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Investigation and Remediation Report for Consolidated SWMU 53-002(a)-99, Inactive Wastewater Impoundments, and AOC 53-008, Storage Area, at Technical Area 53, Revision 1

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Prepared by
Environmental Stewardship Division–Environmental Remediation and Surveillance Program

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Investigation and Remediation Report for Consolidated SWMU 53-002(a)-99, Inactive Wastewater Impoundments, and AOC 53-008, Storage Area, at Technical Area 53, Revision 1

September 2005

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EXECUTIVE SUMMARY

Consolidated Solid Waste Management Unit (SWMU) 53-002(a)-99, which consists of three inactive liquid-waste surface impoundments at Technical Area 53, was investigated to determine the nature and extent of contamination from past activities. Specifically, environmental samples were collected from locations in and around the impoundments, including boreholes, to a maximum depth of 300 ft beneath the site. Samples were also collected to determine the extent of contamination in an ephemeral drainage that has historically received overflow discharges from the impoundments.

SWMU 53-002(a)-99 was remediated in 2000 and in 2002. The remediation efforts entailed removal of all the sludge and liner from the three impoundments and excavation of the interior of the impoundments to tuff bedrock. In addition, selected excavations in the drainage resulted in the removal of radioactively contaminated soil and sediment in the area. Although the impoundments are currently inactive, they are still in place, enclosed by large earthen berms. Within the surrounding mesa-top area is Area of Concern (AOC) 53-008, an active equipment storage area where shielding blocks and other large pieces of equipment are stored temporarily.

The analytical results for samples from the site show that the nature and extent of residual contamination have been defined. A number of inorganic and organic chemicals and radionuclides were detected in the soil, tuff, and sediment that remained after remediation. The concentrations of these contaminants are generally low and are shown to decrease with distance (both vertically and laterally) from the impoundments. Tritium was detected in tuff beneath the impoundments to a depth of about 150 ft. The highest concentrations of tritium were detected within about 20 ft of the surface. Measurements of water content, anion concentrations, and stable isotopes beneath the impoundments indicate that vertical seepage has occurred but that water from the impoundments has not moved significantly beyond the 150-ft depth.

Human health and ecological risk screening assessments for the impoundments and the surrounding area indicate that no potential unacceptable risk/dose exists to humans or the environment at the site. Specifically, the calculated risk estimates (a hazard index of 0.03 and a cancer risk of 2×10^{-6} for the mesa top; a hazard index of 0.03 and a cancer risk of 3×10^{-7} for the drainage) are below the target level established by the New Mexico Environment Department (a hazard index of 1 and a cancer risk of 1×10^{-5}). In addition, the total radiological doses of 8.0 mrem/yr for the mesa top and 6.2 mrem/yr for the drainage are less than the U.S. Department of Energy's target dose of 15 mrem/yr.

SWMU 53-002(a)-99 has been remediated, with the complete removal of all contaminated sludge and liner; the nature and extent of residual contamination have been defined, and it has been shown that the residual contamination does not pose a potential unacceptable risk to humans or the environment. Currently, the site is located within an industrial area under Laboratory (institutional) control. The site is expected to remain so for the reasonably foreseeable future. For these reasons, neither additional corrective action nor further characterization is warranted at SWMU 53-002(a)-99.

AOC 53-008 is an active storage area located around the periphery of SWMU 53-002(a)-99. Inside the AOC are various pieces of equipment and shielding blocks placed on the ground or on pallets at several locations around the mesa-top area near the impoundments. The limited characterization data available for AOC 53-008 have been included in this report and are used to supplement data from SWMU 53-002(a)-99 because of the AOC's location. Because the storage area is active, this report does not treat the investigation of the AOC separately from SWMU 53-002(a)-99, and no conclusions or recommendations are provided for the AOC. It is expected that further investigation of the AOC will be conducted when the storage area is deactivated. Actions on this AOC are deferred until then.

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1.0 INTRODUCTION

This investigation and remediation report details the environmental investigations and remediation conducted at consolidated Solid Waste Management Unit (SWMU) 53-002(a)-99—former sanitary, industrial, and radioactive liquid-waste impoundments—and Area of Concern (AOC) 53-008—an active storage area—at Los Alamos National Laboratory (LANL, or the Laboratory). The site was investigated between 1994 and 2002 by the Laboratory's Risk Reduction and Environmental Stewardship–Remediation Services (RRES-RS) project (formerly the Environmental Restoration [ER] Project), and remedial activities were conducted at the site during 2000 and 2002. The SWMU has been extensively remediated, and the nature and extent of residual contamination currently present at the site have been characterized. The AOC is an active outdoor storage area, and only limited investigation samples have been collected there. Data regarding those samples are included in this report, but no separate conclusions or recommendations are provided for the AOC. Because the storage area is active, further investigation is deferred pending deactivation of the site.

The Laboratory is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE) and managed by the University of California. The Laboratory is located in north-central New Mexico, approximately 60 mi northeast of Albuquerque and 20 mi northwest of Santa Fe. The Laboratory site covers 40 mi^2 of the Pajarito Plateau, which consists of a series of finger-like mesas separated by deep canyons containing perennial and intermittent streams running from west to east. Mesa tops range in elevation from approximately 6200 to 7800 ft. The eastern portion of the plateau stands 300 to 1000 ft above the Rio Grande.

The environmental restoration (ER) work performed by RRES-RS is part of a national DOE effort to clean up facilities that have been involved in weapons production. The goal of these ER activities is to ensure that the DOE's past operations do not pose a potential unacceptable threat to human or environmental health and safety in and around Los Alamos County. To achieve that goal, RRES-RS is investigating sites that have been potentially contaminated by past Laboratory operations.

The SWMU addressed in this report [consolidated SWMU 53-002(a)-99)] contains both hazardous and radioactive components. Depending upon the type of contaminant(s) and the history of a site, either the New Mexico Environment Department (NMED) or the DOE has administrative authority over the work performed by RRES-RS at that site. Under the New Mexico Hazardous Waste Act (NMHWA), NMED has authority over the cleanup of sites with hazardous waste or certain hazardous constituents, including the hazardous waste portion of mixed waste (i.e., waste contaminated with both radioactive and hazardous constituents). The DOE has authority over the cleanup of sites with radioactive contamination. Radionuclides are regulated under DOE Order 5400.5, "Radiation Protection of the Public and the Environment," and DOE Order 435.1, "Radioactive Waste Management." The DOE is also the administrative authority for sites not under NMED's NMHWA authority.

The NMED enforces the Hazardous and Solid Waste Amendments (HSWA) module of the Laboratory's Hazardous Waste Facility Permit, hereafter referred to as Module VIII. Module VIII specifies conditions and requirements for Resource Conservation and Recovery Act (RCRA) investigation and cleanup activities at the Laboratory, which are performed by RRES-RS. The U.S. Environmental Protection Agency (EPA) issued Module VIII on May 23, 1990, and revised it on May 19, 1994 (EPA 1990, 01585; EPA 1994, 44146).

This investigation and remediation report details all ER activities performed at consolidated SWMU 53-002(a)-99. In accordance with Module VIII, the nature and extent of releases of hazardous waste or hazardous constituents are determined through the RCRA facility investigation (RFI) process. The investigation discussed in this document was conducted under the requirements of RCRA and in

accordance with HSWA, following the requirements in Module VIII of the Laboratory's Hazardous Waste Facility Permit (EPA 1990, 01585).

Consolidated SWMU 53-002(a)-99 is located within the Laboratory's Technical Area 53 (TA-53) (Figure 1.0-1). It consolidates SWMUs 53-002(a) and 53-002(b).

SWMU 53-002(a), which is on the north side of the site, is made up of two surface impoundments (these are referred to as the northern impoundments) designed to hold a combined total of 3.2 mil gal. of sanitary and radioactive liquid wastewater from various TA-53 facilities. From 1970 to 1993, the northern impoundments were used as holding ponds for biodegradation, evaporation, and natural radionuclide decay.

SWMU 53-002(b), which is on the south side of the site, is made up of a single surface impoundment (the southern impoundment). The southern impoundment was constructed in 1985. It received excess sanitary wastewater from the northern impoundments through 1989 and received radiological wastewater through 1998. It was designed to hold 2.5 mil gal. All three impoundments are now inactive.

The investigation of consolidated SWMU 53-002(a)-99 sought to determine the nature and extent of potential contamination at the site, and to determine if there are potential unacceptable risks to human health or the environment from any contamination that is present. This report documents the results of sampling at the site, including all samples that represent materials (soil, tuff, and sediment) currently in place at the site. This report also includes the results from screening assessments of human health and ecological risk. Based on the assessments of the data and the calculated risk levels from residual contamination, recommendations are made for disposition of the site.

Before 1997, SWMUs 53-002(a) and 53-002(b) were considered treatment, storage, and disposal (TSD) units regulated under RCRA. On July 21, 1997, in response to a request from the Laboratory, the Hazardous and Radioactive Materials Bureau (HRMB) of the NMED approved a change in status for the TA-53 surface impoundments, from TSD units to corrective action units (NMED 1997, 56380). RCRA activities at these SWMUs after 1997 have been conducted in accordance with the HSWA of 1984.

The 1998 work plan (LANL 1998, 58841) focused on determining if the surface impoundment liners (the clay liners in the northern impoundments and the Hypalon liner in the southern impoundment) had prevented contaminants from migrating into the subsurface. The plan included sampling at multiple depths beneath the impoundments and around the perimeter of the impoundments.

The work plan was designed to answer the following questions (LANL 1998, 58841, pp. 1-6 and 1-8):

- What is the nature, extent, and concentration of contaminants in the media (sludge, clay liner, sand layer, and underlying tuff [to a depth of 15 ft]) associated with the three surface impoundments and in the sediment in the drainage pathways leading from SWMU 53-002(a)?
- What is the extent of historical transport or potential for future mobility, and what is the potential for downcanyon or vertical transport of contaminants into the vadose zone or the sediment in the side canyons of Los Alamos Canyon and Sandia Canyon?
- Do the concentrations of contaminants present at the site pose a potential for unacceptable risk to ecological or human receptors?
- Do the sampling results of the investigation indicate that best management practices (BMPs), either temporary or permanent, or interim measures may be needed to mitigate contaminant transport or to reduce unacceptable risks?

In addition, the work plan stated,

> The data collected from implementing this [work plan]...will be used two ways: to determine the extent (to a 12-ft depth) of contamination and to conduct both baseline human health risk and ecological screening assessments. Baseline human health and/or ecological risk assessment(s) may be conducted with these data for this SWMU and its area of influence. If the extent is defined and the data indicate that human health and ecological risks are negligible, and groundwater/surface water contamination do not constitute a risk, no further action (NFA) will be proposed for this site. (LANL 1998, 58841.2, p. 1-8)

The "12-ft depth" requirement was changed to "15-ft depth" in response to a subsequent notice of deficiency (NOD) (NMED 1999, 64628; LANL 1999, 65120).

The stated objective of the second addendum to the work plan (LANL 2002, 73646, p. 8) was "to confirm that the residual levels of contamination at the site do not pose unacceptable risk to human health and the environment," by presenting a sampling and analysis plan (SAP) designed to define

- the extent of tritium present at the site within and around the impoundments, by verifying the tritium model described in that document;
- the extent of other contaminants within and around the impoundments; and
- the verification sampling for the interim actions (IAs), following removal of the sludge and liners.

This report presents the results of investigation and remediation activities as well as assessments of the nature and extent of residual contamination and of the potential risk associated with SWMU 53-002(a)-99 in its current condition. Also included are data on the samples collected by the ER Project (now RRES-RS) from 1994 through 2002, except when the sampled material was subsequently excavated or otherwise removed from the site. The sampled media reported on here are soil, sediment, and tuff, both from the mesa top and the drainage channel and side canyon leading to Los Alamos Canyon.

2.0 BACKGROUND

TA-53 is located on Mesita de Los Alamos, which is bounded on the north by Los Alamos Canyon and on the south by Sandia Canyon (Figure 2.0-1, Photo 2.0-1). The Los Alamos Neutron Science Center (LANSCE), which includes the LANSCE linear proton accelerator, the Manuel Lujan Jr. Neutron Scattering Center, and a medical isotope production facility, is located at TA-53. Also located at TA-53 are the Accelerator Production of Tritium Project Office, including the Low-Energy Demonstration Accelerator; the Proton Radiography Facility; the Spallation Neutron Source Division; and the Weapons Neutron Research Facility. Research and development activities in accelerator technology, neutron science, materials science, and high-power microwaves also take place at TA-53. Construction of TA-53 facilities began with site preparation in early 1967, and major construction started in October 1968. The first full year of operation was 1974.

Consolidated SWMU 53-002(a)-99 is made up of SWMU 53-002(a), two northern impoundments, and SWMU 53-002(b), the southern impoundment (Figure 2.0-2). These three surface impoundments are adjacent to one another and were used as holding ponds for sanitary and radioactive liquid waste from various TA-53 facilities. The site is described, in detail, in the "RFI Work Plan and SAP for Potential

Release Sites 53-002(a,b) and Associated Piping and Drainages at TA-53" (LANL 1998, 58841, pp. 2-1 through 2-16).

The impoundments received a variety of wastewater types; these included sanitary and radioactive liquid waste from lines serving 420 structures at TA-53 and direct discharges into the surface impoundments from vacuum trucks disposing of septic tank sludge from locations throughout the Laboratory. Some of the contributing facilities were identified as discharging drainage and blowdown from equipment including chillers, water heaters, pressure-relief valves, air conditioners, boilers, compressors, and vacuum pumps. The septic sludge discharged to the impoundments was not characterized before disposal, but there was a potential for waste from septic tanks to contain both radionuclides and hazardous constituents (LANL 1998, 58366).

The northern impoundments were constructed in 1969 and from 1970 to 1993 were used as holding ponds for biodegradation, evaporation, and natural radionuclide decay of wastewater from TA-53 facilities. In addition, the northern impoundments discharged to an outfall permitted by the National Pollutant Discharge Elimination System (NPDES) which was located near the southeast corner of the northeast impoundment. The capacity of the northern impoundments was exceeded periodically, resulting in effluent releases through the NPDES outfall into a drainage channel that formerly ran along the south side of the impoundments. The channel flowed to the east into an unnamed tributary of Los Alamos Canyon. In this report, the channel is referred to as Drainage Area A and Drainage Area B (both are on the mesa top to the east of the impoundments). The tributary canyon (hanging canyon) was characterized by sampling three representative reaches: Reaches C, D, and E. Releases from the northern impoundments were directed down the drainage and into the hanging canyon by storm runoff. Before 1985, violations of the NPDES permit were frequent for pH, total suspended solids, and biological oxygen demand.

In 1985, the southern impoundment was built to receive excess water volumes and to reduce the need for effluent releases from the northern impoundments. Two Aqua-Aerobics surface turbine aerators were also installed in each of the northern impoundments to enhance evaporation and reduce water volumes (LANL 1998, 58841, p. 2-1). Discharges to the NPDES outfall were reduced, but still occurred every 4 to 6 months. The outfall was removed from the Laboratory's NPDES permit in 2001 (EPA 2001, 82282).

When the southern impoundment was built, the drainage channel on the south side of the northern impoundments was destroyed, but a discharge pipe still ran from the northeastern impoundment to the NPDES outfall. From 1985 to 1989, the southern impoundment received excess discharges from the northern impoundments. In 1989, the radioactive wastewater stream was segregated from the sanitary/industrial wastewater stream and the southern impoundment received only radioactive wastewater from 1989 until its deactivation in 1998. The northern impoundments received only sanitary/industrial wastewater from 1989 until 1993, when they were removed from service. At that time, the treatment plant allowed the sanitary wastewater to be diverted from the impoundments.

When the southern impoundment was built, an outfall pipe with a lockable valve was installed on the east side of the impoundment (at the location of the NPDES outfall) to allow discharges if the water reached high levels. In 1989, the outfall valve was locked and tagged out because discharges from the southern impoundment would not have been covered by the NPDES permit. No discharges from the southern impoundment outfall pipe ever occurred, and water levels never exceeded the capacity of the impoundment (LANL 1998, 58841, p. 2-15).

The impoundments are no longer in use and are not connected to radioactive liquid or sanitary waste lines. The radioactive liquid waste has been diverted to the TA-53 Radioactive Liquid Waste Treatment Facility (RLWTF) at Building 945 and Structure 53-954 (two radioactive liquid-waste basins) through a

new waste line that runs to the north of consolidated SWMU 53-002(a)-99 (Figure 2.0-2). The old radioactive waste line extending between the two northern impoundments was cut and capped at a point north of the northwest impoundment and at the south end near the junction of the three impoundments. The disconnected line remains buried in place within the berm between the northern impoundments, and currently there are no plans to remove either the berm or the inactive waste line. The sanitary waste lines that ran into the northern impoundments have been removed. There are no other underground pipelines, tanks, utility lines, or structures within the boundary of consolidated SWMU 53-002(a)-99, although several underground utilities are located immediately to the north (Figures 2.0-1 and 2.0-2)

Some of the surrounding mesa-top area is used for equipment storage (AOC 53-008), with shielding blocks and other large items stored temporarily at multiple locations for variable periods. Building 621, a permanent structure, is located immediately south of the southern impoundment and houses lead bricks used in accelerator operations at TA-53. Building 939, also used for storage, is located approximately 100 ft north of the northeastern impoundment. Structure 53-32, near the northeast corner of the northwestern impoundment, is a shed used to store miscellaneous nonchemical maintenance items. Structures 53-1071 and 53-1072, both located on the north side of the northeastern impoundment, are used to store oil used in accelerator operations. These structures are shown in Figure 2.0-2.

2.1 Results of Previous Investigations

The sludge and water in the northern impoundments were sampled and analyzed before the ER Project began RFI activities at the site in 1994. Because the data generated during those sampling activities were not validated or assessed for usability in accordance with the Laboratory's ER Project protocols, they were used only qualitatively in the development of the 1998 RFI work plan (LANL 1998, 58841). The following summary of investigatory activities prior to 1994 was taken from the 1994 work plan (LANL 1994, 34756, pp. 6-7–6-11).

2.1.1 Sampling and Analysis of Sludge and Water—1988, 1991, and 1992

In 1988, sludge from the northeastern and northwestern impoundments was sampled during the DOE Headquarters Environmental Survey (DOE 1989, 15367). Three composite samples from each impoundment were analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), metals, and gamma-emitting radionuclides.

The results indicated the presence of two VOCs (acetone and toluene), six SVOCs (benzoic acid, benzyl alcohol, fluoranthene, 2-methylphenol, 4-methylphenol, and pyrene), and several metals in the sludge, all at relatively low concentrations. Several radionuclides (beryllium-7, cesium-134, cobalt-56, cobalt-57, cobalt-58, cobalt-60, manganese-54, rubidium-83, selenium-75, sodium-22, yttrium-88, and zinc-65) were detected in all six sludge samples from the northern impoundments.

In July 1991, more sampling was conducted, this time by the Laboratory's Environmental Protection Group (then known as EM-8). Grab samples of sludge and water were collected from three locations in each impoundment and analyzed for VOCs, SVOCs, and toxicity-characteristic leaching procedure (TCLP) metals. In addition, the water samples were analyzed for gross alpha and beta radioactivity. One water sample from each impoundment was analyzed for tritium and gamma-emitting radionuclides.

Analysis of the water samples resulted in no detected VOCs, but toluene and 4-isopropyl toluene were detected in sludge samples. One SVOC (benzoic acid) was detected in one water sample, and three SVOCs (benzidine, di-n-butylphthalate, and bis-2-ethylhexylphthalate) were detected in sludge samples. Again, several metals were detected in water samples and in sludge samples. The radionuclides detected

in water samples were beryllium-7, cesium-134, cobalt-57, cobalt-58, cobalt-60, europium-154, hafnium-175, manganese-54, manganese-56, rubidium-83, and tritium. The radionuclides detected in sludge samples were the same, with the addition of cesium-137, iridium-190, lutetium-173, and sodium-22.

In April 1992, the Environmental Protection Group conducted more comprehensive sampling, collecting grab samples of sludge from 15 locations in each impoundment, using a uniform grid layout. The samples were analyzed for VOCs, SVOCs, TCLP metals, and polychlorinated biphenyls (PCBs). One sludge sample from each impoundment was also analyzed for pesticides, herbicides, pH, flash point, sulfide, and cyanide. In addition, grab samples of water were collected from one location in each impoundment; these were analyzed for TCLP metals; VOCs; SVOCs; PCBs; gross alpha, beta, and gamma radioactivity; and tritium.

For both sludge and water samples, VOC and SVOC results were similar to those from the July 1991 sampling, but additional compounds were detected. The VOCs detected in sludge were acetone, 2-butanone, carbon disulfide, chloroform, 4-isopropyl toluene, toluene, 1,1,1-trichloroethane, and 1,2,4-trimethylbenzene. The only VOC detected in water samples was acetone, in the northeastern and southern impoundments. The SVOCs detected in sludge were benzoic acid, bis-2-ethylhexylphthalate, and di-n-butylphthalate. No SVOCs were detected in the water samples. Again, metals were detected in both sludge and water samples at relatively low concentrations. PCBs were detected in three sludge samples, all at levels below 1 mg/kg. No PCBs were detected in water samples. Several pesticides were detected in sludge samples; no herbicides were detected. No pesticides or herbicides were detected in any of the water samples. Tritium was detected in both water samples.

2.1.2 Sampling and Analysis of Vadose Zone—1993

To determine if a subsurface saturated zone was present and if any contaminants had reached the subsurface, a characterization study was conducted via boreholes adjacent to the SWMU 53-002(a)-99 impoundments (LANL 1993, 29416). Analysis of tuff samples from the boreholes showed no evidence of hazardous waste contamination. Tritium was subsequently detected during ongoing monitoring of the boreholes.

2.1.3 Sampling and Analysis of Effluent Discharge Area—1979–1985

To ascertain the extent of radionuclide contamination from discharges to the drainage channel east of the impoundments, the Laboratory conducted environmental monitoring from 1979 to 1985. Samples were collected annually at eight locations along the course of the drainage into Los Alamos Canyon (LANL 1994, 34756; Figure 6-3, p. 6-10). Several radionuclides (beryllium-7, cobalt-57, cesium-134, tritium, manganese-54, sodium-22, and rubidium-83) were detected in sediment samples. The concentrations were highest near the outfall and decreased downstream.

Data from the 1988, 1991, and 1992 samples can be found in Appendix E of the 1998 work plan (LANL 1998, 58841). The results from the sampling through 1992 provided some understanding of the nature of the contamination present in the sludge and water within the impoundments, but they indicated that further investigation was needed to fully define the nature and extent of contamination for SWMU 53-002(a)-99.

The site was included in the 1994 "RFI Work Plan for Operable Unit 1100" (LANL 1994, 34756), which recommended deferred action on the basis that the site was slated for RCRA closure in the near future. In 1994, further sampling for nature and extent of contamination was conducted by the ER Project, and in

1997 the status of the site was changed, adding the impoundments as SWMU 53-002(a). The details of the investigation from 1994 forward are presented in section 3.0 of this investigation report.

2.2 Related SWMUs or AOCs

AOC 53-008 is adjacent to SWMU 53-002(a)-99 on the north, east, and south sides of the impoundments. The AOC is an active equipment storage area (also known as a "boneyard") where a variety of items are stored temporarily by facilities at TA-53. The stored items are primarily materials used for radiation shielding, such as concrete blocks and wall sections. Because AOC 53-008 is an active storage area, investigation into the site has been limited to collecting a small number of soil samples. In addition, because the number and locations of stored items change frequently, those samples do not provide adequate information about potential contaminants derived specifically from storing material at the AOC. Although this report does not address AOC 53-008 separately, the data from samples collected during the limited investigation of that site have been included with the data from SWMU 53-002(a)-99 to provide additional information about the nature and extent of contamination and potential risk to human health and the environment associated with the impoundments. The data summaries presented in Appendix D and the risk assessments presented in Appendix G do not distinguish between AOC 53-008 data and SWMU 53-002(a)-99 data, and no conclusions or recommendations have been developed separately for AOC 53-008.

3.0 SCOPE OF ACTIVITIES

Preliminary background and historical research was done during the preparation of the "RFI Work Plan for Operable Unit 1100" (LANL 1994, 34756), a document that covered all of TA-53, TA-72, and the former TA-20. The work plan summarized information about the construction and operation of the impoundments through 1994, as well as the results of early sampling and analysis efforts (LANL 1994, 34756, pp. 6-3–6-11). Under the ER Project (now RRES-RS), investigatory and remediation activities at SWMU 53-002(a)-99 took place from 1994 to 2002. The sequence of events is outlined below:

- 1994/1995
    - Site-characterization sampling, per work plan for Operable Unit (OU) 1100 (LANL 1994, 34756)
- 1998/1999
    - Additional site-characterization sampling, per work plan/SAP for potential release sites (PRSs) 53-002(a) and 53-002(b) (LANL 1998, 58841)
- 1999/2000
    - IA to remove sludge and liner from the southern impoundment
    - Confirmatory sampling inside the southern impoundment
    - Additional sampling of berms and surrounding mesa-top area
    - Sampling beneath the southern impoundment after sludge/liner removal
- 2001
    - "Phase I" sampling of sediment in Reaches C, D, and E

- 2002
  - IA to remove sludge and liner from northern impoundments; confirmatory sampling
  - Removal of sediment/soil from selected areas in Los Alamos Canyon tributary drainage
  - Extent sampling per the second addendum to the 1998 work plan (LANL 2002, 73646)
  - "Phase II" sampling of sediment in Reaches C, D, and E

In 1994, execution of the OU 1100 work plan began with the collection of site-characterization samples at the northern impoundments. Samples were collected from the sludge, the clay liner, the tuff below the clay liner, and the tuff below the gunite liner on the berms surrounding the impoundments. Some of the data, particularly those for PCBs, were of uncertain or undocumented quality, indicating that additional sampling should be performed. In an NOD (NMED 1999, 64628), the NMED stated that extent must be determined to a depth of 15 ft rather than 12 ft. In addition, the 1994/1995 sampling did not include the southern impoundment.

In 1998, an RFI work plan was written and submitted to the NMED to address these deficiencies (LANL 1998, 58841). This plan directed the collection of samples from all three impoundments to define the extent of contamination to a 15-ft depth within the impoundments (1–2 ft, 4–5 ft, and 14–15 ft) and to a depth of up to 29 ft around the perimeter of the impoundments, including a tributary drainage and bench area above Sandia Canyon on the west side of the site. The 1998 work plan was implemented in 1999/2000. Samples were collected at the depths specified by the work plan. The locations of all the samples collected on the mesa top, including the ones taken from the Sandia Canyon tributary and bench area, are shown in Figure 3.0-1.

The data from the 1999/2000 sludge and clay liner samples indicated a potential unacceptable risk to potential on-site workers. For that reason, IAs were performed to remove the sludge and liner from the southern impoundment (in 2000) and from the northern impoundments (in 2002).

During the summer of 2000, the southern impoundment was the subject of an IA that included the removal of its contaminant source. The source-removal activities included removing the radioactively contaminated sludge from within the impoundment and cutting and removing the Hypalon (rubber polymer) liner. The average depth of this excavation was 1 to 1.5 ft, and the impoundment was not backfilled following the removal. The waste (sludge and liner) was containerized and shipped to the Laboratory's TA-54, Area G, for disposal. The volume of material removed is presented in Appendix F, Table F-5.1-2. The sampling following the 2000 IA included drilling 14 boreholes to a depth of 15 ft each and collecting samples from four depths (0–0.5 ft, 1–2 ft, 4–5 ft, and 14–15 ft) at each location, as specified by the 1998 work plan (LANL 1998, 58841). The boreholes were located inside the southern impoundment (Figure 3.0-1).

In 2001, initial sampling was performed in Reaches C, D, and E. Twenty-five sediment samples were collected from various depths at 20 locations within the reaches. The sample locations were selected by using a geomorphic approach to identify the sediment deposits most likely to contain contaminants from releases at the impoundments.

In the spring and summer of 2002, a second IA was conducted to remove sludge and clay liner material from the two northern impoundments. The sludge, which varied in depth from 6–32 in., approximately 0.5 ft of clay liner, and 0.25 to 0.5 ft of tuff from below the liner were removed during the 2002 IA. As with the 2000 IA, the impoundments were not backfilled following excavation, and all waste was containerized and shipped to the Laboratory's TA-54, Area G, for disposal. The volumes of material removed are

presented in Appendix F, Tables F-5.1-2, to F-5.1-5. Details of both IAs, including waste volumes, are presented in Appendix F.

Upon completion of the 2002 IA, sampling was conducted to confirm the effectiveness of the excavations and to determine the vertical and lateral extent of contamination in and around the three impoundments. This sampling was conducted in accordance with the 1998 work plan (LANL 1998, 58841) and the 2002 second addendum to the work plan (LANL 2002, 73646).

The sampling included drilling seven boreholes; samples were taken at multiple depths from each borehole. One borehole was drilled in each of the three impoundments. The four remaining boreholes were located at points around the outside of the impoundments (northwest, northeast, east, and south) (Figure 3.0-2). Two shallow auger holes were drilled on the west side of the impoundments because steep terrain made that area inaccessible to the drill rig.

Five surface samples were also collected inside each of the impoundments (15 total samples). Additional sediment samples were also collected to determine the extent of contamination down the canyon toward Los Alamos Canyon. Twenty-five sediment samples were collected at various depths from 20 locations in Reaches C, D, and E (Figure 3.0-3). These sediment samples were analyzed for target analyte list (TAL) metals.

Shallow soil or sediment samples in nonborehole locations were collected with a 3-in. stainless-steel bucket auger driven by hand or a spade or scoop. Cuttings from the desired depth intervals were removed from the auger bucket and put into a stainless-steel collection bowl for distribution among the required sample containers. In places where the hand-driven auger was inadequate because of the tuff's hardness, a power-driven portable auger was used. Shallow auger holes (AH1 and AH2), located in an area inaccessible to the drill rig, were attempted using a hand auger that met refusal at the welded tuff bedrock. Therefore, AH1 and AH2 were completed using a Bosch rotating hammer drill. The shallower boreholes (6.5–30 ft, in the northern impoundments and around the outside of the impoundments) were drilled using a portable power-driven auger. Deeper boreholes (deeper than 30 ft) were drilled using a Failing F-10 drill rig. Continuous core was extracted from the deeper boreholes using a split-spoon core barrel sampler.

The samples were analyzed for various combinations of SVOCs, VOCs, PCBs, TAL metals, hexavalent chromium, pesticides, herbicides, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, strontium-90, and americium-241. All the samples reported on in this report were analyzed at off-site laboratories according to the Laboratory's statement of work for analytical services (LANL 1995, 49738; LANL 2000, 71233). The analytical suites that apply to specific samples are listed in Appendix D.

All sample locations, including boreholes, were surveyed using either a global positioning system (GPS) with differential correction or a total station surveying system. All sample locations are listed, with location descriptions and survey coordinates, in Table A-7.0-1 in Appendix A.

Details about all samples included in the characterization are presented in section 6.0 and in the tables identified in that section. Sample IDs are presented in the format xxxx-xx-xxxx, where the middle two digits represent the year the sample was collected. Descriptions of sample collection methods, field-screening methods, drilling methods, and geodetic survey methods are included in Appendix A. Information regarding waste management is presented in Appendix F.

3.1 Health and Safety Monitoring

The nature of the contamination at SWMU 53-002(a)-99 and the work involved in remediating the site required the use of multiple health and safety measures to protect workers. During the remediation of all three impoundments, monitoring was performed for noise levels, airborne radioactive particulates (active air sampling of the site and personnel), VOCs, and airborne (nonradioactive) particulates. In addition, all involved personnel wore personal thermoluminescent dosimeters at all times. All activities were completed with no health and safety incidents, and the health and safety measures used did not affect the progress or the results of either sampling or remediation activities.

3.2 Radiation Survey

To guide environmental sampling efforts, the 1998 work plan (LANL 1998, 58841) called for a radiological survey of

- the area referred to as Drainage Area B (the mesa-top portion of the drainage channel east of the impoundments),
- the Sandia Canyon tributary, and
- a Sandia Canyon bench area (west and southwest of the impoundments).

In 1999, a survey of gamma radiation was performed in the areas listed above. The details of instrument selection, calibration, and use are presented in Appendix A. The results of the radiation survey are presented in Tables 3.0-1, 3.0-2, and 3.0-3. The gamma radiation levels detected during the survey led to the collection of a number of soil and tuff samples from the mesa-top area west and southwest of the impoundments (Figure 3.0-1) and from Drainage Area B (Figure 3.0-2).

Additional gamma radiation screening was performed on sediments in Reaches C, D, and E, prior to sampling in 2001 and 2002. An initial field gamma radiation survey of sediments was conducted to determine if the radioactivity was sufficiently high to allow gamma screening to be a useful tool for guiding the selection of sample locations. The survey results indicated that the concentrations in the sediment were too low; field instruments could not distinguish them from background radiation.

3.3 Samples Removed during Remediation

In the course of removing the sludge and liner material from the impoundments, some of the material represented by samples collected before 2000 was removed. Therefore, some of those samples no longer represent current site conditions, and those specific samples (205 total) are not included in the data review, the evaluations of extent of residual contamination, or the determination of chemicals of potential concern (COPCs) for the human health and ecological risk site assessments. Site assessments are based on only those samples that represent current site conditions (after the removal of the contaminant sources in the impoundments).

4.0 FIELD INVESTIGATION RESULTS

4.1 Surface Conditions

Surface conditions at the site influenced the selection of investigation sampling locations by defining the areas in which contaminants were most likely to be found. The enclosed design of the impoundments made it likely that the highest numbers and concentrations of contaminants would be detected within the

boundaries defined by the berms surrounding the impoundments. Knowledge of the site's history (e.g., the discharges from the south side of the northern impoundments prior to construction of the southern impoundment) narrowed the search for evidence of discharges outside the impoundments to the drainage channels on the east side of the site. Although contaminants were primarily confined to the area inside the impoundments, the dry conditions that existed after the impoundments were taken out of service pointed to the possibility of airborne dust being deposited on the soil surface of the surrounding area. In the past, BMPs (jute matting overlaying the sludge) had been applied to minimize dust from the impoundments.

In the site's current condition, the impoundments are largely intact, with large berms (> 6 ft high) surrounding each one. Three large openings exist in the berms: one between the northeastern and southern impoundments, one between the northwestern and southern impoundments, and one between the southern impoundment and the outside area. Because the floors of the impoundments are below the ground surface of the surrounding area, surface water does not drain outward from the impoundments but is contained within the impoundments. The ground surface outside the opening in the berm around the southern impoundment generally slopes down to the east such that surface runoff from the area surrounding the impoundment is not likely to flow into the impoundment.

The impoundments are currently unlined, with either crushed tuff or intact tuff bedrock forming the floor. Accumulations of precipitation within the impoundments are likely to either infiltrate the shallow subsurface or evaporate, depending upon the amount and rate of precipitation.

The mesa-top area surrounding the impoundments (wherever it is not disturbed or occupied by buildings or roads) is dominated by piñon-juniper woodland with sparse grass and shrubs as understory vegetation. A variety of shrubs and small plants have become established on the berms around the impoundments, and a few shrubs have appeared inside the impoundments after the excavation of the sludge and liner.

The berms surrounding the impoundments could be subject to erosion, although they are substantially stabilized by vegetation on their upper and outer surfaces. The inner surface (sloping down into the impoundments) of the northern impoundment berms is still lined with gunite in most areas, resulting in an impervious surface. A surface water site assessment conducted on November 14, 2003, indicated no visible erosion at the impoundments and concluded that the potential for soil erosion does not exist (Appendix H presents the surface water assessments).

Currently, the impoundments themselves are not in use. The surrounding mesa-top area is used for equipment storage (AOC 53-008), with shielding blocks (Figure 2.0-2) and other large items stored temporarily at various locations for variable periods of time. A single permanent structure, Building 621, is located immediately south of the southern impoundment and houses lead bricks used in accelerator operations at TA-53. Structure 53-32 is a shed used for storing miscellaneous nonchemical maintenance items. Structures 53-1071 and 53-1072 store oil used in accelerator operations. The locations of the structures are shown in Figure 2.0-2.

4.2 Drilling Investigations

In 1999 and 2000, 51 shallow boreholes were drilled in the northern impoundments and on the mesa-top areas surrounding the impoundments. These boreholes ranged in depth from 6.5 to 30 ft and were drilled using a portable power-driven bucket auger.

Fourteen boreholes were drilled inside the southern impoundment following the 2000 IA. Each of these 14 boreholes was drilled to a depth of 15 ft beneath the southern impoundment after all the sludge and liner

had been removed. These boreholes were drilled using a truck-mounted drill rig and a split-spoon hollow-stem auger.

Seven boreholes were drilled in and around the impoundments following the 2002 IA. Of these seven, one location was selected from within each of the three impoundments and four locations were selected from outside the impoundments (Figure 3.0-2), again after all the sludge and liner had been removed from the impoundments. The borehole locations and depths are listed in Table 4.2-1. The seven boreholes drilled in 2002 consisted of three 50-ft boreholes (BH1, BH2, and BH3, sampled at the surface and at 30 ft [BH1 was sampled at 24 ft] and 50 ft), three 200-ft boreholes (BH4, BH5, and BH6, sampled at 10-ft-depth intervals), and one 300-ft borehole (BH7, sampled at 10-ft-depth intervals). The boreholes were drilled using a truck-mounted drill rig with a hollow-stem auger.

In addition, two shallow auger holes, AH1 (5.5 ft) and AH2 (5.9 ft), were completed using a Bosch rotating hammer drill with a bucket auger attachment. The shallow auger holes were located on the west/southwest side of the impoundments, in an area where the drill rig could not be placed because of steep terrain.

Samples were collected from the split-spoon hollow-stem auger either at the planned depth interval or at an interval based on visual inspection of the core. In some cases, the sample interval was adjusted to allow for the collection of material in and around fractures or clay-rich zones, at geological contacts, or from areas with evidence of potential contamination, such as staining or odors. For example, a sample was collected from 24 to 25 ft bgs in BH1, instead of the 30 ft bgs called out in the second addendum to the RFI work plan (LANL 1998, 59997), based on the presence of staining in the shallower interval.

Photoionization detector (PID) readings of the core were taken immediately upon separating the halves of the split-spoon core barrel and were recorded on the borehole log and corresponding sample collection logs. The cores were also screened for radioactivity (for alpha radiation using a Ludlum-139 rate meter; for beta/gamma radiation using an ESP-1), and the readings were recorded on the logs as was done with the PID readings. The PID and radioactivity screening were performed primarily for health and safety purposes, but they were considered, along with the physical characteristics of the core (e.g., fractures or staining), when determining whether to sample the planned interval or to adjust the sample depth.

Except for the shallow holes at AH1 and AH2, the 2002 drilling produced continuous core that was logged and photographed. All core was inspected and logged by a qualified geologist. The borehole logs are included in Appendix B. The logs report lithologic variations and interpreted geological contacts; sample depths; results of field screening for alpha/beta/gamma radiation and for VOCs; percent core recovery; and notations of odors, staining, fractures, and other features that could guide sample collection or results interpretation.

Continuous borehole logs were not recorded for the 15-ft-deep boreholes drilled in 2000. Instead, descriptions of the borehole material were recorded on the sample collection logs. The samples from these boreholes were all collected within Unit 2 of the Tshirege Member of the Bandelier Tuff, and no lithologic changes or unexpected conditions were encountered. BH7 was drilled in 2002 within the southern impoundment, very near the 15-ft boreholes drilled in 2000. The borehole log for BH7 adequately defines the lithology beneath the southern impoundment.

The lithologic descriptions and geologic unit designations used on the borehole logs are based on accepted terminology and stratigraphy for the Bandelier Tuff and associated units, as reported in various studies and reports on the geology of the Pajarito Plateau (Broxton and Eller 1995, 58207; Broxton et al. 1995, 50119).

The split-spoon auger sections were brushed clean, then decontaminated using a dry decontamination procedure after each core section was removed. All sampling equipment was similarly decontaminated after each sample.

After the required depth was reached, each borehole was closed by backfilling it with cuttings from that hole. The boreholes were backfilled to 3 ft bgs, then sealed with bentonite from 3 ft to 0.5 ft, and finally capped with cement from 0.5 ft to the surface. Each borehole location was marked with a metal monument (stamped with the location ID) that was set into the cement cap.

4.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath SWMU 53-002(a)-99 may be inferred from the regional geology (Broxton and Eller 1995, 58207; Broxton et al. 1995, 50119) and has been further defined using geologic logs from boreholes drilled at or near the site (Appendix B contains the borehole logs).

The predominant rock unit at the surface is Unit 2 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits (Figure 4.3-1). Unit 2 of the Tshirege Member (Qbt 2) is approximately 100 ft thick at this location. Below Unit 2 is Unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is Unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below Unit 1g is approximately 6 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30 to 40 ft thick. The lowest unit encountered in the 300-ft borehole at SWMU 53-002(a)-99 was the Otowi Member of the Bandelier Tuff (Qbo). Only about 20 ft of the Otowi Member was logged in BH7, but it is typically 120 to 180 ft thick. Below the Otowi Member lies the Guaje Pumice Bed (pumice, approximately 35 ft thick), followed by the Puye Formation and the Cerros del Rio basalts with a combined thickness of at least 680 ft in this area (LANL 1998, 58841, p. 2-7).

All samples included in this report were collected from the Bandelier Tuff; the deepest came from the upper portion of the Otowi Member (Qbo). Figure 4.3-1 shows the general stratigraphy of the Bandelier Tuff with the depths of lithologic boundaries as encountered in BH7 at SWMU 53-002(a)-99. The locations of BH7 and other boreholes at the site are shown on Figures 3.0-1 and 3.0-2.

The only subsurface man-made structures within the boundary of the consolidated SWMU are the sanitary waste and radioactive liquid-waste lines (Figure 2.0-2), which are no longer connected to the SWMU 53-002(a)-99 impoundments. Section 2.0 describes the current status of the waste lines.

4.4 Groundwater Conditions

Groundwater occurs in three distinct modes on the Pajarito Plateau:

1. the deep regional aquifer, the upper surface of which is typically contained within the conglomerates and sandstones of the Puye Formation;
2. the intermediate-depth saturated horizons; and
3. shallow alluvial groundwater found in canyon-bottom alluvium (LANL 1998, 58841).

The top of the regional aquifer at TA-53 is estimated to be at least 1000 ft below the mesa surface. It was encountered at a depth of about 750 ft bgs in the Otowi-4 water supply well (LANL 1998, 58841, p. 2-10) in Los Alamos Canyon, northwest of SWMU 53-002(a)-99 (the ground surface elevation at that location is approximately 300 to 400 ft below the mesa-top elevation at TA-53).

The regional aquifer is the only known aquifer in the Los Alamos area capable of producing a municipal and industrial water supply. The direction of groundwater flow in the regional aquifer is to the east-southeast, toward the Rio Grande. The velocity of groundwater flow ranges from about 20 to 250 ft/yr (LANL 1998, 58841, p. 2-7). Details of depths to the regional aquifer, flow directions and rates, and well locations are presented in various Laboratory documents (LANL 1997, 55622; LANL 2000, 66802; Purtymun 1995, 45344).

Intermediate-depth saturated horizons have been identified in wells in both Los Alamos Canyon and Sandia Canyon, in the general vicinity of SWMU 53-002(a)-99. Perched groundwater was encountered at a depth of about 450 ft in water supply well PM-1 when that well was installed in 1965 (LANL 1993, 23249). Well PM-1 is located in Sandia Canyon near the eastern boundary of TA-53, approximately 1.5 mi east-southeast of SWMU 53-002(a)-99. Perched groundwater was also encountered at a depth of 253 ft during installation of the Otowi-4 well in Los Alamos Canyon in 1990 (LANL 1993, 23249). The lateral extent of these perched groundwater zones is not known, but they are believed to be of limited extent. The depth of the perched water in Otowi-4 and PM-1 indicate that if perched water were present near SWMU 53-002(a)-99, it would probably be several hundred ft below the mesa surface. No perched water has been identified beneath SWMU 53-002(a)-99.

Alluvial groundwater has not been observed in the vicinity of SWMU 53-002(a)-99, and two observation wells (SCO-1 and SCO-2) installed near water supply wells PM-1 and PM-3 indicate that no such alluvial groundwater body exists in the lower reaches of Sandia Canyon (Purtymun and Stoker 1990, 07508). Well SCO-1 is located in the bottom of Sandia Canyon, approximately 0.5 mi east-southeast of SWMU 53-002(a)-99, and SCO-2 is approximately 1 mi west of SCO-1 in Sandia Canyon.

Among the reported results for samples collected from the boreholes at SWMU 53-002(a)-99 is percent moisture, which indicates the distribution of moisture in the subsurface below the site (Figure 4.4-1). The results show that the moisture content in rocks at the site is variable but does not approach saturation. In most cases, the observed peaks in moisture content may be related to boundaries between lithologic units where changes in porosity or other characteristics may cause water to accumulate.

Moisture content results from BH7 were compared to the moisture contents reported for borehole LADP-4, in DP Canyon (Broxton et al. 1995, 50119, p. 99). The two moisture profiles exhibit similar patterns with respect to the various rock units and the contacts between those units. In particular, both profiles show significant increases in gravimetric moisture near the Qbt 1v/Qbt 1g contact and the Qbt 1g/Qct contact. At both contacts, the LADP-4 moisture content increases to a maximum of 23%, while the moisture in BH7 increases to about 20%. Borehole LADP-3, in Los Alamos Canyon, had reported moisture contents as high as 41% (Broxton et al. 1995, 50119, p. 98). DP Canyon contains an ephemeral or intermittent stream (LANL 1999, 63915, p. 1-4), while Los Alamos Canyon contains perennial as well as ephemeral reaches. The moisture profile of BH7 is closer to that of LADP-4, perhaps in response to intermittent moisture inputs from the impoundments, which are similar in nature to the intermittent stormwater and townsite inputs to DP Canyon.

4.5 Surface Water Conditions

Surface water at the site consists of ephemeral surface (overland) flow and channelized runoff in response to precipitation. The majority of the precipitation at the site occurs either as typically brief, but often intense, thunderstorms during the summer months or as winter snowfall. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Drainage channels on mesa-top sites are typically shallow and narrow, but these flow into a deeply incised network of canyons.

A drainage channel is present beginning at the east side of a dirt road that runs north to south on the east side of the impoundments. This channel drains approximately to the east, draining off the mesa top into a small hanging canyon that then joins with Los Alamos Canyon. The channel historically received overflow discharges from the northeast and northwest impoundments, but currently has no direct connection to the impoundments. Construction of the southern impoundment in 1985 destroyed the remainder of the mesa-top portion of this drainage, which formerly ran along the south side of the northern impoundments. An overflow pipe continued to connect the northeastern impoundment to the former NPDES outfall just west of the dirt road. This outfall discharged directly to the drainage channel and canyon east of the impoundments. The outfall has since been removed from the Laboratory's NPDES permit and is no longer in use. Surface runoff from the mesa-top areas on the east (and possibly the south) side of the impoundments, including a dirt road, drains into the channel. The flow of surface water in the channel is ephemeral, occurring only after significant rainfall or snowmelt.

In November 2003, surface water site assessments were performed at SWMU 53-002(a)-99 [53-002(a) and 53-002(b) individually] and at AOC 53-008. These assessments use subscores for site factors such as topographic location, slope, evidence of runoff, and run-on to arrive at a single score (ranging from 0 to 100) for each site. This score is an indicator of the potential for erosion and sediment transport, with lower scores indicating lower potential for erosion. SWMUs 53-002(a) and 53-002(b) each received a score of 22.3, indicating no significant potential for erosion. The score for AOC 53-008 is 21.0, also indicating no significant potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

Residual contamination within the impoundments is unlikely to be transported by surface water runoff. The impoundments do not drain to the outside because the floors of the impoundments sit below the current ground surface of the surrounding area, and large berms still enclose the impoundments. Some contaminant transport is possible through infiltration of surface water inside the impoundments into the vadose zone.

5.0 REGULATORY CRITERIA

Because the goal of the IAs at SWMU 53-002(a)-99 was to remove all contaminated sludge and liner material from all three impoundments, no specific cleanup levels were established. However, additional excavations were performed, during which radiological field-screening indicated the presence of elevated radioactivity levels in the sand or tuff underlying the impoundments (after the sludge and liner were removed).

The human health and ecological screening assessments followed guidance provided by the EPA and NMED. For human health, the industrial soil screening levels (SSLs) (see Tables 5.0-1 and 5.0-2) came from EPA Region 6 (EPA 2003, 81724). The carcinogenic analyte levels are multiplied by a factor of 10 to make the numbers consistent with the NMED's target risk level of 10^{-5}. For radionuclides, the screening action levels (SALs) (see Table 5.0-3) were derived according to the Laboratory's "Derivation and Use of Radionuclide Screening Action Levels" (LANL 2001, 69683) and using RESRAD Version 6.21 (LANL 2002, 73705).

The purpose of the ecological screening evaluation is to identify chemicals of potential ecological concern (COPECs). The evaluation involves calculating hazard quotients for COPCs and appropriate screening receptors (LANL 1999, 64783). Ecological screening levels (ESLs) (Table 5.0-4) for the receptors were obtained from the Laboratory's ECORISK Database, Version 2.0 (LANL 2003, 80117).

6.0 SITE CONTAMINATION

This section details all the investigatory samples collected at SWMU 53-002(a)-99 by the ER Project (now RRES-RS) beginning in 1994. Section 6.1 summarizes the dates, locations, depth intervals, and collection methods for soil, rock, and sediment samples. Section 6.2 summarizes the field screening performed on soil, rock, and sediment samples. Section 6.3 summarizes the results of analyses performed on soil, rock, and sediment samples.

6.1 Soil, Rock, and Sediment Sampling

In 1994, execution of the OU 1100 work plan began with the collection of site-characterization samples at the northern impoundments. Sampling was performed between September 15, 1994, and December 7, 1995. Samples were collected from the sludge, the clay liner, the tuff below the clay liner, and the tuff below the gunite liner on the berms surrounding the impoundments. Some of the data, particularly those for PCBs, were of uncertain quality, indicating that additional sampling should be performed. In an NOD (NMED 1999, 64628), the NMED stated that extent must be determined to a depth of 15 ft rather than 12 ft. The 1994/1995 sampling did not include the southern impoundment, which was still active at the time. Sample locations are shown in Figure 3.0-1.

The 1998 RFI work plan was implemented in 1999/2000. Samples were collected from the sludge, clay liner, and tuff underlying the northern impoundments and berms, as was done in the 1994/1995 sampling campaign but to greater depths. Samples, including samples from two tuff-depth intervals at each location, were analyzed for SVOCs, PCBs, TAL metals, gamma-emitting radionuclides, tritium, isotopic plutonium, and strontium-90. Ten percent of these samples collected in 1999/2000 were analyzed for hexavalent chromium (chromium VI). The analytical suites for specific samples are listed in Appendix D, and sample locations are shown in Figure 3.0-1.

The samples collected in 2001/2002 included

- 15 surface confirmation samples (plus 1 field duplicate sample) within the impoundments (fill and tuff) and the upper part of the outfall drainage channel (Drainage Area B) east of the impoundments (sediment and tuff);
- 4 samples from shallow (< 6 ft) auger holes (soil and tuff);
- 110 samples from 7 boreholes that ranged in depth from 50 to 300 ft;
- 47 sediment samples from the lower portions of the drainage channel east of the impoundments (Reaches C, D, and E) to the confluence with Los Alamos Canyon; and
- 13 quality control (QC) samples (field duplicates).

The 2001 and 2002 samples were analyzed for various combinations of SVOCs, VOCs, PCBs, TAL metals, hexavalent chromium, pesticides, herbicides, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, strontium-90, and americium-241. Analytical suites for specific samples are listed in Appendix D, and sample locations are shown in Figures 3.0-1, 3.0-2, and 3.0-3.

A total of 551 samples were collected between 1994 and 2002. Many of those samples (e.g., sludge, clay liner) were collected from material that has since been removed and disposed of as waste. Because those samples no longer represent site conditions, they were not included in the site assessments reported here. At various times, the sample data from removed material were used to guide the selection of additional sample locations, to guide the selection of analytical suites, and to determine the health and safety measures needed to protect workers during remediation and sampling of the site. Only those

samples that represent material still in place at the site were used in the data review (Appendix D) and human health and ecological risk screening assessments (Appendix G) in this report.

The total number of samples included in the assessments (those samples not excavated subsequent to collection) is 486 (see Figures 3.0-1, 3.0-2, and 3.0-3 for sample locations). Of those 486 samples, 332 samples were analyzed for inorganic chemicals, 366 were analyzed for organic chemicals, and 397 were analyzed for radionuclides. Of the same 486 samples, 344 were tuff, 95 were soil, and 47 were sediment. In addition, 28 QC samples were collected and analyzed. These included field duplicate, field rinsate, field trip blank, and performance evaluation samples. The results of QC analyses and general data quality information are presented in Appendix C.

Samples were collected either from split-spoon core barrels, hand- or power-driven bucket augers, or with a spade and scoop, depending upon the depth and media being sampled. The field methods are described in Table A-1.0-1. Depth intervals for the samples were the ones outlined in the 1994 work plan (LANL 1994, 34756), the 1998 work plan (LANL 1998, 58841), or the 2002 addendum (LANL 2002, 73646), except where adjusted on the basis of field observations (e.g., adjusted to capture tuff fractures, geologic contacts, stained areas). Samples were field screened for radioactivity and organic vapors. Sample characteristics were recorded on sample collection logs and, in the case of most borehole samples, in borehole logs. Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the Laboratory's Sample Management Office for shipment to off-site laboratories for analysis. To document their handling, chain-of-custody (COC) forms were completed for all samples. Sample analyses were requested as required according to the Laboratory's statement of work for analytical services (LANL 1995, 49738; LANL 2000, 71233).

The results of the 1994–2002 sampling are presented in Appendix D. The accompanying tables include lists of samples collected, depths, media, and analyses requested for each medium (soil/fill, tuff, and sediment). Sample IDs, as presented in the referenced figures and tables, are in the format xxxx-xx-xxxx, where the middle two digits represent the year the sample was collected. All analytical data are presented, with field COC forms, in Appendix E.

In addition to the 486 samples reported in Appendix D, core samples from BH7 (location 53-02-20824) were analyzed separately for selected anions and stable isotopes (oxygen-18 [$\delta^{18}O$] and deuterium [δD]). Because the impoundments were subject to substantial evaporation, which affects the stable isotope values, it was thought that the $\delta^{18}O$ and δD data could provide information about how deep the impoundment water has moved. It was also hypothesized that the anion data could also indicate the depth of movement of lagoon water (Newman 2003, 80929). Core was collected from BH7 and analyzed for anion concentrations using a leaching process described previously (Broxton et al. 2001, 71250).

The analytical suite included bromide, chloride, chlorate, fluoride, nitrate, nitrite, perchlorate, phosphate, oxalate, sulfate, acetate, and formate. Moisture-protected core samples were collected from between 10.6 and 284.4 ft and analyzed. Pore water anion concentrations were calculated from dried samples of core using leachate concentrations (measured using ion chromatography), gravimetric water contents (measured using American Society of Testing Materials method D2216-90), and bulk densities. The sample preparation for $\delta^{18}O$ and δD analyses was described previously (Broxton et al. 2001, 71250) and used the vacuum distillation method of Shurbaji and Campbell (1997, 64063) and the $\delta^{18}O$ and δD extraction methods of Socki et al. (1992, 64064) and Kendall and Coplen (1985, 64061), respectively. Methods and results are presented in detail in Newman (2003, 80929). Because these samples were not analyzed using the same protocols as the 486 samples reported here, the anion and stable isotope results are only summarized in this report and are not included in Appendix D or in the risk calculations in Appendix G.

6.2 Soil, Rock, and Sediment Sample Field-Screening Results

Radiological field screening was performed on selected samples collected during the investigation and remediation activities. Radiological screening for alpha radiation was performed with a Ludlum-139 rate meter with air proportional probe. Radiological screening for beta/gamma radiation was performed with an Eberline ESP-1 with Geiger Mueller pancake probe.

Radiological screening instruments were provided by the Laboratory's Radiation Instrumentation Pool (now the Radiation Instrumentation and Calibration Team, which is part of the Health, Safety, and Radiation Protection [HSR] Division) and calibration records can be obtained using the HSR-4 group's instrument identification numbers recorded on the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the Laboratory's Radiation Protection Plan and HSR-4 procedures. Performance check records are also on file at HSR-4 and are available upon request.

Organic vapor field-screening with a PID was performed on selected samples collected during investigation and remediation activities. Instruments used included HNU DL-101-2, HNU PI-101, or OVM 580B. The PIDs were calibrated at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 parts per million (ppm) isobutylene. More details about instrumentation and methods can be found in Appendix A.

Field-screening of samples did not detect significantly elevated levels of radioactivity or organic vapors. No field-screening results led to a change in sample location or depth, and no actions related to health and safety were taken as a result of field screening results. The results of radiological and organic vapor field-screening of samples are presented in Table A-3.0-1 in Appendix A.

6.3 Soil, Rock, and Sediment Sampling Analytical Results

Most of the samples collected from berm material were identified in the field as tuff. According to the sample field descriptions, the berms were constructed from tuff excavated during construction of the impoundments; however, significant amounts of soil material were also included in the berms. In addition, the berms have been exposed to the elements for about 30 yr (in the case of the northern impoundments), and it is possible that physical and chemical weathering have altered the properties of the crushed tuff. For these reasons, 27 of the 38 total berm samples (Table 6.3-1) were evaluated with the soil samples rather than with the tuff samples. Two of the remaining 11 berm samples were originally identified as soil or fill, and the remaining 9 berm samples were evaluated as tuff samples as identified. The media listed in Table 6.3-1 are those identified in the field at the time of sample collection. Most berm samples were identified as tuff based on the historical knowledge that the berms had been constructed of excavated tuff.

Analytical results for all samples (excluding excavated samples) are summarized in Appendix D. The accompanying tables in Appendix D present, for each medium (soil/fill, tuff, and sediment), the frequencies of detected chemicals and lists of samples with chemicals either detected (for organic chemicals) or detected above background values (BVs) or fallout values (FVs). Appendix D also presents an overview of the statistical methods applied to the data and the results of those analyses.

The following inorganic COPCs were identified during the data review: silver in mesa-top soil; arsenic, barium, calcium, chromium (total), chromium VI, nickel, and selenium in mesa-top tuff; and antimony and lead in the sediment samples of Reaches C, D, and E.

The organic COPCs identified were 23 organic chemicals listed in Table D-4.3-2 for mesa-top soil; 32 organic chemicals listed in Table D-5.3-2 for mesa-top tuff; and 21 organic chemicals listed in Table D-6.3-2 for drainage sediments.

The radionuclide COPCs identified were americium-241, cesium-134, cobalt-60, sodium-22, strontium-90, and tritium in mesa-top soil; americium-241, cesium-134, cobalt-60, sodium-22, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 in mesa-top tuff; and cesium-134, cobalt-60, and tritium in drainage sediments.

Section D-7.0 in Appendix D compares concentrations of COPCs in Reaches C, D, and E to the concentrations of those analytes in sediments collected from Reaches LA-2FE, LA-3W and LA-3E of Los Alamos Canyon (under a separate investigation of Los Alamos Canyon sediments). The data indicate decreasing trends in contaminant concentrations through Reaches C, D, and E, resulting in concentrations so low that removal is not warranted. Any contributions of contaminants from the impoundments into Los Alamos Canyon are negligible and difficult to distinguish from contributions by other sources in Los Alamos Canyon. An assessment of Los Alamos Canyon is presented in the Los Alamos and Pueblo Canyons investigation report (LANL 2004, 88000).

Core samples from BH7 in the southern impoundment, in addition to the analyses reported in Appendix D, were analyzed separately for stable isotopes and anions (Newman 2003, 80929). These analyses were not called for in the planning documents for the site, but they were performed to provide additional information about the hydrologic characteristics and history of water movement beneath the impoundments. Anions analyzed were bromide, chloride, chlorate, fluoride, nitrate, nitrite, perchlorate, phosphate, oxalate, sulfate, acetate, and formate. Stable isotopes of interest were oxygen-18 ($\delta^{18}O$) and deuterium (δD). Anion concentrations reach maximum values within the top 100 ft of the borehole, then decrease and generally remain at lower values from about 100 ft to 300 ft. Similarly, the stable isotopes show large isotopic values from about 10 to 150 ft, then decrease dramatically at the lower depths.

Perchlorate was detected in only one sample, at a depth of 10.6 ft. The concentration in that sample was 0.003 mg/L (3 ppb). Results of the anion analyses are presented in Table 6.3-2.

The distributions of the anions and the stable isotopes from 0 to 300 ft beneath the southern impoundment suggest that the hydrologic impact of any seepage from within the impoundments is limited to about 150 ft in depth. The stable isotope values and trends are consistent with water that has been subject to evaporation, as would be expected from surface impoundments where periodic influxes of wastewater were allowed to stand. The distribution of anions is further consistent with seepage from a system with a component of sanitary wastewater, as was the case for the entire history of the northern impoundments and for a portion of the history of the southern impoundment.

These results, viewed in conjunction with the tritium data from the deeper boreholes at the site, indicate that the extent of seepage of liquid from the impoundments is limited to about 150–200 ft in depth. Because the deepest borehole (300 ft beneath the southern impoundment, near the center of the site) shows decreasing tritium concentrations, with no tritium detected below 150 ft, and because the other boreholes show similar trends, the extent of tritium contamination beneath the impoundments is clearly defined by the existing data.

The 2002 addendum to the work plan (LANL 2002, 73646) presented the results of simulation modeling of tritium transport beneath SWMU 53-002(a)-99. Those results were used to guide the placement and depth of the boreholes drilled in 2002. The simulation model has now been refined, using analytical results from the borehole samples to constrain the simulations. Simulations using the latest tritium data indicate that the subsurface tritium is expected to dissipate, through natural attenuation and radioactive

decay, to levels below the 20,000 pCi/L EPA drinking water standard (40 CFR 141.66) by the year 2072 (Stauffer 2003, 80930) (Figure 6.3-1). It also shows that the tritium will not move beyond a depth of approximately 200 ft. At that depth, the tritium will be approximately 800 ft above the regional aquifer and at least 500 ft above the nearest known perched groundwater (well PM-1, about 1.5 mi to the east).

7.0 CONCLUSIONS

The data presented in this report represent media (soil, tuff, and sediment) that are currently in place at consolidated SWMU 53-002(a)-99 and the hanging canyon to the east of the SWMU. The source of contaminants at the site—sanitary waste and radioactive liquid sludge in the three impoundments—was removed in 2000 and 2002. The data for the site in its current condition indicate that the cleanup was highly effective in reducing the concentrations of contaminants at the site, although low levels of some contaminants remain both on the mesa top and in the canyon. The results of environmental sampling between 1994 and 2002 are consistent with previous historical investigations in that the residual contaminants detected are similar in nature, but much lower in concentration, to those detected in earlier sampling and to the contents of the sludge as sampled between 1994 and 2002.

Site data for SWMU 53-002(a)-99 show that after remediation of all three impoundments and Drainage Area B, the nature and extent of residual contamination remaining are defined. Contamination on the mesa top is largely confined to the boundaries of the impoundments and consists mainly of tritium in the underlying tuff at depths of less than 150 ft bgs. Low-level residual contamination exists in Drainage Area B and the hanging canyon, but concentrations decrease toward the drainage's confluence with Los Alamos Canyon. For many of the contaminants detected in the canyon, the concentration decreases downstream within the drainage and continues to decrease with distance downstream in Los Alamos Canyon. Other contaminants were detected at significantly higher concentrations in Los Alamos Canyon sediments, indicating that one or more contaminant sources are further upstream in Los Alamos Canyon and not associated with SWMU 53-002(a)-99. An investigation into contamination within Los Alamos Canyon is beyond the scope of the SWMU 53-002(a)-99 investigation.

Both the human health risk screening assessment for an industrial outdoor worker and the ecological risk screening assessment for the mesa top at SWMU 53-002(a)-99 and for the drainage (Appendix G) indicate that no potential unacceptable risk/dose exists at either area. On the mesa top, the 95% upper confidence limits (UCLs) of noncarcinogenic COPCs were all less than the SSLs. The hazard index (HI) is approximately 0.03 for the mesa top and 0.018 for the drainage, which is less than the NMED's target HI of 1.0 (NMED 2000, 68554).

The 95% UCLs of all carcinogenic COPCs were less than their respective SSLs. The total potential excess cancer risk from exposure to carcinogenic COPCs at SWMU 53-002(a)-99 is approximately 2×10^{-6} for the mesa top and 3×10^{-7} for the drainage, which is less than the NMED's target risk level for carcinogenic risk of 1 in 100,000 (1×10^{-5}) (NMED 2000, 68554).

The 95% UCLs for radionuclide COPCs were all less than their respective SALs. The total estimated radionuclide dose is approximately 8.0 mrem/yr (6.6 mrem/yr for the drainage), mainly from cobalt-60 and sodium-22. The DOE's target dose limit for free release of propertyis 15 mrem/yr (DOE 2000, 67489). The total dose on the mesa top is equivalent to a total risk of 3.5×10^{-5} (3×10^{-5} for the drainage).

In the ecological risk screening assessment, no COPECs were retained, indicating that there is no potential unacceptable ecological risk to receptors either on the mesa top or in the drainage.

8.0 RECOMMENDATIONS

SWMU 53-002(a)-99 has been remediated, and sampling results show that the nature and extent of residual contamination has been defined for both the mesa top and the drainage below the impoundments. Human health and ecological risk screening assessments show that no potential unacceptable risk is posed by the residual contamination on the mesa top or in the Los Alamos Canyon tributary drainage. Modeling results refined by borehole sample tritium data indicate that natural dispersion and radioactive decay will reduce the tritium concentrations such that there will be no risk to groundwater. The site is industrial in nature, and it is expected to remain so for the foreseeable future, under institutional control of the Laboratory. For these reasons, neither additional corrective action nor further characterization is warranted at SWMU 53-002(a)-99.

9.0 REFERENCES

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the RRES-RS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the RRES-RS project reference set titled "Reference Set for Operable Unit 1100."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; US Environmental Protection Agency, Region 6; and RRES-RS project. The sets were developed to ensure that the administrative authority has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the administrative authority are not included.

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TABLES

The tables in this report are presented in several locations. The tables that appear below are those that are identified specifically in the main report sections (a few of these are also duplicated in one or more of the appendixes). The tables that are referred to (by specific table number) only in the appendixes are presented in the corresponding appendix. To simplify the process of finding the information requested in the investigation report outline presented in the November 2002 Order, the table below lists the outline requirements and the tables that fulfill those requirements.

Order Requirement (Section XI.C.12)	Table Number, Location	Table Title
1. Regulatory criteria, background levels, applicable cleanup levels	Table 5.0-1, Main report section	Noncarcinogen Soil Screening Values
	Table 5.0-2, Main report section	Carcinogen Screening Values
	Table 5.0-3, Main report section	Radionuclide Screening Action Levels
	Table 5.0-4, Main report section	Ecological Screening Levels
	Table 6.3-1, Main report section	Berm Samples Evaluated as Soil
	Table D-4.1-2, Appendix D	Frequency of Detected Concentrations above BVs for Inorganic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99
	Table D-4.2-2, Appendix D	Frequency of Detected Concentrations above BVs/FVs for Radionuclides in Mesa-Top Soil at SWMU 53-002(a)-99
	Table D-5.1-2, Appendix D	Frequency of Detected Concentrations above BVs for Inorganic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99
	Table D-5.2-2, Appendix D	Frequency of Detected Concentrations for Radionuclides in Mesa Top Tuff at SWMU 53-002(a)-99
	Table D-6.1-2, Appendix D	Frequency of Detected Concentrations above BVs for Inorganic Chemicals in Reaches C, D, and E
	Table D-6.2-2, Appendix D	Frequency of Detected Concentrations for Radionuclides in Reaches C, D, and E
2. Field survey location data	Table 3.0-1, Main report section	Sandia Canyon Tributary Gamma Radiation Survey Data
	Table 3.0-2, Main report section	Sandia Canyon Bench Gamma Radiation Survey Results
	Table 3.0-3, Main report section	Drainage Area B Gamma Radiation Survey Results
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	Table A-3.0-1, Appendix A	Sample Field Radiological and Organic Vapor Screening Results
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3. Field screening/field parameter measurements	Table A-3.0-1, Appendix A	Sample Field Radiological and Organic Vapor Screening Results

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4. Analytical data; analytical methods, detection limits, data quality exceptions	Table C-2.0-1, Appendix C	Analytical Methods Used for Inorganic Chemical Analysis
	Table C-3.0-1, Appendix C	Analytical Methods Used for Organic Chemical Analysis
	Table C-4.0-1, Appendix C	Analytical Methods Used for Radiochemical Analyses
	Table C-5.0-1, Appendix C	Explanation of Data Qualifiers Used in the Data Validation Procedure
	Table C-5.1-1, Appendix C	Inorganic Chemicals
	Table C-5.2-1, Appendix C	Organic Chemicals
	Table C-5.3-1, Appendix C	Radionuclides
	Table C-6.0-1, Appendix C	Rejected Data
	Table D-4.1-1, Appendix D	Samples Collected for Inorganic Chemical Analyses in Mesa Top Soil at SWMU 53-002(a)-99
	Table D-4.1-2, Appendix D	Frequency of Detected Concentrations above BVs for Inorganic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99
	Table D-4.1-3, Appendix D	Results of Statistical Tests for Inorganic Chemicals Above the BV in At Least One Sample in SWMU 53-002(a)-99 Mesa-Top Soil Samples
	Table D-4.1-4, Appendix D	Detected Concentrations above BVs for Inorganic COPCs in Mesa-Top Soil at SWMU 53-002(a)-99
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	Table D-4.3-3, Appendix D	Detected Concentrations for Organic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99
	Table D-5.1-1, Appendix D	Samples Collected for Inorganic Chemical Analyses in Mesa-Top Tuff at SWMU 53-002(a)-99
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	Table D-5.1-3, Appendix D	Results of Statistical Tests for Inorganic Chemicals above the BV in At Least One Sample in SWMU 53-002(a)-99 Mesa-Top Tuff Samples
	Table D-5.1-4, Appendix D	Detected Concentrations above BVs for Inorganic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99
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Order Requirement (Section XI.C.12)	Table Number, Location	Table Title
4. Analytical data; analytical methods, detection limits, data quality exceptions *(continued)*	Table D-5.2-2, Appendix D	Frequency of Detected Concentrations for Radionuclides in Mesa-Top Tuff at SWMU 53-002(a)-99
	Table D-5.2-3, Appendix D	Detected Concentrations above BVs or detected concentrations (if no BV) for Radionuclides in Mesa-Top Tuff at SWMU 53-002(a)-99
	Table D-5.3-1, Appendix D	Samples Collected for Organic Chemical Analyses in Mesa-Top Tuff at SWMU 53-002(a)-99
	Table D-5.3-2, Appendix D	Frequency of Detected Concentrations for Organic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99
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	Table D-6.1-1, Appendix D	Samples Collected for Inorganic Chemical Analyses in Reaches C, D, and E
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	Table D-6.1-4, Appendix D	Detected Concentrations above the BV for Inorganic Chemicals in Reaches C, D, and E
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	Table D-6.2-3, Appendix D	Results of Statistical Tests for Radionuclides above the BV or Detected in At Least One Sample in Canyon Sediment Samples Collected in Reaches C, D, and E
	Table D-6.2-4, Appendix D	Detected Concentrations above the BV for Radionuclides in Reaches C, D, and E
	Table D-6.3-1, Appendix D	Samples Collected for Organic Chemical Analyses in Reaches C, D, and E
	Table D-6.3-2, Appendix D	Frequency of Detected Concentrations for Organic Chemicals in Reaches C, D, and E
	Table D-6.3-3, Appendix D	Detected Concentrations for Organic Chemicals in Reaches C, D, and E
	Table D-7.1-1, Appendix D	Samples Collected for Inorganic Chemical Analyses in Reaches LA-2FE, LA-3E, and LA-3W
	Table D-7.1-2, Appendix D	Summary of Concentrations of Selected Inorganic Chemicals from Reaches LA-2FE, LA-3W, and LA-3E
	Table D-7.1-3, Appendix D	Samples Collected for Radionuclide Analyses in Reaches LA-2FE, LA-3E, and LA-3W

Order Requirement (Section XI.C.12)	Table Number, Location	Table Title
4. Analytical data; analytical methods, detection limits, data quality exceptions *(continued)*	Table D-7.2-1, Appendix D	Samples Collected for Radionuclide Analyses in Reaches LA-2FE, LA-3E, and LA-3W
	Table D-7.2-2, Appendix D	Summary of Concentrations of Selected Radionuclides from Reaches LA-2FE, LA-3W, and LA-3E
	Table D-7.3-1, Appendix D	Samples Collected for Organic Chemical Analyses in Reaches LA-2FE, LA-3E, and LA-3W
	Table D-7.3-2, Appendix D	Summary of Concentrations of Selected Organic Chemicals from Reaches LA-2FE, LA-3W, and LA-3E
5. Groundwater elevations, depth to groundwater.	n/a*	n/a
6. Groundwater analytical data	n/a	n/a
7. Surface water analytical data	n/a	n/a
8. Air sample screening and analytical data	n/a	n/a
9. Pilot testing data	n/a	n/a
10. Materials testing data	n/a	n/a

*n/a = Not applicable.

Table 3.0-1
Sandia Canyon Tributary Gamma Radiation Survey Data

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm*)
1639553.951	1771248.231	0	18596
1639540.447	1771250.741	1	20188
1639526.475	1771252.153	2	20768
1639512.861	1771254.861	3	19792
1639497.012	1771255.741	4	20848
1639482.845	1771256.8	5	18876
1639471.007	1771257.284	6	15872
1639457.713	1771257.694	7	15816
1639446.701	1771257.963	8	14392
1639429.948	1771260.066	9	15100
1639415.676	1771262.053	10	14760
1639407.016	1771260.377	11	14208
1639384.189	1771261.588	12	12844
1639374.229	1771259.428	13	13204
1639360.698	1771260.928	14	12828
1639342.461	1771259.104	15	12212
1639327.615	1771256.741	16	11888
1639314.596	1771254.665	17	11708
1639298.88	1771253.519	18	11704
1639315.009	1771241.324	19	12140
1639325.039	1771240.721	20	12276
1639337.807	1771243.804	21	12704
1639353.267	1771249.011	22	12272
1639366.05	1771251.772	23	12576
1639376.644	1771251.063	24	13848
1639387.113	1771250.577	25	13516
1639401.807	1771252.19	26	14396
1639410.714	1771250.047	27	13932
1639419.947	1771251.013	28	14044
1639438.948	1771251.825	29	15792
1639448.675	1771249.901	30	14264
1639462.217	1771248.985	31	15292
1639476.159	1771248.068	32	15168
1639489.056	1771247.771	33	16372
1639498.848	1771247.498	34	17016
1639511.157	1771247.788	35	16388
1639524.714	1771247.076	36	18056

Table 3.0-1 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm*)
1639536.231	1771246.683	37	18440
1639547.129	1771246.242	38	16856
1639560.846	1771246.38	39	15944
1639561.579	1771237.161	40	17236
1639547.991	1771237.359	41	17500
1639534.204	1771237.483	42	17272
1639524.196	1771237.49	43	17896
1639511.732	1771237.657	44	17404
1639497.841	1771236.847	45	16932
1639484.459	1771237.973	46	16900
1639469.852	1771238.173	47	17720
1639459.211	1771238.402	48	15384
1639446.565	1771237.275	49	15092
1639422.377	1771235.703	50	14540
1639410.478	1771234.028	51	13568
1639397.785	1771232.844	52	13428
1639385.552	1771234.726	53	12656
1639374.451	1771231.611	54	11004
1639359.618	1771233.685	55	13152
1639348.522	1771232.894	56	12272
1639329.118	1771230.734	57	12560
1639319.783	1771225.583	58	11516
1639437.867	1771229.7	59	12428
1639437.083	1771222.78	60	15544
1639435.726	1771211.688	61	16208
1639433.855	1771199.344	62	16012
1639434.034	1771184.868	63	15776
1639432.73	1771167.571	64	15872
1639430.314	1771151.63	65	15928
1639429.44	1771137.903	66	16344
1639428.876	1771123.66	67	16816
1639427.635	1771110.644	68	15640
1639425.776	1771094.12	69	16020
1639423.918	1771082.374	70	16792
1639423.861	1771067.945	71	15788
1639421.752	1771054.833	72	16544
1639421.732	1771039.637	73	16724
1639421.636	1771024.435	74	16992
1639420.255	1771012.254	75	17188

Table 3.0-1 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm*)
1639417.669	1770990.805	76	16928
1639416.942	1770975.295	77	18036
1639416.247	1770959.543	78	18456
1639414.834	1770945.253	79	17344
1639410.782	1770929.932	80	15044
1639402.237	1770929.875	81	17252
1639407.541	1770942.503	82	16748
1639408.155	1770963.797	83	17468
1639406.224	1770979.634	84	17552
1639407.125	1770991.191	85	18200
1639407.888	1771001.192	86	17228
1639409.114	1771012.69	87	17972
1639411.482	1771041.473	88	17224
1639411.677	1771053.44	89	16732
1639413.071	1771064.268	90	15900
1639413.931	1771074.49	91	16108
1639415.41	1771090.477	92	16128
1639415.326	1771104.043	93	15588
1639415.401	1771116.856	94	16056
1639412.767	1771135.181	95	15264
1639414.156	1771142.802	96	15168
1639416.662	1771153.026	97	15376
1639418.118	1771162.364	98	15744
1639416.159	1771174.252	99	14996
1639422.286	1771194.818	100	14796
1639421.214	1771208.339	101	14844
1639423.656	1771219.265	102	15720
1639423.097	1771226.114	103	13016
1639409.337	1771226.429	104	13508
1639411.055	1771223.485	105	14768
1639410.233	1771210.91	106	14560
1639405.16	1771198.837	107	14048
1639406.007	1771185.024	108	14240
1639407.157	1771171.032	109	15092
1639406.391	1771158.035	110	15228
1639404.492	1771141.289	111	14616
1639403.509	1771128.215	112	15780
1639401.644	1771114.151	113	15484
1639395.799	1771095.376	114	14876

Table 3.0-1 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm*)
1639393.653	1771080.126	115	15472
1639382.929	1771064.301	116	15032
1639391.214	1771048.863	117	16228
1639393.065	1771040.052	118	15968
1639391.533	1771028.155	119	16576
1639391.819	1771010.685	120	17248
1639391.678	1771000.409	121	16884
1639391.981	1770992.143	122	17696
1639392.19	1770981.341	123	15752
1639392.705	1770971.112	124	16720
1639379.674	1770996.218	125	14296
1639379.924	1771006.916	126	15164
1639379.863	1771015.57	127	16596
1639377.712	1771030.961	128	15520
1639378.675	1771041.274	129	15148
1639376.229	1771051.046	130	14836
1639377.264	1771061.624	131	15844
1639377.659	1771073.017	132	15136
1639372.194	1771086.339	133	13616
1639370.685	1771098.476	134	14132
1639369.813	1771114.246	135	14292
1639369.93	1771131.595	136	14552
1639371.207	1771146.499	137	14176
1639374.924	1771162.316	138	13440
1639373.74	1771178.071	139	14496
1639373.137	1771189.697	140	13788
1639369.592	1771204.59	141	13440
1639369.78	1771217.873	142	12908
1639344.863	1771218.782	143	12092
1639347.216	1771207.552	144	12576
1639350.284	1771189.71	145	12444
1639353.47	1771171.267	146	13244
1639356.098	1771161.281	147	13588
1639354.989	1771152.476	148	13308
1639355.231	1771143.117	149	13420
1639359.132	1771121.596	150	14308
1639358.771	1771110.79	151	14608
1639360.51	1771098.567	152	14404
1639365.143	1771077.895	153	14372

Table 3.0-1 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm*)
1639365.045	1771062.612	154	14928
1639365.432	1771049.764	155	14440
1639375.866	1771041.693	156	15512
1639370.391	1771025.076	157	15588
1639371.821	1771012.684	158	16164
1639424.182	1770955.265	159	18200
1639424.11	1770946.197	160	19444
1639419.167	1770938.447	161	18700
1639420.218	1770927.7	162	17844
1639430.947	1770923.562	163	19364
1639434.88	1770931.644	164	19808
1639436.829	1770940.606	165	20324
1639436.792	1770950.942	166	21100
1639446.94	1770954.341	167	20544
1639446.516	1770948.551	168	19220
1639445.522	1770937.077	169	19956
1639443.538	1770927.234	170	21108
1639439.824	1770918.157	171	19664
1639448.863	1770912.355	172	19244
1639449.286	1770921.93	173	21936
1639452.066	1770929.588	174	19688
1639457.666	1770945.532	175	22152
1639471.395	1770952.616	176	23284
1639470.639	1770939.648	177	22628
1639470.526	1770926.032	178	21020
1639470.072	1770917.383	179	20792
1639468.97	1770904.497	180	21832
1639470.459	1770883.7	181	21816
1639482.999	1770884.402	182	20472
1639483.262	1770897.87	183	22036
1639484.731	1770911.034	184	22084
1639483.624	1770924.498	185	21476
1639484.097	1770939.612	186	23724
1639499.907	1770948.184	187	24564
1639501.288	1770935.172	188	26068
1639500.495	1770923.006	189	24148
1639498.319	1770903.7	190	24016
1639497.715	1770901.762	191	24016
1639498.149	1770893.271	192	26596

Table 3.0-1 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm*)
1639496.631	1770881.476	193	26176
1639512.133	1770869.174	194	27128
1639517.511	1770881.292	195	28092
1639523.388	1770896.502	196	29244
1639523.099	1770913.589	197	27044
1639521.291	1770930.948	198	26416
1639541.54	1770944.164	199	30504
1639541.163	1770927.039	200	28980
1639537.001	1770907.933	201	29412
1639536.556	1770893.348	202	28756
1639534.76	1770875.63	203	27016
1639531.82	1770859.493	204	26912
1639547.421	1770850.347	206	24156
1639551.404	1770865.747	207	26036
1639560.908	1770879.055	208	26996
1639566.343	1770898.309	209	27144
1639567.039	1770919.132	210	27760
1639569.615	1770943.125	211	28680
1639586.11	1770941.703	212	29196
1639585.427	1770925.551	213	31592
1639584.75	1770907.771	214	32284
1639583.449	1770892.698	215	30268
1639580.124	1770877.113	216	28116
1639580.159	1770862.528	217	28612
1639578.219	1770846.826	218	30448
1639576.969	1770832.564	219	29256
1639577.875	1770818.261	220	27688
1639574.918	1770801.462	221	25120
1639580.551	1770800.652	222	24980
1639579.612	1770790.339	223	23260
1639577.255	1770779.596	224	19668
1639576.918	1770773.831	225	18708
1639587.053	1770769.362	226	18692
1639591.22	1770760.49	227	17988
1639595.427	1770753.911	228	19912

Note: Coordinates from New Mexico State Plane Grid Coordinates, 1983 North American Datum.

*cpm = Counts per minute.

Table 3.0-2
Sandia Canyon Bench Gamma Radiation Survey Results

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm)
1639551.567	1770781.841	0	11776
1639555.93	1770776.338	1	12280
1639557.538	1770772.395	2	12360
1639558.811	1770768.322	3	12948
1639560.663	1770764.138	4	12712
1639562.332	1770760.12	5	12512
1639565.09	1770756.148	6	12132
1639567.111	1770752.36	7	11908
1639565.905	1770747.524	8	12460
1639570.214	1770742.74	9	12868
1639573.516	1770737.792	10	12808
1639577.654	1770729.611	11	11860
1639580.659	1770725.54	12	11400
1639582.64	1770721.393	13	11768
1639577.698	1770718.92	14	12756
1639575.577	1770723.302	15	12480
1639574.044	1770727.921	16	13444
1639571.672	1770736.5	17	12056
1639569.743	1770739.756	18	13316
1639567.165	1770743.984	19	12324
1639565.138	1770747.842	20	13340
1639562.417	1770751.528	21	12368
1639559.463	1770755.319	22	12304
1639556.893	1770760.361	23	13704
1639555.267	1770765.244	24	13436
1639553.776	1770768.997	25	12860
1639549.218	1770773.369	26	12272
1639547.634	1770776.798	27	11860
1639545.208	1770773.333	28	12564
1639548.359	1770768.666	29	12944
1639549.528	1770763.621	30	12360
1639547.594	1770758.785	31	12684
1639549.422	1770754.886	32	13072
1639551.422	1770750.596	33	12476
1639554.478	1770747.824	34	12584
1639556.368	1770744.397	35	11928

Table 3.0-2 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm)
1639560.029	1770741.615	36	12456
1639561.752	1770737.376	37	12100
1639563.23	1770732.933	38	12800
1639567.188	1770723.987	39	11784
1639568.415	1770719.912	40	12096

Note: Coordinates from New Mexico State Plane Grid Coordinates, 1983 North American Datum.

Table 3.0-3
Drainage Area B Gamma Radiation Survey Results

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm)
1640030.981	1770850.919	0	17792
1640038.294	1770848.392	1	22124
1640048.236	1770843.054	2	17044
1640058.325	1770838.764	3	17948
1640067.218	1770834.275	4	17844
1640071.253	1770841.85	5	18580
1640090.229	1770842.53	6	18048
1640089.461	1770830.475	7	17924
1640098.884	1770824.773	8	23476
1640107.449	1770819.672	9	15232
1640115.407	1770814.366	10	16936
1640125.203	1770811.306	11	14160
1640134.802	1770805.454	12	14940
1640144.912	1770801.211	13	13140
1640155.79	1770795.537	14	12180
1640150.152	1770808.428	15	42856
1640140.595	1770813.771	16	19372
1640129.365	1770816.001	17	37156
1640122.94	1770819.06	18	38700
1640114.919	1770825.478	19	74920
1640106.71	1770828.325	20	64964
1640097.202	1770831.347	21	64012
1640086.956	1770835.408	22	64904
1640077.722	1770839.53	23	75840
1640069.084	1770844.904	24	55572
1640059.264	1770849.724	25	63716

Table 3.0-3 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm)
1640049.724	1770853.268	26	72708
1640039.931	1770858.842	27	49728
1640032.116	1770860.105	28	18776
1640033.526	1770865.256	29	17648
1640042.042	1770863.497	30	18352
1640049.876	1770858.377	31	20864
1640066.794	1770854.582	32	22044
1640075.843	1770849.811	33	17980
1640083.657	1770843.224	34	19460
1640091.433	1770839.366	35	19724
1640102.926	1770835.671	36	18208
1640112.273	1770829.982	37	68996
1640120.79	1770827.306	38	74136
1640129.98	1770824.22	39	72940
1640137.987	1770820.584	40	47768
1640147.752	1770815.963	41	65836
1640157.962	1770811.77	42	17676
1640158.51	1770821.085	43	63752
1640150.632	1770822.701	44	72124
1640140.971	1770825.454	45	46156
1640131.769	1770830.014	46	74052
1640123.97	1770831.452	47	29096
1640115.809	1770836.091	48	16100
1640118.292	1770847.853	49	15176
1640126.519	1770841.146	50	16120
1640133.634	1770836.831	51	35620
1640142.922	1770834.484	52	76764
1640036.165	1770846.587	53	19936
1640055.575	1770835.926	54	12184
1640066.118	1770830.05	55	13992
1640086.292	1770818.495	56	15180
1640106.063	1770809.112	57	15800
1640131.614	1770794.297	58	13156
1640152.454	1770780.478	59	12740
1640163.722	1770775.584	60	12664
1640148.139	1770867.579	61	12728
1640134.95	1770861.612	62	13052
1640123.049	1770856.723	63	15064

Table 3.0-3 (continued)

Easting (ft)	Northing (ft)	Location Number	Gamma Radiation (cpm)
1640102.086	1770856.214	64	17632
1640082.54	1770861.281	65	19136
1640066.066	1770861.077	66	23300
1640062.057	1770875.507	67	12076
1640046.543	1770880.596	68	19232

Note: Coordinates from New Mexico State Plane Grid Coordinates, 1983 North American Datum.

Table 4.2-1
Borehole Locations

Borehole ID/ Location Description	Depth (ft)	Location ID	Easting	Northing	Elevation
BH1	50	53-02-20829	1639783.7	1771130.0	6915.8
BH2	50	53-02-20828	1639624.6	1771034.4	6914.4
BH3	50	53-02-20830	1640045.1	1770851.3	6896.4
BH4	200	53-02-20825	1639492.0	1771260.3	6929.2
BH5	200	53-02-20826	1640000.4	1771246.2	6913.8
BH6	200	53-02-20827	1639843.4	1770725.1	6911.9
BH7	300	53-02-20824	1639718.4	1770893.5	6910.0
AH1	5.5	53-02-20831	1639400.5	1770933.6	6910.7
AH2	5.9	53-02-20832	1639491.2	1770893.7	6912.1
S impoundment	15	53-01716	1639660.2	1770848.4	6909.3
S impoundment	15	53-01717	1639767.8	1770844.9	6909.3
S impoundment	15	53-01718	1639870.6	1770837.3	6909.5
S impoundment	15	53-01719	1639704.3	1770917.4	6910.4
S impoundment	15	53-01720	1639705.5	1770881.7	6909.7
S impoundment	15	53-01721	1639660.7	1770897.4	6910.0
S impoundment	15	53-01722	1639765.9	1770898.8	6910.0
S impoundment	15	53-01723	1639822.0	1770882.4	6909.7
S impoundment	15	53-01724	1639869.9	1770879.8	6910.0
S impoundment	15	53-01725	1639626.7	1770792.5	6910.7
S impoundment	15	53-01726	1639716.4	1770802.1	6910.2
S impoundment	15	53-01727	1639764.5	1770796.4	6910.1
S impoundment	15	53-01728	1639814.6	1770794.1	6910.0
S impoundment	15	53-01729	1639875.7	1770792.3	6910.4
NW lagoon	15	53-01573	1639630.9	1771063.8	6915.9
NW lagoon	15	53-01575	1639549.6	1771067.0	6915.8
NW lagoon	15	53-01576	1639512.5	1771070.8	6915.7

Table 4.2-1 (continued)

Borehole ID/ Location Description	Depth (ft)	Location ID	Easting	Northing	Elevation
NW lagoon	15	53-01577	1639509.9	1771030.5	6916.1
NW lagoon	15	53-01582	1639779.5	1771020.5	6916.2
NW lagoon	15	53-01584	1639783.2	1771111.1	6916.0
NW lagoon	15	53-01586	1639826.5	1771150.0	6915.9
NW lagoon	15	53-01587	1639823.6	1771109.4	6916.3
NE lagoon	15	53-01588	1639833.9	1771089.0	6915.9
NE lagoon	15	53-01589	1639821.4	1771060.6	6915.9
NE lagoon	15	53-01592	1639860.8	1771059.1	6916.1
NE lagoon	15	53-01593	1639863.2	1771108.3	6916.2
NE lagoon	15	53-01594	1639865.7	1771148.5	6916.2
NE lagoon	15	53-01595	1639904.6	1771146.0	6916.3
NE lagoon	15	53-01596	1639903.1	1771106.8	6916.2
NE lagoon	15	53-01597	1639899.6	1771056.4	6915.9
NE lagoon	15	53-01598	1639899.5	1771016.0	6916.1
Extent around impoundments	15	53-01664	1639991.6	1770804.3	6904.6
Extent around impoundments	15	53-01681	1639953.9	1770706.4	6906.4
Extent around impoundments	15	53-01682	1639816.2	1770726.2	6913.0
Extent around impoundments	15	53-01683	1639617.2	1770734.4	6910.1
Extent around impoundments	15	53-01684	1640008.0	1770915.2	6904.3
Extent around impoundments	15	53-01685	1640007.6	1771086.6	6905.7
Extent around impoundments	15	53-01686	1639575.1	1770849.7	6911.0
Extent around impoundments	15	53-01687	1639577.2	1770932.6	6917.2
Extent around impoundments	15	53-01688	1639416.8	1771102.7	6917.2
Extent around impoundments	30	53-01689	1639504.6	1771267.0	6929.4
Extent around impoundments	9	53-01690	1639681.2	1771224.0	6928.8
Between NE and NW	15	53-01696	1639724.8	1770961.8	6921.7
Between NE and NW	15	53-01697	1639651.2	1770962.5	6921.7
Between NE and NW	15	53-01698	1639741.9	1770957.4	6921.6
Extent around impoundments	6	53-01708	1639599.6	1770787.0	6917.5
Extent around impoundments	9	53-01709	1639951.3	1770772.6	6917.3
Extent around impoundments	7.5	53-01710	1639902.3	1770743.4	6916.6
Extent around impoundments	6.5	53-01711	1639622.3	1770761.2	6917.1
Rad influent line	25	53-01691	1639685.9	1771215.8	6926.7
Discharge line	25	53-01692	1639960.8	1770979.4	6920.9
Discharge line	25	53-01693	1639946.4	1770952.8	6919.9
Discharge line	25	53-01694	1639955.0	1770893.9	6917.9
Outfall	15	53-01695	1640025.4	1770863.5	6903.1
Extent around impoundments	15	53-01701	1640000.4	1770838.5	6904.9

Table 4.2-1 (continued)

Borehole ID/ Location Description	Depth (ft)	Location ID	Easting	Northing	Elevation
Sewage influent line	20	53-01654	1639703.3	1771279.6	6928.7
Extent around impoundments	25	53-01655	1639856.2	1771209.4	6924.2
Sewage influent line	25	53-01656	1639711.9	1771216.7	6925.9
Sewage influent line	25	53-01657	1639705.2	1771208.6	6926.1
Sewage influent line	25	53-01658	1639706.3	1771155.3	6923.0
Sewage influent line	25	53-01659	1639697.3	1770993.8	6920.1
Rad influent line	25	53-01660	1639704.2	1771140.1	6922.4
Rad influent line	25	53-01661	1639693.8	1771087.5	6920.8
Rad influent line	25	53-01662	1639698.3	1771041.3	6920.8
Rad influent line	25	53-01663	1639685.0	1770970.2	6920.0

Table 5.0-1
Noncarcinogen Soil Screening Levels

Analyte	Industrial SSL[a] (mg/kg)
Antimony	450
Arsenic	280
Barium	79000
Chromium VI	3400
Lead	1400
Nickel	23000
Selenium	5700
Silver	5700
Acetone	1.00E+05
Aroclor-1254	12
Benzoic Acid	1.00E+05
2.4-D	8500
Dalapon	21000
2,4-DB	5500
Di-n-butylphthalate	68000
4-isopropyltoluene[b]	580
Toluene	520
Trichlorofluoromethane	1400
Xylene (total)	210

[a] Value from EPA Region 6 Industrial-Outdoor Worker (EPA 2003, 81724).

[b] Isopropylbenzene used as a surrogate for 4-isopropyltoluene.

Table 5.0-2
Carcinogen Soil Screening Levels

Analyte	Industrial SSL* (mg/kg)
Arsenic	18
Chromium (total)	5000
Chromium VI	710
Aroclor-1254	8.3
Aroclor-1260	8.3
Bis(2-ethylhexyl)phthalate	1400
4,4-DDE	78
4,4-DDT	78
Heptachlor	4.3
Trichloroethene	1.0

*Values from EPA Region 6 Industrial – Outdoor Worker (EPA 2003, 81724).

Table 5.0-3
Radionuclide Screening Action Levels

Analyte	Industrial SAL* (pCi/g)
Americium-241	140.3
Cesium-134	8.255
Cesium-137	19.68
Cobalt-60	4.378
Plutonium-238	176.4
Plutonium-239	158.9
Sodium-22	5.524
Strontium-90	1615
Tritium	15140
Uranium-234	1087
Uranium-235	73.09
Uranium-238	351.1

*Values from RESRAD Version 6.21.

Table 5.0-4
Ecological Screening Levels

Analyte	Red Fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Invertivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	4.60E+01	n/a*	n/a	n/a	n/a	n/a	2.90E+00	2.70E-01	4.80E-01	7.80E+01	5.00E-02
Arsenic	9.70E+01	2.40E+03	1.40E+02	1.00E+02	3.20E+01	1.90E+01	2.10E+01	8.30E-01	1.70E+00	6.80E+00	1.00E+01
Barium	4.10E+04	3.60E+04	1.40E+03	8.20E+02	3.00E+02	1.90E+02	3.30E+03	2.30E+02	4.40E+02	3.30E+02	1.00E+02
Chromium (total)	1.80E+04	1.30E+04	5.30E+03	6.80E+02	5.50E+02	4.60E+02	8.00E+03	7.00E+02	2.10E+03	1.40E+00	2.40E+00
Chromium VI	2.50E+03	1.80E+03	7.60E+02	9.70E+01	7.80E+01	6.60E+01	1.10E+03	1.00E+02	3.00E+02	2.00E-01	3.50E-01
Lead	4.60E+03	8.00E+02	1.40E+02	3.00E+01	2.10E+01	1.60E+01	9.30E+02	1.00E+02	2.20E+02	1.70E+03	2.10E+02
Nickel	3.40E+04	1.00E+04	2.70E+03	4.60E+02	3.40E+02	2.70E+02	8.70E+03	9.80E+02	2.30E+03	1.00E+02	2.00E+01
Selenium	1.10E+02	1.40E+02	8.40E+00	1.00E+01	2.00E+00	1.10E+00	5.50E+01	9.10E-01	1.90E+00	7.70E+00	1.00E-01
Silver	1.40E+04	2.40E+03	1.00E+02	3.00E+01	1.90E+01	1.40E+01	4.90E+02	8.60E+01	1.30E+02	n/a	5.00E-02
Acetone	5.10E+03	5.60E+04	3.10E+03	2.20E+01	4.20E+01	4.20E+02	4.30E+00	3.70E+01	3.80E+00	n/a	n/a
Aroclor 1254	1.50E-01	2.20E-01	1.70E-01	1.40E+00	8.00E-02	4.10E-02	5.60E+01	4.40E-01	8.80E-01	n/a	1.60E+02
Aroclor 1260	1.40E-01	4.60E+00	3.70E+00	3.10E+01	1.70E+00	8.80E-01	1.30E+03	1.00E+01	2.00E+01	n/a	n/a
Benzoic Acid	1.90E+03	n/a	n/a	n/a	n/a	n/a	1.10E+01	1.10E+01	7.30E+00	n/a	n/a
Bis(2-ethylhexyl)phthalate	6.40E+01	1.70E+00	2.30E+00	2.30E+01	1.90E+00	1.00E+00	3.60E+03	3.00E+01	6.10E+01	n/a	n/a
4,4'-DDE	2.30E+01	9.00E-02	1.00E-01	1.50E+00	6.30E-02	3.20E-02	1.40E+03	6.60E+00	1.30E+01	n/a	n/a
4,4'-DDT	3.00E+00	3.10E-01	3.10E-01	4.10E+00	1.70E-01	9.00E-02	1.30E+02	7.10E-01	1.40E+00	n/a	3.70E+00
Di-n-butylphthalate	7.70E+04	3.70E+00	1.10E+00	8.90E-01	2.90E-01	1.70E-01	4.00E+04	2.90E+03	5.30E+03	n/a	1.60E+02
Heptachlor	3.30E-01	1.30E+00	1.20E+00	1.40E+01	6.00E-01	3.00E-01	1.00E+01	5.90E-02	1.10E-01	n/a	4.00E-01
Toluene	1.20E+04	n/a	n/a	n/a	n/a	n/a	1.60E+02	7.00E+01	7.30E+01	n/a	2.00E+02
Trichloroethene	4.60E+04	n/a	n/a	n/a	n/a	n/a	5.90E+02	2.70E+02	2.70E+02	n/a	n/a
Xylene	4.30E+02	1.00E+04	1.00E+03	2.30E+02	1.80E+02	1.50E+02	1.90E+01	5.40E+00	6.80E+00	n/a	1.00E+02

Table 5.0-4 (continued)

Analyte	Red Fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Invertivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Americium-241	2.60E+04	6.20E+04	3.50E+04	1.30E+04	4.00E+03	4.00E+03	3.20E+04	3.10E+04	3.20E+04	4.40E+01	2.10E+04
Cesium-134	3.20E+02	1.30E+03	1.70E+03	1.90E+03	1.70E+03	1.70E+03	1.00E+03	1.10E+03	1.10E+03	7.70E+02	1.10E+03
Cobalt-60	7.00E+02	1.50E+03	1.50E+03	1.50E+03	1.50E+03	1.50E+03	7.60E+02	7.60E+02	7.60E+02	5.50E+02	7.50E+02
Sodium-22	3.40E+03	1.20E+04	1.50E+04	1.70E+04	1.60E+04	1.60E+04	8.90E+03	9.00E+03	9.00E+03	6.50E+03	8.90E+03
Strontium-90	5.60E+02	1.90E+03	2.40E+03	6.00E+02	9.30E+02	1.50E+03	1.30E+03	1.70E+03	1.70E+03	1.20E+03	1.30E+03
Tritium	1.90E+05	5.80E+05	6.30E+05	3.00E+05	4.40E+05	6.00E+05	2.30E+05	3.40E+05	3.30E+05	4.80E+04	3.60E+04
Uranium-234	4.50E+04	1.90E+05	1.20E+05	4.80E+04	1.40E+04	1.40E+04	9.60E+04	9.40E+04	9.10E+04	5.10E+01	1.40E+04
Uranium-235	4.80E+03	1.00E+04	1.00E+04	9.00E+03	6.40E+03	6.40E+03	5.10E+03	5.10E+03	5.10E+03	5.50E+01	4.00E+03
Uranium-238	2.00E+03	4.20E+03	4.10E+03	3.90E+03	3.40E+03	3.40E+03	2.10E+03	2.10E+03	2.10E+03	5.50E+01	1.80E+03

*n/a = Not applicable.

Table 6.3-1
Berm Samples Evaluated as Soil

Sample ID	Location ID	Depth (ft)	Media*
RE53-00-0004	53-01706	2–3	Qbt 3
RE53-00-0005	53-01707	3.5–4.5	Qbt 3
RE53-00-0006	53-01708	5–6	Qbt 3
RE53-00-0008	53-01710	6.5–7.5	Qbt 3
RE53-00-0009	53-01711	5.5–6.5	Qbt 3
RE53-00-0010	53-01712	4–5	Qbt 3
RE53-00-0011	53-01713	4–5	Qbt 3
RE53-00-0012	53-01714	3–4	Qbt 3
RE53-00-0013	53-01715	4.5–5.5	Qbt 3
RE53-99-0233	53-01655	10–12.5	Qbt 2
RE53-99-0234	53-01655	14–15	Qbt 2
RE53-99-0235	53-01655	24–25	Qbt 2
RE53-99-0292	53-01663	9–10	Qbt 2
RE53-99-0293	53-01663	13–14	Qbt 2
RE53-99-0299	53-01692	13–14	Qbt 2
RE53-99-0301	53-01693	9–10	Qbt 2
RE53-99-0302	53-01693	13–14	Qbt 2
RE53-99-0304	53-01694	9–10	Qbt 2
RE53-99-0305	53-01694	13–14	Qbt 2
RE53-99-0313	53-01696	12–24	Qbt 2
RE53-99-0314	53-01696	4–5	Qbt 2
RE53-99-0316	53-01698	1–2	Qbt 2
RE53-99-0317	53-01698	4–5	Qbt 2
RE53-99-0319	53-01697	1–2	Qbt 2
RE53-99-0320	53-01697	4–5	Qbt 2
RE53-99-0236	53-01656	9–10	Qbt 2
RE53-99-0263	53-01685	4–5	Qbt 2

*Media as identified at time of sample collection.

Table 6.3-2
Borehole 7 Pore Water Anion Concentration Estimates

Depth (ft)	Gravimetric Water (%)	Br- (mg/L)	Cl- (mg/L)	CLO3- (mg/L)	CLO4- (mg/L)	F- (mg/L)	NO2- (mg/L)	NO3- (mg/L)	Oxalate (mg/L)	PO4- (mg/L)	SO4- (mg/L)	Acetate	Formate
10.6	5	3.8	146	BD[a]	0.003	61	BD	6.0	5.8	0.82	310	–[b]	–
30.9	4	4.5	173	BD	BD	115	BD	1.5	2.3	6.8	32	–	–
50.9	4	6.0	166	BD	BD	186	0.4	1.1	0.7	2.5	21	+	+
70.6	3	8.2	202	BD	BD	230	BD	0.5	BD	5.3	14	+	+
90.6	6	4.3	128	BD	BD	108	0.3	6.3	BD	1.8	17	+	+
110.7	8	2.3	109	BD	BD	73	BD	14	BD	0.75	22	–	–
130.7	10	2.3	79	BD	BD	58	BD	11	BD	0.57	20	–	–
150.7	20	2.4	49	BD	BD	32	0.2	13	BD	0.15	199	+	+
170.7	12	2.4	101	BD	BD	31	0.1	19	BD	0.26	75	+	+
190.6	15	2.1	50	BD	BD	34	BD	1.8	BD	0.10	37	+	+
210.6	13	2.3	48	BD	BD	39	0.1	0.9	0.2	0.23	42	+	+
229.5	13	1.9	46	BD	BD	41	0.1	2.6	0.4	0.24	11	+	+
244.4	20	0.7	36	BD	BD	28	BD	1.6	BD	0.23	12	–	–
264.5	7	3.6	59	BD	BD	59	BD	BD	0.64	0.64	6.6	+	+
284.4	7	3.3	66	BD	BD	41	0.2	2.9	0.6	1.0	4.2	–	–

[a] BD = below detection.

[b] Acetate and Formate are given as detected (+) or not detected (–).

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FIGURES

The figures in this report are presented in several locations. The figures that appear at the end of the main text are those that are identified specifically in the main report sections (a few of these are also duplicated in one or more of the appendixes). The figures that are referred to (by specific figure number) only in the appendixes are presented in the corresponding appendix. To simplify the process of finding the information requested in the investigation report outline presented in the November 2002 Order, the table below lists the outline requirements and the figures that fulfill those requirements.

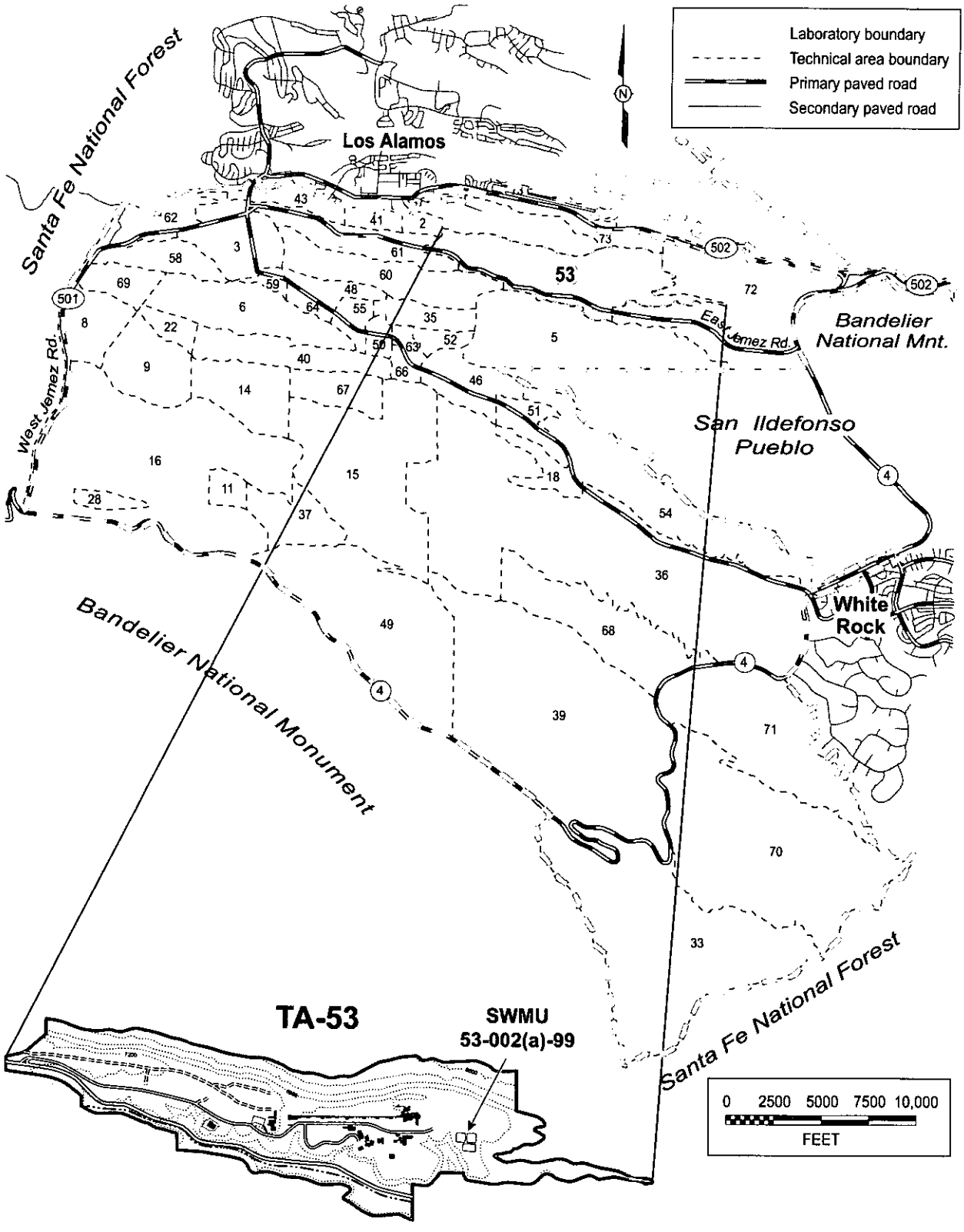
Order Requirement (Section XI.C.13)	Figure Number, Location	Figure Title
1. Vicinity map	Figure 1.0-1, Main report section	Location of TA-53 with respect to Laboratory TAs and surrounding land holdings
	Figure 2.0-1, Main report section	East end of TA-53, including SWMU 53-002(a)-99, AOC 53-008, Los Alamos Canyon, and Sandia Canyon
	Photo 2.0-1, Main report section	Oblique aerial view of the Los Alamos area, showing location of SWMU 53-002(a)-99
2. Site plan showing site features, structures, etc.	Figure 2.0-2, Main report section	Configuration of SWMU 53-002(a)-99 impoundments
3. Boring locations and sampling locations	Figure 3.0-1, Main report section (also in Appendixes D and G)	SWMU 53-002(a)-99 mesa-top sample locations
	Figure 3.0-2, Main report section	Locations of boreholes drilled after 2002 remediation
	Figure 3.0-3, Main report section (also in Appendix D)	SWMU 53-002(a)-99 reach sample locations
4. Soil sample screening/ laboratory analytical data	Figure D-1.0-1, Appendix D	SWMU 53-002(a)-99 mesa-top sample locations
	Figure D-1.0-2, Appendix D	SWMU 53-002(a)-99 reach sample locations
	Figure D-4.1-1, Appendix D	Box plot of cadmium concentrations in mesa-top soil and ALLH background data
	Figure D-4.2-1, Appendix D	Box plot of americium-241 concentrations in mesa-top soil; mesa-top tuff; Reaches C, D, and E sediment; ALLH background data; and sediment background data
	Figure D-4.2-2, Appendix D	Box plot of plutonium-239 concentrations in mesa-top soil; mesa-top tuff; Reaches C, D, and E sediment; ALLH background data; and sediment background data
	Figure D-4.2-3, Appendix D	Box plot of strontium-90 concentrations in mesa-top soil; mesa-top tuff; Reaches C, D, and E sediment; soil background data; and sediment background data
	Figure D-4.2-4, Appendix D	Box plot of tritium concentrations in mesa-top soil, mesa-top tuff, and soil background data
	Figure D-4.3-1, Appendix D	Box plot of acetone concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment
	Figure D-4.3-2, Appendix D	Box plot of bis(2-ethylhexyl)phthalate concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment

Order Requirement (Section XI.C.13)	Figure Number, Location	Figure Title
4. Soil sample screening/ laboratory analytical data *(continued)*	Figure D-5.1-1, Appendix D	Box plot of antimony concentrations in mesa-top tuff and Qbt 2,3,4 background data
	Figure D-5.1-2, Appendix D	Box plot of selenium concentrations in mesa-top tuff and Qbt 2,3,4 background data
	Figure D-5.1-3, Appendix D	Box plot of calcium concentrations in mesa-top tuff and Qbt 2,3,4 background data
	Figure D-5.1-4, Appendix D	Box plot of chromium concentrations in mesa-top tuff and Qbt 2,3,4 background data
	Figure D-5.1-5, Appendix D	Box plot of hexavalent chromium concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment
	Figure D-5.3-1, Appendix D	Box plot of di-n-butyl phthalate concentrations in mesa-top soil; mesa top tuff; and Reaches C, D, and E sediment
	Figure D-6.1-1, Appendix D	Box plot of lead concentrations in Reaches C, D, and E sediment and sediment background data
	Figure D-6.2-1, Appendix D	Box plot of tritium concentrations in Reaches C, D, and E sediment and sediment background data
	Figure D-6.3-1, Appendix D	Box plot of Aroclor-1254 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment
	Figure D-6.3-2, Appendix D	Box plot of toluene concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment
	Figure D-7.0-1, Appendix D	Sample locations in Reaches C, D, and E and Reaches LA-2FE, LA-3E, and LA-3W in Los Alamos Canyon
	Figure D-7.1-1, Appendix D	Box plots for antimony concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W and LA-3E
	Figure D-7.1-2, Appendix D	Box plots for lead concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.1-3, Appendix D	Box plots for selenium concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.2-1, Appendix D	Box plots for cesium-134 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.2-2, Appendix D	Box plots for cobalt-60 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W and LA-3E sediment
	Figure D-7.2-3, Appendix D	Box plots for tritium concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.3-1, Appendix D	Box plots for Aroclor-1254 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.3-2, Appendix D	Box plots for Aroclor-1260 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

Order Requirement (Section XI.C.13)	Figure Number, Location	Figure Title
4. Soil sample screening/ laboratory analytical data *(continued)*	Figure D-7.3-3, Appendix D	Box plots for benzoic acid concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.3-4, Appendix D	Box plots for 4,4'-DDE concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure D-7.3-5, Appendix D	Box plots for 4,4'-DDT concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment
	Figure G-4.0-2, Appendix G	SWMU 53-002(a)-99 reach sample locations
	Figure G-4.0-3, Appendix G	Organic COPCs detected in mesa-top soil samples at SWMU 53-002(a)-99
	Figure G-4.0-4, Appendix G	Organic COPCs detected in mesa-top tuff samples at SWMU 53-002(a)-99
	Figure G-4.0-5, Appendix G	Inorganic COPCs detected above background values in mesa-top soil samples at SWMU 53-002(a)-99
	Figure G-4.0-6, Appendix G	Inorganic COPCs detected above background values in mesa-top tuff samples at SWMU 53-002(a)-99
	Figure G-4.0-7, Appendix G	Radionuclide COPCs detected above background values in mesa-top soil samples at SWMU 53-002(a)-99
	Figure G-4.0-8, Appendix G	Radionuclide COPCs detected above background values in mesa-top tuff samples at SWMU 53-002(a)-99
	Figure G-4.0-9, Appendix G	Tritium detected above background value in mesa-top soil samples at SWMU 53-002(a)-99
	Figure G-4.0-10, Appendix G	Tritium detected above background value in mesa-top tuff samples at SWMU 53-002(a)-99
	Figure G-4.0-11, Appendix G	Tritium bubble plot for samples from 0 to 5 ft bgs at SWMU 53-002(a)-99
	Figure G-4.0-12, Appendix G	Tritium bubble plot for samples from 5 to 15 ft bgs at SWMU 53-002(a)-99
	Figure G-4.0-13, Appendix G	Tritium bubble plot for samples from 15 to 30 ft bgs at SWMU 53-002(a)-99
	Figure G-4.0-14, Appendix G	Tritium bubble plot for samples > 30 ft bgs at SWMU 53-002(a)-99
	Figure G-4.0-15, Appendix G	Actual tritium concentrations in pCi/L from the 2002 boreholes
	Figure G-4.0-16, Appendix G	Organic COPCs detected in SWMU 53-002(a)-99 reach samples
	Figure G-4.0-17, Appendix G	Inorganic COPCs detected above background values in SWMU 53-002(a)-99 reach samples
	Figure G-4.0-18, Appendix G	Radionuclide COPCs detected above background values in SWMU 53-002(a)-99 reach samples
	Figure G-4.0-19, Appendix G	Tritium detected above background value in SWMU 53-002(a)-99 reach samples
5. Newly installed and existing wells	n/a*	n/a

Order Requirement (Section XI.C.13)	Figure Number, Location	Figure Title
6. Monitoring well and piezometer locations	n/a	n/a
7. Groundwater analytical data	n/a	n/a
8. Surface water sample locations	n/a	n/a
9. Surface water analytical data	n/a	n/a
10. Air sampling locations and air quality data	n/a	n/a
11. Geologic cross-sections	Figure 4.3-1, Main report section	Generalized stratigraphy of Bandelier Tuff at SWMU 53-002(a)-99

*n/a = Not applicable.



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Figure 1.0-1. Location of TA-53 with respect to Laboratory TAs and surrounding land holdings

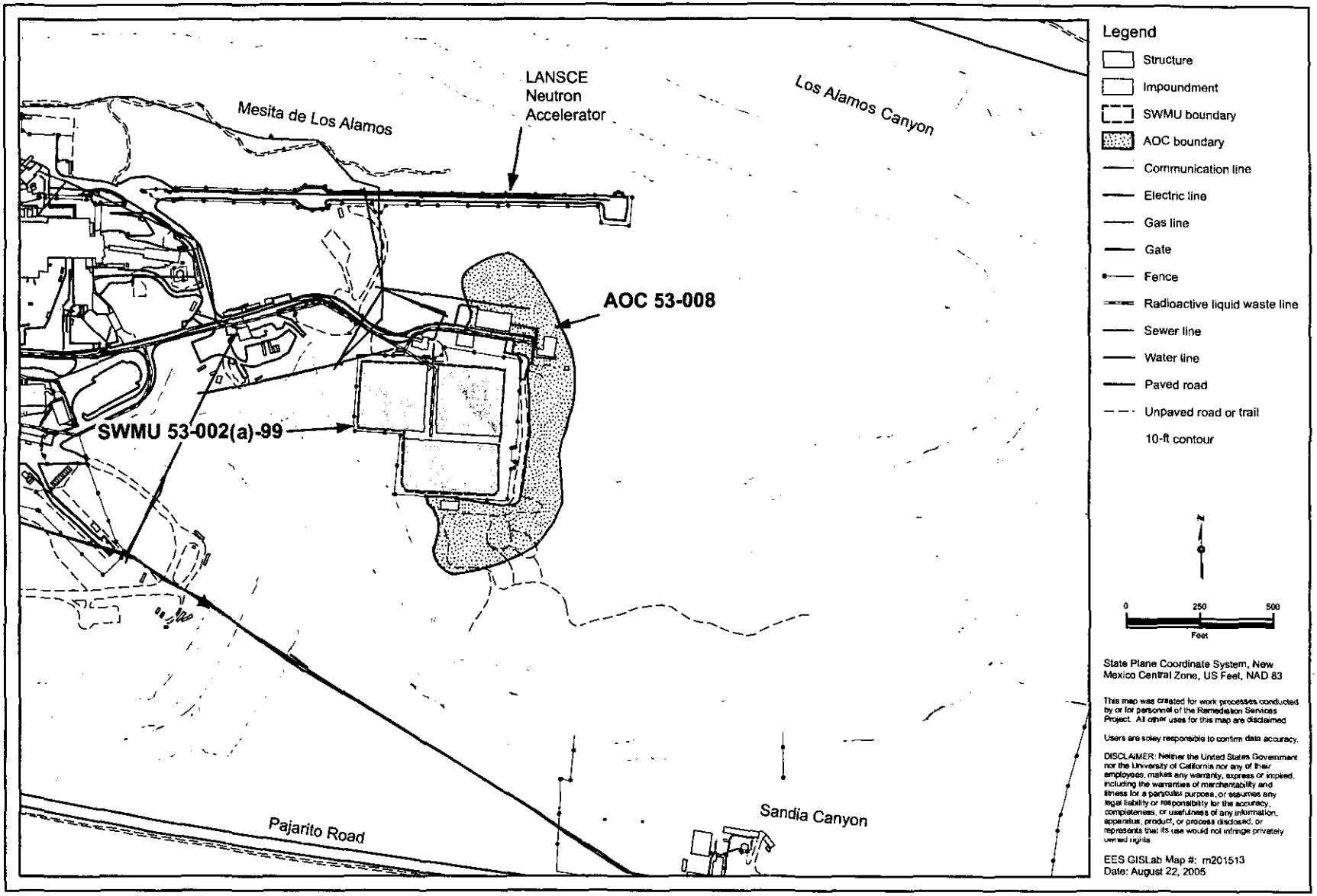


Figure 2.0-1. East end of TA-53, including SWMU 53-002(a)-99, AOC 53-008, Los Alamos Canyon, and Sandia Canyon

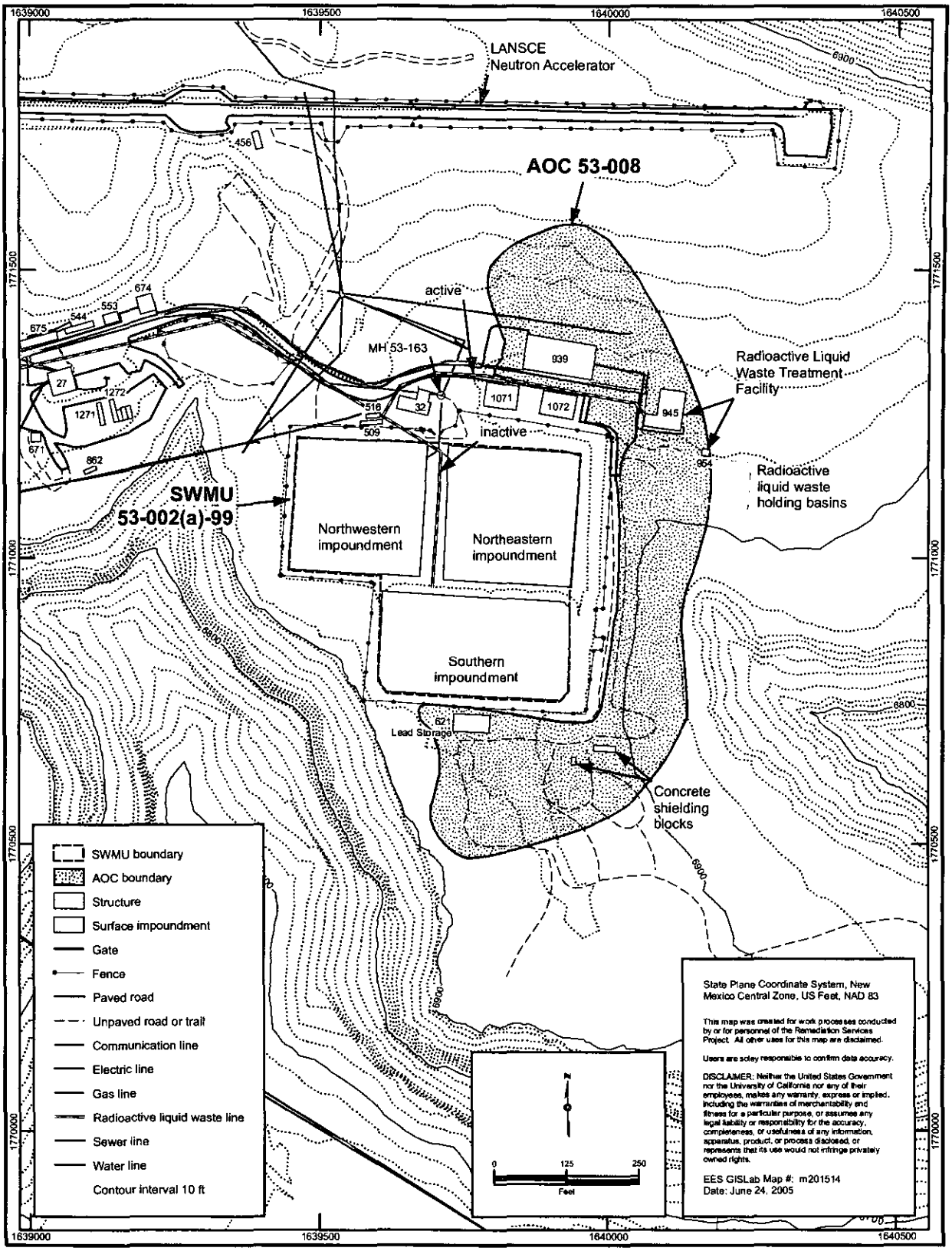


Figure 2.0-2. Configuration of SWMU 53-002(a)-99 impoundments

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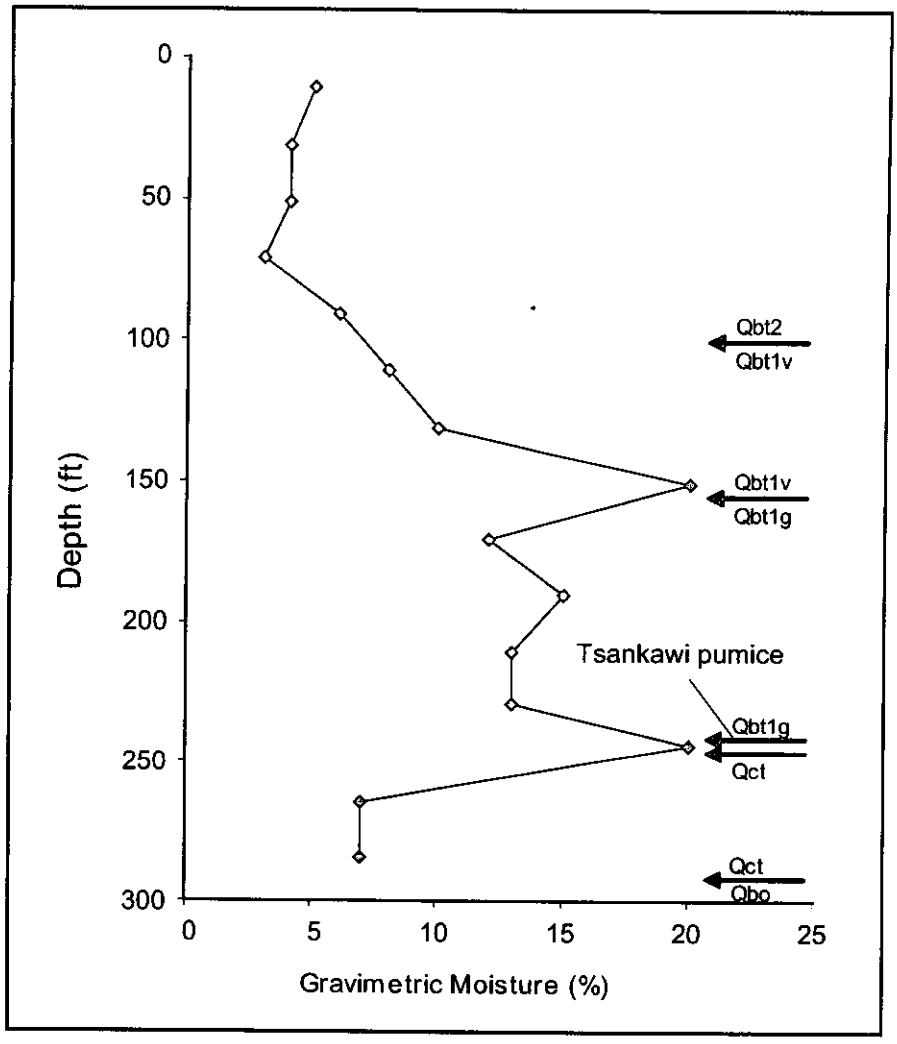


Figure 4.4-1. Moisture content of tuff core samples from BH7

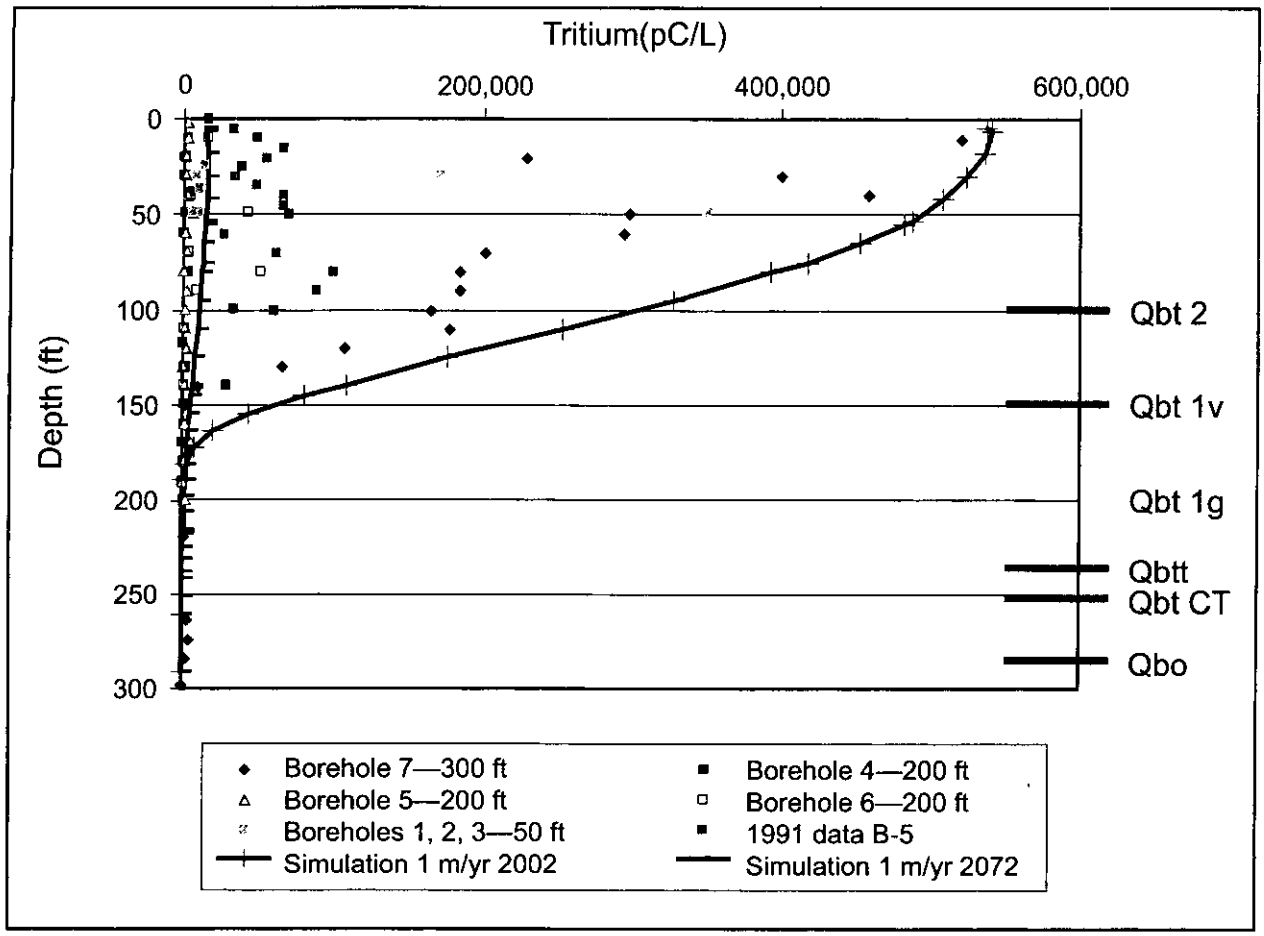
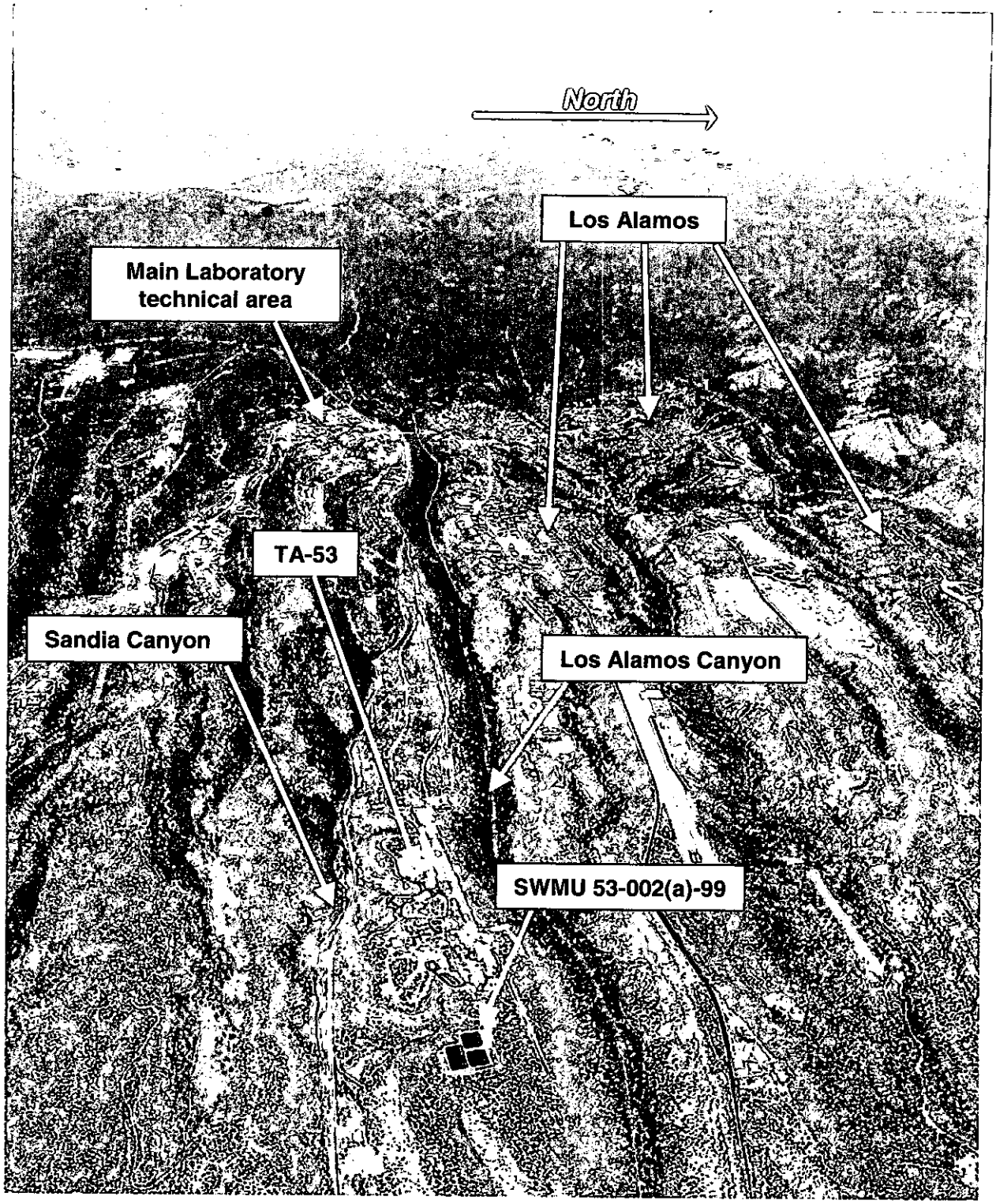


Figure 6.3-1. Simulated tritium below the source region for the years 2002 and 2072 compared to the site borehole data (Stauffer 2003, 80930)



Photograph 2.0-1. Oblique aerial view of the Los Alamos area, showing location of SWMU 53-002(a)-99

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ACRONYMS AND ABBREVIATIONS

AEC	atomic emission spectroscopy
AL	action level
AOC	area of concern
AUF	area-use factor
bgs	below ground surface
BMP	best management practice
BV	background value
COC	chain of custody
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CRDL	contract-required detection limit
DDE	dichlorodiphenyldichloroethylene
DDD	dichlorodiphenyldichloroethane
DDT	p,p'-dichlorodiphenyltrichloroethane
DOE	Department of Energy (US)
DOT	Department of Transportation
EDL	estimated detection limit
EPA	Environmental Protection Agency (US)
EQL	estimated quantitation limit
ER	environmental restoration
ESL	ecological screening level
FIMAD	Facility for Information Management, Analysis, and Display
FV	fallout value
FY	fiscal year
GPS	global positioning system
HDPE	high-density polyethylene
HI	hazard index
HQ	hazard quotient
HRMB	Hazardous and Radioactive Materials Bureau (NMED)
HSR	Health, Safety, and Radiation Protection (a Laboratory division)
HSWA	Hazardous and Solid Waste Amendments
IA	interim action
ICPES	inductively coupled plasma emission spectroscopy
ICP/MS	inductively coupled plasma mass spectroscopy
LANSCE	Los Alamos Neutron Science Center
LANL	Los Alamos National Laboratory
LCS	laboratory control sample

MCAL	mobile chemical analytical laboratory
MDA	material disposal area
MDC	minimum detectable concentration
NFA	no further action
NMED	New Mexico Environment Department
NMHWA	New Mexico Hazardous Waste Act
NOAEL	no observed adverse effect level
NOD	notice of deficiency
NPDES	National Pollutant Discharge Elimination System
OSHA	Occupational Safety and Health Administration
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PAUF	population area-use factor
PCB	polychlorinated biphenyl
PEST	pesticide
PID	photoionization detector
PPE	personal protective equipment
PRS	potential release site
PVC	polyvinyl chloride
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RFI	RCRA facility investigation
RLWTF	Radioactive Liquid Waste Treatment Facility
RPD	relative percent difference
RRES	Risk Reduction and Environmental Stewardship (a Laboratory division)
RRES-RS	RRES–Remediation Services
SAL	screening action level
SAP	sampling and analysis plan
SSHASP	site-specific health and safety plan
SMO	Sample Management Office (RRES-RS)
SOP	standard operating procedure
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
SWSC	sanitary wastewater system consolidation

TA	technical area
TAL	target analyte list
TCLP	toxicity characteristic leaching procedure
TPU	total propagated uncertainty
TSCA	Toxic Substances Control Act
TSD	treatment, storage, and disposal
UCL	upper confidence limit
UTL	upper tolerance limit
VCA	voluntary corrective action
VCP	vitrified clay pipe
VOC	volatile organic compound
WCSF	waste characterization strategy form
XRF	x-ray fluorescence

GLOSSARY

Absorption. The penetration of substances into the bulk of a solid or liquid.

Accelerated cleanup. An action taken at a site ahead of the ER Project prioritized, planned schedule. Accelerated actions may include removal, protection, hardening, installation of best management practices, or collection of characterization date. Accelerated actions may or may not be a final remedy for the site.

Accuracy. The extent to which the results of a calculation or measurement approach the true values of the calculated or measured quantities, and are free from error.

Administrative authority. The federal or state agency that reviews and approves the corrective action process for each PRS at the Laboratory. The New Mexico Environment Department (NMED) is the administrative authority for PRSs that are contaminated by hazardous chemicals and therefore are listed on the Laboratory's RCRA Hazardous Waste Facility permit. The Department of Energy (DOE) provides oversight for PRSs with radiological contamination.

Adsorption. The surface retention of solid, liquid, or gas molecules, atoms, or ions by a solid or liquid.

Aggregate. Physical delineation within a watershed that is used for grouping contaminated sites for the purposes of planning and implementing the Laboratory's ER Project corrective action process in a more efficient and systems-oriented manner.

Alluvial. Said of materials or features deposited by running water.

Alluvium. Clay, silt, sand, gravel, or other rock materials transported by water and deposited in fairly recent geologic time as sorted or semisorted sediments in riverbeds, flood plains, lake shores, and fans at the base of mountain slopes.

Alpha radiation. Radiation composed of alpha particles emitted during the radioactive decay of certain nuclides. The least penetrating of the three common types of radiation (alpha, beta, and gamma), alpha radiation can be blocked easily (for example by a sheet of paper or the outer layer of skin).

Analysis. A process used to measure one or more attributes of a sample in a clearly defined, controlled, systematic manner. Often requires treating a sample chemically or physically before measurement.

Analyte. The particular chemical or radiochemical species to be identified and/or quantified.

Analytical laboratory data qualifiers. Data qualifiers that are attached to sample results by the analytical laboratory that performed the sample analysis.

The following letter qualifier flags are for **inorganic analyses**:

- **"U"** The compound was analyzed for but was not detected. The associated numerical value is the estimated detection limit.
- **"B"** The reported value was obtained from a reading that was less than the estimated detection limit but greater than or equal to the instrument detection limit.
- **"E"** The reported value is estimated because of the presence of interference.
- **"M"** Duplicate injection precision was not within control limits.
- **"N"** Spiked sample recovery was not within control limits.
- **"S"** The reported value was determined by the Method of Standard Additions.
- **"W"** Post-digestion spike for GFAA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- **"*"** Duplicate sample analysis was not within control limits.
- **"+"** Correlation coefficient for the Method of Standard Additions is less than 0.995.

The following letter qualifier flags are for **organic analyses**:

- **"U"** The compound was analyzed for but was not detected. The reported numerical value is the estimated quantitation limit.
- **"J"** Indicates an estimated value. The "J" flag is used if the compound is present but the result is less than the sample estimated quantitation limit and greater then the instrument detection limit.
- **"B"** The analyte was found in the associated method blank as well as in the sample.
- **"E"** The concentrations of the analyte exceeded the calibration range of the instrument.
- **"D"** The analyte was identified in an analysis at a secondary dilution factor.
- **"C"** Identification of a pesticide/PCB has been confirmed by GC/MS.
- **"P"** The percent difference between a pesticide/PCB result obtained on the primary and secondary columns was greater than 25%.
- **"N"** There is presumptive evidence of the presence of a tentatively identified compound based on mass spectral matching.
- **"A"** A tentatively identified compound is a suspected aldol-condensation product.

Aquifer. A permeable body of geologic material capable of yielding groundwater to wells or springs.

Ash-flow tuff. A tuff deposited by a hot dense volcanic current. Ash-flow tuff can be either welded or nonwelded.

Area of concern (AOC). An area at the Laboratory known, or suspected, to be contaminated with radionuclides but not contaminated by hazardous chemicals or hazardous waste.

Background level. The naturally occurring levels of an inorganic chemical or naturally occurring radionuclides in soil, sediment, and tuff.

Background value (BV). Background values exist for inorganic chemicals and radionuclides. The background values are the upper tolerance limits (UTLs) of background sample results, calculated as the upper 95% confidence limit for the 95th percentile. In cases where a UTL cannot be calculated,

either the detection limit or maximum reported value is used as a BV. Background values are used as simple threshold numbers to identify potentially contaminated site sample results as greater than background levels.

Barrier. Any material or structure that prevents or substantially delays movement of solid-, liquid-, or gaseous-phase chemicals in environmental media.

Best management practice (BMP). For facilities that manufacture, use, store, or discharge toxic or hazardous pollutants as defined by the 1977 Clean Water Act, a required program to control the potential spill or release of those materials to surface waters.

Beta radiation. Radioactive transformation of a nuclide in which the nucleus emits a beta particle (electron or positron). Beta radiation can be blocked by an inch of wood or by a thin sheet of aluminum.

Bias. (1) The degree to which the value obtained for a measured parameter deviates from the value accepted as the true, or reference, value. (2) A systematic deviation from the true value that remains constant over replicated measurements within the statistical precision of the measurement process.

Blank sample. A sample expected to have negligible or unmeasurable amounts of analytes. Results of blank sample analyses indicate whether or not field samples might have been contaminated during one or more steps of the sample collection, transport, storage, preparation and analysis process.

Calibration. A process used to identify the relationship between the true, or reference, analyte concentration or other variable and the response of a measurement instrument, chemical analysis method, or other measurement system.

Characterization, characterization process. See **site characterization**

Chemical. Any naturally occurring or man-made substance characterized by a definite molecular composition, including molecules that contain radionuclides.

Chemical of concern. Chemical identified as a potential risk during a site-specific, human-health, or ecological risk assessment.

Chemical of potential concern (COPC). Chemical, detected at a site, that has the potential to adversely affect human and/or ecological receptors due to its concentration, distribution, and mechanism of toxicity. A COPC remains a concern until exposure pathways and receptors are evaluated in a site-specific risk assessment.

Chemical of potential ecological concern (COPEC). A chemical, detected at a site, that has the potential to adversely affect ecological receptors due to its concentration, distribution, and mechanism of toxicity.

Cleanup. Any action that physically removes or treats a hazardous substance that threatens or potentially threatens human health and welfare and the environment. Cleanup actions may include covering and containing a source of contamination to prevent its spread, placing controls on future land use, and excavating and/or treating the contamination source.

Cleanup levels. Media-specific contaminant concentration levels that must be met by a selected corrective action. Cleanup levels are established by using criteria such as protection of human health and the environment; compliance with regulatory requirements; reduction of toxicity, mobility, or volume through treatment; long-and short-term effectiveness; implementability; cost; and public acceptance.

Conceptual model. See also ***Site conceptual model.***

Constituent. Any compound or element present in environmental media, including both naturally occurring and man-made elements.

Contaminant. Any chemical (including radionuclides) present in environmental media or on structural debris at a concentration that may present a risk to human health or the environment.

Contamination. Substances introduced into the environment as a result of people's activities, regardless of whether the concentration is a threat to health (see pollution).

Controlled area or property. Laboratory area to which access is controlled to protect individuals from exposure to radiation and/or hazardous materials.

Corrective action. An action taken to rectify conditions adverse to human health or the environment. Corrective actions are considered complete at a site when

- The ER Project has demonstrated and documented that the site either poses no risk to humans and ecological receptors or that the risk is acceptable, or that a final remedy has been evaluated, selected, and implemented to reduce or eliminate risk, and
- The administrative authority has concurred.

Corrective action process. One or more of a series of activities (initial site assessment, site characterization, interim actions, evaluation of remedial alternatives, and implementation of selected remedy); also refers to RCRA facility assessments, RFIs, corrective measures studies, and corrective measures implementations.

Cumulative risk. Risk that integrates multiple sources, effects, pathways, and contaminants through common human and ecological receptors, points of compliance, and/or times of compliance.

Curie. A unit of radioactivity defined as that quantity of any radioactive nuclide that has an activity of 3.7×10^{10} disintegrations per second.

Data quality assessment. A statistical and scientific evaluation of the data set to assess the validity and performance of the data collection design and statistical test, and to establish whether a data set is adequate for its intended use.

Data quality objectives (DQOs). The qualitative and quantitative goals that are developed before sampling begins that clarify the investigation objectives and identify the type, quantity and quality of data needed to support decisions.

Data validation. A systematic process that applies a defined set of performance-based criteria to a body of data that may result in qualification of the data. This process is performed independently of the analytical laboratory generating the data set and occurs prior to drawing a conclusion from the data. It may comprise a standardized review (routine validation) and/or a problem-specific review (focused validation) of the data.

Detection limit. Minimum concentration that can be determined by a single measurement by an instrument; implies a specified statistical confidence that the analytical concentration is greater than zero.

Discharge (as defined under RCRA, 40 CFR 260.10). Accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water.

Disposal. Discharging, depositing, injecting, dumping, spilling, leaking, or placing any solid waste or hazardous waste into or on any land or water so that such solid or hazardous waste, or any constituent thereof, may enter the environment, be emitted into the air, or discharged into any waters, including groundwaters.

U.S. Department of Energy (DOE). The federal agency that sponsors energy research and regulates nuclear materials for weapons production.

Dose. The quantity of radiation absorbed, per unit of mass, by the body or by any portion of the body.

Dose equivalent. An estimate of the amount of biological damage (in rems) done by the deposition in tissue of a given unit of absorbed radiation dose.

Ecological screening level (ESL). An organism's exposure-response threshold for a given chemical constituent. It is the concentration of a substance in a particular medium that corresponds to a hazard quotient (HQ) of 1.0 for a given organism and below which no risk is indicated.

Effluent. Liquid discharged as a waste, such as contaminated water from a factory or the outflow from a sewage works; water discharged from a storm sewer or from land after irrigation.

U.S. Environmental Protection Agency (EPA). The federal agency responsible for enforcing environmental laws. While state regulatory agencies may be authorized to administer some of this responsibility, EPA retains oversight authority to ensure protection of human health and the environment.

Environmental surveillance. Collection and analysis of samples of air, water, soil, foodstuffs, biota, and other media to determine the environmental quality of an industry or community. Environmental surveillance commonly is performed at sites that contain nuclear facilities.

Eolian. Pertaining to the wind, especially said of sediment deposition by the wind, of structures such as wind-formed ripple marks, or of erosion accomplished by the wind.

Ephemeral stream. Said of a stream or spring that flows only during and immediately after periods of rainfall or snowmelt.

Equipment blank. A blank sample that is used to rinse the sample collection equipment and is then transferred to a sampling container. The equipment blank is collected after equipment decontamination is completed but prior to collection of another field sample.

Erosion. Wearing away the land surface by natural agents such as moving water, wind, organisms, and gravity that involved the transport of rock debris.

Estimated quantitation limit. The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine analytical laboratory operating conditions. Sample estimated quantitation limits are highly matrix-dependent, and the specified estimated quantitation limits might not always be achievable.

Exposure pathway. An exposure pathway outlines the route a contaminant may follow to reach humans. Contaminants may enter the local environment by air or water and pass through soil, plants, livestock, or wildlife, ultimately reaching humans through inhalation (breathing), ingestion (eating and drinking) or adsorption through skin or wounds.

Exposure unit. The bounded area or volume within which a person or other receptor may be exposed to contaminants that have been released to the environment.

Field blank. A blank sample either prepared in the field or carried to the sampling site, exposed to sampling conditions (e.g., bottle caps removed, preservatives added), and returned to a laboratory for analysis in the same manner in which environmental samples are analyzed. Used to identify the presence of contamination potentially added during the sampling and analysis process.

Field duplicate. A second sample collected as near as possible to the original sample.

Gamma radiation. A form of electromagnetic, high-energy radiation emitted from a nucleus. Gamma rays are essentially the same as e-rays and require heavy shielding, such as concrete or steel, to be blocked.

Geohydrology. The science that applies hydrologic methods to the understanding of geologic phenomena.

Grab sample. A specimen collected by a single application of a field sampling procedure to a target population, e.g. the surface soil from a single hole collected following the spade and scoop sampling procedure, or a single air filter left in the field for three months.

Groundwater. Water found beneath the surface of the ground. Groundwater usually refers to a zone of complete water saturation containing no air.

Half-life. The time required for one-half of the radioactive atoms initially present in a sample to decay. Each radionuclide has a characteristic half-life ranging from a fraction of a second to thousands of years.

Hazardous and Solid Waste Amendments (HSWA) Module. Module VIII of the Laboratory's RCRA Hazardous Waste Facility Permit. The permit allows the Laboratory to operate as a treatment, storage, and disposal facility. Module VIII regulates the cleanup of inactive sites and the activities of the ER Project for those PRSs listed on the permit.

Hazardous substance (As defined by 40 CFR 302.3). Any substance designated pursuant to 40 CFR 302. 40 CFR 302.4 – Designation of Hazardous Substances:

(a) *Listed hazardous substances.* The elements, compounds and hazardous wastes appearing in Table 302.4 are designated as hazardous substances under section 102(a) of the CERCLA.

(b) *Unlisted hazardous substances.* A solid waste, defined in 40 CFR 261.2, which is not excluded from regulation as a hazardous waste under 40 CFR 261.4(b), is a hazardous substance under section 101(14) of the CERCLA if it exhibits any of the characteristics identified in 40 CFR 261.20 through 261.24. Note: This definition incorporates by reference, substances listed in CWA sections 311 and 307(a); CAA section 112; RCRA section 3001; and TSCA section 7.

Hazardous waste (As defined by RCRA 40 CFR261.3). Any solid waste is generally a hazardous waste if it

- is not excluded from regulation as a hazardous waste;
- is listed in the regulations as a hazardous waste;
- exhibits any of the defined characteristics of hazardous waste (ignitability, corrosivity, reactivity, or toxicity); or
- is a mixture of solid waste and hazardous waste.

Although the legal definition of hazardous waste is complex, the term generally refers to any waste that the EPA believes could pose a threat to human health and the environment if managed improperly.

High-explosives (HE). The three most common high explosive substances found at the Laboratory are RDX (Royal Demolition eXplosive), TNT (2,4,6-initrotoluene), and HMX (High Melting eXplosive). These highly explosive materials do not occur naturally in the environment and are all used in making military shells, bombs, and grenades. Exposures to these materials are rare because they are generally used in controlled areas. People can be exposed to these chemicals by breathing dust contaminated with the materials, getting it on their skin, or drinking contaminated water.

Holding time. The maximum elapse of time that one can expect to store a sample without unacceptable changes in analyte concentrations. Holding times apply under prescribed storage conditions and

deviations in storage conditions may affect the holding time. Extraction Holding Time refers to the time lapse from sample collection to sample preparation; Analytical Holding Time refers to the time lapse between sample preparation and analysis.

HSWA module. A portion of the Laboratory's permit to operate under RCRA that contains requirements specific to Los Alamos National Laboratory. It is this portion of the permit that contains the list of solid waste management units that must be cleaned up in accordance with RCRA procedures.

Hydrogeology. The science that applies geologic methods to the understanding of hydrologic phenomena.

Industrial use scenario. Industrial use is the future use scenario in which current Laboratory operations continue. Any necessary remediation involves cleanup to standards designed to ensure a safe and healthy work environment for Laboratory workers.

Infiltration. Entry of water into the ground.

Inorganic chemical. Compounds of elements other than carbon such as hexavalent chromium (the form of chromium in a valence state of +6).

Interim measures. Those activities used to control or lessen ongoing risks to human health or the environment in advance of a final cleanup solution. The actions used to achieve the goal of stabilization at contaminated sites that present serious and immediate health hazards.

In situ stabilization. A cleanup strategy that leaves the contaminants in place but unable to migrate or be released into the environment.

Institutional controls. Controls prohibiting or limiting access to contaminated media; may consist of deed restrictions, use restrictions, permitting requirements, etc.

Interference. A chemical or physical entity whose influence results in a decrease or increase in the response of an analytical method or other measurement system relative to the response obtained in the absence of the entity.

Intermittent stream. Said of a stream that flows only in certain reaches due to losing and gaining characteristics of the channel bed.

Laboratory duplicate sample. The portions of a sample taken from the same sample container, prepared for analysis and analyzed independently but under identical conditions. Each duplicate sample is expected to be equally representative of the original material.

LANL data validation qualifiers. Data qualifiers used in the LANL ER Project baseline validation process are as follows:

- **"A"** Contractually required data are not available for data review and evaluation.
- **"U"** The analyte was analyzed for but not detected.
- **"J"** The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
- **"J+"** The analyte was positively identified, and the result is likely to be biased high.
- **"J-"** The analyte was positively identified, and the result is likely to be biased low.
- **"UJ"** The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
- **"RPM"** Without further review of the raw data, the sample results are unusable due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. Presence or

absence cannot be verified. Any results qualified as RPM must be evaluated for relevance to data use.

"P" Professional judgment should be applied to using the data in decision-making.

"PM" Professional judgment should be applied to using the data in decision-making. A manual review of raw data is recommended t determine if the defect impacts data use for decision-making.

"R" The data is rejected as a result of major problems with quality assurance/qualify control (QA/QC) parameters.

Long-term surveillance and monitoring. Collecting periodic measurements over time to assess status and trends.

Long-term maintenance. Maintaining the conditions and assumptions under which risk-based decisions were made.

Material disposal area (MDA). An area used any time between the beginning of Laboratory operations in the early 1940s and the present for disposing of chemically and/or radioactively contaminated materials.

Matrix. See also *sample matrix*.

Matrix spike. An aliquot of sample spiked with a known concentration of target analyte(s). The spiking typically occurs before sample preparation and analysis.

Matrix spike duplicate. An intralaboratory duplicate sample spiked with a known amount of target analyte(s). Spiking occurs prior to sample preparation and analysis.

Media/medium (environmental). Any material capable of absorbing or transporting constituents including tuffs, soils and sediments derived from these tuffs, surface water, groundwater, air, structural surfaces, and debris.

Medium (geological). The solid part of the hydrogeological system; may be unsaturated or saturated.

Method. A body of procedures and techniques for systematically performing an activity.

Method blank. An analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing and which is prepared and analyzed in the same manner as the corresponding environmental samples. The method blank is used to assess the potential for contamination to the sample during preparation and analysis.

Method detection limit (MDL). The minimum concentration of a substance that can be measured and reported with a known statistical confidence that the analyte concentration is greater than zero. The MDL is determined from analysis of samples of a given matrix type containing the analyte after subjecting the sample to the usual preparation and analyses. The MDL is used to establish detection status.

Migration. The movement of inorganic and organic species through unsaturated or saturated materials.

Migration pathway. A route (e.g., a stream or subsurface flow path that controls the potential movement of contaminants to environmental receptors (plants, animals, humans).

Mixed waste. Waste that contains both hazardous waste (as defined by RCRA and its amendments) and radioactive waste (as defined by the AEA and its amendments).

Model. A mathematical approximation of a physical, biological, or social system.

Monitoring well. A well drilled at a specific location on or off a hazardous waste site for the purpose of sampling groundwater or measuring water levels. Typically constructed with a moderate screen interval placed so as to straddle the water table or potentiometric surface associated with the saturated zone of interest.

Nature and extent of contamination. The "nature" of contamination is the chemicals (naturally occurring or man-made) present in or that have been released to the environment and are determined by detection of a chemical in one or more environmental samples. In the case of naturally occurring or widespread man-made chemicals, detection is determined by comparison to background levels. The "extent" of contamination means how much of a given chemical is present in the environment and is determined by comparison to site baseline values, if applicable, and/or analysis of trends in the data.

No further action (NFA). A decision that no further investigation or remediation is warranted for a PRS, based on risk levels for residential use, recreational use, or industrial use. NFA recommendations are based on one or more of the following criteria:

- The site does not exist, is a duplicate of another site, cannot be located, or is located within another site and has been or will be investigated as part of that site
- The site was never used for the management (i.e., generation, treatment, storage, or disposal) of RCRA solid or hazardous wastes and/or constituents.
- The site is not known to have released nor is it suspected of releasing or having released RCRA solid or hazardous wastes and/or constituents to the environment.
- The site is regulated under another state and/or federal authority. If the site is known to have released or is suspected of releasing or having released RCRA solid or hazardous wastes and/or constituents to the environment, it has been or will be investigated and/or cleaned up in accordance with applicable state and/or federal regulations.
- The site was characterized or cleaned up in accordance with current applicable state and/or federal regulations, and the available data indicate that contaminants pose an acceptable level of risk, assuming current and projected future land use.

Notice of deficiency (NOD). A notice issued to DOE and the Laboratory by the administrative authority which states that some aspect(s) of a plan, report, or application does not meet their requirements or that requires clarification or correction.

Operable unit (OU). At LANL, one of 24 areas originally established for administering the ER Project. Set up as groups of potential release sites, the OUs were aggregated based on geographic proximity for the purpose of planning and conducting the cleanup effort. As the project matured, it became apparent that 24 were too many to allow efficient communication and to ensure consistency in approach. Therefore, in 1994, the 24 OUs were reduced to six administrative "field units."

Organic chemical. Compound of elements that contains carbon such as carbon dioxide.

Outfall. The vent or end of a drain, pipe, sewer, ditch, or other conduit that carries wastewater, sewage, storm runoff, or other effluent into a stream.

Perched groundwater. Groundwater that lies above the regional water table and is separated from it by an unsaturated zone.

Percolation. Gravity flow of groundwater through the pore spaces in rock or soil below the ground surface.

Perennial Stream. Said of a stream or reach that flows continuously throughout the year.

Permit modification. A request by either the permittee or the administrative authority to change a condition of the Laboratory's RCRA Hazardous Waste Facility permit.

Pollutant. Any substance, produced and released into the environment as a result of human activity, that has damaging effects on humans or ecological receptors.

Polychlorinated biphenyls (PCB). PCBs are either oily liquids or solids and are colorless to light yellow in color. They have no known smell or taste. There are no known natural sources of PCB. These mixtures of individual chemicals are no longer produced in the US but are still found in the environment. They are chemically, electrically, and thermally stable and are found in old fluorescent lighting fixtures, electrical appliances containing PCB capacitors, old microscope oil, and hydraulic fluids. People exposed to PCB in the air for a long time have experienced irritation of the nose, lungs, and skin. It is not known if PCBs cause birth defects or reproductive problems in people. The US Department of Health and Human Services has determined that PCB may reasonably be anticipated to be carcinogens.

Population (statistical). A set of entities or a continuum in a physical, biological or social system of interest, e.g., the residents of Los Alamos County, the water in an alluvial aquifer, or the plants in Pajarito Canyon.

Porosity. The ratio of the volume of interstices in rock or soil to its total volume expressed as a percentage or as a fraction.

Potential release site (PRS). A site suspected of releasing contaminants into the environment. PRS is a generic term that includes SWMUs, hazardous waste sites listed in Module VII of the Laboratory's Hazardous Waste Facility Permit, and sites that have been identified as potentially contaminated by radioactivity.

Preliminary remediation goal (PRG). Acceptable exposure levels, protective of human health and the environment that are used as a risk-based tool for evaluating remedial alternatives.

Preliminary risk assessment. A risk assessment conducted using conservative assumptions and scenarios and assuming no mitigating or corrective measures beyond those already in place.

Qualifier flag. A letter code indicating, on a gross scale, a verifiable or potential data deficiency. Qualifier flags are assigned to data based on the outcome of data validation checks.

Quality control (QC) sample. A sample which, upon analysis, provides information useful for adjusting, controlling, or verifying continuing acceptability of sampling and/or analysis activities that are in progress.

Quaternary. The second period of the Cenozoic Era, following the Tertiary, and including the last 2 – 3 million years.

Radiation. Energy emitted in the form of rays or particles that are thrown off by disintegrating atoms. The rays or particles emitted may consist of neutrons, positrons, alpha particles, beta particles, or gamma radiation.

Radionuclide. A nuclide (species of atom) capable of spontaneous transformation into other nuclides through changes in its nuclear configuration or energy level. This transformation is accompanied by the emission of photons or particles.

RCRA facility investigation (RFI). The second step of a RCRA corrective action, to gather enough data to fully characterize the nature, extent, and rate of migration of contaminants to determine the appropriate response action. The RFI is generally equivalent to the RI portion of the Superfund process.

Reason code. A code used in the ER data validation process to indicate why a qualifier flag has been assigned to a datum.

Receptor. A person, plant, animal, or geographical location that is exposed to a chemical or physical agent released to the environment by human activities.

Recreational use scenario. Recreational use refers to current and future use scenarios in which cleanup of a PRS is completed to a level that permits the public to safely use it on an intermittent basis for activities such as hiking and camping. The standards are more stringent than they are for the industrial use scenario but not as stringent as those for residential use.

Release. Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous waste or hazardous constituents into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles that contain any hazardous substance, pollutant or contaminant.

Remediation. The process of reducing the concentration of a contaminant (or contaminants) in air, water, or soil media to a level that poses an acceptable risk to human health; the act of restoring a contaminated area to a usable condition based on specified standards.

Remedy or remedial action. Those actions consistent with permanent remedy instead of or in addition to removal actions in the event of a release or threatened release of a hazardous substance into the environment. Those actions used to prevent or minimize the release of hazardous substances so that they do not migrate to cause substantial danger to present or future public health or welfare of the environment.

Remove or removal. The cleanup or removal of released hazardous substances from the environment.

Residential use scenario. The standards for residential use are the most stringent of the three current and future use scenarios being considered by the ER Project and is the level of cleanup EPA is currently specifying for SWMUs located off the Laboratory site and for those released for non-Laboratory use.

Resource Conservation and Recovery Act (RCRA). The Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (40 CFR 60.2). In RCRA, Congress established initial directives and guidelines for EPA to regulate hazardous wastes from generation to ultimate disposal.

RCRA Hazardous Waste Facility Permit. EPA or an authorized state issues RCRA permits to regulate the storage, treatment, and disposal of hazardous waste and the hazardous component of radioactive mixed waste. See also **HSWA Module**.

Rinsate blank. See also *Equipment blank*.

Risk. A measure of a negative or undesirable impact associated with an event.

Risk assessment. A site-specific analysis of the potential adverse effects of hazardous materials that are released from a site in the absence of any control or mitigation actions. Also called a baseline risk assessment.

Risk characterization. The summarization and integration of the results of toxicity and exposure assessments into quantitative and qualitative expressions of risk. The major assumptions, scientific judgments, and sources of uncertainty related to the assessment are also presented.

Routine analysis. The analysis categories of inorganics, metals, organics, radiochemistry and high explosives as defined in the current contract laboratory statement of work.

Routine data validation. The process of reviewing analytical data relative to quantitative routine acceptance criteria. The objective of routine data validation is two-fold: one objective is to estimate the technical quality of the data relative to minimum national standards adopted by LANL ER; the other objective is to indicate to data users the technical data quality at a gross level by assigning qualifier flags to environmental data whose quality indicators do not meet acceptance criteria.

Runoff. The portion of the precipitation on a drainage area that is discharged from the area either by sheet flow or adjacent stream channels.

Run-on. Surface water flowing onto an area as a result of runoff occurring higher up on the slope.

Sample. A portion of a material (e.g., rock, soil, water, air), which, alone or in combination with other samples, is expected to be representative of the material or area from which it is taken. Samples are typically sent to a laboratory for analysis or inspection or are analyzed in the field. When referring to samples of environmental media, the term *field sample* may be used.

Sample matrix. In chemical analysis, that portion of a sample which is exclusive of the analytes of interest. Together, the matrix and analytes of interest form the sample.

Screening action level (SAL). Medium-specific concentration level for a chemical derived using conservative criteria below which it is generally assumed that there is no potential for unacceptable risk to human health. The derivation of a SAL is based on conservative exposure and land use assumptions. However, if an applicable regulatory standard exists that is less than the value derived by risk-based computations, it will be used for the SAL.

Screening assessment. A process designed to determine whether contamination detected in a particular medium at a site may present a potentially unacceptable human-health and/or ecological risk. The assessment uses screening levels that are either human-health or ecologically based concentrations derived by using chemical-specific toxicity information and standardized exposure assumptions below which no additional actions are generally warranted.

Sediment. (1) A mass of fragmented inorganic solid that comes from the weathering of rock and is carried or dropped by air, water, gravity, or ice; or a mass that is accumulated by any other natural agent and that forms in layers on the earth's surface such as sand, gravel, silt, mud, fill, or loess. (2) A solid material that is not in solution and either is distributed through the liquid or has settled out of the liquid.

Site characterization. The process of defining the pathways and methods of migration of the hazardous waste or constituents, including the media affected, the extent, direction and speed of the contaminants, complicating factors influencing movement and concentration profiles.

Site conceptual model. A qualitative or quantitative description of sources of contamination, environmental transport pathways for contamination, and biota that may be impacted by contamination (called receptors) and whose relationships describe qualitatively or quantitatively the release of contamination from the sources, the movement of contamination along the pathways to the exposure points, and the uptake of contaminant by the receptors. A site conceptual model is a three-dimensional picture of site conditions that conveys what is known or suspected about the sources, releases and release mechanisms; contaminant toxicity, mobility, and persistence; exposure pathways and potential receptors; and risks.

Soil erosion. The removal and thinning of the soil layer due to climatic and physical process such as high rainfall that is greatly accelerated by certain activities such as deforestation as after a fire.

Solid waste. Any garbage; refuse; sludge from a waste treatment plant, water-supply treatment plants, or air-pollution-control facility; and other discarded material, including solid, liquid, semisolid, or contained

gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities.

Solid waste management unit (SWMU). Any identifiable site at which solid wastes have been placed at any time, irrespective of whether the unit was intended for the management of solid or hazardous waste. Such units include any area at or around a facility at which solid wastes have been routinely and systematically stored, such as waste tanks, septic tanks, firing sites, burn pits, sumps, landfills (material disposal areas), wastewater outfall areas, canyons around the Laboratory, and contaminated areas resulting from leaking product storage tanks (including petroleum).

Stakeholder. Any party or agency, whether inside or outside the Laboratory, interested in or affected by ER Project issues and activities.

Standard operating procedure (SOP). A written document that details the method for an operation, analysis, or action with thoroughly prescribed techniques and steps, and is officially approved as the method for performing certain routine or repetitive tasks.

Stratigraphy. The science dealing with the succession, age, composition and history of strata.

Surface water. No perennial surface water flows extend completely across the Laboratory in any canyon. Periodic natural surface runoff occurs in two modes:

1. Spring snowmelt runoff that occurs over days to weeks at a low discharge rate and sediment load, and
2. Summer runoff from thunderstorms that occurs over hours at a high discharge rate and sediment load.

The surface water within the Laboratory is not a source of municipal, industrial, or irrigation water, though wildlife does use the waters.

Surrogate compound (surrogate). An organic compound used in the analyses of organic target analytes that is similar in composition and behavior to target analytes but is not normally found in field samples. Surrogates are added to every blank and spike sample to evaluate the efficiency with which analytes are recovered during extraction and analysis.

Target analyte. A chemical or parameter, the concentration, mass or magnitude of which is designed to be quantified by use of a particular test method.

Technical area. Laboratory-established administrative units for its operations. There are currently 49 active TAs spread over 43 mi^2.

Topography. The physical features of a place or region.

Trip blank. A sample of analyte-free media taken to the sampling site and returned to the analytical laboratory unopened along with samples taken in the field. Used to monitor cross contamination of samples during handling and storage both in the field and in the analytical laboratory.

Tuff. A compacted deposit of volcanic ash and dust that contains rock and mineral fragments accumulated during an eruption.

Underground storage tank (As defined in Section 9001(1) of the Solid Waste Disposal Act). The term "underground storage tank" means any one or combination of tanks (including underground pipes connected thereto) which is used to contain an accumulation of regulated substances, and the volume of which (including the volume of the underground pipes connected thereto) is 10% or more beneath the surface of the ground. This term does not include any

(A) farm or residential tank of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;

(B) tank used for string heating oil for consumptive use on the premises where stored;

(C) septic tank;

(D) pipeline facility (including gathering lines) regulated under

i) the Natural Gas Pipeline Safety Act of 1968 (49 USC App. 1671 et seq.),

ii) the Hazardous Liquid Pipeline Safety Act of 1979 (49 USC App. 2001 et seq.), or

iii) which is an intrastate pipeline facility regulated under state laws comparable to the provisions of law referred to in Clause (i) or (ii) of this subparagraph;

(E) surface impoundment, pit, pond, or lagoon,

(F) storm water or waste water collection system;

(G) flow-through process tank;

(H) liquid trap or associated gathering lines directly related to oil or gas production and gathering operations; or

(I) storage tank situated in an underground area (such as a basement, cellar, mine working, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

Unsaturated zone. The zone between the land surface and the regional water table. Generally, fluid pressure in this zone is less than atmospheric pressure, and some of the voids may contain air or other gases at atmospheric pressure. Alternatively, the unsaturated zone generally has moisture contents less than saturation.

Watershed. The region drained by, or contributing waters to, a stream, lake, or other body of water and separated from adjacent drainage areas by divides such as a ridge or summit of high ground.

Water table. The top of the saturated zone; the water level associated with an unconfined aquifer.

Welded tuff. A volcanic deposit hardened by the action of heat, pressures from overlying material, and hot gases.

Appendix A

Field Methods

A-1.0 BOREHOLE DRILLING AND SAMPLING

The following paragraphs summarize the borehole drilling and subsurface sampling that was conducted at consolidated Solid Waste Management Unit (SWMU) 53-002(a)-99 from 1999 to 2002. The field methods used to perform this work are summarized in Table A-1.0-1.

In 1999 and 2000, a total of 48 boreholes were drilled in the northern impoundments, beneath waste lines, and around the outside of the impoundments. These boreholes ranged in depth from 6.5 to 30 ft, and were drilled using a Minuteman-powered auger. The planned sample intervals inside the northern impoundments were 5–6 ft and 14–15 ft. The planned sample intervals outside the impoundments were 1–2 ft, 4–5 ft, and 14–15 ft.

In 2000, 14 boreholes were drilled in the southern impoundment at SWMU 53-002(a)-99, each to a depth of 15 ft (planned intervals were the sand layer below the liner and the tuff at depths of 1–2 ft, 4–5 ft, and 14–15 ft). These boreholes were drilled using a truck-mounted drill rig, following the removal of the sludge and liner material from the impoundment (see Appendix F for a summary of the 2000 interim action). Drilling methods followed Los Alamos National Laboratory (LANL or the Laboratory) Environmental Restoration (ER) Project Standard Operating Procedure 4.01 (LANL-ER SOP-04.01), Rev. 2, "Drilling Methods and Drill Site Management." One hundred and twenty-five samples were collected in accordance with either LANL-ER SOP-06.26, Rev. 1, "Core Barrel Sampling for Subsurface Earth Materials" or LANL-ER SOP-06.10, Rev. 0, "Hand Auger and Thin-Wall Tube Sampler." Continuous borehole logs were not recorded for these boreholes because the powered auger did not produce intact core; sample descriptions were recorded on sample collection logs.

Samples were collected from a stainless steel split-spoon hollow-stem auger which retrieved core in 2.5-ft intervals. Samples were collected at the depth intervals planned in the 1998 work plan (LANL 1998, 58841). Immediately upon separating the halves of the split-spoon core barrel, cores were screened for organic vapors using a photoionization detector (PID). The PID readings were recorded on the corresponding sample collection logs. The samples were also screened for radioactivity (for alpha radiation using a Ludlum-139 rate meter; for beta/gamma radiation using a Model ESP-1 survey instrument).

During 2002, seven boreholes were drilled at SWMU 53-002(a)-99, including three 50-ft boreholes (BH1, BH2, and BH3); three 200-ft boreholes (BH4, BH5, and BH6); and one 300-ft borehole (BH7). The boreholes were drilled using a Failing F-10 drill rig. In addition, two shallow (6 ft) auger holes, AH1 and AH2, were completed using a Bosch rotating hammer drill.

Samples were taken from the split-spoon hollow-stem auger by collecting the planned depth interval or by selecting an interval based on visual inspection of the core.

In some cases, the sample interval was adjusted to allow for collection of material from in and around fractures or clay-rich zones. PID readings of the core were taken immediately upon separating the halves of the split-spoon core barrel and recorded on the borehole log and corresponding sample collection logs. The cores were also screened for radioactivity (for alpha radiation using a Ludlum-139; for beta/gamma radiation using an ESP-1).

The desired section of core (typically a 6-in. interval) was removed from the core barrel and placed in a stainless steel bowl for transfer into sample containers. The sample material was crushed as necessary to allow it to be placed in the appropriate containers.

When volatile organic compound (VOC) samples were required, samples were collected using the EnCore sample collection system to minimize any loss of volatile compounds during the sampling process. EnCore sampling followed the manufacturer's instructions, VM-1.00, Rev. 0, "Operating Instructions for the EnCore Sampler." Field personnel completed a sample collection log and associated chain-of-custody (COC) form for each sample. Sample containers were sealed with signed COC seals and placed in coolers at approximately 4°C. Samples were packaged with preservatives, as necessary, depending upon the analytical method to be used. They were packed, handled, and shipped in accordance with LANL-ER SOP-01.03, Rev. 2, ICN 2, "Handling, Packaging, and Transporting Field Samples," and LANL-ER SOP-01.02, Rev. 1, "Sample Containers and Preservation."

Before the samples left Technical Area (TA) 53, a radiological control technician from the Laboratory's Health Physics Operations Group (HSR-1, part of the Health, Safety, and Radiation Protection Division) screened the samples and sample cooler for detectable radioactivity. Samples were transported to the Sample Management Office (SMO) in sealed coolers. SMO personnel reviewed and approved the COC forms and accepted custody of the samples. To ensure that U.S. Department of Transportation regulations were not violated, a portion of each sample was delivered to American Radiological Services, Inc., for radiological screening before the SMO shipped the samples off-site to the analytical laboratory.

Except for the shallow holes at AH1 and AH2, the drilling in 2002 produced continuous core that was logged and photographed in accordance with LANL-ER SOP-12.01, Rev. 4, "Field Logging, Handling, and Documentation of Borehole Materials." The borehole logs are provided in this report as Appendix B. In addition to showing lithologic variations and interpreted geological contacts, the logs show sample depths, results of field screening for beta/gamma radiation (using an ESP-1) and for alpha radiation (using a Ludlum-139), results of field screening for VOCs by PID, and core recovery. All of the core material that remained after samples were collected was backfilled into the borehole from which it was removed.

The split-spoon core barrel and all other sampling equipment that could have made contact with sample material were decontaminated after each 2.5-ft section was removed or after each sample was collected. Additional decontamination was performed when each borehole was completed and before the drill rig was moved to the next location, to eliminate cross-contamination between samples and borehole locations. Rinsate blank (water) samples were collected from the sampling equipment after decontamination and before the equipment was moved to the next location. These activities followed LANL-ER SOP-01.08, Rev. 1, "Field Decontamination of Drilling and Sampling Equipment," and LANL-ER SOP-01.05, Rev. 1, "Field Quality Control Samples."

Upon completion, each borehole drilled during 2002 was abandoned by backfilling it with the cuttings from that hole to 3 ft below ground surface (bgs), then bentonite clay from 3 ft to 0.5 ft bgs, and finally cement from 0.5 ft bgs to the surface. For each borehole, the cement cap was inset with a circular monument 2 in. in diameter that indicates the location ID number for that hole. Borehole locations were also surveyed as described below in "Geodetic Surveying" (section A-7.0).

A-2.0 OTHER SAMPLES

Shallow soil samples from non-borehole locations were collected with either a 3-in. stainless-steel bucket auger driven by hand, or a spade or scoop, as described in Table A-1.0-1. Cuttings from the desired depth intervals were placed in a stainless-steel collection bowl for distribution among the required sample containers. Samples to be submitted for VOC analysis were collected using the EnCore sample collection system to minimize any loss of volatile compounds during sampling.

Quality control (QC) samples were collected in conjunction with all sampling, according to LANL-ER SOP-1.05, Rev. 1, "Field Quality Control Samples". Field duplicate samples were collected at a frequency of at least 1 duplicate for each 20 samples. Field rinsate samples were collected for sampling equipment at a frequency of at least 1 rinsate for each 20 samples. All QC samples were submitted for analyses at an offsite fixed laboratory following the same procedures that were used for regular samples. Table A-1.0-1 contains more information regarding field quality control samples.

A-3.0 FIELD SCREENING OF SAMPLES

Radiological and organic vapor field screening were performed on selected samples collected during the investigation and remediation activities. Radiological screening for alpha radiation was performed with a Ludlum-139 rate meter using an air proportional probe. Radiological screening for beta/gamma radiation was performed with an Eberline ESP-1 with Geiger Mueller pancake probe. Radiological screening instruments were provided by the Laboratory's Health Physics Measurements Group (ESH-4) Radiation Instrumentation Pool, and calibration records can be obtained using the ESH-4 instrument identification numbers recorded on the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the Laboratory's Radiation Protection Plan and Health Physics Operations Group (ESH-1) procedures.

Calibration of the PID used for organic vapor screening was performed daily using a 100 parts per million (ppm) isobutylene standard, and a yearly calibration was performed by the vendor. The specific PID model used varied because malfunctioning units occasionally required replacement. The following PID models were used:

- HNU DL-101-2 with 11.7 eV lamp (Model DL2117)
- HNU PI-101 with 10.2 eV lamp (Model 101102)
- HNU PI-101 with 10.2 eV lamp (Model 101102
- OVM 580B with 10.6 eV lamp (THERMO Model 580B)

The results of field screening the samples are presented in Table A-3.0-1.

A-4.0 FIELD RADIATION SURVEY

In 1999, a gamma radiation survey was performed that covered the Sandia Canyon bench and tributary areas and Drainage Area B. Survey points were located approximately on grid spacings, modified by the relatively rugged terrain in some areas. The results of the radiation survey are presented in Tables 3.0-1, 3.0-2, and 3.0-3 in the main text of this report.

A-5.0 INSTRUMENTATION SELECTION AND CALIBRATION

The Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan (LANL 1998, 58841, p. 2-50) listed cobalt-60 as a chemical of potential concern (COPC) in the residual sludge within the impoundments, in the clay liner, and in the tuff beneath the impoundments. Cobalt-60 is an activation product that emits two prominent gamma rays that are easily detected using a gamma scintillation device. In this case, a 2 × 2 sodium iodide gamma radiation detector (Ludlum Model 44-10) was used in conjunction with a rate meter data logger (Ludlum Model 2350-1) to detect the presence of elevated gamma radiation. The gamma probe was used with a collimated lead and copper shield configuration

similar to that used at other Laboratory ER sites. The collimated shield was necessary to reduce the effects of shine from the impoundments and residual soil contamination near the survey point so that the survey point was indicative of gamma radiation levels in a circular area approximately 0.5 m in diameter with the probe at the center.

A-6.0 HEALTH AND SAFETY MONITORING

Monitoring was performed for noise levels, airborne radioactive particulates, organic volatile compounds, and airborne particulates during the 2000 and 2002 interim actions. The action levels (ALs) set for each monitoring activity followed the guidelines established by the Occupational Safety and Health Administration and by the Laboratory (e.g., 29 CFR 1926.65, 29 CFR 1910.95, 10 CFR 835, LIR 402-700-01.2). Measurements were taken on an ongoing basis over the duration of all field work. Airborne radioactive particulates, organic volatile compounds, and airborne particulates were monitored daily, and noise-level monitoring was performed when power equipment was used. The instruments used to perform the monitoring were calibrated daily.

Noise-level monitoring was performed using the Quest 2700 Noise Level Meter. The ALs set were 85 dBA for non-Laboratory employees, 84 dBA hearing protection level for Laboratory employees, and 80 dBA full-time for Laboratory employees. Noise ALs were occasionally exceeded only in close proximity to operating power equipment; all personnel working near power equipment wore hearing protection at all times when the equipment was operating.

Air monitoring consisted of dust and organic vapor monitoring using the PDM-3 Mini-ram and the HNU DL-101-2, respectively. The AL for dust was 2 mg/m^3. For organic vapor, the AL was set at 25 ppm sustained for two minutes or more. These levels were not exceeded. Calibration of this monitoring equipment was performed daily or as needed.

Health and safety monitoring proved to be protective of the workers' health. No health or safety incidents occurred, and no work time was lost. Monitoring activities did not affect the investigation results.

A-7.0 GEODETIC SURVEYING

Geodetic surveys of all sampled locations were performed using either a Trimble global positioning system (GPS) or a Wild/Leica TC 1000 total station surveying system. The GPS surveys used differential correction from an Albuquerque base station located at the New Mexico Engineering Research Institute at the University of New Mexico. For total station surveys, the control points used were stations A-5306 and A-5307 from the 1992 Laboratory-wide control network; field measurements were reduced using LisCad Plus 5.0 surveying software. Horizontal coordinates were recorded in New Mexico State Plane Grid Coordinates, 1983 North American Datum (expressed in ft). Elevations were expressed in ft above mean sea level relative to the National Geodetic Vertical Datum of 1929. Geodetic surveys were performed in accordance with LANL-ER SOP-03.11, Rev. 1, "Coordinating and Evaluating Geodetic Surveys." The results of all geodetic surveys are presented in Table A-7.0-1.

Table A-1.0-1
Description of Investigation Methods

Method	Summary
Spade-and-Scoop Collection of Soil Samples	This method is typically used for collection of shallow (i.e., approximately 0–6 in.) soil or sediment samples. The "spade-and-scoop" method involves digging a hole to the desired depth, as prescribed in the sampling and analysis plan, and collecting a discrete grab sample. The sample is typically placed in a clean stainless steel bowl for transfer into various sample containers.
Hand-Auger Sampling	This method is typically used for sampling soil or sediment at depths of less than 10–15 ft, but may in some cases be used for collecting samples of weathered or nonwelded tuff. The method involves hand-turning a stainless-steel bucket auger (typically 3–4 in. inner diameter [I.D.]), creating a vertical hole which can be advanced to the desired sample depth. When the desired depth is reached, the auger is decontaminated before advancing the hole through the sample depth. The sample material is transferred from the auger bucket to a stainless-steel sampling bowl before filling the various required sample containers.
Split-Spoon Core-Barrel Sampling	In this method, a stainless steel core barrel (typically 4-in. I.D., 2.5 ft long) is advanced using a powered drilling rig. The core barrel extracts a continuous length of soil and/or rock which can be examined as a unit. The split-spoon core barrel is a cylindrical barrel split length-wise so that the two halves can be separated to expose the core sample. Once extracted, the section of core is typically screened for radioactivity and organic vapors, photographed, and described in a geologic log. A portion of the core may then be collected as a discrete sample from the desired depth.
Handling, Packaging, and Shipping of Samples	Field team members seal and label samples before packing, and ensure that the sample containers and the containers used for transport are free of external contamination. Field team members package all samples so as to minimize the possibility of breakage during transportation. After all environmental samples are collected, packaged, and preserved, a field team member transports them to either the Sample Management Office (SMO) or an SMO-approved radiation screening laboratory under chain-of-custody. The SMO arranges for shipping of samples to analytical laboratories. The field team member must inform the SMO and/or the radiation screening laboratory coordinator when levels of radioactivity are in the action-level or limited-quantity ranges.
Sample Control and Field Documentation	The collection, screening, and transport of samples are documented on standard forms generated by the SMO. These include sample collection logs, chain-of-custody forms, and sample container labels. Collection logs are completed at the time of sample collection, and are signed by the sampler and a reviewer who verifies the logs for completeness and accuracy. Corresponding labels are initialed and applied to each sample container, and custody seals are placed around container lids or openings. Chain-of-custody forms are completed and assigned to verify that the samples are not left unattended.

Table A-1.0-1 (continued)

Method	Summary
Field Quality Control Samples	Field quality control samples are collected as directed in the Compliance Order on Consent as follows: Field Duplicate: At a frequency of 5%; collected at the same time as a regular sample and submitted for the same analyses. Equipment Rinsate Blank: At a frequency of 5%; collected by rinsing sampling equipment with deionized water, which is collected in a sample container and submitted for laboratory analysis. Trip Blanks: Required for all field events that include the collection of samples for volatile organic compound (VOC) analysis. Trip blank containers consist of certified clean sand that are opened and kept with the other sample containers during the sampling process. **Note:** Although the Consent Order requires field quality-control samples to be collected at a rate of 10%, at the time of the SWMU 53-002(a)-99 investigation (2002 and earlier) field quality control samples were generally collected at a frequency of 5%.
Field Decontamination of Drilling and Sampling Equipment	Dry decontamination is the preferred method to minimize the generation of liquid waste. Dry decontamination may include the use of a wire brush or other tool for removal of soil or other material adhering to the sampling equipment, followed by use of a commercial cleaning agent (nonacid, waxless cleaners) and paper wipes. Dry decontamination may be followed by wet decontamination if necessary. Wet decontamination may include washing with a non-phosphate detergent and water, followed by a water rinse and a second rinse with deionized water. Alternatively, steam cleaning may be used.
Containers and Preservation of Samples	Specific requirements/processes for sample containers, preservation techniques, and holding times are based on Environmental Protection Agency guidance for environmental sampling, preservation, and quality assurance. Specific requirements for each sample are printed on the sample collection logs provided by the SMO (size and type of container, i.e. glass, amber glass, polyethylene, preservative, etc.). All samples are preserved by placing in insulated containers with ice to maintain a temperature of 4°C. Other requirements such as nitric acid or other preservatives may apply to different media or analytical requests.

Table A-3.0-1
Sample Field Radiological and Organic Vapor Screening Results

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-01069	0253-95-0028	S of impoundments	0–0.5	Soil	—[b]	NDA[c]	0
53-01070	0253-95-0029	S of impoundments	0–0.5	Soil	—	NDA	0
53-01071	0253-95-0030	S of impoundments	0–0.5	Soil	—	NDA	0
53-01072	0253-95-0031	S of impoundments	0–0.5	Soil	—	NDA	0
53-01073	0253-95-0032	N of impoundments	0–0.5	Soil	—	NDA	0
53-01074	0253-95-0033	N of impoundments	0–0.5	Soil	—	NDA	0
53-01075	0253-95-0034	N of impoundments	0–0.5	Soil	—	NDA	0
53-01076	0253-95-0035	N of impoundments	0–0.5	Soil	—	NDA	0
53-01077	0253-95-0036	N of impoundments	0–0.5	Soil	—	NDA	0
53-01078	0253-95-0037	N of impoundments	0–0.5	Soil	—	NDA	0
53-01079	0253-95-0038	N of impoundments	0–0.5	Soil	—	NDA	0
53-01001	0253-95-0103	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01002	0253-95-0106	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01003	0253-95-0110	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01004	0253-95-0113	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01005	0253-95-0116	NW impoundment	1.5–2.42	Tuff	—	NDA	0
53-01006	0253-95-0119	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01007	0253-95-0122	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01008	0253-95-0126	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01009	0253-95-0129	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01010	0253-95-0132	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01011	0253-95-0135	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01012	0253-95-0138	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01013	0253-95-0142	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01014	0253-95-0145	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01015	0253-95-0148	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01016	0253-95-0151	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01017	0253-95-0154	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01288	0253-95-0155	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01289	0253-95-0156	NW impoundment	1–1.67	Tuff	—	NDA	0
53-01290	0253-95-0157	NW impoundment	0.67–1.5	Tuff	—	NDA	0
53-01291	0253-95-0158	NW impoundment	1.5–2.17	Tuff	—	NDA	0
53-01292	0253-95-0159	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01293	0253-95-0160	NW impoundment	1.5–2.17	Tuff	—	NDA	0
53-01294	0253-95-0161	NW impoundment	1.5–2.5	Tuff	—	NDA	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-01295	0253-95-0162	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01018	0253-95-0177	NW impoundment	3.5–4.83	Tuff	—	NDA	0
53-01019	0253-95-0181	NW impoundment	2.17–3	Tuff	—	NDA	0
53-01020	0253-95-0184	NW impoundment	3.67–4.5	Tuff	—	NDA	0
53-01021	0253-95-0187	NW impoundment	1.58–2.5	Tuff	—	NDA	0
53-01022	0253-95-0190	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01023	0253-95-0193	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01024	0253-95-0196	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01025	0253-95-0205	NW impoundment	1.5–2.5	Tuff	—	NDA	0
53-01026	0253-95-0208	NE impoundment	1.5–2.5	Tuff	—	NDA	0
53-01027	0253-95-0211	NE impoundment	1.5–2.5	Tuff	—	NDA	0
53-01028	0253-95-0214	NE impoundment	1.5–2.5	Tuff	—	NDA	0
53-01029	0253-95-0217	NE impoundment	1.5–2.5	Tuff	—	NDA	0
53-01030	0253-95-0220	NE impoundment	1.5–2.5	Tuff	—	NDA	0
53-01031	0253-95-0223	NE impoundment	1.5–2.5	Tuff	—	NDA	0
53-01032	0253-95-0227	NE impoundment	1.5–3	Tuff	—	NDA	0
53-01033	0253-95-0230	NE impoundment	1.5–2.5	Fill	—	NDA	0
53-01034	0253-95-0233	NE impoundment	2–3	Fill	—	NDA	0
53-01316	0253-95-0234	NE impoundment	2–3.67	Tuff	—	NDA	0
53-01317	0253-95-0236	NE impoundment	0.67–2	Tuff	—	NDA	0
53-01318	0253-95-0237	NE impoundment	1.17–2.5	Tuff	—	NDA	0
53-01319	0253-95-0238	NE impoundment	1.5–2.33	Tuff	—	NDA	0
53-01320	0253-95-0239	NE impoundment	1–2.33	Tuff	—	NDA	0
53-01321	0253-95-0241	NE impoundment	1.5–2.67	Tuff	—	NDA	0
53-01322	0253-95-0242	NE impoundment	1–2.67	Tuff	—	NDA	0
53-01323	0253-95-0243	NE impoundment	2.5–3.67	Tuff	—	NDA	0
53-01737	RE53-01-0001	Drainage	0–0.36	Fine Sand	—	—	—
53-01746	RE53-01-0002	Drainage	0.29–0.59	Very Fine Sand	—	—	—
53-01733	RE53-01-0012	Drainage	0.46–0.72	Medium Sand	—	—	—
53-01739	RE53-01-0014	Drainage	0–0.23	Fine Sand	—	—	—
53-01740	RE53-01-0015	Drainage	0–0.26	Fine Sand	—	—	—
53-01738	RE53-01-0016	Drainage	0.08–0.23	Medium Sand	—	—	—
53-01738	RE53-01-0017	Drainage	0–0.08	Fine Sand	—	—	—
53-01744	RE53-01-0018	Drainage	0.39–0.76	Very Fine Sand	—	—	—
53-01745	RE53-01-0019	Drainage	0.2–0.46	Fine Sand	—	—	—
53-01747	RE53-01-0020	Drainage	0.23–0.63	Fine Sand	—	—	—
53-01748	RE53-01-0022	Drainage	0.36–0.63	Very Fine Sand	—	—	—

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-01749	RE53-01-0023	Drainage	0–0.2	Coarse Sand	—	—	—
53-01741	RE53-01-0024	Drainage	0–0.29	Fine Sand	—	—	—
53-01742	RE53-01-0025	Drainage	0.36–0.49	Fine Sand	—	—	—
53-01743	RE53-01-0026	Drainage	0–0.13	Coarse Sand	—	—	—
53-01736	RE53-01-0045	Drainage	0–0.42	Very Fine Sand	—	—	—
53-01736	RE53-01-0046	Drainage	0.69–0.85	Fine-Medium Sand	—	—	—
53-01730	RE53-01-0047	Drainage	0–0.13	Coarse Sand	—	—	—
53-01731	RE53-01-0048	Drainage	0.39–0.69	Medium Sand	—	—	—
53-01735	RE53-01-0049	Drainage	0–0.2	Fine Sand	—	—	—
53-01733	RE53-01-0050	Drainage	0–0.33	Fine Sand	—	—	—
53-01732	RE53-01-0051	Drainage	0–0.39	Fine Sand	—	—	—
53-01734	RE53-01-0052	Drainage	0–0.59	Fine Sand	—	—	—
53-01556	RE53-98-0001	RLWT bldg. footprint	0–0.17	Soil	—	NDA	0
53-01557	RE53-98-0002	RLWT imp. footprint	0–0.17	Soil	—	NDA	0
53-01558	RE53-98-0003	RLWT imp. footprint	0–0.17	Soil	—	NDA	0
53-02-19681	RE53-02-45552	S impoundment	0.80–1.25	Pulverized Tuff	0	570	0
53-1718	RE53-00-0093	Below S liner	1–2	Tuff	0	900	0
53-1706	RE53-00-0004	S berm	2–3	Tuff	0	207	0
53-1707	RE53-00-0005	S berm	3.5–4.5	Tuff	0	237	0
53-1708	RE53-00-0006	S berm	5–6	Tuff	0	189	0
53-1709	RE53-00-0007	S berm	8–9	Tuff	0	223	0
53-1710	RE53-00-0008	S berm	6.5–7.5	Tuff	0	224	0
53-1711	RE53-00-0009	S berm	5.5–6.5	Tuff	0	202	0
53-1712	RE53-00-0010	S berm	4–5	Tuff	0	204	0
53-1713	RE53-00-0011	S berm	4–5	Tuff	0	237	0
53-1714	RE53-00-0012	S berm	3–4	Tuff	0	264	0
53-1715	RE53-00-0013	S berm	4.33–5.33	Tuff	0	182	0
53-1716	RE53-00-0040	Below S liner	0–0.5	Sand-Fill	0	1280	0
53-1716	RE53-00-0041	Below S liner	1–2	Tuff	0	746	0
53-1716	RE53-00-0042	Below S liner	4–5	Tuff	0	459	0
53-1716	RE53-00-0043	Below S liner	14–15	Tuff	0	801	0
53-1717	RE53-00-0044	Below S liner	0–0.5	Sand-Fill	0	1780	0
53-1718	RE53-00-0045	Below S liner	0–0.5	Sand-Fill	0	1470	0
53-1719	RE53-00-0046	Below S liner	0–0.5	Sand-Fill	0	788	0
53-1719	RE53-00-0047	Below S liner	1–2	Tuff	0	792	0
53-1719	RE53-00-0048	Below S liner	4–5	Tuff	0	809	0
53-1719	RE53-00-0049	Below S liner	14–15	Tuff	0	712	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1720	RE53-00-0050	Below S liner	0–0.5	Sand-Fill	0	788	0
53-1720	RE53-00-0051	Below S liner	1–2	Tuff	0	784	0
53-1720	RE53-00-0052	Below S liner	4–5	Tuff	0	800	0
53-1720	RE53-00-0053	Below S liner	14–15	Tuff	0	808	0
53-1721	RE53-00-0054	Below S liner	0–0.5	Sand-Fill	0	750	0
53-1721	RE53-00-0055	Below S liner	1–2	Tuff	0	801	0
53-1721	RE53-00-0056	Below S liner	4–5	Tuff	0	820	0
53-1721	RE53-00-0057	Below S liner	14–15	Tuff	0	708	0
53-1722	RE53-00-0058	Below S liner	0–0.5	Sand-Fill	0	834	0
53-1722	RE53-00-0059	Below S liner	1–2	Tuff	0	775	0
53-1722	RE53-00-0060	Below S liner	4–5	Tuff	0	843	0
53-1722	RE53-00-0061	Below S liner	14–15	Tuff	0	834	0
53-1723	RE53-00-0062	Below S liner	0–0.5	Sand-Fill	0	834	0
53-1723	RE53-00-0063	Below S liner	1–2	Tuff	0	750	0
53-1723	RE53-00-0064	Below S liner	4–5	Tuff	0	750	0
53-1723	RE53-00-0065	Below S liner	14–15	Tuff	0	775	0
53-1724	RE53-00-0066	Below S liner	0–0.5	Sand-Fill	0	716	0
53-1724	RE53-00-0067	Below S liner	1–2	Tuff	0	775	0
53-1724	RE53-00-0068	Below S liner	4–5	Tuff	0	700	0
53-1724	RE53-00-0069	Below S liner	14–15	Tuff	0	700	0
53-1725	RE53-00-0070	Below S liner	0–0.5	Sand-Fill	0	662	0
53-1725	RE53-00-0071	Below S liner	1–2	Tuff	0	706	0
53-1725	RE53-00-0072	Below S liner	4–5	Tuff	0	784	0
53-1725	RE53-00-0073	Below S liner	14–15	Tuff	0	806	0
53-1726	RE53-00-0074	Below S liner	0–0.5	Sand-Fill	0	628	0
53-1726	RE53-00-0075	Below S liner	1–2	Tuff	0	700	0
53-1726	RE53-00-0076	Below S liner	4–5	Tuff	0	780	0
53-1726	RE53-00-0077	Below S liner	14–15	Tuff	0	750	0
53-1727	RE53-00-0078	Below S liner	0–0.5	Sand-Fill	0	763	0
53-1727	RE53-00-0079	Below S liner	1–2	Tuff	0	840	0
53-1727	RE53-00-0080	Below S liner	4–5	Tuff	0	754	0
53-1727	RE53-00-0081	Below S liner	14–15	Tuff	0	750	0
53-1728	RE53-00-0082	Below S liner	0–0.5	Sand-Fill	0	738	0
53-1728	RE53-00-0083	Below S liner	1–2	Tuff	0	800	0
53-1728	RE53-00-0084	Below S liner	4–5	Tuff	0	746	0
53-1728	RE53-00-0085	Below S liner	14–15	Tuff	0	767	0
53-1729	RE53-00-0086	Below S liner	0–0.5	Sand-Fill	0	680	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1729	RE53-00-0087	Below S liner	1–2	Tuff	0	771	0
53-1729	RE53-00-0088	Below S liner	4–5	Tuff	0	822	0
53-1729	RE53-00-0089	Below S liner	14–15	Tuff	0	738	0
53-1717	RE53-00-0090	Below S liner	1–2	Tuff	0	948	0
53-1717	RE53-00-0091	Below S liner	4–5	Tuff	0	822	0
53-1717	RE53-00-0092	Below S liner	14–15	Tuff	0	800	0
53-1718	RE53-00-0094	Below S liner	4–5	Tuff	0	754	0
53-1718	RE53-00-0095	Below S liner	14–15	Tuff	0	674	0
53-02-19679	RE53-02-45550	S impoundment	1.0–1.5	Tuff	0	458	0
53-02-19679	RE53-02-45551	S impoundment	1.3–1.8	Tuff	0	465	0
53-02-19680	RE53-02-45552	S impoundment	0.8–1.25	Tuff	0	570	0
53-02-20824	RE53-02-46593	BH7, S impoundment	10.4–10.7	Tuff	0	387	0
53-02-20824	RE53-02-46594	BH7, S impoundment	20.0–20.5	Tuff	0	504	0
53-02-20824	RE53-02-46597	BH7, S impoundment	30.0–31.8	Tuff	0	551	0
53-02-20824	RE53-02-46598	BH7, S impoundment	40.0–40.5	Tuff	0	513	0
53-02-20824	RE53-02-46599	BH7, S impoundment	50.0–51.7	Tuff	0	492	0
53-02-20824	RE53-02-46600	BH7, S impoundment	60.0–60.5	Tuff	0	509	0
53-02-20824	RE53-02-46601	BH7, S impoundment	70.0–71.1	Tuff	0	504	0
53-02-20824	RE53-02-46602	BH7, S impoundment	80.0–80.7	Tuff	0	530	0
53-02-20824	RE53-02-46603	BH7, S impoundment	90.0–91.2	Tuff	0	652	0
53-02-20824	RE53-02-46604	BH7, S impoundment	100.0–101.2	Tuff	0	483	0
53-02-20824	RE53-02-46605	BH7, S impoundment	110.0–111.3	Tuff	0	538	0
53-02-20824	RE53-02-46606	BH7, S impoundment	120.0–120.6	Tuff	0	462	0
53-02-20824	RE53-02-46607	BH7, S impoundment	130.0–131.4	Tuff	0	538	0
53-02-20824	RE53-02-46608	BH7, S impoundment	140.0–140.5	Tuff	0	542	0
53-02-20824	RE53-02-46609	BH7, S impoundment	150.0–151.3	Tuff	0	425	0
53-02-20824	RE53-02-46610	BH7, S impoundment	160–160.5	Tuff	0	483	0
53-02-20824	RE53-02-46611	BH7, S impoundment	170.0–131.3	Tuff	0	433	0
53-02-20824	RE53-02-46612	BH7, S impoundment	180.0–180.6	Tuff	0	517	0
53-02-20824	RE53-02-46613	BH7, S impoundment	190.0–191.2	Tuff	0	483	0
53-02-20824	RE53-02-46614	BH7, S impoundment	200.0–200.5	Tuff	0	488	0
53-02-20824	RE53-02-46615	BH7, S impoundment	210.0–211.1	Tuff	0	610	0
53-02-20824	RE53-02-46616	BH7, S impoundment	219.5–220.0	Tuff	0	513	0
53-02-20824	RE53-02-46617	BH7, S impoundment	229.00–230.0	Tuff	0	475	0
53-02-20824	RE53-02-46618	BH7, S impoundment	239.5–240.0	Tuff	0	572	0
53-02-20824	RE53-02-46619	BH7, S impoundment	229.0–230.0	Tuff	0	496	0
53-02-20824	RE53-02-46620	BH7, S impoundment	254.5–255.0	Tuff	0	521	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-02-20824	RE53-02-46621	BH7, S impoundment	264.0–265.0	Tuff	0	433	0
53-02-20824	RE53-02-46622	BH7, S impoundment	274.5–275.0	Tuff	0	437	0
53-02-20824	RE53-02-46623	BH7, S impoundment	283.8–285.0	Tuff	0	454	0
53-02-20824	RE53-02-46624	BH7, S impoundment	298.3–299.0	Tuff	0	538	0
53-02-20824	RE53-02-46625	BH7, S impoundment	298.3–299.0	Tuff	0	404	0
53-02-20824	RE53-02-46626	BH7, S impoundment	100.0–101.2	Tuff	0	454	0
53-02-20824	RE53-02-46627	BH7, S impoundment	9.4–10.0	Tuff	0	446	0
53-02-20825	RE53-02-46628	BH4	19.5–20.0	Tuff	0	390	0
53-02-20825	RE53-02-46629	BH4	29.1–30.0	Tuff	0	411	0
53-02-20825	RE53-02-46630	BH4	38.0–38.5	Tuff	0	450	0
53-02-20825	RE53-02-46631	BH4	48.9–50.0	Tuff	0	476	0
53-02-20825	RE53-02-46632	BH4	59.5–60.0	Tuff	0	468	0
53-02-20825	RE53-02-46633	BH4	69.5–70.0	Tuff	0	533	0
53-02-20825	RE53-02-46634	BH4	79.5–80.0	Tuff	0	533	0
53-02-20825	RE53-02-46635	BH4	89.5–90.0	Tuff	0	541	0
53-02-20825	RE53-02-46636	BH4	99.2–100.0	Tuff	0	537	0
53-02-20825	RE53-02-46637	BH4	109.5–110.0	Tuff	0	507	0
53-02-20825	RE53-02-46638	BH4	117.5–118.2	Tuff	0	567	0
53-02-20825	RE53-02-46639	BH4	129.5–130.0	Tuff	0	572	0
53-02-20825	RE53-02-46640	BH4	139.5–140.0	Tuff	0	524	0
53-02-20825	RE53-02-46641	BH4	149.5–150.0	Tuff	0	515	0
53-02-20825	RE53-02-46642	BH4	159.5–160.0	Tuff	0	563	0
53-02-20825	RE53-02-46643	BH4	169.5–170.0	Tuff	0	550	0
53-02-20825	RE53-02-46644	BH4	179.5–180.0	Tuff	0	507	0
53-02-20825	RE53-02-46645	BH4	189.5–190.0	Tuff	0	615	0
53-02-20825	RE53-02-46646	BH4	199.5–200.0	Tuff	0	602	0
53-02-20825	RE53-02-46647	BH4	48.9–50	Tuff	0	394	0
53-02-20825	RE53-02-46649	BH4	9.5–10.0	Tuff	0	450	0
53-02-20826	RE53-02-46650	BH5	19.5–20.0	Tuff	0	416	0
53-02-20826	RE53-02-46651	BH5	29.0–30.0	Tuff	0	395	0
53-02-20826	RE53-02-46652	BH5	39.5–40.0	Tuff	0	496	0
53-02-20826	RE53-02-46653	BH5	48.6–50.0	Tuff	0	416	1.0
53-02-20826	RE53-02-46654	BH5	59.5–60.0	Tuff	0	496	0
53-02-20826	RE53-02-46655	BH5	69.5–70.0	Tuff	0	462	0
53-02-20826	RE53-02-46656	BH5	79.4–80.0	Tuff	0	605	0
53-02-20826	RE53-02-46657	BH5	89.5–90.0	Tuff	0	425	0
53-02-20826	RE53-02-46658	BH5	99.2–100.0	Tuff	0	479	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-02-20826	RE53-02-46659	BH5	109.5–110	Tuff	0	517	0
53-02-20826	RE53-02-46660	BH5	119.5–120.0	Tuff	0	534	0
53-02-20826	RE53-02-46661	BH5	129.5–130.0	Tuff	0	551	0.4
53-02-20826	RE53-02-46662	BH5	139.5–140.0	Tuff	0	605	0.3
53-02-20826	RE53-02-46663	BH5	149.5–150.0	Tuff	0	534	0
53-02-20826	RE53-02-46664	BH5	159.5–160.0	Tuff	0	552	0
53-02-20826	RE53-02-46665	BH5	169.5–170.0	Tuff	0	552	0
53-02-20826	RE53-02-46666	BH5	179.5–180.0	Tuff	0	494	—
53-02-20826	RE53-02-46667	BH5	189.5–190.0	Tuff	0	437	0
53-02-20826	RE53-02-46668	BH5	199.5–200.0	Tuff	0	437	0
53-02-20826	RE53-02-46669	BH5	48.6–50.0	Tuff	0	496	1.0
53-02-20826	RE53-02-46671	BH5	9.5–10.0	Tuff	0	467	0
53-02-20827	RE53-02-46672	BH6	19.5–20.0	Tuff	0	408	0
53-02-20827	RE53-02-46673	BH6	29.0–30.0	Tuff	0	492	0
53-02-20827	RE53-02-46674	BH6	39.5–40.0	Tuff	0	488	0
53-02-20827	RE53-02-46675	BH6	49.0–50.0	Tuff	0	538	0
53-02-20827	RE53-02-46676	BH6	59.5–60.0	Tuff	0	521	0
53-02-20827	RE53-02-46677	BH6	69.4–70.0	Tuff	0	500	0
53-02-20827	RE53-02-46678	BH6	79.5–80.0	Tuff	0	551	0
53-02-20827	RE53-02-46679	BH6	89.5–90.0	Tuff	0	416	0
53-02-20827	RE53-02-46680	BH6	98.4–100.0	Tuff	0	395	0
53-02-20827	RE53-02-46681	BH6	109.5–110.0	Tuff	0	446	0
53-02-20827	RE53-02-46682	BH6	119.5–120.0	Tuff	0	639	0
53-02-20827	RE53-02-46683	BH6	129.5–130.0	Tuff	0	589	0
53-02-20827	RE53-02-46684	BH6	139.5–140.0	Tuff	0	496	0
53-02-20827	RE53-02-46685	BH6	149.5–150.0	Tuff	0	462	0
53-02-20827	RE53-02-46686	BH6	159.5–160.0	Tuff	0	525	0
53-02-20827	RE53-02-46687	BH6	169.5–170.0	Tuff	0	496	0
53-02-20827	RE53-02-46688	BH6	179.5–180.0	Tuff	0	517	0
53-02-20827	RE53-02-46689	BH6	189.5–190.0	Tuff	0	580	0
53-02-20827	RE53-02-46690	BH6	199.5–200.0	Tuff	0	467	0
53-02-20827	RE53-02-46691	BH6	98.4–100.0	Tuff	0	568	0
53-02-20827	RE53-02-46697	BH6	64.0–65.0	Tuff	0	429	0
53-02-20827	RE53-02-46698	BH6	101.6–102.5	Tuff	0	425	0
53-02-20827	RE53-02-46700	BH6	1.8–2.5	Fill	0	467	0
53-02-20826	RE53-02-46705	BH5	0–0.5	Tuff	0	450	0
53-02-20828	RE53-02-46706	BH2, NW impoundment	29.0–30.0	Tuff	0	554	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-02-20828	RE53-02-46707	BH2, NW impoundment	48.5–50.0	Tuff	0	429	0
53-02-20828	RE53-02-46708	BH2, NW impoundment	48.5–50.0	Tuff	0	537	0
53-02-20828	RE53-02-46709	BH2, NW impoundment	0–0.8	Fill	0	442	0
53-02-20829	RE53-02-46710	BH1, NE impoundment	24.0–25.0	Tuff	0	476	0
53-02-20829	RE53-02-46711	BH1, NE impoundment	49.2–50.0	Tuff	0	450	0
53-02-20829	RE53-02-46712	BH1, NE impoundment	0–0.8	Fill	0	455	0
53-02-20829	RE53-02-46713	BH1, NE impoundment	0.3–0.8	Tuff	0	492	0
53-02-20830	RE53-02-46714	BH3	28.9–30.0	Tuff	0	496	0
53-02-20830	RE53-02-46715	BH3	49.5–50.0	Tuff	0	488	0
53-02-20830	RE53-02-46718	BH3	36.7–37.5	Tuff	0	420	0
53-02-20829	RE53-02-46723	BH1, NE impoundment	0–0.5	Tuff	0	424	1.0
53-02-20831	RE53-02-46724	AH1	5.1–5.5	Tuff	0	481	0
53-02-20831	RE53-02-46725	AH1	0–0.5	Tuff	0	463	0.2
53-02-20832	RE53-02-46726	AH2	5.2–5.9	Tuff	0	515	0.1
53-02-20832	RE53-02-46730	AH2	0–0.5	Tuff	0	372	0.2
53-02-20839	RE53-02-46731	NE impoundment	0–0.5	Tuff	0	381	0.2
53-02-20833	RE53-02-46732	NW impoundment	0–0.5	Tuff	0	524	0
53-02-20834	RE53-02-46733	NW impoundment	0–0.5	Tuff	0	498	0.4
53-02-20835	RE53-02-46734	NW impoundment	0–0.4	Tuff	0	468	0
53-02-20836	RE53-02-46735	NW impoundment	0–0.5	Tuff	0	498	0
53-02-20837	RE53-02-46736	NW impoundment	0–0.3	Tuff	0	615	0
53-02-20838	RE53-02-46737	NE impoundment	0–0.5	Tuff	0	489	0.2
53-02-20839	RE53-02-46738	NE impoundment	0–0.5	Tuff	0	450	0
53-02-20840	RE53-02-46739	NE impoundment	0–0.5	Tuff	0	511	0
53-02-20841	RE53-02-46740	NE impoundment	0–0.5	Tuff	0	563	0
53-02-20842	RE53-02-46741	NE impoundment	0–0.5	Fill	0	537	0
53-02-20843	RE53-02-46742	S impoundment	0–0.4	Fill	0	398	0
53-02-20844	RE53-02-46743	S impoundment	0–0.4	Fill	0	645	0
53-02-20845	RE53-02-46744	S impoundment	0–0.5	Tuff	0	442	0
53-02-20846	RE53-02-46745	Outfall	0–0.3	Tuff	0	546	0
53-01744	RE53-02-49303	Drainage Area C	0.75–1.4	Sediment	—	—	—
53-01746	RE53-02-49304	Drainage Area C	0–0.30	Sediment	—	—	—
53-01747	RE53-02-49305	Drainage Area C	0.62–1.02	Sediment	—	—	—
53-02-21057	RE53-02-49306	Drainage Area C	0–0.26	Sediment	—	—	—
53-02-21058	RE53-02-49307	Drainage Area C	0.33–0.66	Sediment	—	—	—
53-01748	RE53-02-49308	Drainage Area C	0–0.23	Sediment	—	—	—
53-01748	RE53-02-49309	Drainage Area C	0.62–0.92	Sediment	—	—	—

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-01732	RE53-02-49310	Drainage Area D	0.39–0.56	Sediment	—	—	—
53-01733	RE53-02-49311	Drainage Area D	0.72–0.85	Sediment	—	—	—
53-02-21063	RE53-02-49312	Drainage Area D	0–1.02	Sediment	—	—	—
53-02-21063	RE53-02-49313	Drainage Area D	1.02–1.44	Sediment	—	—	—
53-02-21065	RE53-02-49314	Drainage Area D	0–0.30	Sediment	—	—	—
53-02-21066	RE53-02-49315	Drainage Area D	0.07–0.36	Sediment	—	—	—
53-02-21066	RE53-02-49316	Drainage Area D	0.36–0.66	Sediment	—	—	—
53-01735	RE53-02-49317	Drainage Area D	0.20–0.59	Sediment	—	—	—
53-01735	RE53-02-49318	Drainage Area D	1.21–1.71	Sediment	—	—	—
53-01736	RE53-02-49319	Drainage Area D	0.98–1.38	Sediment	—	—	—
53-01737	RE53-02-49320	Drainage Area E	0.36–0.66	Sediment	—	—	—
53-01738	RE53-02-49321	Drainage Area E	0.23–0.36	Sediment	—	—	—
53-02-21073	RE53-02-49322	Drainage Area E	0–0.26	Sediment	—	—	—
53-02-21074	RE53-02-49323	Drainage Area E	0–0.26	Sediment	—	—	—
53-01740	RE53-02-49324	Drainage Area E	0.26–0.95	Sediment	—	—	—
53-01741	RE53-02-49325	Drainage Area E	0.30–0.59	Sediment	—	—	—
53-02-21077	RE53-02-49326	Drainage Area E	0–0.33	Sediment	—	—	—
53-02-21074	RE53-02-49339	Drainage Area E	0–0.26	Sediment	—	—	—
53-01741	RE53-02-49340	Drainage Area E	0.30–0.59	Sediment	—	—	—
53-1559	RE53-99-0001	Around impoundments	7.5–8.5	Sand	0	—	0
53-1560	RE53-99-0002	Around impoundments	3.5–4.5	Sand	0	—	0
53-1561	RE53-99-0003	Around impoundments	15.0–15.5	Grav	0	—	0
53-1563	RE53-99-0004	Around impoundments	0–1	Fill	0	385	0
53-1563	RE53-99-0005	Around impoundments	1–2	Fill	0	494	0
53-1561	RE53-99-0006	Around impoundments	2–3	Tuff	0	400	0
53-1562	RE53-99-0007	Around impoundments	0–1	Fill	0	381	0
53-1562	RE53-99-0008	Around impoundments	1–2	Fill	0	435	0
53-1560	RE53-99-0009	Around impoundments	2–3	Tuff	0	503	0
53-1569	RE53-99-0010	Around impoundments	2–3	Tuff	0	391	0
53-1565	RE53-99-0013	NW impoundment	0–0.5	Sludge	0	801	0
53-1565	RE53-99-0014	NW impoundment	0.5–0.67	Clay Liner	0	751	0
53-1565	RE53-99-0015	NW impoundment	1–2	Tuff	0	734	0
53-1566	RE53-99-0016	NW impoundment	0–0.33	Sludge	0	730	0
53-1566	RE53-99-0017	NW impoundment	0.33–0.67	Clay Liner	0	486	0
53-1566	RE53-99-0018	NW impoundment	1–2	Tuff	0	580	0
53-1567	RE53-99-0019	NW impoundment	0–0.33	Sludge	0	2970	0
53-1567	RE53-99-0020	NW impoundment	0.33–0.67	Clay Liner	0	—	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1567	RE53-99-0021	NW impoundment	1–2	Tuff	0	2470	0
53-1568	RE53-99-0022	NW impoundment	0–0.33	Sludge	0	6540	0
53-1568	RE53-99-0023	NW impoundment	0.33–0.83	Clay Liner	0	3930	0
53-1568	RE53-99-0024	NW impoundment	1–2	Tuff	0	3630	0
53-1569	RE53-99-0025	NW impoundment	0–0.33	Sludge	0	5310	0
53-1569	RE53-99-0026	NW impoundment	0.33–0.67	Clay Liner	0	3580	0
53-1569	RE53-99-0027	NW impoundment	1–2	Tuff	—	—	—
53-1570	RE53-99-0028	NW impoundment	0–0.33	Sludge	0	1390	0
53-1570	RE53-99-0029	NW impoundment	0.33–0.67	Clay Liner	0	1660	0
53-1570	RE53-99-0030	NW impoundment	1–2	Tuff	—	—	—
53-1571	RE53-99-0031	NW impoundment	0–0.33	Sludge	0	608	0
53-1571	RE53-99-0032	NW impoundment	0.33–0.67	Clay Liner	0	649	0
53-1571	RE53-99-0033	NW impoundment	1–2	Tuff	0	643	0
53-1572	RE53-99-0034	NW impoundment	0–0.33	Sludge	0	862	0
53-1572	RE53-99-0035	NW impoundment	0.33–0.67	Clay Liner	0	962	0
53-1572	RE53-99-0036	NW impoundment	1–2	Tuff	0	656	0
53-1573	RE53-99-0037	NW impoundment	0–0.33	Sludge	0	890	0
53-1573	RE53-99-0038	NW impoundment	0.33–0.67	Clay Liner	—	692	0
53-1573	RE53-99-0039	NW impoundment	1–2	Tuff	—	760	0
53-1573	RE53-99-0040	NW impoundment	1–2	Tuff	—	760	0
53-1574	RE53-99-0041	NW impoundment	0–0.33	Sludge	—	916	0
53-1574	RE53-99-0042	NW impoundment	0–0.33	Sludge	—	916	0
53-1574	RE53-99-0043	NW impoundment	0.33–0.67	Clay Liner	—	820	0
53-1574	RE53-99-0044	NW impoundment	1–2	Tuff	—	729	0
53-1579	RE53-99-0045	NW impoundment	0–0.33	Sludge	0	6430	0
53-1579	RE53-99-0046	NW impoundment	0.33–0.67	Clay Liner	0	4250	0
53-1579	RE53-99-0047	NW impoundment	1–2	Tuff	0	3590	0
53-1580	RE53-99-0048	NW impoundment	0–0.33	Sludge	0	1580	0
53-1580	RE53-99-0049	NW impoundment	0.33–0.67	Clay Liner	0	1450	0
53-1580	RE53-99-0050	NW impoundment	1–2	Tuff	0	1270	0
53-1581	RE53-99-0051	NW impoundment	0–0.33	Sludge	0	1280	0
53-1581	RE53-99-0052	NW impoundment	0.33–0.67	Clay Liner	0	1070	0
53-1581	RE53-99-0053	NW impoundment	1–2	Tuff	0	1020	0
53-1599	RE53-99-0054	NW impoundment	0–0.33	Sludge	0	1010	0
53-1599	RE53-99-0055	NW impoundment	0.33–0.67	Clay Liner	0	835	0
53-1599	RE53-99-0056	NW impoundment	1–2	Tuff	0	924	0
53-1575	RE53-99-0057	NW impoundment	0–0.33	Sludge	0	2710	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1575	RE53-99-0058	NW impoundment	0.33–0.67	Clay Liner	0	2470	0
53-1575	RE53-99-0059	NW impoundment	1–2	Tuff	0	2210	0
53-1576	RE53-99-0060	NW impoundment	0–0.33	Sludge	0	6470	0
53-1576	RE53-99-0061	NW impoundment	0.33–0.67	Clay Liner	0	2050	0
53-1576	RE53-99-0062	NW impoundment	1–2	Tuff	0	1710	0
53-1577	RE53-99-0063	NW impoundment	0–0.33	Sludge	0	4820	0
53-1577	RE53-99-0064	NW impoundment	0.33–0.67	Clay Liner	0	1850	0
53-1577	RE53-99-0065	NW impoundment	1–2	Tuff	0	1680	0
53-1585	RE53-99-0066	NE impoundment	0–0.33	Sludge	0	1270	0
53-1585	RE53-99-0067	NE impoundment	0–0.33	Sludge	0	1270	0
53-1585	RE53-99-0068	NE impoundment	0.33–0.67	Clay Liner	0	943	0
53-1585	RE53-99-0069	NE impoundment	1–2	Tuff	0	935	0
53-1584	RE53-99-0070	NE impoundment	0–0.33	Sludge	0	1300	0
53-1584	RE53-99-0071	NE impoundment	0.33–0.67	Clay Liner	0	985	0
53-1584	RE53-99-0072	NE impoundment	1–2	Tuff	0	922	0
53-1584	RE53-99-0073	NE impoundment	1–2	Tuff	0	922	0
53-1583	RE53-99-0074	NE impoundment	0–0.33	Sludge	0	1980	0
53-1583	RE53-99-0075	NE impoundment	0.33–0.67	Clay Liner	0	910	0
53-1583	RE53-99-0076	NE impoundment	0.33–0.67	Clay Liner	0	910	0
53-1583	RE53-99-0077	NE impoundment	1–2	Tuff	0	960	0
53-1582	RE53-99-0078	NE impoundment	0–0.33	Sludge	0	1940	0
53-1582	RE53-99-0079	NE impoundment	0.33–0.67	Clay Liner	0	872	0
53-1582	RE53-99-0080	NE impoundment	1–2	Tuff	0	856	0
53-1590	RE53-99-0081	NE impoundment	0–0.33	Sludge	0	1080	0
53-1590	RE53-99-0082	NE impoundment	0.33–0.67	Clay Liner	0	877	0
53-1590	RE53-99-0083	NE impoundment	1–2	Tuff	0	847	0
53-1589	RE53-99-0084	NE impoundment	0–0.33	Sludge	0	1220	0
53-1589	RE53-99-0085	NE impoundment	0.33–0.67	Clay Liner	0	791	0
53-1589	RE53-99-0086	NE impoundment	1–2	Tuff	0	852	0
53-1587	RE53-99-0087	NE impoundment	0–0.33	Sludge	0	945	0
53-1587	RE53-99-0088	NE impoundment	0.33–0.67	Clay Liner	0	771	0
53-1587	RE53-99-0089	NE impoundment	1–2	Tuff	0	773	0
53-1586	RE53-99-0090	NE impoundment	0–0.33	Sludge	0	1100	0
53-1586	RE53-99-0091	NE impoundment	0.33–0.67	Clay Liner	0	796	0
53-1586	RE53-99-0092	NE impoundment	1–2	Tuff	0	866	0
53-1588	RE53-99-0093	NE impoundment	0–0.33	Sludge	0	854	0
53-1588	RE53-99-0094	NE impoundment	0.33–0.67	Clay Liner	0	712	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1588	RE53-99-0095	NE impoundment	1–2	Tuff	0	742	0
53-1594	RE53-99-0096	NE impoundment	0–0.33	Sludge	0	1490	0
53-1594	RE53-99-0097	NE impoundment	0.33–0.67	Clay Liner	0	852	0
53-1594	RE53-99-0098	NE impoundment	1–2	Tuff	0	895	0
53-1593	RE53-99-0099	NE impoundment	0–0.33	Sludge	0	827	0
53-1593	RE53-99-0100	NE impoundment	0.33–0.67	Clay Liner	0	719	0
53-1593	RE53-99-0101	NE impoundment	1–2	Tuff	0	681	0
53-1592	RE53-99-0102	NE impoundment	0–0.33	Sludge	0	1310	0
53-1592	RE53-99-0103	NE impoundment	0.33–0.67	Clay Liner	0	987	0
53-1592	RE53-99-0104	NE impoundment	1–2	Tuff	0	937	0
53-1591	RE53-99-0105	NE impoundment	0–0.33	Sludge	0	985	0
53-1591	RE53-99-0106	NE impoundment	0.33–0.67	Clay Liner	0	721	0
53-1591	RE53-99-0107	NE impoundment	1–2	Tuff	0	808	0
53-1598	RE53-99-0108	NE impoundment	0–0.33	Sludge	0	1040	0
53-1598	RE53-99-0109	NE impoundment	0.33–0.67	Clay Liner	0	785	0
53-1598	RE53-99-0110	NE impoundment	1–2	Tuff	0	698	0
53-1597	RE53-99-0111	NE impoundment	0–0.33	Sludge	0	1310	0
53-1597	RE53-99-0112	NE impoundment	0.33–0.67	Clay Liner	0	744	0
53-1597	RE53-99-0113	NE impoundment	1–2	Tuff	0	717	0
53-1573	RE53-99-0115	NW impoundment	4–5	Tuff	0	742	0
53-1573	RE53-99-0116	NW impoundment	14–15	Tuff	0	NDA	0
53-1575	RE53-99-0117	NW impoundment	4–5	Tuff	0	2030	0
53-1575	RE53-99-0118	NW impoundment	14–15	Tuff	0	2140	0
53-1576	RE53-99-0119	NW impoundment	4–5	Tuff	0	1780	0
53-1576	RE53-99-0120	NW impoundment	14–15	Tuff	0	1610	0
53-1577	RE53-99-0121	NW impoundment	4–5	Tuff	0	1760	0
53-1577	RE53-99-0122	NW impoundment	14–15	Tuff	0	1760	0
53-1584	RE53-99-0123	NE impoundment	4–5	Tuff	0	916	0
53-1584	RE53-99-0124	NE impoundment	14–15	Tuff	0	931	0
53-1582	RE53-99-0125	NE impoundment	4–5	Tuff	0	982	0
53-1582	RE53-99-0126	NE impoundment	14–15	Tuff	0	881	0
53-1582	RE53-99-0127	NE impoundment	14–15	Tuff	0	881	0
53-1589	RE53-99-0128	NE impoundment	4–5	Tuff	0	779	0
53-1589	RE53-99-0129	NE impoundment	14–15	Tuff	0	841	0
53-1567	RE53-99-0130	NW impoundment	4–5	Tuff	0	872	0
53-1567	RE53-99-0131	NW impoundment	14–15	Tuff	0	793	0
53-1586	RE53-99-0132	NE impoundment	4–5	Tuff	0	877	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1586	RE53-99-0133	NE impoundment	14–15	Tuff	0	955	0
53-1588	RE53-99-0134	NE impoundment	4–5	Tuff	0	1060	0
53-1588	RE53-99-0135	NE impoundment	14–15	Tuff	0	1020	0
53-1594	RE53-99-0136	NE impoundment	4–5	Tuff	0	793	0
53-1594	RE53-99-0137	NE impoundment	14–15	Tuff	0	702	0
53-1593	RE53-99-0138	NE impoundment	4–5	Tuff, Mixed Soil	0	1050	0
53-1593	RE53-99-0139	NE impoundment	14–15	Tuff	0	999	0
53-1592	RE53-99-0140	NE impoundment	4–5	Tuff	0	1030	0
53-1592	RE53-99-0141	NE impoundment	14–15	Tuff	0	1020	0
53-1598	RE53-99-0142	NE impoundment	4–5	Tuff	0	870	0
53-1598	RE53-99-0143	NE impoundment	14–15	Tuff	0	825	0
53-1597	RE53-99-0144	NE impoundment	4–5	Tuff	0	735	0
53-1597	RE53-99-0145	NE impoundment	14–15	Tuff	0	775	0
53-1596	RE53-99-0146	NE impoundment	4–5	Tuff	0	771	0
53-1596	RE53-99-0147	NE impoundment	14–15	Tuff	0	775	0
53-1595	RE53-99-0148	NE impoundment	4–5	Tuff	0	779	0
53-1595	RE53-99-0149	NE impoundment	14–15	Tuff	0	779	0
53-1593	RE53-99-0158	NE impoundment	N/A	Sand	0	0	0
53-1592	RE53-99-0159	NE impoundment	N/A	Sand	0	0	0
53-1642	RE53-99-0163	Sandia Tributary	0–0.5	Crushed Tuff	—	200	0
53-1643	RE53-99-0164	Sandia Tributary	0–3	Silty Soil	—	269	0
53-1644	RE53-99-0165	Sandia Tributary	0–0.5	Silty Soil	—	206	0
53-1645	RE53-99-0166	Sandia Tributary	0–0.5	Weathered Tuff	—	248	0
53-1646	RE53-99-0167	Sandia Tributary	0–0.5	Silty Soil	—	193	0
53-1647	RE53-99-0168	Sandia Tributary	0–0.5	Silty Soil	—	206	0
53-1648	RE53-99-0169	Sandia Tributary	0–0.5	Silty Soil	—	261	0
53-1649	RE53-99-0170	Sandia Tributary	0–0.5	Silty Soil	—	215	0
53-1650	RE53-99-0171	Sandia Tributary	0–0.5	Weathered Tuff	—	228	0
53-1651	RE53-99-0172	Sandia Tributary	0–0.5	Silty Soil	—	200	0
53-1651	RE53-99-0173	Sandia Tributary	0–0.5	Silty Soil	—	200	0
53-1651	RE53-99-0174	Sandia Tributary	0.5–0.67	Soil	—	—	0
53-1645	RE53-99-0175	Sandia Tributary	1.0–1.33	Soil	—	—	—
53-1648	RE53-99-0176	Sandia Tributary	0.67–1.0	Soil	—	—	—
53-1646	RE53-99-0177	Sandia Tributary	0.58–0.92	Soil	—	—	—
53-1644	RE53-99-0178	Sandia Tributary	0.67–1.0	Soil	—	—	—
53-1642	RE53-99-0179	Sandia Tributary	4.5–5.0	Soil	—	—	—
53-1652	RE53-99-0180	Sandia Tributary	0–0.5	Organic Matter	—	—	—

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1652	RE53-99-0181	Sandia Tributary	0.67–1.0	Tuff	—	—	—
53-1653	RE53-99-0182	Sandia Tributary	0–0.5	Organic Matter	—	—	—
53-1639	RE53-99-0183	Drainage Area A	0–0.33	Organic Matter	0	444	0
53-1640	RE53-99-0184	Drainage Area A	0–0.33	Organic Matter	0	486	0
53-1641	RE53-99-0185	Drainage Area A	0–0.33	Organic Matter	0	461	0
53-1595	RE53-99-0187	NE impoundment	0–0.33	Sludge	0	1040	0
53-1595	RE53-99-0188	NE impoundment	0.33–0.67	Clay Liner	0	737	0
53-1595	RE53-99-0189	NE impoundment	1–2	Tuff	0	742	0
53-1596	RE53-99-0190	NE impoundment	0–0.33	Sludge	0	1180	0
53-1596	RE53-99-0191	NE impoundment	0.33–0.67	Clay Liner	0	735	0
53-1596	RE53-99-0192	NE impoundment	1–2	Tuff	0	760	0
53-1631	RE53-99-0210	Drainage Area B	0–0.5	Organic Matter	0	839	0
53-1631	RE53-99-0211	Drainage Area B	0.67–1.67	Tuff	0	916	0
53-1632	RE53-99-0212	Drainage Area B	0–0.33	Organic Matter	0	1090	0
53-1633	RE53-99-0213	Drainage Area B	0–0.5	Organic Matter	0	374	0
53-1634	RE53-99-0214	Drainage Area B	0–0.5	Organic Matter	0	920	0
53-1634	RE53-99-0215	Drainage Area B	0.67–1.67	Tuff	0	785	0
53-1624	RE53-99-0216	Drainage Area B	0–0.5	Soil	0	511	0
53-1624	RE53-99-0217	Drainage Area B	0.5–1.0	Tuff	0	559	0
53-1626	RE53-99-0218	Drainage Area B	0–0.5	Soil	0	744	0
53-1626	RE53-99-0219	Drainage Area B	.05–0.83	Tuff	0	644	0
53-1626	RE53-99-0220	Drainage Area B	0.83–1.5	Tuff	0	567	0
53-1635	RE53-99-0221	Drainage Area B	0–0.5	Organic Matter	0	1170	0
53-1635	RE53-99-0222	Drainage Area B	0.5–1.33	Organic Matter	0	1150	0
53-1635	RE53-99-0223	Drainage Area B	1.33–2.5	Tuff	0	1130	0
53-1636	RE53-99-0224	Drainage Area B	0–0.33	Organic Matter	0	1220	0
53-1637	RE53-99-0225	Drainage Area B	0–0.5	Organic Matter	0	850	0
53-1638	RE53-99-0226	Drainage Area B	0–3	Organic Matter	0	1070	0
53-1690	RE53-99-0227	Around impoundments	4.5–6.0	Tuff	—	—	—
53-1690	RE53-99-0228	Around impoundments	6.0–7.5	Sludge/Soil	—	—	—
53-1690	RE53-99-0229	Around impoundments	7.5–9.0	Clay Liner	—	—	—
53-1654	RE53-99-0230	Pipes	7–8	Tuff	0	318	0
53-1654	RE53-99-0231	Pipes	12–13	Tuff	0	228	0
53-1654	RE53-99-0232	Pipes	19–20	Tuff	0	282	0
53-1655	RE53-99-0233	Around impoundments	10–12	Tuff	0	295	0
53-1655	RE53-99-0234	Around impoundments	14–15	Red Clay	0	268	0
53-1655	RE53-99-0235	Around Impoundments	24–25	Tuff	0	347	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1656	RE53-99-0236	Pipes	9–10	Tuff	0	361	0
53-1656	RE53-99-0237	Pipes	13–14	Tuff	0	318	0
53-1656	RE53-99-0238	Pipes	24–25	Tuff	0	347	0
53-1657	RE53-99-0239	Pipes	9–10	Tuff	0	324	0
53-1657	RE53-99-0240	Pipes	13–14	Tuff	0	339	0
53-1657	RE53-99-0241	Pipes	24–25	Tuff	0	345	0
53-1658	RE53-99-0242	Pipes	9–10	Tuff	0	372	0
53-1658	RE53-99-0243	Pipes	13–14	Tuff	0	349	0
53-1658	RE53-99-0244	Pipes	24–25	Tuff	0	351	0
53-1586	RE53-99-0245	NE impoundment	4–5	Tuff	0	810	0
53-1568	RE53-99-0246	NW impoundment	14–15	Tuff	0	798	0
53-1664	RE53-99-0247	Around impoundments	1–2	Soil	0	315	0
53-1664	RE53-99-0248	Around impoundments	4–5	Tuff	0	357	0
53-1664	RE53-99-0249	Around impoundments	14–15	Tuff	0	349	0
53-1681	RE53-99-0250	Around impoundments	1–2	Soil	0	316	0
53-1681	RE53-99-0251	Around impoundments	4–5	Tuff	0	395	0
53-1681	RE53-99-0252	Around impoundments	14–15	Tuff	0	380	0
53-1682	RE53-99-0253	Around impoundments	1–2	Soil	0	444	0
53-1682	RE53-99-0254	Around impoundments	4–5	Tuff	0	353	0
53-1682	RE53-99-0255	Around impoundments	14–15	Tuff	0	428	0
53-1683	RE53-99-0256	Around impoundments	1–2	Soil	0	390	0
53-1683	RE53-99-0257	Around impoundments	4–5	Tuff	0	426	0
53-1683	RE53-99-0258	Around impoundments	14–15	Tuff	0	432	0
53-1684	RE53-99-0259	Around impoundments	1–2	Soil	0	305	0
53-1684	RE53-99-0260	Around impoundments	4–5	Tuff	0	347	0
53-1684	RE53-99-0261	Around impoundments	14–15	Tuff	0	326	0
53-1685	RE53-99-0262	Around impoundments	1–2	Soil	0	322	0
53-1685	RE53-99-0263	Around impoundments	4–5	Tuff	0	303	0
53-1685	RE53-99-0264	Around impoundments	14–15	Tuff	0	316	0
53-1686	RE53-99-0265	Around impoundments	1–2	Soil	0	359	0
53-1686	RE53-99-0266	Around impoundments	4–5	Tuff	0	359	0
53-1686	RE53-99-0267	Around impoundments	14–15	Tuff	0	407	0
53-1687	RE53-99-0268	Around impoundments	1–2	Soil	0	330	0
53-1687	RE53-99-0269	Around impoundments	4–5	Tuff	0	343	0
53-1687	RE53-99-0270	Around impoundments	14–15	Tuff	0	303	0
53-1688	RE53-99-0271	Around impoundments	1–2	Soil	0	307	0
53-1688	RE53-99-0272	Around impoundments	4–5	Tuff	0	249	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1688	RE53-99-0273	Around impoundments	14–15	Tuff	0	336	0
53-1688	RE53-99-0274	Around impoundments	1–2	Soil	0	307	0
53-1688	RE53-99-0275	Around impoundments	4–5	Tuff	0	249	0
53-1688	RE53-99-0276	Around impoundments	14–15	Tuff	0	336	0
53-1689	RE53-99-0277	Around impoundments	16–17	Tuff	0	372	0
53-1689	RE53-99-0278	Around impoundments	19–20	Tuff	0	426	0
53-1689	RE53-99-0279	Around impoundments	29–30	Tuff	0	330	0
53-1659	RE53-99-0280	Pipes	9–10	Tuff	0	339	0
53-1659	RE53-99-0281	Pipes	13–14	Tuff	0	355	0
53-1659	RE53-99-0282	Pipes	24–25	Tuff	0	355	0
53-1661	RE53-99-0283	Pipes	9–10	Tuff	0	343	0
53-1661	RE53-99-0284	Pipes	13–14	Tuff	0	351	0
53-1661	RE53-99-0285	Pipes	24–25	Tuff	0	320	0
53-1660	RE53-99-0286	Pipes	9–10	Tuff	0	314	0
53-1660	RE53-99-0287	Pipes	13–14	Tuff	0	380	0
53-1660	RE53-99-0288	Pipes	24–25	Tuff	0	395	0
53-1662	RE53-99-0289	Pipes	9–10	Tuff	0	358	0
53-1662	RE53-99-0290	Pipes	13–14	Tuff	0	358	0
53-1662	RE53-99-0291	Pipes	24–25	Tuff	0	364	0
53-1663	RE53-99-0292	Pipes	9–10	Tuff	0	270	0
53-1663	RE53-99-0293	Pipes	13–14	Tuff	0	346	0
53-1663	RE53-99-0294	Pipes	24–25	Tuff	0	371	0
53-1691	RE53-99-0295	Pipes	9–10	Tuff	0	336	0
53-1691	RE53-99-0296	Pipes	13–14	Tuff	0	368	0
53-1691	RE53-99-0297	Pipes	24–25	Tuff	0	363	0
53-1692	RE53-99-0298	Pipes	9–10	Tuff	0	343	0
53-1692	RE53-99-0299	Pipes	13–14	Tuff/Clay	0	289	0
53-1692	RE53-99-0300	Pipes	24–25	Tuff	0	316	0
53-1693	RE53-99-0301	Pipes	9–10	Tuff	0	341	0
53-1693	RE53-99-0302	Pipes	13–14	Red Clayey Soil	0	345	0
53-1693	RE53-99-0303	Pipes	24–25	Tuff	0	309	0
53-1694	RE53-99-0304	Pipes	9–10	Tuff/Clay	0	280	0
53-1694	RE53-99-0305	Pipes	13–14	Tuff	0	355	0
53-1694	RE53-99-0306	Pipes	24–25	Tuff	0	339	0
53-1701	RE53-99-0307	Pipes	1–2	Tuff	—	384	—
53-1701	RE53-99-0308	Pipes	4–5	Tuff	—	353	—
53-1701	RE53-99-0309	Pipes	14–15	Tuff	0	390	0

Table A-3.0-1 (continued)

Location ID	Sample ID	Location Description	Depth (ft)	Sample Description	Alpha (cpm[a])	Beta/ Gamma (cpm)	PID (ppm)
53-1695	RE53-99-0310	Pipes	1–2	Tuff	0	390	0
53-1695	RE53-99-0311	Pipes	4–5	Tuff	0	463	0
53-1695	RE53-99-0312	Pipes	14–15	Tuff	0	401	0
53-1696	RE53-99-0313	NE/NW berm	1–2	Tuff	0	358	0
53-1696	RE53-99-0314	NE/NW berm	4–5	Tuff	0	399	0
53-1696	RE53-99-0315	NE/NW berm	14–15	Tuff	0	350	0
53-1698	RE53-99-0316	NE/NW berm	1–2	Tuff	0	380	0
53-1698	RE53-99-0317	NE/NW berm	4–5	Tuff	0	360	0
53-1698	RE53-99-0318	NE/NW berm	14–15	Tuff	0	313	0
53-1697	RE53-99-0319	NE/NW berm	1–2	Tuff	0	394	0
53-1697	RE53-99-0320	NE/NW berm	4–5	Tuff	0	362	0
53-1697	RE53-99-0321	NE/NW berm	14–15	Tuff	0	315	0
53-1702	RE53-99-0322	S berm	1–2	Tuff	0	2000	0

[a] cpm = Counts per minute.

[b] — = Not recorded.

[c] NDA = No detectable activity.

Table A-7.0-1
Geodetic Survey Results

Location ID	Location Description	Easting (ft)	Northing (ft)	Elevation (ft)
53-01001	NW impoundment	1639505.7	1771165.7	6916.3
53-01002	NW impoundment	1639543.2	1771159.2	6915.9
53-01003	NW impoundment	1639592.4	1771154.3	6916
53-01004	NW impoundment	1639636.1	1771149.9	6915.9
53-01005	NW impoundment	1639498.1	1771124.3	6916
53-01006	NW impoundment	1639537.1	1771121.7	6915.7
53-01007	NW impoundment	1639591.7	1771117.3	6915.7
53-01008	NW impoundment	1639641.7	1771114.8	6915.8
53-01009	NW impoundment	1639576	1771074.7	6915.6
53-01010	NW impoundment	1639489.3	1771052.4	6915.6
53-01011	NW impoundment	1639524.6	1771053.7	6915.7
53-01012	NW impoundment	1639579.4	1771056.5	6915.6
53-01013	NW impoundment	1639639.1	1771059.8	6915.5
53-01014	NW impoundment	1639485.8	1771020.3	6915.6
53-01015	NW impoundment	1639520.7	1771020.1	6915.6
53-01016	NW impoundment	1639572.6	1771023.3	6915.7
53-01017	NW impoundment	1639635.8	1771025.5	6915.4
53-01018	NE impoundment	1639776	1771144.1	6915.7
53-01019	NE impoundment	1639814.3	1771144.3	6915.6
53-01020	NE impoundment	1639860.8	1771145.1	6915.5
53-01021	NE impoundment	1639902.7	1771143.7	6915.7
53-01022	NE impoundment	1639775.5	1771102.4	6915.8
53-01023	NE impoundment	1639817.7	1771103.5	6915.6
53-01024	NE impoundment	1639864.1	1771105.9	6915.6
53-01025	NE impoundment	1639906.7	1771106.3	6915.6
53-01026	NE impoundment	1639827.7	1771070.4	6915.6
53-01027	NE impoundment	1639775.3	1771050.9	6915.7
53-01028	NE impoundment	1639819.1	1771048.1	6915.7
53-01029	NE impoundment	1639863.7	1771044.6	6915.7
53-01030	NE impoundment	1639905.8	1771043.5	6915.6
53-01031	NE impoundment	1639773.9	1771018.9	6915.7
53-01032	NE impoundment	1639819.9	1771017.8	6915.6
53-01033	NE impoundment	1639866.4	1771017.8	6915.7
53-01034	NE impoundment	1639902.2	1771014.7	6915.6
53-01070	S of impoundments	1639740	1770700	6911.64
53-01071	S of impoundments	1639740	1770720	6912.01
53-01072	S of impoundments	1639740	1770740	6913.59

Table A-7.0-1 (continued)

Location ID	Location Description	Easting (ft)	Northing (ft)	Elevation (ft)
53-01073	N of impoundments	1639740	1771240	6926.08
53-01074	N of impoundments	1639740	1771260	6926.93
53-01075	N of impoundments	1639740	1771280	6928.33
53-01076	N of impoundments	1639740	1771300	6925.92
53-01077	N of impoundments	1639740	1771320	6921.99
53-01078	N of impoundments	1639740	1771340	6921.92
53-01079	N of impoundments	1639760	1770480	6905.74
53-01070	S of impoundments	1639740	1770700	6911.64
53-01288	NW impoundment	1639470.9	1771199.5	6919.2
53-01289	NW impoundment	1639578.1	1771198.5	6918.4
53-01290	NW impoundment	1639682.4	1771160.7	6919.7
53-01291	NW impoundment	1639463.1	1771096.2	6917.6
53-01292	NW impoundment	1639674	1771083.2	6916.5
53-01293	NW impoundment	1639469.7	1770987.3	6918.4
53-01294	NW impoundment	1639587.4	1770985.4	6915.7
53-01295	NW impoundment	1639664.2	1770987.9	6916.2
53-01316	NE impoundment	1639730.3	1771165.5	6920.5
53-01317	NE impoundment	1639822.6	1771187.6	6917.9
53-01318	NE impoundment	1639946.6	1771169.6	6917.5
53-01319	NE impoundment	1639734.8	1771079.8	6916.1
53-01320	NE impoundment	1639943.7	1771078.1	6916.7
53-01321	NE impoundment	1639736	1770979.3	6917
53-01322	NE impoundment	1639845.1	1770973.2	6916.4
53-01323	NE impoundment	1639934.7	1770972.1	6917.8
53-01556	RLWT*	1640103.892	1771265.192	6913.27
53-01557	RLWT	1640102.835	1771144.455	6905.34
53-01558	RLWT	1640190.472	1771125.786	6905.83
53-01565	NW impoundment	1639634.693	1771159.375	6916.040
53-01566	NW impoundment	1639595.382	1771158.750	6916.061
53-01567	NW impoundment	1639556.403	1771158.750	6916.112
53-01568	NW impoundment	1639513.914	1771160.125	6916.162
53-01569	NE impoundment	1639511.994	1771121.125	6915.958
53-01570	NW impoundment	1639552.264	1771119.000	6916.071
53-01571	NW impoundment	1639593.796	1771117.625	6915.814
53-01572	NW impoundment	1639633.197	1771118.250	6916.167
53-01573	NW impoundment	1639630.883	1771063.750	6915.915
53-01574	NW impoundment	1639591.704	1771067.875	6915.870
53-01575	NW impoundment	1639549.585	1771067.000	6915.777
53-01576	NW impoundment	1639512.521	1771070.750	6915.705

Table A-7.0-1 (continued)

Location ID	Location Description	Easting (ft)	Northing (ft)	Elevation (ft)
53-01577	NW impoundment	1639509.893	1771030.500	6916.131
53-01579	NW impoundment	1639549.119	1771029.625	6915.817
53-01580	NW impoundment	1639589.483	1771028.500	6915.733
53-01581	NW impoundment	1639629.348	1771028.625	6915.753
53-01582	NE impoundment	1639779.459	1771020.500	6916.232
53-01583	NE impoundment	1639781.631	1771060.000	6916.166
53-01584	NE impoundment	1639783.160	1771111.125	6915.951
53-01585	NE impoundment	1639784.725	1771150.625	6916.012
53-01586	NE impoundment	1639826.506	1771150.000	6915.918
53-01587	NE impoundment	1629823.626	1771109.375	6916.303
53-01588	NE impoundment	1639833.860	1771089.000	6915.893
53-01589	NE impoundment	1639821.416	1771060.625	6915.908
53-01590	NE impoundment	1639819.293	1771019.750	6915.752
53-01591	NE impoundment	1639858.613	1771019.125	6916.284
53-01592	NE impoundment	1639860.790	1771059.125	6916.091
53-01593	NE impoundment	1639863.163	1771108.250	6916.178
53-01594	NE impoundment	1639865.670	1771148.500	6916.218
53-01595	NE impoundment	1639904.589	1771146.000	6916.332
53-01596	NE impoundment	1639903.088	1771106.750	6916.207
53-01597	NE impoundment	1639899.616	1771056.375	6915.927
53-01598	NE impoundment	1639899.510	1771016.000	6916.105
53-01599	NW impoundment	1639571.844	1771101.250	6915.869
53-01636	Drainage Area B	1640155.7900	1770795.5000	6887.663
53-01637	Drainage Area B	1640126.5190	1770841.1250	6891.843
53-01638	Drainage Area B	1639989.690	1770865.786	6891.151
53-01639	Drainage Area A	1639990.422	1770872.149	6903.594
53-01640	Drainage Area A	1639990.893	1770863.993	6903.272
53-01641	Drainage Area A	1639995.294	1770868.777	6902.536
53-01642	Sandia Canyon Tributary	1639497.0120	1771255.7500	6929.229
53-01643	Sandia Canyon Tributary	1639314.5960	1771254.6250	6911.356
53-01644	Sandia Canyon Tributary	1639419.9470	1771251.0000	6920.892
53-01645	Sandia Canyon Tributary	1639416.2470	1770959.5000	6913.929
53-01646	Sandia Canyon Tributary	1639376.2290	1771051.0000	6913.299
53-01647	Sandia Canyon Tributary	1639375.8660	1771041.7500	6913.471
53-01648	Sandia Canyon Tributary	1639371.8210	1771012.6250	6912.164
53-01649	Sandia Canyon Tributary	1639498.1490	1770893.2500	6912.586
53-01650	Sandia Canyon Tributary	1639584.7500	1770907.7500	6915.306
53-01651	Sandia Canyon Tributary	1639580.1590	1770862.5000	6912.186
53-01652	Sandia Canyon Tributary	1639553.7760	1770769.0000	6882.654

Table A-7.0-1 (continued)

Location ID	Location Description	Easting (ft)	Northing (ft)	Elevation (ft)
53-01653	Sandia Canyon Tributary	1639568.4150	1770719.8750	6878.954
53-01654	Lines	1639703.330	1771279.621	6928.720
53-01655	Lines	1639856.167	1771209.445	6924.207
53-01656	Lines	1639711.946	1771216.708	6925.945
53-01657	Lines	1639705.181	1771208.550	6926.126
53-01658	Lines	1639706.256	1771155.283	6923.041
53-01659	Lines	1639697.317	1770993.826	6920.085
53-01660	Lines	1639704.194	1771140.142	6922.437
53-01661	Lines	1639693.758	1771087.535	6920.755
53-01662	Lines	1639698.295	1771041.262	6920.830
53-01663	Lines	1639685.028	1770970.244	6919.995
53-01664	S impoundment	1639991.564	1770804.280	6904.575
53-01681	S impoundment	1639953.941	1770706.354	6906.424
53-01682	S impoundment	1639816.168	1770726.227	6913.014
53-01683	S impoundment	1639617.225	1770734.359	6910.115
53-01684	S impoundment	1640007.961	1770915.202	6904.282
53-01685	NE impoundment	1640007.632	1771086.563	6905.704
53-01686	S impoundment	1639575.071	1770849.714	6911.029
53-01687	S impoundment	1639577.190	1770932.556	6917.186
53-01688	NW impoundment	1639416.805	1771102.667	6917.236
53-01689	NW impoundment	1639504.613	1771267.003	6929.430
53-01690	NW impoundment	1639681.240	1771223.952	6927.177
53-01691	Lines	1639685.934	1771215.756	6926.706
53-01692	Lines	1639960.767	1770979.440	6920.892
53-01693	Lines	1639946.446	1770952.799	6919.930
53-01694	Lines	1639954.956	1770893.870	6917.943
53-01695	Lines	1640025.417	1770863.537	6903.073
53-01696	Between NE and NW	1639724.776	1770961.797	6920.406
53-01697	Between NE and NW	1639651.192	1770962.479	6920.308
53-01698	Between NE and NW	1639741.928	1770957.407	6920.058
53-01701	Lines	1640000.41	1770838.537	6904.850
53-01702	NE impoundment	1639719.776	1770961.797	6921.876
53-01706	S impoundment	1639603.525	1770907.190	6918.745
53-01707	S impoundment	1639601.832	1770840.572	6914.991
53-01708	S impoundment	1639599.596	1770787.007	6914.171
53-01709	S impoundment	1639951.316	1770772.639	6916.951
53-01710	S impoundment	1639902.296	1770743.417	6915.685
53-01711	S impoundment	1639622.316	1770761.158	6913.579
53-01712	S impoundment	1639729.629	1770752.576	6914.442

Table A-7.0-1 (continued)

Location ID	Location Description	Easting (ft)	Northing (ft)	Elevation (ft)
53-01713	S impoundment	1639815.243	1770747.774	6914.223
53-01714	S impoundment	1639956.532	1770890.051	6918.886
53-01715	S impoundment	1639665.149	1770755.767	6914.802
53-01716	S impoundment	1639660.154	1770848.368	6909.298
53-01717	S impoundment	1639767.793	1770844.896	6909.346
53-01718	S impoundment	1639870.571	1770837.257	6909.484
53-01719	S impoundment	1639704.315	1770917.412	6908.211
53-01720	S impoundment	1639705.469	1770881.674	6907.808
53-01721	S impoundment	1639660.648	1770897.356	6908.713
53-01722	S impoundment	1639765.898	1770898.833	6907.275
53-01723	S impoundment	1639822.024	1770882.371	6906.543
53-01724	S impoundment	1639869.925	1770879.805	6906.905
53-01725	S impoundment	1639626.716	1770792.474	6908.508
53-01726	S impoundment	1639716.376	1770802.070	6908.239
53-01727	S impoundment	1639764.478	1770796.386	6908.686
53-01728	S impoundment	1639814.593	1770794.138	6908.475
53-01729	S impoundment	1639875.670	1770792.306	6908.624
53-01730	Drainage	1642003.921	1771067.668	6568.084
53-01731	Drainage	1642022.005	1771077.858	6567.550
53-01732	Drainage	1642027.590	1771101.259	6567.549
53-01733	Drainage	1642037.399	1771105.227	6566.142
53-01734	Drainage	1642107.121	1771188.798	6561.583
53-01735	Drainage	1642138.334	1771213.368	6557.858
53-01736	Drainage	1642193.964	1771201.394	6557.181
53-01737	Drainage	1643459.627	1771654.916	6498.186
53-01738	Drainage	1643463.069	1771748.512	6494.748
53-01739	Drainage	1643524.183	1771879.936	6489.841
53-01740	Drainage	1643594.663	1771903.719	6486.225
53-01741	Drainage	1643644.387	1771932.826	6485.822
53-01742	Drainage	1643712.494	1771999.223	6482.121
53-01743	Drainage	1643775.568	1771999.013	6478.251
53-01744	Drainage	1641163.424	1770804.538	6676.828
53-01745	Drainage	1641198.565	1770813.901	6676.112
53-01746	Drainage	1641268.729	1770766.139	6669.676
53-01747	Drainage	1641340.476	1770779.747	6662.110
53-01748	Drainage	1641405.644	1770790.002	6654.179
53-01749	Drainage	1641390.154	1770777.965	6654.382
53-02-19679	S impoundment	1639896.9	1770843.3	6909.53
53-02-19680	S impoundment	1639787.8	1770862.7	6909.726

Table A-7.0-1 (continued)

Location ID	Location Description	Easting (ft)	Northing (ft)	Elevation (ft)
53-02-19681	S impoundment	1639659.8	1770849.3	6909.653
53-02-20824	BH7	1639718.4	1770893.5	6910.0
53-02-20825	BH4	1639492.0	1771260.3	6929.2
53-02-20826	BH5	1640000.4	1771246.2	6913.8
53-02-20827	BH6	1639843.4	1770725.1	6911.9
53-02-20828	BH2	1639624.6	1771034.4	6914.4
53-02-20829	BH1	1639783.7	1771130.0	6915.8
53-02-20830	BH3	1640045.1	1770851.3	6896.4
53-02-20831	AH1	1639400.5	1770933.6	6910.7
53-02-20832	AH2	1639491.2	1770893.7	6912.1
53-02-20833	NW impoundment	1639501.6	1771154.8	6915.4
53-02-20834	NW impoundment	1639635.9	1771169.2	6914.1
53-02-20835	NW impoundment	1639533.1	1771087	6915.2
53-02-20836	NW impoundment	1639492.2	1771014.8	6915.2
53-02-20837	NW impoundment	1639624.9	1771028.8	6914.448
53-02-20838	NE impoundment	1639788.0	1771135.7	6915.819
53-02-20839	NE Impoundment	1639922.5	1771145.8	6915.4
53-02-20840	NE impoundment	1639849.8	1771068.8	6915.5
53-02-20841	NE impoundment	1639763.2	1771006.7	6915
53-02-20842	NE impoundment	1639896	1771012.2	6913.7
53-02-20843	S impoundment	1639659.8	1770839.3	6909.7
53-02-20844	S impoundment	1639787.8	1770852.7	6909.7
53-02-20845	S impoundment	1639896.9	1770831.3	6909.5
53-02-20846	Drainage Area B	1640111.9	1770824	6890
53-02-20847	Drainage Area B	1640077.7	1770832.6	6896.2
53-02-21057	Drainage Area C	1641354	1770791	6663.985
53-02-21058	Drainage Area C	1641345	1770791	6663.016
53-02-21063	Drainage Area D	1641961	1771055	6573.419
53-02-21065	Drainage Area D	1642061	1771138	6565.855
53-02-21066	Drainage Area D	1642101	1771194	6562.54
53-02-21073	Drainage Area E	1643459	1771819	6493.302
53-02-21074	Drainage Area E	1643558	1771886	6489.234
53-02-21077	Drainage Area E	1643747	1772003	6479.211
53-02-21270	Sandia Canyon	1639362	1770304	6693

*RLWT = Radioactive Liquid Waste Treatment plant at TA-53.

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Appendix B

Borehole Logs

Los Alamos National Laboratory
RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 1 of 1**

Sample Location ID: 53-02-20829 **Start Date:** 08/07/02 **End Date:** 08/0702

Coordinates : 1639783.7 E / 1771130.0 N **Ground Surface Elevation:** 6915.8 ft

Field Borehole ID: BH1 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 50.0 ft

Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC

Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core

Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered

Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20829.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RES3-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	100	0	442	46709	Qbt3		Fill: 0 to 1.5 ft. Crushed tuff, lt brown 5 YR 6/4.
	100	0	455	46712			UNIT 3 TSHIREGE MEMBER, BANDELIER TUFF: 1.5 to 8.2 ft. Subunit Qbt3(l). TUFF, pinkish gray 5 YR 8/1, NONINDURATED, WAFERED.
5	100						
	100						
	100				Qbt2		UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 8.2 to 20.0 ft. Subunit Qbt2(u2). TUFF, grayish orange pink 10 R 8/2, MODERATELY INDURATED, SLIGHTLY WELDED, devitrified pumice lapilli are elongate, 1 X 3 shaped, from 0.2 to 4.0 cm in size, with very coarse-grained sugary texture. At 15.0 ft, same TUFF as above except pale red 5 R 6/2.
10	100						
	100						
	100						
15	100						
	100						
20	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 20.0 to 50.0 ft. Subunit Qbt2(u1). TUFF, same as above except SLIGHTLY WELDED and WAFERED. From 24.0 to 25.0 ft, sampled oxidation front at 30 degrees to core axis between pale red above and dark brown below. Oxidation continued to 26.0 ft. Unoxidized from 26.0 to 27.0 ft. Oxidized from 27.0 to 27.5 ft. At 27.5 ft, TUFF, unoxidized, PALE RED 10 R 6/2, SLIGHTLY INDURATED, WAFERED, devitrified. Moderately oxidized groundmass from 31.0 to 32.5 ft. At 32.5 ft, same as above unoxidized TUFF. From 36.7 to 37.5 ft, sampled 2-inch thick oxidation along remnant fracture at 45 degrees to core axis. Weak groundmass oxidation extends to 38.2 ft. At 40.7 ft, subhorizontal fracture at high angle to core axis pinches out rapidly. From 45.5 to 50.0 ft, PALE RED TUFF, unoxidized, MODERATELY INDURATED, SLIGHTLY WELDED.
	100	0	476	46710			
25	100						
	100						
30	100						
	100						
35	100						
	100	0	420	46718			
40	100						
	100						
45	100						
	100						
50	100	0	450	46711			

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

Los Alamos National Laboratory
RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 1 of 1**
Sample Location ID: 53-02-20828 **Start Date:** 08/07/02 **End Date:** 08/0702
Coordinates : 1639624.6 E / 1771034.4 N **Ground Surface Elevation:** 6914.4 ft
Field Borehole ID: BH2 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 50.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20828.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	100	0	450	46705	Qbt3		UNIT 3 TSHIREGE MEMBER, BANDELIER TUFF: 0 to 5.0 ft. Subunit Qbt3(l). TUFF, pinkish gray 5 YR 8/1, NON TO SLIGHTLY INDURATED. At 2.0 ft, very pale orange 10 YR 8/2, SLIGHTLY INDURATED and WAFERED, extremely devitrified with coarse-grained surgary texture to pearl-shaped pumice lapilli and bombs up to 4 cm.
5	100				Qbt2		UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 5.0 to 16.0 ft. Subunit Qbt2(u2). TUFF, grayish orange pink YR 8/2 and grayish orange pink 10 R 8/2, SLIGHTLY INDURATED. At 10.0 ft, MODERATELY INDURATED, nonwelded. By 13.0 ft, color has gradually changed to LIGHT PALE RED 10 R 6/2.
10	100						
15	100						
20	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 16.0 to 50.0t. Subunit Qbt2(u1). TUFF, same as above except slightly welded. At 20.0 ft, slightly indurated and wafered. At 25.0 ft, moderately indurated. At 30.0 ft, moderately indurated, slightly welded, pale red. By 35.0 ft, color has changed to lt brownish gray 5 YR 6/1, moderately indurated. By 45.0 ft, lt brownish gray 5 YR 6/1 moderately indurated, slightly welded.
25	100						
30	100	0	534	46706			
35	100						
40	100						
45	100						
50	100	0 0	429 537	46707 46708			

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

Los Alamos National Laboratory
RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 1 of 1**
Sample Location ID: 53-02-20830 **Start Date:** 08/02/02 **End Date:** 08/2/02
Coordinates : 1640045.1 E / 1770851.3 N **Ground Surface Elevation:** 6896.4 ft
Field Borehole ID: BH3 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 50.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20830.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	100	0	492	46713	Fill Qbt2		Fill: 0 to 0.3 ft. FILL, straw. UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 0.3 to 14.3 ft. Subunit Qbt2(u2). TUFF, grayish pink 5 R 8/2, MODERATELY INDURATED, MODERATELY WELDED, pumice lapilli are elongate, 1 X 3.5 cm.
5	100						
10	100						
15	100				Qbt2		UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 14.3 to 45.0 ft. Subunit Qbt2(u1). TUFF, same as above except weakly oxidized groundmass yields grayish orange pink 5 YR 7/2. From 16.8 to 17.5 ft, NONINDURATED, grayish pink 5 R 8/2. From 17.5 to 21.2 ft, MODERATELY INDURATED, grayish pink 5 R 8/2. From 18.3 to 18.4 ft, nearly horizontal band of oxidized tuff may represent bedding plan fracture. At 21.2 ft, SLIGHTLY INDURATED slightly welded, pumice lapilli 1 X 3 cm. By 39.0 ft, color has gradually changed to pinkish gray 5 YR 8/1 with an increase in medium light gray N6 pumice lapilli to up to 30%, still SLIGHTLY INDURATED.
20	100						
25	100						
30	100	0	496	46714			
35	100						
40	100						
45	100				Qbt2		UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 45.0 to 50.0 ft. Subunit Qbt2(1). TUFF, same as above, except MODERATELY INDURATED, SLIGHTY WELDED.
50	100	0	488	46715			

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 1 of 4**
Sample Location ID: 53-02-20825 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639492.0 E / 1771260.3 N **Ground Surface Elevation:** 6929.2 ft
Field Borehole ID: BH4 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20825.

Depth (ft bgs)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	72						Fill: 0 to 3.4 ft. Crushed tuff.
5	100				Qbt3		UNIT 3 TSHIREGE MEMBER, BANDELIER TUFF: 3.4 to 14.8 ft. Subunit Qbt3(l). TUFF, variably oxidized, non-oxidized is pinkish gray 5 YR 8/1. Stongest oxidation is light brown 5 YR 6/4. At 8.0 ft. variable oxidation ends, all pinkish gray 5 YR 8/1, NONINDURATED, devitrified.
10	100	0	446	46627			
15	100				Qbt2		UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 14.8 to 25.0 ft. Subunit Qbt2(u2). TUFF, pinkish gray 5 YR 8/1 MODERATELY INDURATED. By 15.5 ft, color has light RED HUE, wafered. At. 21.4, driller noted VERY HARD DRILLING, grayish pink 5 R 8/2, MODERATELY INDURATED, MODERATELY WELDED, pumice lapilli are elongate 1 X 2.5 shape from 0.2 to 1 cm.
20	100	0	390	46628			
25	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 25.0 to 72.5 ft. Subunit Qbt2(u1). TUFF, grayish pink 5 R 8/2, SLIGHTLY TO MODERATELY INDURATED and WAFERED. At 26.5 ft, weak oxidation in sub-planar lense through core at 60 degrees to axis may be fracture. From 38.0 to 38.5 ft, sampled 1 cm thick steeply dipping oxidized fracture that extends to 41.5 ft. At 40.0 ft, grayish orange pink 5 YR 7/2 moderately indurated, slightly welded, devitrified, quartz and blue chatoyant sanidine phenocrysts are 30% total and up to 1 mm is size. From 45.0 to 47.5 ft, 2 mm thick unduating oxidized fracture parallel to core axis, photographed. At 52.0 ft, TUFF, same as above, SLIGHTLY INDURATED. By 68.0 ft, lt brownish gray, SLIGHTLY INDURATED, devitrified, pumice poor.
30	100	0	411	46629			
35	100						
40	100	0	450	46630			
45	100						
50	100	0	476	46631			
	100	0	394	46647			
	80						

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 2 of 4**
Sample Location ID: 53-02-20825 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639492.0 E / 1771260.3 N **Ground Surface Elevation:** 6929.2 ft
Field Borehole ID: BH4 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20825.

Depth (ft bgs)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
55	100						
60	100	0	468	46632			
65	100						
70	100	0	533	46633			
75	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 72.5 to 106.3 ft. Subunit Qbt2(i). TUFF, PALE RED R 6/2, MODERATELY INDURATED, SLIGHTLY WELDED, weak Fe oxide stain in groundmass, devitrified. By 90.0 ft, TUFF same as above, MODERATELY INDURATED, SLIGHTLY WELDED. At 100.0 ft, pinkish gray 5 YR 8/1, MODERATELY INDURATED, devitrified, pumice lapilli are dark gray and up to 1 to 2 cm in size with trace of light gray vapor-phase alteration as 0.5 mm halos surrounding lapilli.
80	100	0	533	46634			
85	100						
90	100	0	541	46635			
95	100						
100	100	0	537	46636			
105	100						

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 3 of 4**
Sample Location ID: 53-02-20825 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639492.0 E / 1771260.3 N **Ground Surface Elevation:** 6929.2 ft
Field Borehole ID: BH4 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20825.

Depth (ft bgs)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
110	100	0	507	46637	Qbt1v		UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 106.3 to 115.0 ft. Subunit Qbt1v(u3). TUFF, pinkish gray 5 YR 8/1, NON TO SLIGHTLY INDURATED, VAPOR PHASE ALTERED.
115	100						
120	100	0	567	46638			UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 115.0 to 135.5 ft. Subunit Qbt1v(u2). TUFF, grayish orange pink, non to locally slightly indurated and wafered, dervitrified, vapor phased altered. From 117.5 to 118.2 ft, sampled 0.5 cm steeply dipping oxidized fracture at low angle to core axis. By 120.0 ft, grayish orange pink 5 YR 7/2, non to SLIGHTLY INDURATED in wafers, At 125.0 ft, same as above except slightly to moderately indurated. At 127.5 ft, moderately indurated TUFF alternating with 0.5 ft thick nonindurated TUFF.
125	100						
130	100	0	572	46639			
135	100						UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 135.3 to 145.0 ft. Subunit Qbt1v(u1). TUFF, pinkish gray 5 YR 8/1, moderately indurated intercalated with slightly indurated, Fe-rich chocolate brown devitrified pumice lapilli. By 142.5 ft, chocolate brown pumice lapilli show devitrification crytals in linear fabric along relict tube structures.
140	100	0	514	46640			
145	100				Qbt1v colon.		UNIT 1V-COLONNADE TSHIREGE MEMBER, BANDELIER TUFF: 145.0 to 159.5 ft. Subunit Qbt1v(c). TUFF, pinkish gray 5 YR 8/1, MODERATELY TO STRONGLY INDURATED, with Fe-rich CHOCOLATE BROWN DEVITRIFIED PUMICE LAPILLI. At 150.0 ft, TUFF same as above except grayish orange pink 5 YR 7/2. No glass at 155.0 ft. No glass at 157.0 ft.
150	100	0	515	46641			
155	100						

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 4 of 4**
Sample Location ID: 53-02-20825 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639492.0 E / 1771260.3 N **Ground Surface Elevation:** 6929.2 ft
Field Borehole ID: BH4 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20825.

Depth (ft bgs)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
160	100	0	563	46642	Qbt1g		UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 159.5 to 187.5 ft. Subunit Qbt1g (Fe-rich). TUFF, MODERATELY INDURATED, at 159.5 ft, the first observed trace of VITRIC GLASS defines the vapor phase notch and the contact with unit 1g (Broxton and Reneau, 1995) and marks the top of the devitrification interval. At 160.0 ft, grayish orange pink, mostly devitrified with trace glass. At 162.5 ft, color change to MODERATE ORANGE PINK 10 R 7/4, still mosty devitrified. By 170.0 ft, ratio of devitrified to vitric pumice lapilli is 40:60 in MODERATE ORANGE PINK 5 YR 8/4 MODERATELY INDURATED, phenocryst-rich TUFF. By 170.8 ft, 100% of pumice lapilli are vitric marking the bottom of the devitrfication interval within unit 1g. At 172.5 ft, same as above, MODERATE REDDISH ORANGE 10 R 6/6. At 175.0 ft, TUFF, lt brown 5 YR 6/4, phenocryst-rich in lapilli and groundmass, with equant shaped intermediate composition lithics, most < 1 mm, largest up to 1.5 cm.
165	100						
170	100	0	550	46643			
175	100						
180	100	0	507	46644			
185	100						
190	100	0	615	46645			UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 187.5 to 200.0 ft. Subunit Qbt1g (Fe-poor). TUFF, LT BROWN 5 YR 6/4, NON TO SLIGHTLY INDURATED, fewer phenocrysts and pumice lapilli. By 192.0 ft, color has changed to GRAYISH ORANGE PINK 5 YR 7/2, NON TO SLIGHTLY INDURATED, pumice-rich TUFF.
195	100						
200	100						

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 1 of 4**
Sample Location ID: 53-02-20826 **Start Date:** 08/02/02 **End Date:** 08/06/02
Coordinates : 1640000.4 E / 1771246.2 N **Ground Surface Elevation:** 6913.8 ft
Field Borehole ID: BH5 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and asphalt patch from 0.5 ft to surface. Asphalt patch contains monument stamped with 53-02-20826.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	100				Asph. Fill		Asphalt: 0 to 0.5 ft. Asphalt
	100	0	467	46700			Fill: 0.5 to 3.4 ft. Yellowish brown to pinkish gray crushed tuff, locally oxidized, silty and clayey. Sampled clay-rich tuff from 1.8 to 2.5 ft.
5	100				Qbt3		
	100						UNIT 3 TSHIREGE MEMBER, BANDELIER TUFF: 3.4 to 10.0 ft. Subunit Qbt3(l). TUFF, MEDIUM LIGHT GRAY, moderately indurated, slightly welded. At 9.5 to 11.0 ft, 0.5 cm thick cliche-filled fracture at 30 degrees to core axis included in sample 46649 and photographed in 10.0 to 12.5 ft run.
	100	0	452	46649			
10	100				Qbt2		
	100						
	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 10.0 to 28.6.0 ft. Subunit Qbt2(u2). TUFF, light brownish gray 5 YR 6/1. By 14.0 ft, color had changed to pinkish gray 5 YR 8/1, dark gray pumice lapilli 1 to 5 mm, quartz and chatoyant blue sanidine phenocrysts, each 5 to 10%, up to 1 mm. At 25.0 ft, TUFF same as above, SLIGHTLY WELDED, 1 X 4 cm pumice bombs have thin halo of light pinkish white vapor-phase alteration.
15	100						
	100						
	100	0	416	46650			
20	100						
	100						
	100						
25	100						
	100						
	100	NA	395	46651			UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 28.6 to 57.5 ft. Subunit Qbt2(u1). TUFF, PALE RED 10 R 6/2, moderately indurated, slightly welded. At 37.0 ft, pumice bombs up to 3 X 5 cm with trace of light pinksh white vapor-phase alteration along relict tube structures
30	100						
	100						
	100						
35	100						
	100						
	100	NA	496	46652			
40	100						
	100						
	100						
45	100						
	100	416	416	46653			
50	100	1.0	496	46669			
	100						
	00						

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 2 of 4**
Sample Location ID: 53-02-20826 **Start Date:** 08/02/02 **End Date:** 08/06/02
Coordinates : 1640000.4 E / 1771246.2 N **Ground Surface Elevation:** 6913.8 ft
Field Borehole ID: BH5 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and asphalt patch from 0.5 ft to surface. Asphalt patch contains monument stamped with 53-02-20826.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
55	100						
60	100	1.0	496	46654			UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 57.5 to 107.1 ft. Subunit Qbt2(l). TUFF, PALE RED 10 R 6/2 MODERATELY INDURATED, SLIGHTLY WELDED. By 60.0 ft, slightly indurated, non to slightly welded.
65	100						
70	100	0	462	46655			
75	100						
80	100	0	605	46656			
85	100						
90	100	0	425	46657			
95	100						
100	100	0	479	46658			
105	100						

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 3 of 4**
Sample Location ID: 53-02-20826 **Start Date:** 08/02/02 **End Date:** 08/06/02
Coordinates : 1640000.4 E / 1771246.2 N **Ground Surface Elevation:** 6913.8 ft
Field Borehole ID: BH5 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and asphalt patch from 0.5 ft to surface. Asphalt patch contains monument stamped with 53-02-20826.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
110	100	0	517	46659	Qbt1v		UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 107.1 to 113.0 ft. Subunit Qbt1v(u3). TUFF, NON TO SLIGHTLY INDURATED, NON WELDED, PALE RED 10 R 6/2, devitrified, WAFERED. Pumice lapill are equant to pearl shaped, 0.5 to 3 cm, surgary, with light pinkish white vapor-phase alteration along relict tube structures.
115	100						UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 113.0 to 130.0 ft. Subunit Qbt1v(u2). TUFF, NONINDURATED, pale red 10 R 6/2. At 115.5 ft, color change to GRAYISH ORANGE PINK 5 YR 7/2 to DULL WHITISH GRAY in groundmass, weakly VAPOR PHASE ALTERED.
120	100	0	534	46660			
125	52						
130	100	0.4	551	46661			UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 130.0 to 140.0 ft. Subunit Qbt1v(u1). TUFF, PINKISH GRAY 5 YR 8/1, locally moderately indurated, 50% of pumice are dark chocolate brown equant lapilli 0.2 to 1 cm, other 50% pumice are light gray lapilli with sugary texture. At 132.0 ft, SLIGHTLY INDURATED. By 139.0 ft, increase in chocolate brown oxidized pumice lapilli
135	100						
140	100	0.3	605	46662	Qbt1v colon.		UNIT 1V-COLONNADE TSHIREGE MEMBER, BANDELIER TUFF: 140.0 to 153.5 ft. Subunit Qbt1v(c). TUFF, pinkish gray 5 YR 8/1, SLIGHTLY INDURATED, intermediate composition volcanic LITHICS are dark gray, < 1 cm, 5%. By 148.0 ft, TUFF is very PALE ORANGE 10 YR 8/2, MODERATELY INDURATED, non welded, CHOCOLATE BROWN pumice lapilli.
145	100						
150	100	0	534	46663			
155	100				Qbt1g		UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 153.5 to 178.0 ft. Subunit Qbt1g (Fe-rich). TUFF, MODERATELY INDURATED, at 153.5 ft, the first observed trace of VITRIC GLASS defines the vapor phase notch and the contact with unit 1g (Broxton and Reneau, 1995) and marks the top of the devitrification interval. At 155.0 ft, color change to MODERATE ORANGE

(description continued on next page)

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 4 of 4**
Sample Location ID: 53-02-20826 **Start Date:** 08/02/02 **End Date:** 08/06/02
Coordinates : 1640000.4 E / 1771246.2 N **Ground Surface Elevation:** 6913.8 ft
Field Borehole ID: BH5 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and asphalt patch from 0.5 ft to surface. Asphalt patch contains monument stamped with 53-02-20826.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
160	100	0	552	46664			PINK 10 R 7/4. Mostly devitrified surgary lapilli with some vitric pumice lapilli standing out from groundmass. By 160.0 ft, 70% of pumice lapilli are vitrc. By 167.0 ft, 100% of pumice lapilli are vitric marking the bottom of the devitrification interval. At 272.5 ft, vitric TUFF as above, light orangish brown, slightly indurated.
165	100						
170	100	0	552	46665			
175	100						
180	100	NA	494	46666			UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 178.0 to 200.0 ft. Subunit Qbt1g (Fe-poor). TUFF, LIGHT BROWN 5 YR 6/4, NONINDURATED, with pearl-shaped pumice lapilli to 2 X 4 cm. By 187.5 ft, TUFF as above, slightly indurated.
185	100						
190	100	NA	437	46667			
195	100						
200	100	NA	437	46668			

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 Impoundments **PRS 53-002 (a)-99** **Page 1 of 4**
Sample Location ID: 53-02-20827 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639843.4 E / 1770725.1 N **Ground Surface Elevation:** 6911.9 ft
Field Borehole ID: BH6 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20827.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	100				Qbt3		Fill: 0 to 0.9 ft. Crushed tuff.
5	100				Qbt2		UNIT 3 TSHIREGE MEMBER, BANDELIER TUFF: 0.9 to 3.5 ft. Subunit Qbt3(l). Fracture fill, dull white chalky, caliche-like fill in partially oxidized fracture.
10	100	NA	467	46671			UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 3.5 to 55.0 ft. Subunit Qbt2(u2). TUFF, grayish pink 5 R 8/2, MODERATELY INDURATED, nonwelded, devitrified; pumice lapilli are 15% of rock, 2 X 3 cm, pearl shaped with surgary texture. At 13.0 ft, light dull white chalky fill in vertical fracture along core circumference. At 40.0 ft, same TUFF as above, MODERATELY INDURATED, with dk gray, surgary, devitrified pumice bombs to 5 X 7 cm, irregular shaped. At 50.0 ft, some pumice lapilli show trace of light pinkish white vapor-phase alteration along linear fabric to devitrification crystals after relict tube structures.
15	100						
20	100	NA	408	46672			
25	100						
30	100	NA	492	46673			
35	100						
40	100	NA	488	46674			
45	100						
50	100	NA	538	46675			
	80						

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 2 of 4**
Sample Location ID: 53-02-20827 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639843.4 E / 1770725.1 N **Ground Surface Elevation:** 6911.9 ft
Field Borehole ID: BH6 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20827.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
55	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 55.0 to 82.0 ft. Subunit Qbt2(u1). TUFF, same as above, grayish pink 5 R 8/2, SLIGHTLY TO MODERATELY INDURATED with local wafered appearance from auger energy. From 64.0 to 65.0 ft, sampled closed, oxidized, 1-cm thick, steeply-dipping fracture at low angle (5 degrees) to core axis. At 74.4 to 75.5 ft, noted 0.5 cm thick fracture of oxidized tuff at 15 degrees to core axis as fracture. WAFERED appearance from 76.0 to 80.0 ft.
60	100	NA	521	46676			
	100						
65	100	NA	429	46697			
	100						
70	100	NA	500	46677			
	100						
75	100						
	100						
80	100	NA	551	46678			
	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 82.0 to 101.6 ft. Subunit Qbt2(l). TUFF, pinkish gray 5 YR 8/1, MODERATELY INDURATED, SLIGHTLY WELDED, devitrified. At 97.0 ft, some pumice lapilli show trace of light pinkish white vapor-phase alteration along linear fabric after relict tube structures.
85	100						
	100						
90	100	NA	416	46679			
	100						
95	100						
	100						
100	100	NA	315	46680			
	100	NA	568	46691			
	100	NA	425	46698	Qbt1v		UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 101.6 to 137.5 ft. Subunit Qbt1v(u). TUFF, NONINDURATED, intercalated with thin horizons of slight to moderate induration, NONWELDED. From 101.6 to 110.0 ft, pinkish gray 5 YR 8/1. At 110.0 ft, DULL WHITE N9 fine-grained ash groundmass
105	100						

(description continued on next page)

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 3 of 4**
Sample Location ID: 53-02-20827 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639843.4 E / 1770725.1 N **Ground Surface Elevation:** 6911.9 ft
Field Borehole ID: BH6 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20827.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
110	100	NA	446	46681			surrounds medium light gray N6 equant shaped pumice lapilli, 30%, 0.5 to 2 cm. At 115.5 ft, weakly oxidized closed fracture with no fill material at 30 degrees to core axis. By 124.0 ft, pumice lapilli are 10 to 15%. By 130 ft, dark brownish gray pumice lapilli are pearl shaped, 15%, average 1 cm, largest 5 cm, with very sugary texture (coarse-grained devitrification crystals). At 137.0 ft, first appearance of some dark chocolate brown, well oxidized pumice lapilli.
115	100						
120	100	NA	639	46682			
125	100						
130	100	NA	589	46683			
135	100						
140	100	NA	496	46684	Qbt1v colon.		UNIT 1V-COLONNADE TSHIREGE MEMBER, BANDELIER TUFF: 137.5 to 150.0 ft. Subunit Qbt1v(c). TUFF, light pinkish gray 5 YR 8/1, MODERATELY INDURATED, NONWELDED, with all DARK CHOCOLATE BROWN pumice lapilli, 10 to 15%, average 1cm, largest 4 cm, pearl shaped to irregular. At 143.0 ft, grayish pink 5 R 8/2.
145	100						
150	100	NA	462	46685	Qbt1g		UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 150.0 to 167.0 ft. Subunit Qbt1g (Fe-rich). TUFF, MODERATELY INDURATED, at 150.0 ft, the first observed trace of VITRIC GLASS defines the vapor phase notch and the contact with unit 1g (Broxton and Reneau, 1995) and marks the top of the devitrification interval. At 153.0 ft, color change to MODERATE ORANGE PINK 10 R 7/4. At 156.0 ft, 100% of pumice lapilli are vitric marking the bottom of the devitrfication interval within unit 1g. Most lapilli are < 1 cm, largest are 3 cm, equant to pearl shaped with well defined glassy tube structures.
155	100						
160	100	NA	515	46686			

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 4 of 4**
Sample Location ID: 53-02-20827 **Start Date:** 07/31/02 **End Date:** 08/1/02
Coordinates : 1639843.4 E / 1770725.1 N **Ground Surface Elevation:** 6911.9 ft
Field Borehole ID: BH6 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 200.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20827.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
160	100						
	100						
165	92						
	100						UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 167.0 to 200.0 ft. Subunit Qbt1g (Fe-poor). TUFF, SLIGHTLY INDURATED. By 175.0 ft, color has gradually changed to light orange pink, largest pumice bombs are 3 X 5 cm. By 180.0 ft, light dull orangish pink, VITRIC, NON TO SLIGHTLY INDURATED. By 197.0 ft, color has gradually changed to very pale orange 10 YR 8/2.
170	100	NA	496	46687			
	100						
175	100						
	100						
180	100	NA	517	46688			
	100						
185	100						
	100						
190	100	NA	580	46689			
	100						
195	100						
	100						
200	100	NA	467	46690			

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 1 of 6**
Sample Location ID: 53-02-20824 **Start Date:** 07/24/02 **End Date:** 07/30/02
Coordinates : 1639718.4 E / 1770893.5 N **Ground Surface Elevation:** 6910.0 ft
Field Borehole ID: BH7 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 299.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20824.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
0	100				Qbt2		Fill: 0 to 0.2 ft. Crushed tuff.
5	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 0.2 to 12.5 ft. Subunit Qbt2(u2). TUFF, weathered, grayish orange pink 5 YR 7/2 to light brownish gray 5 YR 6/1 to pale yellowish brown 10 YR 6/2, devitrified, SLIGHTLY WELDED, SLIGHTLY TO MODERATELY INDURATED; pumice lapilli 20%, 0.2 to 1 cm, slightly elongated, sugary texture; quartz phenocrysts 5% up to 1 mm, no lithics. At 7.5 ft fresh (unweathered) tuff is pinkish gray 5 YR 8/1.
	68						
10	100						
	84	NA	397	46593			
15	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 12.5 to 55.0 ft. Subunit Qbt2(u1). TUFF, pinkish gray 5 YR 8/1 to light brownish gray 5 YR 6/1, NONWELDED, NON TO SLIGHTLY INDURATED, LOCAL OXIDATION STAINING, dark-blue chatoyant sanidine phenocysts 5% up to 1 mm, WAFERED appearance in core barrel due to auger energy. At 21.5 ft to 21.6 ft, horizontal horizon of oxidized tuff may indicate low dipping fracture. At 22.5 ft, local oxidation of grayish orange pink 5 YR 7/2 groundmass has changed to moderate Fe oxide staining on surgary coarse-grained devitrification crytstals in pumice lapilli. At 27.0 ft, closed fracture at 20 degrees to core axis, non-oxidized, but containing minute plant roots, photographed. At 29.5 ft, slightly welded. At 35.0 ft, medium light gray N6 groundmass, dull white devitrified irregular shaped pumice bombs up to 10 cm. At 37.5 ft, pumice lapilli down to 1 cm and equant shaped, < 5%. At 50.0 ft, grayish orange pink 5 YR 7/2, slightly welded, slightly indurated, elongate pumice bombs to 6 cm are locally surrounded by light pinkish white rind of vapor-phase alteration.
	92						
20	100						
	100	NA	504	46594			
25	100						
	100						
30	100	NA	551	46597			
	100						
35	100						
	100						
40	100	NA	513	46598			
	100						
45	100						
	100						
50	100	NA	492	46599			
	100						
55							

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 2 of 6**
Sample Location ID: 53-02-20824 **Start Date:** 07/24/02 **End Date:** 07/30/02
Coordinates : 1639718.4 E / 1770893.5 N **Ground Surface Elevation:** 6910.0 ft
Field Borehole ID: BH7 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 299.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20824.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
55	100						UNIT 2 TSHIREGE MEMBER, BANDELIER TUFF: 55.0 to 99.6 ft. Subunit Qbt2(l). TUFF, grayish orange pink 5 YR 7/2, MODERATELY INDURATED, nonwelded, equant shaped pumice lapilli are 10 to 15%, up to 1 cm, containing 1.5 mm clear subhedral quartz phenocrysts amid very coarse granular devitrification crystals. Quartz and blue chatoyant sanidine each 5% in groundmass. At 65.0 ft, color has gradually changed to PALE RED 10 R 6/2 from oxidation of minute orthopyroxenes in approximately 10% of groundmass. At 71.5 ft, intermediate composition lithics are 10% and up to 1 .5 cm. At 73.0 ft, elongate light red clayey pumice lapilli up to 25%. At 75.0 ft, red clayey pumice are 5%, other lapilli are light to dark gray lapilli and 10%, sugary texture, equant shape with linear fabric to devitrification crystals after relict glass tube structures, no lithics. At 84.5 ft, partially oxidized lapilli are elongate 1 X 2 cm with oxidation along relict tube structures. At 86.0 ft, pumice lapilli are 30% and locally elongate bombs 3 X 6 cm, with partially oxidized linear fabric after relict tube structures. At 95.0 ft, PALE RED 10 R 6/2 MODERATELY INDURATED, SLIGHTLY WELDED ash fow with subequant pumice lapilli averaging 1 cm, but locally elongate (1 X 2) bombs up to 10 cm.
60	100	NA	509	46600			
65	100						
70	100	NA	504	46601			
75	100						
80	100	NA	530	46602			
85	100						
90	100	NA	652	46603			
95	100						
100	100	NA	483	46604	Qbt1v		UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 99.6 to 104.2 ft. Subunit Qbt1v(u3). TUFF, NONINDURATED, pale red 10 R 6/2. At 100.0 ft, locally moderately indurated and slightly welded.
	100	NA	454	46626			
105	100						UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 104.2 to 124.8 ft. Subunit Qbt1v(u2). TUFF, GRAYISH ORANGE PINK 5 YR 7/2, SLIGHTLY INDURATED, slightly welded coarse-grained devitrified pumice lapilli and bombs are elongate and irregular shaped and up to 6 X 10 cm. At 105.0 ft,
	75						
110	100						

(description continued on next page)

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RRES-R Borehole Log

Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 3 of 6**
Sample Location ID: 53-02-20824 **Start Date:** 07/24/02 **End Date:** 07/30/02
Coordinates : 1639718.4 E / 1770893.5 N **Ground Surface Elevation:** 6910.0 ft
Field Borehole ID: BH7 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 299.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20824.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RES3-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
110	100	NA	538	46605			driller noted SOFTER DRILLING. At 110.0 ft, locally oxidized dark gray to brown elongate (1 x 2) pumice lapilli average 0.5 cm with trace of LIGHT PINKISH WHITE VAPOR-PHASE ALTERATION. At 115.0 ft, grayish orange pink 5 YR 7/2, NON TO SLIGHTLY INDURATED, nonwelded. By 117.0 ft, color has gradually changed to pinkish gray 5 YR 8/1, pumice lapilli are 30 % of rock, 1 to 2 cm, dark gray and dark brown.
115	100						
	100						
	100						
120	100	NA	462	46606			
	100						
125	100						UNIT 1V TSHIREGE MEMBER, BANDELIER TUFF: 124.8 to 137.5 ft. Subunit Qbt1v(u1). TUFF, grayish orange pink 5 YR 7/2 NON TO SLIGHTLY INDURATED, NONWELDED. At 130.0 ft, WAFERED appearance to slightly indurated tuff due to auger energy, well oxidized equant CHOCOLATE BROWN pumice lapilli average 1 cm and are 20% of rock, intermediate composition volcanic lithics up to 1 cm are 2% of rock.
	100						
130	100	NA	538	46607			
	100						
135	100						
	100				Qbt1v colon.		UNIT 1V-COLONNADE TSHIREGE MEMBER, BANDELIER TUFF: 137.5 to 147.0 ft. Subunit Qbt1v(c). TUFF, hint of color change to LIGHT BROWN 5 YR 6/4, however, predominantly pinkish gray 5 YR 8/1. CHOCOLATE BROWN, well oxidized, DEVITRIFIED pumice lapilli. At 140 ft, color varies between pale yellowish brown 10 YR 6/2, grayish orange pink 5 YR 7/2, and very pale orange 10 YR 8/2, non to slightly indurated. At 145.0 ft, slightly indurated, LIGHT BROWN 5 YR 6/4, irregular 1 to 2 cm intermediate composition volcanic LITHICS are 4 % of rock. At 146.0 ft, MODERATELY INDURATED with local non to slightly indurated zones.
140	100	NA	542	46608			
	100						
145	100						
	100				Qbt1g		
150	100	NA	425	46609			UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 147.0 to 170.0 ft. Subunit Qbt1g (Fe-rich). TUFF, at 147.0 ft, the first observed trace of VITRIC GLASS in pumice fragment defines the vapor phase notch and the contact with unit 1g (Broxton and Reneau, 1995) and marks the top of the devitrification interval At 150.0 ft color change to MODERATE REDDISH ORANGE 10 R 6/6. At 155.0 ft, 60% of pumice lapilli are vitric (glassy) and 40% are devitrified. At 157.0 ft, intermediate composition volcanic LITHICS are locally up to 10% of rock and 100% of pumice lapilli are vitric marking the bottom of the devitrification interval within unit 1g. At 160.0 ft, MODERATE ORANGE PINK 10 R 7/4, slightly to moderately indurated, volcanic lithics are 5% of rock. At 165.0 ft, NONINDURATED, moderate orange pink 10 R 7/4.
155	100						
	100						
160	100	NA	483	46610			
	100						
165							

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 4 of 6**
Sample Location ID: 53-02-20824 **Start Date:** 07/24/02 **End Date:** 07/30/02
Coordinates : 1639718.4 E / 1770893.5 N **Ground Surface Elevation:** 6910.0 ft
Field Borehole ID: BH7 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 299.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20824.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
165	100						
	100						
170	100	NA	433	46611			UNIT 1G TSHIREGE MEMBER, BANDELIER TUFF: 170.0 to 243.5 ft. Subunit Qbt1g (Fe-poor). TUFF, NONINDURATED, GRAYISH ORANGE 10 YR 7/4 and yellowish brown 10 YR 6/2. By 173.0 ft, color has changed to GRAYISH ORANGE PINK 5 YR 7/2 and LIGHT BROWN 5 YR 6/4, equant pumice lapilli are 10 to 15% up to 2 cm, locally pearl shaped, groundmass is slightly indurated, NONWELDED. At 185.0 ft, NONINDURATED, NONWELDED vitric tuff, most pumice lapilli are < 1 cm, however, local bombs are up to 6 cm, pearl shaped, and mafic-rich. By 205.0 ft, color has gradually changed to pinkish gray 5 YR 8/1. At 210.0 ft, grayish orange pink, locally slightly indurated. At 230.0 ft, same as above, most pumice lapilli are 1 cm, local bombs up to 5 cm. By 232.0 ft, color has gradually changed to very pale orange 10 YR 8/2. At 235.0 ft, grayish orange pink 5 YR 7/2 NONINDURATED VITRIC tuff.
175	100						
	100						
180	100	NA	517	46612			
	100						
185	100						
	100						
190	100	NA	483	46613			
	100						
195	100						
	100						
200	100	NA	488	46614			
	100						
205	100						
	100						
210	100	NA	610	46615			
	100						
215	100						
	100						
220	100	NA	513	46616			

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 5 of 6**
Sample Location ID: 53-02-20824 **Start Date:** 07/24/02 **End Date:** 07/30/02
Coordinates : 1639718.4 E / 1770893.5 N **Ground Surface Elevation:** 6910.0 ft
Field Borehole ID: BH7 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 299.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20824.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
220	100						
	100						
225	100						
	100	NA	435	46617			
230	100						
	100						
235	100						
	100						
240	100	NA	572	46618			
	100						
245	100	NA	495	46619	Tsankawi Cerro Toledo Interv.		TSANKAWI PUMICE BED: 243.5 to 245.0 ft. PUMICE FALL, dull white, moderately sorted, 100% vitric pumice lapilli, 0.5 to 1.5 cm in size.
	100						CERRO TOLEDO INTERVAL: 245.0 to 246.5 ft. SILT AND SILTY CLAY, MODERATE YELLOWISH BROWN 10 YR 7/4, MOIST.
	100						
250	92						CERRO TOLEDO INTERVAL: 246.5 to 247.0 ft. PUMICE FALL, grayish orange 10 YR 7/4, poorly sorted, with slit and sand, moist to dry.
	100	NA	521	46620			
255	60						CERRO TOLEDO INTERVAL: 247.0 to 248.0 ft. SAND, medium grained.
	100						CERRO TOLEDO INTERVAL: 248.0 to 249.0 ft. SAND, fine grained.
	100						
260	100						CERRO TOLEDO INTERVAL: 249.0 to 250.3 ft. PUMICE FALL, dull white, well sorted, 100% vitric pumice lapilli, 2 mm to 5 mm in size.
	100						
265	100	NA	433	46621			CERRO TOLEDO INTERVAL: 250.3 to 255.0 ft. TUFF, reworked?, silty, intermediate composition volcanic clasts are 5%, 2 to 7 mm.

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Project: RFI Addendum II, TA-53 impoundments **PRS 53-002 (a)-99** **Page 6 of 6**
Sample Location ID: 53-02-20824 **Start Date:** 07/24/02 **End Date:** 07/30/02
Coordinates : 1639718.4 E / 1770893.5 N **Ground Surface Elevation:** 6910.0 ft
Field Borehole ID: BH7 **Borehole Attitude:** Vertical **Total depth of Borehole (TD):** 299.0 ft
Driller/Co.: Stanley Johnson/Stewart Bros. **Geologist/ Co.:** Jon Marin/SAIC
Drilling Equipment: Failing F-10 4 1/4" ID hollow stem auger (HSA) with continuous wireline core
Core Barrel: 3.5" OD, 2.5 ' long ss split-spoon **Depth to Groundwater:** Not encountered
Abandonment: Backfilled with cuttings from TD to 3 ft, bentonite chips from 3 ft to 0.5 ft, and cement from 0.5 ft to surface. Cement cap contains monument stamped with 53-02-20824.

Depth (ft)	Core run/ recovery (%)	PID Screening (ppm)	Rad Screening dpm	Sample Number (RE53-02-XXXXX)	Stratigraphic Unit	Graphic Log	Lithologic Description
265	100						
270	100						
	100						
275	100	NA	437	46622			CERRO TOLEDO INTERVAL: 255.0 to 282.5 ft. TUFF, reworked?, moderate orange pink 5 YR 8/4, intermediate composition volcanic clasts are 7%, 2 to 7 mm. Rock resembles nonindurated Otowi Member ignimbrite with 10% 0.5 to 4 cm vitric pumice lapilli, lt olive green partially oxidized with 50% showing glassy, fibrous, wavy, honey-combed tube structures, other lapilli are vitric without tube structures. Groundmass STRUCTURE (phenocrysts, lapilli and ash matrix) typical of ash flows is NOT PRESENT. No indication of bedding or deposition. At 277.5 ft, grayish orange pink 5 YR 7/2 reworked? ash flow tuff, pumice lapilli are rare to none, intermediate composition volcanic lithics are 5%, most < 1 cm. At 280.0 ft, very angular Tchicoma Formation dacite cobble is 2.5 cm wide and cube shaped.
280	100						
	100				Qbo		
285	100	NA	454	46623			QBO: 282.5 to 299.0 ft. TUFF, Otowi Member ash flow. LT BROWN 5 YR 67/4 NONINDURATED, with groundmass STRUCTURE resembling cooling units from Tshirege Member. Vitric pumice lapilli are partially oxidized, 20%, up to 2 cm. Quartz phenocrysts are 5%, up to 1 mm, intermediate composition volcanic lithics are 5%, subangular dacite 2 to 5 mm. By 285.0 ft, color has gradually changed to PALE REDDISH BROWN 10 R 5/4, pumice bombs to 2 X 3 cm, STRONGLY OXIDIZED, pearl shaped. Fibrous glassy tube structures intact. Pumice contain 1 mm quartz pheonocrysts up to 10%.
	100						
290	100						
	100						
295	100						
	100	NA	538	46624			

bgs = below ground surface, length measured from ground surface
ss=stainless steel
ppm= parts per million
= beta,gamma particle radiation
alpha particle radiation screening = 0 or NDA = no detectable activity
NA = not attempted
PID = photo-ionizing detector
dpm = disintegrations per minute
CAPITALIZED WORDS in lithologic description = characteristic features

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Appendix C

Analytical Program and
Quality Assurance/Quality Control Review

C-1.0 INTRODUCTION

Quality assurance (QA), quality control (QC), and data validation procedures were implemented in accordance with the requirements of the *Quality Assurance Project Plan Requirements for Sampling and Analysis* (LANL 1996, 54609), and the Los Alamos National Laboratory's Environmental Restoration (ER) Project analytical services statement of work (SOW) for contract laboratories (LANL 1995, 49738; LANL 2000, 71233). [The ER Project is now Risk Reduction & Environmental Stewardship–Remediation Services (RRES-RS).] The results of the QA/QC activities were used to estimate accuracy, bias, and precision of the analytical measurements. QC samples, including method blanks, blank spikes, matrix spikes, and laboratory control samples,were used to assess accuracy and bias. Internal standards, external standards, surrogates, and tracers were also used to assess accuracy.

The type and frequency of QC analyses are described in the analytical services SOWs (LANL 1995, 49738; LANL 2000, 71233). Other QC factors, such as sample preservation and holding times, were also assessed. The requirements for sample preservation and holding times are given in the standard operating procedure LANL-ER-SOP-1.02, Rev. 0, "Sample Containers and Preservation." Evaluating these QC indicators allows estimates to be made of the accuracy, bias, and precision of the analytical suites. A focused data validation was also performed for all the data packages (also referred to as request numbers). The focused validation followed the same procedure discussed above and included a more detailed review of the raw data results generated by the analytical laboratory.

Data validation results, including request numbers, sample identification numbers, and their associated qualifiers, are given in Tables C-5.1-1, C-5.2-1, and C-5.3-1. The data, including the qualified data, are usable for evaluation and interpretive purposes. The entire data set meets the standards set for use in this report, with the exception of the rejected data listed in Table C-6.0-1.

The analytical methods for metals, radionuclides, and organic analytes are summarized in the following sections. The required estimated detection limit (EDL) or estimated quantitation limit (EQL) for each analyte is prescribed in the analytical services SOWs for contract laboratories (LANL 1995, 49738; LANL 2000, 71233). However, because some of the analyses were performed prior to implementation of these SOWS, some EQLs and EDLs may differ from those specified.

C-2.0 INORGANIC CHEMICAL METHODS

A total of 332 samples were analyzed for the target analyte list (TAL) metals at SWMU 53-002(a)-99. For these samples, US Environmetnal Protection Agency (EPA) Method 7471A, cold vapor atomic absorption (CVAA) (EPA 1987, 57589), was used to analyze for mercury. The other TAL metals were analyzed by either Method 6010B, inductively coupled plasma emission spectroscopy (ICPES), or Method 6020, inductively coupled plasma mass spectrometry (ICP/MS).

The inorganic methods used for this data set are summarized in Table C-2.0-1. Holding times were met for all inorganic chemical digestions and analyses.

C-2.1 Inorganic QA/QC Samples

Laboratory control samples (LCS), method blanks, matrix spike samples, field duplicate samples, interference-check samples, and serial-dilution samples were analyzed to assess accuracy and precision for inorganic chemical analyses. Each of these QA/QC sample types is defined in the analytical services SOWs (LANL 1995, 49738; LANL 2000, 71233) and described briefly in the sections below. Because

some of the analyses were performed prior to this SOW, slightly different QA/QC procedures may have been followed.

The LCS serves as a monitor of the overall performance of each step during the analysis, including sample digestion. The analytical results for the samples were qualified according to National Functional Guidelines (EPA 1994, 48639.1) if the individual LCS recovery indicated an unacceptable bias in the measurement of individual analytes. The LCS recoveries should fall into the control limits of 75–125% (LANL 1995, 49738; LANL 2000, 71233).

Method blanks are used as a measurement of bias and potential cross-contamination. The blank results for inorganic chemical analyses were within acceptable limits for all the analyses. All target analytes should be below the contract-required detection limit (CRDL) in the method blank.

Accuracy for inorganic chemical analyses is also assessed using matrix spike samples. A matrix spike sample is designed to provide information about the effect of each sample matrix on the sample preparation procedures and analytical technique. The spike sample recoveries should be within the acceptance range of 75–125% (LANL 2000, 71233). Seventy sample inorganic analyses were rejected for one or more analytes because the matrix spike recovery was less than 30% (Table C-6.0-1).

Analyzing the field duplicate samples assessed the precision of inorganic chemical analyses. All relative percent differences (RPDs) between the samples and field duplicates should be ±35% (LANL 2000, 71233).

Interference-check samples are used to determine if a high concentration of a single analyte in a sample is interfering with the ability to detect other analytes. All interference-check sample results were within acceptable limits (LANL 2000, 71233).

Serial-dilution checks are performed to determine if dilutions have been prepared correctly, and to identify any effects that may arise from characteristics of the sample matrix. All serial-dilution sample results were within acceptable limits (LANL 2000, 71233).

C-2.2 Inorganic Chemical Background Values

It is important to note that the previously used analytical services SOW (LANL 1995, 49738) was issued before the widespread use of axial view ICPES (also known as *trace* ICPES), and before the development of the LANL soil inorganic chemical background data set. With the advent of axial view ICPES, detection limits for inorganic chemicals have greatly improved. As an example, antimony soil detection limits for the older radial view ICPES are typically on the order of 12 mg/kg; for the *trace* ICPES the detection limits are as low as 0.5 mg/kg.

The document titled "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 59730) was developed after trace ICPES was widely used. However, since some of this work was performed prior to widespread trace ICPES use, not all detection limits are below the background values.

C-3.0 ORGANIC CHEMICAL ANALYSES

Three hundred sixty-six samples were collected at SWMU 53-002(a)-99 for one or more of the following organic chemical analyses: volatile organic compound (VOC) analysis using EPA Method 5035/8260; semivolatile organic compound (SVOC) analysis using EPA Method 8270; VOC, SVOC, and polychlorinated biphenyl (PCB) analysis using EPA Method 8082; pesticide analysis using EPA

Method 8081A; and herbicide analysis using EPA Method 8150. Methods are summarized in Table C-3.0-1. The summaries for these analyses are presented in the sections below. All QC procedures were followed as required by the analytical services SOWs (LANL 1995, 49738; LANL 2000, 71233).

C-3.1 SVOC Analyses

SVOC analyses were performed using EPA SW-846 Method 3540 for extraction and Method 8270 B for analysis. Holding times for extraction and analysis were met for all samples. The qualifiers applied to these samples due to internal standard and surrogate recoveries are presented in section C-5.0.

C-3.2 PCB Analyses

PCB samples were analyzed using EPA SW-846 Method 3540 for extraction and EPA SW-846 Method 8082 for determination.

C-3.3 VOC Analyses

VOC samples were collected and extracted using EPA Method 5035. The samples were analyzed using EPA SW-846 Method 8260. All holding times were met for the VOC analyses.

C-3.4 Herbicide Analyses

Herbicide samples were extracted using EPA SW-846 Method 3540 and analyzed using EPA SW-846 Method 8150. All holding times were met for the herbicide analyses.

C-3.5 Pesticide Chemical Analyses

Pesticide samples were extracted using EPA Method 3540 and analyzed using EPA SW-846 Method 8081. All holding times were met for the pesticide analyses.

C-3.6 Organic QA/QC Samples

Quality controls are designed to produce a quantitative measure of the reliability of a specific part of an analytical procedure. The results of the quality controls performed on a sample provide confidence about whether the analyte is present and whether the concentration reported is correct. The methods for validating organic sample results on the basis of the various QA/QC sample types are specified in LANL-ER-SOP-15.01, Rev. 1, for VOCs; LANL-ER-SOP-15.02, Rev. 1 for SVOCs; and LANL-ER-SOP-15.03, Rev. 1, for pesticides and PCBs. Because some of the analyses were performed prior to the current SOW, slightly different QA/QC procedures may have been followed. The validation of organic chemical data using QA/QC samples and other methods can result in the rejection of the data or the assignment of various qualifiers to individual sample results (see Table C-5.0-1 for an explanation of qualifiers). The results of validating the organic chemical analyses are presented in Table C-5.2-1.

Calibration verifications, instrument-performance checks, LCSs, method blanks, matrix spike samples, surrogates, and internal standards were analyzed to assess the accuracy and precision of organic chemical analyses. Each of these QA/QC sample types is defined in the analytical services SOWs (LANL 1995, 49738; LANL 2000, 71233) and described briefly in the paragraphs below.

Calibration verification is the establishment of a quantitative relationship between the response of the analytical procedure and the concentration of the target analyte. There are two aspects of calibration

verification: initial and continuing. The initial calibration verifies the accuracy of the calibration curve as well as the individual calibration standards used to perform the calibration. The continuing calibration assures that the initial calibration is still holding and correct as the instrument is used to process samples. The continuing calibration also serves to determine that analyte identification criteria such as retention times and spectral matching are being met.

The instrument-performance check is an evaluation of the tune conditions of the instrument. Six sample pesticide analyses were rejected for one or more analyte because calibration results did not meet method requirements (Table C-6.0-1).

Validation of organic data using QA/QC samples and other methods can result in rejection of the data or in assignment of various qualifiers to individual sample results (see Table C-5.0-1 for an explanation of the qualifiers). The results of validating the organic chemical analyses are presented in Table C-5.2-1.

The LCS is a known matrix that has been spiked with compounds that are representative of the target analytes, and it serves as a monitor of overall performance on a "perfect" sample. The LCS is the primary demonstration, on a daily basis, of the ability to analyze samples with good qualitative and quantitative accuracy. The analytical results for the samples were qualified according to National Functional Guidelines (EPA 1999, 66649.1) if the individual LCS recoveries were not within method-specific acceptance criteria. The LCS recoveries should fall within the control limits of 75–125% (LANL 1995, 49738; LANL 2000, 71233). Twelve sample PCB analyses were rejected because the LCS documentation was missing (Table C-6.0-1).

A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing and which is extracted and analyzed in the same manner as the corresponding environmental samples. Method blanks are used to assess the potential for sample contamination during extraction and analysis. All target analytes should be below the CRDL in the method blank (LANL 1995, 49738; LANL 2000, 71233). The method blank results for organic chemical analyses were within acceptable limits for all the analyses.

The accuracy of organic chemical analyses is also assessed using matrix spike samples which are aliquots of the submitted samples spiked with a known concentration of the target analyte(s). Matrix spike samples are used to measure the ability to recover prescribed analytes from a native sample matrix. Spiking typically occurs before sample preparation and analysis. The spike sample recoveries should be within the acceptance range of 75–125% (LANL 2000, 71233).

A surrogate compound (surrogate) is an organic chemical compound used in the analyses of organic target analytes that is similar in composition and behavior to the target analytes but not normally found in environmental samples. Surrogates are added to every blank, sample, and spike to evaluate the efficiency with which analytes are recovered during extraction and analysis. The recovery percentage of the surrogates must be within specified ranges (see LANL-ER-SOP-15.01, Rev. 1, for VOCs; LANL-ER-SOP-15.02, Rev. 1, for SVOCs; and LANL-ER-SOP-15.03, Rev. 1, for pesticides and PCBs), or the sample may be rejected or assigned a qualifier.

Internal standards are chemical compounds added to every blank, sample, and standard extract at a known concentration. They are used to compensate for (1) analyte concentration changes that might occur during storage of the extract, and (2) quantitation variations that can occur during analysis. Internal standards are used as the basis for quantitation of target analytes. The percent recovery for internal standards should be within the range of ≥50% to ≤200%. Six sample VOC analyses were rejected for one or more analytes because internal standard recovery percentages were not within acceptable limits (Table C-6.0-1).

C-4.0 RADIOCHEMICAL ANALYSES

A total of 397 samples were analyzed for radionuclides using the methods listed in Table C-4.0-1. Radionuclides with reported values less than the minimum detectable concentration (MDC) were qualified as non-detected (U). The radionuclides that were qualified as non-detected based on the MDC are summarized in Table C-5.3-1. Each radionuclide result was also compared with the corresponding 1-sigma total propagated uncertainty (TPU). If the result was not greater than three times the TPU, it was qualified as non-detected (U). Radionuclides qualified as non-detected (U) based on the 1-sigma TPU are also presented in Table C-5.3-1.

Certain gamma spectroscopy analytes are subject to spectral interference from energies of other radionuclides. When this occurs it is not possible to reliably measure these radionuclides. Laboratory results indicated spectral interference for several gamma spectroscopy analytes. These values were rejected (R) due to spectral interference, as summarized in section C-5.3. All other radionuclide results, including the qualified data, are usable for evaluation and interpretation purposes.

The precision and bias of radiochemical analyses performed at off-site fixed laboratories were assessed using matrix spike samples, LCSs, method blanks, duplicates, and tracers.

The analytical services SOW (LANL 1995, 49738; LANL 2000, 71233) specifies that spike sample recoveries should be within ±25% of the certified value. All spike sample recoveries met this acceptance criterion. LCSs were analyzed to assess accuracy for radionuclide analyses. The LCSs serve as a monitor of the overall performance of each step during the analysis, including the radiochemical separation preparation. The analytical services SOW (LANL 1995, 49738; LANL 2000, 71233) specifies that LCS recoveries should be within ±25% of the certified value. The analytical results for individual LCSs were all within the ±25% recovery control limit. Method blanks are also used to assess bias. The analytical services SOW (LANL 1995, 49738) specifies that the method blank concentration should not exceed the required EQL. All method blanks met this criterion.

C-5.0 DATA VALIDATION

The tables cited in the following sections present the data qualifiers applied to each analyte for a given sample. The data qualifiers themselves are explained in Table C-5.0-1.

Table C-5.1-1 (inorganic data quality), Table C-5.2-1 (organic data quality), and Table C-5.3-1 (radionuclide data quality) summarize the qualifiers for this data set.

C-5.1 Inorganic Data Review

Table C-5.1-1 presents the analytes that were qualified. A number of the analyses resulted in detected analytes between the method detection limit and the practical quantitation limit (J qualifier) as well as U qualifiers associated with samples that contained analytes ≤5 times the blank level.

C-5.2 Organic Data Review

Table C-5.2-1 presents the data for the samples that were analyzed for organic analytes and qualified. A number of samples were qualified due to insufficient mass spectrometry information to provide detection (i.e., the U qualifier was used).

C-5.3 Radionuclide Data Review

Table C-5.3-1 presents the data for the samples that were analyzed for radionuclides and qualified. A number of samples were qualified as undetected due to a signal less than three times the 1-sigma TPU or less than the minimum detectable concentration. Potential bias due to low tracer recovery was also identified in a few samples.

REFERENCES

The following list includes all documents cited in this report within Appendix C. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the RRES-RS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the RRES-RS project reference set titled "Reference Set for Operable Unit 1100."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; US Environmental Protection Agency, Region 6; and RRES-RS project. The sets were developed to ensure that the administrative authority has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the administrative authority are not included.

EPA (US Environmental Protection Agency), May 1987. "Test Methods for Evaluating Solid Waste, Laboratory Manual, Physical/Chemical Methods," SW-846, Third Edition, Update III, Washington, DC. (EPA 1987, 57589)

EPA (US Environmental Protection Agency), February 1, 1994. "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," OSWER 9240.1-35, EPA540/R-94-013, Washington, D.C. (EPA 1994, 48639.1)

EPA (US Environmental Protection Agency), October 1, 1999. "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," OSWER 9240.1-05A-P, PB99-963506, EPA540/R-99-008, Washington, D.C. (EPA 1999, 66649.1)

LANL (Los Alamos National Laboratory), July 1995. "Statement of Work—Analytical Support," Rev. 2, RFP No. 9-XS1-Q4257, Los Alamos, New Mexico. (LANL 1995, 49738)

LANL (Los Alamos National Laboratory), March 1996. "Quality Assurance Project Plan Requirements for Sampling and Analysis," Los Alamos National Laboratory document LA-UR-96-441, Los Alamos, New Mexico. (LANL 1996, 54609)

LANL (Los Alamos National Laboratory), December 2000. "Statement of Work for Analytical Laboratories," Rev. 1, I8980SOW0-8s, Los Alamos, New Mexico. (LANL 2000, 71233)

LANL (Los Alamos National Laboratory), September 1998. "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (draft), Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998, 59730)

Table C-2.0-1
Analytical Methods Used for Inorganic Chemical Analyses

Analytical Method	Analytical Description	Analytical Suite
EPA SW-846 Method 6010B	ICPES – atomic emission spectroscopy (AES)	Aluminum, antimony, arsenic, barium, beryllium, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, silver, thallium, vanadium, and zinc. (TAL metals)
EPA SW-846 Method 6020	ICP/MS	Aluminum, antimony, arsenic, barium, beryllium, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, silver, thallium, vanadium, and zinc. (TAL metals)
EPA SW-846 Method 7471A	CVAA	Mercury (TAL metal)
EPA Method 218.4	Atomic absorption, chelation extraction	Hexavalent chromium
EPA SW-846 Method 7196	Colorimetric method	Hexavalent chromium
EPA SW-846 Method 7041	Atomic absorption, furnace technique	Antimony
EPA SW-846 Method 7470A	Manual cold vapor technique	Mercury in liquid waste
EPA SW-846 Method 7841	Atomic absorption, furnace technique	Thallium
EPA SW-846 Method 7740	Atomic absorption, furnace technique	Selenium
EPA SW-846 Method 7471A	Manual cold vapor technique	Mercury in solid/semisolid waste

Table C-3.0-1
Analytical Methods Used for Organic Chemical Analyses

Analytical Method	Analytical Description	Target Compound List
EPA Method 3540 – Extraction EPA SW-846 Method 8270 – Analysis	SVOCs	Analytical services SOW (LANL 1995, 49738; LANL 2000, 71233)
EPA Method 5035 – Sampling EPA Method 5035 – Extraction EPA SW-846 Method 8260 – Analysis	VOCs	Analytical services SOW (LANL 1995, 49738; LANL 2000, 71233)
EPA Method 3540 – Extraction EPA SW-846 Method 8082 - Analysis	PCBs	Analytical services SOW (LANL 1995, 49738; LANL 2000, 71233)
EPA Method 3540 – Extraction EPA SW-846 Method 8081 – Analysis	Pesticides	Analytical services SOW (LANL 1995, 49738; LANL 2000, 71233)
EPA Method 3540 – Extraction EPA SW-846 Method 8150 – Analysis	Herbicides	Analytical services SOW (LANL 1995, 49738; LANL 2000, 71233)

Table C-4.0-1
Analytical Methods Used for Radiochemical Analyses

Radionuclides	Analytical Technique
Gamma-emitting radionuclides	Gamma spectroscopy
Isotopic plutonium	Chemical separation/alpha spectroscopy
Isotopic uranium	Chemical separation/alpha spectroscopy
Americium-241	Chemical separation/alpha spectroscopy
Tritium	Liquid scintillation
Strontium-90	Chemical separation/gas proportional counting

Table C-5.0-1
Explanation of Data Qualifiers Used in the Data Validation Procedure

Qualifier	Explanation
U	The analyte was analyzed for but not detected. Reported value is the sample-specific EQL or detection limit.
J	The reported value should be regarded as estimated.
J+	The reported value should be regarded as estimated and biased high.
J-	The reported value should be regarded as estimated and biased low.
UJ	The analyte was analyzed for but not detected. Reported value is an estimate of the sample-specific quantitation limit or detection limit.
R	The sample results were rejected because of serious deficiencies in the ability to analyze the sample and meet quality control criteria; presence or absence cannot be verified.

Table C-5.1-1
Inorganic Chemicals

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
Canyon Sediment						
1146S	RE53-02-49303	53-01744	0.75–1.42	Cadmium	J	The result for this analyte is estimated; it was less than the practical quantitation limit but above the method detection limit.
	RE53-02-49304	53-01746	0–0.29			
	RE53-02-49305	53-01747	0.63–1.02			
	RE53-02-49306	53-02-21057	0–0.26			
	RE53-02-49307	53-02-21058	0.33–0.65			
	RE53-02-49308	53-01748	0–0.23			
	RE53-02-49309	53-01748	0.06–0.92			
	RE53-02-49310	53-01732	0.4–0.56			
	RE53-02-49311	53-01733	0.72–0.85			
	RE53-02-49312	53-02-21063	0–1.02			
	RE53-02-49313	53-02-21063	1.02–1.44			
	RE53-02-49314	53-02-21065	0–0.29			
	RE53-02-49316	53-02-21066	0.36–0.65			
	RE53-02-49317	53-01735	0.19–0.59			
	RE53-02-49318	53-01735	1.21–1.7			
	RE53-02-49319	53-01736	0.98–1.38			
	RE53-02-49320	53-01737	0.36–0.65			
	RE53-02-49321	53-01738	0.23–0.36			
	RE53-02-49322	53-02-21073	0–0.27			
	RE53-02-49323	53-02-21074	0–0.27			
	RE53-02-49324	53-01740	0.27–0.96			
	RE53-02-49325	53-01741	0.29–0.6			

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
1146S	RE53-02-49304 RE53-02-49306	53-01746 53-02-21057	0–0.29 0–0.26	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1146S	RE53-02-49303 RE53-02-49304 RE53-02-49305 RE53-02-49306 RE53-02-49307 RE53-02-49308 RE53-02-49309 RE53-02-49310 RE53-02-49311 RE53-02-49312 RE53-02-49313 RE53-02-49314 RE53-02-49315 RE53-02-49316 RE53-02-49317 RE53-02-49318 RE53-02-49319 RE53-02-49320 RE53-02-49321 RE53-02-49322 RE53-02-49323 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-01744 53-01746 53-01747 53-02-21057 53-02-21058 53-01748 53-01748 53-01732 53-01733 53-02-21063 53-02-21063 53-02-21065 53-02-21066 53-02-21066 53-01735 53-01735 53-01736 53-01737 53-01738 53-02-21073 53-02-21074 53-01740 53-01741 53-02-21077	0.75–1.42 0–0.29 0.63–1.02 0–0.26 0.33–0.65 0–0.23 0.06–0.92 0.4–0.56 0.72–0.85 0–1.02 1.02–1.44 0–0.29 0.06–0.36 0.36–0.65 0.19–0.59 1.21–1.7 0.98–1.38 0.36–0.65 0.23–0.36 0–0.27 0–0.27 0.27–0.96 0.29–0.6 0–0.33	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1146S	RE53-02-49304 RE53-02-49305 RE53-02-49306 RE53-02-49307 RE53-02-49308 RE53-02-49309 RE53-02-49310 RE53-02-49311 RE53-02-49312 RE53-02-49313 RE53-02-49314 RE53-02-49315 RE53-02-49316 RE53-02-49317 RE53-02-49318 RE53-02-49319 RE53-02-49320 RE53-02-49321 RE53-02-49322 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-01746 53-01747 53-02-21057 53-02-21058 53-01748 53-01748 53-01732 53-01733 53-02-21063 53-02-21063 53-02-21065 53-02-21066 53-02-21066 53-01735 53-01735 53-01736 53-01737 53-01738 53-02-21073 53-01740 53-01741 53-02-21077	0–0.29 0.63–1.02 0–0.26 0.33–0.65 0–0.23 0.06–0.92 0.4–0.56 0.72–0.85 0–1.02 1.02–1.44 0–0.29 0.06–0.36 0.36–0.65 0.19–0.59 1.21–1.7 0.98–1.38 0.36–0.65 0.23–0.36 0–0.27 0.27–0.96 0.29–0.6 0–0.33	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1146S	RE53-02-49323	53-02-21074	0–0.27	Potassium	J	The result for this analyte is estimated; the relative % difference of the serial dilution sample was > the advisory limit.
1146S	RE53-02-49318 RE53-02-49323 RE53-02-49324	53-01735 53-02-21074 53-01740	1.21–1.7 0–0.27 0.27–0.96	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
1146S	RE53-02-49307	53-02-21058	0.33–0.65	Mercury	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
	RE53-02-49311	53-01733	0.72–0.85			
	RE53-02-49312	53-02-21063	0–1.02			
	RE53-02-49313	53-02-21063	1.02–1.44			
	RE53-02-49315	53-02-21066	0.06–0.36			
	RE53-02-49318	53-01735	1.21–1.7			
	RE53-02-49319	53-01736	0.98–1.38			
	RE53-02-49320	53-01737	0.36–0.65			
	RE53-02-49321	53-01738	0.23–0.36			
1146S	RE53-02-49303	53-01744	0.75–1.42	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
	RE53-02-49304	53-01746	0–0.29			
	RE53-02-49305	53-01747	0.63–1.02			
	RE53-02-49306	53-02-21057	0–0.26			
	RE53-02-49307	53-02-21058	0.33–0.65			
	RE53-02-49308	53-01748	0–0.23			
	RE53-02-49309	53-01748	0.06–0.92			
	RE53-02-49310	53-01732	0.4–0.56			
	RE53-02-49311	53-01733	0.72–0.85			
	RE53-02-49312	53-02-21063	0–1.02			
	RE53-02-49313	53-02-21063	1.02–1.44			
	RE53-02-49314	53-02-21065	0–0.29			
	RE53-02-49315	53-02-21066	0.06–0.36			
	RE53-02-49316	53-02-21066	0.36–0.65			
	RE53-02-49317	53-01735	0.19–0.59			
	RE53-02-49319	53-01736	0.98–1.38			
	RE53-02-49320	53-01737	0.36–0.65			
	RE53-02-49321	53-01738	0.23–0.36			
	RE53-02-49322	53-02-21073	0–0.27			
	RE53-02-49325	53-01741	0.29–0.6			
	RE53-02-49326	53-02-21077	0–0.33			
9671R	RE53-01-0045	53-01736	0–0.42	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-01-0046	53-01736	0.69–0.85			
	RE53-01-0047	53-01730	0–0.13			
	RE53-01-0048	53-01731	0.39–0.69			
	RE53-01-0049	53-01735	0–0.2			
	RE53-01-0050	53-01733	0–0.33			
	RE53-01-0051	53-01732	0–0.39			
	RE53-01-0052	53-01734	0–0.59			
9671R	RE53-01-0051	53-01732	0–0.39	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9671R	RE53-01-0046	53-01736	0.69–0.85	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-01-0048	53-01731	0.39–0.69			
9671R	RE53-01-0045	53-01736	0–0.42	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-01-0046	53-01736	0.69–0.85			
	RE53-01-0047	53-01730	0–0.13			
	RE53-01-0048	53-01731	0.39–0.69			
	RE53-01-0049	53-01735	0–0.2			
	RE53-01-0050	53-01733	0–0.33			
	RE53-01-0051	53-01732	0–0.39			
	RE53-01-0052	53-01734	0–0.59			
9671R	RE53-01-0046	53-01736	0.69–0.85	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
9671R	RE53-01-0047	53-01730	0–0.13	Beryllium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
9671R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01730 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0–0.13 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
9674R	RE53-01-0001 RE53-01-0014 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01739 53-01740 53-01738 53-01738	0–0.36 0–0.23 0–0.26 0.08–0.23 0–0.08	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9674R	RE53-01-0001 RE53-01-0014 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01739 53-01740 53-01738 53-01738	0–0.36 0–0.23 0–0.26 0.08–0.23 0–0.08	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9674R	RE53-01-0001 RE53-01-0014 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01739 53-01740 53-01738 53-01738	0–0.36 0–0.23 0–0.26 0.08–0.23 0–0.08	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
9689R	RE53-01-0012	53-01733	0.46–0.72	Cadmium Selenium Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9689R	RE53-01-0012	53-01733	0.46–0.72	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
9703R	RE53-01-0023 RE53-01-0026	53-01749 53-01743	0–0.2 0–0.13	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.29 0.36–0.49 0–0.13	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0023 RE53-01-0026	53-01749 53-01743	0–0.2 0–0.13	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0022 RE53-01-0024	53-01746 53-01744 53-01745 53-01748 53-01741	0.29–0.59 0.39–0.76 0.2–0.46 0.36–0.63 0–0.29	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0023 RE53-01-0026	53-01749 53-01743	0–0.2 0–0.13	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0024 RE53-01-0025	53-01746 53-01744 53-01745 53-01741 53-01742	0.29–0.59 0.39–0.76 0.2–0.46 0–0.29 0.36–0.49	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0024 RE53-01-0025	53-01746 53-01744 53-01745 53-01741 53-01742	0.29–0.59 0.39–0.76 0.2–0.46 0–0.29 0.36–0.49	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0022 RE53-01-0024	53-01746 53-01744 53-01748 53-01741	0.29–0.59 0.39–0.76 0.36–0.63 0–0.29	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	Beryllium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
9703R	RE53-01-0023 RE53-01-0026	53-01749 53-01743	0–0.2 0–0.13	Copper	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
Mesa Soil						
220	0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0038	53-01075 53-01076 53-01077 53-01079	0–0.5 0–0.5 0–0.5 0–0.5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0029 0253-95-0031 0253-95-0033 0253-95-0035 0253-95-0038	53-01070 53-01072 53-01074 53-01076 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
220	0253-95-0028 0253-95-0029 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01070 53-01071 53-01072 53-01073 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0029	53-01070	0–0.5	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0029 0253-95-0035 0253-95-0038	53-01070 53-01076 53-01079	0–0.5 0–0.5 0–0.5	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0028 0253-95-0030 0253-95-0032 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01071 53-01073 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0028 0253-95-0029 0253-95-0031 0253-95-0033 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01070 53-01072 53-01074 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0028 0253-95-0029 0253-95-0030 0253-95-0031 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01070 53-01071 53-01072 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0031 0253-95-0033 0253-95-0035 0253-95-0038	53-01072 53-01074 53-01076 53-01079	0–0.5 0–0.5 0–0.5 0–0.5	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0029 0253-95-0030 0253-95-0032	53-01070 53-01071 53-01073	0–0.5 0–0.5 0–0.5	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
220	0253-95-0028 0253-95-0029 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01070 53-01071 53-01072 53-01073 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
220	0253-95-0029 0253-95-0031 0253-95-0033 0253-95-0038	53-01070 53-01072 53-01074 53-01079	0–0.5 0–0.5 0–0.5 0–0.5	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5010R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17	Arsenic Beryllium Cobalt Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5010R	RE53-98-0002 RE53-98-0003	53-01557 53-01558	0–0.17 0–0.17	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5010R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17	Nickel Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5010R	RE53-98-0001 RE53-98-0003	53-01556 53-01558	0–0.17 0–0.17	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5010R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17	Sodium Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5010R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167	53-01642 53-01643 53-01644 53-01645 53-01646	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5623R	RE53-99-0165 RE53-99-0166 RE53-99-0167	53-01644 53-01645 53-01646	0–0.5 0–0.5 0–0.5	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167	53-01642 53-01643 53-01644 53-01645 53-01646	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164	53-01642 53-01643	0–0.5 0–0.25	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0168	53-01647	0–0.25	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170	53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649	0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5623R	RE53-99-0172	53-01651	0–0.5	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0165 RE53-99-0167	53-01644 53-01646	0–0.5 0–0.5	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0164	53-01643	0–0.25	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	Aluminum Iron	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5623R	RE53-99-0163 RE53-99-0164 RE53-99-0168	53-01642 53-01643 53-01647	0–0.5 0–0.25 0–0.25	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5623R	RE53-99-0163	53-01642	0–0.5	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5634R	RE53-99-0175	53-01645	1–1.33	Antimony	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0175	53-01645	1–1.33	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	Beryllium Cobalt Magnesium Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0174	53-01651	0.5–0.67	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0175	53-01645	1–1.33	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5634R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	Aluminum	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5634R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	Lead	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5644R	RE53-99-0176 RE53-99-0178 RE53-99-0179	53-01648 53-01644 53-01642	0.67–1 0.67–1 4.5–5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0178	53-01644	0.67–1	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0178 RE53-99-0179	53-01644 53-01642	0.67–1 4.5–5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0178	53-01644	0.67–1	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0176 RE53-99-0178	53-01648 53-01644	0.67–1 0.67–1	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0176 RE53-99-0178 RE53-99-0179	53-01648 53-01644 53-01642	0.67–1 0.67–1 4.5–5	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0177	53-01646	0.58–0.92	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0176 RE53-99-0178 RE53-99-0179	53-01648 53-01644 53-01642	0.67–1 0.67–1 4.5–5	Potassium Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5644R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5	Aluminum Iron	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5644R	RE53-99-0177	53-01646	0.58–0.92	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5662R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181	53-01652 53-01652	0–0.5 0.67–1	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5662R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0181	53-01652	0.67–1	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181	53-01652 53-01652	0–0.5 0.67–1	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	Cobalt Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181	53-01652 53-01652	0–0.5 0.67–1	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0182	53-01653	0–0.5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0182	53-01652 53-01653	0–0.5 0–0.5	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0182	53-01653	0–0.5	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5662R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	Aluminum Iron	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5662R	RE53-99-0180	53-01652	0–0.5	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5662R	RE53-99-0181	53-01652	0.67–1	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5799R	RE53-99-0185	53-01641	0–0.33	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5799R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	Beryllium Cobalt Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5799R	RE53-99-0183 RE53-99-0185	53-01639 53-01641	0–0.33 0–0.33	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5799R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	Sodium Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5799R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5906R	RE53-99-0226	53-01638	0–0.25	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5906R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5906R	RE53-99-0224 RE53-99-0225	53-01636 53-01637	0–0.33 0–0.5	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5906R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5906R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	Antimony Copper	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5906R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	Manganese Zinc	J+	The result for this analyte is estimated and biased high; the spike % recovery was high.
5950R	RE53-99-0250	53-01681	1–2	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0247 RE53-99-0250	53-01664 53-01681	1–2 1–2	Cadmium Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0247 RE53-99-0250	53-01664 53-01681	1–2 1–2	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5950R	RE53-99-0250	53-01681	1–2	Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5950R	RE53-99-0247	53-01664	1–2	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5964R	RE53-99-0259	53-01684	1–2	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0256	53-01683	1–2	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0259	53-01684	1–2	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0253 RE53-99-0256	53-01682 53-01683	1–2 1–2	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5964R	RE53-99-0253	53-01682	1–2	Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5964R	RE53-99-0256 RE53-99-0259	53-01683 53-01684	1–2 1–2	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5968R	RE53-99-0262	53-01685	1–2	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5968R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5968R	RE53-99-0263	53-01685	4–5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5968R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0265	53-01686	1–2	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	Antimony Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5983R	RE53-99-0271	53-01688	1–2	Cadmium Mercury Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5983R	RE53-99-0271	53-01688	1–2	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5983R	RE53-99-0271	53-01688	1–2	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5983R	RE53-99-0271	53-01688	1–2	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5990R	RE53-99-0233 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01656	10–12.5 24–25 9–10	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0234	53-01655	14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5990R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10	Antimony Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6001R	RE53-99-0292	53-01663	9–10	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0293	53-01663	13–14	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0292	53-01663	9–10	Cobalt Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0293	53-01663	13–14	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0292	53-01663	9–10	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6011R	RE53-99-0301	53-01693	9–10	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304	53-01692 53-01693 53-01693 53-01694	13–14 9–10 13–14 9–10	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0301	53-01693	9–10	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0302	53-01693	13–14	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
6011R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6011R	RE53-99-0305	53-01694	13–14	Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6011R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304	53-01692 53-01693 53-01693 53-01694	13–14 9–10 13–14 9–10	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6023R	RE53-99-0313 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0319	53-01696 53-01696 53-01698 53-01697	12–24 4–5 1–2 1–2	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0316 RE53-99-0317 RE53-99-0319	53-01698 53-01698 53-01697	1–2 4–5 1–2	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0319	53-01697	1–2	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0313 RE53-99-0314 RE53-99-0320	53-01696 53-01696 53-01697	12–24 4–5 4–5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0317 RE53-99-0319	53-01698 53-01697	4–5 1–2	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	Antimony Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6023R	RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319	53-01696 53-01698 53-01698 53-01697	4–5 1–2 4–5 1–2	Arsenic	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6056R	RE53-99-0322	53-01702	1–2	Beryllium Cadmium Mercury Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6056R	RE53-99-0322	53-01702	1–2	Chromium Manganese Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
6056R	RE53-99-0322	53-01702	1–2	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6484R	RE53-00-0004 RE53-00-0005 RE53-00-0006	53-01706 53-01707 53-01708	2–3 3.5–4.5 5–6	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6484R	RE53-00-0005	53-01707	3.5–4.5	Cadmium Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6484R	RE53-00-0004 RE53-00-0005 RE53-00-0006	53-01706 53-01707 53-01708	2–3 3.5–4.5 5–6	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6484R	RE53-00-0004 RE53-00-0005	53-01706 53-01707	2–3 3.5–4.5	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6484R	RE53-00-0004 RE53-00-0005 RE53-00-0006	53-01706 53-01707 53-01708	2–3 3.5–4.5 5–6	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6484R	RE53-00-0004	53-01706	2–3	Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6484R	RE53-00-0006	53-01708	5–6	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6484R	RE53-00-0005 RE53-00-0006	53-01707 53-01708	3.5–4.5 5–6	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6504R	RE53-00-0012	53-01714	3–4	Beryllium Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6504R	RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01711 53-01712 53-01713 53-01714 53-01715	5.5–6.5 4–5 4–5 3–4 4.5–5.5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6504R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 3–4 4.5–5.5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6504R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 3–4 4.5–5.5	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6504R	RE53-00-0011	53-01713	4–5	Thallium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6504R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01713 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 4–5 3–4 4.5–5.5	Manganese	J+	The result for this analyte is estimated and biased high; the spike % recovery was high.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
6504R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01713 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 4–5 3–4 4.5–5.5	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
7533R	RE53-00-0046	53-01719	0–0.5	Sodium	J	The duplicate sample relative percent difference (RPD) is > the advisory limit and the sample is a detect.
7533R	RE53-00-0046	53-01719	0–0.5	Arsenic Selenium Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7533R	RE53-00-0046	53-01719	0–0.5	Barium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
7533R	RE53-00-0046	53-01719	0–0.5	Beryllium Cobalt Copper Manganese Silver Vanadium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
7600R	RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5	Zinc	J	The duplicate sample RPD is > the advisory limit and the sample is a detect.
7600R	RE53-00-0050	53-01720	0–0.5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01722 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0062	53-01723	0–0.5	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0062	53-01723	0–0.5	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0078	53-01727	0–0.5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0050 RE53-00-0058 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0082 RE53-00-0086	53-01720 53-01722 53-01724 53-01725 53-01726 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
7600R	RE53-00-0050 RE53-00-0054 RE53-00-0058	53-01720 53-01721 53-01722	0–0.5 0–0.5 0–0.5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
Mesa Tuff						
1015S	RE53-02-46597	53-02-20824	30–31.8	Barium Cadmium Cobalt Magnesium Potassium Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1015S	RE53-02-46597	53-02-20824	30–31.8	Thallium	J	The result for this analyte is estimated; its relative % difference from the duplicate was > the advisory limit.
1015S	RE53-02-46597	53-02-20824	30–31.8	Silver	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
1025S	RE53-02-46599	53-02-20824	50–51.7	Arsenic Barium Cadmium Cobalt Magnesium Potassium Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1025S	RE53-02-46599	53-02-20824	50–51.7	Thallium	J	The result for this analyte is estimated; its relative % difference from the duplicate was > the advisory limit.
1025S	RE53-02-46599	53-02-20824	50–51.7	Silver	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
1110S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	Cadmium Calcium Chromium Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1110S	RE53-02-46714	53-02-20830	28.9–30	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1110S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1110S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	Cobalt Manganese Potassium	J	The result for this analyte is estimated; its relative % difference from the duplicate was > the advisory limit.
1110S	RE53-02-46714	53-02-20830	28.9–30	Thallium	J	The result for this analyte is estimated; its relative % difference from the duplicate was > the advisory limit.
1110S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	Barium Copper Lead Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
1110S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	Zinc	J+	The result for this analyte is estimated and biased high; the spike % recovery was high.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
1110S	RE53-02-46715	53-02-20830	49–50	Silver Thallium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
1110S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
1127S	RE53-02-46707 RE53-02-46711	53-02-20828 53-02-20829	48.5–50 49.2–50	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829	29–30 48.5–50 49.2–50 36.7–37.5	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	29–30 48.5–50 24–25 49.2–50 36.7–37.5	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46711 RE53-02-46718	53-02-20829 53-02-20829	49.2–50 36.7–37.5	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46711	53-02-20828 53-02-20828 53-02-20829	29–30 48.5–50 49.2–50	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	29–30 48.5–50 24–25 49.2–50 36.7–37.5	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829	29–30 48.5–50 36.7–37.5	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46707	53-02-20828	48.5–50	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829	29–30 48.5–50 24–25 36.7–37.5	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46710	53-02-20829	24–25	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	29–30 48.5–50 24–25 49.2–50 36.7–37.5	Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
1127S	RE53-02-46711	53-02-20829	49.2–50	Magnesium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829	29–30 48.5–50 49.2–50 36.7–37.5	Silver	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
1127S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	29–30 48.5–50 24–25 49.2–50 36.7–37.5	Thallium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5623R	RE53-99-0171	53-01650	0–0.42	Arsenic Beryllium Cobalt Copper Magnesium Nickel Potassium Vanadium Aluminum	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5623R	RE53-99-0171	53-01650	0–0.42	Iron	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5623R	RE53-99-0171	53-01650	0–0.42	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5634R	RE53-99-0115	53-01573	4–5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	Barium Beryllium Calcium Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0116	53-01573	14–15	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0116	53-01573	14–15	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	Sodium Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5634R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	Aluminum Lead	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5634R	RE53-99-0115	53-01573	4–5	Magnesium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5634R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5641R	RE53-99-0118	53-01575	14–15	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5641R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	Barium Beryllium Cobalt Copper Magnesium Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5641R	RE53-99-0118	53-01575	14–15	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5641R	RE53-99-0117	53-01575	4–5	Selenium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5641R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5641R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	Aluminum Iron	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5641R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5641R	RE53-99-0117	53-01575	4–5	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5685R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15	Arsenic Barium Beryllium Calcium Cobalt Copper Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5685R	RE53-99-0119 RE53-99-0121	53-01576 53-01577	4–5 4–5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5685R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15	Sodium Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5685R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0123 RE53-99-0125	53-01584 53-01582	4–5 4–5	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0124 RE53-99-0126	53-01584 53-01582	14–15 14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0126	53-01582	14–15	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Beryllium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125	53-01584 53-01584 53-01582	4–5 14–15 4–5	Magnesium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5696R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	Nickel Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01587 53-01587	14–15 4–5 14–15	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0128 RE53-99-0130	53-01589 53-01587	4–5 4–5	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0129	53-01589	14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0128 RE53-99-0130	53-01589 53-01587	4–5 4–5	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0131	53-01587	14–15	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Manganese	J+	The result for this analyte is estimated and biased high; the spike % recovery was high.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Beryllium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5703R	RE53-99-0129 RE53-99-0131	53-01589 53-01587	14–15 14–15	Magnesium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130	53-01589 53-01589 53-01587	4–5 14–15 4–5	Nickel	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5703R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5707R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0133	53-01586	14–15	Barium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0133	53-01586	14–15	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	Cobalt Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0133	53-01586	14–15	Magnesium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0132	53-01586	4–5	Potassium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5707R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	Aluminum	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
5707R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	Manganese	J+	The result for this analyte is estimated and biased high; the spike % recovery was high.
5707R	RE53-99-0133	53-01586	14–15	Beryllium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5707R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	Nickel	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5707R	RE53-99-0133	53-01586	14–15	Potassium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5791R	RE53-99-0136	53-01594	4–5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5791R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15	Barium Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5791R	RE53-99-0137	53-01594	14–15	Calcium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5791R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15	Cobalt Magnesium Nickel Potassium Sodium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5791R	RE53-99-0136	53-01594	4–5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5791R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5791R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15	Copper	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5795R	RE53-99-0140	53-01592	4–5	Antimony	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5795R	RE53-99-0134	53-01588	4–5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5795R	RE53-99-0134 RE53-99-0135 RE53-99-0138 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01593 53-01592 53-01592	4–5 14–15 4–5 14–15 4–5 14–15	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5795R	RE53-99-0134 RE53-99-0139 RE53-99-0141	53-01588 53-01593 53-01592	4–5 14–15 14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5795R	RE53-99-0134 RE53-99-0135 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01592 53-01592	4–5 14–15 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5795R	RE53-99-0134 RE53-99-0135 RE53-99-0139 RE53-99-0141	53-01588 53-01588 53-01593 53-01592	4–5 14–15 14–15 14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5795R	RE53-99-0138	53-01593	4–5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5795R	RE53-99-0134	53-01588	4–5	Antimony Selenium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5795R	RE53-99-0135 RE53-99-0138 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01593 53-01593 53-01592 53-01592	14–15 4–5 14–15 4–5 14–15	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5819R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5819R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	Zinc	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5819R	RE53-99-0144	53-01597	4–5	Mercury	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5819R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	Thallium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5819R	RE53-99-0142 RE53-99-0145	53-01598 53-01597	4–5 14–15	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5819R	RE53-99-0143 RE53-99-0144	53-01598 53-01597	14–15 4–5	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5827R	RE53-99-0146 RE53-99-0148 RE53-99-0149	53-01596 53-01595 53-01595	4–5 4–5 14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5827R	RE53-99-0146 RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01596 53-01595 53-01595	4–5 14–15 4–5 14–15	Mercury Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5827R	RE53-99-0146 RE53-99-0148 RE53-99-0149	53-01596 53-01595 53-01595	4–5 4–5 14–15	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5827R	RE53-99-0146 RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01596 53-01595 53-01595	4–5 14–15 4–5 14–15	Manganese Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5827R	RE53-99-0147	53-01596	14–15	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5950R	RE53-99-0248 RE53-99-0249 RE53-99-0252	53-01664 53-01664 53-01681	4–5 14–15 14–15	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0251 RE53-99-0252	53-01681 53-01681	4–5 14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5950R	RE53-99-0248	53-01664	4–5	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0248	53-01664	4–5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5950R	RE53-99-0248 RE53-99-0249 RE53-99-0251	53-01664 53-01664 53-01681	4–5 14–15 4–5	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5950R	RE53-99-0252	53-01681	14–15	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5950R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5964R	RE53-99-0255	53-01682	14–15	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260	53-01682 53-01682 53-01683 53-01683 53-01684	4–5 14–15 4–5 14–15 4–5	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0254 RE53-99-0257 RE53-99-0258	53-01682 53-01683 53-01683	4–5 4–5 14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0254	53-01682	4–5	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0255 RE53-99-0258	53-01682 53-01683	14–15 14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0254 RE53-99-0258	53-01682 53-01683	4–5 14–15	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5964R	RE53-99-0254 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5964R	RE53-99-0254 RE53-99-0255 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01684 53-01684	4–5 14–15 14–15 4–5 14–15	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5964R	RE53-99-0258	53-01683	14–15	Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5964R	RE53-99-0257	53-01683	4–5	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5964R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01684 53-01684	4–5 14–15 4–5 4–5 14–15	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5968R	RE53-99-0264	53-01685	14–15	Beryllium Cadmium Cobalt Nickel Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0266 RE53-99-0267 RE53-99-0269	53-01686 53-01686 53-01687	4–5 14–15 4–5	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0266 RE53-99-0267 RE53-99-0270	53-01686 53-01686 53-01687	4–5 14–15 14–15	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5975R	RE53-99-0266 RE53-99-0267 RE53-99-0269	53-01686 53-01686 53-01687	4–5 14–15 4–5	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5975R	RE53-99-0270	53-01687	14–15	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5975R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5983R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5983R	RE53-99-0277 RE53-99-0279	53-01689 53-01689	16–17 29–30	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5983R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5983R	RE53-99-0272 RE53-99-0277 RE53-99-0278	53-01688 53-01689 53-01689	4–5 16–17 19–20	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5983R	RE53-99-0272	53-01688	4–5	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5983R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5983R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5983R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5986R	RE53-99-0228 RE53-99-0229	53-01690 53-01690	6–7.5 7.5–9	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5986R	RE53-99-0227 RE53-99-0229	53-01690 53-01690	4.5–6 7.5–9	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5986R	RE53-99-0228 RE53-99-0229	53-01690 53-01690	6–7.5 7.5–9	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5986R	RE53-99-0228 RE53-99-0229	53-01690 53-01690	6–7.5 7.5–9	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5986R	RE53-99-0227 RE53-99-0228	53-01690 53-01690	4.5–6 6–7.5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5986R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5990R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0230 RE53-99-0231 RE53-99-0238	53-01654 53-01654 53-01656	7–8 12–13 24–25	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5990R	RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01656 53-01656	19–20 13–14 24–25	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0232 RE53-99-0237	53-01654 53-01656	19–20 13–14	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0231 RE53-99-0237	53-01654 53-01656	12–13 13–14	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0232 RE53-99-0237	53-01654 53-01656	19–20 13–14	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0230 RE53-99-0237 RE53-99-0238	53-01654 53-01656 53-01656	7–8 13–14 24–25	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5990R	RE53-99-0232	53-01654	19–20	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5990R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5990R	RE53-99-0231	53-01654	12–13	Thallium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
5990R	RE53-99-0230 RE53-99-0231 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01656 53-01656	7–8 12–13 13–14 24–25	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5990R	RE53-99-0230 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01656 53-01656	7–8 19–20 13–14 24–25	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
5998R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0280 RE53-99-0283 RE53-99-0286	53-01659 53-01661 53-01660	9–10 9–10 9–10	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0242 RE53-99-0280 RE53-99-0286	53-01658 53-01659 53-01660	9–10 9–10 9–10	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5998R	RE53-99-0239 RE53-99-0240 RE53-99-0241	53-01657 53-01657 53-01657	9–10 13–14 24–25	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0284 RE53-99-0285 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 13–14 24–25 13–14 24–25	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0239 RE53-99-0280	53-01657 53-01659	9–10 9–10	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0286 RE53-99-0287	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 9–10 13–14	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
5998R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0284 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 13–14 9–10 13–14 24–25	Thallium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
5998R	RE53-99-0239	53-01657	9–10	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
	RE53-99-0240	53-01657	13–14			
	RE53-99-0241	53-01657	24–25			
	RE53-99-0242	53-01658	9–10			
	RE53-99-0243	53-01658	13–14			
	RE53-99-0244	53-01658	24–25			
	RE53-99-0280	53-01659	9–10			
	RE53-99-0281	53-01659	13–14			
	RE53-99-0282	53-01659	24–25			
	RE53-99-0283	53-01661	9–10			
	RE53-99-0284	53-01661	13–14			
	RE53-99-0285	53-01661	24–25			
	RE53-99-0286	53-01660	9–10			
	RE53-99-0287	53-01660	13–14			
	RE53-99-0288	53-01660	24–25			
6001R	RE53-99-0289	53-01662	9–10	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0290	53-01662	13–14			
	RE53-99-0291	53-01662	24–25			
	RE53-99-0294	53-01663	24–25			
6001R	RE53-99-0289	53-01662	9–10	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0290	53-01662	13–14			
	RE53-99-0291	53-01662	24–25			
	RE53-99-0294	53-01663	24–25			
6001R	RE53-99-0289	53-01662	9–10	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0290	53-01662	13–14			
	RE53-99-0291	53-01662	24–25			
	RE53-99-0294	53-01663	24–25			
6001R	RE53-99-0294	53-01663	24–25	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6001R	RE53-99-0289	53-01662	9–10	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0290	53-01662	13–14			
6001R	RE53-99-0290	53-01662	13–14	Antimony	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6001R	RE53-99-0289	53-01662	9–10	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
	RE53-99-0291	53-01662	24–25			
	RE53-99-0294	53-01663	24–25			
6011R	RE53-99-0295	53-01691	9–10	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0296	53-01691	13–14			
	RE53-99-0297	53-01691	24–25			
	RE53-99-0298	53-01691	9–10			
	RE53-99-0300	53-01692	24–25			
	RE53-99-0306	53-01694	24–25			
6011R	RE53-99-0303	53-01693	24–25	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0306	53-01694	24–25			
6011R	RE53-99-0295	53-01691	9–10	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-99-0296	53-01691	13–14			
	RE53-99-0306	53-01694	24–25			

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
6011R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 9–10 24–25 24–25 24–25	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0300	53-01691 53-01691 53-01691 53-01692	9–10 13–14 24–25 24–25	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0295 RE53-99-0298 RE53-99-0300 RE53-99-0306	53-01691 53-01691 53-01692 53-01694	9–10 9–10 24–25 24–25	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 24–25 24–25 24–25	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01692 53-01693 53-01694	24–25 9–10 24–25 24–25 24–25	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6011R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 9–10 24–25 24–25 24–25	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6011R	RE53-99-0295	53-01691	9–10	Magnesium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6011R	RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	13–14 24–25 9–10 24–25 24–25 24–25	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6011R	RE53-99-0298	53-01691	9–10	Selenium	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6011R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 24–25 24–25 24–25	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6014R	RE53-99-0308 RE53-99-0309 RE53-99-0312	53-01701 53-01701 53-01695	4–5 14–15 14–15	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
6014R	RE53-99-0310	53-01695	1–2	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0309 RE53-99-0312	53-01701 53-01695	14–15 14–15	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695	1–2 4–5 14–15 4–5 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0308 RE53-99-0312	53-01701 53-01695	4–5 14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0307 RE53-99-0308 RE53-99-0310 RE53-99-0311	53-01701 53-01701 53-01695 53-01695	1–2 4–5 1–2 4–5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0308 RE53-99-0309 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01695 53-01695	4–5 14–15 4–5 14–15	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0307 RE53-99-0308 RE53-99-0309	53-01701 53-01701 53-01701	1–2 4–5 14–15	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0310 RE53-99-0311	53-01695 53-01695	1–2 4–5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6014R	RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01695 53-01695 53-01695	14–15 1–2 4–5 14–15	Antimony	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6014R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695 53-01695	1–2 4–5 14–15 1–2 4–5 14–15	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6014R	RE53-99-0309 RE53-99-0310	53-01701 53-01695	14–15 1–2	Selenium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6014R	RE53-99-0307 RE53-99-0308	53-01701 53-01701	1–2 4–5	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6014R	RE53-99-0307 RE53-99-0308 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01695 53-01695	1–2 4–5 4–5 14–15	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6023R	RE53-99-0315	53-01696	14–15	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0318 RE53-99-0321	53-01698 53-01697	14–15 14–15	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
6023R	RE53-99-0321	53-01697	14–15	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0315 RE53-99-0321	53-01696 53-01697	14–15 14–15	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0321	53-01697	14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0318	53-01698	14–15	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0315 RE53-99-0321	53-01696 53-01697	14–15 14–15	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6023R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	Antimony Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
6023R	RE53-99-0315 RE53-99-0321	53-01696 53-01697	14–15 14–15	Arsenic	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6504R	RE53-00-0007	53-01709	8–9	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6504R	RE53-00-0007	53-01709	8–9	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6504R	RE53-00-0007	53-01709	8–9	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
6504R	RE53-00-0007	53-01709	8–9	Manganese	J+	The result for this analyte is estimated and biased high; the spike % recovery was high.
6504R	RE53-00-0007	53-01709	8–9	Antimony	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
6504R	RE53-00-0007	53-01709	8–9	Selenium	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.
7533R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 4–5 14–15	Sodium	J	The duplicate sample RPD is > the advisory limit and the sample is a detect.
7533R	RE53-00-0043 RE53-00-0047 RE53-00-0048	53-01716 53-01719 53-01719	14–15 1–2 4–5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
7533R	RE53-00-0043 RE53-00-0047 RE53-00-0093	53-01716 53-01719 53-01718	14–15 1–2 1–2	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7533R	RE53-00-0042	53-01716	4–5	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7533R	RE53-00-0042 RE53-00-0048 RE53-00-0049	53-01716 53-01719 53-01719	4–5 4–5 14–15	Nickel	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7533R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	Barium Beryllium Cobalt Copper	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
7533R	RE53-00-0041 RE53-00-0042 RE53-00-0047 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 1–2 14–15 4–5 14–15 1–2 4–5 14–15	Manganese	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
7533R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047	53-01716 53-01716 53-01716 53-01719	1–2 4–5 14–15 1–2	Silver	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
7533R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	Vanadium	J-	The result for this analyte is estimated and biased low; the spike % recovery was low.
7533R	RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	4–5 14–15 4–5 14–15 1–2 4–5 14–15	Silver	UJ	The reporting limit for this analyte is estimated; the spike % recovery was low.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
7600R	RE53-00-0071	53-01725	1–2	Zinc	J	The duplicate sample RPD is > the advisory limit and the sample is a detect.
	RE53-00-0073	53-01725	14–15			
	RE53-00-0075	53-01726	1–2			
	RE53-00-0076	53-01726	4–5			
	RE53-00-0079	53-01727	1–2			
	RE53-00-0080	53-01727	4–5			
	RE53-00-0081	53-01727	14–15			
	RE53-00-0083	53-01728	1–2			
	RE53-00-0084	53-01728	4–5			
	RE53-00-0085	53-01728	14–15			
	RE53-00-0087	53-01729	1–2			
	RE53-00-0088	53-01729	4–5			
	RE53-00-0089	53-01729	14–15			
7600R	RE53-00-0064	53-01723	4–5	Arsenic	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0079	53-01727	1–2			
	RE53-00-0083	53-01728	1–2			
	RE53-00-0085	53-01728	14–15			
7600R	RE53-00-0051	53-01720	1–2	Beryllium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0052	53-01720	4–5			
	RE53-00-0053	53-01720	14–15			
	RE53-00-0055	53-01721	1–2			
	RE53-00-0056	53-01721	4–5			
	RE53-00-0057	53-01721	14–15			
	RE53-00-0060	53-01722	4–5			
	RE53-00-0061	53-01722	14–15			
	RE53-00-0063	53-01723	1–2			
	RE53-00-0064	53-01723	4–5			
	RE53-00-0065	53-01723	14–15			
	RE53-00-0067	53-01724	1–2			
	RE53-00-0068	53-01724	4–5			
	RE53-00-0069	53-01724	14–15			
	RE53-00-0071	53-01725	1–2			
	RE53-00-0072	53-01725	4–5			
	RE53-00-0073	53-01725	14–15			
	RE53-00-0075	53-01726	1–2			
	RE53-00-0076	53-01726	4–5			
	RE53-00-0077	53-01726	14–15			
	RE53-00-0079	53-01727	1–2			
	RE53-00-0080	53-01727	4–5			
	RE53-00-0081	53-01727	14–15			
	RE53-00-0083	53-01728	1–2			
	RE53-00-0084	53-01728	4–5			
	RE53-00-0085	53-01728	14–15			
	RE53-00-0087	53-01729	1–2			
	RE53-00-0088	53-01729	4–5			
	RE53-00-0089	53-01729	14–15			
7600R	RE53-00-0051	53-01720	1–2	Cadmium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0059	53-01722	1–2			
	RE53-00-0061	53-01722	14–15			
	RE53-00-0063	53-01723	1–2			
	RE53-00-0065	53-01723	14–15			
	RE53-00-0069	53-01724	14–15			
	RE53-00-0072	53-01725	4–5			
	RE53-00-0081	53-01727	14–15			
7600R	RE53-00-0063	53-01723	1–2	Chromium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
7600R	RE53-00-0051	53-01720	1–2	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0052	53-01720	4–5			
	RE53-00-0053	53-01720	14–15			
	RE53-00-0055	53-01721	1–2			
	RE53-00-0056	53-01721	4–5			
	RE53-00-0057	53-01721	14–15			
7600R	RE53-00-0060	53-01722	4–5	Cobalt	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0061	53-01722	14–15			
	RE53-00-0063	53-01723	1–2			
	RE53-00-0064	53-01723	4–5			
	RE53-00-0065	53-01723	14–15			
	RE53-00-0067	53-01724	1–2			
	RE53-00-0068	53-01724	4–5			
	RE53-00-0069	53-01724	14–15			
	RE53-00-0072	53-01725	4–5			
	RE53-00-0073	53-01725	14–15			
	RE53-00-0076	53-01726	4–5			
	RE53-00-0077	53-01726	14–15			
	RE53-00-0079	53-01727	1–2			
	RE53-00-0080	53-01727	4–5			
	RE53-00-0081	53-01727	14–15			
	RE53-00-0083	53-01728	1–2			
	RE53-00-0084	53-01728	4–5			
	RE53-00-0085	53-01728	14–15			
	RE53-00-0087	53-01729	1–2			
	RE53-00-0088	53-01729	4–5			
	RE53-00-0089	53-01729	14–15			
7600R	RE53-00-0053	53-01720	14–15	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0057	53-01721	14–15			
	RE53-00-0061	53-01722	14–15			
7600R	RE53-00-0063	53-01723	1–2	Copper	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0064	53-01723	4–5			
	RE53-00-0068	53-01724	4–5			
	RE53-00-0072	53-01725	4–5			
	RE53-00-0073	53-01725	14–15			
	RE53-00-0077	53-01726	14–15			
	RE53-00-0083	53-01728	1–2			
	RE53-00-0084	53-01728	4–5			
	RE53-00-0085	53-01728	14–15			
	RE53-00-0088	53-01729	4–5			
	RE53-00-0089	53-01729	14–15			
7600R	RE53-00-0059	53-01722	1–2	Mercury	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0067	53-01724	1–2			
	RE53-00-0075	53-01726	1–2			
	RE53-00-0080	53-01727	4–5			
	RE53-00-0087	53-01729	1–2			
	RE53-00-0088	53-01729	4–5			
7600R	RE53-00-0051	53-01720	1–2	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
	RE53-00-0055	53-01721	1–2			
	RE53-00-0056	53-01721	4–5			
	RE53-00-0057	53-01721	14–15			
	RE53-00-0060	53-01722	4–5			
	RE53-00-0063	53-01723	1–2			
	RE53-00-0068	53-01724	4–5			

Table C-5.1-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analyte	Qualifier	Explanation
7600R	RE53-00-0072 RE53-00-0076 RE53-00-0077 RE53-00-0079 RE53-00-0080 RE53-00-0081 RE53-00-0083 RE53-00-0087 RE53-00-0088 RE53-00-0089	53-01725 53-01726 53-01726 53-01727 53-01727 53-01727 53-01728 53-01729 53-01729 53-01729	4–5 4–5 14–15 1–2 4–5 14–15 1–2 1–2 4–5 14–15	Silver	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0059 RE53-00-0060	53-01722 53-01722	1–2 4–5	Thallium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.
7600R	RE53-00-0077	53-01726	14–15	Vanadium	J	The result for this analyte is estimated; it was < the practical quantitation limit but above the method detection limit.

Table C-5.2-1
Organic Chemicals

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
Canyon Sediment							
1145S	RE53-02-49306 RE53-02-49308 RE53-02-49309 RE53-02-49314 RE53-02-49321 RE53-02-49324	53-02-21057 53-01748 53-01748 53-02-21065 53-01738 53-01740	0–0.26 0–0.23 0.06–0.92 0–0.29 0.23–0.36 0.27–0.96	PAH	Acenaphthylene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49304 RE53-02-49305 RE53-02-49308 RE53-02-49309 RE53-02-49312 RE53-02-49313 RE53-02-49314 RE53-02-49317 RE53-02-49319 RE53-02-49321 RE53-02-49322 RE53-02-49323 RE53-02-49325	53-01746 53-01747 53-01748 53-01748 53-02-21063 53-02-21063 53-02-21065 53-01735 53-01736 53-01738 53-02-21073 53-02-21074 53-01741	0–0.29 0.63–1.02 0–0.23 0.06–0.92 0–1.02 1.02–1.44 0–0.29 0.19–0.59 0.98–1.38 0.23–0.36 0–0.27 0–0.27 0.29–0.6		Benzo(a)anthracene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49303 RE53-02-49304 RE53-02-49305 RE53-02-49306 RE53-02-49308 RE53-02-49309 RE53-02-49312 RE53-02-49313 RE53-02-49314 RE53-02-49316 RE53-02-49317 RE53-02-49318 RE53-02-49319 RE53-02-49322 RE53-02-49324 RE53-02-49325	53-01744 53-01746 53-01747 53-02-21057 53-01748 53-01748 53-02-21063 53-02-21063 53-02-21065 53-02-21066 53-01735 53-01735 53-01736 53-02-21073 53-01740 53-01741	0.75–1.42 0–0.29 0.63–1.02 0–0.26 0–0.23 0.06–0.92 0–1.02 1.02–1.44 0–0.29 0.36–0.65 0.19–0.59 1.21–1.7 0.98–1.38 0–0.27 0.27–0.96 0.29–0.6		Benzo(a)pyrene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49303 RE53-02-49304 RE53-02-49308 RE53-02-49313 RE53-02-49314 RE53-02-49317 RE53-02-49319 RE53-02-49321 RE53-02-49322 RE53-02-49323 RE53-02-49324 RE53-02-49325	53-01744 53-01746 53-01748 53-02-21063 53-02-21065 53-01735 53-01736 53-01738 53-02-21073 53-02-21074 53-01740 53-01741	0.75–1.42 0–0.29 0–0.23 1.02–1.44 0–0.29 0.19–0.59 0.98–1.38 0.23–0.36 0–0.27 0–0.27 0.27–0.96 0.29–0.6		Benzo(b)fluoranthene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1145S	RE53-02-49303	53-01744	0.75–1.42		Benzo(g,h,i)perylene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
	RE53-02-49304	53-01746	0–0.29				
	RE53-02-49305	53-01747	0.63–1.02				
	RE53-02-49308	53-01748	0–0.23				
	RE53-02-49311	53-01733	0.72–0.85				
	RE53-02-49314	53-02-21065	0–0.29				
	RE53-02-49317	53-01735	0.19–0.59				
	RE53-02-49318	53-01735	1.21–1.7				
	RE53-02-49319	53-01736	0.98–1.38				
	RE53-02-49321	53-01738	0.23–0.36				
	RE53-02-49322	53-02-21073	0–0.27				
	RE53-02-49323	53-02-21074	0–0.27				
	RE53-02-49324	53-01740	0.27–0.96				
	RE53-02-49325	53-01741	0.29–0.6				
1145S	RE53-02-49303	53-01744	0.75–1.42	PAH	Benzo(k)fluoranthene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
	RE53-02-49304	53-01746	0–0.29				
	RE53-02-49305	53-01747	0.63–1.02				
	RE53-02-49306	53-02-21057	0–0.26				
	RE53-02-49307	53-02-21058	0.33–0.65				
	RE53-02-49308	53-01748	0–0.23				
	RE53-02-49309	53-01748	0.06–0.92				
	RE53-02-49310	53-01732	0.4–0.56				
	RE53-02-49311	53-01733	0.72–0.85				
	RE53-02-49312	53-02-21063	0–1.02				
	RE53-02-49313	53-02-21063	1.02–1.44				
	RE53-02-49314	53-02-21065	0–0.29				
	RE53-02-49315	53-02-21066	0.06–0.36				
	RE53-02-49316	53-02-21066	0.36–0.65				
	RE53-02-49317	53-01735	0.19–0.59				
	RE53-02-49319	53-01736	0.98–1.38				
	RE53-02-49320	53-01737	0.36–0.65				
	RE53-02-49321	53-01738	0.23–0.36				
	RE53-02-49322	53-02-21073	0–0.27				
	RE53-02-49323	53-02-21074	0–0.27				
	RE53-02-49324	53-01740	0.27–0.96				
	RE53-02-49325	53-01741	0.29–0.6				
1145S	RE53-02-49304	53-01746	0–0.29		Chrysene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
	RE53-02-49305	53-01747	0.63–1.02				
	RE53-02-49306	53-02-21057	0–0.26				
	RE53-02-49307	53-02-21058	0.33–0.65				
	RE53-02-49308	53-01748	0–0.23				
	RE53-02-49309	53-01748	0.06–0.92				
	RE53-02-49310	53-01732	0.4–0.56				
	RE53-02-49311	53-01733	0.72–0.85				
	RE53-02-49312	53-02-21063	0–1.02				
	RE53-02-49313	53-02-21063	1.02–1.44				
	RE53-02-49314	53-02-21065	0–0.29				
	RE53-02-49316	53-02-21066	0.36–0.65				
	RE53-02-49317	53-01735	0.19–0.59				
	RE53-02-49318	53-01735	1.21–1.7				
	RE53-02-49319	53-01736	0.98–1.38				
	RE53-02-49320	53-01737	0.36–0.65				
	RE53-02-49321	53-01738	0.23–0.36				
	RE53-02-49322	53-02-21073	0–0.27				

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1145S	RE53-02-49304 RE53-02-49308 RE53-02-49309 RE53-02-49319	53-01746 53-01748 53-01748 53-01736	0–0.29 0–0.23 0.06–0.92 0.98–1.38	PAH	Dibenz(a,h)anthracene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49304 RE53-02-49308 RE53-02-49313 RE53-02-49314 RE53-02-49317 RE53-02-49319 RE53-02-49322	53-01746 53-01748 53-02-21063 53-02-21065 53-01735 53-01736 53-02-21073	0–0.29 0–0.23 1.02–1.44 0–0.29 0.19–0.59 0.98–1.38 0–0.27		Fluoranthene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49304 RE53-02-49305 RE53-02-49306 RE53-02-49308 RE53-02-49314 RE53-02-49316 RE53-02-49317 RE53-02-49321 RE53-02-49322 RE53-02-49323 RE53-02-49324 RE53-02-49325	53-01746 53-01747 53-02-21057 53-01748 53-02-21065 53-02-21066 53-01735 53-01738 53-02-21073 53-02-21074 53-01740 53-01741	0–0.29 0.63–1.02 0–0.26 0–0.23 0–0.29 0.36–0.65 0.19–0.59 0.23–0.36 0–0.27 0–0.27 0.27–0.96 0.29–0.6		Indeno(1,2,3-cd)pyrene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49323	53-02-21074	0–0.27		Naphthalene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49304 RE53-02-49313 RE53-02-49314 RE53-02-49317 RE53-02-49319 RE53-02-49322	53-01746 53-02-21063 53-02-21065 53-01735 53-01736 53-02-21073	0–0.29 1.02–1.44 0–0.29 0.19–0.59 0.98–1.38 0–0.27		Phenanthrene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49303 RE53-02-49304 RE53-02-49310 RE53-02-49311 RE53-02-49313 RE53-02-49314 RE53-02-49315 RE53-02-49317 RE53-02-49319 RE53-02-49321 RE53-02-49322 RE53-02-49323 RE53-02-49324 RE53-02-49326	53-01744 53-01746 53-01732 53-01733 53-02-21063 53-02-21065 53-02-21066 53-01735 53-01736 53-01738 53-02-21073 53-02-21074 53-01740 53-02-21077	0.75–1.42 0–0.29 0.4–0.56 0.72–0.85 1.02–1.44 0–0.29 0.06–0.36 0.19–0.59 0.98–1.38 0.23–0.36 0–0.27 0–0.27 0.27–0.96 0–0.33	PAH	Pyrene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
1145S	RE53-02-49323	53-02-21074	0–0.27	PCB	Aroclor-1254	J-	The result for this analyte is estimated and biased low; the sample was extracted outside the appropriate holding time.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1145S	RE53-02-49323 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-02-21074 53-01740 53-01741 53-02-21077	0–0.27 0.27–0.96 0.29–0.6 0–0.33	PCB	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	UJ	The reporting limit for this analyte is estimated; the sample was extracted outside the appropriate holding time.
1145S	RE53-02-49324 RE53-02-49325 RE53-02-49326	53-01740 53-01741 53-02-21077	0.27–0.96 0.29–0.6 0–0.33	PEST	DDE[4,4'-]	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
1145S	RE53-02-49324 RE53-02-49325 RE53-02-49326	53-01740 53-01741 53-02-21077	0.27–0.96 0.29–0.6 0–0.33		DDT[4,4'-]	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
1145S	RE53-02-49323 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-02-21074 53-01740 53-01741 53-02-21077	0–0.27 0.27–0.96 0.29–0.6 0–0.33	PEST	Aldrin BHC[alpha-] BHC[beta-] BHC[delta-] BHC[gamma-] Chlordane[alpha-] Chlordane[gamma-] DDD[4,4'-]	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
1145S	RE53-02-49323	53-02-21074	0–0.27		DDE[4,4'-]	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
1145S	RE53-02-49323	53-02-21074	0–0.27		DDT[4,4'-]	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
1145S	RE53-02-49323 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-02-21074 53-01740 53-01741 53-02-21077	0–0.27 0.27–0.96 0.29–0.6 0–0.33	PEST	Dieldrin Endosulfan I Endosulfan II Endosulfan Sulfate Endrin Endrin Aldehyde Endrin Ketone Heptachlor Heptachlor Epoxide Methoxychlor[4,4'-] Toxaphene (Technical Grade)	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1145S	RE53-02-49320	53-01737	0.36–0.65	PEST	Aldrin BHC[alpha-] BHC[beta-] BHC[delta-] BHC[gamma-] Chlordane[alpha-] Chlordane[gamma-] DDD[4,4'-] DDE[4,4'-] DDT[4,4'-] Dieldrin Endosulfan I Endosulfan II Endosulfan Sulfate Endrin Endrin Aldehyde Endrin Ketone Heptachlor Heptachlor Epoxide Methoxychlor[4,4'-] Toxaphene (Technical Grade)	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
1145S	RE53-02-49314	53-02-21065	0–0.29	VOC	Bromobenzene Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Isopropylbenzene Isopropyltoluene[4-] Propylbenzene[1-] Tetrachloroethane[1,1,2,2-] Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Benzoic Acid	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Benzyl Alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-ethylhexyl)phthalate Bromophenyl-phenylether[4-] Butylbenzylphthalate	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Chloro-3-methylphenol[4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Chloroaniline[4-] Chloronaphthalene[2-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33	SVOC	Chlorophenol[2-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Chlorophenyl-phenyl[4-] Ether Chrysene Dibenz(a,h)anthracene Dibenzofuran Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorobenzidine[3,3'-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Dichlorophenol[2,4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Diethylphthalate	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048	53-01736 53-01736 53-01731	0–0.42 0.69–0.85 0.39–0.69		Dimethyl Phthalate	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9670R	RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01735 53-01733 53-01732 53-01734	0–0.2 0–0.33 0–0.39 0–0.59	SVOC	Dimethyl Phthalate	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Dimethylphenol[2,4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Di-n-butylphthalate	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Dinitro-2-methylphenol[4,6-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0050 RE53-01-0051	53-01733 53-01732	0–0.33 0–0.39		Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclo-pentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene Isophorone Methylnaphthalene[2-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Methylphenol[2-] Methylphenol[4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59	SVOC	Naphthalene	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Nitroaniline[2-] Nitroaniline[3-] Nitroaniline[4-] Nitrobenzene	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Nitrophenol[2-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050 RE53-01-0051	53-01736 53-01731 53-01733 53-01732	0–0.42 0.39–0.69 0–0.33 0–0.39		Nitrophenol[4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Nitrosodimethylamine [N-] Nitroso-di-n-propylamine[N-] Nitrosodiphenylamine [N-] Oxybis(1-chloropropane)[2,2'-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Pentachlorophenol	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Phenanthrene	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Phenol	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Pyrene Trichlorobenzene[1,2,4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.
9670R	RE53-01-0045 RE53-01-0048 RE53-01-0050	53-01736 53-01731 53-01733	0–0.42 0.39–0.69 0–0.33		Trichlorophenol[2,4,5-] Trichlorophenol[2,4,6-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0048 RE53-01-0049	53-01736 53-01736 53-01730 53-01731 53-01735	0–0.42 0.69–0.85 0–0.13 0.39–0.69 0–0.2	SVOC	Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
9670R	RE53-01-0051	53-01732	0–0.39	VOC	Isopropyltoluene[4-]	J	The result for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9670R	RE53-01-0051	53-01732	0–0.39	VOC	Tetrachloroethene	J+	The result for this analyte is estimated and biased high; the surrogate % recovery was high.
9670R	RE53-01-0051	53-01732	0–0.39		Toluene	J+	The result for this analyte is estimated and biased high; the surrogate % recovery was high.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01730 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0–0.13 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
9670R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01730 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0–0.13 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59	voc	Chloroform Methylene Chloride Trichloroethene	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
9670R	RE53-01-0046 RE53-01-0051	53-01736 53-01732	0.69–0.85 0–0.39	VOC	Bromobenzene Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9670R	RE53-01-0046	53-01736	0.69–0.85		Isopropyltoluene[4-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9670R	RE53-01-0046 RE53-01-0051	53-01736 53-01732	0.69–0.85 0–0.39		Propylbenzene[1-] Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001	53-01737	0–0.36	HERB	D[2,4-] DB[2,4-]	J+	The result for this analyte is estimated and biased high; the surrogate % recovery was high.
9673R	RE53-01-0001	53-01737	0–0.36	HERB	Dichlorprop Dinoseb T[2,4,5-]	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
9673R	RE53-01-0015	53-01740	0–0.26	VOC	Bromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Trichloroethene	J	The result for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0016	53-01737 53-01738	0–0.36 0.08–0.23	VOC	Acetone Chloroform	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
9673R	RE53-01-0001 RE53-01-0014 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01739 53-01740 53-01738 53-01738	0–0.36 0–0.23 0–0.26 0.08–0.23 0–0.08		Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
9673R	RE53-01-0016 RE53-01-0017	53-01738 53-01738	0.08–0.23 0–0.08	VOC	Bromomethane	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
9673R	RE53-01-0015	53-01740	0–0.26		Dichlorobenzene[1,4-]	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
9673R	RE53-01-0014	53-01739	0–0.23		Trichloroethene	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9673R	RE53-01-0015	53-01740	0–0.26	VOC	Acetone	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26	VOC	Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001	53-01737	0–0.36		Bromomethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26		Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0015	53-01740	0–0.26		Chloroform	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26		Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001	53-01737	0–0.36		Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26		Dichlorodifluoromethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26	VOC	Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis/trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene[cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane [1,1,1,2-] Tetrachloroethane [1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethane[1,1,2-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001	53-01737	0–0.36	VOC	Trichloroethene	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26		Trichlorofluoromethane Trichloropropane[1,2,3-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9673R	RE53-01-0001	53-01737	0–0.36		Trichlorotrifluoroethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26		Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9688R	RE53-01-0012	53-01733	0.46–0.72	SVOC	Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
9688R	RE53-01-0012	53-01733	0.46–0.72	VOC	Acetone Chloroform Methylene Chloride Trichloroethene	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0023	53-01749	0–0.2	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Benzyl Alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-ethylhexyl)phthalate Bromophenyl-phenylether[4-] Butylbenzylphthalate Chloroaniline[4-] Chloronaphthalene[2-] Chlorophenyl-phenyl[4-] Ether Chrysene Dibenz(a,h)anthracene Dibenzofuran Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorobenzidine[3,3'-] Diethylphthalate Dimethyl Phthalate Di-n-butylphthalate Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclo-pentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene Isophorone Methylnaphthalene[2-] Naphthalene Nitroaniline[2-] Nitroaniline[3-] Nitroaniline[4-] Nitrobenzene Nitrosodimethylamine [N-] Nitroso-di-n-propylamine[N-] Nitrosodiphenylamine [N-] Oxybis(1-chloropropane)[2,2'-] Phenanthrene Pyrene Trichlorobenzene[1,2,4-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0020	53-01747	0.23–0.63	SVOC	Benzo(a)anthracene	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022	53-01744 53-01745 53-01747 53-01748	0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63		Benzo(a)pyrene	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022	53-01744 53-01745 53-01747 53-01748	0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63		Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0020	53-01747	0.23–0.63		Bis(2-ethylhexyl)phthalate	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0020	53-01747	0.23–0.63		Butylbenzylphthalate	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0020	53-01747	0.23–0.63		Chrysene	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0020	53-01747	0.23–0.63		Dichlorobenzidine[3,3'-]	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022	53-01744 53-01745 53-01747 53-01748	0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63		Di-n-octylphthalate Indeno(1,2,3-cd)pyrene	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.29 0.36–0.49 0–0.13	SVOC	Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
9702R	RE53-01-0018	53-01744	0.39–0.76	VOC	Dichlorobenzene[1,4-]	J	The result for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018	53-01744	0.39–0.76		Toluene	J	The result for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01744 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.39–0.76 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
9702R	RE53-01-0025 RE53-01-0026	53-01742 53-01743	0.36–0.49 0–0.13		Carbon Disulfide	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
9702R	RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13		Chloroform	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
9702R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13		Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
9702R	RE53-01-0002	53-01746	0.29–0.59	VOC	Bromomethane	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0002 RE53-01-0019	53-01746 53-01745	0.29–0.59 0.2–0.46		Dichlorobenzene[1,4-]	U	The result for this analyte is undetected; the mass spectrum did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49	VOC	Benzene	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Bromobenzene	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022	53-01744 53-01748	0.39–0.76 0.36–0.63		Carbon Disulfide	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018	53-01744	0.39–0.76	VOC	Chloroform	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49	VOC	Chloromethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Dibromoethane[1,2-] Dibromomethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49	VOC	Dichlorobenzene[1,2-] Dichlorobenzene[1,3-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01748 53-01741 53-01742	0.36–0.63 0–0.29 0.36–0.49		Dichlorobenzene[1,4-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49	VOC	Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis/trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Isopropylbenzene Isopropyltoluene[4-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Methyl-2-pentanone[4-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Propylbenzene[1-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Styrene Tetrachloroethane[1,1,1,2-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49	VOC	Tetrachloroethane[1,1,2,2-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Tetrachloroethene	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0022 RE53-01-0025	53-01748 53-01742	0.36–0.63 0.36–0.49		Toluene	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Trichloroethane[1,1,1-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0022 RE53-01-0025	53-01748 53-01742	0.36–0.63 0.36–0.49		Trichloroethane[1,1,2-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Trichloroethene Trichlorofluoromethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Trichloropropane[1,2,3-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49	VOC	Trichlorotrifluoroethane	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0024 RE53-01-0025	53-01744 53-01748 53-01741 53-01742	0.39–0.76 0.36–0.63 0–0.29 0.36–0.49		Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-]	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0018 RE53-01-0022 RE53-01-0025	53-01744 53-01748 53-01742	0.39–0.76 0.36–0.63 0.36–0.49		Vinyl Chloride Xylene (Total)	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.
Mesa Soil							
5622R	RE53-99-0163 RE53-99-0164 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	PCB	Aroclor-1016	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5622R	RE53-99-0163 RE53-99-0164 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Aroclor-1221 Aroclor-1232 Aroclor-1242	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0164 RE53-99-0166 RE53-99-0168 RE53-99-0169	53-01642 53-01643 53-01645 53-01647 53-01648	0–0.5 0–0.25 0–0.5 0–0.25 0–0.5		Aroclor-1248	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0170 RE53-99-0172	53-01649 53-01651	0–0.5 0–0.5	PCB	Aroclor-1248	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0164 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Aroclor-1254 Aroclor-1260	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0170	53-01649	0–0.5	PEST	DDE[4,4'-]	J-	The result for this analyte is estimated and biased low; the surrogate % recovery was low.
5622R	RE53-99-0165	53-01644	0–0.5	PEST	DDT[4,4'-]	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	PEST	Aldrin BHC[alpha-] BHC[beta-] BHC[delta-] BHC[gamma-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168 RE53-99-0169	53-01642 53-01645 53-01647 53-01648	0–0.5 0–0.5 0–0.25 0–0.5	PEST	Chlordane[alpha-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0170 RE53-99-0172	53-01649 53-01651	0–0.5 0–0.5	PEST	Chlordane[alpha-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Chlordane[gamma-] DDD[4,4'-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0172	53-01642 53-01645 53-01647 53-01648 53-01651	0–0.5 0–0.5 0–0.25 0–0.5 0–0.5		DDE[4,4'-] DDT[4,4'-] Dieldrin	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168	53-01642 53-01645 53-01647	0–0.5 0–0.5 0–0.25		Endosulfan I	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.5	PEST	Endosulfan I	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Endosulfan II Endosulfan Sulfate Endrin Endrin Aldehyde Endrin Ketone	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163	53-01642	0–0.5		Heptachlor	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	PEST	Heptachlor	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5622R	RE53-99-0163 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Heptachlor Epoxide Methoxychlor[4,4'-] Toxaphene (Technical Grade)	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5622R	RE53-99-0163	53-01642	0–0.5	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Benzoic Acid Benzyl Alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-ethylhexyl)phthalate Bromophenyl-phenylether[4-] Butylbenzylphthalate Chloro-3-methylphenol[4-] Chloroaniline[4-] Chloronaphthalene[2-] Chlorophenol[2-] Chlorophenyl-phenyl[4-] Ether Chrysene Dibenz(a,h)anthracene Dibenzofuran Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorobenzidine[3,3'-] Dichlorophenol[2,4-] Diethylphthalate Dimethyl Phthalate Dimethylphenol[2,4-] Di-n-butylphthalate Dinitro-2-methylphenol[4,6-] Dinitrophenol[2,4-] Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclo-pentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene Isophorone Methylnaphthalene[2-] Methylphenol[2-] Methylphenol[3-] Methylphenol[4-] Naphthalene	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Nitroaniline[2-] Nitroaniline[3-] Nitroaniline[4-] Nitrobenzene Nitrophenol[2-] Nitrophenol[4-] Nitrosodimethylamine [N-] Nitroso-di-n-propylamine[N-] Nitrosodiphenylamine [N-] Oxybis(1-chloropropane)[2,2'-] Pentachlorophenol Phenanthrene Phenol Pyrene Trichlorobenzene[1,2,4-] Trichlorophenol[2,4,5-] Trichlorophenol[2,4,6-]		
5633R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	VOC	Acetone Chloroform Toluene	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5643R	RE53-99-0177 RE53-99-0178	53-01646 53-01644	0.58–0.92 0.67–1	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5661R	RE53-99-0181	53-01652	0.67–1	VOC	Acetone Toluene	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5801R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5905R	RE53-99-0224	53-01636	0–0.33	SVOC	Bis(2-ethylhexyl)phthalate	J	The result is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5905R	RE53-99-0224 RE53-99-0226	53-01636 53-01638	0–0.33 0–0.25	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Benzoic Acid Benzyl Alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.
5905R	RE53-99-0226	53-01638	0–0.25		Bis(2-ethylhexyl)phthalate	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5905R	RE53-99-0224 RE53-99-0226	53-01636 53-01638	0–0.33 0–0.25		Bromophenyl-phenylether[4-] Butylbenzylphthalate Chloro-3-methylphenol[4-] Chloroaniline[4-] Chloronaphthalene[2-] Chlorophenol[2-] Chlorophenyl-phenyl[4-]Ether Chrysene Dibenz(a,h)anthracene Dibenzofuran Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorobenzidine[3,3'-] Dichlorophenol[2,4-] Diethylphthalate Dimethyl Phthalate Dimethylphenol[2,4-] Di-n-butylphthalate Dinitro-2-methylphenol[4,6-] Dinitro-2-methylphenol[4,6-] Dinitrophenol[2,4-] Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclo-pentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene Isophorone Methylnaphthalene[2-] Methylphenol[2-] Methylphenol[3-] Methylphenol[4-] Naphthalene Nitroaniline[2-] Nitroaniline[3-] Nitroaniline[4-] Nitrobenzene Nitrophenol[2-] Nitrophenol[4-] Nitrosodimethylamine[N-] Nitroso-di-n-propylamine[N-] Nitrosodiphenylamine[N-] Oxybis(1-chloropropane)[2,2'-] Pentachlorophenol Phenanthrene Phenol Pyrene Trichlorobenzene[1,2,4-] Trichlorophenol[2,4,5-] Trichlorophenol[2,4,6-]	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5949R	RE53-99-0247 RE53-99-0250	53-01664 53-01681	1–2 1–2	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5963R	RE53-99-0259	53-01684	1–2	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5963R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2		Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5963R	RE53-99-0259	53-01684	1–2	VOC	Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
5967R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5967R	RE53-99-0263	53-01685	4–5		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5974R	RE53-99-0265	53-01686	1–2	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5974R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2		Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5974R	RE53-99-0265	53-01686	1–2	VOC	Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene {cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-]		

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Vinyl Chloride Xylene (Total)		
5982R	RE53-99-0271	53-01688	1–2	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5982R	RE53-99-0271	53-01688	1–2	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Tetrachloroethane[1,1,1, 2-] Tetrachloroethane[1,1,2, 2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
5989R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5989R	RE53-99-0236	53-01656	9–10		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5989R	RE53-99-0233	53-01655	10–12.5	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
6000R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
6000R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichlorofluoromethane Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-]		

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
6010R	RE53-99-0299 RE53-99-0302	53-01692 53-01693	13–14 13–14	VOC	Acetone	J-	The result for this analyte is estimated and biased low; the surrogate % recovery was low.
6010R	RE53-99-0302	53-01693	13–14		Butanone[2-]	J-	The result for this analyte is estimated and biased low; the surrogate % recovery was low.
6010R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
6010R	RE53-99-0301	53-01693	9–10	VOC	Acetone	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
6010R	RE53-99-0299 RE53-99-0301 RE53-99-0302	53-01692 53-01693 53-01693	13–14 9–10 13–14		Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
6010R	RE53-99-0299 RE53-99-0301	53-01692 53-01693	13–14 9–10		Butanone[2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
6010R	RE53-99-0299 RE53-99-0301 RE53-99-0302	53-01692 53-01693 53-01693	13–14 9–10 13–14		Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
6010R	RE53-99-0299 RE53-99-0301	53-01692 53-01693	13–14 9–10		Carbon Disulfide	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6010R	RE53-99-0299 RE53-99-0301 RE53-99-0302	53-01692 53-01693 53-01693	13–14 9–10 13–14		Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total) Xylene (Total)	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6022R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
6022R	RE53-99-0313 RE53-99-0314	53-01696 53-01696	12–24 4–5		Trichloroethene	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6022R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6022R	RE53-99-0313 RE53-99-0319	53-01696 53-01697	12–24 1–2	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
6055R	RE53-99-0322	53-01702	1–2	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
6503R	RE53-00-0008 RE53-00-0010 RE53-00-0011 RE53-00-0013	53-01710 53-01712 53-01713 53-01715	6.5–7.5 4–5 4–5 4.5–5.5	SVOC	Diethylphthalate Di-n-butylphthalate	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
6503R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01713 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 4–5 3–4 4.5–5.5	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
6503R	RE53-00-0010	53-01712	4–5	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichlorofluoromethane Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7532R	RE53-00-0046	53-01719	0–0.5	SVOC	Benzoic Acid	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7532R	RE53-00-0046	53-01719	0–0.5	VOC	Acetone Methylene Chloride Chlorodibromomethane Dichloropropane[1,3-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Trichloroethane[1,1,2-]	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
7599R	RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	SVOC	Aniline Chloroaniline[4-]	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
7599R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066	53-01720 53-01721 53-01722 53-01723 53-01724	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Chloronaphthalene[2-]	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
7599R	RE53-00-0074	53-01726	0–0.5		Indeno(1,2,3-cd)pyrene	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
7599R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066	53-01720 53-01721 53-01722 53-01723 53-01724	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	SVOC	Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7599R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0070 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01722 53-01723 53-01725 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Indeno(1,2,3-cd)pyrene	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7599R	RE53-00-0062 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01723 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	VOC	Acetone	J	The result is estimated; the initial standard and/or continuing calibration did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7599R	RE53-00-0066	53-01724	0–0.5	VOC	Acetone	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
7599R	RE53-00-0050 RE53-00-0054 RE53-00-0066 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01724 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Methylene Chloride	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
7599R	RE53-00-0058	53-01722	0–0.5	VOC	Acetone	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7599R	RE53-00-0066	53-01724	0–0.5		Chloroform Iodomethane	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
Mesa Tuff							
1014S	RE53-02-46597	53-02-20824	30–31.8	SVOC	Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
1014S	RE53-02-46597	53-02-20824	30–31.8	VOC	Acetone Methylene Chloride Bromomethane Chloroethane Dichlorodifluoromethane Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
1024S	RE53-02-46599	53-02-20824	50–51.7	SVOC	Isophorone	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
1024S	RE53-02-46599	53-02-20824	50–51.7	VOC	Acetone Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
1098S	RE53-02-46673 RE53-02-46675 RE53-02-46697	53-02-20827 53-02-20827 53-02-20827	29–30 49–50 64–65	SVOC	Benzoic Acid Hexachlorocyclo-pentadiene	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1126S	RE53-02-46710 RE53-02-46718	53-02-20829 53-02-20829	24–25 36.7–37.5	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Benzoic Acid Benzyl Alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-ethylhexyl)phthalate Bromophenyl-phenylether[4-] Butylbenzylphthalate Chloro-3-methylphenol[4-] Chloroaniline[4-] Chloronaphthalene[2-] Chlorophenol[2-] Chlorophenyl-phenyl[4-]Ether Chrysene Dibenz(a,h)anthracene Dibenzofuran Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorobenzidine[3,3'-] Dichlorophenol[2,4-] Diethylphthalate Dimethyl Phthalate Dimethylphenol[2,4-] Di-n-butylphthalate Dinitro-2-methylphenol[4,6-] Dinitrophenol[2,4-] Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclo-pentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene Isophorone Methylnaphthalene[2-] Methylphenol[2-] Methylphenol[4-] Naphthalene Nitroaniline[2-]	UJ	The reporting limit is estimated; at least two surrogate recoveries did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Nitroaniline[3-] Nitroaniline[4-] Nitrobenzene Nitrophenol[2-] Nitrophenol[4-] Nitrosodimethylamine [N-] Nitroso-di-n-propylamine[N-] Nitrosodiphenylamine [N-] Oxybis(1-chloropropane)[2,2'-] Pentachlorophenol Phenanthrene Phenol Pyrene Trichlorobenzene[1,2,4-] Trichlorophenol[2,4,5-] Trichlorophenol[2,4,6-]		
1126S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	29–30 48.5–50 24–25 49.2–50 36.7–37.5	VOC	Acetone Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
1129S	RE53-02-46629 RE53-02-46631	53-02-20825 53-02-20825	29.1–30 48.9–50	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Benzoic Acid Benzyl Alcohol Bis(2-chloroethoxy)methane Bis(2-chloroethyl)ether Bis(2-ethylhexyl)phthalate Bromophenyl-phenylether[4-] Butylbenzylphthalate Chloro-3-methylphenol[4-] Chloroaniline[4-] Chloronaphthalene[2-] Chlorophenol[2-] Chlorophenyl-phenyl[4-] Ether Chrysene Dibenz(a,h)anthracene Dibenzofuran Dichlorobenzene[1,2-] Dichlorobenzene[1,3-]	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Dichlorobenzene[1,4-] Dichlorobenzidine[3,3'-] Dichlorophenol[2,4-] Diethylphthalate Dimethyl Phthalate Dimethylphenol[2,4-] Di-n-butylphthalate Dinitro-2-methylphenol[4,6-] Dinitrophenol[2,4-] Dinitrotoluene[2,4-] Dinitrotoluene[2,6-] Di-n-octylphthalate Fluoranthene Fluorene Hexachlorobenzene Hexachlorobutadiene Hexachlorocyclo-pentadiene Hexachloroethane Indeno(1,2,3-cd)pyrene Isophorone Methylnaphthalene[2-] Methylphenol[2-] Methylphenol[4-] Naphthalene Nitroaniline[2-] Nitroaniline[3-] Nitroaniline[4-] Nitrobenzene Nitrophenol[2-] Nitrophenol[4-] Nitrosodimethylamine [N-] Nitroso-di-n-propylamine[N-] Nitrosodiphenylamine [N-] Oxybis(1-chloropropane)[2,2'-] Pentachlorophenol Phenanthrene Phenol Pyrene Trichlorobenzene[1,2,4-] Trichlorophenol[2,4,5-] Trichlorophenol[2,4,6-]		
5622R	RE53-99-0171	53-01650	0–0.42	PCB	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5633R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	VOC	Acetone Chloroform Toluene	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5640R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5684R	RE53-99-0119	53-01576	4–5	VOC	Iodomethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5684R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15		Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5695R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	SVOC	Bis(2-ethylhexyl)phthalate	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5705R	RE53-99-0132	53-01586	4–5	SVOC	Butylbenzylphthalate	J	The result is estimated; the continuing calibration verification did not meet method requirements.
5705R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	SVOC	Bis(2-ethylhexyl)phthalate	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5705R	RE53-99-0132	53-01586	4–5	SVOC	Acenaphthene Acenaphthylene Aniline Anthracene Azobenzene Benzo(a)anthracene Benzo(a)pyrene Benzo(b)fluoranthene Benzo(g,h,i)perylene Benzo(k)fluoranthene Benzoic Acid Benzyl Alcohol Bis(2-chloroethoxy)methane	UJ	The reporting limit is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Bis(2-chloroethyl)ether		
					Bromophenyl-phenylether[4-]		
					Chloro-3-methylphenol[4-]		
					Chloroaniline[4-]		
					Chloronaphthalene[2-]		
					Chlorophenol[2-]		
					Chlorophenyl-phenyl[4-] Ether		
					Chrysene		
					Dibenz(a,h)anthracene		
					Dibenzofuran		
					Dichlorobenzene[1,2-]		
					Dichlorobenzene[1,3-]		
					Dichlorobenzene[1,4-]		
					Dichlorobenzidine[3,3'-]		
					Dichlorophenol[2,4-]		
					Diethylphthalate		
					Dimethyl Phthalate		
					Dimethylphenol[2,4-]		
					Di-n-butylphthalate		
					Dinitro-2-methylphenol[4,6-]		
					Dinitrophenol[2,4-]		
					Dinitrotoluene[2,4-]		
					Dinitrotoluene[2,6-]		
					Di-n-octylphthalate		
					Fluoranthene		
					Fluorene		
					Hexachlorobenzene		
					Hexachlorobutadiene		
					Hexachlorocyclo-pentadiene		
					Hexachloroethane		
					Indeno(1,2,3-cd)pyrene		
					Isophorone		
					Methylnaphthalene[2-]		
					Methylphenol[2-]		
					Methylphenol[4-]		
					Naphthalene		
					Nitroaniline[2-]		
					Nitroaniline[3-]		
					Nitroaniline[4-]		
					Nitrobenzene		
					Nitrophenol[2-]		
					Nitrophenol[4-]		
					Nitroso-di-n-propylamine[N-]		
					Nitrosodiphenylamine [N-]		
					Oxybis(1-chloropropane)[2,2'-]		
					Pentachlorophenol		
					Phenanthrene		
					Phenol		
					Pyrene		
					Trichlorobenzene[1,2,4-]		
					Trichlorophenol[2,4,5-]		

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Trichlorophenol[2,4,6-]		
5709R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5790R	RE53-99-0137 RE53-99-0245 RE53-99-0246	53-01594 53-01586 53-01568	14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5790R	RE53-99-0136 RE53-99-0137 RE53-99-0245 RE53-99-0246	53-01594 53-01594 53-01586 53-01568	4–5 14–15 4–5 14–15		Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5794R	RE53-99-0134 RE53-99-0135 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01592 53-01592	4–5 14–15 14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5818R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5826R	RE53-99-0146 RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01596 53-01595 53-01595	4–5 14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5826R	RE53-99-0146 RE53-99-0148	53-01596 53-01595	4–5 4–5		Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5949R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5963R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258	53-01682 53-01682 53-01683 53-01683	4–5 14–15 4–5 14–15	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5963R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15		Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5963R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258	53-01682 53-01682 53-01683 53-01683	4–5 14–15 4–5 14–15		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5967R	RE53-99-0264	53-01685	14–15	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5974R	RE53-99-0266	53-01686	4–5	PCB	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5974R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5974R	RE53-99-0266 RE53-99-0267 RE53-99-0270	53-01686 53-01686 53-01687	4–5 14–15 14–15		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5982R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
5985R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5985R	RE53-99-0228 RE53-99-0229	53-01690 53-01690	6–7.5 7.5–9		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5985R	RE53-99-0228	53-01690	6–7.5	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
5989R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5989R	RE53-99-0230 RE53-99-0231 RE53-99-0238	53-01654 53-01654 53-01656	7–8 12–13 24–25		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5989R	RE53-99-0231 RE53-99-0232 RE53-99-0237	53-01654 53-01654 53-01656	12–13 19–20 13–14	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichlorofluoromethane Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
5997R	RE53-99-0280	53-01659	9–10	VOC	Acetone	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25		Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5997R	RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01658 53-01658 53-01658 53-01661 53-01661 53-01660 53-01660 53-01660	24–25 9–10 13–14 24–25 13–14 24–25 9–10 13–14 24–25		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
5997R	RE53-99-0242	53-01658	9–10	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Methyl-2-pentanone[4-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-	UJ	The reporting limit for this analyte is estimated; the continuing calibration verification did not meet method requirements.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloropropane[1,2,3-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0288	53-01657 53-01657 53-01660	9–10 13–14 24–25	VOC	Acetone	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Butylbenzene[tert-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Dibromo-3-Chloropropane[1,2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Dibromoethane[1,2-] Dibromomethane	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Dichlorobenzene[1,2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25	VOC	Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Dichloroethane[1,2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Isopropyltoluene[4-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Methyl-2-pentanone[4-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Propylbenzene[1-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25		Trichloroethene	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280	53-01657 53-01657 53-01659	9–10 13–14 9–10		Trichlorofluoromethane	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Trichloropropane[1,2,3-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
5997R	RE53-99-0239 RE53-99-0240 RE53-99-0242 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01658 53-01659 53-01660	9–10 13–14 9–10 9–10 24–25	VOC	Trimethylbenzene [1,2,4-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
	RE53-99-0239 RE53-99-0240 RE53-99-0280 RE53-99-0288	53-01657 53-01657 53-01659 53-01660	9–10 13–14 9–10 24–25		Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
6000R	RE53-99-0289 RE53-99-0290 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01662 53-01663	9–10 13–14 24–25 24–25	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
6000R	RE53-99-0289 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01663	9–10 24–25 24–25		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6010R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 9–10 24–25 24–25 24–25	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
6010R	RE53-99-0298 RE53-99-0300	53-01691 53-01692	9–10 24–25	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
6013R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695 53-01695	1–2 4–5 14–15 1–2 4–5 14–15	VOC	Methylene Chloride	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6013R	RE53-99-0311 RE53-99-0312	53-01695 53-01695	4–5 14–15		Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x the concentration in the blank.
6013R	RE53-99-0310	53-01695	1–2	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichlorofluoromethane Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
6022R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
6022R	RE53-99-0321	53-01697	14–15	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloroethene[trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene[cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-] Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
6503R	RE53-00-0007	53-01709	8–9	SVOC	Diethylphthalate Di-n-butylphthalate	U	The result for this analyte is undetected; the concentration was < or = to 10x the concentration in the blank.
6503R	RE53-00-0007	53-01709	8–9	VOC	Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
7532R	RE53-00-0094 RE53-00-0095	53-01718 53-01718	4–5 14–15	HERB	D[2,4-] Dalapon DB[2,4-] Dicamba Dichlorprop Dinoseb T[2,4,5-] TP[2,4,5-]	UJ	The reporting limit for this analyte is estimated; the sample was extracted outside the appropriate holding time.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7532R	RE53-00-0093	53-01718	1–2	HERB	D[2,4-] Dalapon DB[2,4-] Dicamba Dichlorprop Dinoseb T[2,4,5-] TP[2,4,5-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.
7532R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0048 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 4–5 4–5 14–15 1–2 4–5 14–15	SVOC	Benzoic Acid	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7532R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	VOC	Acetone Methylene Chloride Trichlorofluoromethane	U	The result for this analyte is undetected; the concentration was < or = to 5x or 10x the concentration in the blank.
7532R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	VOC	Chlorodibromomethane Dichloropropane[1,3-] Dichloropropene [cis-1,3-] Dichloropropene[trans-1,3-] Trichloroethane[1,1,2-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7599R	RE53-00-0069 RE53-00-0071 RE53-00-0072 RE53-00-0073 RE53-00-0075 RE53-00-0076 RE53-00-0077 RE53-00-0079 RE53-00-0080 RE53-00-0081 RE53-00-0083 RE53-00-0085 RE53-00-0087	53-01724 53-01725 53-01725 53-01725 53-01726 53-01726 53-01726 53-01727 53-01727 53-01727 53-01728 53-01728 53-01729	14–15 1–2 4–5 14–15 1–2 4–5 14–15 1–2 4–5 14–15 1–2 14–15 1–2	SVOC	Aniline	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7599R	RE53-00-0064	53-01723	4–5		Chloroaniline[4-]	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
7599R	RE53-00-0051	53-01720	1–2		Chloronaphthalene[2-]	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0059	53-01722	1–2				
7599R	RE53-00-0060	53-01722	4–5	SVOC	Chloronaphthalene[2-]	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
7599R	RE53-00-0065	53-01723	14–15		Indeno(1,2,3-cd)pyrene	UJ	The reporting limit for this analyte is estimated; the laboratory control standard recovery was low.
7599R	RE53-00-0051	53-01720	1–2	SVOC	Dinitrophenol[2,4-]	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7599R	RE53-00-0051	53-01720	1–2		Indeno(1,2,3-cd)pyrene	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
7599R	RE53-00-0051	53-01720	1–2	VOC	Acetone	J	The result is estimated; the initial standard and/or continuing calibration did not meet method requirements.
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				
7599R	RE53-00-0053	53-01720	14–15	VOC	Acetone	J-	The result for this analyte is estimated and biased low; the surrogate % recovery was low.
7599R	RE53-00-0063	53-01723	1–2	VOC	Acetone	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7599R	RE53-00-0052 RE53-00-0055 RE53-00-0056 RE53-00-0057 RE53-00-0064 RE53-00-0065 RE53-00-0067 RE53-00-0068 RE53-00-0069 RE53-00-0079 RE53-00-0080 RE53-00-0081 RE53-00-0083 RE53-00-0084 RE53-00-0085 RE53-00-0087 RE53-00-0088 RE53-00-0089	53-01720 53-01721 53-01721 53-01721 53-01723 53-01723 53-01724 53-01724 53-01724 53-01727 53-01727 53-01727 53-01728 53-01728 53-01728 53-01729 53-01729 53-01729	4–5 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15 1–2 4–5 14–15 1–2 4–5 14–15 1–2 4–5 14–15		Methylene Chloride	UJ	The reporting limit for this analyte is estimated; the laboratory control sample % recovery was low.
7599R	RE53-00-0053	53-01720	14–15	VOC	Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform Bromomethane Butanone[2-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-] Dichlorobenzene[1,4-] Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Methyl-2-pentanone[4-] Methylene Chloride Styrene Tetrachloroethane[1,1,1,2-]	UJ	The reporting limit for this analyte is estimated; the surrogate % recovery was low.

Table C-5.2-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
					Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene Trichloro-1,2,2-trifluoroethane[1,1,2-] Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichlorofluoromethane Trichloropropane[1,2,3-] Trimethylbenzene [1,2,4-] Trimethylbenzene [1,3,5-] Vinyl Chloride Xylene (Total)		
7599R	RE53-00-0063 RE53-00-0064 RE53-00-0065 RE53-00-0067 RE53-00-0068 RE53-00-0069	53-01723 53-01723 53-01723 53-01724 53-01724 53-01724	1–2 4–5 14–15 1–2 4–5 14–15	VOC	Chloroform	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.
7599R	RE53-00-0063 RE53-00-0064 RE53-00-0065 RE53-00-0067 RE53-00-0068 RE53-00-0069	53-01723 53-01723 53-01723 53-01724 53-01724 53-01724	1–2 4–5 14–15 1–2 4–5 14–15		Iodomethane	UJ	The reporting limit is estimated; the initial standard and/or continuing calibration did not meet method requirements.

Table C-5.3-1
Radionuclides

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
Canyon Sediment							
1147S	RE53-02-49303 RE53-02-49304 RE53-02-49305 RE53-02-49308 RE53-02-49310 RE53-02-49311 RE53-02-49313 RE53-02-49315 RE53-02-49318 RE53-02-49319 RE53-02-49320 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-01744 53-01746 53-01747 53-01748 53-01732 53-01733 53-02-21063 53-02-21066 53-01735 53-01736 53-01737 53-01740 53-01741 53-02-21077	0.75–1.42 0–0.29 0.63–1.02 0–0.23 0.4–0.56 0.72–0.85 1.02–1.44 0.06–0.36 1.21–1.7 0.98–1.38 0.36–0.65 0.27–0.96 0.29–0.6 0–0.33	AM_241	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1147S	RE53-02-49306 RE53-02-49307 RE53-02-49312 RE53-02-49314 RE53-02-49316 RE53-02-49317 RE53-02-49321 RE53-02-49322 RE53-02-49323	53-02-21057 53-02-21058 53-02-21063 53-02-21065 53-02-21066 53-01735 53-01738 53-02-21073 53-02-21074	0–0.26 0.33–0.65 0–1.02 0–0.29 0.36–0.65 0.19–0.59 0.23–0.36 0–0.27 0–0.27	AM_241	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
1147S	RE53-02-49306 RE53-02-49310 RE53-02-49313 RE53-02-49318 RE53-02-49319 RE53-02-49320 RE53-02-49324 RE53-02-49325	53-02-21057 53-01732 53-02-21063 53-01735 53-01736 53-01737 53-01740 53-01741	0–0.26 0.4–0.56 1.02–1.44 1.21–1.7 0.98–1.38 0.36–0.65 0.27–0.96 0.29–0.6	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1147S	RE53-02-49307 RE53-02-49313	53-02-21058 53-02-21063	0.33–0.65 1.02–1.44		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1147S	RE53-02-49306 RE53-02-49310 RE53-02-49313 RE53-02-49320 RE53-02-49324 RE53-02-49325	53-02-21057 53-01732 53-02-21063 53-01737 53-01740 53-01741	0–0.26 0.4–0.56 1.02–1.44 0.36–0.65 0.27–0.96 0.29–0.6		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1147S	RE53-02-49303	53-01744	0.75–1.42	GAMMA_ SPEC	Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-02-49304	53-01746	0–0.29				
	RE53-02-49305	53-01747	0.63–1.02				
	RE53-02-49306	53-02-21057	0–0.26				
	RE53-02-49307	53-02-21058	0.33–0.65				
	RE53-02-49308	53-01748	0–0.23				
	RE53-02-49309	53-01748	0.06–0.92				
	RE53-02-49310	53-01732	0.4–0.56				
	RE53-02-49311	53-01733	0.72–0.85				
	RE53-02-49312	53-02-21063	0–1.02				
	RE53-02-49313	53-02-21063	1.02–1.44				
	RE53-02-49314	53-02-21065	0–0.29				
	RE53-02-49315	53-02-21066	0.06–0.36				
	RE53-02-49316	53-02-21066	0.36–0.65				
	RE53-02-49317	53-01735	0.19–0.59				
	RE53-02-49318	53-01735	1.21–1.7				
	RE53-02-49319	53-01736	0.98–1.38				
	RE53-02-49320	53-01737	0.36–0.65				
1147S	RE53-02-49303	53-01744	0.75–1.42	GAMMA_ SPEC	Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-02-49304	53-01746	0–0.29				
	RE53-02-49305	53-01747	0.63–1.02				
	RE53-02-49306	53-02-21057	0–0.26				
	RE53-02-49307	53-02-21058	0.33–0.65				
	RE53-02-49308	53-01748	0–0.23				
	RE53-02-49309	53-01748	0.06–0.92				
	RE53-02-49310	53-01732	0.4–0.56				
	RE53-02-49311	53-01733	0.72–0.85				
	RE53-02-49312	53-02-21063	0–1.02				
	RE53-02-49313	53-02-21063	1.02–1.44				
	RE53-02-49314	53-02-21065	0–0.29				
	RE53-02-49315	53-02-21066	0.06–0.36				
	RE53-02-49316	53-02-21066	0.36–0.65				
	RE53-02-49317	53-01735	0.19–0.59				
	RE53-02-49318	53-01735	1.21–1.7				
	RE53-02-49319	53-01736	0.98–1.38				
	RE53-02-49320	53-01737	0.36–0.65				
	RE53-02-49321	53-01738	0.23–0.36				
	RE53-02-49322	53-02-21073	0–0.27				
	RE53-02-49323	53-02-21074	0–0.27				
	RE53-02-49324	53-01740	0.27–0.96				
	RE53-02-49325	53-01741	0.29–0.6				
	RE53-02-49326	53-02-21077	0–0.33				

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1147S	RE53-02-49303 RE53-02-49304 RE53-02-49305 RE53-02-49306 RE53-02-49307 RE53-02-49308 RE53-02-49309 RE53-02-49310 RE53-02-49311 RE53-02-49312 RE53-02-49313 RE53-02-49314 RE53-02-49315 RE53-02-49317 RE53-02-49318 RE53-02-49319 RE53-02-49320 RE53-02-49321 RE53-02-49322 RE53-02-49323 RE53-02-49324 RE53-02-49325 RE53-02-49326	53-01744 53-01746 53-01747 53-02-21057 53-02-21058 53-01748 53-01748 53-01732 53-01733 53-02-21063 53-02-21063 53-02-21065 53-02-21066 53-01735 53-01735 53-01736 53-01737 53-01738 53-02-21073 53-02-21074 53-01740 53-01741 53-02-21077	0.75–1.42 0–0.29 0.63–1.02 0–0.26 0.33–0.65 0–0.23 0.06–0.92 0.4–0.56 0.72–0.85 0–1.02 1.02–1.44 0–0.29 0.06–0.36 0.19–0.59 1.21–1.7 0.98–1.38 0.36–0.65 0.23–0.36 0–0.27 0–0.27 0.27–0.96 0.29–0.6 0–0.33	GAMMA_ SPEC	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1147S	RE53-02-49311	53-01733	0.72–0.85	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
1147S	RE53-02-49316	53-02-21066	0.36–0.65		Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9672R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0049 RE53-01-0050	53-01736 53-01736 53-01730 53-01735 53-01733	0–0.42 0.69–0.85 0–0.13 0–0.2 0–0.33	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0048 RE53-01-0051	53-01731 53-01732	0.39–0.69 0–0.39		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01730 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0–0.13 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0048 RE53-01-0051 RE53-01-0052	53-01731 53-01732 53-01734	0.39–0.69 0–0.39 0–0.59	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9672R	RE53-01-0046 RE53-01-0048 RE53-01-0051	53-01736 53-01731 53-01732	0.69–0.85 0.39–0.69 0–0.39		Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9672R	RE53-01-0047	53-01730	0–0.13		Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9672R	RE53-01-0047 RE53-01-0048 RE53-01-0050 RE53-01-0052	53-01730 53-01731 53-01733 53-01734	0–0.13 0.39–0.69 0–0.33 0–0.59	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0052	53-01736 53-01736 53-01730 53-01731 53-01735 53-01733 53-01734	0–0.42 0.69–0.85 0–0.13 0.39–0.69 0–0.2 0–0.33 0–0.59	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0045 RE53-01-0046 RE53-01-0047 RE53-01-0049 RE53-01-0050	53-01736 53-01736 53-01730 53-01735 53-01733	0–0.42 0.69–0.85 0–0.13 0–0.2 0–0.33		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0051	53-01732	0–0.39	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9672R	RE53-01-0048 RE53-01-0051 RE53-01-0052	53-01731 53-01732 53-01734	0.39–0.69 0–0.39 0–0.59		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9672R	RE53-01-0051	53-01732	0–0.39	ISO_U	Uranium-234 Uranium-238	J-	The result for this analyte is estimated and biased low; the tracer/carrier % recovery was low.
9672R	RE53-01-0047	53-01730	0–0.13	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0045 RE53-01-0046 RE53-01-0048 RE53-01-0049 RE53-01-0050 RE53-01-0051 RE53-01-0052	53-01736 53-01736 53-01731 53-01735 53-01733 53-01732 53-01734	0–0.42 0.69–0.85 0.39–0.69 0–0.2 0–0.33 0–0.39 0–0.59	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9672R	RE53-01-0045 RE53-01-0047 RE53-01-0049 RE53-01-0050 RE53-01-0052	53-01736 53-01730 53-01735 53-01733 53-01734	0–0.42 0–0.13 0–0.2 0–0.33 0–0.59	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9672R	RE53-01-0046 RE53-01-0048	53-01736 53-01731	0.69–0.85 0.39–0.69	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9675R	RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01740 53-01738 53-01738	0–0.26 0.08–0.23 0–0.08	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0001	53-01737	0–0.36		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0001 RE53-01-0014 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01739 53-01740 53-01738 53-01738	0–0.36 0–0.23 0–0.26 0.08–0.23 0–0.08		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0001 RE53-01-0014 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01739 53-01740 53-01738 53-01738	0–0.36 0–0.23 0–0.26 0.08–0.23 0–0.08		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0014	53-01739	0–0.23	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9675R	RE53-01-0001	53-01737	0–0.36	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9675R	RE53-01-0016	53-01738	0.08–0.23		Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9675R	RE53-01-0016 RE53-01-0017	53-01738 53-01738	0.08–0.23 0–0.08	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0014 RE53-01-0015 RE53-01-0017	53-01739 53-01740 53-01738	0–0.23 0–0.26 0–0.08	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0014 RE53-01-0016 RE53-01-0017	53-01739 53-01738 53-01738	0–0.23 0.08–0.23 0–0.08		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0001 RE53-01-0016	53-01737 53-01738	0–0.36 0.08–0.23	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9675R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9675R	RE53-01-0014	53-01739	0–0.23	ISO_U	Uranium-235	J+	The result for this analyte is estimated and biased high; the laboratory control sample recovery was high.
9675R	RE53-01-0001 RE53-01-0015 RE53-01-0016 RE53-01-0017	53-01737 53-01740 53-01738 53-01738	0–0.36 0–0.26 0.08–0.23 0–0.08	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9675R	RE53-01-0014 RE53-01-0016 RE53-01-0017	53-01739 53-01738 53-01738	0–0.23 0.08–0.23 0–0.08	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9675R	RE53-01-0001 RE53-01-0015	53-01737 53-01740	0–0.36 0–0.26	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9690R	RE53-01-0012	53-01733	0.46–0.72	GAMMA_ SPEC	Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9690R	RE53-01-0012	53-01733	0.46–0.72	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9690R	RE53-01-0012	53-01733	0.46–0.72	H3	Tritium	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9690R	RE53-01-0012	53-01733	0.46–0.72	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9690R	RE53-01-0012	53-01733	0.46–0.72	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9690R	RE53-01-0012	53-01733	0.46–0.72	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01745 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.2–0.46 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0025	53-01742	0.36–0.49		Cesium-137 Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
9704R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0023 RE53-01-0026	53-01749 53-01743	0–0.2 0–0.13	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0020 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01747 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.23–0.63 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0019 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01745 53-01749 53-01741 53-01742 53-01743	0.2–0.46 0–0.2 0–0.29 0.36–0.49 0–0.13		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0020	53-01747	0.23–0.63	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9704R	RE53-01-0023	53-01749	0–0.2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
9704R	RE53-01-0019 RE53-01-0026	53-01745 53-01743	0.2–0.46 0–0.13	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
9704R	RE53-01-0019 RE53-01-0020 RE53-01-0023 RE53-01-0025 RE53-01-0026	53-01745 53-01747 53-01749 53-01742 53-01743	0.2–0.46 0.23–0.63 0–0.2 0.36–0.49 0–0.13	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
Mesa Soil							
1104S	RE53-02-46700	53-02-20826	1.8–2.5	GAMMA_SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1104S	RE53-02-46700	53-02-20826	1.8–2.5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1128S	RE53-02-46709	53-02-20829	0–0.8	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1128S	RE53-02-46709	53-02-20829	0–0.8	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
1148S	RE53-02-46741 RE53-02-46742	53-02-20843 53-02-20844	0–0.5 0–0.4	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1148S	RE53-02-46741 RE53-02-46742 RE53-02-46743	53-02-20843 53-02-20844 53-02-20845	0–0.5 0–0.4 0–0.4		Cesium-134 Cesium-137 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1148S	RE53-02-46742	53-02-20844	0–0.4	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
221	0253-95-0028 0253-95-0029 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01070 53-01071 53-01072 53-01073 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
221	0253-95-0028 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01071 53-01072 53-01073 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
221	0253-95-0031 0253-95-0033 0253-95-0034	53-01072 53-01074 53-01075	0–0.5 0–0.5 0–0.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
221	0253-95-0028 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01071 53-01072 53-01073 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
221	0253-95-0028	53-01069	0–0.5		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
221	0253-95-0029 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01070 53-01071 53-01072 53-01073 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	GAMMA_ SPEC	Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
221	0253-95-0028 0253-95-0029 0253-95-0030 0253-95-0031 0253-95-0032 0253-95-0033 0253-95-0034 0253-95-0035 0253-95-0036 0253-95-0037 0253-95-0038	53-01069 53-01070 53-01071 53-01072 53-01073 53-01074 53-01075 53-01076 53-01077 53-01078 53-01079	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Sodium-22 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5011R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17	GAMMA_ SPEC	Americium-241 Cesium-134 Cobalt-60 Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5011R	RE53-98-0001 RE53-98-0002	53-01556 53-01557	0–0.17 0–0.17		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5011R	RE53-98-0001 RE53-98-0003	53-01556 53-01558	0–0.17 0–0.17		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5011R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17		Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5011R	RE53-98-0001 RE53-98-0002 RE53-98-0003	53-01556 53-01557 53-01558	0–0.17 0–0.17 0–0.17	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5011R	RE53-98-0003	53-01558	0–0.17		Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5011R	RE53-98-0002	53-01557	0–0.17		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0164 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01643 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.25 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163	53-01642	0–0.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Cobalt-60 Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5	GAMMA_ SPEC	Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5624R	RE53-99-0163 RE53-99-0165 RE53-99-0167	53-01642 53-01644 53-01646	0–0.5 0–0.5 0–0.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0164	53-01643	0–0.25		Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0164 RE53-99-0166 RE53-99-0169 RE53-99-0172	53-01643 53-01645 53-01648 53-01651	0–0.25 0–0.5 0–0.5 0–0.5		Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0172	53-01651	0–0.5		Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167	53-01642 53-01643 53-01644 53-01645 53-01646	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0168 RE53-99-0169 RE53-99-0170 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01647 53-01648 53-01649 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.25 0–0.5 0–0.5 0–0.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0166 RE53-99-0169 RE53-99-0172	53-01642 53-01645 53-01648 53-01651	0–0.5 0–0.5 0–0.5 0–0.5	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0167	53-01646	0–0.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0164 RE53-99-0165	53-01643 53-01644	0–0.25 0–0.5		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0164 RE53-99-0167 RE53-99-0170	53-01643 53-01646 53-01649	0–0.25 0–0.5 0–0.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0163 RE53-99-0164 RE53-99-0165 RE53-99-0166 RE53-99-0167 RE53-99-0169 RE53-99-0172	53-01642 53-01643 53-01644 53-01645 53-01646 53-01648 53-01651	0–0.5 0–0.25 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5635R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0174	53-01651	0.5–0.67		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0174	53-01651	0.5–0.67		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0175	53-01645	1–1.33		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0175	53-01645	1–1.33	GAMMA_ SPEC	Cesium-137 Europium-152	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5635R	RE53-99-0174	53-01651	0.5–0.67		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5635R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5635R	RE53-99-0174 RE53-99-0175	53-01651 53-01645	0.5–0.67 1–1.33	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0176 RE53-99-0178 RE53-99-0179	53-01648 53-01644 53-01642	0.67–1 0.67–1 4.5–5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5645R	RE53-99-0177 RE53-99-0178	53-01646 53-01644	0.58–0.92 0.67–1		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5		Cobalt-60 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0176 RE53-99-0177 RE53-99-0178	53-01648 53-01646 53-01644	0.67–1 0.58–0.92 0.67–1		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0177	53-01646	0.58–0.92	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5645R	RE53-99-0176 RE53-99-0179	53-01648 53-01642	0.67–1 4.5–5	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5645R	RE53-99-0179	53-01642	4.5–5		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5645R	RE53-99-0177 RE53-99-0178	53-01646 53-01644	0.58–0.92 0.67–1	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5645R	RE53-99-0176 RE53-99-0177 RE53-99-0178 RE53-99-0179	53-01648 53-01646 53-01644 53-01642	0.67–1 0.58–0.92 0.67–1 4.5–5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0180 RE53-99-0182	53-01652 53-01653	0–0.5 0–0.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0181 RE53-99-0182	53-01652 53-01653	0.67–1 0–0.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0181	53-01652	0.67–1		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5663R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5		Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0181	53-01652	0.67–1	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5663R	RE53-99-0180	53-01652	0–0.5		Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5663R	RE53-99-0180 RE53-99-0182	53-01652 53-01653	0–0.5 0–0.5		Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5663R	RE53-99-0180 RE53-99-0181	53-01652 53-01652	0–0.5 0.67–1	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5663R	RE53-99-0180 RE53-99-0181 RE53-99-0182	53-01652 53-01652 53-01653	0–0.5 0.67–1 0–0.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5800R	RE53-99-0183 RE53-99-0184	53-01639 53-01640	0–0.33 0–0.33	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5800R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33		Cesium-137 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5800R	RE53-99-0183	53-01639	0–0.33	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5800R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5800R	RE53-99-0185	53-01641	0–0.33	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5800R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5907R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0224 RE53-99-0225	53-01636 53-01637	0–0.33 0–0.5	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0225 RE53-99-0226	53-01637 53-01638	0–0.5 0–0.25		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0224	53-01636	0–0.33	GAMMA_ SPEC	Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5907R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0225	53-01637	0–0.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5907R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	ISO_U	Uranium-234 Uranium-238	U	The result for this analyte is undetected; the required blank information is missing.
5907R	RE53-99-0224 RE53-99-0226	53-01636 53-01638	0–0.33 0–0.25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5951R	RE53-99-0250	53-01681	1–2	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0247 RE53-99-0250	53-01664 53-01681	1–2 1–2		Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0247 RE53-99-0250	53-01664 53-01681	1–2 1–2	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5951R	RE53-99-0247	53-01664	1–2	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0250	53-01681	1–2		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0250	53-01681	1–2	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5951R	RE53-99-0247	53-01664	1–2		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5951R	RE53-99-0247	53-01664	1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0250	53-01681	1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5965R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0253 RE53-99-0259	53-01682 53-01684	1–2 1–2		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2		Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0256	53-01683	1–2	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5965R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0256 RE53-99-0259	53-01683 53-01684	1–2 1–2		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5965R	RE53-99-0253	53-01682	1–2	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5965R	RE53-99-0253 RE53-99-0256 RE53-99-0259	53-01682 53-01683 53-01684	1–2 1–2 1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0253 RE53-99-0259	53-01682 53-01684	1–2 1–2	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0262	53-01685	1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0263	53-01685	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5976R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	ISO_U	Uranium-234 Uranium-238	U	The result for this analyte is undetected; the required blank information is missing.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5976R	RE53-99-0265 RE53-99-0268	53-01686 53-01687	1–2 1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5976R	RE53-99-0265	53-01686	1–2	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0271	53-01688	1–2	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0271	53-01688	1–2	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0271	53-01688	1–2	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0271	53-01688	1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5991R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0233 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01656	10–12.5 24–25 9–10		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10		Cobalt-60 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01656	14–15 24–25 9–10		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0234	53-01655	14–15	GAMMA_ SPEC	Cesium-137 Europium-152	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5991R	RE53-99-0233	53-01655	10–12.5		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5991R	RE53-99-0235 RE53-99-0236	53-01655 53-01656	24–25 9–10	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0233 RE53-99-0234 RE53-99-0235	53-01655 53-01655 53-01655	10–12.5 14–15 24–25	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0233 RE53-99-0234 RE53-99-0235 RE53-99-0236	53-01655 53-01655 53-01655 53-01656	10–12.5 14–15 24–25 9–10	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0236	53-01656	9–10	SR_90	Strontium-90	J+	The result for this analyte is estimated and biased high; the laboratory control sample recovery was high.
5991R	RE53-99-0235	53-01655	24–25	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0292	53-01663	9–10		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14		Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0292 RE53-99-0293	53-01663 53-01663	9–10 13–14	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6012R	RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01693 53-01694 53-01694	13–14 9–10 13–14		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14		Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0299 RE53-99-0301	53-01692 53-01693	13–14 9–10	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6012R	RE53-99-0299 RE53-99-0301 RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01692 53-01693 53-01693 53-01694 53-01694	13–14 9–10 13–14 9–10 13–14	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0299 RE53-99-0301	53-01692 53-01693	13–14 9–10	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0302 RE53-99-0304 RE53-99-0305	53-01693 53-01694 53-01694	13–14 9–10 13–14	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5		Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01697 53-01697	12–24 4–5 1–2 1–2 4–5		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	GAMMA_ SPEC	Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0317 RE53-99-0319	53-01696 53-01696 53-01698 53-01697	12–24 4–5 4–5 1–2		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6024R	RE53-99-0317	53-01698	4–5	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0317	53-01698	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0314	53-01696	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6024R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6057R	RE53-99-0322	53-01702	1–2	GAMMA_ SPEC	Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6057R	RE53-99-0322	53-01702	1–2	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6057R	RE53-99-0322	53-01702	1–2	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6495R	RE53-00-0004 RE53-00-0005 RE53-00-0006	53-01706 53-01707 53-01708	2–3 3.5–4.5 5–6	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6495R	RE53-00-0004 RE53-00-0005 RE53-00-0006	53-01706 53-01707 53-01708	2–3 3.5–4.5 5–6		Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6495R	RE53-00-0004 RE53-00-0005 RE53-00-0006	53-01706 53-01707 53-01708	2–3 3.5–4.5 5–6	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6495R	RE53-00-0004 RE53-00-0005	53-01706 53-01707	2–3 3.5–4.5		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6495R	RE53-00-0006	53-01708	5–6	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6511R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01713 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 4–5 3–4 4.5–5.5	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012	53-01710 53-01711 53-01712 53-01713 53-01714	6.5–7.5 5.5–6.5 4–5 4–5 3–4		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01713 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 4–5 3–4 4.5–5.5	GAMMA_ SPEC	Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012 RE53-00-0013	53-01710 53-01711 53-01712 53-01713 53-01714 53-01715	6.5–7.5 5.5–6.5 4–5 4–5 3–4 4.5–5.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0008 RE53-00-0009 RE53-00-0010 RE53-00-0011 RE53-00-0012	53-01710 53-01711 53-01712 53-01713 53-01714	6.5–7.5 5.5–6.5 4–5 4–5 3–4		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0013	53-01715	4.5–5.5	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7534R	RE53-00-0046	53-01719	0–0.5	GAMMA_ SPEC	Cesium-134 Cesium-137 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0046	53-01719	0–0.5	H3	Tritium	J+	The result for this analyte is estimated and biased high; the matrix-spike % recovery was high.
7534R	RE53-00-0046	53-01719	0–0.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7534R	RE53-00-0046	53-01719	0–0.5	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7534R	RE53-00-0046	53-01719	0–0.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7534R	RE53-00-0046	53-01719	0–0.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0050 RE53-00-0054 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082	53-01720 53-01721 53-01722 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01722 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0054 RE53-00-0062 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01721 53-01723 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7601R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01722 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0054 RE53-00-0062 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082	53-01721 53-01723 53-01725 53-01726 53-01727 53-01728	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0050 RE53-00-0054 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7601R	RE53-00-0062 RE53-00-0066	53-01723 53-01724	0–0.5 0–0.5	ISO_U	Uranium-235	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
7601R	RE53-00-0070	53-01725	0–0.5	ISO_U	Uranium-234	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7601R	RE53-00-0070 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01725 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5		Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7601R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01722 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0184	53-01020	3.67–4.5	GAMMA_ SPEC	Americium-241 Cesium-137 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76780	0253-95-0184	53-01020	3.67–4.5	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76797	0253-95-0184	53-01020	3.67–4.5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76800	0253-95-0184	53-01020	3.67–4.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76850	0253-95-0184	53-01020	3.67–4.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0196	53-01024	1.5–2.5	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0196	53-01024	1.5–2.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77138	0253-95-0196	53-01024	1.5–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0230 0253-95-0233	53-01033 53-01034	1.5–2.5 2–3	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0230	53-01033	1.5–2.5		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0230 0253-95-0233	53-01033 53-01034	1.5–2.5 2–3	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77248	0253-95-0230 0253-95-0233	53-01033 53-01034	1.5–2.5 2–3	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77250	0253-95-0230 0253-95-0233	53-01033 53-01034	1.5–2.5 2–3	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
77254	0253-95-0196	53-01024	1.5–2.5	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77258	0253-95-0230 0253-95-0233	53-01033 53-01034	1.5–2.5 2–3	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
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1017S	RE53-02-46597	53-02-20824	30–31.8	GAMMA_SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1017S	RE53-02-46597	53-02-20824	30–31.8	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1027S	RE53-02-46599 RE53-02-46604	53-02-20824 53-02-20824	50–51.7 100–101.2	GAMMA_SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1027S	RE53-02-46599 RE53-02-46604	53-02-20824 53-02-20824	50–51.7 100–101.2	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1039S	RE53-02-46609 RE53-02-46610	53-02-20824 53-02-20824	150–151.3 160–160.5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1070S	RE53-02-46611 RE53-02-46612 RE53-02-46613 RE53-02-46614 RE53-02-46615 RE53-02-46616 RE53-02-46617 RE53-02-46618 RE53-02-46619 RE53-02-46620	53-02-20824 53-02-20824 53-02-20824 53-02-20824 53-02-20824 53-02-20824 53-02-20824 53-02-20824 53-02-20824 53-02-20824	170–171.3 180–180.6 190–191.2 200–200.5 210–211.1 219.5–220 229–230 239.5–240 243.8–245 254.5–255	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1089S	RE53-02-46621 RE53-02-46622 RE53-02-46623 RE53-02-46624	53-02-20824 53-02-20824 53-02-20824 53-02-20824	264–265 274.5–275 283.8–285 298.3–299	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1099S	RE53-02-46673 RE53-02-46675 RE53-02-46680 RE53-02-46697	53-02-20827 53-02-20827 53-02-20827 53-02-20827	29–30 49–50 98.4–100 64–65	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1099S	RE53-02-46672 RE53-02-46673 RE53-02-46674 RE53-02-46675 RE53-02-46676 RE53-02-46677 RE53-02-46678 RE53-02-46679 RE53-02-46680 RE53-02-46681 RE53-02-46682 RE53-02-46683 RE53-02-46684 RE53-02-46697 RE53-02-46698	53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827	19.5–20 29–30 39.5–40 49–50 59.5–60 69.4–70 79.5–80 89.5–90 98.4–100 109.5–110 119.5–120 129.5–130 139.5–140 64–65 101.6–102.5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1099S	RE53-02-46673 RE53-02-46675 RE53-02-46680 RE53-02-46697	53-02-20827 53-02-20827 53-02-20827 53-02-20827	29–30 49–50 98.4–100 64–65	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1101S	RE53-02-46685 RE53-02-46686 RE53-02-46687 RE53-02-46688 RE53-02-46689 RE53-02-46690	53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827 53-02-20827	149.5–150 159.5–160 169.5–170 179.5–180 189.5–190 199.5–200	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1104S	RE53-02-46651	53-02-20826	29–30	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1104S	RE53-02-46649 RE53-02-46650 RE53-02-46651 RE53-02-46652	53-02-20826 53-02-20826 53-02-20826 53-02-20826	9.5–10 19.5–20 29–30 39.5–40	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1104S	RE53-02-46651	53-02-20826	29–30	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1111S	RE53-02-46713 RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830 53-02-20830	0.3–0.8 28.9–30 49–50	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1111S	RE53-02-46714 RE53-02-46715	53-02-20830 53-02-20830	28.9–30 49–50	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1113S	RE53-02-46653 RE53-02-46658	53-02-20826 53-02-20826	48.6–50 99.2–100	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1113S	RE53-02-46653 RE53-02-46654 RE53-02-46655 RE53-02-46656 RE53-02-46657 RE53-02-46658 RE53-02-46659 RE53-02-46660 RE53-02-46661 RE53-02-46662 RE53-02-46663 RE53-02-46664 RE53-02-46665 RE53-02-46666 RE53-02-46667 RE53-02-46668	53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826 53-02-20826	48.6–50 59.5–60 69.5–70 79.4–80 89.5–90 99.2–100 109.5–110 119.5–120 129.5–130 139.5–140 149.5–150 159.5–160 169.5–170 179.5–180 189.5–190 199.5–200	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1113S	RE53-02-46653 RE53-02-46658	53-02-20826 53-02-20826	48.6–50 99.2–100	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1128S	RE53-02-46705 RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	0–0.5 29–30 48.5–50 24–25 49.2–50 36.7–37.5	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1128S	RE53-02-46706 RE53-02-46707 RE53-02-46710 RE53-02-46711 RE53-02-46718	53-02-20828 53-02-20828 53-02-20829 53-02-20829 53-02-20829	29–30 48.5–50 24–25 49.2–50 36.7–37.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1130S	RE53-02-46629 RE53-02-46631	53-02-20825 53-02-20825	29.1–30 48.9–50	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1130S	RE53-02-46627 RE53-02-46628 RE53-02-46629 RE53-02-46630 RE53-02-46631 RE53-02-46632 RE53-02-46633 RE53-02-46634 RE53-02-46635	53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825	9.4–10 19.5–20 29.1–30 38–38.5 48.9–50 59.5–60 69.5–70 79.5–80 89.5–90	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1130S	RE53-02-46629 RE53-02-46631	53-02-20825 53-02-20825	29.1–30 48.9–50	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1134S	RE53-02-46636	53-02-20825	99.2–100	GAMMA_SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1134S	RE53-02-46636 RE53-02-46637 RE53-02-46638 RE53-02-46639 RE53-02-46641 RE53-02-46642 RE53-02-46643	53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825 53-02-20825	99.2–100 109.5–110 117.5–118.2 129.5–130 149.5–150 159.5–160 169.5–170	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1134S	RE53-02-46636	53-02-20825	99.2–100	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
1135S	RE53-02-46644 RE53-02-46645 RE53-02-46646	53-02-20825 53-02-20825 53-02-20825	179.5–180 189.5–190 199.5–200	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1141S	RE53-02-46723 RE53-02-46725	53-02-20831 53-02-20832	0–0.5 0–0.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1148S	RE53-02-46731 RE53-02-46732 RE53-02-46733 RE53-02-46734 RE53-02-46735 RE53-02-46736 RE53-02-46737 RE53-02-46738 RE53-02-46739 RE53-02-46740 RE53-02-46744 RE53-02-46745	53-02-20833 53-02-20834 53-02-20835 53-02-20836 53-02-20837 53-02-20838 53-02-20839 53-02-20840 53-02-20841 53-02-20842 53-02-20846 53-02-20847	0–0.5 0–0.5 0–0.5 0–0.4 0–0.5 0–0.3 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.3	GAMMA_SPEC	Americium-241 Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
1148S	RE53-02-46732 RE53-02-46733 RE53-02-46736 RE53-02-46737 RE53-02-46740	53-02-20834 53-02-20835 53-02-20838 53-02-20839 53-02-20842	0–0.5 0–0.5 0–0.3 0–0.5 0–0.5		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1148S	RE53-02-46731 RE53-02-46732 RE53-02-46733 RE53-02-46734 RE53-02-46735 RE53-02-46736 RE53-02-46737 RE53-02-46738 RE53-02-46739 RE53-02-46740 RE53-02-46744 RE53-02-46745	53-02-20833 53-02-20834 53-02-20835 53-02-20836 53-02-20837 53-02-20838 53-02-20839 53-02-20840 53-02-20841 53-02-20842 53-02-20846 53-02-20847	0–0.5 0–0.5 0–0.5 0–0.4 0–0.5 0–0.3 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.3	GAMMA_ SPEC	Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1148S	RE53-02-46731 RE53-02-46738 RE53-02-46739 RE53-02-46745	53-02-20833 53-02-20840 53-02-20841 53-02-20847	0–0.5 0–0.5 0–0.5 0–0.3	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
1160S	RE53-02-46724 RE53-02-46726	53-02-20831 53-02-20832	5.1–5.5 5.2–5.9	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1167S	RE53-02-46588 RE53-02-46589	53-02-21270 53-02-21270	46–46.5 114–115	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
1324S	RE53-02-45550 RE53-02-45551 RE53-02-45552	53-02-19679 53-02-19680 53-02-19681	1–1.5 1.3–1.8 0.8–1.25	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Europium-152 Ruthenium-106 Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0171	53-01650	0–0.42	GAMMA_ SPEC	Americium-241 Cesium-134 Cobalt-60 Europium-152 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0171	53-01650	0–0.42	GAMMA_ SPEC	Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5624R	RE53-99-0171	53-01650	0–0.42	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5624R	RE53-99-0171	53-01650	0–0.42	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5635R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0116	53-01573	14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0115	53-01573	4–5		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0115	53-01573	4–5	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5635R	RE53-99-0116	53-01573	14–15		Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5635R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5635R	RE53-99-0115 RE53-99-0116	53-01573 53-01573	4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5642R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5642R	RE53-99-0118	53-01575	14–15		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5642R	RE53-99-0117	53-01575	4–5		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5642R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15		Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5642R	RE53-99-0117	53-01575	4–5	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5642R	RE53-99-0118	53-01575	14–15		Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5642R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5642R	RE53-99-0117 RE53-99-0118	53-01575 53-01575	4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0120	53-01576	14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0119 RE53-99-0120 RE53-99-0122	53-01576 53-01576 53-01577	4–5 14–15 14–15		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0121 RE53-99-0122	53-01577 53-01577	4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0119	53-01576	4–5	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5686R	RE53-99-0121	53-01577	4–5		Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5686R	RE53-99-0119 RE53-99-0120	53-01576 53-01576	4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5686R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5686R	RE53-99-0119 RE53-99-0120 RE53-99-0121	53-01576 53-01576 53-01577	4–5 14–15 4–5		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0122	53-01577	14–15	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5686R	RE53-99-0119 RE53-99-0120	53-01576 53-01576	4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5686R	RE53-99-0119 RE53-99-0120 RE53-99-0121 RE53-99-0122	53-01576 53-01576 53-01577 53-01577	4–5 14–15 4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0123 RE53-99-0125 RE53-99-0126	53-01584 53-01582 53-01582	4–5 4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15		Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0126	53-01582	14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15		Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0126	53-01582	14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0123 RE53-99-0125 RE53-99-0126	53-01584 53-01582 53-01582	4–5 4–5 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5697R	RE53-99-0123	53-01584	4–5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5697R	RE53-99-0124	53-01584	14–15		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5697R	RE53-99-0126	53-01582	14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5697R	RE53-99-0123 RE53-99-0124 RE53-99-0125	53-01584 53-01584 53-01582	4–5 14–15 4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5697R	RE53-99-0123 RE53-99-0124 RE53-99-0125 RE53-99-0126	53-01584 53-01584 53-01582 53-01582	4–5 14–15 4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0131	53-01589 53-01589 53-01587	4–5 14–15 14–15		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01587 53-01587	14–15 4–5 14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0130 RE53-99-0131	53-01589 53-01587 53-01587	4–5 4–5 14–15		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129	53-01589 53-01589	4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5704R	RE53-99-0130 RE53-99-0131	53-01587 53-01587	4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5704R	RE53-99-0128 RE53-99-0129 RE53-99-0130 RE53-99-0131	53-01589 53-01589 53-01587 53-01587	4–5 14–15 4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5706R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5706R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15		Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5706R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15		Cobalt-60 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5706R	RE53-99-0133	53-01586	14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5706R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5706R	RE53-99-0133	53-01586	14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5706R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0137	53-01594	14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0137	53-01594	14–15		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15		Cobalt-60 Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0137	53-01594	14–15	GAMMA_ SPEC	Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5792R	RE53-99-0136	53-01594	4–5	GAMMA_ SPEC	Americium-241 Cesium-137 Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5792R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0136	53-01594	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5792R	RE53-99-0136	53-01594	4–5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0138 RE53-99-0139 RE53-99-0141	53-01593 53-01593 53-01592	4–5 14–15 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0134 RE53-99-0138 RE53-99-0139 RE53-99-0141	53-01588 53-01593 53-01593 53-01592	4–5 4–5 14–15 14–15		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0134 RE53-99-0135 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01592 53-01592	4–5 14–15 14–15 4–5 14–15		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0135 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01593 53-01592 53-01592	14–15 14–15 4–5 14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0134 RE53-99-0135 RE53-99-0138 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01593 53-01592 53-01592	4–5 14–15 4–5 14–15 4–5 14–15		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0134 RE53-99-0135 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01592 53-01592	4–5 14–15 14–15 4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0134 RE53-99-0135 RE53-99-0138 RE53-99-0139 RE53-99-0140 RE53-99-0141	53-01588 53-01588 53-01593 53-01593 53-01592 53-01592	4–5 14–15 4–5 14–15 4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5797R	RE53-99-0140	53-01592	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5797R	RE53-99-0138 RE53-99-0140 RE53-99-0141	53-01593 53-01592 53-01592	4–5 4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5820R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5820R	RE53-99-0142 RE53-99-0143	53-01598 53-01598	4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5820R	RE53-99-0144	53-01597	4–5	GAMMA_ SPEC	Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5820R	RE53-99-0142	53-01598	4–5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5820R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5820R	RE53-99-0142 RE53-99-0143 RE53-99-0144 RE53-99-0145	53-01598 53-01598 53-01597 53-01597	4–5 14–15 4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5820R	RE53-99-0145	53-01597	14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146 RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01596 53-01595 53-01595	4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146 RE53-99-0147 RE53-99-0149	53-01596 53-01596 53-01595	4–5 14–15 14–15		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01595 53-01595	14–15 4–5 14–15		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0148 RE53-99-0149	53-01595 53-01595	4–5 14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146 RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01596 53-01595 53-01595	4–5 14–15 4–5 14–15		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5828R	RE53-99-0146 RE53-99-0148 RE53-99-0149	53-01596 53-01595 53-01595	4–5 4–5 14–15		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0149	53-01595	14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146	53-01596	4–5	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5828R	RE53-99-0147	53-01596	14–15		Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5828R	RE53-99-0146 RE53-99-0147 RE53-99-0148	53-01596 53-01596 53-01595	4–5 14–15 4–5	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146 RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01596 53-01595 53-01595	4–5 14–15 4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0147 RE53-99-0148 RE53-99-0149	53-01596 53-01595 53-01595	14–15 4–5 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146	53-01596	4–5	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5828R	RE53-99-0147 RE53-99-0149	53-01596 53-01595	14–15 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5828R	RE53-99-0146 RE53-99-0148	53-01596 53-01595	4–5 4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5951R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0248 RE53-99-0251 RE53-99-0252	53-01664 53-01681 53-01681	4–5 4–5 14–15		Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15		Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5951R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0248 RE53-99-0249 RE53-99-0252	53-01664 53-01664 53-01681	4–5 14–15 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0248 RE53-99-0249 RE53-99-0251 RE53-99-0252	53-01664 53-01664 53-01681 53-01681	4–5 14–15 4–5 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0251	53-01681	4–5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5951R	RE53-99-0248 RE53-99-0249	53-01664 53-01664	4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5951R	RE53-99-0251 RE53-99-0252	53-01681 53-01681	4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5965R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0261	53-01682 53-01683 53-01683 53-01684	14–15 4–5 14–15 14–15		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15	GAMMA_ SPEC	Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5965R	RE53-99-0254 RE53-99-0255 RE53-99-0257 RE53-99-0258 RE53-99-0260 RE53-99-0261	53-01682 53-01682 53-01683 53-01683 53-01684 53-01684	4–5 14–15 4–5 14–15 4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5965R	RE53-99-0254 RE53-99-0257 RE53-99-0258	53-01682 53-01683 53-01683	4–5 4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0264	53-01685	14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0264	53-01685	14–15	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0264	53-01685	14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0264	53-01685	14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5969R	RE53-99-0264	53-01685	14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0266 RE53-99-0267 RE53-99-0270	53-01686 53-01686 53-01687	4–5 14–15 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5976R	RE53-99-0269	53-01687	4–5	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5976R	RE53-99-0270	53-01687	14–15	ISO_U	Uranium-235	J+	The result for this analyte is estimated and biased high; the matrix-spike % recovery was high.
5976R	RE53-99-0267	53-01686	14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5976R	RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01687 53-01687	14–15 4–5 14–15	ISO_U	Uranium-234	U	The result for this analyte is undetected; the required blank information is missing.
5976R	RE53-99-0266 RE53-99-0267 RE53-99-0269 RE53-99-0270	53-01686 53-01686 53-01687 53-01687	4–5 14–15 4–5 14–15		Uranium-238	U	The result for this analyte is undetected; the required blank information is missing.
5976R	RE53-99-0266 RE53-99-0269	53-01686 53-01687	4–5 4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5976R	RE53-99-0266	53-01686	4–5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0272 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01689 53-01689 53-01689	4–5 16–17 19–20 29–30	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	GAMMA_ SPEC	Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0273	53-01688	14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5984R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0272 RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01688 53-01689 53-01689 53-01689	4–5 14–15 16–17 19–20 29–30	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5984R	RE53-99-0273 RE53-99-0277 RE53-99-0278 RE53-99-0279	53-01688 53-01689 53-01689 53-01689	14–15 16–17 19–20 29–30	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5984R	RE53-99-0272	53-01688	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5984R	RE53-99-0272 RE53-99-0277	53-01688 53-01689	4–5 16–17	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228	53-01690 53-01690	4.5–6 6–7.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9		Cesium-137 Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0229	53-01690 53-01690	4.5–6 7.5–9		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9		Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228	53-01690 53-01690	4.5–6 6–7.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0229	53-01690 53-01690	4.5–6 7.5–9		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0229	53-01690	7.5–9	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5987R	RE53-99-0228	53-01690	6–7.5		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5987R	RE53-99-0229	53-01690	7.5–9	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5987R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9	ISO_U	Uranium-234	U	The result for this analyte is undetected; the required blank information is missing.
5987R	RE53-99-0227 RE53-99-0228	53-01690 53-01690	4.5–6 6–7.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5987R	RE53-99-0228	53-01690	6–7.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25	GAMMA_ SPEC	Americium-241 Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01656 53-01656	12–13 19–20 13–14 24–25		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25		Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0230	53-01654	7–8	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5991R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0230 RE53-99-0231 RE53-99-0232 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01654 53-01656 53-01656	7–8 12–13 19–20 13–14 24–25	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0230 RE53-99-0231 RE53-99-0237 RE53-99-0238	53-01654 53-01654 53-01656 53-01656	7–8 12–13 13–14 24–25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5991R	RE53-99-0232	53-01654	19–20	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5991R	RE53-99-0231 RE53-99-0237	53-01654 53-01656	12–13 13–14	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5999R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01661 53-01661 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5999R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0283 RE53-99-0284 RE53-99-0286 RE53-99-0287	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01661 53-01661 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 9–10 13–14 9–10 13–14		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5999R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25	GAMMA_ SPEC	Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5999R	RE53-99-0239 RE53-99-0241 RE53-99-0242 RE53-99-0243 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0285 RE53-99-0286 RE53-99-0287	53-01657 53-01657 53-01658 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01660 53-01660	9–10 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 24–25 9–10 13–14	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
5999R	RE53-99-0239 RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01657 53-01657 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 24–25 9–10 13–14 24–25 9–10 13–14 24–25 9–10 13–14 24–25	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5999R	RE53-99-0243	53-01658	13–14	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5999R	RE53-99-0243	53-01658	13–14		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5999R	RE53-99-0239 RE53-99-0243 RE53-99-0285 RE53-99-0286 RE53-99-0287 RE53-99-0288	53-01657 53-01658 53-01661 53-01660 53-01660 53-01660	9–10 13–14 24–25 9–10 13–14 24–25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
5999R	RE53-99-0240 RE53-99-0241 RE53-99-0242 RE53-99-0244 RE53-99-0280 RE53-99-0281 RE53-99-0282 RE53-99-0283 RE53-99-0284	53-01657 53-01657 53-01658 53-01658 53-01659 53-01659 53-01659 53-01661 53-01661	13–14 24–25 9–10 24–25 9–10 13–14 24–25 9–10 13–14	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
5999R	RE53-99-0285	53-01661	24–25	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0289 RE53-99-0290 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01662 53-01663	9–10 13–14 24–25 24–25	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0289 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01663	9–10 24–25 24–25		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0289 RE53-99-0290 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01662 53-01663	9–10 13–14 24–25 24–25		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6002R	RE53-99-0289 RE53-99-0290 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01662 53-01663	9–10 13–14 24–25 24–25		Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0289 RE53-99-0290 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01662 53-01663	9–10 13–14 24–25 24–25	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0289 RE53-99-0290 RE53-99-0291 RE53-99-0294	53-01662 53-01662 53-01662 53-01663	9–10 13–14 24–25 24–25	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0289 RE53-99-0290 RE53-99-0294	53-01662 53-01662 53-01663	9–10 13–14 24–25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6002R	RE53-99-0291	53-01662	24–25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693	9–10 13–14 24–25 9–10 24–25 24–25	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01694	9–10 13–14 24–25 9–10 24–25 24–25		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 9–10 24–25 24–25 24–25		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 24–25 24–25 24–25		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 9–10 24–25 24–25 24–25	GAMMA_ SPEC	Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297	53-01691 53-01691 53-01691	9–10 13–14 24–25	H3	Tritium	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0298 RE53-99-0300 RE53-99-0303 RE53-99-0306	53-01691 53-01691 53-01691 53-01691 53-01692 53-01693 53-01694	9–10 13–14 24–25 9–10 24–25 24–25 24–25	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0298 RE53-99-0306	53-01691 53-01694	9–10 24–25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6012R	RE53-99-0295 RE53-99-0296 RE53-99-0297 RE53-99-0300 RE53-99-0303	53-01691 53-01691 53-01691 53-01692 53-01693	9–10 13–14 24–25 24–25 24–25	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6015R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695 53-01695	1–2 4–5 14–15 1–2 4–5 14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6015R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695	1–2 4–5 14–15 4–5 14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6015R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695 53-01695	1–2 4–5 14–15 1–2 4–5 14–15		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6015R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695	1–2 4–5 14–15 4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6015R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695 53-01695	1–2 4–5 14–15 1–2 4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6015R	RE53-99-0307 RE53-99-0308 RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01701 53-01701 53-01695 53-01695 53-01695	1–2 4–5 14–15 1–2 4–5 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
6015R	RE53-99-0307 RE53-99-0308	53-01701 53-01701	1–2 4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6015R	RE53-99-0309 RE53-99-0310 RE53-99-0311 RE53-99-0312	53-01701 53-01695 53-01695 53-01695	14–15 1–2 4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
6024R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6024R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0007	53-01709	8–9	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Cobalt-60 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
6511R	RE53-00-0007	53-01709	8–9	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0041 RE53-00-0043 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092	53-01716 53-01716 53-01719 53-01719 53-01717 53-01717	1–2 14–15 4–5 14–15 4–5 14–15	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 4–5 14–15		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0043 RE53-00-0049 RE53-00-0091 RE53-00-0092	53-01716 53-01719 53-01717 53-01717	14–15 14–15 4–5 14–15		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043	53-01716 53-01716 53-01716	1–2 4–5 14–15		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	GAMMA_ SPEC	Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0043 RE53-00-0048 RE53-00-0049	53-01716 53-01719 53-01719	14–15 4–5 14–15		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0042	53-01716	4–5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7534R	RE53-00-0047	53-01719	1–2		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717	1–2 4–5 14–15 1–2 4–5 14–15 4–5	H3	Tritium	J+	The result for this analyte is estimated and biased high; the matrix-spike % recovery was high.
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 1–2 4–5 14–15	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 4–5 14–15		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
7534R	RE53-00-0093	53-01718	1–2	ISO_PU	Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7534R	RE53-00-0092	53-01717	14–15	ISO_U	Uranium-235	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
7534R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 1–2 4–5 14–15	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7534R	RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01718 53-01718 53-01718	4–5 14–15 1–2 4–5 14–15 4–5 1–2 4–5 14–15	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7534R	RE53-00-0041	53-01716	1–2	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7601R	RE53-00-0051	53-01720	1–2	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
7601R	RE53-00-0051	53-01720	1–2		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
7601R	RE53-00-0063	53-01723	1–2	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7601R	RE53-00-0051	53-01720	1–2	GAMMA_ SPEC	Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				
7601R	RE53-00-0053	53-01720	14–15	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7601R	RE53-00-0051	53-01720	1–2		Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0052	53-01720	4–5		Ruthenium-106		
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				
7601R	RE53-00-0055	53-01721	1–2	GAMMA_ SPEC	Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				
7601R	RE53-00-0051	53-01720	1–2	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
	RE53-00-0083	53-01728	1–2				

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7601R	RE53-00-0051	53-01720	1–2	ISO_PU	Plutonium-238 Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				
7601R	RE53-00-0059	53-01722	1–2	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7601R	RE53-00-0063	53-01723	1–2	ISO_U	Uranium-235	J-	The result for this analyte is estimated and biased low; the laboratory control sample % recovery was low.
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0073	53-01725	14–15				
7601R	RE53-00-0060	53-01722	4–5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
	RE53-00-0072	53-01725	4–5				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
7601R	RE53-00-0071	53-01725	1–2		Uranium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
7601R	RE53-00-0051	53-01720	1–2	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				
76116	0253-95-0103	53-01001	1.5–2.5	GAMMA_ SPEC	Americium-241 Cesium-134 Cesium-137 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76120	0253-95-0103	53-01001	1.5–2.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76640	0253-95-0110	53-01003	1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	0253-95-0113	53-01004	1.5–2.5				
	0253-95-0116	53-01005	1.5–2.42				
	0253-95-0119	53-01006	1.5–2.5				
	0253-95-0122	53-01007	1.5–2.5				
76640	0253-95-0106	53-01002	1.5–2.5		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
	0253-95-0110	53-01003	1.5–2.5				
	0253-95-0113	53-01004	1.5–2.5				
	0253-95-0116	53-01005	1.5–2.42				
	0253-95-0119	53-01006	1.5–2.5				
	0253-95-0122	53-01007	1.5–2.5				

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76640	0253-95-0106	53-01002	1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76676	0253-95-0106 0253-95-0110 0253-95-0113 0253-95-0116 0253-95-0119 0253-95-0122	53-01002 53-01003 53-01004 53-01005 53-01006 53-01007	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.42 1.5–2.5 1.5–2.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76676	0253-95-0106 0253-95-0110 0253-95-0113 0253-95-0122	53-01002 53-01003 53-01004 53-01007	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76676	0253-95-0106 0253-95-0110 0253-95-0113 0253-95-0116 0253-95-0119 0253-95-0122	53-01002 53-01003 53-01004 53-01005 53-01006 53-01007	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.42 1.5–2.5 1.5–2.5		Cesium-137 Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76676	0253-95-0116 0253-95-0119	53-01005 53-01006	1.5–2.42 1.5–2.5	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76676	0253-95-0110 0253-95-0113	53-01003 53-01004	1.5–2.5 1.5–2.5		Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76676	0253-95-0106 0253-95-0110 0253-95-0113 0253-95-0116 0253-95-0119 0253-95-0122	53-01002 53-01003 53-01004 53-01005 53-01006 53-01007	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.42 1.5–2.5 1.5–2.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76677	0253-95-0106 0253-95-0110 0253-95-0116 0253-95-0119 0253-95-0122	53-01002 53-01003 53-01005 53-01006 53-01007	1.5–2.5 1.5–2.5 1.5–2.42 1.5–2.5 1.5–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76778	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0138 0253-95-0142 0253-95-0145 0253-95-0148 0253-95-0151	53-01008 53-01009 53-01010 53-01011 53-01012 53-01013 53-01014 53-01015 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76778	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0138 0253-95-0145	53-01008 53-01009 53-01010 53-01011 53-01012 53-01014	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76778	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0138 0253-95-0145 0253-95-0148 0253-95-0151	53-01008 53-01009 53-01010 53-01011 53-01012 53-01014 53-01015 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76778	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0138 0253-95-0142 0253-95-0145 0253-95-0148 0253-95-0151	53-01008 53-01009 53-01010 53-01011 53-01012 53-01013 53-01014 53-01015 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	GAMMA_ SPEC	Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76778	0253-95-0151	53-01016	1.5–2.5	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76778	0253-95-0142	53-01013	1.5–2.5		Cesium-137	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76778	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0138 0253-95-0142 0253-95-0145 0253-95-0148 0253-95-0151	53-01008 53-01009 53-01010 53-01011 53-01012 53-01013 53-01014 53-01015 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76779	0253-95-0154 0253-95-0155 0253-95-0156 0253-95-0157 0253-95-0158 0253-95-0159 0253-95-0160 0253-95-0161	53-01017 53-01288 53-01289 53-01290 53-01291 53-01292 53-01293 53-01294	1.5–2.5 1.5–2.5 1–1.67 0.67–1.5 1.5–2.17 1.5–2.5 1.5–2.17 1.5–2.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76779	0253-95-0154 0253-95-0155 0253-95-0156 0253-95-0159 0253-95-0160	53-01017 53-01288 53-01289 53-01292 53-01293	1.5–2.5 1.5–2.5 1–1.67 1.5–2.5 1.5–2.17		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76779	0253-95-0154 0253-95-0155 0253-95-0156 0253-95-0157 0253-95-0158 0253-95-0159 0253-95-0160 0253-95-0161	53-01017 53-01288 53-01289 53-01290 53-01291 53-01292 53-01293 53-01294	1.5–2.5 1.5–2.5 1–1.67 0.67–1.5 1.5–2.17 1.5–2.5 1.5–2.17 1.5–2.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76779	0253-95-0155 0253-95-0156	53-01288 53-01289	1.5–2.5 1–1.67		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76779	0253-95-0154 0253-95-0155 0253-95-0156 0253-95-0157 0253-95-0158 0253-95-0159 0253-95-0160 0253-95-0161	53-01017 53-01288 53-01289 53-01290 53-01291 53-01292 53-01293 53-01294	1.5–2.5 1.5–2.5 1–1.67 0.67–1.5 1.5–2.17 1.5–2.5 1.5–2.17 1.5–2.5	GAMMA_ SPEC	Europium-152 Ruthenium-106 Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76779	0253-95-0158	53-01291	1.5–2.17	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76779	0253-95-0161	53-01294	1.5–2.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0162 0253-95-0177 0253-95-0181 0253-95-0187 0253-95-0234 0253-95-0236 0253-95-0237 0253-95-0238 0253-95-0239 0253-95-0241 0253-95-0242 0253-95-0243	53-01295 53-01018 53-01019 53-01021 53-01316 53-01317 53-01318 53-01319 53-01320 53-01321 53-01322 53-01323	1.5–2.5 3.5–4.83 2.17–3 1.58–2.5 2–3.67 0.67–2 1.17–2.5 1.5–2.33 1–2.33 1.5–2.67 1–2.67 2.5–3.67	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0177 0253-95-0236 0253-95-0237 0253-95-0239 0253-95-0242 0253-95-0243	53-01018 53-01317 53-01318 53-01320 53-01322 53-01323	3.5–4.83 0.67–2 1.17–2.5 1–2.33 1–2.67 2.5–3.67		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0162 0253-95-0177 0253-95-0181 0253-95-0187 0253-95-0234 0253-95-0236 0253-95-0237 0253-95-0238 0253-95-0239 0253-95-0241 0253-95-0242 0253-95-0243	53-01295 53-01018 53-01019 53-01021 53-01316 53-01317 53-01318 53-01319 53-01320 53-01321 53-01322 53-01323	1.5–2.5 3.5–4.83 2.17–3 1.58–2.5 2–3.67 0.67–2 1.17–2.5 1.5–2.33 1–2.33 1.5–2.67 1–2.67 2.5–3.67		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0181	53-01019	2.17–3		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76780	0253-95-0162 0253-95-0177 0253-95-0181 0253-95-0187 0253-95-0234 0253-95-0236 0253-95-0237 0253-95-0238 0253-95-0239 0253-95-0241 0253-95-0242 0253-95-0243	53-01295 53-01018 53-01019 53-01021 53-01316 53-01317 53-01318 53-01319 53-01320 53-01321 53-01322 53-01323	1.5–2.5 3.5–4.83 2.17–3 1.58–2.5 2–3.67 0.67–2 1.17–2.5 1.5–2.33 1–2.33 1.5–2.67 1–2.67 2.5–3.67	GAMMA_ SPEC	Europium-152	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0177 0253-95-0181 0253-95-0187 0253-95-0234 0253-95-0236 0253-95-0237 0253-95-0238 0253-95-0239 0253-95-0241 0253-95-0242 0253-95-0243	53-01018 53-01019 53-01021 53-01316 53-01317 53-01318 53-01319 53-01320 53-01321 53-01322 53-01323	3.5–4.83 2.17–3 1.58–2.5 2–3.67 0.67–2 1.17–2.5 1.5–2.33 1–2.33 1.5–2.67 1–2.67 2.5–3.67		Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0162 0253-95-0177 0253-95-0234 0253-95-0238 0253-95-0239 0253-95-0241 0253-95-0242 0253-95-0243	53-01295 53-01018 53-01316 53-01319 53-01320 53-01321 53-01322 53-01323	1.5–2.5 3.5–4.83 2–3.67 1.5–2.33 1–2.33 1.5–2.67 1–2.67 2.5–3.67		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76780	0253-95-0162 0253-95-0181	53-01295 53-01019	1.5–2.5 2.17–3	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76780	0253-95-0177 0253-95-0187 0253-95-0239 0253-95-0243	53-01018 53-01021 53-01320 53-01323	3.5–4.83 1.58–2.5 1–2.33 2.5–3.67		Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76780	0253-95-0162	53-01295	1.5–2.5		Ruthenium-106	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76780	0253-95-0181 0253-95-0187 0253-95-0236 0253-95-0237	53-01019 53-01021 53-01317 53-01318	2.17–3 1.58–2.5 0.67–2 1.17–2.5		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76795	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0142 0253-95-0145 0253-95-0151	53-01008 53-01009 53-01010 53-01011 53-01013 53-01014 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76795	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0135 0253-95-0138 0253-95-0145 0253-95-0148 0253-95-0151	53-01008 53-01009 53-01010 53-01011 53-01012 53-01014 53-01015 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76795	0253-95-0138 0253-95-0148	53-01012 53-01015	1.5–2.5 1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76795	0253-95-0142	53-01013	1.5–2.5		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76796	0253-95-0154 0253-95-0155 0253-95-0156 0253-95-0157 0253-95-0158 0253-95-0159 0253-95-0161	53-01017 53-01288 53-01289 53-01290 53-01291 53-01292 53-01294	1.5–2.5 1.5–2.5 1–1.67 0.67–1.5 1.5–2.17 1.5–2.5 1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76796	0253-95-0154 0253-95-0155 0253-95-0156 0253-95-0157 0253-95-0158 0253-95-0159 0253-95-0160 0253-95-0161	53-01017 53-01288 53-01289 53-01290 53-01291 53-01292 53-01293 53-01294	1.5–2.5 1.5–2.5 1–1.67 0.67–1.5 1.5–2.17 1.5–2.5 1.5–2.17 1.5–2.5		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76796	0253-95-0160	53-01293	1.5–2.17	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76797	0253-95-0177 0253-95-0181 0253-95-0187 0253-95-0236 0253-95-0238 0253-95-0241 0253-95-0242	53-01018 53-01019 53-01021 53-01317 53-01319 53-01321 53-01322	3.5–4.83 2.17–3 1.58–2.5 0.67–2 1.5–2.33 1.5–2.67 1–2.67	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76797	0253-95-0162 0253-95-0177 0253-95-0187 0253-95-0236 0253-95-0237 0253-95-0239 0253-95-0242 0253-95-0243	53-01295 53-01018 53-01021 53-01317 53-01318 53-01320 53-01322 53-01323	1.5–2.5 3.5–4.83 1.58–2.5 0.67–2 1.17–2.5 1–2.33 1–2.67 2.5–3.67		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76797	0253-95-0162 0253-95-0234 0253-95-0237 0253-95-0239 0253-95-0243	53-01295 53-01316 53-01318 53-01320 53-01323	1.5–2.5 2–3.67 1.17–2.5 1–2.33 2.5–3.67	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76797	0253-95-0234 0253-95-0238 0253-95-0241	53-01316 53-01319 53-01321	2–3.67 1.5–2.33 1.5–2.67		Plutonium-239	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76798	0253-95-0138 0253-95-0148	53-01012 53-01015	1.5–2.5 1.5–2.5	ISO_U	Uranium-234 Uranium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76799	0253-95-0155 0253-95-0156 0253-95-0158 0253-95-0159 0253-95-0160	53-01288 53-01289 53-01291 53-01292 53-01293	1.5–2.5 1–1.67 1.5–2.17 1.5–2.5 1.5–2.17	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76799	0253-95-0154 0253-95-0157	53-01017 53-01290	1.5–2.5 0.67–1.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76800	0253-95-0177 0253-95-0187 0253-95-0234 0253-95-0237 0253-95-0241 0253-95-0242 0253-95-0243	53-01018 53-01021 53-01316 53-01318 53-01321 53-01322 53-01323	3.5–4.83 1.58–2.5 2–3.67 1.17–2.5 1.5–2.67 1–2.67 2.5–3.67	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76800	0253-95-0162 0253-95-0181 0253-95-0236 0253-95-0238 0253-95-0239	53-01295 53-01019 53-01317 53-01319 53-01320	1.5–2.5 2.17–3 0.67–2 1.5–2.33 1–2.33	ISO_U	Uranium-235	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76807	0253-95-0126 0253-95-0129 0253-95-0132 0253-95-0145 0253-95-0148 0253-95-0151	53-01008 53-01009 53-01010 53-01014 53-01015 53-01016	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76807	0253-95-0135 0253-95-0138 0253-95-0142	53-01011 53-01012 53-01013	1.5–2.5 1.5–2.5 1.5–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76808	0253-95-0154 0253-95-0156 0253-95-0157 0253-95-0158 0253-95-0159 0253-95-0162 0253-95-0234 0253-95-0236 0253-95-0237 0253-95-0238 0253-95-0239 0253-95-0241 0253-95-0242	53-01017 53-01289 53-01290 53-01291 53-01292 53-01295 53-01316 53-01317 53-01318 53-01319 53-01320 53-01321 53-01322	1.5–2.5 1–1.67 0.67–1.5 1.5–2.17 1.5–2.5 1.5–2.5 2–3.67 0.67–2 1.17–2.5 1.5–2.33 1–2.33 1.5–2.67 1–2.67	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
76808	0253-95-0155 0253-95-0243	53-01288 53-01323	1.5–2.5 2.5–3.67	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
76850	0253-95-0177 0253-95-0187	53-01018 53-01021	3.5–4.83 1.58–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
76850	0253-95-0181	53-01019	2.17–3	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77137	0253-95-0190 0253-95-0193 0253-95-0205 0253-95-0208	53-01022 53-01023 53-01025 53-01026	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0205	53-01025	1.5–2.5		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0190 0253-95-0193 0253-95-0205 0253-95-0208	53-01022 53-01023 53-01025 53-01026	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0193	53-01023	1.5–2.5		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0190 0253-95-0193 0253-95-0205 0253-95-0208	53-01022 53-01023 53-01025 53-01026	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0190	53-01022	1.5–2.5		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77137	0253-95-0193 0253-95-0208	53-01023 53-01026	1.5–2.5 1.5–2.5	GAMMA_ SPEC	Cesium-134	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77137	0253-95-0205	53-01025	1.5–2.5		Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77137	0253-95-0190 0253-95-0193 0253-95-0205 0253-95-0208	53-01022 53-01023 53-01025 53-01026	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77138	0253-95-0208	53-01026	1.5–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
77138	0253-95-0190 0253-95-0193 0253-95-0205	53-01022 53-01023 53-01025	1.5–2.5 1.5–2.5 1.5–2.5	SR_90	Strontium-90	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77248	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3	GAMMA_ SPEC	Americium-241	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3		Cesium-134	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3		Cesium-137	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0223	53-01031	1.5–2.5		Cobalt-60	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3	GAMMA_ SPEC	Europium-152 Ruthenium-106	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0211 0253-95-0214 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–3		Sodium-22	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77248	0253-95-0214 0253-95-0217 0253-95-0220	53-01028 53-01029 53-01030	1.5–2.5 1.5–2.5 1.5–2.5	GAMMA_ SPEC	Cobalt-60	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77248	0253-95-0220	53-01030	1.5–2.5		Sodium-22	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77248	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3	ISO_U	Uranium-235	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77249	0253-95-0217	53-01029	1.5–2.5	ISO_U	Uranium-234 Uranium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.

Table C-5.3-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Analytical Suite	Analyte	Qualifier	Explanation
77250	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77250	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77254	0253-95-0190 0253-95-0193 0253-95-0205	53-01022 53-01023 53-01025	1.5–2.5 1.5–2.5 1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77254	0253-95-0190 0253-95-0193 0253-95-0205 0253-95-0208	53-01022 53-01023 53-01025 53-01026	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5		Plutonium-239	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.
77254	0253-95-0208	53-01026	1.5–2.5	ISO_PU	Plutonium-238	U	The result for this analyte is undetected; the result was < 3x the 1-sigma total propagated uncertainty.
77258	0253-95-0211 0253-95-0214 0253-95-0217 0253-95-0220 0253-95-0223 0253-95-0227	53-01027 53-01028 53-01029 53-01030 53-01031 53-01032	1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–2.5 1.5–3	SR_90	Strontium-90	U	The result for this analyte is undetected; the amount detected is < the minimum detectable concentration.

C-6.0 REJECTED DATA

Table C-6.0-1 presents all rejected data, with reason codes and explanations for each.

Table C-6.0-1
Rejected Data

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
Canyon							
1147S	RE53-02-49303	53-01744	0.75–1.42	GAMMA_ SPEC	Cesium-134	R	The result for this analyte is rejected due to spectral interference that prevented positive identification of the analyte.
1147S	RE53-02-49310	53-01732	0.4–0.56	GAMMA_ SPEC	Cesium-137	R	The result for this analyte is rejected due to spectral interference that prevented positive identification of the analyte.
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014	53-01739	0–0.23	VOC	Bromomethane	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Dichlorobenzene[1,4-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Dichlorodifluoromethane Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis/trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene[cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Propylbenzene[1-] Styrene Tetrachloroethane[1,1,1,2-] Tetrachloroethane[1,1,2,2-] Tetrachloroethene Toluene	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0001 RE53-01-0014 RE53-01-0017	53-01737 53-01739 53-01738	0–0.36 0–0.23 0–0.08	VOC	Trichloro-1,2,2-trifluoroethane[1,1,2-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Trichloroethane[1,1,1-] Trichloroethane[1,1,2-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0017	53-01738	0–0.08	VOC	Trichloroethene	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Trichlorofluoromethane Trichloropropane[1,2,3-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014 RE53-01-0015 RE53-01-0017	53-01739 53-01740 53-01738	0–0.23 0–0.26 0–0.08	VOC	Trichlorotrifluoroethane	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9673R	RE53-01-0014 RE53-01-0017	53-01739 53-01738	0–0.23 0–0.08	VOC	Trimethylbenzene[1,2,4-] Trimethylbenzene[1,3,5-] Vinyl Chloride Xylene (Total)	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0002 RE53-01-0019	53-01746 53-01745	0.29–0.59 0.2–0.46	VOC	Acetone Benzene Bromobenzene Bromochloromethane Bromodichloromethane Bromoform	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0019	53-01745	0.2–0.46	VOC	Bromomethane	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0002 RE53-01-0019	53-01746 53-01745	0.29–0.59 0.2–0.46	VOC	Butanone[2-] Butylbenzene[n-] Butylbenzene[sec-] Butylbenzene[tert-] Carbon Disulfide Carbon Tetrachloride Chlorobenzene Chlorodibromomethane Chloroethane Chloroform Chloromethane Chlorotoluene[2-] Chlorotoluene[4-] Dibromo-3-Chloropropane[1,2-] Dibromoethane[1,2-] Dibromomethane Dichlorobenzene[1,2-] Dichlorobenzene[1,3-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0002 RE53-01-0019	53-01746 53-01745	0.29–0.59 0.2–0.46	VOC	Dichlorodifluoromethane	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
9702R	RE53-01-0002 RE53-01-0019	53-01746 53-01745	0.29–0.59 0.2–0.46	VOC	Dichloroethane[1,1-] Dichloroethane[1,2-] Dichloroethene[1,1-] Dichloroethene[cis/trans-1,2-] Dichloropropane[1,2-] Dichloropropane[1,3-] Dichloropropane[2,2-] Dichloropropene[1,1-] Dichloropropene[cis-1,3-] Dichloropropene[trans-1,3-] Ethylbenzene Hexanone[2-] Iodomethane Isopropylbenzene Isopropyltoluene[4-] Methyl-2-pentanone[4-]	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9702R	RE53-01-0002 RE53-01-0019	53-01746 53-01745	0.29–0.59 0.2–0.46	VOC	Propylbenzene[1-] Styrene Tetrachloroethane [1,1,1,2-] Tetrachloroethane [1,1,2,2-] Tetrachloroethene Toluene Trichloroethane[1,1,1-] Trichloroethane[1,1,2-] Trichloroethene Trichlorofluoromethane Trichloropropane[1,2,3-] Trichlorotrifluoroethane Trimethylbenzene[1,2,4-] Trimethylbenzene[1,3,5-] Vinyl Chloride Xylene (Total)	R	The result is rejected; the internal standard % recovery of the continuing calibration verification did not meet method requirements.
9703R	RE53-01-0002 RE53-01-0018 RE53-01-0019 RE53-01-0022 RE53-01-0023 RE53-01-0024 RE53-01-0025 RE53-01-0026	53-01746 53-01744 53-01745 53-01748 53-01749 53-01741 53-01742 53-01743	0.29–0.59 0.39–0.76 0.2–0.46 0.36–0.63 0–0.2 0–0.29 0.36–0.49 0–0.13	METALS	Lead	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
Mesa Soil							
5798R	RE53-99-0183 RE53-99-0184 RE53-99-0185	53-01639 53-01640 53-01641	0–0.33 0–0.33 0–0.33	PEST	BHC[delta-] DDD[4,4'-] DDT[4,4'-] Endosulfan Sulfate Endrin Ketone Methoxychlor[4,4'-]	R	The result for this analyte is rejected; the calibration and/or standard did not meet method requirements.
5906R	RE53-99-0224 RE53-99-0225 RE53-99-0226	53-01636 53-01637 53-01638	0–0.33 0–0.5 0–0.25	METALS	Selenium	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
5968R	RE53-99-0262 RE53-99-0263	53-01685 53-01685	1–2 4–5	METALS	Antimon```y Selenium	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
6023R	RE53-99-0313 RE53-99-0314 RE53-99-0316 RE53-99-0317 RE53-99-0319 RE53-99-0320	53-01696 53-01696 53-01698 53-01698 53-01697 53-01697	12–24 4–5 1–2 4–5 1–2 4–5	METALS	Selenium	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
6024R	RE53-99-0320	53-01697	4–5	GAMMA_ SPEC	Sodium-22	R	The result for this analyte is rejected due to spectral interference that prevented positive identification of the analyte.
7532R	RE53-00-0046	53-01719	0–0.5	PCB	Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	R	The result for this analyte is rejected; the laboratory control sample documentation is missing.
7533R	RE53-00-0046	53-01719	0–0.5	METALS	Antimony	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
7600R	RE53-00-0050 RE53-00-0054 RE53-00-0058 RE53-00-0062 RE53-00-0066 RE53-00-0070 RE53-00-0074 RE53-00-0078 RE53-00-0082 RE53-00-0086	53-01720 53-01721 53-01722 53-01723 53-01724 53-01725 53-01726 53-01727 53-01728 53-01729	0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5 0–0.5	METALS	Antimony	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
Mesa Tuff							
5686R	RE53-99-0122	53-01577	14–15	GAMMA_ SPEC	Cobalt-60	R	The result for this analyte is rejected due to spectral interference that prevented positive identification of the analyte.
5705R	RE53-99-0098 RE53-99-0132 RE53-99-0133	53-01594 53-01586 53-01586	1–2 4–5 14–15	PEST	Aldrin BHC[beta-] BHC[delta-]	R	The result for this analyte is rejected; the calibration and/or standard did not meet method requirements.
5705R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	PEST	BHC[gamma-]	R	The result for this analyte is rejected; the calibration and/or standard did not meet method requirements.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
5705R	RE53-99-0098 RE53-99-0132 RE53-99-0133	53-01594 53-01586 53-01586	1–2 4–5 14–15	PEST	Chlordane[alpha-] Chlordane[gamma-] DDD[4,4'-] DDE[4,4'-] DDT[4,4'-] Dieldrin Endosulfan I Endosulfan II Endosulfan Sulfate Endrin Endrin Aldehyde Endrin Ketone Heptachlor Heptachlor Epoxide Methoxychlor[4,4'-]	R	The result for this analyte is rejected; the calibration and/or standard did not meet method requirements.
5705R	RE53-99-0132 RE53-99-0133	53-01586 53-01586	4–5 14–15	PEST	Toxaphene (Technical Grade)	R	The result for this analyte is rejected; the calibration and/or standard did not meet method requirements.
5791R	RE53-99-0136 RE53-99-0137	53-01594 53-01594	4–5 14–15	METALS	Antimony	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
5968R	RE53-99-0264	53-01685	14–15	METALS	Antimony Selenium	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
5986R	RE53-99-0227 RE53-99-0228 RE53-99-0229	53-01690 53-01690 53-01690	4.5–6 6–7.5 7.5–9	METALS	Selenium	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
6023R	RE53-99-0315 RE53-99-0318 RE53-99-0321	53-01696 53-01698 53-01697	14–15 14–15 14–15	METALS	Selenium	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
7532R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	PCB	Aroclor-1016 Aroclor-1221 Aroclor-1232	R	The result for this analyte is rejected; the laboratory control sample documentation is missing.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
7532R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	PCB	Aroclor-1242 Aroclor-1248 Aroclor-1254 Aroclor-1260	R	The result for this analyte is rejected; the laboratory control sample documentation is missing.
7532R	RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01718 53-01718 53-01718	1–2 4–5 14–15	PEST	Aldrin BHC[alpha-] BHC[beta-] BHC[delta-] BHC[gamma-] Chlordane[alpha-] Chlordane[gamma-] DDD[4,4'-] DDE[4,4'-] DDT[4,4'-] Dieldrin Endosulfan I Endosulfan II Endosulfan Sulfate Endrin Endrin Aldehyde Endrin Ketone Heptachlor Heptachlor Epoxide Methoxychlor[4,4'-] Toxaphene (Technical Grade)	R	The result for this analyte is rejected; the laboratory control sample documentation is missing.
7533R	RE53-00-0041 RE53-00-0042 RE53-00-0043 RE53-00-0047 RE53-00-0048 RE53-00-0049 RE53-00-0091 RE53-00-0092 RE53-00-0093 RE53-00-0094 RE53-00-0095	53-01716 53-01716 53-01716 53-01719 53-01719 53-01719 53-01717 53-01717 53-01718 53-01718 53-01718	1–2 4–5 14–15 1–2 4–5 14–15 4–5 14–15 1–2 4–5 14–15	METALS	Antimony	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.

Table C-6.0-1 (continued)

Request	Sample ID	Location ID	Depth (ft)	Suite	Analyte	Qualifier	Explanation
7600R	RE53-00-0051	53-01720	1–2	METALS	Antimony	R	The result for this analyte is rejected; the matrix spike recovery was less than 30%.
	RE53-00-0052	53-01720	4–5				
	RE53-00-0053	53-01720	14–15				
	RE53-00-0055	53-01721	1–2				
	RE53-00-0056	53-01721	4–5				
	RE53-00-0057	53-01721	14–15				
	RE53-00-0059	53-01722	1–2				
	RE53-00-0060	53-01722	4–5				
	RE53-00-0061	53-01722	14–15				
	RE53-00-0063	53-01723	1–2				
	RE53-00-0064	53-01723	4–5				
	RE53-00-0065	53-01723	14–15				
	RE53-00-0067	53-01724	1–2				
	RE53-00-0068	53-01724	4–5				
	RE53-00-0069	53-01724	14–15				
	RE53-00-0071	53-01725	1–2				
	RE53-00-0072	53-01725	4–5				
	RE53-00-0073	53-01725	14–15				
	RE53-00-0075	53-01726	1–2				
	RE53-00-0076	53-01726	4–5				
	RE53-00-0077	53-01726	14–15				
	RE53-00-0079	53-01727	1–2				
	RE53-00-0080	53-01727	4–5				
	RE53-00-0081	53-01727	14–15				
	RE53-00-0083	53-01728	1–2				
	RE53-00-0084	53-01728	4–5				
	RE53-00-0085	53-01728	14–15				
	RE53-00-0087	53-01729	1–2				
	RE53-00-0088	53-01729	4–5				
	RE53-00-0089	53-01729	14–15				

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Appendix D

Data Review

D-1.0 OVERVIEW OF IDENTIFYING COPCS

The data for SWMU 53-002(a)-99 include analytical data from 95 soil samples and 344 tuff samples collected from the mesa top, and 47 sediment samples collected from Reaches C, D, and E. The soil samples include 46 samples identified as soil, 22 fill samples, and 27 berm samples originally identified as tuff, but further review of the sample information indicates these samples are more soil-like in nature (see Section 6.3 for further discussion and Table 6.3-1 for clarification). The 344 tuff samples were collected from seven different units of tuff (15 from Qbt 3, 276 from Qbt 2, 20 from Qbt 1v, 27 from Qbt 1g, 2 from Qbo, 3 from Qct, and 1 from Qbtt). Figures D-1.0-1 and D-1.0-2 show the sample locations on the mesa top and in the canyon. All data used quantitatively to identify chemicals of potential concern (COPCs) at SWMU 53-002(a)-99 were subjected to RRES-RS QA/QC procedures (see Appendix C). The data review process for identifying COPCs begins with a comparison of site data with

- naturally occurring background concentrations for inorganic chemicals,
- naturally occurring background and fallout concentrations for radionuclides, and
- analytical estimated quantitation levels (EQLs) for organic chemicals.

Background comparisons and a variety of statistical and graphical methods were used to compare site inorganic and radionuclide data with Los Alamos National Laboratory (the Laboratory or LANL) background data (LANL 1998, 59730). Organic chemical data were evaluated for detection status only. For background comparisons, the first step was to compare the site data with a background value (BV). A BV may be an estimated value for the background data set (upper tolerance limit [95, 95] or the 95% upper confidence bound on the 95th quantile), a detection limit (DL), a fallout value (FV), a minimum detectable activity, or it may be calculated based on secular equilibrium or a total analysis.

If a site-specific datum exceeds its BV, additional evaluation of the datum may be performed by comparing the range of values in the site data set for that chemical to the range of values for that chemical in the background data set. Graphical analyses (e.g., box plots) may be used or, if adequate data are available, statistical tests that evaluate differences in distribution may be used. Nonparametric tests commonly used to assess data distributions include the Gehan, quantile, and slippage tests. Together these tests assess complete shifts in distributions, shifts of a subset of the data, and the potential for some of the site data to be greater than the maximum background concentration. Observed significance levels (p-values) are obtained; these values indicate whether a difference does or does not exist between the data sets. A p-value of less than 0.05 indicates that a difference exists between the distributions (i.e., the site data are different from the background data). A p-value greater than 0.05 indicates that no difference exists between distributions (i.e., site and background data are similar). Only data that are relevant for identifying COPCs are discussed in this section; this includes measurements above applicable thresholds or DLs that are greater than an applicable threshold.

D-2.0 OVERVIEW OF STATISTICAL METHODS

A variety of statistical methods may be applied to each of the data sets. The use of any of these methods depends on how appropriate the method is for the available data.

D-2.1 Exploratory Data Analysis

Graphical analyses for these data sets include box plots. These analyses provide a visual representation of the data and determine the presence of outliers or other anomalous data that might affect statistical results and interpretations. The plots allow a visual comparison among concentration distributions. The

differences of interest may include an overall shift in concentration (shift of central location) or, when the centers are nearly equal, a difference between the upper tails of the two distributions (elevated concentrations in a small fraction of one distribution). The plots may be used in conjunction with the statistical tests (distributional comparisons) described below. Unless otherwise noted, the nondetected concentrations are included in the plots at their reported DL or EQL.

Box plots. A box plot consists of a box, a line across the box, whiskers (lines extended beyond the box and terminated with a short perpendicular line), and points outside the whiskers. The box area of the plot is the region between the 25th percentile and the 75th percentile of the data, the interquartile range or middle half of the data. The horizontal line within the box represents the median (50th percentile) of the data. The whiskers give an interval of 1.5 times the interquartile range, outside of which data may be evaluated for their potential to be outliers. Often, the concentrations are plotted as points overlying the box plot. When a data set contains both detected concentrations and nondetected concentrations reported as DLs, the detected concentrations are plotted as x's, and the nondetected concentrations are plotted as o's.

D-2.2 Distributional Comparisons

Comparisons between data sets that might represent different concentration distributions, such as site-specific data and Laboratory background data, are performed using a variety of statistical methods. For background comparisons, these methods begin with a simple comparison of site-specific data with an upper tolerance limit (UTL) estimated from the background data (UTL [95,95] or the 95% upper confidence bound on the 95th quantile). UTLs are used to represent the upper end of concentration distribution and are also referred to as BVs. UTL comparisons are followed, when appropriate, by statistical tests that evaluate potential differences between the distributions. These tests are used for testing hypotheses about data from two potentially different distributions, e.g., a test of the hypothesis that site concentrations are elevated above background levels. Nonparametric tests that are most commonly performed include the two-sample Wilcoxon Rank Sum test (Wilcoxon test), the Gehan test (modification of the Wilcoxon test), and the quantile test (Gehan 1965, 55611; Gilbert and Simpson 1990, 55612). The Gehan test is best suited for assessing complete shifts in distributions. This test accounts for nondetected concentrations at multiple DLs in a statistically robust manner. If there are no nondetected concentrations in the data, the Gehan test is equivalent to the Wilcoxon test. The quantile test is better suited to assessing shifts of a subset of the data.

Between the two tests (Gehan and quantile), most types of differences between distributions can be identified. Occasionally, if the differences between two distributions appear to occur far into the tails, the slippage test might be performed. This test evaluates the potential for some of the site data to be greater than the maximum concentration in the background data set if, in fact, the site data and background data came from the same distribution. Observed significance levels (p-values) are obtained from the Gehan, quantile, and/or slippage tests. If a p-value is much less than a specified probability, e.g., 0.05 (a nominal significance level), then there is some reason to suspect that there is a difference between the distributions. If the p-value is much greater than 0.05, no difference is indicated. If the p-value is close to 0.05, then the need for further evaluation is indicated. When many tests are performed on the same set of data, there is an increased possibility of observing a p-value of less than 0.05 by random chance alone, and further evaluation should be considered. Adjustments to the nominal significance level can be considered using methods described in Box et al. (1978, 56653, pp. 203–207) and Keppel (1982, 56652, pp. 145–65).

The standard set of tests is run whenever the detection rate for both SWMU 53-002(a)-99 and Laboratory background is greater than 50%; if the detection rate is less than 50% in either set, then the Gehan test is

not applicable. An assumption for application of the quantile test is that largest values from the combined set of site and background results are detected values, i.e., all sample results above the tested quantile are detected concentrations. When DLs are so large that they exceed or fall within the range of largest detected concentrations, the quantile test is not run.

D-3.0 TRITIUM CALCULATIONS

While reviewing the tritium data presented for SWMU 53-002(a)-99 it was noted that some of the units reported were in pCi/g (wet) and others were reported in pCi/g (dry) by the analytical laboratories performing the testing. If the analytical result obtained for tritium is divided into the weight of the entire sample (water + dry soil) as received by the lab, the units are in pCi/g (wet). If the analytical result is divided over just the weight of the dry soil then the units are in pCi/g (dry). A review of all the data packages with tritium results was then conducted which showed that, in addition to differences in reported activity units, the laboratories reported their percent moistures in a different manner. Some reported the percent moisture as weight of water / (weight of dry soil + weight of water) * 100. This is called the water weight fraction. Others reported the percent moisture as weight of water / weight of dry soil * 100. This is called the gravimetric water content.

With this information noted it was necessary to devise formulas for converting the activity reported in pCi/g to pCi/L for the various combinations of wet and dry activity units, and the gravimetric and water weight fraction percent moisture units. The following formulas were devised, following the example found in "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 59730), so the tritium data could be compared using consistent units:

$$pCi/L = pCi/g\ (wet) * (1 + WC\ (grav)) / WC\ (grav) * 1000\ ml/L$$

$$pCi/L = pCi/g\ (wet) * 1 / WC\ (wwf) * 1000\ ml/L$$

$$pCi/L = pCi/g\ (dry) * 1 / WC\ (grav) * 1000\ ml/L$$

$$pCi/L = pCi/g\ (dry) * (1 - WC\ (wwf)) / WC\ (wwf) * 1000\ ml/L$$

where WC = water content = percent moisture / 100

grav = gravimetric water content

wwf = water weight fraction

These formulas were then applied for the conversion from pCi/g to pCi/L as appropriate for the water content and activity units reported by the analytical laboratory.

The BV for tritium in soil is reported in pCi/mL. Therefore, as presented in this appendix, tritium concentrations for soil are compared to the BV in pCi/mL. To assist in the comparison between soil and tuff on the mesa top, this appendix also presents tritium concentrations for tuff in pCi/mL. The BV for tritium in sediment is reported in pCi/g. To compare the tritium concentrations for reach sediment with the tritium BV for sediment, Section D-6.2 and Section D-7.2 present tritium concentrations for sediment in pCi/g (wet weight). Appendix G, which presents the human health and ecological risk assessments for residual contamination at SWMU 53-002(a)-99, uses pCi/g (wet weight) units for the tritium concentrations so they are directly comparable to the soil screening levels, which are in pCi/g. Tritium in geologic media exists in either liquid or vapor phases; therefore, tritium concentrations are expressed in pCi/g (wet weight) rather than pCi/g (dry weight) in order to better represent tritium contamination under natural environmental conditions.

D-4.0 RESULTS OF SOIL SAMPLES ON THE MESA TOP AT SWMU 53-002(a)-99

D-4.1 Inorganic Chemicals

Ninety samples were collected from soil on the mesa top and analyzed for inorganic chemicals. Five of these samples were also analyzed for chromium VI. Table D-4.1-1 summarizes the soil samples collected and the requested inorganic chemical analyses for each sample. There was a maximum of 24 inorganic chemicals (including chromium VI) reported for these samples. Table C-5.1-1 presents the inorganic chemicals with results that were qualified during data validation. Thirteen samples had results for antimony that were rejected and eleven samples had results for selenium that were rejected. Table C-6.0-1 summarizes the rejected data for antimony and selenium.

Table D-4.1-2 presents the frequency of inorganic chemicals detected in mesa-top soil samples at SWMU 53-002(a)-99. Eleven inorganic chemicals (aluminum, arsenic, barium, chromium, cobalt, iron, magnesium, manganese, nickel, potassium, and vanadium) were less than the BV for all samples. There is no BV for hexavalent chromium, but all results were reported as nondetected concentrations.

Four of five results for chromium VI were reported as nondetected concentrations with high detection limits (20, 22, 41, and 43 mg/kg) compared to the other hexavalent chromium nondetected result of 0.1 mg/kg. These four samples were diluted by a factor of 10 for two of the samples and a factor of 20 for the other two samples. Review of the data package indicates that the solution was brown colored when the extraction was done at the laboratory. Because the method for hexavalent chromium determination is based on measuring the color of the solution at a certain wavelength, the solution had to be diluted enough to pass a light beam through to measure, resulting in the dilution of the chromium complex. All four of these samples were collected from locations to the west of the southern impoundment (toward Sandia Canyon). There were four detected concentrations of hexavalent chromium found at SWMU 53-002(a)-99, but these detected concentrations were in the tuff under the NE impoundment and the southern impoundment (see Section D-4.2). Given this information, the elevated detection limits indicate only that any hexavalent chromium present outside the southern impoundment is not more than the elevated DLs. Hexavalent chromium is not retained as a COPC in the soil material.

Twelve inorganic chemicals were reported with at least one result above the BV. Beryllium, cadmium, calcium, copper, lead, sodium, and zinc had at least one detected concentration above the BV. Antimony, mercury, silver, selenium, and thallium were reported with only detection limits above the BV. There were at least 50% nondetected concentrations in the data sets for antimony, cadmium, mercury, and selenium.

Further statistical tests were run for all inorganic chemicals with at least one result above the BV. Only the slippage test was run for antimony, cadmium, mercury, and selenium since these inorganic chemicals had more than 50% nondetected concentrations. Further statistical tests could not be performed for silver, because it does not have a background data set. Results are presented in Table D-4.1-3.

Statistical test results were not significant for the seven inorganic chemicals with detected concentrations above the BV, indicating that the distribution of sample concentrations is not different from background. Beryllium, calcium, copper, lead, sodium, and zinc werew not retained as COPCs.

Of 77 samples analyzed for antimony, 24 of these samples had detection limits above the BV. The p-value for the slippage test was less than 0.05, indicating that the site and background distributions did not come from the same distribution. This difference is the result of the subset of elevated detection limits. The detection limits range between 0.94 and 5.4 mg/kg compared to a BV of 0.83 mg/kg, which is based on data from samples analyzed by inductively coupled plasma mass spectroscopy. All the elevated detection limits were from samples collected in 1995 and 1999 and analyzed by inductively coupled

plasma emission spectroscopy (see Appendix C for further discussion of these two analytical methods). Although multiple detection limits were above the BV with a maximum detection limit of 5.4 mg/kg, these samples were analyzed by an acceptable analytical method, and antimony was not retained as a COPC.

Mercury was analyzed in 90 samples and 25 of these samples had detection limits above the BV. The BV for mercury in soil is based on a detection limit of 0.1 mg/kg. The range of detection limits above the BV for mercury is 0.1 to 0.22, where over half of the detection limits are 0.11 mg/kg compared to the BV of 0.1 mg/kg. Mercury was not retained as a COPC because all of the detection limits are close to the BV and the analytical methods are comparable.

Silver was detected above the BV of 1 mg/kg in four samples. The detected concentrations above the BV for silver ranged from 1.1 to 1.5 mg/kg. The BV for silver is based on a detection limit, so no further statistical tests can be performed for silver. (Note that the concentrations detected above the BV for silver were all collected under the liner in the south lagoon.) Silver was retained as a COPC.

Cadmium was detected in one sample at a concentration of 0.64 mg/kg above the BV of 0.4 mg/kg. The BV for cadmium is based on a detection limit. The background data set has detected concentrations of cadmium with a maximum of 2.5 mg/kg. As the box plot in Figure D-4.1-1 shows, the cadmium data are well within the range of the background data. Therefore, cadmium was not retained as a COPC. Table D-4.1-4 presents the concentrations for the inorganic COPCs above the BV in mesa-top soil.

The COPCs identified for the mesa-top soil samples include silver.

D-4.2 Radionuclides

Ninety-five samples were collected from soil on the mesa top and analyzed for radionuclides. Table D-4.2-1 summarizes the soil samples collected and the requested radionuclide analyses for each sample. There was a maximum of 14 radionuclides reported for these samples. Table C-5.2-1 presents the radionuclides with results that were qualified during data validation. One sample had a result rejected for sodium-22. Table C-6.0-1 summarizes the rejected data for the sodium-22 result. Table D-4.2-2 presents the frequency of radionuclides detected above BV/FV in mesa-top soil samples at SWMU 53-002(a)-99.

Six radionuclides (americium-241, plutonium-238, plutonium-239, strontium-90, tritium, and uranium-238) were greater than the BV/FV in at least one sample. There are no BV/FVs for cesium-134, cobalt-60, europium-152, ruthenium-106, and sodium-22. Cesium-134, cobalt-60, and sodium-22 were detected in at least one sample and are retained as COPCs.

All three statistical tests were run for tritium, but only the slippage test was run for americium-241, plutonium-238, plutonium-239, and strontium-90 since these radionuclides had more than 50% nondetected concentrations. Results are presented in Table D-4.2-3. Although the uranium isotopes have BVs for comparison, there is not a background data set to run further statistical tests. Uranium-238 was detected in 71 out of 76 samples but was only detected above the BV of 2.29 mg/kg in one sample (at a concentration of 2.53 mg/kg). Uranium-238 is not retained as a COPC.

Americium-241 was detected in six of the ninety-five samples and all six detected concentrations were above the BV. The p-value for the slippage test was less than 0.05, indicating that the site and background data sets did not come from the same distribution. Figure D-4.2-1 shows the detected concentrations of americium-241 in mesa-top soil compared to the background data for soil. Americium-241 is retained as a COPC.

Plutonium-238 and plutonium-239 have p-values of 0.33 and 0.58, respectively, which are not less than 0.05. Both of these radionuclides had similar patterns, with most detected concentrations falling within the range of the background data and one detected concentration well above the background distribution (see Figure D-4.2-2). Plutonium-238 and plutonium-239 are not retained as COPCs.

Strontium-90 was detected at concentrations above the BV in 14 out of 24 detected concentrations. The p-value for the slippage test was less than 0.05, indicating that the site and background distributions did not come from the same distribution. Figure D-4.2-3 shows the distributions of strontium-90 data with the distribution of soil background data for comparison. Strontium-90 is retained as a COPC.

Fifty-one out of fifty-two detected concentrations of tritium were above the BV. The p-values for all three statistical tests support a difference in distributions between the site data and the background data for tritium. Figure D-4.2-4 shows the comparison of the tritium data from the mesa-top soil in comparison to the soil background data. Tritium is retained as a COPC.

Table D-4.2-4 presents the detected concentrations above BV/FV for the radionuclide COPCs in mesa-top soil.

The radionuclide COPCs identified for the mesa-top soil samples include americium-241, cesium-134, cobalt-60, sodium-22, strontium-90, and tritium.

D-4.3 Organic Chemicals

Seventy-seven samples were collected from soil on the mesa top and analyzed for organic chemicals. Table D-4.3-1 summarizes the soil samples collected and the requested organic chemical analyses for each sample. Table C-5.3-1 presents the organic chemicals with results that were qualified during data validation. Three different samples had results that were rejected for various pesticides and one sample had results that were rejected for various polychlorinated biphenyls (PCBs). Table C-6.0-1 summarizes the rejected data for these pesticides and PCBs. Table D-4.3-2 presents the frequency of organic chemicals detected in mesa-top soil samples at SWMU 53-002(a)-99.

Twenty-three organic chemicals were detected in at least one sample in the mesa-top soil samples. Identification of COPCs for organic chemicals is based on detection status. Therefore all 23 organic chemicals detected (acenaphthene, acetone, Aroclor-1254, benzene, benzo(g,h,i)perylene, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butanone[2-], butylbenzylphthalate, chloroethane, dichlorophenyltrichloroethane (DDE[4,4'-]), dichlorodiphenyltrichloroethane (DDT[4,4'-]), diethylphthalate, di-n-butyl phthalate, fluoranthene, heptachlor, methylene chloride, methylphenol[4-], pyrene, toluene, trichloro-1,2,2-trifluoroethane[1,1,2-], trichloroethene, and trichlorofluoromethane) are identified as COPCs. Table D-4.3-3 presents the detected concentrations for the organic COPCs in mesa-top soil.

Acetone and bis(2-ethylhexyl)phthalate were the two most frequently detected organic chemicals in the soil samples. Figures D-4.3-1 and D-4.3-2 show the distribution of the data for these two organic chemicals with the distribution of the data for the same organic chemicals in mesa-top tuff and sediment from Reaches C, D, and E.

The organic chemical COPCs identified for the mesa-top soil samples include acenaphthene, acetone, Aroclor-1254, benzene, benzo(g,h,i)perylene, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butanone[2-], butylbenzylphthalate, chloroethane, DDE[4,4'-], DDT[4,4'-], diethylphthalate, di-n-butyl phthalate, fluoranthene, heptachlor, methylene chloride, methylphenol[4-], pyrene, toluene, trichloro-1,2,2-trifluoroethane[1,1,2-], trichloroethene, and trichlorofluoromethane.

D-5.0 RESULTS OF TUFF SAMPLES ON THE MESA TOP AT SWMU 53-002(a)-99

D-5.1 Inorganic Chemicals

Of the 199 samples collected from tuff on the mesa top, 195 samples (194 from Qbt 2 and 1 from Qbt 3) were analyzed for inorganic chemicals. Twenty-six samples were analyzed for hexavalent chromium. Table D-5.1-1 summarizes the tuff samples collected and the requested inorganic chemical analyses for each sample. A maximum of 24 inorganic chemicals were reported for these samples (including hexavalent chromium). Table C-5.1-1 presents the inorganic chemicals with results that were qualified during data validation. Forty-four samples had results for antimony that were rejected and seven samples analyzed for selenium had rejected results. Table C-6.0-1 summarizes the rejected data for antimony and selenium. Table D-5.1-2 presents the frequency of inorganic chemicals detected above BV in mesa-top tuff samples at SWMU 53-002(a)-99.

Six inorganic chemicals (cadmium, iron, manganese, potassium, sodium, and vanadium) were less than the BV for all samples and are not retained as COPCs. Eighteen inorganic chemicals were reported with at least one result above the BV. Aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, lead, magnesium, mercury, nickel, selenium, silver, and zinc had at least one detected concentration above the BV. Antimony and thallium were reported with only detection limits above the BV. Hexavalent chromium does not have a BV for comparison so the detection status will be used.

Further statistical tests were run for most of the inorganic chemicals with at least one result above the BV. Only the slippage test was run for antimony, silver, and thallium since these inorganic chemicals had more than 50% nondetected concentrations. Although selenium has more than 50% nondetected concentrations, the background data set is all nondetected concentrations, so even the slippage test could not be run for selenium. Mercury and hexavalent chromium do not have background data sets, so no further statistical tests were run. The results are presented in Table D-5.1-3.

At least one statistical test was significant for antimony, arsenic, barium, calcium, chromium, and nickel. Of 151 samples analyzed for antimony, all 41 detected concentrations were below the BV. However, 91 of the samples had detection limits above the BV. The detection limits above the BV range between 0.5 and 1 mg/kg compared to a BV of 0.5 mg/kg. With the exception of one sample collected in 2000, all of the elevated detection limits were from samples collected in 1995 and 1999. Figure D-5.1-1 shows the relationship of the detection limits between the site data and the background data. Antimony was not retained as a COPC because the elevated detection limits at 1 mg/kg are only slightly greater than the BV of 0.5 mg/kg.

There are over 50% nondetected concentrations in the data sets for thallium and only one detection limit is above the BV. Thallium was not retained as a COPC.

Although silver and selenium have more than 50% nondetected concentrations in each data set, there was at least one detected concentration above the BV. Out of 195 samples, silver was only detected once above the BV (1.1 mg/kg vs the BV of 1 mg/kg) and is not retained as a COPC. Although the selenium data from the tuff samples has over 50% nondetected concentrations, most of the detected concentrations are above the BV as shown in Figure D-5.1-2. Therefore, selenium was retained as a COPC.

The distributions for arsenic, barium, calcium, chromium, and nickel for the TA-53 tuff are above the background data distribution. Barium, calcium (Figure D-5.1-3), chromium (Figure D-5.1-4), and nickel have similar patterns in the site data distributions compared to the background data distributions. Arsenic, barium, calcium, chromium, and nickel were retained as COPCs.

Hexavalent chromium was analyzed in 26 samples and 6 detected concentrations were reported at 0.06, 0.57, 0.6, and 0.62, 0.75, and 1 mg/kg (Figure D-5.1-5). The five highest detected concentrations were from samples collected at two different locations under the liner in the middle of the south impoundment. (Note that there are 15 samples with detection limits for hexavalent chromium ranging between 2.1 and 2.3 mg/kg.) Hexavalent chromium was retained as a COPC. Mercury was detected above the BV in only one sample out of one hundred and forty. Mercury was not retained as a COPC.

The COPCs identified for the mesa-top tuff samples include arsenic, barium, calcium, chromium, hexavalent chromium, nickel, and selenium.

D-5.2 Radionuclides

Two-hundred and fifty-five samples were collected from tuff (Qbt2 and Qbt3) on the mesa top and analyzed for radionuclides. Fifty-three additional samples were collected from tuff units Qbo, Qbt1g, Qbt1v, Qbtt, and Qct and analyzed only for tritium. Table D-5.2-1 summarizes the tuff samples collected and the requested radionuclide analyses for each sample. There was a maximum of 14 radionuclides reported for these samples. Table C-5.2-1 presents the radionuclides with results that were qualified during data validation. One sample had a result rejected for cobalt-60. Table C-6.0-1 summarizes the rejected data for the cobalt-60 result. Table D-5.2-2 presents the frequency of radionuclides detected in mesa-top tuff samples at SWMU 53-002(a)-99.

Only the isotopic uranium radionuclides have a BV for comparison. The BVs for uranium-234, uranium-235, and uranium-238 are based on a conversion from total uranium data. Therefore, no background data sets are available for further statistical tests. Because all three isotopes have at least one detected result above the BV, uranium-234, uranium-235, and uranium-238 were all retained as COPCs.

All other reported radionuclides have no BV for comparison. All reported radionuclides were detected at least one time in the tuff, except ruthenium-106. Ruthenium-106 is not retained as a COPC. Europium-152 was only detected in only one sample out of two hundred and twenty-three samples. Cesium-137 was detected in three samples out of two hundred and nine. Plutonium-238 and plutonium-239 were detected in three and four samples, respectively, out of one hundred and eighty-four. Because there were only a few detected concentrations of europium-152, cesium-137, plutonium-238, and plutonium-239, and they do not appear to be collocated with other concentrations detected in the tuff, europium-152, cesium-137, plutonium-238, and plutonium-239 were not retained as COPCs.

Because COPCs are identified based on detection status and tritium was detected in more than half of the samples collected in the tuff, tritium is retained as a COPC in the subsurface tuff. Tritium data for soil samples was presented in pCi/ml, to have consistent units for the comparison of samples collected on the mesa top, tritium data for samples collected in tuff are also presented in pCi/mL.

Table D-5.2-3 presents the detected concentrations for the radionuclide COPCs in mesa-top tuff.

The COPCs identified for the mesa-top tuff samples include americium-241, cesium-134, cobalt-60, sodium-22, strontium-90, tritium, uranium-234, uranium-235, and uranium-238.

D-5.3 Organic Chemicals

Two-hundred and forty-two samples were collected from tuff on the mesa top and analyzed for organic chemicals. Table D-5.3-1 summarizes the tuff samples collected and the requested organic chemical analyses for each sample. Table C-5.3-1 presents the organic chemicals with results that were qualified

during data validation. Six different samples had results that were rejected for various pesticides. Eleven different samples had results that were rejected for various PCBs. Table C-6.0-1 summarizes the rejected data for these pesticides and PCBs. Table D-5.3-2 presents the frequency of organic chemicals detected in mesa-top tuff samples at SWMU 53-002(a)-99.

Thirty-two organic chemicals were detected in at least one sample in the mesa-top tuff samples. Identification of COPCs for organic chemicals is based on detection status. Therefore, all 32 organic chemicals detected were identified as COPCs: acetone, Aroclor-1254, Aroclor-1260, benzene, benzoic acid, benzyl alcohol, benzene hexachloride (BHC) [alpha-], BHC[gamma-], bis[2-ethylhexyl]phthalate, butanone[2-], butylbenzene[sec-], butylbenzylphthalate, chloroethane, dichlorodiphenyldichloroethane (DDD[4,4'-]), DDT[4,4'-], dichlorodifluoromethane, dieldrin, diethylphthalate, di-n-butyl phthalate, endrin, heptachlor, isopropyltoluene[4-], methyl-2-pentanone[4-], methylene chloride, methylphenol[3-], methylphenol[4-], phenol, tetrachloroethene, toluene, trichloroethene, trichlorofluoromethane, and trimethylbenzene[1,2,4-]). Table D-5.3-3 presents the detected concentrations for the organic COPCs in mesa-top tuff.

As in the mesa-top soil data, acetone (Figure D-4.3-1) and bis(2-ethylhexyl)phthalate (Figure D-4.3-2) were also the two most frequently detected organic chemicals in the tuff samples. Di-n-butyl phthalate had the third highest number of detected concentrations. Figure D-5.3-1 shows the distribution of the data for di-n-butyl phthalate with the distribution of the data for the same organic chemical in mesa-top tuff and sediment from Reaches C, D, and E.

The organic COPCs identified for the mesa-top tuff samples include acetone, Aroclor-1254, Aroclor-1260, benzene, benzoic acid, benzyl alcohol, BHC [alpha-], BHC[gamma-], bis[2-ethylhexyl]phthalate, butanone[2-], butylbenzene[sec-], butylbenzylphthalate, chloroethane, DDD[4,4'-], DDT[4,4'-], dichlorodifluoromethane, dieldrin, diethylphthalate, di-n-butyl phthalate, endrin, heptachlor, isopropyltoluene[4-], methyl-2-pentanone[4-], methylene chloride, methylphenol[3-], methylphenol[4-], phenol, tetrachloroethene, toluene, trichloroethene, trichlorofluoromethane, and trimethylbenzene[1,2,4-].

D-6.0 RESULTS OF SEDIMENT SAMPLES IN REACHES C, D, AND E

D-6.1 Inorganic Chemicals

Forty-seven samples were collected from sediment in Reaches C, D, and E and analyzed for inorganic chemicals. Three of these samples were also analyzed for hexavalent chromium. Table D-6.1-1 summarizes the sediment samples collected and the requested inorganic chemical analyses for each sample. Table C-5.1-1 presents the inorganic chemicals with results that were qualified during data validation. Eight samples had results for lead that were rejected. Table C-6.0-1 summarizes the rejected data for lead.

There was a maximum of 24 inorganic chemicals (including hexavalent chromium) reported for these samples. Table D-6.1-2 presents the frequency of inorganic chemicals detected in sediment samples in the canyon below SWMU 53-002(a)-99. Eighteen inorganic chemicals (aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, iron, magnesium, manganese, mercury, nickel, potassium, silver, sodium, thallium, vanadium, and zinc) were less than the BV for all samples. Hexavalent chromium was analyzed in three samples and was not detected in any of the three samples.

Five chemicals were reported with at least one result above the BV. Antimony, copper, lead, and selenium had at least one detected concentration above the BV. Cadmium had two sample results

reported with detection limits above the BV. Selenium also had twenty-two sample results reported with detection limits above the BV.

Further statistical tests were run for all inorganic chemicals with at least one result above the BV, except for antimony and selenium. Antimony does not have a background data set. The selenium data have more than 50% nondetected concentrations, so further statistical tests cannot be run. Results are presented in Table D-6.1-3.

Two statistical tests were significant for lead, with p-values of 0.0004 and 0.011. Box plots for lead are shown in Figure D-6.1-1. Lead was retained as a COPC. Antimony was reported with one detected concentration (7.91 mg/kg) above the BV of 0.83 mg/kg. Because of the magnitude of this detected concentration in comparison to the BV, antimony was retained as a COPC. Selenium was detected in six samples collected in the canyon, with a concentration range between 0.3 and 0.4 mg/kg. The maximum detection limit for selenium was 0.526 mg/kg, which is also above the BV of 0.3 mg/kg but within the range of all other detection limits reported for selenium. Selenium was retained as a COPC. Table D-6.1-4 presents the detected concentrations for the inorganic COPCs in canyon sediment.

The COPCs identified for the canyon sediment samples include antimony, lead, and selenium.

D-6.2 Radionuclides

Forty-seven samples were collected from sediment in Reaches C, D, and E and analyzed for radionuclides. Table D-6.2-1 summarizes the sediment samples collected and the requested radionuclide analyses for each sample. Table C-5.2-1 presents the radionuclides with results that were qualified during data validation. One sample had a result rejected for cesium-134, and one other sample had a result rejected for cesium-137. Table C-6.0-1 summarizes the rejected data for these two radionuclides. Table D-6.2-2 presents the frequency of radionuclides detected in sediment samples collected in Reaches C, D, and E.

The detected concentrations for these radionuclides were compared to BV/FVs, if available. Americium-241, cesium-137, and tritium had detected concentrations greater than their respective FVs in at least one sample. Cesium-134 and cobalt-60 were detected in multiple samples, but there is no BV for comparison. Therefore, cesium-134 and cobalt-60 were retained as COPCs.

Further statistical tests were run for cesium-137 and tritium. Only the slippage test was run for americium-241 since there were more than 50% nondetected concentrations. The results of the statistical tests are presented in Table D-6.2-3.

Americium-241 had three detected concentrations out of forty-seven samples that were above the BV. The p-value for the slippage test does not indicate any difference between the site and background distributions. Therefore, americium-241 was not retained as a COPC. Cesium-137 and tritium both had p-values less than 0.05. Cesium-137 had three detected concentrations above the BV out of forty-six samples. Because the maximum detected concentration of cesium-137 is 1.02 mg/kg compared to a BV of 0.9 mg/kg and cesium-137 was not identified as a COPC in the mesa-top soil or tuff, cesium-137 was not retained as a COPC. Tritium was detected above the BV in two out of twenty-three samples. These two detected concentrations were both greater than the maximum detected concentration in the tritium sediment background data. In addition, tritium was identified as a COPC in both the mesa-top soil and tuff; therefore, tritium was retained as a COPC. Figure D-6.2-1 shows the distributions for the site data and sediment background data for tritium.

Table D-6.2-4 presents the detected concentrations for the radionuclide COPCs in sediment from Reaches C, D, and E.

The radionuclides identified as COPCs in canyon sediment samples are cesium-134, cobalt-60, and tritium.

D-6.3 Organic Chemicals

Forty-seven samples were collected from sediment in Reaches C, D, and E and analyzed for organic chemicals. Table D-6.3-1 summarizes the sediment samples collected and the requested organic chemical analyses for each sample. Table C-5.3-1 presents the organic chemicals with results that were qualified during data validation. Six different samples had results that were rejected for various volatile organic chemicals. Table C-6.0-1 summarizes the rejected data for these volatile organic chemicals. Table D-6.3-2 presents the frequency of organic chemicals detected in sediment samples from Reaches C, D, and E.

Twenty-one organic chemicals were detected in at least one sample from the sediment. Identification of organic COPCs is based on detection status. Therefore, all 21 organic chemicals detected were identified as COPCs: acetone, Aroclor-1254, Aroclor-1260, benzoic acid, bromomethane, 2,4-D, dalapon, 2,4-DB, 4,4'-DDE, 4,4'-DDT, dichlorobenzene[1,2-], dichlorobenzene[1,3-], dichlorobenzene[1,4-], fluoranthene, hexachlorobenzene, isopropyltoluene[4-], pyrene, tetrachloroethene, toluene, trichloroethene, and total xylene). Table D-6.3-3 presents the detected concentrations for the organic COPCs in sediment from Reaches C, D, and E.

Aroclor-1254 and toluene were the two most frequently detected organic chemicals in the sediment samples. Figures D-6.3-1 and D-6.3-2 show the distribution of the data for these two organic chemicals with the distribution of the data for the same organic chemicals in mesa-top soil and tuff.

The organic chemical COPCs identified for the sediment samples from Reaches C, D, and E include acetone, Aroclor-1254, Aroclor-1260, benzoic acid, bromomethane, 2,4-D, dalapon, 2,4-DB, 4,4'-DDE, 4,4'-DDT, dichlorobenzene[1,2-], dichlorobenzene[1,3-], dichlorobenzene[1,4-], fluoranthene, hexachlorobenzene, isopropyltoluene[4-], pyrene, tetrachloroethene, toluene, trichloroethene, and total xylene.

D-7.0 COMPARISON OF SEDIMENT SAMPLES COLLECTED IN REACHES C, D, AND E AND IN CANYON REACHES LA-2FE, LA-3E, AND LA-3W

Samples were collected from soil and tuff on the mesa top at SWMU 53-002(a)-99. Additional samples were also collected in the drainage to the east of SWMU 53-002(a)-99. These samples were collected from Reaches C, D, and E (Figure D-7.0-1). Reaches C, D, and E drain into Los Alamos Canyon. This section provides a summary of the data from samples collected on the mesa top and Reaches C, D, and E in comparison to data from samples that were collected in three reaches of Los Alamos Canyon (LANL 2004, 88000). Reach LA-2FE is located in Los Alamos Canyon upstream from the confluence of Reaches C, D, and E and Los Alamos Canyon. Reaches LA-3W and LA-3E are also located in Los Alamos Canyon and are downstream from the confluence of Reaches C, D, and E and Los Alamos Canyon. Reach LA-3W is closest to the confluence of Reaches C, D, and E and Los Alamos Canyon while Reach LA-3E is almost 2 km farther downstream in Los Alamos Canyon (Figure D-7.0-1).

D-7.1 Inorganic Chemicals

Six sediment samples were collected from Reach LA-2FE and analyzed for inorganic chemicals. Six sediment samples were collected from Reach LA-3E and analyzed for inorganic chemicals and cyanide. Six sediment samples were collected from Reach LA-3W and analyzed for inorganic chemicals and cyanide. Table D-7.1-1 summarizes the sediment samples collected and the inorganic chemical analyses for each sample.

The inorganic COPCs identified in the drainage sediment samples collected in Reaches C, D, and E include antimony, lead, and selenium. Table D-7.1-2 summarizes the data for these inorganic chemicals from samples collected in Reaches LA-2FE, LA-3W, and LA-3E.

Figure D-7.1-1 shows the distributions of antimony for the sediment from Reaches C, D, and E, and Reaches LA-2FE, LA-3W, and LA-3E. As the figure illustrates, Reach LA-3E did not have any detected concentrations of antimony but did have detection limits higher than the BV of 0.83 mg/kg. These detection limits are in the same range as the highest detection limits from the mesa-top soil data. There was one high detected concentration of 7.91 mg/kg in the Reach D sediment samples. Of the three detected concentrations in the sediment samples from Reaches C, D, and E, this was the only detected concentration of antimony above the BV. All detected concentrations of antimony in Reach LA-2FE and Reach LA-3W samples were below the BV.

Figure D-7.1-2 shows the distributions of lead for the sediment from Reaches C, D, and E, and Reaches LA-2FE, LA-3W, and LA-3E as well as the distribution of the sediment background data. Although the overall distributions of lead data from samples collected in Reaches LA-2FE, LA-3E, and LA-3W are all elevated compared to the distributions of lead data from samples collected for Reaches C, D, and E, there were also fewer samples collected in the reaches. As the box plots show, the range of concentrations for lead collected from Reaches LA-2FE, LA-3W, and LA-3E is the same as for samples collected in Reaches C, D, and E.

Figure D-7.1-3 shows the distributions of selenium for the sediment from Reaches C, D, and E, and Reaches LA-2FE, LA-3W, and LA-3E. Selenium was detected in three out of six samples collected in Reach LA-3W. These detected concentrations are in the same range of detected selenium concentrations collected in Reaches C, D, and E. Selenium was also detected in samples collected upstream in Reach LA-2FE. Selenium was not detected in the samples collected in Reach LA-3E, which is farthest down the canyon.

Table D-7.1-3 presents the samples collected for radionuclide analyses in Reaches LA-2FE, LA-3E, and LA-3W.

D-7.2 Radionuclides

The radionuclide COPCs identified in the drainage sediment samples collected in Reaches C, D, and E include cesium-134, cobalt-60, and tritium. Tables D-7.2-1 and D 7.2-2 summarize the samples collected and the data for these radionuclides from samples collected in Reaches LA-2FE, LA-3W, and LA-3E.

Cesium-134 does not have a BV/FV in any media. Cesium-134 was detected in multiple samples in the mesa-top soil, mesa-top tuff, and the sediment from Reaches C, D, and E. As Figure D-7.2-1 shows, the highest concentrations of cesium-134 in Reaches C, D, and E were found in Reach C. Cesium-134 was not detected in any sample collected in Reaches LA-3W and LA-3E. Cesium-134 was only detected in one sample in Reach LA-2FE, but this detected concentration was low and within the nondetected

concentrations for the samples collected within all three Los Alamos Canyon reaches. Figure D-7.2-1 shows the data distributions for all of the cesium-134 data from the sediment samples.

Cobalt-60 does not have a BV in any media. Cobalt-60 was detected in multiple samples in the mesa-top soil, mesa-top tuff, and the sediment from Reaches C, D, and E. The highest concentrations of cobalt-60 were found in Reach C, and the concentrations decreased in Reaches D and E (see Figure D-7.2-2). Cobalt-60 was detected in only three samples collected in Reaches LA-2FE, LA-3W, and LA-3E. All three detected concentrations were in Reach LA-3E, which is the farthest downstream from Reaches C, D, and E. Figure D-7.2-2 shows the concentrations of cobalt-60 that were detected in the samples from Reaches C, D, and E are elevated in comparison to the few detected concentrations of cobalt-60 in Reach LA-3E.

Tritium was identified as a COPC in the SWMU 53-002(a)-99 soil and tuff samples and Reach C, D, and E sediment samples. Tritium was detected in three out of six samples collected in both Reach LA-2FE and Reach LA-3W. Figure D-7.2-3 shows the distributions of tritium. Tritium was detected at essentially the same concentrations in both the samples from Reaches C, D, and E and the Reach LA-2FE and LA-3W samples although the highest concentration overall was detected in Reach C. Tritium was not detected in Reach LA-3E.

D-7.3 Organic Chemicals

The organic chemical COPCs identified in the sediment samples collected in Reaches C, D, and E include acetone, Aroclor-1254, Aroclor-1260, benzoic acid, 2,4-D, dalapon, 2,4-DB, 4,4'-DDE, 4,4'-DDT, 4-isopropyltoluene, toluene, and total xylene. Table D-7.3-1 summarizes the samples collected in canyon Reaches LA-2FE, LA-2E, and LA-2W.

Volatile organic chemicals and herbicides were not analyzed in any of the Los Alamos Canyon reach samples. Therefore, the four volatile organic chemicals (acetone, 4-isopropyltoluene, toluene, and total xylene) and the three herbicides (2,4-D, dalapon, and 2,4-DB) that were identified as COPCs in the Reach C, D, and E samples are not discussed further in this section. Table D-7.3-2 summarizes the data for the rest of the organic chemicals that were detected in Reach C, D, and E samples and reported for samples collected in Reaches LA-2FE, LA-3W, and LA-3E.

Aroclor-1254 was detected in the mesa soil, mesa tuff, and in Reaches C, D, and E but was not detected in any of the samples collected in Reaches LA-2FE, LA-3W, and LA-3E. Figure D-7.3-1 shows that the highest concentrations of Aroclor-1254 in the reaches were found in Reach C and the detected concentrations in Reaches D and E are much lower. This figure also shows that the detection limits from the samples collected in the canyon reaches are similar to the samples collected from Reaches C, D, and E.

Figure D-7.3-2 shows the low detected concentrations of Aroclor-1260 in the sediment samples from Reaches C, D, and E. The detected concentrations of Aroclor-1260, which were collected in Reach LA-2FE upstream of Reaches C, D, and E, are much higher than the detected concentrations in the sediment samples from Reaches C, D, and E. The detected concentrations of Aroclor-1260 decrease from Reach LA-2FE to Reach LA-3W to Reach LA-3E as the reaches continue downstream.

Benzoic acid was detected in few samples in the sediment samples from Reach C and in LA-2FE at concentrations less than 0.5 mg/kg. The detection limits for the samples collected from sediment ranged between 1.5 mg/kg and 2.5 mg/kg. Figure D-7.3-3 illustrates the varying detection limits for benzoic acid and the low detected concentrations. Benzoic acid was only detected in one of the Los Alamos Canyon reach samples and this sample was collected in Reach LA-2FE, which is upstream of where Reaches C, D, and E lead into Los Alamos Canyon.

Figure D-7.3-4 shows detected concentrations of 4,4'-DDE in Reaches C, D, and E. The only 4,4'-DDE detected in the Los Alamos Canyon reach samples was from samples collected in Reach LA-2FE, which is upstream of where Reaches C, D, and E lead into Los Alamos Canyon. No detected concentrations of 4,4'-DDE in the samples were collected in Reaches LA-3W, and LA-3E.

Figure D-7.3-5 shows that the detected concentrations for 4,4'-DDT in the Reach C, D, and E samples include a few detected concentrations at low levels. In the Los Alamos Canyon reach samples, there are more detected concentrations and these concentrations are higher than the concentrations reported on the mesa top or in Reaches C, D, and E. 4,4'-DDT was detected in Reach LA-2FE, which is upstream of Reaches C, D, and E, and it was also detected at similar concentrations in Reach LA-3W. 4,4'-DDT was not detected in Reach LA-3E.

D-8.0 REFERENCES

The following list includes all documents cited in this report within Appendix D. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the RRES-RS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the RRES-RS project reference set titled "Reference Set for Operable Unit 1100."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; US Environmental Protection Agency, Region 6; and RRES-RS project. The sets were developed to ensure that the administrative authority has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the administrative authority are not included.

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Table D-4.1-1
Samples Collected for Inorganic Chemical Analyses in Mesa-Top Soil at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
0253-95-0184	53-01020	3.67–4.5	Fill	—[a]	76972
0253-95-0196	53-01024	1.5–2.5	Fill	—	77378
0253-95-0230	53-01033	1.5–2.5	Fill	—	77717
0253-95-0233	53-01034	2–3	Fill	—	77717
RE53-99-0224	53-01636	0–0.33	Soil	—	5906R
RE53-99-0225	53-01637	0–0.5	Soil	—	5906R
RE53-99-0226	53-01638	0–0.25	Soil	—	5906R
RE53-99-0183	53-01639	0–0.33	Soil	5799R	5799R
RE53-99-0184	53-01640	0–0.33	Soil	—	5799R
RE53-99-0185	53-01641	0–0.33	Soil	—	5799R
RE53-99-0163	53-01642	0–0.5	Fill	—	5623R
RE53-99-0179	53-01642	4.5–5	Soil	—	5644R
RE53-99-0164	53-01643	0–0.25	Soil	—	5623R
RE53-99-0165	53-01644	0–0.5	Soil	—	5623R
RE53-99-0178	53-01644	0.67–1	Soil	—	5644R
RE53-99-0166	53-01645	0–0.5	Soil	—	5623R
RE53-99-0175	53-01645	1–1.33	Soil	—	5634R
RE53-99-0167	53-01646	0–0.5	Soil	—	5623R
RE53-99-0177	53-01646	0.58–0.92	Soil	—	5644R
RE53-99-0168	53-01647	0–0.25	Soil	—	5623R
RE53-99-0169	53-01648	0–0.5	Soil	—	5623R
RE53-99-0176	53-01648	0.67–1	Soil	—	5644R
RE53-99-0170	53-01649	0–0.5	Soil	—	5623R
RE53-99-0172	53-01651	0–0.5	Soil	5623R	5623R
RE53-99-0174	53-01651	0.5–0.67	Soil	5634R	5634R
RE53-99-0180	53-01652	0–0.5	Soil	—	5662R
RE53-99-0181	53-01652	0.67–1	Soil	5662R	5662R
RE53-99-0182	53-01653	0–0.5	Soil	5662R	5662R
RE53-99-0233	53-01655	10–12.5	Qbt 2[b]	—	5990R
RE53-99-0234	53-01655	14–15	Qbt 2[b]	—	5990R
RE53-99-0235	53-01655	24–25	Qbt 2[b]	—	5990R
RE53-99-0236	53-01656	9–10	Qbt 2[b]	—	5990R
RE53-99-0292	53-01663	9–10	Qbt 2[b]	—	6001R
RE53-99-0293	53-01663	13–14	Qbt 2[b]	—	6001R
RE53-99-0247	53-01664	1–2	Soil	—	5950R
RE53-99-0250	53-01681	1–2	Soil	—	5950R

Table D-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-99-0253	53-01682	1–2	Soil	—	5964R
RE53-99-0256	53-01683	1–2	Soil	—	5964R
RE53-99-0259	53-01684	1–2	Soil	—	5964R
RE53-99-0262	53-01685	1–2	Soil	—	5968R
RE53-99-0263	53-01685	4–5	Qbt 2[b]	—	5968R
RE53-99-0265	53-01686	1–2	Soil	—	5975R
RE53-99-0268	53-01687	1–2	Soil	—	5975R
RE53-99-0271	53-01688	1–2	Soil	—	5983R
RE53-99-0299	53-01692	13–14	Qbt 2[b]	—	6011R
RE53-99-0301	53-01693	9–10	Qbt 2[b]	—	6011R
RE53-99-0302	53-01693	13–14	Qbt 2[b]	—	6011R
RE53-99-0304	53-01694	9–10	Qbt 2[b]	—	6011R
RE53-99-0305	53-01694	13–14	Qbt 2[b]	—	6011R
RE53-99-0314	53-01696	4–5	Qbt 2[b]	—	6023R
RE53-99-0313	53-01696	12–24	Qbt 2[b]	—	6023R
RE53-99-0319	53-01697	1–2	Qbt 2[b]	—	6023R
RE53-99-0320	53-01697	4–5	Qbt 2[b]	—	6023R
RE53-99-0316	53-01698	1–2	Qbt 2[b]	—	6023R
RE53-99-0317	53-01698	4–5	Qbt 2[b]	—	6023R
RE53-99-0322	53-01702	1–2	Fill	—	6056R
RE53-00-0004	53-01706	2–3	Qbt 3[b]	—	6484R
RE53-00-0005	53-01707	3.5–4.5	Qbt 3[b]	—	6484R
RE53-00-0006	53-01708	5–6	Qbt 3[b]	—	6484R
RE53-00-0008	53-01710	6.5–7.5	Qbt 3[b]	—	6504R
RE53-00-0009	53-01711	5.5–6.5	Qbt 3[b]	—	6504R
RE53-00-0010	53-01712	4–5	Qbt 3[b]	—	6504R
RE53-00-0011	53-01713	4–5	Qbt 3[b]	—	6504R
RE53-00-0012	53-01714	3–4	Qbt 3[b]	—	6504R
RE53-00-0013	53-01715	4.5–5.5	Qbt 3[b]	—	6504R
RE53-00-0046	53-01719	0–0.5	Fill	—	7533R
RE53-00-0050	53-01720	0–0.5	Fill	—	7600R
RE53-00-0054	53-01721	0–0.5	Fill	—	7600R
RE53-00-0058	53-01722	0–0.5	Fill	—	7600R
RE53-00-0062	53-01723	0–0.5	Fill	—	7600R
RE53-00-0066	53-01724	0–0.5	Fill	—	7600R
RE53-00-0070	53-01725	0–0.5	Fill	—	7600R
RE53-00-0074	53-01726	0–0.5	Fill	—	7600R
RE53-00-0078	53-01727	0–0.5	Fill	—	7600R

Table D-4.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-00-0082	53-01728	0–0.5	Fill	—	7600R
RE53-00-0086	53-01729	0–0.5	Fill	—	7600R
0253-95-0028	53-01069	0–0.5	Soil	—	220
0253-95-0029	53-01070	0–0.5	Soil	—	220
0253-95-0030	53-01071	0–0.5	Soil	—	220
0253-95-0031	53-01072	0–0.5	Soil	—	220
0253-95-0032	53-01073	0–0.5	Soil	—	220
0253-95-0033	53-01074	0–0.5	Soil	—	220
0253-95-0034	53-01075	0–0.5	Soil	—	220
0253-95-0035	53-01076	0–0.5	Soil	—	220
0253-95-0036	53-01077	0–0.5	Soil	—	220
0253-95-0037	53-01078	0–0.5	Soil	—	220
0253-95-0038	53-01079	0–0.5	Soil	—	220
RE53-98-0001	53-01556	0–0.17	Soil	—	5010R
RE53-98-0002	53-01557	0–0.17	Soil	—	5010R
RE53-98-0003	53-01558	0–0.17	Soil	—	5010R

[a] — = Sample not requested for this analysis.

[b] Samples collected from the berms were identified as more soil-like and grouped with soil samples.

Table D-4.1-2
Frequency of Detected Concentrations above BVs for Inorganic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (mg/kg)	Background Value (mg/kg)	Frequency of Detects above Background Value	Frequency of Nondetects above Background Value
Aluminum	Soil	90	90	650 to 17800	29200	0/90	0/90
Antimony	Soil	77	27	0.05 to [5.4]	0.83	0/77	24/77
Arsenic	Soil	90	79	[0.39] to 4.6	8.17	0/90	0/90
Barium	Soil	90	90	10 to 260	295	0/90	0/90
Beryllium	Soil	90	90	0.15 to 2.7	1.83	1/90	0/90
Cadmium	Soil	90	29	0.03 to [0.65]	0.4	1/90	15/90
Calcium	Soil	90	90	370 to 34000	6120	9/90	0/90
Chromium	Soil	90	90	0.77 to 17	19.3	0/90	0/90
Hexavalent chromium	Soil	5	0	[0.1 to 43]	na[b]	0/5	na
Cobalt	Soil	90	87	0.1 to 4.2	8.64	0/90	0/90
Copper	Soil	90	90	0.81 to 18	14.7	1/90	0/90
Iron	Soil	90	90	1320 to 12000	21500	0/90	0/90
Lead	Soil	90	90	2.9 to 76.9	22.3	1/90	0/90
Magnesium	Soil	90	90	206 to 3870	4610	0/90	0/90
Manganese	Soil	90	90	63.2 to 430	671	0/90	0/90
Mercury	Soil	90	30	0.003 to [0.22]	0.1	0/90	25/90
Nickel	Soil	90	89	0.92 to 15.3	15.4	0/90	0/90
Potassium	Soil	90	88	[223] to 2500	3460	0/90	0/90
Selenium	Soil	79	24	[0.07] to [2.1]	1.52	0/79	1/79
Silver	Soil	90	17	[0.1] to 1.5	1	4/90	0/90
Sodium	Soil	90	89	[0.51] to 1000	915	1/90	0/90
Thallium	Soil	90	46	0.03 to [1]	0.73	0/90	3/90
Vanadium	Soil	90	90	2.5 to 21.3	39.6	0/90	0/90
Zinc	Soil	90	90	0.022 to 63.4	48.8	2/90	0/90

[a] Values in square brackets indicate detection limits for nondetects.

[b] na = Not available.

Table D-4.1-3
Results of Statistical Tests for Inorganic Chemicals above the BV in at Least One Sample in SWMU 53-002(a)-99 Mesa-Top Soil Samples

Analyte	Gehan p-value	Quantile p-value	Slippage p-value	No. of Site Data	No. of Bkgd Data	Max Detect Site Data (mg/kg)	Max Detect Bkgd Data (mg/kg)
Antimony	n/a*	n/a	<0.001	77	135	0.75	1
Beryllium	1	1	1	90	174	2.7	3.95
Calcium	0.529	0.064	0.342	90	173	34000	14000
Cadmium	n/a	n/a	1	90	39	0.64	2.6
Copper	1	1	0.341	90	174	18	16
Mercury	n/a	n/a	1	90	39	0.074	0.1
Lead	1	1	0.342	90	173	76.9	28
Selenium	n/a	n/a	0.669	79	39	1.2	1.7
Sodium	1	1	1	90	174	1000	1800
Thallium	1	1	1	90	173	0.67	1
Zinc	1	1	1	90	172	63.4	75.5

*n/a = Not applicable.

Table D-4.1-4
Detected Concentrations above BVs for Inorganic COPCs in Mesa-Top Soil at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Silver
Soil Background Value				1
RE53-00-0070	53-01725	0–0.5	Fill	1.5
RE53-00-0074	53-01726	0–0.5	Fill	1.1
RE53-00-0078	53-01727	0–0.5	Fill	1.1
RE53-00-0086	53-01729	0–0.5	Fill	1.2

Table D-4.2-1
Samples Collected for Radionuclide Analyses in Mesa-Top Soil at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Gross Alpha/Beta	Gross Gamma	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
0253-95-0184	53-01020	3.67–4.5	Fill	76780	—[a]	—	76856	76797	76800	76850
0253-95-0196	53-01024	1.5–2.5	Fill	77137	—	—	77177	77254	77256	77138
0253-95-0230	53-01033	1.5–2.5	Fill	77248	—	—	77237	77250	77249	77258
0253-95-0233	53-01034	2–3	Fill	77248	—	—	77237	77250	77249	77258
RE53-99-0224	53-01636	0–0.33	Soil	5907R	—	—	5907R	5907R	5907R	5907R
RE53-99-0225	53-01637	0–0.5	Soil	5907R	—	—	5907R	5907R	5907R	5907R
RE53-99-0226	53-01638	0–0.25	Soil	5907R	—	—	5907R	5907R	5907R	5907R
RE53-99-0183	53-01639	0–0.33	Soil	5800R	—	—	5800R	5800R	5800R	5800R
RE53-99-0184	53-01640	0–0.33	Soil	5800R	—	—	5800R	5800R	5800R	5800R
RE53-99-0185	53-01641	0–0.33	Soil	5800R	—	—	5800R	5800R	5800R	5800R
RE53-99-0163	53-01642	0–0.5	Fill	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0179	53-01642	4.5–5	Soil	5645R	—	—	5645R	5645R	5645R	5645R
RE53-99-0164	53-01643	0–0.25	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0165	53-01644	0–0.5	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0178	53-01644	0.67–1	Soil	5645R	—	—	5645R	5645R	5645R	5645R
RE53-99-0166	53-01645	0–0.5	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0175	53-01645	1–1.33	Soil	5635R	—	—	5635R	5635R	5635R	5635R
RE53-99-0167	53-01646	0–0.5	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0177	53-01646	0.58–0.92	Soil	5645R	—	—	5645R	5645R	5645R	5645R
RE53-99-0168	53-01647	0–0.25	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0169	53-01648	0–0.5	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0176	53-01648	0.67–1	Soil	5645R	—	—	5645R	5645R	5645R	5645R
RE53-99-0170	53-01649	0–0.5	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0172	53-01651	0–0.5	Soil	5624R	—	—	5624R	5624R	5624R	5624R
RE53-99-0174	53-01651	0.5–0.67	Soil	5635R	—	—	5635R	5635R	5635R	5635R
RE53-99-0180	53-01652	0–0.5	Soil	5663R	—	—	5663R	5663R	5663R	5663R
RE53-99-0181	53-01652	0.67–1	Soil	5663R	—	—	5663R	5663R	5663R	5663R
RE53-99-0182	53-01653	0–0.5	Soil	5663R	—	—	5663R	5663R	5663R	5663R
RE53-99-0233	53-01655	10–12.5	Qbt 2[b]	5991R	—	—	5991R	5991R	5991R	5991R
RE53-99-0234	53-01655	14–15	Qbt 2[b]	5991R	—	—	5991R	5991R	5991R	5991R
RE53-99-0235	53-01655	24–25	Qbt 2[b]	5991R	—	—	5991R	5991R	5991R	5991R
RE53-99-0236	53-01656	9–10	Qbt 2[b]	5991R	—	—	5991R	5991R	5991R	5991R
RE53-99-0292	53-01663	9–10	Qbt 2[b]	6002R	—	—	6002R	6002R	6002R	6002R
RE53-99-0293	53-01663	13–14	Qbt 2[b]	6002R	—	—	6002R	6002R	6002R	6002R
RE53-99-0247	53-01664	1–2	Soil	5951R	—	—	5951R	5951R	5951R	5951R

Table D-4.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Gross Alpha/Beta	Gross Gamma	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-99-0250	53-01681	1–2	Soil	5951R	—	—	5951R	5951R	5951R	5951R
RE53-99-0253	53-01682	1–2	Soil	5965R	—	—	5965R	5965R	5965R	5965R
RE53-99-0256	53-01683	1–2	Soil	5965R	—	—	5965R	5965R	5965R	5965R
RE53-99-0259	53-01684	1–2	Soil	5965R	—	—	5965R	5965R	5965R	5965R
RE53-99-0262	53-01685	1–2	Soil	5969R	—	—	5969R	5969R	5969R	5969R
RE53-99-0263	53-01685	4–5	Qbt 2[b]	5969R	—	—	5969R	5969R	5969R	5969R
RE53-99-0265	53-01686	1–2	Soil	5976R	—	—	5976R	5976R	5976R	5976R
RE53-99-0268	53-01687	1–2	Soil	5976R	—	—	5976R	5976R	5976R	5976R
RE53-99-0271	53-01688	1–2	Soil	5984R	—	—	5984R	5984R	5984R	5984R
RE53-99-0299	53-01692	13–14	Qbt 2[b]	6012R	—	—	6012R	6012R	6012R	6012R
RE53-99-0301	53-01693	9–10	Qbt 2[b]	6012R	—	—	6012R	6012R	6012R	6012R
RE53-99-0302	53-01693	13–14	Qbt 2[b]	6012R	—	—	6012R	6012R	6012R	6012R
RE53-99-0304	53-01694	9–10	Qbt 2[b]	6012R	—	—	6012R	6012R	6012R	6012R
RE53-99-0305	53-01694	13–14	Qbt 2[b]	6012R	—	—	6012R	6012R	6012R	6012R
RE53-99-0314	53-01696	4–5	Qbt 2[b]	6024R	—	—	6024R	6024R	6024R	6024R
RE53-99-0313	53-01696	12–24	Qbt 2[b]	6024R	—	—	6024R	6024R	6024R	6024R
RE53-99-0319	53-01697	1–2	Qbt 2[b]	6024R	—	—	6024R	6024R	6024R	6024R
RE53-99-0320	53-01697	4–5	Qbt 2[b]	6024R	—	—	6024R	6024R	6024R	6024R
RE53-99-0316	53-01698	1–2	Qbt 2[b]	6024R	—	—	6024R	6024R	6024R	6024R
RE53-99-0317	53-01698	4–5	Qbt 2[b]	6024R	—	—	6024R	6024R	6024R	6024R
RE53-02-46700	53-02-20826	1.8–2.5	Fill	1104S	—	—	1104S	—	—	1104S
RE53-02-46709	53-02-20829	0–0.8	Fill	1128S	—	—	—	—	—	—
RE53-02-46741	53-02-20843	0–0.5	Fill	1148S	—	—	—	—	—	—
RE53-02-46742	53-02-20844	0–0.4	Fill	1148S	—	—	—	—	—	—
RE53-02-46743	53-02-20845	0–0.4	Fill	1148S	—	—	—	—	—	—
RE53-99-0322	53-01702	1–2	Fill	6057R	—	—	6057R	6057R	6057R	6057R
RE53-00-0004	53-01706	2–3	Qbt 3[b]	6495R	—	—	6485R	6495R	6495R	—
RE53-00-0005	53-01707	3.5–4.5	Qbt 3[b]	6495R	—	—	6485R	6495R	6495R	—
RE53-00-0006	53-01708	5–6	Qbt 3[b]	6495R	—	—	6485R	6495R	6495R	—
RE53-00-0008	53-01710	6.5–7.5	Qbt 3[b]	6511R	—	—	6505R	6511R	6511R	—
RE53-00-0009	53-01711	5.5–6.5	Qbt 3[b]	6511R	—	—	6505R	6511R	6511R	—
RE53-00-0010	53-01712	4–5	Qbt 3[b]	6511R	—	—	6505R	6511R	6511R	—
RE53-00-0011	53-01713	4–5	Qbt 3[b]	6511R	—	—	6505R	6511R	6511R	—
RE53-00-0012	53-01714	3–4	Qbt 3[b]	6511R	—	—	6505R	6511R	6511R	—
RE53-00-0013	53-01715	4.5–5.5	Qbt 3[b]	6511R	—	—	6505R	6511R	6511R	—

Table D-4.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Gross Alpha/Beta	Gross Gamma	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-00-0046	53-01719	0–0.5	Fill	7534R	—	—	7534R	7534R	7534R	7534R
RE53-00-0050	53-01720	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0054	53-01721	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0058	53-01722	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0062	53-01723	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0066	53-01724	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0070	53-01725	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0074	53-01726	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0078	53-01727	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0082	53-01728	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
RE53-00-0086	53-01729	0–0.5	Fill	7601R	—	—	7601R	7601R	7601R	7601R
0253-95-0028	53-01069	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0029	53-01070	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0030	53-01071	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0031	53-01072	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0032	53-01073	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0033	53-01074	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0034	53-01075	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0035	53-01076	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0036	53-01077	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0037	53-01078	0–0.5	Soil	221	—	—	—	—	—	—
0253-95-0038	53-01079	0–0.5	Soil	221	—	—	—	—	—	—
RE53-98-0001	53-01556	0–0.17	Soil	5011R	5011R	5011R	—	—	—	—
RE53-98-0002	53-01557	0–0.17	Soil	5011R	5011R	5011R	—	—	—	—
RE53-98-0003	53-01558	0–0.17	Soil	5011R	5011R	5011R	—	—	—	—

[a] — = Sample not requested for this analysis.

[b] Samples collected from the berms were identified as more soil-like and grouped with soil samples.

Table D-4.2-2
Frequency of Detected Concentrations
above BVs/FVs for Radionuclides in Mesa-Top Soil at SWMU 53-002(a)-99

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (pCi/g)	Background Value or Fallout Value (pCi/g)	Frequency of Detects above Background Value
Americium-241	Soil	95	6	[-0.27] to 3.86	0.013	6/95
Cesium-134	Soil	95	6	[-0.056] to 14.6	na[b]	6/95
Cesium-137	Soil	95	16	[-0.08] to 0.89	1.65	0/95
Cobalt-60	Soil	95	15	[-0.08] to 13	na	15/95
Europium-152	Soil	84	0	[-0.23 to 0.88]	na	0/84
Plutonium-238	Soil	76	2	[-0.0131] to 0.37	0.023	2/76
Plutonium-239	Soil	76	4	[-0.04] to 0.314	0.054	1/76
Ruthenium-106	Soil	95	0	[-1.05 to 3.71]	na	0/95
Sodium-22	Soil	92	15	[-0.16] to 21.9	na	15/92
Strontium-90	Soil	68	24	[-0.294] to 4.98	1.31	14/68
Tritium[c]	Soil	77	52	[-23.20] to 2980	0.766	51/77
Uranium-234	Soil	76	70	0.58 to 2.27	2.59	0/76
Uranium-235	Soil	95	34	[-0.34] to [0.29]	0.2	0/95
Uranium-238	Soil	76	71	0.656 to 2.53	2.29	1/76

[a] Values in square brackets indicate detection limits for nondetects.
[b] na = Not available.
[c] Units are pCi/mL.

Table D-4.2-3
Results of Statistical Tests for Radionuclides
above BVs/FVs in SWMU 53-002(a)-99 Mesa-Top Soil Samples

Analyte	Gehan p-value	Quantile p-value	Slippage p-value	No. of Site Data	No. of Bkgd Data	Max Site (pCi/g)	Max Bkgd (pCi/g)
Americium-241	n/a*	n/a	<0.001	95	27	3.86	0.013
Tritium	<0.001	<0.001	<0.001	77	51	119.29	0.9
Plutonium-238	n/a	n/a	0.33	76	56	0.37	0.037
Plutonium-239	n/a	n/a	0.576	76	56	0.314	0.055
Strontium-90	n/a	n/a	<0.001	68	42	4.98	1.1

*n/a = Not applicable.

Table D-4.2-4
Detected Concentrations above the BV for Radionuclides in Mesa-Top Soil at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)
Soil Background Value				**0.013**	**na**[a]	**na**	**na**	**1.31**	**0.766**
0253-95-0029	53-01070	0.00–0.50	Soil	—[b]	6.22	2.69	—	—	—
0253-95-0033	53-01074	0.00–0.50	Soil	—	—	0.124	—	—	—
0253-95-0184	53-01020	3.67–4.50	Fill	—	—	0.297	1.65	—	38.9
0253-95-0196	53-01024	1.50–2.50	Fill	—	—	—	0.298	—	20.8
0253-95-0230	53-01033	1.50–2.50	Fill						39.8
0253-95-0233	53-01034	2.00–3.00	Fill	—	—	—	0.691	—	12.4
RE53-00-0004	53-01706	2.00–3.00	Qbt 3[c]	—	—	—	—	—	18.039
RE53-00-0005	53-01707	3.50–4.50	Qbt 3[c]	—	—	—	—	—	10.73
RE53-00-0006	53-01708	5.00–6.00	Qbt 3[c]	—	—	—	—	—	6.406
RE53-00-0008	53-01710	6.50–7.50	Qbt 3[c]	—	—	—	—	—	17.815
RE53-00-0009	53-01711	5.50–6.50	Qbt 3[c]	—	—	—	—	—	40.883
RE53-00-0010	53-01712	4.00–5.00	Qbt 3[c]	—	—	—	—	—	18.27
RE53-00-0011	53-01713	4.00–5.00	Qbt 3[c]	—	—	—	—	—	10.972
RE53-00-0012	53-01714	3.00–4.00	Qbt 3[c]	—	—	—	—	—	263.175
RE53-00-0013	53-01715	4.50–5.50	Qbt 3[c]	—	—	—	—	—	9.36
RE53-00-0046	53-01719	0.00–0.50	Fill	1.18	—	1.78	0.331	—	175
RE53-00-0050	53-01720	0.00–0.50	Fill	—	—	0.159	0.301	—	73.8
RE53-00-0054	53-01721	0.00–0.50	Fill						327
RE53-00-0058	53-01722	0.00–0.50	Fill	0.829	—	2.37	16.2	—	2980
RE53-00-0062	53-01723	0.00–0.50	Fill						347
RE53-00-0066	53-01724	0.00–0.50	Fill	—	—	0.0936	0.172	—	1210
RE53-00-0070	53-01725	0.00–0.50	Fill						136
RE53-00-0074	53-01726	0.00–0.50	Fill						420
RE53-00-0078	53-01727	0.00–0.50	Fill						438
RE53-00-0082	53-01728	0.00–0.50	Fill						133
RE53-00-0086	53-01729	0.00–0.50	Fill	—	0.174	—	0.443	—	673
RE53-02-46741	53-02-20843	0.00–0.50	Fill	—	—	3.53	21.9	—	—
RE53-02-46742	53-02-20844	0.00–0.40	Fill	—	—	—	3.6	—	—
RE53-02-46743	53-02-20845	0.00–0.40	Fill	3.86	—	13	12	—	—
RE53-99-0168	53-01647	0.00–0.25	Soil	—	—	—	—	—	—
RE53-99-0169	53-01648	0.00–0.50	Soil	—	—	—	—	—	1.618
RE53-99-0170	53-01649	0.00–0.50	Soil	—	—	—	—	—	3.454
RE53-99-0172	53-01651	0.00–0.50	Soil	—	—	—	—	—	5.503

Table D-4.2-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)
Soil Background Value				**0.013**	**na[a]**	**na**	**na**	**1.31**	**0.766**
RE53-99-0174	53-01651	0.50–0.67	Soil	—	—	—	—	—	6.683
RE53-99-0175	53-01645	1.00–1.33	Soil	—	—	—	—	—	4.288
RE53-99-0176	53-01648	0.67–1.00	Soil	—	—	—	—	—	1.392
RE53-99-0179	53-01642	4.50–5.00	Soil	—	—	—	—	—	3.222
RE53-99-0182	53-01653	0.00–0.50	Soil	—	—	—	—	—	3.253
RE53-99-0183	53-01639	0.00–0.33	Soil	—	—	0.428	0.286	—	1.67
RE53-99-0184	53-01640	0.00–0.33	Soil	—	14.6	8.93	0.432	—	1.48
RE53-99-0185	53-01641	0.00–0.33	Soil	0.191	1.5	1.77	0.422	—	0.938
RE53-99-0224	53-01636	0.00–0.33	Soil	—	—	0.74	—	4.98	—
RE53-99-0225	53-01637	0.00–0.50	Soil	—	—	0.28	—	1.45	—
RE53-99-0226	53-01638	0.00–0.25	Soil	—	0.71	3.7	—	2.64	—
RE53-99-0233	53-01655	10.00–12.50	Qbt 2[c]	—	—	—	—		78.492
RE53-99-0234	53-01655	14.00–15.00	Qbt 2[c]	—	—	—	—		243.724
RE53-99-0236	53-01656	9.00–10.00	Qbt 2[c]	—	—	—	—	1.41 (J+)	—
RE53-99-0247	53-01664	1.00–2.00	Soil	0.19	—	—	—	1.53	—
RE53-99-0250	53-01681	1.00–2.00	Soil	—	—	—	—	1.47	—
RE53-99-0263	53-01685	4.00–5.00	Qbt 2[c]	—	—	—	—	1.4	—
RE53-99-0271	53-01688	1.00–2.00	Soil	—	—	—	—	1.65	—
RE53-99-0292	53-01663	9.00–10.00	Qbt 2[c]	—	—	—	—		89.696
RE53-99-0293	53-01663	13.00–14.00	Qbt 2[c]	—	0.09 (J)	—	—		90.526
RE53-99-0299	53-01692	13.00–14.00	Qbt 2[c]	—	—	—	—	2.29	27.703 (J)
RE53-99-0301	53-01693	9.00–10.00	Qbt 2[c]	—	—	—	—	1.9	18.092 (J)
RE53-99-0302	53-01693	13.00–14.00	Qbt 2[c]	—	—	—	—	1.37	78.406
RE53-99-0304	53-01694	9.00–10.00	Qbt 2[c]	—	—	—	—	2.63	776.46
RE53-99-0305	53-01694	13.00–14.00	Qbt 2[c]	—	—	—	—	1.6	1010.769
RE53-99-0313	53-01696	12.00–24.00	Qbt 2[c]	—	—	—	—	—	5.619
RE53-99-0314	53-01696	4.00–5.00	Qbt 2[c]	—	—	—	—	—	8.913
RE53-99-0316	53-01698	1.00–2.00	Qbt 2[c]	—	—	—	0.25	—	28.68
RE53-99-0317	53-01698	4.00–5.00	Qbt 2[c]	—	—	—	—	—	114.064
RE53-99-0319	53-01697	1.00–2.00	Qbt 2[c]	—	—	—	—	—	8.87
RE53-99-0320	53-01697	4.00–5.00	Qbt 2[c]	—	—	—	—	—	15.343
RE53-99-0322	53-01702	1.00–2.00	Fill	0.22	—	—	—	1.49	41.838

[a] na = Not available.

[b] — = Result was not above the BV/FV.

[c] Samples collected from the berms were identified as more soil-like and grouped with soil samples.

Table D-4.3-1
Samples Collected for Organic Chemical Analyses in Mesa-Top Soil at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
0253-95-0184	53-01020	3.67–4.5	Fill	76932	—[a]	—	77145	77234	76882
0253-95-0196	53-01024	1.5–2.5	Fill	77434	—	—	77600	77234	77328
0253-95-0230	53-01033	1.5–2.5	Fill	77672	—	—	77796	77567	77458
0253-95-0233	53-01034	2–3	Fill	77672	—	—	77796	77567	77458
RE53-99-0224	53-01636	0–0.33	Soil	—	5905R	—	—	5905R	—
RE53-99-0225	53-01637	0–0.5	Soil	—	5905R	—	—	5905R	—
RE53-99-0226	53-01638	0–0.25	Soil	—	5905R	—	—	5905R	—
RE53-99-0183	53-01639	0–0.33	Soil	5798R	5798R	5798R	—	5798R	5801R
RE53-99-0184	53-01640	0–0.33	Soil	—	5798R	5798R	—	5798R	5801R
RE53-99-0185	53-01641	0–0.33	Soil	—	5798R	5798R	—	5798R	5801R
RE53-99-0163	53-01642	0–0.5	Fill	—	5622R	5622R	—	5622R	—
RE53-99-0179	53-01642	4.5–5	Soil	—	5643R	5643R	—	5643R	5643R
RE53-99-0164	53-01643	0–0.25	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0165	53-01644	0–0.5	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0178	53-01644	0.67–1	Soil	—	5643R	5643R	—	5643R	5643R
RE53-99-0166	53-01645	0–0.5	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0175	53-01645	1–1.33	Soil	5633R	5633R	5633R	—	5633R	5633R
RE53-99-0167	53-01646	0–0.5	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0177	53-01646	0.58–0.92	Soil	—	5643R	5643R	—	5643R	5643R
RE53-99-0168	53-01647	0–0.25	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0169	53-01648	0–0.5	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0176	53-01648	0.67–1	Soil	—	5643R	5643R	—	5643R	5643R
RE53-99-0170	53-01649	0–0.5	Soil	—	5622R	5622R	—	5622R	—
RE53-99-0172	53-01651	0–0.5	Soil	5622R	5622R	5622R	—	5622R	—
RE53-99-0174	53-01651	0.5–0.67	Soil	—	5633R	5633R	—	5633R	5633R
RE53-99-0180	53-01652	0–0.5	Soil	—	5661R	5661R	—	5661R	—
RE53-99-0181	53-01652	0.67–1	Soil	5661R	5661R	5661R	—	5661R	5661R
RE53-99-0182	53-01653	0–0.5	Soil	5661R	5661R	5661R	—	5661R	—
RE53-99-0233	53-01655	10–12.5	Qbt 2[b]	—	5989R	—	—	5989R	5989R
RE53-99-0234	53-01655	14–15	Qbt 2[b]	—	5989R	—	—	5989R	5989R
RE53-99-0235	53-01655	24–25	Qbt 2[b]	—	5989R	—	—	5989R	5989R
RE53-99-0236	53-01656	9–10	Qbt 2[b]	—	5989R	—	—	5989R	5989R
RE53-99-0292	53-01663	9–10	Qbt 2[b]	—	6000R	—	—	6000R	6000R
RE53-99-0293	53-01663	13–14	Qbt 2[b]	—	6000R	—	—	6000R	6000R
RE53-99-0247	53-01664	1–2	Soil	—	5949R	—	—	5949R	5949R
RE53-99-0250	53-01681	1–2	Soil	—	5949R	—	—	5949R	5949R
RE53-99-0253	53-01682	1–2	Soil	5963R	5963R	5963R	—	5963R	5963R
RE53-99-0256	53-01683	1–2	Soil	—	5963R	—	—	5963R	5963R
RE53-99-0259	53-01684	1–2	Soil	—	5963R	—	—	5963R	5963R
RE53-99-0262	53-01685	1–2	Soil	—	5967R	—	—	5967R	5967R

Table D-4.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
RE53-99-0263	53-01685	4–5	Qbt 2[b]	—	5967R	—	—	5967R	5967R
RE53-99-0265	53-01686	1–2	Soil	—	5974R	—	—	5974R	5974R
RE53-99-0268	53-01687	1–2	Soil	—	5974R	—	—	5974R	5974R
RE53-99-0271	53-01688	1–2	Soil	—	5982R	—	—	5982R	5982R
RE53-99-0299	53-01692	13–14	Qbt 2[b]	—	6010R	—	—	6010R	6010R
RE53-99-0301	53-01693	9–10	Qbt 2[b]	—	6010R	—	—	6010R	6010R
RE53-99-0302	53-01693	13–14	Qbt 2[b]	—	6010R	—	—	6010R	6010R
RE53-99-0304	53-01694	9–10	Qbt 2[b]	—	6010R	—	—	6010R	6010R
RE53-99-0305	53-01694	13–14	Qbt 2[b]	—	6010R	—	—	6010R	6010R
RE53-99-0314	53-01696	4–5	Qbt 2[b]	—	6022R	—	—	6022R	6022R
RE53-99-0313	53-01696	12–24	Qbt 2[b]	—	6022R	—	—	6022R	6022R
RE53-99-0319	53-01697	1–2	Qbt 2[b]	—	6022R	—	—	6022R	6022R
RE53-99-0320	53-01697	4–5	Qbt 2[b]	—	6022R	—	—	6022R	6022R
RE53-99-0316	53-01698	1–2	Qbt 2[b]	—	6022R	—	—	6022R	6022R
RE53-99-0317	53-01698	4–5	Qbt 2[b]	—	6022R	—	—	6022R	6022R
RE53-02-46700	53-02-20826	1.8–2.5	Fill	—	—	—	—	1103S	—
RE53-99-0322	53-01702	1–2	Fill	—	6055R	—	—	6055R	6055R
RE53-00-0004	53-01706	2–3	Qbt 3[b]	—	6483R	—	—	6483R	6483R
RE53-00-0005	53-01707	3.5–4.5	Qbt 3[b]	—	6483R	—	—	6483R	6483R
RE53-00-0006	53-01708	5–6	Qbt 3[b]	—	6483R	—	—	6483R	6483R
RE53-00-0008	53-01710	6.5–7.5	Qbt 3[b]	—	6503R	—	—	6503R	6503R
RE53-00-0009	53-01711	5.5–6.5	Qbt 3[b]	—	6503R	—	—	6503R	6503R
RE53-00-0010	53-01712	4–5	Qbt 3[b]	—	6503R	—	—	6503R	6503R
RE53-00-0011	53-01713	4–5	Qbt 3[b]	—	6503R	—	—	6503R	6503R
RE53-00-0012	53-01714	3–4	Qbt 3[b]	6503R	6503R	6503R	—	6503R	6503R
RE53-00-0013	53-01715	4.5–5.5	Qbt 3[b]	6503R	6503R	6503R	—	6503R	6503R
RE53-00-0046	53-01719	0–0.5	Fill	—	—	—	—	7532R	7532R
RE53-00-0050	53-01720	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0054	53-01721	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0058	53-01722	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0062	53-01723	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0066	53-01724	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0070	53-01725	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0074	53-01726	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0078	53-01727	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0082	53-01728	0–0.5	Fill	—	7599R	—	—	7599R	7599R
RE53-00-0086	53-01729	0–0.5	Fill	—	7599R	—	—	7599R	7599R

[a] — = Sample not requested for this analysis.

[b] Samples collected from the berms were identified as more soil-like and grouped with soil samples.

Table D-4.3-2
Frequency of Detected Concentrations for
Organic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range* (mg/kg)	Frequency of Detects
Acenaphthene	Soil	73	1	[0.04] to [0.4]	1/73
Acetone	Soil	62	19	[0.0025] to 0.0817	19/62
Aroclor-1254	Soil	75	1	[0.004] to 0.16	1/75
Benzene	Soil	62	1	0.0003 to [0.0096]	1/62
Benzo(g,h,i)perylene	Soil	77	1	0.018 to [0.41]	1/77
Bis(2-chloroethyl)ether	Soil	77	1	[0.04] to [0.4]	1/77
Bis(2-ethylhexyl)phthalate	Soil	77	10	0.019 to [0.4]	10/77
Butanone[2-]	Soil	62	1	[0.003] to [0.039]	1/62
Butylbenzylphthalate	Soil	77	1	[0.003] to [0.38]	1/77
Chloroethane	Soil	62	2	0.00052 to [0.019]	2/62
DDE[4,4'-]	Soil	32	1	0.00032 to [0.332]	1/32
DDT[4,4'-]	Soil	29	1	[0.0005] to [0.332]	1/29
Diethylphthalate	Soil	77	2	[0.019] to [0.4]	2/77
Di-n-butylphthalate	Soil	77	8	0.018 to 1.6	8/77
Fluoranthene	Soil	77	1	[0.03] to [0.4]	1/77
Heptachlor	Soil	32	2	0.00101 to [0.332]	2/32
Methylene Chloride	Soil	62	3	[0.006] to [0.048]	3/62
Methylphenol[4-]	Soil	73	1	0.024 to [0.73]	1/73
Pyrene	Soil	77	1	[0.031] to [0.4]	1/77
Toluene	Soil	62	4	[0.00036] to [0.0096]	4/62
Trichloro-1,2,2-trifluoroethane[1,1,2-]	Soil	58	1	[0.000922] to 0.017	1/58
Trichloroethene	Soil	62	5	[0.0006] to [0.007]	5/62
Trichlorofluoromethane	Soil	62	4	[0.001] to [0.096]	4/62

*Values in square brackets indicate detection limits for nondetects.

Table D-4.3-3
Detected Concentrations for Organic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Aroclor-1254	Benzene	Benzo(g,h,i)perylene	Bis(2-chloroethyl)ether	Bis(2-ethylhexyl)phthalate
0253-95-0184	53-01020	3.67–4.50	Fill	—*	0.0817	—	—	—	—	—
0253-95-0196	53-01024	1.50–2.50	Fill	—	0.0235	—	—	—	—	—
0253-95-0230	53-01033	1.50–2.50	Fill	—	6.190001E-03 (J)	—	—	—	—	—
0253-95-0233	53-01034	2.00–3.00	Fill	—	—	—	—	—	—	—
RE53-99-0224	53-01636	0.00–0.33	Soil	—	—	—	—	—	—	0.063 (J)
RE53-99-0184	53-01640	0.00–0.33	Soil	—	—	0.16	—	—	—	0.074 (J)
RE53-99-0185	53-01641	0.00–0.33	Soil	—	—	—	—	—	—	—
RE53-99-0179	53-01642	4.50–5.00	Soil	—	—	—	—	—	—	—
RE53-99-0164	53-01643	0.00–0.25	Soil	—	—	—	—	—	—	—
RE53-99-0165	53-01644	0.00–0.50	Soil	—	—	—	—	—	—	0.058 (J)
RE53-99-0178	53-01644	0.67–1.00	Soil	—	—	—	—	—	—	0.042 (J)
RE53-99-0166	53-01645	0.00–0.50	Soil	—	—	—	—	—	—	6.900001E-02 (J)
RE53-99-0175	53-01645	1.00–1.33	Soil	—	—	—	—	—	—	—
RE53-99-0167	53-01646	0.00–0.50	Soil	—	—	—	—	—	—	0.046 (J)
RE53-99-0177	53-01646	0.58–0.92	Soil	—	—	—	—	—	8.400001E-02 (J)	—
RE53-99-0176	53-01648	0.67–1.00	Soil	—	—	—	—	—	—	—
RE53-99-0170	53-01649	0.00–0.50	Soil	—	—	—	—	—	—	0.048 (J)
RE53-99-0174	53-01651	0.50–0.67	Soil	—	—	—	0.0003 (J)	—	—	—
RE53-99-0234	53-01655	14.00–15.00	Qbt 2	—	0.013	—	—	—	—	—
RE53-99-0247	53-01664	1.00–2.00	Soil	—	—	—	—	—	—	—
RE53-99-0250	53-01681	1.00–2.00	Soil	—	—	—	—	—	—	—
RE53-99-0253	53-01682	1.00–2.00	Soil	—	0.03	—	—	—	—	—

Table D-4.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Acetone	Aroclor-1254	Benzene	Benzo(g,h,i)perylene	Bis(2-chloroethyl)ether	Bis(2-ethylhexyl)phthalate
RE53-99-0259	53-01684	1.00–2.00	Soil	—	—	—	—	—	—	0.021 (J)
RE53-99-0265	53-01686	1.00–2.00	Soil	—	—	—	—	—	—	0.061 (J)
RE53-99-0271	53-01688	1.00–2.00	Soil	0.3 (J)	—	—	—	—	—	0.019 (J)
RE53-99-0299	53-01692	13.00–14.00	Qbt 2	—	0.027 (J-)	—	—	—	—	—
RE53-99-0301	53-01693	9.00–10.00	Qbt 2	—	—	—	—	—	—	—
RE53-99-0302	53-01693	13.00–14.00	Qbt 2	—	0.025 (J-)	—	—	—	—	—
RE53-99-0304	53-01694	9.00–10.00	Qbt 2	—	—	—	—	—	—	—
RE53-99-0305	53-01694	13.00–14.00	Qbt 2	—	0.063	—	—	—	—	—
RE53-99-0314	53-01696	4.00–5.00	Qbt 2	—	—	—	—	—	—	—
RE53-99-0313	53-01696	12.00–24.00	Qbt 2	—	—	—	—	—	—	—
RE53-99-0316	53-01698	1.00–2.00	Qbt 2	—	0.01 (J)	—	—	—	—	—
RE53-99-0317	53-01698	4.00–5.00	Qbt 2	—	0.008 (J)	—	—	—	—	—
RE53-99-0322	53-01702	1.00–2.00	Fill	—	0.045	—	—	—	—	—
RE53-00-0004	53-01706	2.00–3.00	Qbt 3	—	—	—	—	—	—	—
RE53-00-0005	53-01707	3.50–4.50	Qbt 3	—	—	—	—	—	—	—
RE53-00-0006	53-01708	5.00–6.00	Qbt 3	—	—	—	—	0.018	—	—
RE53-00-0050	53-01720	0.00–0.50	Fill	—	0.0057 (J)	—	—	—	—	—
RE53-00-0054	53-01721	0.00–0.50	Fill	—	0.0072 (J)	—	—	—	—	—
RE53-00-0062	53-01723	0.00–0.50	Fill	—	0.0054 (J)	—	—	—	—	—
RE53-00-0070	53-01725	0.00–0.50	Fill	—	0.0047 (J)	—	—	—	—	—
RE53-00-0074	53-01726	0.00–0.50	Fill	—	4.900001E-03 (J)	—	—	—	—	—
RE53-00-0078	53-01727	0.00–0.50	Fill	—	0.0054 (J)	—	—	—	—	—
RE53-00-0082	53-01728	0.00–0.50	Fill	—	0.0055 (J)	—	—	—	—	—
RE53-00-0086	53-01729	0.00–0.50	Fill	—	0.0052 (J)	—	—	—	—	—

Table D-4.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Butanone[2-]	Butylbenzylphthalate	Chloroethane	DDE[4,4'-]	DDT[4,4'-]	Diethylphthalate	Di-n-butylphthalate	Fluoranthene
SWMU 53-002(a)											
0253-95-0184	53-01020	3.67–4.50	Fill	—	—	—	—	—	—	—	—
0253-95-0196	53-01024	1.50–2.50	Fill	—	—	—	—	—	—	—	—
0253-95-0230	53-01033	1.50–2.50	Fill	—	—	—	—	—	—	—	—
0253-95-0233	53-01034	2.00–3.00	Fill	—	—	—	—	—	—	—	—
RE53-99-0224	53-01636	0.00–0.33	Soil	—	—	—	—	—	—	—	—
RE53-99-0184	53-01640	0.00–0.33	Soil	—	—	—	—	—	—	—	—
RE53-99-0185	53-01641	0.00–0.33	Soil	—	—	—	—	—	—	—	—
RE53-99-0179	53-01642	4.50–5.00	Soil	—	—	—	—	0.00073 (J)	—	—	—
RE53-99-0164	53-01643	0.00–0.25	Soil	—	—	—	—	—	—	—	0.041 (J)
RE53-99-0165	53-01644	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0178	53-01644	0.67–1.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0166	53-01645	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0175	53-01645	1.00–1.33	Soil	—	—	0.0026 (J)	—	—	—	—	—
RE53-99-0167	53-01646	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0177	53-01646	0.58–0.92	Soil	—	—	—	—	—	—	—	—
RE53-99-0176	53-01648	0.67–1.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0170	53-01649	0.00–0.50	Soil	—	—	—	0.00032 (J-)	—	—	—	—
RE53-99-0174	53-01651	0.50–0.67	Soil	—	—	0.00052 (J)	—	—	—	—	—
RE53-99-0234	53-01655	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0247	53-01664	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0250	53-01681	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0253	53-01682	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0259	53-01684	1.00–2.00	Soil	—	—	—	—	—	—	—	—

Table D-4.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Butanone[2-]	Butylbenzylphthalate	Chloroethane	DDE[4,4'-]	DDT[4,4'-]	Diethylphthalate	Di-n-butylphthalate	Fluoranthene
RE53-99-0265	53-01686	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0271	53-01688	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0299	53-01692	13.00–14.00	Qbt 2	—	—	—	—	—	—	0.15 (J)	—
RE53-99-0301	53-01693	9.00–10.00	Qbt 2	—	—	—	—	—	—	0.28 (J)	—
RE53-99-0302	53-01693	13.00–14.00	Qbt 2	0.011 (J-)	—	—	—	—	—	—	—
RE53-99-0304	53-01694	9.00–10.00	Qbt 2	—	—	—	—	—	—	0.52	—
RE53-99-0305	53-01694	13.00–14.00	Qbt 2	—	0.055 (J)	—	—	—	—	0.56	—
RE53-99-0314	53-01696	4.00–5.00	Qbt 2	—	—	—	—	—	0.054 (J)	1.3	—
RE53-99-0313	53-01696	12.00–24.00	Qbt 2	—	—	—	—	—	0.06 (J)	1.6	—
RE53-99-0316	53-01698	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.025 (J)	—
RE53-99-0317	53-01698	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.018 (J)	—
RE53-99-0322	53-01702	1.00–2.00	Fill	—	—	—	—	—	—	—	—
RE53-00-0004	53-01706	2.00–3.00	Qbt 3	—	—	—	—	—	—	—	—
RE53-00-0005	53-01707	3.50–4.50	Qbt 3	—	—	—	—	—	—	—	—
RE53-00-0006	53-01708	5.00–6.00	Qbt 3	—	—	—	—	—	—	—	—
RE53-00-0050	53-01720	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0054	53-01721	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0062	53-01723	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0070	53-01725	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0074	53-01726	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0078	53-01727	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0082	53-01728	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0086	53-01729	0.00–0.50	Fill	—	—	—	—	—	—	—	—

Table D-4.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Heptachlor	Methylene Chloride	Methylphenol[4-]	Pyrene	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane
SWMU 53-002(a)											
0253-95-0184	53-01020	3.67–4.50	Fill	—	—	—	—	—	—	—	—
0253-95-0196	53-01024	1.50–2.50	Fill	—	—	—	—	—	—	—	—
0253-95-0230	53-01033	1.50–2.50	Fill	0.0011 (J)	—	—	—	—	—	—	0.002
0253-95-0233	53-01034	2.00–3.00	Fill	0.00101 (J)	—	—	—	—	—	—	—
RE53-99-0224	53-01636	0.00–0.33	Soil	—	—	—	—	—	—	—	—
RE53-99-0184	53-01640	0.00–0.33	Soil	—	—	—	—	—	—	0.0013 (J)	—
RE53-99-0185	53-01641	0.00–0.33	Soil	—	—	—	—	—	—	9.700001E-04 (J)	—
RE53-99-0179	53-01642	4.50–5.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0164	53-01643	0.00–0.25	Soil	—	—	—	0.038 (J)	—	—	—	—
RE53-99-0165	53-01644	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0178	53-01644	0.67–1.00	Soil	—	—	—	—	0.00082 (J)	—	9.100001E-04 (J)	—
RE53-99-0166	53-01645	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0175	53-01645	1.00–1.33	Soil	—	—	—	—	—	—	0.0012 (J)	—
RE53-99-0167	53-01646	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0177	53-01646	0.58–0.92	Soil	—	—	—	—	—	—	—	—
RE53-99-0176	53-01648	0.67–1.00	Soil	—	—	—	—	8.500001E-04 (J)	—	—	—
RE53-99-0170	53-01649	0.00–0.50	Soil	—	—	—	—	—	—	—	—
RE53-99-0174	53-01651	0.50–0.67	Soil	—	—	—	—	—	—	0.00086 (J)	—
RE53-99-0234	53-01655	14.00–15.00	Qbt 2	—	—	0.024 (J)	—	—	—	—	—
RE53-99-0247	53-01664	1.00–2.00	Soil	—	—	—	—	0.00045 (J)	—	—	—
RE53-99-0250	53-01681	1.00–2.00	Soil	—	—	—	—	0.00037 (J)	—	—	—

Table D-4.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Heptachlor	Methylene Chloride	Methylphenol[4-]	Pyrene	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane
RE53-99-0253	53-01682	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0259	53-01684	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0265	53-01686	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0271	53-01688	1.00–2.00	Soil	—	—	—	—	—	—	—	—
RE53-99-0299	53-01692	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0301	53-01693	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0302	53-01693	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0304	53-01694	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0305	53-01694	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0314	53-01696	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0313	53-01696	12.00–24.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0316	53-01698	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0317	53-01698	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0322	53-01702	1.00–2.00	Fill	—	—	—	—	—	0.017	—	—
RE53-00-0004	53-01706	2.00–3.00	Qbt 3	—	0.013	—	—	—	—	—	0.002 (J)
RE53-00-0005	53-01707	3.50–4.50	Qbt 3	—	0.013	—	—	—	—	—	0.002 (J)
RE53-00-0006	53-01708	5.00–6.00	Qbt 3	—	0.013	—	—	—	—	—	0.002 (J)
RE53-00-0050	53-01720	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0054	53-01721	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0062	53-01723	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0070	53-01725	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0074	53-01726	0.00–0.50	Fill	—	—	—	—	—	—	—	—

Table D-4.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Heptachlor	Methylene Chloride	Methylphenol[4-]	Pyrene	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane
RE53-00-0078	53-01727	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0082	53-01728	0.00–0.50	Fill	—	—	—	—	—	—	—	—
RE53-00-0086	53-01729	0.00–0.50	Fill	—	—	—	—	—	—	—	—

*— = Result was not detected or not analyzed.

Table D-5.1-1
Samples Collected for Inorganic Chemical Analyses in Mesa-Top Tuff at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
0253-95-0103	53-01001	1.5–2.5	Qbt 2	—*	76761
0253-95-0106	53-01002	1.5–2.5	Qbt 2	—	76817
0253-95-0110	53-01003	1.5–2.5	Qbt 2	—	76817
0253-95-0113	53-01004	1.5–2.5	Qbt 2	—	76817
0253-95-0116	53-01005	1.5–2.42	Qbt 2	—	76817
0253-95-0119	53-01006	1.5–2.5	Qbt 2	—	76817
0253-95-0122	53-01007	1.5–2.5	Qbt 2	—	76824
0253-95-0126	53-01008	1.5–2.5	Qbt 2	—	76824
0253-95-0129	53-01009	1.5–2.5	Qbt 2	—	76824
0253-95-0132	53-01010	1.5–2.5	Qbt 2	—	76824
0253-95-0135	53-01011	1.5–2.5	Qbt 2	—	76824
0253-95-0138	53-01012	1.5–2.5	Qbt 2	—	76824
0253-95-0142	53-01013	1.5–2.5	Qbt 2	—	76824
0253-95-0145	53-01014	1.5–2.5	Qbt 2	—	76824
0253-95-0148	53-01015	1.5–2.5	Qbt 2	—	76824
0253-95-0151	53-01016	1.5–2.5	Qbt 2	—	76833
0253-95-0154	53-01017	1.5–2.5	Qbt 2	—	76833
0253-95-0177	53-01018	3.5–4.83	Qbt 2	—	76972
0253-95-0181	53-01019	2.17–3	Qbt 2	—	76972
0253-95-0187	53-01021	1.58–2.5	Qbt 2	—	76972
0253-95-0190	53-01022	1.5–2.5	Qbt 2	—	77325
0253-95-0193	53-01023	1.5–2.5	Qbt 2	—	77572
0253-95-0205	53-01025	1.5–2.5	Qbt 2	—	77378
0253-95-0208	53-01026	1.5–2.5	Qbt 2	—	77378
0253-95-0211	53-01027	1.5–2.5	Qbt 2	—	77642
0253-95-0214	53-01028	1.5–2.5	Qbt 2	—	77642
0253-95-0217	53-01029	1.5–2.5	Qbt 2	—	77642
0253-95-0220	53-01030	1.5–2.5	Qbt 2	—	78389
0253-95-0223	53-01031	1.5–2.5	Qbt 2	—	77642
0253-95-0227	53-01032	1.5–3	Qbt 2	—	77642
0253-95-0155	53-01288	1.5–2.5	Qbt 2	—	76933
0253-95-0156	53-01289	1–1.67	Qbt 2	—	76933
0253-95-0157	53-01290	0.67–1.5	Qbt 2	—	76933
0253-95-0158	53-01291	1.5–2.17	Qbt 2	—	76933
0253-95-0159	53-01292	1.5–2.5	Qbt 2	—	76933
0253-95-0160	53-01293	1.5–2.17	Qbt 2	—	76933
0253-95-0161	53-01294	1.5–2.5	Qbt 2	—	76933

Table D-5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
0253-95-0162	53-01295	1.5–2.5	Qbt 2	—	76933
0253-95-0234	53-01316	2–3.67	Qbt 2	—	76933
0253-95-0236	53-01317	0.67–2	Qbt 2	—	76933
0253-95-0237	53-01318	1.17–2.5	Qbt 2	—	76933
0253-95-0238	53-01319	1.5–2.33	Qbt 2	—	76933
0253-95-0239	53-01320	1–2.33	Qbt 2	—	76972
0253-95-0241	53-01321	1.5–2.67	Qbt 2	—	76972
0253-95-0242	53-01322	1–2.67	Qbt 2	—	76972
0253-95-0243	53-01323	2.5–3.67	Qbt 2	—	76972
RE53-99-0115	53-01573	4–5	Qbt 2	5634R	5634R
RE53-99-0116	53-01573	14–15	Qbt 2	5634R	5634R
RE53-99-0059	53-01575	1–2	Qbt 2	5641R	—
RE53-99-0117	53-01575	4–5	Qbt 2	—	5641R
RE53-99-0118	53-01575	14–15	Qbt 2	—	5641R
RE53-99-0062	53-01576	1–2	Qbt 2	5685R	—
RE53-99-0119	53-01576	4–5	Qbt 2	—	5685R
RE53-99-0120	53-01576	14–15	Qbt 2	—	5685R
RE53-99-0121	53-01577	4–5	Qbt 2	—	5685R
RE53-99-0122	53-01577	14–15	Qbt 2	5685R	5685R
RE53-99-0125	53-01582	4–5	Qbt 2	5696R	5696R
RE53-99-0126	53-01582	14–15	Qbt 2	5696R	5696R
RE53-99-0123	53-01584	4–5	Qbt 2	5696R	5696R
RE53-99-0124	53-01584	14–15	Qbt 2	5696R	5696R
RE53-99-0132	53-01586	4–5	Qbt 2	5707R	5707R
RE53-99-0133	53-01586	14–15	Qbt 2	5707R	5707R
RE53-99-0130	53-01587	4–5	Qbt 2	5703R	5703R
RE53-99-0131	53-01587	14–15	Qbt 2	5703R	5703R
RE53-99-0134	53-01588	4–5	Qbt 2	—	5795R
RE53-99-0135	53-01588	14–15	Qbt 2	—	5795R
RE53-99-0128	53-01589	4–5	Qbt 2	5703R	5703R
RE53-99-0129	53-01589	14–15	Qbt 2	5703R	5703R
RE53-99-0107	53-01591	1–2	Qbt 2	5819R	—
RE53-99-0104	53-01592	1–2	Qbt 2	5796R	—
RE53-99-0140	53-01592	4–5	Qbt 2	5796R	5795R
RE53-99-0141	53-01592	14–15	Qbt 2	5796R	5795R
RE53-99-0138	53-01593	4–5	Qbt 2	5796R	5795R
RE53-99-0139	53-01593	14–15	Qbt 2	5796R	5795R
RE53-99-0136	53-01594	4–5	Qbt 2	—	5791R

Table D-5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-99-0137	53-01594	14–15	Qbt 2	—	5791R
RE53-99-0148	53-01595	4–5	Qbt 2	—	5827R
RE53-99-0149	53-01595	14–15	Qbt 2	—	5827R
RE53-99-0146	53-01596	4–5	Qbt 2	—	5827R
RE53-99-0147	53-01596	14–15	Qbt 2	—	5827R
RE53-99-0144	53-01597	4–5	Qbt 2	—	5819R
RE53-99-0145	53-01597	14–15	Qbt 2	—	5819R
RE53-99-0142	53-01598	4–5	Qbt 2	—	5819R
RE53-99-0143	53-01598	14–15	Qbt 2	—	5819R
RE53-99-0171	53-01650	0–0.42	Qbt 2	—	5623R
RE53-99-0230	53-01654	7–8	Qbt 2	—	5990R
RE53-99-0231	53-01654	12–13	Qbt 2	—	5990R
RE53-99-0232	53-01654	19–20	Qbt 2	—	5990R
RE53-99-0237	53-01656	13–14	Qbt 2	—	5990R
RE53-99-0238	53-01656	24–25	Qbt 2	—	5990R
RE53-99-0239	53-01657	9–10	Qbt 2	—	5998R
RE53-99-0240	53-01657	13–14	Qbt 2	—	5998R
RE53-99-0241	53-01657	24–25	Qbt 2	—	5998R
RE53-99-0242	53-01658	9–10	Qbt 2	—	5998R
RE53-99-0243	53-01658	13–14	Qbt 2	—	5998R
RE53-99-0244	53-01658	24–25	Qbt 2	—	5998R
RE53-99-0280	53-01659	9–10	Qbt 2	—	5998R
RE53-99-0281	53-01659	13–14	Qbt 2	—	5998R
RE53-99-0282	53-01659	24–25	Qbt 2	—	5998R
RE53-99-0286	53-01660	9–10	Qbt 2	—	5998R
RE53-99-0287	53-01660	13–14	Qbt 2	—	5998R
RE53-99-0288	53-01660	24–25	Qbt 2	—	5998R
RE53-99-0283	53-01661	9–10	Qbt 2	—	5998R
RE53-99-0284	53-01661	13–14	Qbt 2	—	5998R
RE53-99-0285	53-01661	24–25	Qbt 2	—	5998R
RE53-99-0289	53-01662	9–10	Qbt 2	—	6001R
RE53-99-0290	53-01662	13–14	Qbt 2	—	6001R
RE53-99-0291	53-01662	24–25	Qbt 2	—	6001R
RE53-99-0294	53-01663	24–25	Qbt 2	—	6001R
RE53-99-0248	53-01664	4–5	Qbt 2	—	5950R
RE53-99-0249	53-01664	14–15	Qbt 2	—	5950R
RE53-99-0251	53-01681	4–5	Qbt 2	—	5950R
RE53-99-0252	53-01681	14–15	Qbt 2	—	5950R

Table D-5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-99-0254	53-01682	4–5	Qbt 2	—	5964R
RE53-99-0255	53-01682	14–15	Qbt 2	—	5964R
RE53-99-0257	53-01683	4–5	Qbt 2	—	5964R
RE53-99-0258	53-01683	14–15	Qbt 2	—	5964R
RE53-99-0260	53-01684	4–5	Qbt 2	—	5964R
RE53-99-0261	53-01684	14–15	Qbt 2	—	5964R
RE53-99-0264	53-01685	14–15	Qbt 2	—	5968R
RE53-99-0266	53-01686	4–5	Qbt 2	—	5975R
RE53-99-0267	53-01686	14–15	Qbt 2	—	5975R
RE53-99-0269	53-01687	4–5	Qbt 2	—	5975R
RE53-99-0270	53-01687	14–15	Qbt 2	—	5975R
RE53-99-0272	53-01688	4–5	Qbt 2	—	5983R
RE53-99-0273	53-01688	14–15	Qbt 2	—	5983R
RE53-99-0277	53-01689	16–17	Qbt 2	—	5983R
RE53-99-0278	53-01689	19–20	Qbt 2	—	5983R
RE53-99-0279	53-01689	29–30	Qbt 2	—	5983R
RE53-99-0227	53-01690	4.5–6	Qbt 2	—	5986R
RE53-99-0228	53-01690	6–7.5	Qbt 2	—	5986R
RE53-99-0229	53-01690	7.5–9	Qbt 2	—	5986R
RE53-99-0295	53-01691	9–10	Qbt 2	—	6011R
RE53-99-0298	53-01691	9–10	Qbt 2	—	6011R
RE53-99-0296	53-01691	13–14	Qbt 2	—	6011R
RE53-99-0297	53-01691	24–25	Qbt 2	—	6011R
RE53-99-0300	53-01692	24–25	Qbt 2	—	6011R
RE53-99-0303	53-01693	24–25	Qbt 2	—	6011R
RE53-99-0306	53-01694	24–25	Qbt 2	—	6011R
RE53-99-0310	53-01695	1–2	Qbt 2	—	6014R
RE53-99-0311	53-01695	4–5	Qbt 2	—	6014R
RE53-99-0312	53-01695	14–15	Qbt 2	—	6014R
RE53-99-0315	53-01696	14–15	Qbt 2	—	6023R
RE53-99-0321	53-01697	14–15	Qbt 2	—	6023R
RE53-99-0318	53-01698	14–15	Qbt 2	—	6023R
RE53-99-0307	53-01701	1–2	Qbt 2	—	6014R
RE53-99-0308	53-01701	4–5	Qbt 2	—	6014R
RE53-99-0309	53-01701	14–15	Qbt 2	—	6014R
RE53-02-46597	53-02-20824	30–31.8	Qbt 2	—	1015S
RE53-02-46599	53-02-20824	50–51.7	Qbt 2	—	1025S
RE53-02-46706	53-02-20828	29–30	Qbt 2	—	1127S

Table D-5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-02-46707	53-02-20828	48.5–50	Qbt 2	—	1127S
RE53-02-46710	53-02-20829	24–25	Qbt 2	—	1127S
RE53-02-46718	53-02-20829	36.7–37.5	Qbt 2	—	1127S
RE53-02-46711	53-02-20829	49.2–50	Qbt 2	—	1127S
RE53-02-46714	53-02-20830	28.9–30	Qbt 2	—	1110S
RE53-02-46715	53-02-20830	49–50	Qbt 2	—	1110S
RE53-00-0007	53-01709	8–9	Qbt 3	—	6504R
RE53-00-0041	53-01716	1–2	Qbt 2	—	7533R
RE53-00-0042	53-01716	4–5	Qbt 2	—	7533R
RE53-00-0043	53-01716	14–15	Qbt 2	—	7533R
RE53-00-0091	53-01717	4–5	Qbt 2	7584R	7533R
RE53-00-0092	53-01717	14–15	Qbt 2	7584R	7533R
RE53-00-0093	53-01718	1–2	Qbt 2	7532R	7533R
RE53-00-0094	53-01718	4–5	Qbt 2	7532R	7533R
RE53-00-0095	53-01718	14–15	Qbt 2	7532R	7533R
RE53-00-0047	53-01719	1–2	Qbt 2	—	7533R
RE53-00-0048	53-01719	4–5	Qbt 2	—	7533R
RE53-00-0049	53-01719	14–15	Qbt 2	—	7533R
RE53-00-0051	53-01720	1–2	Qbt 2	—	7600R
RE53-00-0052	53-01720	4–5	Qbt 2	—	7600R
RE53-00-0053	53-01720	14–15	Qbt 2	—	7600R
RE53-00-0055	53-01721	1–2	Qbt 2	—	7600R
RE53-00-0056	53-01721	4–5	Qbt 2	—	7600R
RE53-00-0057	53-01721	14–15	Qbt 2	—	7600R
RE53-00-0059	53-01722	1–2	Qbt 2	—	7600R
RE53-00-0060	53-01722	4–5	Qbt 2	—	7600R
RE53-00-0061	53-01722	14–15	Qbt 2	—	7600R
RE53-00-0063	53-01723	1–2	Qbt 2	—	7600R
RE53-00-0064	53-01723	4–5	Qbt 2	—	7600R
RE53-00-0065	53-01723	14–15	Qbt 2	—	7600R
RE53-00-0067	53-01724	1–2	Qbt 2	—	7600R
RE53-00-0068	53-01724	4–5	Qbt 2	—	7600R
RE53-00-0069	53-01724	14–15	Qbt 2	—	7600R
RE53-00-0071	53-01725	1–2	Qbt 2	—	7600R
RE53-00-0072	53-01725	4–5	Qbt 2	—	7600R
RE53-00-0073	53-01725	14–15	Qbt 2	—	7600R
RE53-00-0075	53-01726	1–2	Qbt 2	—	7600R
RE53-00-0076	53-01726	4–5	Qbt 2	—	7600R

Table D-5.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-00-0077	53-01726	14–15	Qbt 2	—	7600R
RE53-00-0079	53-01727	1–2	Qbt 2	—	7600R
RE53-00-0080	53-01727	4–5	Qbt 2	—	7600R
RE53-00-0081	53-01727	14–15	Qbt 2	—	7600R
RE53-00-0083	53-01728	1–2	Qbt 2	—	7600R
RE53-00-0084	53-01728	4–5	Qbt 2	—	7600R
RE53-00-0085	53-01728	14–15	Qbt 2	—	7600R
RE53-00-0087	53-01729	1–2	Qbt 2	—	7600R
RE53-00-0088	53-01729	4–5	Qbt 2	—	7600R
RE53-00-0089	53-01729	14–15	Qbt 2	—	7600R*

*— = Sample not requested for this analysis.

Table D-5.1-2
Frequency of Detected Concentrations
above BVs for Inorganic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (mg/kg)	Background Value (mg/kg)	Frequency of Detects above Background Value	Frequency of Nondetects above Background Value
Aluminum	Qbt 2	194	194	4.6 to 12000	7340	6/194	0/194
Aluminum	Qbt 3	1	1	3400 to 3400	7340	0/1	0/1
Antimony	Qbt 2	150	41	[0.02 to 1]	0.5	0/150	90/150
Antimony	Qbt 3	1	0	[0.54 to 0.54]	0.5	0/1	1/1
Arsenic	Qbt 2	194	189	0.17 to 3.6	2.79	5/194	0/194
Arsenic	Qbt 3	1	1	1.9 to 1.9	2.79	0/1	0/1
Barium	Qbt 2	194	194	1.5 to 130	46	16/194	0/194
Barium	Qbt 3	1	1	25 to 25	46	0/1	0/1
Beryllium	Qbt 2	194	185	0.0701 to 1.3	1.21	1/194	0/194
Beryllium	Qbt 3	1	1	0.35 to 0.35	1.21	0/1	0/1
Cadmium	Qbt 2	194	92	0.0108 to 0.6	1.63	0/194	0/194
Cadmium	Qbt 3	1	0	[0.11 to 0.11]	1.63	0/1	0/1
Calcium	Qbt 2	194	194	173 to 41000	2200	29/194	0/194
Calcium	Qbt 3	1	1	1600 to 1600	2200	0/1	0/1
Chromium	Qbt 2	194	194	0.21 to 36.4	7.14	27/19	0/194
Chromium	Qbt 3	1	1	2.8 to 2.8	7.14	0/1	0/1
Hexavalent chromium	Qbt 2	26	6	[0.041 to 2.3]	na[b]	6/24	na

Table D-5.1-2 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (mg/kg)	Background Value (mg/kg)	Frequency of Detects above Background Value	Frequency of Nondetects above Background Value
Cobalt	Qbt 2	194	194	0.031 to 4.6	3.14	1/194	0/194
Cobalt	Qbt 3	1	1	0.4 to 0.4	3.14	0/1	0/1
Copper	Qbt 2	194	187	[0.08] to 9.22	4.66	4/194	0/194
Copper	Qbt 3	1	1	1.7 to 1.7	4.66	0/1	0/1
Iron	Qbt 2	194	194	295 to 11000	14500	0/194	0/194
Iron	Qbt 3	1	1	4900 to 4900	14500	0/1	0/1
Lead	Qbt 2	194	194	1.27 to 41	11.2	12/194	0/194
Lead	Qbt 3	1	1	7.5 to 7.5	11.2	0/1	0/1
Magnesium	Qbt 2	194	187	17.4 to 3110	1690	5/194	0/194
Magnesium	Qbt 3	1	1	620 to 620	1690	0/1	0/1
Manganese	Qbt 2	194	194	32 to 460	482	0/194	0/194
Manganese	Qbt 3	1	1	190 to 190	482	0/1	0/1
Mercury	Qbt 2	194	55	0.00265 to 0.302	0.1	1/194	28/194
Mercury	Qbt 3	1	0	[0.11 to 0.11]	0.1	0/1	1/1
Nickel	Qbt 2	194	162	0.21 to 18.6	6.58	12/194	0/194
Nickel	Qbt 3	1	1	2.3 to 2.3	6.58	0/1	0/1
Potassium	Qbt 2	194	177	73.60001 to 2000	3500	0/194	0/194
Potassium	Qbt 3	1	1	430 to 430	3500	0/1	0/1
Selenium	Qbt 2	187	68	[0.07 to 1.1]	0.3	52/187	74/187
Selenium	Qbt 3	1	0	[1.1 to 1.1]	0.3	0/1	1/1
Silver	Qbt 2	194	27	[0.016] to 1.1	1	1/194	0/194
Silver	Qbt 3	1	0	[0.54 to 0.54]	1	0/1	0/1
Sodium	Qbt 2	194	194	27.7 to 1200	2770	0/194	0/194
Sodium	Qbt 3	1	1	110 to 110	2770	0/1	0/1
Thallium	Qbt 2	194	52	[0.02 to 1.5]	1.1	0/194	1/194
Thallium	Qbt 3	1	1	0.09 to 0.09	1.1	0/1	0/1
Vanadium	Qbt 2	194	194	0.48 to 17	17	0/194	0/194
Vanadium	Qbt 3	1	1	4.9 to 4.9	17	0/1	0/1
Zinc	Qbt 2	194	194	6.47 to 84	63.5	3/194	0/194
Zinc	Qbt 3	1	1	30 to 30	63.5	0/1	0/1

[a] Values in square brackets indicate detection limits for nondetects.

[b] na = Not available.

Table D-5.1-3
Results of Statistical Tests for Inorganic Chemicals
above the BV in at Least One Sample in SWMU 53-002(a)-99 Mesa-Top Tuff Samples

Analyte	Gehan p-value	Quantile p-value	Slippage p-value	No. of Site Data	No. of Bkgd Data	Max Detect Site Data (mg/kg)	Max Detect Bkgd Data (mg/kg)
Aluminum	1	1	0.324	195	63	12000	8370
Antimony	n/a*	n/a	<0.001	151	64	0.239	0.4
Arsenic	<0.001	0.023	1	195	64	3.6	5
Barium	1	0.964	0.018	195	63	130	51.6
Beryllium	1	1	1	195	64	1.3	1.8
Calcium	0.005	0.055	<0.001	195	64	41000	2230
Chromium	<0.001	0.003	0.076	197	64	36.4	13
Cobalt	1	1	0.947	195	11	4.6	3.14
Copper	0.140	0.950	0.753	195	64	9.22	6.2
Lead	0.572	0.774	0.137	195	63	41	15.5
Magnesium	0.988	0.977	0.753	195	64	3110	2820
Nickel	0.029	0.514	0.057	195	63	18.6	7
Silver	n/a	n/a	1	195	64	1.1	1.9
Thallium	n/a	n/a	1	195	64	0.86	1.7
Zinc	1	1	0.425	195	64	84	65.6

*n/a = Not applicable.

Table D-5.1-4
Detected Concentrations above BVs for
Inorganic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Calcium	Chromium	Hexavalent Chromium	Nickel	Selenium
Qbt 2,3,4 Background Value				**2.79**	**46**	**2200**	**7.14**	**na[a]**	**6.58**	**0.3**
0253-95-0132	53-01010	1.50–2.50	Qbt 2	—[b]	—	—	7.37	—	—	—
0253-95-0142	53-01013	1.50–2.50	Qbt 2	—	70.7	—	—	—	—	0.412 (J)
0253-95-0190	53-01022	1.50–2.50	Qbt 2	—	—	3000	—	—	—	—
0253-95-0193	53-01023	1.50–2.50	Qbt 2	—	59.8	29600	—	—	—	—
0253-95-0205	53-01025	1.50–2.50	Qbt 2	—	—	7750	—	—	—	—
0253-95-0208	53-01026	1.50–2.50	Qbt 2	—	95.7	26000	—	—	—	—
0253-95-0211	53-01027	1.50–2.50	Qbt 2	—	—	10500	—	—	—	—
0253-95-0214	53-01028	1.50–2.50	Qbt 2	—	—	3360	—	—	—	—
0253-95-0217	53-01029	1.50–2.50	Qbt 2	—	55.8	5290	—	—	—	—
0253-95-0227	53-01032	1.50–3.00	Qbt 2	—	—	12100	—	—	—	—
0253-95-0242	53-01322	1.00–2.67	Qbt 2	—	—	3580	—	—	—	—
0253-95-0243	53-01323	2.50–3.67	Qbt 2	—	—	2580	—	—	—	—
RE53-99-0115	53-01573	4.00–5.00	Qbt 2	—	—	—	18.5	—	9.3	—
RE53-99-0117	53-01575	4.00–5.00	Qbt 2	—	—	2790	—	—	—	0.79 (J)
RE53-99-0118	53-01575	14.00–15.00	Qbt 2	—	—	17900	—	—	—	—
RE53-99-0119	53-01576	4.00–5.00	Qbt 2	—	—	—	15.7	—	8.2 (J)	—
RE53-99-0120	53-01576	14.00–15.00	Qbt 2	—	—	—	21.2	—	11.1	—
RE53-99-0121	53-01577	4.00–5.00	Qbt 2	—	—	—	7.7	—	—	—
RE53-99-0122	53-01577	14.00–15.00	Qbt 2	—	—	—	36.4	—	18.6	—
RE53-99-0126	53-01582	14.00–15.00	Qbt 2	—	—	—	7.9	—	—	—
RE53-99-0132	53-01586	4.00–5.00	Qbt 2	—	47.2	—	—	—	—	—
RE53-99-0133	53-01586	14.00–15.00	Qbt 2	—	—	—	9.3	—	—	—
RE53-99-0134	53-01588	4.00–5.00	Qbt 2	—	—	7300	—	—	—	—
RE53-99-0135	53-01588	14.00–15.00	Qbt 2	—	—	—	15	—	7.3	—
RE53-99-0128	53-01589	4.00–5.00	Qbt 2	—	—	2490	—	—	—	—
RE53-99-0107	53-01591	1.00–2.00	Qbt 2	—	—	—	—	0.06	—	—
RE53-99-0140	53-01592	4.00–5.00	Qbt 2	—	92	41000	—	—	—	—
RE53-99-0141	53-01592	14.00–15.00	Qbt 2	—	—	—	11	—	—	—
RE53-99-0138	53-01593	4.00–5.00	Qbt 2	—	58	4000	—	—	—	—
RE53-99-0148	53-01595	4.00–5.00	Qbt 2	3.6	94	3700	8.2	—	6.9	0.5 (J-)
RE53-99-0149	53-01595	14.00–15.00	Qbt 2	—	—	—	24	—	13	—
RE53-99-0146	53-01596	4.00–5.00	Qbt 2	3	58	2400	8.6	—	8.1	0.37 (J-)
RE53-99-0147	53-01596	14.00–15.00	Qbt 2	—	—	—	17	—	9.6	—

Table D-5.1-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Calcium	Chromium	Hexavalent Chromium	Nickel	Selenium
Qbt 2,3,4 Background Value				**2.79**	**46**	**2200**	**7.14**	**na[a]**	**6.58**	**0.3**
RE53-99-0144	53-01597	4.00–5.00	Qbt 2	—	53	—	—	—	—	—
RE53-99-0145	53-01597	14.00–15.00	Qbt 2	—	—	—	23	—	12	—
RE53-99-0142	53-01598	4.00–5.00	Qbt 2	—	57	3600	—	—	—	—
RE53-99-0143	53-01598	14.00–15.00	Qbt 2	2.9	—	—	17	—	9	—
RE53-99-0171	53-01650	0.00–0.42	Qbt 2	—	51.4	—	—	—	—	—
RE53-99-0230	53-01654	7.00–8.00	Qbt 2	—	—	2600	—	—	—	—
RE53-99-0285	53-01661	24.00–25.00	Qbt 2	—	—	—	9.9	—	—	—
RE53-99-0291	53-01662	24.00–25.00	Qbt 2	—	—	—	13	—	—	—
RE53-99-0254	53-01682	4.00–5.00	Qbt 2	—	58	21000	—	—	—	—
RE53-99-0257	53-01683	4.00–5.00	Qbt 2	—	—	5300	12	—	—	—
RE53-99-0279	53-01689	29.00–30.00	Qbt 2	—	—	—	7.8	—	—	—
RE53-99-0227	53-01690	4.50–6.00	Qbt 2	—	—	2480	—	—	—	—
RE53-99-0310	53-01695	1.00–2.00	Qbt 2	3.4	110	6400	8.8	—	—	0.79 (J-)
RE53-99-0318	53-01698	14.00–15.00	Qbt 2	3.4	130	—	9.1	—	7	—
RE53-99-0307	53-01701	1.00–2.00	Qbt 2	—	—	4200	—	—	—	—
RE53-02-46597	53-02-20824	30.00–31.80	Qbt 2	—	—	—	—	—	—	0.35
RE53-02-46599	53-02-20824	50.00–51.70	Qbt 2	—	—	—	—	—	—	0.36
RE53-02-46706	53-02-20828	29.00–30.00	Qbt 2	—	—	—	—	—	—	0.72
RE53-02-46707	53-02-20828	48.50–50.00	Qbt 2	—	—	—	—	—	—	0.5
RE53-02-46710	53-02-20829	24.00–25.00	Qbt 2	—	—	—	—	—	—	0.55
RE53-02-46718	53-02-20829	36.70–37.50	Qbt 2	—	—	—	—	—	—	0.52
RE53-02-46711	53-02-20829	49.20–50.00	Qbt 2	—	—	—	—	—	—	0.49
RE53-02-46714	53-02-20830	28.90–30.00	Qbt 2	—	—	—	—	—	—	0.36 (J-)
RE53-02-46715	53-02-20830	49.00–50.00	Qbt 2	—	—	—	—	—	—	0.31 (J-)
RE53-00-0041	53-01716	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.522
RE53-00-0042	53-01716	4.00–5.00	Qbt 2	—	—	8400	—	—	—	0.635
RE53-00-0043	53-01716	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.699
RE53-00-0091	53-01717	4.00–5.00	Qbt 2	—	—	—	7.7	—	—	0.6
RE53-00-0092	53-01717	14.00–15.00	Qbt 2	—	—	—	7.6	—	—	0.534
RE53-00-0093	53-01718	1.00–2.00	Qbt 2	—	—	—	—	0.57	—	0.396
RE53-00-0094	53-01718	4.00–5.00	Qbt 2	—	—	—	7.5	0.6	—	0.595
RE53-00-0095	53-01718	14.00–15.00	Qbt 2	—	—	—	—	0.62	—	0.785
RE53-00-0047	53-01719	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.511
RE53-00-0048	53-01719	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.574
RE53-00-0049	53-01719	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.526

Table D-5.1-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Arsenic	Barium	Calcium	Chromium	Hexavalent Chromium	Nickel	Selenium
Qbt 2,3,4 Background Value				**2.79**	**46**	**2200**	**7.14**	**na[a]**	**6.58**	**0.3**
RE53-00-0051	53-01720	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.325
RE53-00-0052	53-01720	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.566
RE53-00-0053	53-01720	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.448
RE53-00-0055	53-01721	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.424
RE53-00-0056	53-01721	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.402
RE53-00-0057	53-01721	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.478
RE53-00-0059	53-01722	1.00–2.00	Qbt 2	—	52	—	—	—	—	0.433
RE53-00-0060	53-01722	4.00–5.00	Qbt 2	—	—	—	7.4	—	—	0.374
RE53-00-0061	53-01722	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.42
RE53-00-0063	53-01723	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.49
RE53-00-0064	53-01723	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.349
RE53-00-0065	53-01723	14.00–15.00	Qbt 2	—	—	—	7.8	—	—	0.529
RE53-00-0067	53-01724	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.382
RE53-00-0068	53-01724	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.494
RE53-00-0069	53-01724	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.585
RE53-00-0071	53-01725	1.00–2.00	Qbt 2	—	—	3900	—	—	—	—
RE53-00-0072	53-01725	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.381
RE53-00-0073	53-01725	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.514
RE53-00-0075	53-01726	1.00–2.00	Qbt 2	—	—	3700	—	—	—	—
RE53-00-0076	53-01726	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.406
RE53-00-0077	53-01726	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.506
RE53-00-0080	53-01727	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.577
RE53-00-0081	53-01727	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.53
RE53-00-0083	53-01728	1.00–2.00	Qbt 2	—	—	—	—	—	—	0.307
RE53-00-0084	53-01728	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.481
RE53-00-0085	53-01728	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.497
RE53-00-0087	53-01729	1.00–2.00	Qbt 2	—	—	2800	—	—	—	0.4
RE53-00-0088	53-01729	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.604
RE53-00-0089	53-01729	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.701
RE53-00-0091	53-01717	4.00–5.00	Qbt 2	—	—	—	—	0.75	—	—
RE53-00-0092	53-01717	14.00–15.00	Qbt 2	—	—	—	—	1	—	—

[a] na = Not available.

[b] — = Result was not above the BV/FV.

Table D-5.2-1
Samples Collected for Radionuclide Analyses in Mesa-Top Tuff at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
0253-95-0103	53-01001	1.5–2.5	Qbt 2	76116	76138	76119	76120	76128
0253-95-0106	53-01002	1.5–2.5	Qbt 2	76676	76643	76640	76676	76677
0253-95-0110	53-01003	1.5–2.5	Qbt 2	76676	76643	76640	76676	76677
0253-95-0113	53-01004	1.5–2.5	Qbt 2	76676	76643	76640	76676	76677
0253-95-0116	53-01005	1.5–2.42	Qbt 2	76676	76643	76640	76676	76677
0253-95-0119	53-01006	1.5–2.5	Qbt 2	76676	76643	76640	76676	76677
0253-95-0122	53-01007	1.5–2.5	Qbt 2	76676	76643	76640	76676	76677
0253-95-0126	53-01008	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0129	53-01009	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0132	53-01010	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0135	53-01011	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0138	53-01012	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0142	53-01013	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0145	53-01014	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0148	53-01015	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0151	53-01016	1.5–2.5	Qbt 2	76778	76782	76795	76798	76807
0253-95-0154	53-01017	1.5–2.5	Qbt 2	76779	76783	76796	76799	76808
0253-95-0177	53-01018	3.5–4.83	Qbt 2	76780	76856	76797	76800	76850
0253-95-0181	53-01019	2.17–3	Qbt 2	76780	76856	76797	76800	76850
0253-95-0187	53-01021	1.58–2.5	Qbt 2	76780	76856	76797	76800	76850
0253-95-0190	53-01022	1.5–2.5	Qbt 2	77137	77177	77254	77256	77138
0253-95-0193	53-01023	1.5–2.5	Qbt 2	77137	77177	77254	77256	77138
0253-95-0205	53-01025	1.5–2.5	Qbt 2	77137	77177	77254	77256	77138
0253-95-0208	53-01026	1.5–2.5	Qbt 2	77137	77177	77254	77256	77138
0253-95-0211	53-01027	1.5–2.5	Qbt 2	77248	77237	77250	77249	77258
0253-95-0214	53-01028	1.5–2.5	Qbt 2	77248	77237	77250	77249	77258
0253-95-0217	53-01029	1.5–2.5	Qbt 2	77248	77237	77250	77249	77258
0253-95-0220	53-01030	1.5–2.5	Qbt 2	77248	77237	77250	77249	77258
0253-95-0223	53-01031	1.5–2.5	Qbt 2	77248	77237	77250	77249	77258
0253-95-0227	53-01032	1.5–3	Qbt 2	77248	77237	77250	77249	77258
0253-95-0155	53-01288	1.5–2.5	Qbt 2	76779	76783	76796	76799	76808
0253-95-0156	53-01289	1–1.67	Qbt 2	76779	76783	76796	76799	76808
0253-95-0157	53-01290	0.67–1.5	Qbt 2	76779	76783	76796	76799	76808
0253-95-0158	53-01291	1.5–2.17	Qbt 2	76779	76783	76796	76799	76808
0253-95-0159	53-01292	1.5–2.5	Qbt 2	76779	76783	76796	76799	76808

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
0253-95-0160	53-01293	1.5–2.17	Qbt 2	76779	76783	76796	76799	76808
0253-95-0161	53-01294	1.5–2.5	Qbt 2	76779	76783	76796	76799	76808
0253-95-0162	53-01295	1.5–2.5	Qbt 2	76780	76783	76797	76800	76808
0253-95-0234	53-01316	2–3.67	Qbt 2	76780	76785	76797	76800	76808
0253-95-0236	53-01317	0.67–2	Qbt 2	76780	76785	76797	76800	76808
0253-95-0237	53-01318	1.17–2.5	Qbt 2	76780	76785	76797	76800	76808
0253-95-0238	53-01319	1.5–2.33	Qbt 2	76780	76785	76797	76800	76808
0253-95-0239	53-01320	1–2.33	Qbt 2	76780	76785	76797	76800	76808
0253-95-0241	53-01321	1.5–2.67	Qbt 2	76780	76785	76797	76800	76808
0253-95-0242	53-01322	1–2.67	Qbt 2	76780	76785	76797	76800	76808
0253-95-0243	53-01323	2.5–3.67	Qbt 2	76780	76785	76797	76800	76808
RE53-99-0115	53-01573	4–5	Qbt 2	5635R	5635R	5635R	5635R	5635R
RE53-99-0116	53-01573	14–15	Qbt 2	5635R	5635R	5635R	5635R	5635R
RE53-99-0117	53-01575	4–5	Qbt 2	5642R	5642R	5642R	5642R	5642R
RE53-99-0118	53-01575	14–15	Qbt 2	5642R	5642R	5642R	5642R	5642R
RE53-99-0119	53-01576	4–5	Qbt 2	5686R	5686R	5686R	5686R	5686R
RE53-99-0120	53-01576	14–15	Qbt 2	5686R	5686R	5686R	5686R	5686R
RE53-99-0121	53-01577	4–5	Qbt 2	5686R	5686R	5686R	5686R	5686R
RE53-99-0122	53-01577	14–15	Qbt 2	5686R	5686R	5686R	5686R	5686R
RE53-99-0125	53-01582	4–5	Qbt 2	5697R	5697R	5697R	5697R	5697R
RE53-99-0126	53-01582	14–15	Qbt 2	5697R	5697R	5697R	5697R	5697R
RE53-99-0123	53-01584	4–5	Qbt 2	5697R	5697R	5697R	5697R	5697R
RE53-99-0124	53-01584	14–15	Qbt 2	5697R	5697R	5697R	5697R	5697R
RE53-99-0132	53-01586	4–5	Qbt 2	5706R	5706R	5706R	5706R	5706R
RE53-99-0133	53-01586	14–15	Qbt 2	5706R	5706R	5706R	5706R	5706R
RE53-99-0130	53-01587	4–5	Qbt 2	5704R	5704R	5704R	5704R	5704R
RE53-99-0131	53-01587	14–15	Qbt 2	5704R	5704R	5704R	5704R	5704R
RE53-99-0134	53-01588	4–5	Qbt 2	5797R	5797R	5797R	5797R	5797R
RE53-99-0135	53-01588	14–15	Qbt 2	5797R	5797R	5797R	5797R	5797R
RE53-99-0128	53-01589	4–5	Qbt 2	5704R	5704R	5704R	5704R	5704R
RE53-99-0129	53-01589	14–15	Qbt 2	5704R	5704R	5704R	5704R	5704R
RE53-99-0140	53-01592	4–5	Qbt 2	5797R	5797R	5797R	5797R	5797R
RE53-99-0141	53-01592	14–15	Qbt 2	5797R	5797R	5797R	5797R	5797R
RE53-99-0138	53-01593	4–5	Qbt 2	5797R	5797R	5797R	5797R	5797R
RE53-99-0139	53-01593	14–15	Qbt 2	5797R	5797R	5797R	5797R	5797R
RE53-99-0136	53-01594	4–5	Qbt 2	5792R	5792R	5792R	5792R	5792R

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-99-0137	53-01594	14–15	Qbt 2	5792R	5792R	5792R	5792R	5792R
RE53-99-0148	53-01595	4–5	Qbt 2	5828R	5828R	5828R	5828R	5828R
RE53-99-0149	53-01595	14–15	Qbt 2	5828R	5828R	5828R	5828R	5828R
RE53-99-0146	53-01596	4–5	Qbt 2	5828R	5828R	5828R	5828R	5828R
RE53-99-0147	53-01596	14–15	Qbt 2	5828R	5828R	5828R	5828R	5828R
RE53-99-0144	53-01597	4–5	Qbt 2	5820R	5820R	5820R	5820R	5820R
RE53-99-0145	53-01597	14–15	Qbt 2	5820R	5820R	5820R	5820R	5820R
RE53-99-0142	53-01598	4–5	Qbt 2	5820R	5820R	5820R	5820R	5820R
RE53-99-0143	53-01598	14–15	Qbt 2	5820R	5820R	5820R	5820R	5820R
RE53-99-0171	53-01650	0–0.42	Qbt 2	5624R	5624R	5624R	5624R	5624R
RE53-99-0230	53-01654	7–8	Qbt 2	5991R	5991R	5991R	5991R	5991R
RE53-99-0231	53-01654	12–13	Qbt 2	5991R	5991R	5991R	5991R	5991R
RE53-99-0232	53-01654	19–20	Qbt 2	5991R	5991R	5991R	5991R	5991R
RE53-99-0237	53-01656	13–14	Qbt 2	5991R	5991R	5991R	5991R	5991R
RE53-99-0238	53-01656	24–25	Qbt 2	5991R	5991R	5991R	5991R	5991R
RE53-99-0239	53-01657	9–10	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0240	53-01657	13–14	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0241	53-01657	24–25	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0242	53-01658	9–10	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0243	53-01658	13–14	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0244	53-01658	24–25	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0280	53-01659	9–10	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0281	53-01659	13–14	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0282	53-01659	24–25	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0286	53-01660	9–10	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0287	53-01660	13–14	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0288	53-01660	24–25	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0283	53-01661	9–10	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0284	53-01661	13–14	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0285	53-01661	24–25	Qbt 2	5999R	5999R	5999R	5999R	5999R
RE53-99-0289	53-01662	9–10	Qbt 2	6002R	6002R	6002R	6002R	6002R
RE53-99-0290	53-01662	13–14	Qbt 2	6002R	6002R	6002R	6002R	6002R
RE53-99-0291	53-01662	24–25	Qbt 2	6002R	6002R	6002R	6002R	6002R
RE53-99-0294	53-01663	24–25	Qbt 2	6002R	6002R	6002R	6002R	6002R
RE53-99-0248	53-01664	4–5	Qbt 2	5951R	5951R	5951R	5951R	5951R
RE53-99-0249	53-01664	14–15	Qbt 2	5951R	5951R	5951R	5951R	5951R

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-99-0251	53-01681	4–5	Qbt 2	5951R	5951R	5951R	5951R	5951R
RE53-99-0252	53-01681	14–15	Qbt 2	5951R	5951R	5951R	5951R	5951R
RE53-99-0254	53-01682	4–5	Qbt 2	5965R	5965R	5965R	5965R	5965R
RE53-99-0255	53-01682	14–15	Qbt 2	5965R	5965R	5965R	5965R	5965R
RE53-99-0257	53-01683	4–5	Qbt 2	5965R	5965R	5965R	5965R	5965R
RE53-99-0258	53-01683	14–15	Qbt 2	5965R	5965R	5965R	5965R	5965R
RE53-99-0260	53-01684	4–5	Qbt 2	5965R	5965R	5965R	5965R	5965R
RE53-99-0261	53-01684	14–15	Qbt 2	5965R	5965R	5965R	5965R	5965R
RE53-99-0264	53-01685	14–15	Qbt 2	5969R	5969R	5969R	5969R	5969R
RE53-99-0266	53-01686	4–5	Qbt 2	5976R	5976R	5976R	5976R	5976R
RE53-99-0267	53-01686	14–15	Qbt 2	5976R	5976R	5976R	5976R	5976R
RE53-99-0269	53-01687	4–5	Qbt 2	5976R	5976R	5976R	5976R	5976R
RE53-99-0270	53-01687	14–15	Qbt 2	5976R	5976R	5976R	5976R	5976R
RE53-99-0272	53-01688	4–5	Qbt 2	5984R	5984R	5984R	5984R	5984R
RE53-99-0273	53-01688	14–15	Qbt 2	5984R	5984R	5984R	5984R	5984R
RE53-99-0277	53-01689	16–17	Qbt 2	5984R	5984R	5984R	5984R	5984R
RE53-99-0278	53-01689	19–20	Qbt 2	5984R	5984R	5984R	5984R	5984R
RE53-99-0279	53-01689	29–30	Qbt 2	5984R	5984R	5984R	5984R	5984R
RE53-99-0227	53-01690	4.5–6	Qbt 2	5987R	5987R	5987R	5987R	5987R
RE53-99-0228	53-01690	6–7.5	Qbt 2	5987R	5987R	5987R	5987R	5987R
RE53-99-0229	53-01690	7.5–9	Qbt 2	5987R	5987R	5987R	5987R	5987R
RE53-99-0295	53-01691	9–10	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0298	53-01691	9–10	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0296	53-01691	13–14	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0297	53-01691	24–25	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0300	53-01692	24–25	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0303	53-01693	24–25	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0306	53-01694	24–25	Qbt 2	6012R	6012R	6012R	6012R	6012R
RE53-99-0310	53-01695	1–2	Qbt 2	6015R	6015R	6015R	6015R	6015R
RE53-99-0311	53-01695	4–5	Qbt 2	6015R	6015R	6015R	6015R	6015R
RE53-99-0312	53-01695	14–15	Qbt 2	6015R	6015R	6015R	6015R	6015R
RE53-99-0315	53-01696	14–15	Qbt 2	6024R	6024R	6024R	6024R	6024R
RE53-99-0321	53-01697	14–15	Qbt 2	6024R	6024R	6024R	6024R	6024R
RE53-99-0318	53-01698	14–15	Qbt 2	6024R	6024R	6024R	6024R	6024R
RE53-99-0307	53-01701	1–2	Qbt 2	6015R	6015R	6015R	6015R	6015R
RE53-99-0308	53-01701	4–5	Qbt 2	6015R	6015R	6015R	6015R	6015R

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-99-0309	53-01701	14–15	Qbt 2	6015R	6015R	6015R	6015R	6015R
RE53-02-45550	53-02-19679	1–1.5	Qbt 3	1324S	—*	—	—	—
RE53-02-45551	53-02-19680	1.3–1.8	Qbt 3	1324S	—	—	—	—
RE53-02-45552	53-02-19681	0.8–1.25	Qbt 3	1324S	—	—	—	—
RE53-02-46593	53-02-20824	10.4–10.7	Qbt 2	—	1017S	—	—	—
RE53-02-46594	53-02-20824	20–20.5	Qbt 2	—	1017S	—	—	—
RE53-02-46597	53-02-20824	30–31.8	Qbt 2	1017S	1017S	—	—	1017S
RE53-02-46598	53-02-20824	40–40.5	Qbt 2	—	1017S	—	—	—
RE53-02-46599	53-02-20824	50–51.7	Qbt 2	1027S	1027S	—	—	1027S
RE53-02-46600	53-02-20824	60–60.5	Qbt 2	—	1027S	—	—	—
RE53-02-46601	53-02-20824	70–71.1	Qbt 2	—	1027S	—	—	—
RE53-02-46602	53-02-20824	80–80.7	Qbt 2	—	1027S	—	—	—
RE53-02-46603	53-02-20824	90–91.2	Qbt 2	—	1027S	—	—	—
RE53-02-46604	53-02-20824	100–101.2	Qbt 2	1027S	1027S	—	—	1027S
RE53-02-46605	53-02-20824	110–111.3	Qbt 1v	—	1027S	—	—	—
RE53-02-46606	53-02-20824	120–120.6	Qbt 1v	—	1027S	—	—	—
RE53-02-46607	53-02-20824	130–131.4	Qbt 1v	—	1039S	—	—	—
RE53-02-46608	53-02-20824	140–140.5	Qbt 1v	—	1039S	—	—	—
RE53-02-46609	53-02-20824	150–151.3	Qbt 1g	—	1039S	—	—	—
RE53-02-46610	53-02-20824	160–160.5	Qbt 1g	—	1039S	—	—	—
RE53-02-46611	53-02-20824	170–171.3	Qbt 1g	—	1070S	—	—	—
RE53-02-46612	53-02-20824	180–180.6	Qbt 1g	—	1070S	—	—	—
RE53-02-46613	53-02-20824	190–191.2	Qbt 1g	—	1070S	—	—	—
RE53-02-46614	53-02-20824	200–200.5	Qbt 1g	—	1070S	—	—	—
RE53-02-46615	53-02-20824	210–211.1	Qbt 1g	—	1070S	—	—	—
RE53-02-46616	53-02-20824	219.5–220	Qbt 1g	—	1070S	—	—	—
RE53-02-46617	53-02-20824	229–230	Qbt 1g	—	1070S	—	—	—
RE53-02-46618	53-02-20824	239.5–240	Qbt 1g	—	1070S	—	—	—
RE53-02-46619	53-02-20824	243.8–245	Qbtt	—	1070S	—	—	—
RE53-02-46620	53-02-20824	254.5–255	Qct	—	1070S	—	—	—
RE53-02-46621	53-02-20824	264–265	Qct	—	1089S	—	—	—
RE53-02-46622	53-02-20824	274.5–275	Qct	—	1089S	—	—	—
RE53-02-46623	53-02-20824	283.8–285	Qbo	—	1089S	—	—	—
RE53-02-46624	53-02-20824	298.3–299	Qbo	—	1089S	—	—	—
RE53-02-46627	53-02-20825	9.4–10	Qbt 3	—	1130S	—	—	—
RE53-02-46628	53-02-20825	19.5–20	Qbt 2	—	1130S	—	—	—

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-02-46629	53-02-20825	29.1–30	Qbt 2	1130S	1130S	—	—	1130S
RE53-02-46630	53-02-20825	38–38.5	Qbt 2	—	1130S	—	—	—
RE53-02-46631	53-02-20825	48.9–50	Qbt 2	1130S	1130S	—	—	1130S
RE53-02-46632	53-02-20825	59.5–60	Qbt 2	—	1130S	—	—	—
RE53-02-46633	53-02-20825	69.5–70	Qbt 2	—	1130S	—	—	—
RE53-02-46634	53-02-20825	79.5–80	Qbt 2	—	1130S	—	—	—
RE53-02-46635	53-02-20825	89.5–90	Qbt 2	—	1130S	—	—	—
RE53-02-46636	53-02-20825	99.2–100	Qbt 2	1134S	1134S	—	—	1134S
RE53-02-46637	53-02-20825	109.5–110	Qbt 1v	—	1134S	—	—	—
RE53-02-46638	53-02-20825	117.5–118.2	Qbt 1v	—	1134S	—	—	—
RE53-02-46639	53-02-20825	129.5–130	Qbt 1v	—	1134S	—	—	—
RE53-02-46640	53-02-20825	139.5–140	Qbt 1v	—	1134S	—	—	—
RE53-02-46641	53-02-20825	149.5–150	Qbt 1v	—	1134S	—	—	—
RE53-02-46642	53-02-20825	159.5–160	Qbt 1g	—	1134S	—	—	—
RE53-02-46643	53-02-20825	169.5–170	Qbt 1g	—	1134S	—	—	—
RE53-02-46644	53-02-20825	179.5–180	Qbt 1g	—	1135S	—	—	—
RE53-02-46645	53-02-20825	189.5–190	Qbt 1g	—	1135S	—	—	—
RE53-02-46646	53-02-20825	199.5–200	Qbt 1g	—	1135S	—	—	—
RE53-02-46649	53-02-20826	9.5–10	Qbt 2	—	1104S	—	—	—
RE53-02-46650	53-02-20826	19.5–20	Qbt 2	—	1104S	—	—	—
RE53-02-46651	53-02-20826	29–30	Qbt 2	1104S	1104S	—	—	1104S
RE53-02-46652	53-02-20826	39.5–40	Qbt 2	—	1104S	—	—	—
RE53-02-46653	53-02-20826	48.6–50	Qbt 2	1113S	1113S	—	—	1113S
RE53-02-46654	53-02-20826	59.5–60	Qbt 2	—	1113S	—	—	—
RE53-02-46655	53-02-20826	69.5–70	Qbt 2	—	1113S	—	—	—
RE53-02-46656	53-02-20826	79.4–80	Qbt 2	—	1113S	—	—	—
RE53-02-46657	53-02-20826	89.5–90	Qbt 2	—	1113S	—	—	—
RE53-02-46658	53-02-20826	99.2–100	Qbt 2	1113S	1113S	—	—	1113S
RE53-02-46659	53-02-20826	109.5–110	Qbt 1v	—	1113S	—	—	—
RE53-02-46660	53-02-20826	119.5–120	Qbt 1v	—	1113S	—	—	—
RE53-02-46661	53-02-20826	129.5–130	Qbt 1v	—	1113S	—	—	—
RE53-02-46662	53-02-20826	139.5–140	Qbt 1v	—	1113S	—	—	—
RE53-02-46663	53-02-20826	149.5–150	Qbt 1v	—	1113S	—	—	—
RE53-02-46664	53-02-20826	159.5–160	Qbt 1g	—	1113S	—	—	—
RE53-02-46665	53-02-20826	169.5–170	Qbt 1g	—	1113S	—	—	—
RE53-02-46666	53-02-20826	179.5–180	Qbt 1g	—	1113S	—	—	—

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-02-46667	53-02-20826	189.5–190	Qbt 1g	—	1113S	—	—	—
RE53-02-46668	53-02-20826	199.5–200	Qbt 1g	—	1113S	—	—	—
RE53-02-46671	53-02-20827	9.5–10	Qbt 2	—	1099S	—	—	—
RE53-02-46672	53-02-20827	19.5–20	Qbt 2	—	1099S	—	—	—
RE53-02-46673	53-02-20827	29–30	Qbt 2	1099S	1099S	—	—	1099S
RE53-02-46674	53-02-20827	39.5–40	Qbt 2	—	1099S	—	—	—
RE53-02-46675	53-02-20827	49–50	Qbt 2	1099S	1099S	—	—	1099S
RE53-02-46676	53-02-20827	59.5–60	Qbt 2	—	1099S	—	—	—
RE53-02-46697	53-02-20827	64–65	Qbt 2	1099S	1099S	—	—	1099S
RE53-02-46677	53-02-20827	69.4–70	Qbt 2	—	1099S	—	—	—
RE53-02-46678	53-02-20827	79.5–80	Qbt 2	—	1099S	—	—	—
RE53-02-46679	53-02-20827	89.5–90	Qbt 2	—	1099S	—	—	—
RE53-02-46680	53-02-20827	98.4–100	Qbt 2	1099S	1099S	—	—	1099S
RE53-02-46698	53-02-20827	101.6–102.5	Qbt 1v	—	1099S	—	—	—
RE53-02-46681	53-02-20827	109.5–110	Qbt 1v	—	1099S	—	—	—
RE53-02-46682	53-02-20827	119.5–120	Qbt 1v	—	1099S	—	—	—
RE53-02-46683	53-02-20827	129.5–130	Qbt 1v	—	1099S	—	—	—
RE53-02-46684	53-02-20827	139.5–140	Qbt 1v	—	1099S	—	—	—
RE53-02-46685	53-02-20827	149.5–150	Qbt 1v	—	1101S	—	—	—
RE53-02-46686	53-02-20827	159.5–160	Qbt 1g	—	1101S	—	—	—
RE53-02-46687	53-02-20827	169.5–170	Qbt 1g	—	1101S	—	—	—
RE53-02-46688	53-02-20827	179.5–180	Qbt 1g	—	1101S	—	—	—
RE53-02-46689	53-02-20827	189.5–190	Qbt 1g	—	1101S	—	—	—
RE53-02-46690	53-02-20827	199.5–200	Qbt 1g	—	1101S	—	—	—
RE53-02-46705	53-02-20828	0–0.5	Qbt 3	1128S	—	—	—	—
RE53-02-46706	53-02-20828	29–30	Qbt 2	1128S	1128S	—	—	1128S
RE53-02-46707	53-02-20828	48.5–50	Qbt 2	1128S	1128S	—	—	1128S
RE53-02-46710	53-02-20829	24–25	Qbt 2	1128S	1128S	—	—	1128S
RE53-02-46718	53-02-20829	36.7–37.5	Qbt 2	1128S	1128S	—	—	1128S
RE53-02-46711	53-02-20829	49.2–50	Qbt 2	1128S	1128S	—	—	1128S
RE53-02-46713	53-02-20830	0.3–0.8	Qbt 2	1111S	—	—	—	—
RE53-02-46714	53-02-20830	28.9–30	Qbt 2	1111S	1111S	—	—	1111S
RE53-02-46715	53-02-20830	49–50	Qbt 2	1111S	1111S	—	—	1111S
RE53-02-46723	53-02-20831	0–0.5	Qbt 2	—	—	—	—	1141S
RE53-02-46724	53-02-20831	5.1–5.5	Qbt 2	—	—	—	—	1160S
RE53-02-46725	53-02-20832	0–0.5	Qbt 2	—	—	—	—	1141S

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-02-46726	53-02-20832	5.2–5.9	Qbt 2	—	—	—	—	1160S
RE53-02-46731	53-02-20833	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46732	53-02-20834	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46733	53-02-20835	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46734	53-02-20836	0–0.4	Qbt 3	1148S	—	—	—	—
RE53-02-46735	53-02-20837	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46736	53-02-20838	0–0.3	Qbt 2	1148S	—	—	—	—
RE53-02-46737	53-02-20839	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46738	53-02-20840	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46739	53-02-20841	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46740	53-02-20842	0–0.5	Qbt 3	1148S	—	—	—	—
RE53-02-46744	53-02-20846	0–0.5	Qbt 2	1148S	—	—	—	—
RE53-02-46745	53-02-20847	0–0.3	Qbt 2	1148S	—	—	—	—
RE53-02-46588	53-02-21270	46–46.5	Qbt 1g	—	1167S	—	—	—
RE53-02-46589	53-02-21270	114–115	Qbt 1g	—	1167S	—	—	—
RE53-00-0007	53-01709	8–9	Qbt 3	6511R	6505R	6511R	6511R	—
RE53-00-0041	53-01716	1–2	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0042	53-01716	4–5	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0043	53-01716	14–15	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0091	53-01717	4–5	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0092	53-01717	14–15	Qbt 2	7534R	7534R	—	7534R	—
RE53-00-0093	53-01718	1–2	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0094	53-01718	4–5	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0095	53-01718	14–15	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0047	53-01719	1–2	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0048	53-01719	4–5	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0049	53-01719	14–15	Qbt 2	7534R	7534R	7534R	7534R	7534R
RE53-00-0051	53-01720	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0052	53-01720	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0053	53-01720	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0055	53-01721	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0056	53-01721	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0057	53-01721	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0059	53-01722	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0060	53-01722	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0061	53-01722	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R

Table D-5.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-00-0063	53-01723	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0064	53-01723	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0065	53-01723	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0067	53-01724	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0068	53-01724	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0069	53-01724	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0071	53-01725	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0072	53-01725	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0073	53-01725	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0075	53-01726	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0076	53-01726	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0077	53-01726	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0079	53-01727	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0080	53-01727	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0081	53-01727	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0083	53-01728	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0084	53-01728	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0085	53-01728	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0087	53-01729	1–2	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0088	53-01729	4–5	Qbt 2	7601R	7601R	7601R	7601R	7601R
RE53-00-0089	53-01729	14–15	Qbt 2	7601R	7601R	7601R	7601R	7601R

*— = Sample not requested for this analysis.

Table D-5.2-2
Frequency of Detected Concentrations for Radionuclides in Mesa-Top Tuff at SWMU 53-002(a)-99

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (pCi/g)	Background Value (pCi/g)	Frequency of Detects above Background Value
Americium-241	Qbt 2	209	15	[-0.31] to 5.21	na[b]	15/209
Americium-241	Qbt 3	14	0	[-0.26 to 0.1]	na	0/14
Cesium-134	Qbt 2	209	28	[-0.054] to 2.29	na	28/209
Cesium-134	Qbt 3	14	0	[-0.021 to 0.104]	na	0/14
Cesium-137	Qbt 2	209	3	[-0.105] to 0.44	na	3/209
Cesium-137	Qbt 3	14	0	[-0.103 to 0.054]	na	0/14
Cobalt-60	Qbt 2	208	56	[-0.066] to 8.49	na	56/208
Cobalt-60	Qbt 3	14	5	[-0.03] to 2.44	na	5/14
Europium-152	Qbt 2	209	1	[-0.32] to 0.79	na	1/209
Europium-152	Qbt 3	14	0	[-0.14 to 0.42]	na	0/14
Plutonium-238	Qbt 2	184	3	[-0.01] to [0.258]	na	3/184
Plutonium-238	Qbt 3	1	0	[0.012 to 0.012]	na	0/1
Plutonium-239	Qbt 2	184	4	[-0.03] to [0.23]	na	4/184
Plutonium-239	Qbt 3	1	0	[0.005 to 0.005]	na	0/1
Ruthenium-106	Qbt 2	208	0	[-0.48 to 1.18]	na	0/208
Ruthenium-106	Qbt 3	14	0	[-0.62 to 0.42]	na	0/14
Sodium-22	Qbt 2	185	26	[-0.06] to 9.96	na	26/185
Sodium-22	Qbt 3	4	3	[-0.02] to 10.1	na	3/4
Strontium-90	Qbt 2	208	65	[-1.12] to 3.98	na	65/208
Tritium[c]	Qbtt	1	0	[-0.588]	na	0/1
Tritium[c]	Qbt 2	232	152	[-64.415] to 64397	na	152/232
Tritium[c]	Qbt 3	2	1	[1.724] to 11.508	na	1/2
Tritium[c]	Qbo	2	0	[0.237 to 1.825]	na	0/2
Tritium[c]	Qbt 1g	27	0	[-3.059 to 5.094]	na	0/27
Tritium[c]	Qbt 1v	20	5	[-9.5] to 177.419	na	5/20
Tritium[c]	Qct	3	0	[-1.288 to 4.151]	na	0/3
Uranium-234	Qbt 2	185	176	0.754 to 2.7	1.98	14/185
Uranium-234	Qbt 3	1	1	0.7 to 0.7	1.98	0/1
Uranium-235	Qbt 2	209	36	[-0.42] to [0.388]	0.09	4/209
Uranium-235	Qbt 3	14	1	[-0.34] to [0.331]	0.09	0/14
Uranium-238	Qbt 2	181	173	0.762 to 2.82	1.93	14/181
Uranium-238	Qbt 3	1	1	0.73 to 0.73	1.93	0/1

[a] Values in square brackets indicate detection limits for nondetects.

[b] na = Not available.

[c] Units are pCi/mL.

Table D-5.2-3
Detected Concentrations above BVs or
Detected Concentrations (if no BV) for Radionuclides in Mesa-Top Tuff at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
0253-95-0103	53-01001	1.50–2.50	Qbt 2	—[b]	—	0.307	—	2.48	18	—	—	—
0253-95-0106	53-01002	1.50–2.50	Qbt 2	—	—	0.499	—	—	16.8	—	—	—
0253-95-0110	53-01003	1.50–2.50	Qbt 2	—	—	—	—	—	21.8	—	—	—
0253-95-0113	53-01004	1.50–2.50	Qbt 2	—	—	—	—	1.22	22.4	—	—	—
0253-95-0116	53-01005	1.50–2.42	Qbt 2	—	—	1.5	—	—	11.8	—	—	—
0253-95-0119	53-01006	1.50–2.50	Qbt 2	—	—	0.4	—	—	20.4	—	—	—
0253-95-0122	53-01007	1.50–2.50	Qbt 2	—	—	0.33	—	—	21.5	—	—	—
0253-95-0126	53-01008	1.50–2.50	Qbt 2	—	—	0.306	—	—	23.4	—	—	—
0253-95-0129	53-01009	1.50–2.50	Qbt 2	—	—	0.274	—	—	15.9	—	—	—
0253-95-0132	53-01010	1.50–2.50	Qbt 2	—	—	1.26	—	—	12.2	—	—	—
0253-95-0135	53-01011	1.50–2.50	Qbt 2	—	—	0.435	—	—	8.49	—	—	—
0253-95-0138	53-01012	1.50–2.50	Qbt 2	—	—	0.435	—	—	18	—	—	—
0253-95-0142	53-01013	1.50–2.50	Qbt 2	—	1.99	8.32	—	—	15.6	—	—	—
0253-95-0145	53-01014	1.50–2.50	Qbt 2	—	—	2.08	—	—	20	—	—	—
0253-95-0148	53-01015	1.50–2.50	Qbt 2	—	0.411	2.22	—	—	15	—	—	—
0253-95-0151	53-01016	1.50–2.50	Qbt 2	—	—	0.571	—	—	18.7	—	—	—
0253-95-0154	53-01017	1.50–2.50	Qbt 2	—	—	0.293	—	—	20.9	—	—	—
0253-95-0177	53-01018	3.50–4.83	Qbt 2	—	—	—	—	—	38.9	—	—	—
0253-95-0181	53-01019	2.17–3.00	Qbt 2	—	—	—	—	—	293	—	—	—
0253-95-0187	53-01021	1.58–2.50	Qbt 2	—	0.222	—	—	—	17.8	—	—	—
0253-95-0190	53-01022	1.50–2.50	Qbt 2	—	0.156	0.21	—	—	47.7	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
0253-95-0193	53-01023	1.50–2.50	Qbt 2	—	—	—	0.491	—	71.1	—	—	—
0253-95-0205	53-01025	1.50–2.50	Qbt 2	—	—	—	0.373	—	18.3	—	—	—
0253-95-0208	53-01026	1.50–2.50	Qbt 2	—	—	0.309	0.325	—	22.9	—	—	—
0253-95-0211	53-01027	1.50–2.50	Qbt 2	—	—	0.411	—	—	13.7	—	—	—
0253-95-0214	53-01028	1.50–2.50	Qbt 2	—	—	—	—	—	30	—	—	—
0253-95-0217	53-01029	1.50–2.50	Qbt 2	—	—	—	0.623	—	43	—	—	—
0253-95-0220	53-01030	1.50–2.50	Qbt 2	—	0.321	—	—	—	20.1	—	—	—
0253-95-0223	53-01031	1.50–2.50	Qbt 2	—	—	—	—	—	29	—	—	—
0253-95-0227	53-01032	1.50–3.00	Qbt 2	—	—	0.82	—	—	47.8	—	—	—
0253-95-0155	53-01288	1.50–2.50	Qbt 2	—	—	—	—	—	298	—	—	—
0253-95-0156	53-01289	1.00–1.67	Qbt 2	—	—	—	—	—	104	—	—	—
0253-95-0157	53-01290	0.67–1.50	Qbt 2	—	0.745	4.66	—	—	9.31	—	—	—
0253-95-0158	53-01291	1.50–2.17	Qbt 2	—	—	1.17	—	—	13.2	—	—	—
0253-95-0159	53-01292	1.50–2.50	Qbt 2	—	—	0.657	—	—	13.8	—	—	—
0253-95-0160	53-01293	1.50–2.17	Qbt 2	—	—	0.178	—	0.984	368	—	—	—
0253-95-0161	53-01294	1.50–2.50	Qbt 2	—	1.66	3.95	—	3.65	13	—	—	—
0253-95-0162	53-01295	1.50–2.50	Qbt 2	—	—	2.85	—	—	10.2	—	—	—
0253-95-0234	53-01316	2.00–3.67	Qbt 2	—	2.29	1.93	—	—	22	—	—	—
0253-95-0236	53-01317	0.67–2.00	Qbt 2	—	—	0.327	—	—	52.8	—	—	—
0253-95-0237	53-01318	1.17–2.50	Qbt 2	—	—	0.376	—	—	31.6	—	—	—
0253-95-0238	53-01319	1.50–2.33	Qbt 2	—	1.57	3.49	—	—	7.59	—	—	—
0253-95-0239	53-01320	1.00–2.33	Qbt 2	—	—	—	—	—	7.08	—	—	—
0253-95-0241	53-01321	1.50–2.67	Qbt 2	—	1.91	3.46	—	—	22.1	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
0253-95-0242	53-01322	1.00–2.67	Qbt 2	—	—	0.606	—	—	20	—	—	—
0253-95-0243	53-01323	2.50–3.67	Qbt 2	—	—	—	—	—	24.5	—	—	—
RE53-99-0115	53-01573	4.00–5.00	Qbt 2	—	—	—	—	—	11.544	—	—	—
RE53-99-0116	53-01573	14.00–15.00	Qbt 2	—	—	—	—	—	6.372	—	—	—
RE53-99-0117	53-01575	4.00–5.00	Qbt 2	—	—	—	—	—	1.142	—	—	—
RE53-99-0118	53-01575	14.00–15.00	Qbt 2	—	—	—	—	—	4.647	—	—	—
RE53-99-0119	53-01576	4.00–5.00	Qbt 2	—	—	—	—	—	2.967	—	—	—
RE53-99-0120	53-01576	14.00–15.00	Qbt 2	—	—	—	—	—	3.667	—	—	—
RE53-99-0121	53-01577	4.00–5.00	Qbt 2	—	—	0.64	—	—	1.891	—	—	—
RE53-99-0122	53-01577	14.00–15.00	Qbt 2	—	—	—	—	—	5.032	—	0.103	—
RE53-99-0125	53-01582	4.00–5.00	Qbt 2	—	—	0.104	—	—	4.1	—	—	—
RE53-99-0126	53-01582	14.00–15.00	Qbt 2	—	—	—	—	—	18.1	—	—	—
RE53-99-0123	53-01584	4.00–5.00	Qbt 2	—	—	0.0591	—	—	1.25	—	—	—
RE53-99-0124	53-01584	14.00–15.00	Qbt 2	0.0837	—	0.0502	—	—	4.93	—	—	—
RE53-99-0132	53-01586	4.00–5.00	Qbt 2	—	—	—	0.0864	—	159	—	—	—
RE53-99-0133	53-01586	14.00–15.00	Qbt 2	—	—	—	—	—	399	—	—	—
RE53-99-0130	53-01587	4.00–5.00	Qbt 2	—	0.0374	—	—	—	79.4	—	—	—
RE53-99-0131	53-01587	14.00–15.00	Qbt 2	—	—	—	—	—	157	—	—	—
RE53-99-0134	53-01588	4.00–5.00	Qbt 2	0.162	—	0.0455	—	0.358	7.88	—	—	—
RE53-99-0135	53-01588	14.00–15.00	Qbt 2	0.141	0.668	—	—	0.795	13.4	—	—	—
RE53-99-0128	53-01589	4.00–5.00	Qbt 2	—	—	0.07	—	—	4.04	—	—	—
RE53-99-0129	53-01589	14.00–15.00	Qbt 2	—	—	—	—	—	7.49	—	—	—
RE53-99-0140	53-01592	4.00–5.00	Qbt 2	0.119	0.564	—	—	—	115	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-99-0141	53-01592	14.00–15.00	Qbt 2	—	—	—	—	—	404	—	—	—
RE53-99-0138	53-01593	4.00–5.00	Qbt 2	—	—	0.0697	0.177	—	20.5	—	—	—
RE53-99-0139	53-01593	14.00–15.00	Qbt 2	—	—	—	—	0.847	142	—	—	—
RE53-99-0136	53-01594	4.00–5.00	Qbt 2	—	—	—	0.151	—	18.525	—	—	—
RE53-99-0137	53-01594	14.00–15.00	Qbt 2	—	—	—	—	0.67	127.638	—	—	—
RE53-99-0148	53-01595	4.00–5.00	Qbt 2	—	0.12	—	0.18	1 (J)		—	—	—
RE53-99-0149	53-01595	14.00–15.00	Qbt 2	—	—	—	—	0.68 (J)	320.903	—	—	—
RE53-99-0146	53-01596	4.00–5.00	Qbt 2	—	—	0.12	0.2	0.94 (J)		—	—	—
RE53-99-0147	53-01596	14.00–15.00	Qbt 2	—	—	0.22	—	1.14		—	—	—
RE53-99-0144	53-01597	4.00–5.00	Qbt 2	—	—	—	—	1.06	306.384	—	—	—
RE53-99-0145	53-01597	14.00–15.00	Qbt 2	—	—	—	0.19	—	64398	—	—	—
RE53-99-0142	53-01598	4.00–5.00	Qbt 2	—	—	—	—	1.18		—	—	—
RE53-99-0143	53-01598	14.00–15.00	Qbt 2	—	—	—	—	1.08 (J)	524.381	—	—	—
RE53-99-0171	53-01650	0.00–0.42	Qbt 2	—	—	—	—	—	13.035	—	0.091	—
RE53-99-0230	53-01654	7.00–8.00	Qbt 2	—	—	—	—	1.02 (J)	—	—	—	—
RE53-99-0232	53-01654	19.00–20.00	Qbt 2	—	—	—	—	0.67 (J)	—	—	—	—
RE53-99-0238	53-01656	24.00–25.00	Qbt 2	—	—	—	—	2.51	—	—	—	—
RE53-99-0239	53-01657	9.00–10.00	Qbt 2	—	—	—	—	1.35	—	—	—	2.18
RE53-99-0240	53-01657	13.00–14.00	Qbt 2	—	—	—	—	0.99	69.171 (J)	—	—	1.96
RE53-99-0241	53-01657	24.00–25.00	Qbt 2	—	—	—	—	1.44	—	—	—	—
RE53-99-0242	53-01658	9.00–10.00	Qbt 2	—	—	—	—	0.84 (J)	—	—	—	—
RE53-99-0243	53-01658	13.00–14.00	Qbt 2	—	—	—	—	1.3	—	2.08	—	—
RE53-99-0244	53-01658	24.00–25.00	Qbt 2	—	—	—	—	1.54	—	2.56	—	2.34

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-99-0280	53-01659	9.00–10.00	Qbt 2	0.15	—	—	—	1.33 (J)	—	—	—	2.19
RE53-99-0281	53-01659	13.00–14.00	Qbt 2	—	—	—	—	0.99 (J)	—	—	—	2.42
RE53-99-0282	53-01659	24.00–25.00	Qbt 2	—	0.09	—	—	0.95 (J)	—	2.54	—	2.21
RE53-99-0286	53-01660	9.00–10.00	Qbt 2	—	—	—	—	0.8 (J)	—	—	—	—
RE53-99-0287	53-01660	13.00–14.00	Qbt 2	—	—	—	—	1.1 (J)	—	—	—	—
RE53-99-0288	53-01660	24.00–25.00	Qbt 2	—	0.09	—	—	1.49	109.827	2.2	—	—
RE53-99-0283	53-01661	9.00–10.00	Qbt 2	—	—	—	—	0.95	—	2.05	—	—
RE53-99-0284	53-01661	13.00–14.00	Qbt 2	—	—	—	—	1.39	158.601 (J)	—	—	—
RE53-99-0285	53-01661	24.00–25.00	Qbt 2	—	0.09	—	—	—	—	—	—	2.02
RE53-99-0289	53-01662	9.00–10.00	Qbt 2	—	—	—	—	1.29	—	—	—	—
RE53-99-0290	53-01662	13.00–14.00	Qbt 2	—	0.08	—	—	0.92	—	—	—	—
RE53-99-0291	53-01662	24.00–25.00	Qbt 2	—	—	—	—	1.18	—	—	—	—
RE53-99-0294	53-01663	24.00–25.00	Qbt 2	—	—	—	—	1.28 (J)	—	—	—	—
RE53-99-0248	53-01664	4.00–5.00	Qbt 2	—	—	—	—	1.91	—	—	—	—
RE53-99-0249	53-01664	14.00–15.00	Qbt 2	—	0.12	—	—	2.68	—	2.06	—	2.08
RE53-99-0251	53-01681	4.00–5.00	Qbt 2	—	—	—	—	1.38	—	—	—	—
RE53-99-0252	53-01681	14.00–15.00	Qbt 2	—	—	—	—	1.32	—	—	—	—
RE53-99-0254	53-01682	4.00–5.00	Qbt 2	—	0.11	—	—	—	—	—	—	—
RE53-99-0255	53-01682	14.00–15.00	Qbt 2	—	—	—	—	1.27	—	2.11	—	1.95
RE53-99-0257	53-01683	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—	2.07
RE53-99-0260	53-01684	4.00–5.00	Qbt 2	—	0.11	—	—	3.47	—	—	—	—
RE53-99-0261	53-01684	14.00–15.00	Qbt 2	—	—	—	—	3.98	—	2.7	—	2.82
RE53-99-0264	53-01685	14.00–15.00	Qbt 2	—	—	—	—	1.52	—	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-99-0266	53-01686	4.00–5.00	Qbt 2	—	—	—	—	—	—	2.33	—	—
RE53-99-0267	53-01686	14.00–15.00	Qbt 2	—	—	—	—	0.96 (J)	—	—	—	—
RE53-99-0269	53-01687	4.00–5.00	Qbt 2	—	—	—	—	0.94 (J)	—	—	—	—
RE53-99-0270	53-01687	14.00–15.00	Qbt 2	—	—	—	—	1.14	—	—	0.31 (J+)	—
RE53-99-0272	53-01688	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-99-0273	53-01688	14.00–15.00	Qbt 2	—	—	—	—	1.08	—	—	—	—
RE53-99-0278	53-01689	19.00–20.00	Qbt 2	—	—	—	—	0.92 (J)	—	—	—	—
RE53-99-0279	53-01689	29.00–30.00	Qbt 2	—	—	—	—	1.26	—	—	—	—
RE53-99-0227	53-01690	4.50–6.00	Qbt 2	—	—	—	—	0.92 (J)	—	—	—	—
RE53-99-0228	53-01690	6.00–7.50	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-99-0229	53-01690	7.50–9.00	Qbt 2	—	0.15	—	—	1.34	—	—	—	—
RE53-99-0295	53-01691	9.00–10.00	Qbt 2	—	—	—	—	1.58	—	2.21	—	—
RE53-99-0298	53-01691	9.00–10.00	Qbt 2	—	—	0.1	—	1.45	25.413 (J)	—	—	—
RE53-99-0296	53-01691	13.00–14.00	Qbt 2	—	—	—	—	1.35	—	2.7	—	1.96
RE53-99-0297	53-01691	24.00–25.00	Qbt 2	—	—	—	—	1.62	—	2.07	—	2.45
RE53-99-0300	53-01692	24.00–25.00	Qbt 2	—	—	—	—	1.71	130.545	2.35	—	—
RE53-99-0303	53-01693	24.00–25.00	Qbt 2	—	0.09	—	—	1.23	231.516	—	—	—
RE53-99-0306	53-01694	24.00–25.00	Qbt 2	0.19	—	—	—	1.32	207.683	2.37	—	1.99
RE53-99-0310	53-01695	1.00–2.00	Qbt 2	—	—	0.13	0.28	1.65	88.228 (J)	—	—	—
RE53-99-0311	53-01695	4.00–5.00	Qbt 2	—	—	—	—	1.48	546.877	—	—	—
RE53-99-0312	53-01695	14.00–15.00	Qbt 2	—	—	—	—	2.08	375.871	—	—	—
RE53-99-0315	53-01696	14.00–15.00	Qbt 2	—	—	—	—	—	11.066	—	—	—
RE53-99-0321	53-01697	14.00–15.00	Qbt 2	—	—	—	—	—	5.445	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-99-0318	53-01698	14.00–15.00	Qbt 2	—	—	—	—	—	170.334	—	0.105	—
RE53-99-0307	53-01701	1.00–2.00	Qbt 2	—	—	—	—	1.56	225.857	—	—	—
RE53-99-0308	53-01701	4.00–5.00	Qbt 2	—	—	—	—	1.89	456.349	—	—	—
RE53-99-0309	53-01701	14.00–15.00	Qbt 2	—	—	—	—	1.35	456.193	—	—	—
RE53-02-45550	53-02-19679	1.00–1.50	Qbt 3	—	—	0.433	8.54	—	—	—	—	—
RE53-02-45551	53-02-19680	1.30–1.80	Qbt 3	—	—	0.48	10.1	—	—	—	—	—
RE53-02-45552	53-02-19681	0.80–1.25	Qbt 3	—	—	0.2	5.74	—	—	—	—	—
RE53-02-46593	53-02-20824	10.40–10.70	Qbt 2	—	—	—	—	—	519.672 (J)	—	—	—
RE53-02-46594	53-02-20824	20.00–20.50	Qbt 2	—	—	—	—	—	228.814 (J)	—	—	—
RE53-02-46597	53-02-20824	30.00–31.80	Qbt 2	—	—	—	—	—	400 (J)	—	—	—
RE53-02-46598	53-02-20824	40.00–40.50	Qbt 2	—	—	—	—	—	458.14 (J)	—	—	—
RE53-02-46599	53-02-20824	50.00–51.70	Qbt 2	—	—	—	—	—	297.5 (J)	—	—	—
RE53-02-46600	53-02-20824	60.00–60.50	Qbt 2	—	—	—	—	—	293.824 (J)	—	—	—
RE53-02-46601	53-02-20824	70.00–71.10	Qbt 2	—	—	—	—	—	202 (J)	—	—	—
RE53-02-46602	53-02-20824	80.00–80.70	Qbt 2	—	—	—	—	—	184.127 (J)	—	—	—
RE53-02-46603	53-02-20824	90.00–91.20	Qbt 2	—	—	—	—	—	184.127 (J)	—	—	—
RE53-02-46604	53-02-20824	100.00–101.20	Qbt 2	—	—	—	—	—	165.714 (J)	—	—	—
RE53-02-46605	53-02-20824	110.00–111.30	Qbt 1v	—	—	—	—	—	177.419 (J)	—	—	—
RE53-02-46606	53-02-20824	120.00–120.60	Qbt 1v	—	—	—	—	—	108.333 (J)	—	—	—
RE53-02-46607	53-02-20824	130.00–131.40	Qbt 1v	—	—	—	—	—	66.514 (J)	—	—	—
RE53-02-46608	53-02-20824	140.00–140.50	Qbt 1v	—	—	—	—	—	10.662 (J)	—	—	—
RE53-02-46629	53-02-20825	29.10–30.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-02-46631	53-02-20825	48.90–50.00	Qbt 2	—	—	—	—	—	—	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-02-46636	53-02-20825	99.20–100.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-02-46640	53-02-20825	139.50–140.00	Qbt 1v	—	—	—	—	—	29.286	—	—	—
RE53-02-46651	53-02-20826	29.00–30.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-02-46658	53-02-20826	99.20–100.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-02-46671	53-02-20827	9.50–10.00	Qbt 2	—	—	—	—	—	15.455	—	—	—
RE53-02-46675	53-02-20827	49.00–50.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-02-46680	53-02-20827	98.40–100.00	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-02-46705	53-02-20828	0.00–0.50	Qbt 3	—	—	—	—	—	—	—	—	—
RE53-02-46706	53-02-20828	29.00–30.00	Qbt 2	—	—	—	—	—	7.692	—	—	—
RE53-02-46707	53-02-20828	48.50–50.00	Qbt 2	—	—	—	—	—	10.182	—	—	—
RE53-02-46710	53-02-20829	24.00–25.00	Qbt 2	—	—	—	—	—	13.964	—	—	—
RE53-02-46718	53-02-20829	36.70–37.50	Qbt 2	—	—	—	—	—	10.333	—	—	—
RE53-02-46711	53-02-20829	49.20–50.00	Qbt 2	—	—	—	—	—	5.738	—	—	—
RE53-02-46714	53-02-20830	28.90–30.00	Qbt 2	—	—	—	—	—	171.333	—	—	—
RE53-02-46715	53-02-20830	49.00–50.00	Qbt 2	—	—	—	—	—	350	—	—	—
RE53-02-46731	53-02-20833	0.00–0.50	Qbt 3	—	—	—	—	—	—	—	—	—
RE53-02-46732	53-02-20834	0.00–0.50	Qbt 3	—	—	—	—	—	—	—	—	—
RE53-02-46734	53-02-20836	0.00–0.40	Qbt 3	—	—	2.44	—	—	—	—	—	—
RE53-02-46735	53-02-20837	0.00–0.50	Qbt 3	—	—	0.65	—	—	—	—	—	—
RE53-02-46740	53-02-20842	0.00–0.50	Qbt 3	—	—	—	—	—	—	—	—	—
RE53-02-46744	53-02-20846	0.00–0.50	Qbt 2	—	0.44	2.7	—	—	—	—	—	—
RE53-02-46745	53-02-20847	0.00–0.30	Qbt 2	—	—	—	—	—	—	—	—	—
RE53-00-0007	53-01709	8.00–9.00	Qbt 3	—	—	—	—	—	11.508	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-00-0041	53-01716	1.00–2.00	Qbt 2	—	—	0.106	0.312	—	524 (J+)	—	—	—
RE53-00-0042	53-01716	4.00–5.00	Qbt 2	—	—	0.254	1.53	—	156 (J+)	—	—	—
RE53-00-0043	53-01716	14.00–15.00	Qbt 2	—	—	—	—	—	6.85 (J+)	—	—	—
RE53-00-0091	53-01717	4.00–5.00	Qbt 2	—	—	—	1.12	—	425 (J+)	—	—	—
RE53-00-0092	53-01717	14.00–15.00	Qbt 2	—	—	—	0.106	—	101	—	—	—
RE53-00-0093	53-01718	1.00–2.00	Qbt 2	5.21	0.0931	8.49	8.49	—	900	—	—	—
RE53-00-0094	53-01718	4.00–5.00	Qbt 2	1.05	—	1.46	1.69	—	819	—	—	—
RE53-00-0095	53-01718	14.00–15.00	Qbt 2	0.0945	—	0.137	0.126	—	68.3	—	—	—
RE53-00-0047	53-01719	1.00–2.00	Qbt 2	0.488	—	0.615	—	—	3740 (J+)	—	—	—
RE53-00-0048	53-01719	4.00–5.00	Qbt 2	—	—	0.119	—	—	7400 (J+)	—	—	—
RE53-00-0049	53-01719	14.00–15.00	Qbt 2	—	—	—	—	—	1520 (J+)	—	—	—
RE53-00-0051	53-01720	1.00–2.00	Qbt 2	—	—	—	1.95	—	917	—	—	—
RE53-00-0052	53-01720	4.00–5.00	Qbt 2	—	—	0.0904	0.568	—	853	—	—	—
RE53-00-0053	53-01720	14.00–15.00	Qbt 2	—	—	—	0.211	—	759	—	—	—
RE53-00-0055	53-01721	1.00–2.00	Qbt 2	—	—	—	—	—	522	—	—	—
RE53-00-0056	53-01721	4.00–5.00	Qbt 2	—	—	—	—	—	317	—	—	—
RE53-00-0057	53-01721	14.00–15.00	Qbt 2	—	—	—	—	—	96.6	—	—	—
RE53-00-0059	53-01722	1.00–2.00	Qbt 2	—	—	1.1	9.96	—	9460	—	—	—
RE53-00-0060	53-01722	4.00–5.00	Qbt 2	—	—	0.174	2.85	—	9630	—	—	—
RE53-00-0061	53-01722	14.00–15.00	Qbt 2	0.0856	—	—	0.386	—	7710	—	—	—
RE53-00-0063	53-01723	1.00–2.00	Qbt 2	—	—	—	—	—	440	—	—	—
RE53-00-0064	53-01723	4.00–5.00	Qbt 2	—	—	—	—	—	165	—	—	—
RE53-00-0065	53-01723	14.00–15.00	Qbt 2	0.0947	—	—	—	—	159	—	—	—

Table D-5.2-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-134	Cobalt-60	Sodium-22	Strontium-90	Tritium (pCi/mL)	Uranium-234	Uranium-235	Uranium-238
Qbt 2,3,4 Background Value				**na**[a]	**na**	**na**	**na**	**na**	**na**	**1.98**	**0.09**	**1.93**
RE53-00-0067	53-01724	1.00–2.00	Qbt 2	—	—	0.101	—	—	1540	—	—	—
RE53-00-0068	53-01724	4.00–5.00	Qbt 2	—	—	—	—	—	1210	—	—	—
RE53-00-0069	53-01724	14.00–15.00	Qbt 2	—	—	—	—	—	420	—	—	—
RE53-00-0071	53-01725	1.00–2.00	Qbt 2	0.163	—	0.339	0.0767	—	387	—	—	—
RE53-00-0072	53-01725	4.00–5.00	Qbt 2	—	—	—	—	—	488	—	—	—
RE53-00-0073	53-01725	14.00–15.00	Qbt 2	—	—	—	—	—	196	—	—	—
RE53-00-0075	53-01726	1.00–2.00	Qbt 2	—	—	—	—	—	439	—	—	—
RE53-00-0076	53-01726	4.00–5.00	Qbt 2	—	—	—	—	—	118	—	—	—
RE53-00-0077	53-01726	14.00–15.00	Qbt 2	—	—	—	—	—	17.2	—	—	—
RE53-00-0079	53-01727	1.00–2.00	Qbt 2	—	—	—	—	—	441	—	—	—
RE53-00-0080	53-01727	4.00–5.00	Qbt 2	—	—	—	—	—	104	—	—	—
RE53-00-0081	53-01727	14.00–15.00	Qbt 2	—	—	—	—	—	49.5	—	—	—
RE53-00-0083	53-01728	1.00–2.00	Qbt 2	—	—	—	—	—	308	—	—	—
RE53-00-0084	53-01728	4.00–5.00	Qbt 2	—	—	—	—	—	111	—	—	—
RE53-00-0085	53-01728	14.00–15.00	Qbt 2	—	—	—	—	—	25.3	—	—	—
RE53-00-0087	53-01729	1.00–2.00	Qbt 2	—	0.263	0.0557	0.0933	—	789	—	—	—
RE53-00-0088	53-01729	4.00–5.00	Qbt 2	0.126	0.0392	—	—	—	529	—	—	—
RE53-00-0089	53-01729	14.00–15.00	Qbt 2	0.126	0.0392	—	—	—	128	—	—	—

[a] na = Not available.

[b] — = Result was not above the BV or not detected (if no BV).

Table D-5.3-1
Samples Collected for Organic Chemical Analyses in Mesa-Top Tuff at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
0253-95-0103	53-01001	1.5–2.5	Qbt 2	76624	—*	—	76247	76387	76158
0253-95-0106	53-01002	1.5–2.5	Qbt 2	76718	—	—	76721	76716	76696
0253-95-0110	53-01003	1.5–2.5	Qbt 2	76718	—	—	76721	76716	76696
0253-95-0113	53-01004	1.5–2.5	Qbt 2	76718	—	—	76721	76716	76696
0253-95-0116	53-01005	1.5–2.42	Qbt 2	76718	—	—	76721	76716	76696
0253-95-0119	53-01006	1.5–2.5	Qbt 2	76718	—	—	76721	76716	76696
0253-95-0122	53-01007	1.5–2.5	Qbt 2	76718	—	—	76721	76716	76696
0253-95-0126	53-01008	1.5–2.5	Qbt 2	76815	—	—	76952	76772	76751
0253-95-0129	53-01009	1.5–2.5	Qbt 2	76815	—	—	76952	76772	76751
0253-95-0132	53-01010	1.5–2.5	Qbt 2	76815	—	—	76952	76772	76752
0253-95-0135	53-01011	1.5–2.5	Qbt 2	76815	—	—	76952	76772	76752
0253-95-0138	53-01012	1.5–2.5	Qbt 2	77884	—	—	76952	76772	76752
0253-95-0142	53-01013	1.5–2.5	Qbt 2	76815	—	—	76952	76772	76752
0253-95-0145	53-01014	1.5–2.5	Qbt 2	76815	—	—	76996	76772	76752
0253-95-0148	53-01015	1.5–2.5	Qbt 2	76815	—	—	76996	76772	76836
0253-95-0151	53-01016	1.5–2.5	Qbt 2	76815	—	—	76996	76772	76836
0253-95-0154	53-01017	1.5–2.5	Qbt 2	76861	—	—	76996	76774	76836
0253-95-0177	53-01018	3.5–4.83	Qbt 2	76932	—	—	77145	77234	76882
0253-95-0181	53-01019	2.17–3	Qbt 2	76932	—	—	77145	77234	76882
0253-95-0187	53-01021	1.58–2.5	Qbt 2	76932	—	—	77145	77234	76882
0253-95-0190	53-01022	1.5–2.5	Qbt 2	77434	—	—	77600	77234	77328
0253-95-0193	53-01023	1.5–2.5	Qbt 2	77434	—	—	77600	77234	77328
0253-95-0205	53-01025	1.5–2.5	Qbt 2	77434	—	—	77600	77234	77328
0253-95-0208	53-01026	1.5–2.5	Qbt 2	77434	—	—	77600	77567	77398
0253-95-0211	53-01027	1.5–2.5	Qbt 2	77434	—	—	77796	77567	77398
0253-95-0214	53-01028	1.5–2.5	Qbt 2	77672	—	—	77796	77567	77398
0253-95-0217	53-01029	1.5–2.5	Qbt 2	77672	—	—	77796	77567	77398
0253-95-0220	53-01030	1.5–2.5	Qbt 2	77672	—	—	77796	77567	77398
0253-95-0223	53-01031	1.5–2.5	Qbt 2	77672	—	—	77796	77567	77458
0253-95-0227	53-01032	1.5–3	Qbt 2	77672	—	—	77796	77567	77458
0253-95-0155	53-01288	1.5–2.5	Qbt 2	76861	—	—	76996	76774	76836
0253-95-0156	53-01289	1–1.67	Qbt 2	76861	—	—	76996	76774	76836
0253-95-0157	53-01290	0.67–1.5	Qbt 2	76861	—	—	76996	76774	76836
0253-95-0158	53-01291	1.5–2.17	Qbt 2	76861	—	—	76996	76774	76836

Table D-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
0253-95-0159	53-01292	1.5–2.5	Qbt 2	76932	—	—	76996	76774	76751
0253-95-0160	53-01293	1.5–2.17	Qbt 2	76861	—	—	76996	76774	76751
0253-95-0161	53-01294	1.5–2.5	Qbt 2	76861	—	—	76996	76774	76751
0253-95-0162	53-01295	1.5–2.5	Qbt 2	76861	—	—	76996	76774	76751
0253-95-0234	53-01316	2–3.67	Qbt 2	76861	—	—	76996	76774	76751
0253-95-0236	53-01317	0.67–2	Qbt 2	76861	—	—	77145	76774	76879
0253-95-0237	53-01318	1.17–2.5	Qbt 2	76932	—	—	77145	76774	76879
0253-95-0238	53-01319	1.5–2.33	Qbt 2	76932	—	—	77145	76774	77086
0253-95-0239	53-01320	1–2.33	Qbt 2	76932	—	—	77145	76774	76879
0253-95-0241	53-01321	1.5–2.67	Qbt 2	76932	—	—	77145	76774	76879
0253-95-0242	53-01322	1–2.67	Qbt 2	76932	—	—	77145	76774	76882
0253-95-0243	53-01323	2.5–3.67	Qbt 2	76932	—	—	77145	77234	76882
RE53-99-0015	53-01565	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0018	53-01566	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0021	53-01567	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0024	53-01568	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0246	53-01568	14–15	Qbt 2	—	—	—	—	—	5790R
RE53-99-0027	53-01569	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0030	53-01570	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0033	53-01571	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0036	53-01572	1–2	Qbt 2	—	5615R	5615R	—	—	—
RE53-99-0039	53-01573	1–2	Qbt 2	—	5620R	5620R	—	—	—
RE53-99-0115	53-01573	4–5	Qbt 2	5633R	5633R	5633R	—	5633R	5633R
RE53-99-0116	53-01573	14–15	Qbt 2	5633R	5633R	5633R	—	5633R	5633R
RE53-99-0044	53-01574	1–2	Qbt 2	—	5620R	5620R	—	—	—
RE53-99-0059	53-01575	1–2	Qbt 2	—	5640R	5640R	—	—	—
RE53-99-0117	53-01575	4–5	Qbt 2	5640R	5640R	5640R	—	5640R	5640R
RE53-99-0118	53-01575	14–15	Qbt 2	5640R	5640R	5640R	—	5640R	5640R
RE53-99-0062	53-01576	1–2	Qbt 2	—	5684R	5684R	—	—	—
RE53-99-0119	53-01576	4–5	Qbt 2	5684R	5684R	5684R	—	5684R	5684R
RE53-99-0120	53-01576	14–15	Qbt 2	5684R	5684R	5684R	—	5684R	5684R
RE53-99-0065	53-01577	1–2	Qbt 2	—	5684R	5684R	—	—	—
RE53-99-0121	53-01577	4–5	Qbt 2	5684R	5684R	5684R	—	5684R	5684R
RE53-99-0122	53-01577	14–15	Qbt 2	5684R	5684R	5684R	—	5684R	5684R
RE53-99-0047	53-01579	1–2	Qbt 2	—	5621R	5621R	—	—	—

Table D-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-99-0050	53-01580	1–2	Qbt 2	—	5621R	5621R	—	—	—
RE53-99-0053	53-01581	1–2	Qbt 2	—	5621R	5621R	—	—	—
RE53-99-0080	53-01582	1–2	Qbt 2	—	5698R	5698R	—	—	—
RE53-99-0125	53-01582	4–5	Qbt 2	—	5695R	5695R	—	5695R	5695R
RE53-99-0126	53-01582	14–15	Qbt 2	—	5695R	5695R	—	5695R	5695R
RE53-99-0077	53-01583	1–2	Qbt 2	—	5698R	5698R	—	—	—
RE53-99-0072	53-01584	1–2	Qbt 2	—	5698R	5698R	—	—	—
RE53-99-0123	53-01584	4–5	Qbt 2	—	5695R	5695R	—	5695R	5695R
RE53-99-0124	53-01584	14–15	Qbt 2	—	5695R	5695R	—	5695R	5695R
RE53-99-0069	53-01585	1–2	Qbt 2	—	5698R	5698R	—	—	—
RE53-99-0092	53-01586	1–2	Qbt 2	—	5702R	5702R	—	—	—
RE53-99-0132	53-01586	4–5	Qbt 2	—	5705R	5705R	—	5705R	—
RE53-99-0245	53-01586	4–5	Qbt 2	—	—	—	—	—	5790R
RE53-99-0133	53-01586	14–15	Qbt 2	—	5705R	5705R	—	5705R	—
RE53-99-0089	53-01587	1–2	Qbt 2	—	5702R	5702R	—	—	—
RE53-99-0130	53-01587	4–5	Qbt 2	—	5702R	5702R	—	5702R	5709R
RE53-99-0131	53-01587	14–15	Qbt 2	—	5702R	5702R	—	5702R	5709R
RE53-99-0095	53-01588	1–2	Qbt 2	—	5716R	5716R	—	—	—
RE53-99-0134	53-01588	4–5	Qbt 2	—	5794R	5794R	—	5794R	5794R
RE53-99-0135	53-01588	14–15	Qbt 2	—	5794R	5794R	—	5794R	5794R
RE53-99-0086	53-01589	1–2	Qbt 2	—	5698R	5698R	—	—	—
RE53-99-0128	53-01589	4–5	Qbt 2	—	5702R	5702R	—	5702R	5709R
RE53-99-0129	53-01589	14–15	Qbt 2	—	5702R	5702R	—	5702R	5709R
RE53-99-0083	53-01590	1–2	Qbt 2	—	5698R	5698R	—	—	—
RE53-99-0107	53-01591	1–2	Qbt 2	—	5818R	5818R	—	—	—
RE53-99-0104	53-01592	1–2	Qbt 2	—	5794R	5794R	—	—	—
RE53-99-0140	53-01592	4–5	Qbt 2	—	5794R	5794R	—	5794R	5794R
RE53-99-0141	53-01592	14–15	Qbt 2	—	5794R	5794R	—	5794R	5794R
RE53-99-0101	53-01593	1–2	Qbt 2	—	5716R	5716R	—	—	—
RE53-99-0138	53-01593	4–5	Qbt 2	—	5794R	5794R	—	5794R	5794R
RE53-99-0139	53-01593	14–15	Qbt 2	—	5794R	5794R	—	5794R	5794R
RE53-99-0098	53-01594	1–2	Qbt 2	—	5705R	5705R	—	—	—
RE53-99-0136	53-01594	4–5	Qbt 2	—	—	—	5790R	5790R	5790R
RE53-99-0137	53-01594	14–15	Qbt 2	—	—	—	5790R	5790R	5790R
RE53-99-0189	53-01595	1–2	Qbt 2	—	5716R	5716R	—	—	—

Table D-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-99-0148	53-01595	4–5	Qbt 2	—	5826R	5826R	—	5826R	5826R
RE53-99-0149	53-01595	14–15	Qbt 2	—	5826R	5826R	—	5826R	5826R
RE53-99-0192	53-01596	1–2	Qbt 2	—	5716R	5716R	—	—	—
RE53-99-0146	53-01596	4–5	Qbt 2	—	5826R	5826R	—	5826R	5826R
RE53-99-0147	53-01596	14–15	Qbt 2	—	5826R	5826R	—	5826R	5826R
RE53-99-0113	53-01597	1–2	Qbt 2	—	5716R	5716R	—	—	—
RE53-99-0144	53-01597	4–5	Qbt 2	—	5818R	5818R	—	5818R	5818R
RE53-99-0145	53-01597	14–15	Qbt 2	—	5818R	5818R	—	5818R	5818R
RE53-99-0110	53-01598	1–2	Qbt 2	—	5716R	5716R	—	—	—
RE53-99-0142	53-01598	4–5	Qbt 2	—	5818R	5818R	—	5818R	5818R
RE53-99-0143	53-01598	14–15	Qbt 2	—	5818R	5818R	—	5818R	5818R
RE53-99-0056	53-01599	1–2	Qbt 2	—	5621R	5621R	—	—	—
RE53-99-0171	53-01650	0–0.42	Qbt 2	—	5622R	5622R	—	5622R	—
RE53-99-0230	53-01654	7–8	Qbt 2	—	5989R	—	—	5989R	5989R
RE53-99-0231	53-01654	12–13	Qbt 2	—	5989R	—	—	5989R	5989R
RE53-99-0232	53-01654	19–20	Qbt 2	—	5989R	—	—	5989R	5989R
RE53-99-0237	53-01656	13–14	Qbt 2	—	5989R	—	—	5989R	5989R
RE53-99-0238	53-01656	24–25	Qbt 2	—	5989R	—	—	5989R	5989R
RE53-99-0239	53-01657	9–10	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0240	53-01657	13–14	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0241	53-01657	24–25	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0242	53-01658	9–10	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0243	53-01658	13–14	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0244	53-01658	24–25	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0280	53-01659	9–10	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0281	53-01659	13–14	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0282	53-01659	24–25	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0286	53-01660	9–10	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0287	53-01660	13–14	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0288	53-01660	24–25	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0283	53-01661	9–10	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0284	53-01661	13–14	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0285	53-01661	24–25	Qbt 2	—	5997R	—	—	5997R	5997R
RE53-99-0289	53-01662	9–10	Qbt 2	—	6000R	—	—	6000R	6000R
RE53-99-0290	53-01662	13–14	Qbt 2	—	6000R	—	—	6000R	6000R

Table D-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-99-0291	53-01662	24–25	Qbt 2	—	6000R	—	—	6000R	6000R
RE53-99-0294	53-01663	24–25	Qbt 2	—	6000R	—	—	6000R	6000R
RE53-99-0248	53-01664	4–5	Qbt 2	—	5949R	—	—	5949R	5949R
RE53-99-0249	53-01664	14–15	Qbt 2	—	5949R	—	—	5949R	5949R
RE53-99-0251	53-01681	4–5	Qbt 2	—	5949R	—	—	5949R	5949R
RE53-99-0252	53-01681	14–15	Qbt 2	—	5949R	—	—	5949R	5949R
RE53-99-0254	53-01682	4–5	Qbt 2	5963R	5963R	5963R	—	5963R	5963R
RE53-99-0255	53-01682	14–15	Qbt 2	5963R	5963R	5963R	—	5963R	5963R
RE53-99-0257	53-01683	4–5	Qbt 2	—	5963R	—	—	5963R	5963R
RE53-99-0258	53-01683	14–15	Qbt 2	—	5963R	—	—	5963R	5963R
RE53-99-0260	53-01684	4–5	Qbt 2	—	5963R	—	—	5963R	5963R
RE53-99-0261	53-01684	14–15	Qbt 2	—	5963R	—	—	5963R	5963R
RE53-99-0264	53-01685	14–15	Qbt 2	—	5967R	—	—	5967R	5967R
RE53-99-0266	53-01686	4–5	Qbt 2	—	5974R	—	—	5974R	5974R
RE53-99-0267	53-01686	14–15	Qbt 2	—	5974R	—	—	5974R	5974R
RE53-99-0269	53-01687	4–5	Qbt 2	—	5974R	—	—	5974R	5974R
RE53-99-0270	53-01687	14–15	Qbt 2	—	5974R	—	—	5974R	5974R
RE53-99-0272	53-01688	4–5	Qbt 2	—	5982R	—	—	5982R	5982R
RE53-99-0273	53-01688	14–15	Qbt 2	—	5982R	—	—	5982R	5982R
RE53-99-0277	53-01689	16–17	Qbt 2	—	5982R	—	—	5982R	5982R
RE53-99-0278	53-01689	19–20	Qbt 2	—	5982R	—	—	5982R	5982R
RE53-99-0279	53-01689	29–30	Qbt 2	—	5982R	—	—	5982R	5982R
RE53-99-0227	53-01690	4.5–6	Qbt 2	—	5985R	5985R	—	5985R	5985R
RE53-99-0228	53-01690	6–7.5	Qbt 2	—	5985R	5985R	—	5985R	5985R
RE53-99-0229	53-01690	7.5–9	Qbt 2	—	5985R	5985R	—	5985R	5985R
RE53-99-0295	53-01691	9–10	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0298	53-01691	9–10	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0296	53-01691	13–14	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0297	53-01691	24–25	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0300	53-01692	24–25	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0303	53-01693	24–25	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0306	53-01694	24–25	Qbt 2	—	6010R	—	—	6010R	6010R
RE53-99-0310	53-01695	1–2	Qbt 2	—	6013R	—	—	6013R	6013R
RE53-99-0311	53-01695	4–5	Qbt 2	—	6013R	—	—	6013R	6013R
RE53-99-0312	53-01695	14–15	Qbt 2	—	6013R	—	—	6013R	6013R

Table D-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-99-0315	53-01696	14–15	Qbt 2	—	6022R	—	—	6022R	6022R
RE53-99-0321	53-01697	14–15	Qbt 2	—	6022R	—	—	6022R	6022R
RE53-99-0318	53-01698	14–15	Qbt 2	—	6022R	—	—	6022R	6022R
RE53-99-0307	53-01701	1–2	Qbt 2	—	6013R	—	—	6013R	6013R
RE53-99-0308	53-01701	4–5	Qbt 2	—	6013R	—	—	6013R	6013R
RE53-99-0309	53-01701	14–15	Qbt 2	—	6013R	—	—	6013R	6013R
RE53-02-46597	53-02-20824	30–31.8	Qbt 2	—	—	—	—	1014S	1014S
RE53-02-46599	53-02-20824	50–51.7	Qbt 2	—	—	—	—	1024S	1024S
RE53-02-46629	53-02-20825	29.1–30	Qbt 2	—	—	—	—	1129S	—
RE53-02-46631	53-02-20825	48.9–50	Qbt 2	—	—	—	—	1129S	—
RE53-02-46651	53-02-20826	29–30	Qbt 2	—	—	—	—	1103S	—
RE53-02-46653	53-02-20826	48.6–50	Qbt 2	—	—	—	—	1112S	—
RE53-02-46673	53-02-20827	29–30	Qbt 2	—	—	—	—	1098S	—
RE53-02-46675	53-02-20827	49–50	Qbt 2	—	—	—	—	1098S	—
RE53-02-46697	53-02-20827	64–65	Qbt 2	—	—	—	—	1098S	—
RE53-02-46706	53-02-20828	29–30	Qbt 2	—	—	—	—	1126S	1126S
RE53-02-46707	53-02-20828	48.5–50	Qbt 2	—	—	—	—	1126S	1126S
RE53-02-46710	53-02-20829	24–25	Qbt 2	—	—	—	—	1126S	1126S
RE53-02-46718	53-02-20829	36.7–37.5	Qbt 2	—	—	—	—	1126S	1126S
RE53-02-46711	53-02-20829	49.2–50	Qbt 2	—	—	—	—	1126S	1126S
RE53-02-46714	53-02-20830	28.9–30	Qbt 2	—	1109S	—	—	1109S	—
RE53-02-46715	53-02-20830	49–50	Qbt 2	—	1109S	—	—	1109S	—
RE53-02-46723	53-02-20831	0–0.5	Qbt 2	—	—	—	—	1140S	—
RE53-02-46724	53-02-20831	5.1–5.5	Qbt 2	—	—	—	—	1159S	—
RE53-02-46725	53-02-20832	0–0.5	Qbt 2	—	—	—	—	1140S	—
RE53-02-46726	53-02-20832	5.2–5.9	Qbt 2	—	—	—	—	1159S	—
RE53-00-0007	53-01709	8–9	Qbt 3	—	6503R	—	—	6503R	6503R
RE53-00-0041	53-01716	1–2	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0042	53-01716	4–5	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0043	53-01716	14–15	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0091	53-01717	4–5	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0092	53-01717	14–15	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0093	53-01718	1–2	Qbt 2	7532R	—	—	—	7532R	7532R
RE53-00-0094	53-01718	4–5	Qbt 2	7532R	—	—	—	7532R	7532R
RE53-00-0095	53-01718	14–15	Qbt 2	7532R	—	—	—	7532R	7532R

Table D-5.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-00-0047	53-01719	1–2	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0048	53-01719	4–5	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0049	53-01719	14–15	Qbt 2	—	—	—	—	7532R	7532R
RE53-00-0051	53-01720	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0052	53-01720	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0053	53-01720	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0055	53-01721	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0056	53-01721	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0057	53-01721	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0059	53-01722	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0060	53-01722	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0061	53-01722	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0063	53-01723	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0064	53-01723	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0065	53-01723	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0067	53-01724	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0068	53-01724	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0069	53-01724	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0071	53-01725	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0072	53-01725	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0073	53-01725	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0075	53-01726	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0076	53-01726	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0077	53-01726	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0079	53-01727	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0080	53-01727	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0081	53-01727	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0083	53-01728	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0084	53-01728	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0085	53-01728	14–15	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0087	53-01729	1–2	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0088	53-01729	4–5	Qbt 2	—	7599R	—	—	7599R	7599R
RE53-00-0089	53-01729	14–15	Qbt 2	—	7599R	—	—	7599R	7599R

*— = Sample not requested for this analysis.

Table D-5.3-2
Frequency of Detected Concentrations for
Organic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range* (mg/kg)	Frequency of Detects
Acetone	Qbt 2	191	54	0.00222 to 0.107	54/191
Aroclor-1254	Qbt 2	210	4	[0.00403] to [0.406]	4/210
Aroclor-1260	Qbt 2	210	1	[0.00363] to [0.406]	1/210
Benzene	Qbt 2	191	1	0.00027 to [0.01]	1/191
Benzoic Acid	Qbt 2	205	2	[0.0199] to [4]	2/205
Benzyl Alcohol	Qbt 2	205	1	0.025 to [1.6]	1/205
BHC[alpha-]	Qbt 2	166	3	0.000754 to [0.333]	3/166
BHC[gamma-]	Qbt 2	164	6	0.000593 to [0.333]	6/164
Bis(2-ethylhexyl)phthalate	Qbt 2	205	27	0.018 to 0.47	27/205
Butanone[2-]	Qbt 2	191	5	0.0014 to [0.04]	5/191
Butylbenzene[sec-]	Qbt 2	145	1	[0.000278] to [0.01]	1/145
Butylbenzylphthalate	Qbt 2	205	2	0.018 to [0.45]	2/205
Chloroethane	Qbt 2	191	2	[0.00136] to [0.02]	2/191
DDD[4,4'-]	Qbt 2	163	1	[0.0018] to [0.333]	1/163
DDT[4,4'-]	Qbt 2	163	2	0.00034 to [0.333]	2/163
Dichlorodifluoromethane	Qbt 2	191	3	[0.000728] to [0.02]	3/191
Dieldrin	Qbt 2	163	3	0.000898 to [0.333]	3/163
Diethylphthalate	Qbt 2	205	1	[0.0497] to [0.45]	1/205
Di-n-butylphthalate	Qbt 2	205	16	0.02 to 1.5	16/205
Endrin	Qbt 2	163	2	0.000835 to [0.333]	2/163
Heptachlor	Qbt 2	163	3	0.000935 to [0.333]	3/163
Isopropyltoluene[4-]	Qbt 2	145	4	[0.000234] to [0.01]	4/145
Methyl-2-pentanone[4-]	Qbt 2	191	3	0.00099 to [0.04]	3/191
Methylene Chloride	Qbt 2	191	5	[0.000584] to [0.036]	5/191
Methylphenol[3-]	Qbt 2	96	1	[0.0459] to [0.4]	1/96
Methylphenol[4-]	Qbt 2	159	1	0.032 to [0.73]	1/159
Phenol	Qbt 2	205	1	0.029 to [0.45]	1/205
Tetrachloroethene	Qbt 2	191	1	[0.000419] to [0.01]	1/191
Toluene	Qbt 2	191	7	[0.000478] to [0.01]	7/191
Trichloroethene	Qbt 2	191	5	0.00048 to [0.01]	5/191
Trichlorofluoromethane	Qbt 2	191	1	[0.001] to [0.016]	1/191
Trimethylbenzene[1,2,4-]	Qbt 2	145	2	[0.000211] to [0.01]	2/145

*Values in square brackets indicate detection limits for nondetects.

Table D-5.3-3
Detected Concentrations for Organic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzene	Benzoic Acid	Benzyl Alcohol	BHC[alpha-]	BHC[gamma-]
0253-95-0103	53-01001	1.50–2.50	Qbt 2	—*	—	0.018	—	—	—	7.990001E-04 (J)	0.000593 (J)
0253-95-0110	53-01003	1.50–2.50	Qbt 2	0.0339	—	—	—	—	—	—	—
0253-95-0113	53-01004	1.50–2.50	Qbt 2	0.0717	—	—	—	—	—	—	—
0253-95-0116	53-01005	1.50–2.42	Qbt 2	0.0367	—	—	—	—	—	—	—
0253-95-0119	53-01006	1.50–2.50	Qbt 2	0.0481	—	—	—	—	—	—	—
0253-95-0122	53-01007	1.50–2.50	Qbt 2	0.00271 (J)	—	—	—	—	—	—	—
0253-95-0129	53-01009	1.50–2.50	Qbt 2	—	0.0055	—	—	—	—	—	—
0253-95-0135	53-01011	1.50–2.50	Qbt 2	—	0.00508	—	—	—	—	—	—
0253-95-0138	53-01012	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0142	53-01013	1.50–2.50	Qbt 2	0.0409	—	—	—	—	—	—	—
0253-95-0145	53-01014	1.50–2.50	Qbt 2	0.00884 (J)	—	—	—	—	—	—	—
0253-95-0148	53-01015	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0177	53-01018	3.50–4.83	Qbt 2	0.0101	—	—	—	—	—	—	—
0253-95-0181	53-01019	2.17–3.00	Qbt 2	0.0486	—	—	—	—	—	—	—
0253-95-0187	53-01021	1.58–2.50	Qbt 2	0.107	—	—	—	—	—	—	0.000658 (J)
0253-95-0190	53-01022	1.50–2.50	Qbt 2	0.0256	—	—	—	—	—	—	—
0253-95-0193	53-01023	1.50–2.50	Qbt 2	0.00294 (J)	—	—	—	—	—	—	—
0253-95-0205	53-01025	1.50–2.50	Qbt 2	0.007 (J)	—	—	—	—	—	—	—
0253-95-0208	53-01026	1.50–2.50	Qbt 2	0.00226 (J)	—	—	—	—	—	—	—
0253-95-0211	53-01027	1.50–2.50	Qbt 2	0.0031 (J)	—	—	—	—	—	—	—
0253-95-0214	53-01028	1.50–2.50	Qbt 2	0.00547 (J)	—	—	—	—	—	—	—
0253-95-0217	53-01029	1.50–2.50	Qbt 2	0.0205	—	—	—	—	—	—	—
0253-95-0220	53-01030	1.50–2.50	Qbt 2	0.00783 (J)	—	—	—	—	—	—	—
0253-95-0227	53-01032	1.50–3.00	Qbt 2	0.00568 (J)	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzene	Benzoic Acid	Benzyl Alcohol	BHC[alpha-]	BHC[gamma-]
0253-95-0155	53-01288	1.50–2.50	Qbt 2	0.00222 (J)	—	—	—	—	—	—	—
0253-95-0156	53-01289	1.00–1.67	Qbt 2	0.00301 (J)	—	—	—	—	—	—	—
0253-95-0157	53-01290	0.67–1.50	Qbt 2	0.0332	—	—	—	—	—	—	—
0253-95-0161	53-01294	1.50–2.50	Qbt 2	—	0.00595	—	—	—	—	—	0.00069 (J)
0253-95-0162	53-01295	1.50–2.50	Qbt 2	—	—	—	—	—	—	0.00077 (J)	—
0253-95-0236	53-01317	0.67–2.00	Qbt 2	—	—	—	—	—	—	—	0.000742 (J)
0253-95-0237	53-01318	1.17–2.50	Qbt 2	—	—	—	—	—	—	—	0.000738 (J)
0253-95-0239	53-01320	1.00–2.33	Qbt 2	—	—	—	—	—	—	0.000754 (J)	0.00078 (J)
0253-95-0242	53-01322	1.00–2.67	Qbt 2	0.0144 (J)	—	—	—	—	—	—	—
RE53-99-0115	53-01573	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0116	53-01573	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0117	53-01575	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0118	53-01575	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0119	53-01576	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0120	53-01576	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0121	53-01577	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0122	53-01577	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0125	53-01582	4.00–5.00	Qbt 2	0.007 (J)	—	—	—	—	—	—	—
RE53-99-0126	53-01582	14.00–15.00	Qbt 2	0.01 (J)	—	—	—	—	—	—	—
RE53-99-0124	53-01584	14.00–15.00	Qbt 2	0.011 (J)	—	—	—	—	—	—	—
RE53-99-0132	53-01586	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0133	53-01586	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0134	53-01588	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0135	53-01588	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0129	53-01589	14.00–15.00	Qbt 2	—	—	—	0.00027 (J)	—	—	—	—
RE53-99-0140	53-01592	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0141	53-01592	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzene	Benzoic Acid	Benzyl Alcohol	BHC[alpha-]	BHC[gamma-]
RE53-99-0138	53-01593	4.00–5.00	Qbt 2	0.04	—	—	—	—	—	—	—
RE53-99-0139	53-01593	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0136	53-01594	4.00–5.00	Qbt 2	0.022	—	—	—	—	—	—	—
RE53-99-0137	53-01594	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0148	53-01595	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0149	53-01595	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0146	53-01596	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0147	53-01596	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0144	53-01597	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0145	53-01597	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0142	53-01598	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0143	53-01598	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0230	53-01654	7.00–8.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0231	53-01654	12.00–13.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0232	53-01654	19.00–20.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0237	53-01656	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0243	53-01658	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0244	53-01658	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0249	53-01664	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0251	53-01681	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0260	53-01684	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0264	53-01685	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0266	53-01686	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0273	53-01688	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0277	53-01689	16.00–17.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0278	53-01689	19.00–20.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0279	53-01689	29.00–30.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzene	Benzoic Acid	Benzyl Alcohol	BHC[alpha-]	BHC[gamma-]
RE53-99-0229	53-01690	7.50–9.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0295	53-01691	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0298	53-01691	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0296	53-01691	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0297	53-01691	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0300	53-01692	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0303	53-01693	24.00–25.00	Qbt 2	0.028	0.16	—	—	—	—	—	—
RE53-99-0306	53-01694	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0310	53-01695	1.00–2.00	Qbt 2	—	—	—	—	—	0.025 (J)	—	—
RE53-99-0312	53-01695	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0315	53-01696	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0321	53-01697	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0318	53-01698	14.00–15.00	Qbt 2	0.008 (J)	—	—	—	—	—	—	—
RE53-99-0307	53-01701	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0308	53-01701	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-02-46707	53-02-20828	48.50–50.00	Qbt 2	—	—	—	—	0.19 (J)	—	—	—
RE53-02-46725	53-02-20832	0.00–0.50	Qbt 2	—	—	—	—	0.076 (J)	—	—	—
RE53-00-0094	53-01718	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0047	53-01719	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0051	53-01720	1.00–2.00	Qbt 2	0.0084 (J)	—	—	—	—	—	—	—
RE53-00-0052	53-01720	4.00–5.00	Qbt 2	0.0064 (J)	—	—	—	—	—	—	—
RE53-00-0053	53-01720	14.00–15.00	Qbt 2	0.011 (J-)	—	—	—	—	—	—	—
RE53-00-0055	53-01721	1.00–2.00	Qbt 2	0.0056 (J)	—	—	—	—	—	—	—
RE53-00-0056	53-01721	4.00–5.00	Qbt 2	0.005 (J)	—	—	—	—	—	—	—
RE53-00-0057	53-01721	14.00–15.00	Qbt 2	0.0069 (J)	—	—	—	—	—	—	—
RE53-00-0059	53-01722	1.00–2.00	Qbt 2	0.005 (J)	—	—	—	—	—	—	—
RE53-00-0060	53-01722	4.00–5.00	Qbt 2	8.800001E-03 (J)	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzene	Benzoic Acid	Benzyl Alcohol	BHC[alpha-]	BHC[gamma-]
RE53-00-0061	53-01722	14.00–15.00	Qbt 2	0.0055 (J)	—	—	—	—	—	—	—
RE53-00-0071	53-01725	1.00–2.00	Qbt 2	0.0052 (J)	—	—	—	—	—	—	—
RE53-00-0072	53-01725	4.00–5.00	Qbt 2	0.0069 (J)	—	—	—	—	—	—	—
RE53-00-0073	53-01725	14.00–15.00	Qbt 2	0.0055 (J)	—	—	—	—	—	—	—
RE53-00-0075	53-01726	1.00–2.00	Qbt 2	0.0059 (J)	—	—	—	—	—	—	—
RE53-00-0076	53-01726	4.00–5.00	Qbt 2	0.0067 (J)	—	—	—	—	—	—	—
RE53-00-0077	53-01726	14.00–15.00	Qbt 2	0.0057 (J)	—	—	—	—	—	—	—
RE53-00-0079	53-01727	1.00–2.00	Qbt 2	0.0051 (J)	—	—	—	—	—	—	—
RE53-00-0080	53-01727	4.00–5.00	Qbt 2	0.0069 (J)	—	—	—	—	—	—	—
RE53-00-0081	53-01727	14.00–15.00	Qbt 2	0.0047 (J)	—	—	—	—	—	—	—
RE53-00-0083	53-01728	1.00–2.00	Qbt 2	0.0057 (J)	—	—	—	—	—	—	—
RE53-00-0084	53-01728	4.00–5.00	Qbt 2	0.0052 (J)	—	—	—	—	—	—	—
RE53-00-0085	53-01728	14.00–15.00	Qbt 2	0.005 (J)	—	—	—	—	—	—	—
RE53-00-0087	53-01729	1.00–2.00	Qbt 2	7.900001E-03 (J)	—	—	—	—	—	—	—
RE53-00-0088	53-01729	4.00–5.00	Qbt 2	0.0056 (J)	—	—	—	—	—	—	—
RE53-00-0089	53-01729	14.00–15.00	Qbt 2	0.0056 (J)	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Butylbenzylphthalate	Chloroethane	DDD[4,4'-]	DDT[4,4'-]	Dichlorodifluoromethane
SWMU 53-002(a)											
0253-95-0103	53-01001	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0110	53-01003	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0113	53-01004	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0116	53-01005	1.50–2.42	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0119	53-01006	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0122	53-01007	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0129	53-01009	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0135	53-01011	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0138	53-01012	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0142	53-01013	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0145	53-01014	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0148	53-01015	1.50–2.50	Qbt 2	0.247 (J)	—	—	—	—	—	—	—
0253-95-0177	53-01018	3.50–4.83	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0181	53-01019	2.17–3.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0187	53-01021	1.58–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0190	53-01022	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0193	53-01023	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0205	53-01025	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0208	53-01026	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0211	53-01027	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0214	53-01028	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0217	53-01029	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0220	53-01030	1.50–2.50	Qbt 2	—	—	—	—	—	0.00305 (J)	0.00199 (J)	—
0253-95-0227	53-01032	1.50–3.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Butylbenzylphthalate	Chloroethane	DDD[4,4'-]	DDT[4,4'-]	Dichlorodifluoromethane
0253-95-0155	53-01288	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0156	53-01289	1.00–1.67	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0157	53-01290	0.67–1.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0161	53-01294	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0162	53-01295	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0236	53-01317	0.67–2.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0237	53-01318	1.17–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0239	53-01320	1.00–2.33	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0242	53-01322	1.00–2.67	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0115	53-01573	4.00–5.00	Qbt 2	—	—	—	—	0.0021 (J)	—	—	—
RE53-99-0116	53-01573	14.00–15.00	Qbt 2	—	0.0019 (J)	—	—	0.004 (J)	—	—	—
RE53-99-0117	53-01575	4.00–5.00	Qbt 2	0.047 (J)	—	—	—	—	—	—	—
RE53-99-0118	53-01575	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0119	53-01576	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0120	53-01576	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0121	53-01577	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0122	53-01577	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0125	53-01582	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0126	53-01582	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0124	53-01584	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0132	53-01586	4.00–5.00	Qbt 2	—	—	—	0.09 (J)	—	—	—	—
RE53-99-0133	53-01586	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0134	53-01588	4.00–5.00	Qbt 2	0.1 (J)	—	—	—	—	—	—	—
RE53-99-0135	53-01588	14.00–15.00	Qbt 2	0.096 (J)	—	—	—	—	—	—	—
RE53-99-0129	53-01589	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Butylbenzylphthalate	Chloroethane	DDD[4,4'-]	DDT[4,4'-]	Dichlorodifluoromethane
RE53-99-0140	53-01592	4.00–5.00	Qbt 2	0.1 (J)	—	—	—	—	—	0.00034 (J)	—
RE53-99-0141	53-01592	14.00–15.00	Qbt 2	0.47	—	—	—	—	—	—	—
RE53-99-0138	53-01593	4.00–5.00	Qbt 2	0.1 (J)	0.005 (J)	—	—	—	—	—	—
RE53-99-0139	53-01593	14.00–15.00	Qbt 2	0.15 (J)	—	—	—	—	—	—	—
RE53-99-0136	53-01594	4.00–5.00	Qbt 2	7.300001E-02 (J)	—	—	—	—	—	—	—
RE53-99-0137	53-01594	14.00–15.00	Qbt 2	0.054 (J)	—	—	—	—	—	—	—
RE53-99-0148	53-01595	4.00–5.00	Qbt 2	0.054 (J)	0.0014 (J)	—	—	—	—	—	—
RE53-99-0149	53-01595	14.00–15.00	Qbt 2	0.05 (J)	—	—	—	—	—	—	—
RE53-99-0146	53-01596	4.00–5.00	Qbt 2	0.059 (J)	—	—	—	—	—	—	—
RE53-99-0147	53-01596	14.00–15.00	Qbt 2	0.062 (J)	—	—	—	—	—	—	—
RE53-99-0144	53-01597	4.00–5.00	Qbt 2	0.097 (J)	0.0026 (J)	—	—	—	—	—	—
RE53-99-0145	53-01597	14.00–15.00	Qbt 2	0.081 (J)	—	—	—	—	—	—	—
RE53-99-0142	53-01598	4.00–5.00	Qbt 2	0.093 (J)	—	—	—	—	—	—	—
RE53-99-0143	53-01598	14.00–15.00	Qbt 2	9.500001E-02 (J)	—	—	—	—	—	—	—
RE53-99-0230	53-01654	7.00–8.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0231	53-01654	12.00–13.00	Qbt 2	0.061 (J)	—	—	—	—	—	—	—
RE53-99-0232	53-01654	19.00–20.00	Qbt 2	0.044 (J)	—	—	—	—	—	—	—
RE53-99-0237	53-01656	13.00–14.00	Qbt 2	0.048 (J)	—	—	—	—	—	—	—
RE53-99-0243	53-01658	13.00–14.00	Qbt 2	0.019 (J)	—	—	—	—	—	—	—
RE53-99-0244	53-01658	24.00–25.00	Qbt 2	0.033 (J)	—	—	—	—	—	—	—
RE53-99-0249	53-01664	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0251	53-01681	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0260	53-01684	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0264	53-01685	14.00–15.00	Qbt 2	0.067 (J)	—	—	—	—	—	—	—
RE53-99-0266	53-01686	4.00–5.00	Qbt 2	0.018 (J)	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Butylbenzylphthalate	Chloroethane	DDD[4,4'-]	DDT[4,4'-]	Dichlorodifluoromethane
RE53-99-0273	53-01688	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0277	53-01689	16.00–17.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0278	53-01689	19.00–20.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0279	53-01689	29.00–30.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0229	53-01690	7.50–9.00	Qbt 2	0.33 (J)	—	—	—	—	—	—	—
RE53-99-0295	53-01691	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0298	53-01691	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0296	53-01691	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0297	53-01691	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0300	53-01692	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0303	53-01693	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0306	53-01694	24.00–25.00	Qbt 2	—	—	—	0.018 (J)	—	—	—	—
RE53-99-0310	53-01695	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0312	53-01695	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	0.006 (J)
RE53-99-0315	53-01696	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0321	53-01697	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0318	53-01698	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0307	53-01701	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	0.002 (J)
RE53-99-0308	53-01701	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	0.002 (J)
RE53-02-46707	53-02-20828	48.50–50.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-02-46725	53-02-20832	0.00–0.50	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0094	53-01718	4.00–5.00	Qbt 2	0.098 (J)	—	—	—	—	—	—	—
RE53-00-0047	53-01719	1.00–2.00	Qbt 2	—	—	0.006	—	—	—	—	—
RE53-00-0051	53-01720	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0052	53-01720	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Butylbenzylphthalate	Chloroethane	DDD[4,4'-]	DDT[4,4'-]	Dichlorodifluoromethane
RE53-00-0053	53-01720	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0055	53-01721	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0056	53-01721	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0057	53-01721	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0059	53-01722	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0060	53-01722	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0061	53-01722	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0071	53-01725	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0072	53-01725	4.00–5.00	Qbt 2	—	0.0053 (J)	—	—	—	—	—	—
RE53-00-0073	53-01725	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0075	53-01726	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0076	53-01726	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0077	53-01726	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0079	53-01727	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0080	53-01727	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0081	53-01727	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0083	53-01728	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0084	53-01728	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0085	53-01728	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0087	53-01729	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0088	53-01729	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0089	53-01729	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Endrin	Heptachlor	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride
SWMU 53-002(a)											
0253-95-0103	53-01001	1.50–2.50	Qbt 2	—	—	—	0.000835 (J)	—	—	—	—
0253-95-0110	53-01003	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0113	53-01004	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0116	53-01005	1.50–2.42	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0119	53-01006	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0122	53-01007	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0129	53-01009	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0135	53-01011	1.50–2.50	Qbt 2	0.000898 (J)	—	—	—	—	—	—	—
0253-95-0138	53-01012	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	0.0037 (J)
0253-95-0142	53-01013	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	0.0046 (J)
0253-95-0145	53-01014	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	0.00424 (J)
0253-95-0148	53-01015	1.50–2.50	Qbt 2	0.000973 (J)	—	—	0.000846 (J)	0.00168	—	—	—
0253-95-0177	53-01018	3.50–4.83	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0181	53-01019	2.17–3.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0187	53-01021	1.58–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0190	53-01022	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0193	53-01023	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0205	53-01025	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0208	53-01026	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0211	53-01027	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0214	53-01028	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0217	53-01029	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0220	53-01030	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0227	53-01032	1.50–3.00	Qbt 2	—	—	—	—	0.000935 (J)	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Endrin	Heptachlor	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride
0253-95-0155	53-01288	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0156	53-01289	1.00–1.67	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0157	53-01290	0.67–1.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0161	53-01294	1.50–2.50	Qbt 2	0.000922 (J)	—	—	—	0.0012 (J)	—	—	—
0253-95-0162	53-01295	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0236	53-01317	0.67–2.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0237	53-01318	1.17–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0239	53-01320	1.00–2.33	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0242	53-01322	1.00–2.67	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0115	53-01573	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0116	53-01573	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0117	53-01575	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0118	53-01575	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0119	53-01576	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0120	53-01576	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0121	53-01577	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0122	53-01577	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0125	53-01582	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0126	53-01582	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	0.001 (J)
RE53-99-0124	53-01584	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0132	53-01586	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0133	53-01586	14.00–15.00	Qbt 2	—	—	0.036 (J)	—	—	—	—	—
RE53-99-0134	53-01588	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0135	53-01588	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0129	53-01589	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Endrin	Heptachlor	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride
RE53-99-0140	53-01592	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0141	53-01592	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0138	53-01593	4.00–5.00	Qbt 2	—	—	—	—	—	0.0024 (J)	—	—
RE53-99-0139	53-01593	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0136	53-01594	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0137	53-01594	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0148	53-01595	4.00–5.00	Qbt 2	—	—	—	—	—	0.00049 (J)	—	—
RE53-99-0149	53-01595	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0146	53-01596	4.00–5.00	Qbt 2	—	—	—	—	—	0.00056 (J)	—	—
RE53-99-0147	53-01596	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0144	53-01597	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0145	53-01597	14.00–15.00	Qbt 2	—	—	—	—	—	—	9.900001E-04 (J)	—
RE53-99-0142	53-01598	4.00–5.00	Qbt 2	—	—	—	—	—	0.0017 (J)	0.0011 (J)	—
RE53-99-0143	53-01598	14.00–15.00	Qbt 2	—	—	—	—	—	—	0.0016 (J)	—
RE53-99-0230	53-01654	7.00–8.00	Qbt 2	—	—	0.029 (J)	—	—	—	—	—
RE53-99-0231	53-01654	12.00–13.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0232	53-01654	19.00–20.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0237	53-01656	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0243	53-01658	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0244	53-01658	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0249	53-01664	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0251	53-01681	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	0.0047 (J)
RE53-99-0260	53-01684	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0264	53-01685	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0266	53-01686	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Endrin	Heptachlor	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride
RE53-99-0273	53-01688	14.00–15.00	Qbt 2	—	—	0.026 (J)	—	—	—	—	—
RE53-99-0277	53-01689	16.00–17.00	Qbt 2	—	—	0.072 (J)	—	—	—	—	—
RE53-99-0278	53-01689	19.00–20.00	Qbt 2	—	—	8.400001E-02 (J)	—	—	—	—	—
RE53-99-0279	53-01689	29.00–30.00	Qbt 2	—	—	0.085 (J)	—	—	—	—	—
RE53-99-0229	53-01690	7.50–9.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0295	53-01691	9.00–10.00	Qbt 2	—	—	0.045 (J)	—	—	—	—	—
RE53-99-0298	53-01691	9.00–10.00	Qbt 2	—	—	0.12 (J)	—	—	—	—	—
RE53-99-0296	53-01691	13.00–14.00	Qbt 2	—	—	0.044 (J)	—	—	—	—	—
RE53-99-0297	53-01691	24.00–25.00	Qbt 2	—	—	8.800001E-02 (J)	—	—	—	—	—
RE53-99-0300	53-01692	24.00–25.00	Qbt 2	—	—	0.23 (J)	—	—	—	—	—
RE53-99-0303	53-01693	24.00–25.00	Qbt 2	—	—	0.3 (J)	—	—	—	—	—
RE53-99-0306	53-01694	24.00–25.00	Qbt 2	—	—	0.61	—	—	—	—	—
RE53-99-0310	53-01695	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0312	53-01695	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0315	53-01696	14.00–15.00	Qbt 2	—	0.058 (J)	1.5	—	—	—	—	—
RE53-99-0321	53-01697	14.00–15.00	Qbt 2	—	—	0.02 (J)	—	—	—	—	—
RE53-99-0318	53-01698	14.00–15.00	Qbt 2	—	—	0.021 (J)	—	—	—	—	—
RE53-99-0307	53-01701	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0308	53-01701	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-02-46707	53-02-20828	48.50–50.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-02-46725	53-02-20832	0.00–0.50	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0094	53-01718	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0047	53-01719	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0051	53-01720	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0052	53-01720	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Endrin	Heptachlor	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride
RE53-00-0053	53-01720	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0055	53-01721	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0056	53-01721	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0057	53-01721	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0059	53-01722	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0060	53-01722	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0061	53-01722	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0071	53-01725	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0072	53-01725	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0073	53-01725	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0075	53-01726	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0076	53-01726	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0077	53-01726	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0079	53-01727	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0080	53-01727	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0081	53-01727	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0083	53-01728	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0084	53-01728	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0085	53-01728	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0087	53-01729	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0088	53-01729	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0089	53-01729	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Methylphenol[3-]	Methylphenol[4-]	Phenol	Tetrachloroethene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]
0253-95-0103	53-01001	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0110	53-01003	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0113	53-01004	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0116	53-01005	1.50–2.42	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0119	53-01006	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0122	53-01007	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0129	53-01009	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0135	53-01011	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0138	53-01012	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0142	53-01013	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0145	53-01014	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0148	53-01015	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0177	53-01018	3.50–4.83	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0181	53-01019	2.17–3.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0187	53-01021	1.58–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0190	53-01022	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0193	53-01023	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0205	53-01025	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0208	53-01026	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0211	53-01027	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0214	53-01028	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0217	53-01029	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0220	53-01030	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0227	53-01032	1.50–3.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0155	53-01288	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Methylphenol[3-]	Methylphenol[4-]	Phenol	Tetrachloroethene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]
0253-95-0156	53-01289	1.00–1.67	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0157	53-01290	0.67–1.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0161	53-01294	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0162	53-01295	1.50–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0236	53-01317	0.67–2.00	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0237	53-01318	1.17–2.50	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0239	53-01320	1.00–2.33	Qbt 2	—	—	—	—	—	—	—	—
0253-95-0242	53-01322	1.00–2.67	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0115	53-01573	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0116	53-01573	14.00–15.00	Qbt 2	—	—	—	—	—	9.700001E-04 (J)	—	—
RE53-99-0117	53-01575	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0118	53-01575	14.00–15.00	Qbt 2	—	—	—	—	0.00071 (J)	—	—	—
RE53-99-0119	53-01576	4.00–5.00	Qbt 2	—	—	—	—	0.00053 (J)	0.00049 (J)	—	—
RE53-99-0120	53-01576	14.00–15.00	Qbt 2	—	—	—	—	—	8.500001E-04 (J)	—	—
RE53-99-0121	53-01577	4.00–5.00	Qbt 2	—	—	—	—	—	0.00061 (J)	—	—
RE53-99-0122	53-01577	14.00–15.00	Qbt 2	—	—	—	—	0.00071 (J)	0.00048 (J)	—	—
RE53-99-0125	53-01582	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0126	53-01582	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0124	53-01584	14.00–15.00	Qbt 2	—	—	—	—	0.004 (J)	—	—	—
RE53-99-0132	53-01586	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0133	53-01586	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0134	53-01588	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0135	53-01588	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0129	53-01589	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0140	53-01592	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Methylphenol[3-]	Methylphenol[4-]	Phenol	Tetrachloroethene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]
RE53-99-0141	53-01592	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0138	53-01593	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	0.00047 (J)
RE53-99-0139	53-01593	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0136	53-01594	4.00–5.00	Qbt 2	—	0.032 (J)	—	—	—	—	—	—
RE53-99-0137	53-01594	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0148	53-01595	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0149	53-01595	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0146	53-01596	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0147	53-01596	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0144	53-01597	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0145	53-01597	14.00–15.00	Qbt 2	0.37	—	—	—	—	—	—	—
RE53-99-0142	53-01598	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0143	53-01598	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0230	53-01654	7.00–8.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0231	53-01654	12.00–13.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0232	53-01654	19.00–20.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0237	53-01656	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0243	53-01658	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0244	53-01658	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0249	53-01664	14.00–15.00	Qbt 2	—	—	—	0.00045 (J)	0.00063 (J)	—	—	—
RE53-99-0251	53-01681	4.00–5.00	Qbt 2	—	—	—	—	7.200001E-04 (J)	—	—	—
RE53-99-0260	53-01684	4.00–5.00	Qbt 2	—	—	—	—	0.001 (J)	—	—	—
RE53-99-0264	53-01685	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0266	53-01686	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0273	53-01688	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Methylphenol[3-]	Methylphenol[4-]	Phenol	Tetrachloroethene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]
RE53-99-0277	53-01689	16.00–17.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0278	53-01689	19.00–20.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0279	53-01689	29.00–30.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0229	53-01690	7.50–9.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0295	53-01691	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0298	53-01691	9.00–10.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0296	53-01691	13.00–14.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0297	53-01691	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0300	53-01692	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0303	53-01693	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0306	53-01694	24.00–25.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0310	53-01695	1.00–2.00	Qbt 2	—	—	0.029 (J)	—	—	—	—	—
RE53-99-0312	53-01695	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0315	53-01696	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0321	53-01697	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0318	53-01698	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0307	53-01701	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-99-0308	53-01701	4.00–5.00	Qbt 2	—	—	—	—	—	—	0.001	—
RE53-02-46707	53-02-20828	48.50–50.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-02-46725	53-02-20832	0.00–0.50	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0094	53-01718	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0047	53-01719	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0051	53-01720	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	0.00038 (J)
RE53-00-0052	53-01720	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0053	53-01720	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

Table D-5.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Methylphenol[3-]	Methylphenol[4-]	Phenol	Tetrachloroethene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]
RE53-00-0055	53-01721	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0056	53-01721	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0057	53-01721	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0059	53-01722	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0060	53-01722	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0061	53-01722	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0071	53-01725	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0072	53-01725	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0073	53-01725	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0075	53-01726	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0076	53-01726	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0077	53-01726	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0079	53-01727	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0080	53-01727	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0081	53-01727	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0083	53-01728	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0084	53-01728	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0085	53-01728	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0087	53-01729	1.00–2.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0088	53-01729	4.00–5.00	Qbt 2	—	—	—	—	—	—	—	—
RE53-00-0089	53-01729	14.00–15.00	Qbt 2	—	—	—	—	—	—	—	—

*— = Result was not detected or not analyzed.

Table D-6.1-1
Samples Collected for Inorganic Chemical Analyses in Reaches C, D, and E

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-01-0047	53-01730	0–0.13	Sediment	—*	9671R
RE53-01-0048	53-01731	0.39–0.69	Sediment	—	9671R
RE53-01-0051	53-01732	0–0.39	Sediment	—	9671R
RE53-02-49310	53-01732	0.4–0.56	Sediment	—	1146S
RE53-01-0050	53-01733	0–0.33	Sediment	—	9671R
RE53-01-0012	53-01733	0.46–0.72	Sediment	9689R	9689R
RE53-02-49311	53-01733	0.72–0.85	Sediment	—	1146S
RE53-01-0052	53-01734	0–0.59	Sediment	—	9671R
RE53-01-0049	53-01735	0–0.2	Sediment	—	9671R
RE53-02-49317	53-01735	0.19–0.59	Sediment	—	1146S
RE53-02-49318	53-01735	1.21–1.7	Sediment	—	1146S
RE53-01-0045	53-01736	0–0.42	Sediment	—	9671R
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	9671R
RE53-02-49319	53-01736	0.98–1.38	Sediment	—	1146S
RE53-01-0001	53-01737	0–0.36	Sediment	9674R	9674R
RE53-02-49320	53-01737	0.36–0.65	Sediment	—	1146S
RE53-01-0017	53-01738	0–0.08	Sediment	—	9674R
RE53-01-0016	53-01738	0.08–0.23	Sediment	—	9674R
RE53-02-49321	53-01738	0.23–0.36	Sediment	—	1146S
RE53-01-0014	53-01739	0–0.23	Sediment	—	9674R
RE53-01-0015	53-01740	0–0.26	Sediment	—	9674R
RE53-02-49324	53-01740	0.27–0.96	Sediment	—	1146S
RE53-01-0024	53-01741	0–0.29	Sediment	—	9703R
RE53-02-49325	53-01741	0.29–0.6	Sediment	—	1146S
RE53-01-0025	53-01742	0.36–0.49	Sediment	—	9703R
RE53-01-0026	53-01743	0–0.13	Sediment	—	9703R
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	9703R
RE53-02-49303	53-01744	0.75–1.42	Sediment	—	1146S
RE53-01-0019	53-01745	0.2–0.46	Sediment	—	9703R
RE53-02-49304	53-01746	0–0.29	Sediment	—	1146S
RE53-01-0002	53-01746	0.29–0.59	Sediment	9703R	9703R
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	9703R
RE53-02-49305	53-01747	0.63–1.02	Sediment	—	1146S
RE53-02-49308	53-01748	0–0.23	Sediment	—	1146S
RE53-02-49309	53-01748	0.06–0.92	Sediment	—	1146S
RE53-01-0022	53-01748	0.36–0.63	Sediment	—	9703R

Table D-6.1-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexavalent Chromium	Metals
RE53-01-0023	53-01749	0–0.2	Sediment	—	9703R
RE53-02-49306	53-02-21057	0–0.26	Sediment	—	1146S
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	—	1146S
RE53-02-49312	53-02-21063	0–1.02	Sediment	—	1146S
RE53-02-49313	53-02-21063	1.02–1.44	Sediment	—	1146S
RE53-02-49314	53-02-21065	0–0.29	Sediment	—	1146S
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	—	1146S
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	—	1146S
RE53-02-49322	53-02-21073	0–0.27	Sediment	—	1146S
RE53-02-49323	53-02-21074	0–0.27	Sediment	—	1146S
RE53-02-49326	53-02-21077	0–0.33	Sediment	—	1146S

*— = Sample not requested for this analysis.

Table D-6.1-2
Frequency of Detected Concentrations above BV for Inorganic Chemicals in Reaches C, D, and E

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (mg/kg)	Background Value (mg/kg)	Frequency of Detects above Background Value	Frequency of Nondetects above Background Value
Aluminum	Sediment	47	47	865 to 9670	15400	0/47	0/47
Antimony	Sediment	47	3	0.0517 to 7.91	0.83	1/47	0/47
Arsenic	Sediment	47	46	0.22 to 2.5	3.98	0/47	0/47
Barium	Sediment	47	47	9.6 to 73.4	127	0/47	0/47
Beryllium	Sediment	47	46	0.1 to 1.1	1.31	0/47	0/47
Cadmium	Sediment	47	44	[0.014] to [0.49]	0.4	0/47	2/47
Calcium	Sediment	47	47	503 to 3210	4420	0/47	0/47
Chromium	Sediment	47	47	0.55 to 6.99	10.5	0/47	0/47
Hexavalent chromium	Sediment	3	0	[0.82 to 1.7]	na[b]	0/3	na
Cobalt	Sediment	47	47	0.36 to 2.7	4.73	0/47	0/47
Copper	Sediment	47	45	[0.9] to 12.1	11.2	1/47	0/47
Iron	Sediment	47	47	1750 to 9060	13800	0/47	0/47
Lead	Sediment	39	39	6.42 to 44.7	19.7	8/39	0/39
Magnesium	Sediment	47	47	264 to 1570	2370	0/47	0/47
Manganese	Sediment	47	47	56.2 to 424	543	0/47	0/47
Mercury	Sediment	47	20	[0.00451] to 0.0342	0.1	0/47	0/47
Nickel	Sediment	47	47	0.61 to 4.61	9.38	0/47	0/47
Potassium	Sediment	47	47	169 to 1630	2690	0/47	0/47
Selenium	Sediment	47	10	[0.23] to [0.526]	0.3	6/47	22/47
Silver	Sediment	47	31	0.0199 to 0.33	1	0/47	0/47
Sodium	Sediment	47	47	15.3 to 216	1470	0/47	0/47
Thallium	Sediment	47	30	0.0276 to 0.25	0.73	0/47	0/47
Vanadium	Sediment	47	47	1.2 to 12.9	19.7	0/47	0/47
Zinc	Sediment	47	47	13.9 to 49.8	60.2	0/47	0/47

[a] Values in square brackets indicate detection limits for nondetects.
[b] na = Not available.

Table D-6.1-3
Results of Statistical Tests for Inorganic Chemicals above the BV in at Least One Sample in Reaches C, D, and E

Analyte Code	Gehan p-value	Quantile p-value	Slippage p-value	No. of Site Data	No. of Bkgd Data	Max Detect Site Data (mg/kg)	Max Detect Bkgd Data (mg/kg)
Cadmium	0.383	0.222	0.762	47	24	0.2	0.18
Copper	0.121	0.398	0.603	47	31	12.1	12
Lead	0.0004	0.011	0.09	39	31	44.7	25.6

Table D-6.1-4
Detected Concentrations above the BV for Inorganic Chemicals in Reaches C, D, and E

Sample ID	Location ID	Depth (ft)	Media	Antimony	Lead	Selenium
Sediment Background Value				**0.83**	**19.7**	**0.3**
RE53-01-0012	53-01733	0.46–0.72	Sediment	—*	—	0.33 (J)
RE53-01-0050	53-01733	0.00–0.33	Sediment	—	20.1	—
RE53-01-0049	53-01735	0.00–0.20	Sediment	—	23.3	—
RE53-02-49318	53-01735	1.21–1.70	Sediment	7.91 (J-)	—	—
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	—	0.32 (J)
RE53-01-0017	53-01738	0.00–0.08	Sediment	—	20.3	—
RE53-01-0024	53-01741	0.00–0.29	Sediment	—	—	0.32 (J)
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	—	0.38 (J)
RE53-02-49304	53-01746	0.00–0.29	Sediment	—	44.7	—
RE53-01-0002	53-01746	0.29–0.59	Sediment	—	—	0.35 (J)
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	26.1	—
RE53-02-49308	53-01748	0.00–0.23	Sediment	—	33.6	—
RE53-02-49306	53-02-21057	0.00–0.26	Sediment	—	—	0.39 (J)
RE53-02-49314	53-02-21065	0.00–0.29	Sediment	—	30.3	—
RE53-02-49323	53-02-21074	0.00–0.27	Sediment	—	22.2	—

*— = Result was not above the BV/FV.

Table D-6.2-1
Samples Collected for Radionuclide Analyses in Reaches C, D, and E

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-01-0047	53-01730	0–0.13	Sediment	—*	9672R	9672R	9672R	9672R	9672R
RE53-01-0048	53-01731	0.39–0.69	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-01-0051	53-01732	0–0.39	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-02-49310	53-01732	0.4–0.56	Sediment	1147S	1147S	—	—	—	—
RE53-01-0050	53-01733	0–0.33	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-01-0012	53-01733	0.46–0.72	Sediment	—	9690R	9690R	9690R	9690R	9690R
RE53-02-49311	53-01733	0.72–0.85	Sediment	1147S	1147S	—	—	—	—
RE53-01-0052	53-01734	0–0.59	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-01-0049	53-01735	0–0.2	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-02-49317	53-01735	0.19–0.59	Sediment	1147S	1147S	—	—	—	—
RE53-02-49318	53-01735	1.21–1.7	Sediment	1147S	1147S	—	—	—	—
RE53-01-0045	53-01736	0–0.42	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	9672R	9672R	9672R	9672R	9672R
RE53-02-49319	53-01736	0.98–1.38	Sediment	1147S	1147S	—	—	—	—
RE53-01-0001	53-01737	0–0.36	Sediment	—	9675R	9675R	9675R	9675R	9675R
RE53-02-49320	53-01737	0.36–0.65	Sediment	1147S	1147S	—	—	—	—
RE53-01-0017	53-01738	0–0.08	Sediment	—	9675R	9675R	9675R	9675R	9675R
RE53-01-0016	53-01738	0.08–0.23	Sediment	—	9675R	9675R	9675R	9675R	9675R
RE53-02-49321	53-01738	0.23–0.36	Sediment	1147S	1147S	—	—	—	—
RE53-01-0014	53-01739	0–0.23	Sediment	—	9675R	9675R	9675R	9675R	9675R
RE53-01-0015	53-01740	0–0.26	Sediment	—	9675R	9675R	9675R	9675R	9675R
RE53-02-49324	53-01740	0.27–0.96	Sediment	1147S	1147S	—	—	—	—
RE53-01-0024	53-01741	0–0.29	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-02-49325	53-01741	0.29–0.6	Sediment	1147S	1147S	—	—	—	—
RE53-01-0025	53-01742	0.36–0.49	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-01-0026	53-01743	0–0.13	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-02-49303	53-01744	0.75–1.42	Sediment	1147S	1147S	—	—	—	—
RE53-01-0019	53-01745	0.2–0.46	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-02-49304	53-01746	0–0.29	Sediment	1147S	1147S	—	—	—	—
RE53-01-0002	53-01746	0.29–0.59	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-02-49305	53-01747	0.63–1.02	Sediment	1147S	1147S	—	—	—	—
RE53-02-49308	53-01748	0–0.23	Sediment	1147S	1147S	—	—	—	—

Table D-6.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
RE53-02-49309	53-01748	0.06–0.92	Sediment	1147S	1147S	—	—	—	—
RE53-01-0022	53-01748	0.36–0.63	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-01-0023	53-01749	0–0.2	Sediment	—	9704R	9704R	9704R	9704R	9704R
RE53-02-49306	53-02-21057	0–0.26	Sediment	1147S	1147S	—	—	—	—
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	1147S	1147S	—	—	—	—
RE53-02-49312	53-02-21063	0–1.02	Sediment	1147S	1147S	—	—	—	—
RE53-02-49313	53-02-21063	1.02–1.44	Sediment	1147S	1147S	—	—	—	—
RE53-02-49314	53-02-21065	0–0.29	Sediment	1147S	1147S	—	—	—	—
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	1147S	1147S	—	—	—	—
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	1147S	1147S	—	—	—	—
RE53-02-49322	53-02-21073	0–0.27	Sediment	1147S	1147S	—	—	—	—
RE53-02-49323	53-02-21074	0–0.27	Sediment	1147S	1147S	—	—	—	—
RE53-02-49326	53-02-21077	0–0.33	Sediment	1147S	1147S	—	—	—	—

*— = Sample not requested for this analysis.

Table D-6.2-2
Frequency of Detected Concentrations for Radionuclides in Reaches C, D, and E

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (pCi/g)	Background Value (pCi/g)	Frequency of Detects above Background Value
Americium-241	Sediment	47	4	[-0.507] to 0.194	0.04	3/47
Cesium-134	Sediment	46	33	[-0.266] to 1.95	na[b]	33/46
Cesium-137	Sediment	46	41	[0.0411] to 1.02	0.9	3/46
Cobalt-60	Sediment	47	37	[-0.000795] to 5.83	na	37/47
Europium-152	Sediment	47	0	[-0.15 to 0.0549]	na	0/47
Plutonium-238	Sediment	23	0	[-0.00126 to 0.0166]	0.006	0/23
Plutonium-239	Sediment	23	3	[-0.0017] to 0.0487	0.068	0/23
Ruthenium-106	Sediment	47	0	[-0.353 to 0.289]	na	0/47
Sodium-22	Sediment	24	0	[-0.0445 to 0.0535]	na	0/24
Strontium-90	Sediment	23	5	[0.0517] to 0.526	1.04	0/23
Tritium	Sediment	23	14	[0.004] to 0.213	0.093	2/23
Uranium-234	Sediment	23	23	0.352 to 2.05	2.59	0/23
Uranium-235	Sediment	47	7	[0.015] to [0.345]	0.2	0/47
Uranium-238	Sediment	23	23	0.35 to 2.25	2.29	0/23

[a] Values in square brackets indicate detection limits for nondetects.
[b] na = Not available.

Table D-6.2-3
Results of Statistical Tests for Radionuclides above the BV or Detected in at Least One Sample in Canyon Sediment Samples Collected in Reaches C, D, and E

Analyte	Gehan p-value	Quantile p-value	Slippage p-value	No. of Site Data	No. of Bkgd Data	Max Site (pCi/g)	Max Bkgd (pCi/g)
Americium-241	n/a*	n/a	0.234	47	23	0.194	0.038
Cesium-137	<0.001	0.069	1	46	24	1.02	1.28
Tritium	0.045	0.067	0.054	23	23	0.212	0.086

*n/a = Not applicable.

Table D-6.2-4
Detected Concentrations above the BV for Radionuclides in Reaches C, D, and E

Sample ID	Location ID	Depth (ft)	Media	Cesium-134	Cobalt-60	Tritium
Sediment Background Value				**na**[a]	**na**	**0.093**
RE53-01-0047	53-01730	0.00–0.13	Sediment	0.203	0.384	—[b]
RE53-01-0048	53-01731	0.39–0.69	Sediment	—	—	—
RE53-01-0051	53-01732	0.00–0.39	Sediment	—	—	—
RE53-01-0050	53-01733	0.00–0.33	Sediment	0.73	1.11	—
RE53-01-0012	53-01733	0.46–0.72	Sediment	0.479	1.24	—
RE53-02-49311	53-01733	0.72–0.85	Sediment	—	0.303	—
RE53-01-0052	53-01734	0.00–0.59	Sediment	0.307	0.366	—
RE53-01-0049	53-01735	0.00–0.20	Sediment	0.51	0.945	—
RE53-02-49317	53-01735	0.19–0.59	Sediment	0.309	0.871	—
RE53-02-49318	53-01735	1.21–1.70	Sediment	—	0.0999	—
RE53-01-0045	53-01736	0.00–0.42	Sediment	0.479	1.04	—
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	0.657	0.114
RE53-02-49319	53-01736	0.98–1.38	Sediment	—	0.332	—
RE53-01-0001	53-01737	0.00–0.36	Sediment	—	—	—
RE53-01-0017	53-01738	0.00–0.08	Sediment	0.485	0.775	—
RE53-01-0016	53-01738	0.08–0.23	Sediment	0.505	0.627	—
RE53-02-49321	53-01738	0.23–0.36	Sediment	0.326	0.728	—
RE53-01-0014	53-01739	0.00–0.23	Sediment	0.501	0.776	—
RE53-01-0015	53-01740	0.00–0.26	Sediment	0.254	0.806	—
RE53-02-49324	53-01740	0.27–0.96	Sediment	—	—	—
RE53-01-0024	53-01741	0.00–0.29	Sediment	0.247	0.294	—
RE53-02-49325	53-01741	0.29–0.60	Sediment	—	—	—
RE53-01-0025	53-01742	0.36–0.49	Sediment	0.101	—	—
RE53-01-0026	53-01743	0.00–0.13	Sediment	0.197	0.247	—
RE53-01-0018	53-01744	0.39–0.76	Sediment	1.95	5.83	—
RE53-02-49303	53-01744	0.75–1.42	Sediment	—	0.922	—
RE53-01-0019	53-01745	0.20–0.46	Sediment	1.25	2.86	—

Table D-6.2-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	Cesium-134	Cobalt-60	Tritium
Sediment Background Value				**na***	**na**	**0.093**
RE53-02-49304	53-01746	0.00–0.29	Sediment	0.388	0.942	—
RE53-01-0002	53-01746	0.29–0.59	Sediment	1.24	2.3	—
RE53-01-0020	53-01747	0.23–0.63	Sediment	1.16	2.04	—
RE53-02-49305	53-01747	0.63–1.02	Sediment	0.368	0.982	—
RE53-02-49308	53-01748	0.00–0.23	Sediment	0.667	1.35	—
RE53-02-49309	53-01748	0.06–0.92	Sediment	0.0797	0.253	—
RE53-01-0022	53-01748	0.36–0.63	Sediment	0.619	3.99	0.213
RE53-01-0023	53-01749	0.00–0.20	Sediment	0.131	0.246	—
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	0.0618	0.249	—
RE53-02-49312	53-02-21063	0.00–1.02	Sediment	0.0699	0.197	—
RE53-02-49314	53-02-21065	0.00–0.29	Sediment	0.46	1.17	—
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	0.151	0.407	—
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	0.0424	0.29	—
RE53-02-49322	53-02-21073	0.00–0.27	Sediment	0.21	0.582	—
RE53-02-49323	53-02-21074	0.00–0.27	Sediment	0.306	0.783	—
RE53-02-49326	53-02-21077	0.00–0.33	Sediment	0.0877	0.246	—

[a] na = Not available.

[b] — = Result was not above the BV/FV or was detected (if no BV/FV).

Table D-6.3-1
Samples Collected for Organic Chemical Analyses in Reaches C, D, and E

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PAH	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-01-0047	53-01730	0–0.13	Sediment	—*	—	9670R	—	—	9670R	9670R
RE53-01-0048	53-01731	0.39–0.69	Sediment	—	—	9670R	—	—	9670R	9670R
RE53-01-0051	53-01732	0–0.39	Sediment	—	—	9670R	—	—	9670R	9670R
RE53-02-49310	53-01732	0.4–0.56	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0050	53-01733	0–0.33	Sediment	—	—	9670R	—	—	9670R	9670R
RE53-01-0012	53-01733	0.46–0.72	Sediment	9688R	—	—	—	9688R	9688R	9688R
RE53-02-49311	53-01733	0.72–0.85	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0052	53-01734	0–0.59	Sediment	—	—	9670R	—	—	9670R	9670R
RE53-01-0049	53-01735	0–0.2	Sediment	—	—	9670R	—	—	9670R	9670R
RE53-02-49317	53-01735	0.19–0.59	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49318	53-01735	1.21–1.7	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0045	53-01736	0–0.42	Sediment	—	—	9670R	—	—	9670R	9670R

Table D-6.3-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Herbicides	PAH	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	—	9670R	—	—	9670R	9670R
RE53-02-49319	53-01736	0.98–1.38	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0001	53-01737	0–0.36	Sediment	9673R	—	—	—	9673R	9673R	9673R
RE53-02-49320	53-01737	0.36–0.65	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0017	53-01738	0–0.08	Sediment	—	—	9673R	—	—	9673R	9673R
RE53-01-0016	53-01738	0.08–0.23	Sediment	—	—	9673R	—	—	9673R	9673R
RE53-02-49321	53-01738	0.23–0.36	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0014	53-01739	0–0.23	Sediment	—	—	9673R	—	—	9673R	9673R
RE53-01-0015	53-01740	0–0.26	Sediment	—	—	9673R	—	—	9673R	9673R
RE53-02-49324	53-01740	0.27–0.96	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0024	53-01741	0–0.29	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-02-49325	53-01741	0.29–0.6	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0025	53-01742	0.36–0.49	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-01-0026	53-01743	0–0.13	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-02-49303	53-01744	0.75–1.42	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0019	53-01745	0.2–0.46	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-02-49304	53-01746	0–0.29	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0002	53-01746	0.29–0.59	Sediment	9702R	—	—	9702R	9702R	9702R	9702R
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-02-49305	53-01747	0.63–1.02	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49308	53-01748	0–0.23	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49309	53-01748	0.06–0.92	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-01-0022	53-01748	0.36–0.63	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-01-0023	53-01749	0–0.2	Sediment	—	—	9702R	—	—	9702R	9702R
RE53-02-49306	53-02-21057	0–0.26	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49312	53-02-21063	0–1.02	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49313	53-02-21063	1.02–1.44	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49314	53-02-21065	0–0.29	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49322	53-02-21073	0–0.27	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49323	53-02-21074	0–0.27	Sediment	—	1145S	1145S	1145S	—	—	1145S
RE53-02-49326	53-02-21077	0–0.33	Sediment	—	1145S	1145S	1145S	—	—	1145S

*— = Sample not requested for this analysis.

Table D-6.3-2
Frequency of Detected Concentrations for Organic Chemicals in Reaches C, D, and E

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range* (mg/kg)	Frequency of Detects
Acetone	Sediment	43	4	[0.0045] to 0.037	4/43
Aroclor-1254	Sediment	47	21	0.0023 to 0.17	21/47
Aroclor-1260	Sediment	47	5	[0.0033] to [0.036]	5/47
Benzoic Acid	Sediment	23	2	0.11 to [1.7]	2/23
Bromomethane	Sediment	45	1	[0.00067] to [0.012]	1/45
D[2,4-]	Sediment	3	1	[0.082] to 0.16	1/3
Dalapon	Sediment	3	1	[0.041] to 0.22	1/3
DB[2,4-]	Sediment	3	1	[0.082] to 0.2	1/3
DDE[4,4'-]	Sediment	27	5	0.00058 to [0.0088]	5/27
DDT[4,4'-]	Sediment	27	3	0.00052 to [0.0088]	3/27
Dichlorobenzene[1,2-]	Sediment	66	1	0.00057 to [0.36]	1/66
Dichlorobenzene[1,3-]	Sediment	66	1	0.00069 to [0.36]	1/66
Dichlorobenzene[1,4-]	Sediment	68	1	[0.0012] to [0.36]	1/68
Fluoranthene	Sediment	47	1	[0.00167] to [0.36]	1/47
Hexachlorobenzene	Sediment	23	1	0.23 to [0.36]	1/23
Isopropyltoluene[4-]	Sediment	43	4	[0.0012] to 0.344	4/43
Pyrene	Sediment	47	1	[0.00167] to [0.36]	1/47
Tetrachloroethene	Sediment	43	1	0.00073 to [0.0054]	1/43
Toluene	Sediment	43	14	0.00053 to [0.0053]	14/43
Trichloroethene	Sediment	44	2	[0.00044] to [0.0053]	2/44
Xylene (Total)	Sediment	19	1	0.0015 to [0.0054]	1/19

*Values in square brackets indicate detection limits for nondetects.

Table D-6.3-3
Detected Concentrations for Organic Chemicals in Reaches C, D, and E

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzoic Acid	Bromomethane	D[2,4-]	Dalapon
RE53-01-0047	53-01730	0.00–0.13	Sediment	—*	—	—	—	—	—	—
RE53-01-0051	53-01732	0.00–0.39	Sediment	—	—	—	—	—	—	—
RE53-01-0012	53-01733	0.46–0.72	Sediment	—	—	—	—	—	—	0.22
RE53-02-49317	53-01735	0.19–0.59	Sediment	—	0.0053	—	—	—	—	—
RE53-02-49318	53-01735	1.21–1.70	Sediment	—	0.0028 (J)	—	—	—	—	—
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	—	—	—	—	—	—
RE53-02-49319	53-01736	0.98–1.38	Sediment	—	—	0.0046	—	—	—	—
RE53-01-0001	53-01737	0.00–0.36	Sediment	—	—	—	—	—	0.16 (J+)	—
RE53-02-49321	53-01738	0.23–0.36	Sediment	—	0.0031 (J)	—	—	—	—	—
RE53-01-0015	53-01740	0.00–0.26	Sediment	—	—	—	—	0.0012 (J)	—	—
RE53-02-49324	53-01740	0.27–0.96	Sediment	0.037	—	—	—	—	—	—
RE53-01-0024	53-01741	0.00–0.29	Sediment	—	—	—	—	—	—	—
RE53-02-49325	53-01741	0.29–0.60	Sediment	—	—	—	—	—	—	—
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	7.300001E-02	—	0.11 (J)	—	—	—
RE53-02-49303	53-01744	0.75–1.42	Sediment	—	0.0126	—	—	—	—	—
RE53-01-0019	53-01745	0.20–0.46	Sediment	—	0.037	—	—	—	—	—
RE53-02-49304	53-01746	0.00–0.29	Sediment	—	0.0067	0.0089	—	—	—	—
RE53-01-0002	53-01746	0.29–0.59	Sediment	—	0.052	0.034	0.13 (J)	—	—	—
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	0.039	—	—	—	—	—
RE53-02-49305	53-01747	0.63–1.02	Sediment	—	0.0069	—	—	—	—	—
RE53-02-49308	53-01748	0.00–0.23	Sediment	—	0.0089	0.0052	—	—	—	—
RE53-02-49309	53-01748	0.06–0.92	Sediment	—	0.0071	—	—	—	—	—

Table D-6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Acetone	Aroclor-1254	Aroclor-1260	Benzoic Acid	Bromomethane	D[2,4-]	Dalapon
RE53-01-0022	53-01748	0.36–0.63	Sediment	—	0.17	—	—	—	—	—
RE53-01-0023	53-01749	0.00–0.20	Sediment	—	—	—	—	—	—	—
RE53-02-49306	53-02-21057	0.00–0.26	Sediment	—	0.0077	—	—	—	—	—
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	—	0.0023 (J)	—	—	—	—	—
RE53-02-49312	53-02-21063	0.00–1.02	Sediment	0.0171	—	—	—	—	—	—
RE53-02-49313	53-02-21063	1.02–1.44	Sediment	0.0113	0.0047	—	—	—	—	—
RE53-02-49314	53-02-21065	0.00–0.29	Sediment	—	0.0056	—	—	—	—	—
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	—	0.0033 (J)	—	—	—	—	—
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	—	0.003 (J)	—	—	—	—	—
RE53-02-49322	53-02-21073	0.00–0.27	Sediment	—	0.0044	0.0045	—	—	—	—
RE53-02-49323	53-02-21074	0.00–0.27	Sediment	0.0075 (J)	0.0054 (J-)	—	—	—	—	—
RE53-02-49326	53-02-21077	0.00–0.33	Sediment	—	—	—	—	—	—	—

Table D-6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	DB[2,4-]	DDE[4,4'-]	DDT[4,4'-]	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]	Fluoranthene
RE53-01-0047	53-01730	0.00–0.13	Sediment	—	—	—	—	—	—	—
RE53-01-0051	53-01732	0.00–0.39	Sediment	—	—	—	—	—	—	—
RE53-01-0012	53-01733	0.46–0.72	Sediment	—	—	—	—	—	—	—
RE53-02-49317	53-01735	0.19–0.59	Sediment	—	—	—	—	—	—	—
RE53-02-49318	53-01735	1.21–1.70	Sediment	—	0.0029	—	—	—	—	—
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	—	—	—	—	—	—
RE53-02-49319	53-01736	0.98–1.38	Sediment	—	—	—	—	—	—	—
RE53-01-0001	53-01737	0.00–0.36	Sediment	0.2 (J+)	—	—	—	—	—	—
RE53-02-49321	53-01738	0.23–0.36	Sediment	—	—	—	—	—	—	—
RE53-01-0015	53-01740	0.00–0.26	Sediment	—	—	—	0.00057 (J)	0.00069 (J)	—	—
RE53-02-49324	53-01740	0.27–0.96	Sediment	—	0.00081 (J-)	0.00052 (J-)	—	—	—	—
RE53-01-0024	53-01741	0.00–0.29	Sediment	—	—	—	—	—	—	—
RE53-02-49325	53-01741	0.29–0.60	Sediment	—	0.00058 (J-)	0.0017 (J-)	—	—	—	—
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	—	—	—	—	0.0015 (J)	—
RE53-02-49303	53-01744	0.75–1.42	Sediment	—	—	—	—	—	—	—
RE53-01-0019	53-01745	0.20–0.46	Sediment	—	—	—	—	—	—	—
RE53-02-49304	53-01746	0.00–0.29	Sediment	—	—	—	—	—	—	—
RE53-01-0002	53-01746	0.29–0.59	Sediment	—	—	—	—	—	—	8.800001E-02 (J)
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	—	—	—	—	—	—
RE53-02-49305	53-01747	0.63–1.02	Sediment	—	—	—	—	—	—	—
RE53-02-49308	53-01748	0.00–0.23	Sediment	—	—	—	—	—	—	—
RE53-02-49309	53-01748	0.06–0.92	Sediment	—	—	—	—	—	—	—

Table D-6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	DB[2,4-]	DDE[4,4'-]	DDT[4,4'-]	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]	Fluoranthene
RE53-01-0022	53-01748	0.36–0.63	Sediment	—	—	—	—	—	—	—
RE53-01-0023	53-01749	0.00–0.20	Sediment	—	—	—	—	—	—	—
RE53-02-49306	53-02-21057	0.00–0.26	Sediment	—	—	—	—	—	—	—
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	—	0.00079 (J)	—	—	—	—	—
RE53-02-49312	53-02-21063	0.00–1.02	Sediment	—	—	—	—	—	—	—
RE53-02-49313	53-02-21063	1.02–1.44	Sediment	—	—	—	—	—	—	—
RE53-02-49314	53-02-21065	0.00–0.29	Sediment	—	—	—	—	—	—	—
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	—	—	—	—	—	—	—
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	—	—	—	—	—	—	—
RE53-02-49322	53-02-21073	0.00–0.27	Sediment	—	—	—	—	—	—	—
RE53-02-49323	53-02-21074	0.00–0.27	Sediment	—	—	—	—	—	—	—
RE53-02-49326	53-02-21077	0.00–0.33	Sediment	—	0.0044 (J-)	0.002 (J-)	—	—	—	—

Table D-6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexachlorobenzene	Isopropyltoluene[4-]	Pyrene	Tetrachloroethene	Toluene	Trichloroethene	Xylene (Total)
RE53-01-0047	53-01730	0.00–0.13	Sediment	0.23 (J)	—	—	—	—	—	—
RE53-01-0051	53-01732	0.00–0.39	Sediment	—	0.0016 (J)	—	0.00073 (J+)	0.0051 (J+)	—	—
RE53-01-0012	53-01733	0.46–0.72	Sediment	—	0.0063	—	—	—	—	—
RE53-02-49317	53-01735	0.19–0.59	Sediment	—	0.344	—	—	0.0013 (J)	—	—
RE53-02-49318	53-01735	1.21–1.70	Sediment	—	—	—	—	0.00053 (J)	—	—
RE53-01-0046	53-01736	0.69–0.85	Sediment	—	—	—	—	9.100001E-04 (J)	—	—
RE53-02-49319	53-01736	0.98–1.38	Sediment	—	—	—	—	—	—	—
RE53-01-0001	53-01737	0.00–0.36	Sediment	—	—	—	—	—	—	—
RE53-02-49321	53-01738	0.23–0.36	Sediment	—	—	—	—	—	—	—
RE53-01-0015	53-01740	0.00–0.26	Sediment	—	—	—	—	—	0.00061 (J)	—
RE53-02-49324	53-01740	0.27–0.96	Sediment	—	0.0303	—	—	0.0028	—	—
RE53-01-0024	53-01741	0.00–0.29	Sediment	—	—	—	—	—	—	0.0015 (J)
RE53-02-49325	53-01741	0.29–0.60	Sediment	—	—	0.0101	—	0.00082 (J)	—	—
RE53-01-0018	53-01744	0.39–0.76	Sediment	—	—	—	—	0.00063 (J)	—	—
RE53-02-49303	53-01744	0.75–1.42	Sediment	—	—	—	—	—	—	—
RE53-01-0019	53-01745	0.20–0.46	Sediment	—	—	—	—	—	—	—
RE53-02-49304	53-01746	0.00–0.29	Sediment	—	—	—	—	0.0011 (J)	—	—
RE53-01-0002	53-01746	0.29–0.59	Sediment	—	—	—	—	—	—	—
RE53-01-0020	53-01747	0.23–0.63	Sediment	—	—	—	—	—	—	—
RE53-02-49305	53-01747	0.63–1.02	Sediment	—	—	—	—	—	—	—
RE53-02-49308	53-01748	0.00–0.23	Sediment	—	—	—	—	0.0008 (J)	—	—
RE53-02-49309	53-01748	0.06–0.92	Sediment	—	—	—	—	—	—	—
RE53-01-0022	53-01748	0.36–0.63	Sediment	—	—	—	—	—	—	—

Table D-6.3-3 (continued)

Sample ID	Location ID	Depth (ft)	Media	Hexachlorobenzene	Isopropyltoluene[4-]	Pyrene	Tetrachloroethene	Toluene	Trichloroethene	Xylene (Total)
RE53-01-0023	53-01749	0.00–0.20	Sediment	—	—	—	—	—	0.00057 (J)	—
RE53-02-49306	53-02-21057	0.00–0.26	Sediment	—	—	—	—	0.0007 (J)	—	—
RE53-02-49307	53-02-21058	0.33–0.65	Sediment	—	—	—	—	—	—	—
RE53-02-49312	53-02-21063	0.00–1.02	Sediment	—	—	—	—	—	—	—
RE53-02-49313	53-02-21063	1.02–1.44	Sediment	—	—	—	—	0.001 (J)	—	—
RE53-02-49314	53-02-21065	0.00–0.29	Sediment	—	—	—	—	—	—	—
RE53-02-49315	53-02-21066	0.06–0.36	Sediment	—	—	—	—	0.00068 (J)	—	—
RE53-02-49316	53-02-21066	0.36–0.65	Sediment	—	—	—	—	0.00065 (J)	—	—
RE53-02-49322	53-02-21073	0.00–0.27	Sediment	—	—	—	—	—	—	—
RE53-02-49323	53-02-21074	0.00–0.27	Sediment	—	—	—	—	0.00099 (J)	—	—
RE53-02-49326	53-02-21077	0.00–0.33	Sediment	—	—	—	—	—	—	—

*— = Result was not detected or not analyzed.

Table D-7.1-1
Samples Collected for
Inorganic Chemical Analyses in Reaches LA-2FE, LA-3E, and LA-3W

Reach	Location ID	Sample ID	Depth (ft)	Media	Cyanide	Metals
LA-2FE	LA-10081	CALA-01-0067	1.67–2.39	Sediment	—*	8850R
LA-2FE	LA-10082	CALA-01-0068	0.2–0.92	Sediment	—	8850R
LA-2FE	LA-10140	CALA-01-0071	0–0.72	Sediment	—	8846R
LA-2FE	LA-10144	CALA-01-0072	1.18–1.64	Sediment	—	8846R
LA-2FE	LA-10092	CALA-01-0073	0–0.56	Sediment	—	8850R
LA-2FE	LA-10093	CALA-01-0074	0.17–1.05	Sediment	—	8850R
LA-3E	LA-00109	04LA-97-0143	1.33–1.62	Sediment	3313R	3314R
LA-3E	LA-00110	04LA-97-0145	0.91–1.33	Sediment	3313R	3314R
LA-3E	LA-00111	04LA-97-0147	0.91–1.12	Sediment	3313R	3314R
LA-3E	LA-00114	04LA-97-0148	0.54–1.04	Sediment	3313R	3314R
LA-3E	LA-00115	04LA-97-0149	0.91–1.33	Sediment	3313R	3314R
LA-3E	LA-00116	04LA-97-0150	0–0.16	Sediment	3313R	3314R
LA-3W	LA-10099	CALA-01-0069	0–0.49	Sediment	—	8856R
LA-3W	LA-10101	CALA-01-0070	0–0.39	Sediment	—	8856R
LA-3W	LA-10101	CALA-01-0075	0.82–1.64	Sediment	—	8856R
LA-3W	LA-10102	CALA-01-0076	0–0.42	Sediment	—	8856R
LA-3W	LA-10102	CALA-01-0077	0.59–1.32	Sediment	—	8856R
LA-3W	LA-10105	CALA-01-0078	0–0.5	Sediment	—	8856R

*— = Sample not requested for this analysis.

Table D-7.1-2
Summary of Concentrations of
Selected Inorganic Chemicals from Reaches LA-2FE, LA-3W, and LA-3E

Reach	Analyte	No. of Samples	No. of NDs	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	BV (mg/kg)
LA-2FE	Antimony	6	0	n/a*	n/a	6	0.35	0.82	0.83
LA-3E	Antimony	6	6	5.1	6.5	0	n/a	n/a	0.83
LA-3W	Antimony	6	2	0.23	0.32	4	0.34	0.6	0.83
LA-2FE	Lead	6	0	n/a	n/a	6	12	49	19.7
LA-3E	Lead	6	0	n/a	n/a	6	6	44.2	19.7
LA-3W	Lead	6	0	n/a	n/a	6	13	33	19.7
LA-2FE	Selenium	6	0	n/a	n/a	6	0.33	0.62	0.3
LA-3E	Selenium	6	6	0.24	0.3	0	n/a	n/a	0.3
LA-3W	Selenium	6	3	0.21	0.27	3	0.26	0.42	0.3

*n/a = Not applicable.

Table D-7.2-1
Samples Collected for Radionuclide Analyses in Reaches LA-2FE, LA-3E, and LA-3W

Reach	Location ID	Depth (ft)	Media	Sample ID	Americium-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
LA-2FE	LA-10081	1.67–2.39	Sediment	CALA-01-0067	—*	8852R	8852R	8852R	8852R	8852R	8852R
LA-2FE	LA-10082	0.2–0.92	Sediment	CALA-01-0068	—	8852R	8852R	8852R	8852R	8852R	8852R
LA-2FE	LA-10140	0–0.72	Sediment	CALA-01-0071	—	8848R	8848R	8848R	8848R	8848R	8848R
LA-2FE	LA-10144	1.18–1.64	Sediment	CALA-01-0072	—	8848R	8848R	8848R	8848R	8848R	8848R
LA-2FE	LA-10092	0–0.56	Sediment	CALA-01-0073	—	8852R	8852R	8852R	8852R	8852R	8852R
LA-2FE	LA-10093	0.17–1.05	Sediment	CALA-01-0074	—	8852R	8852R	8852R	8852R	8852R	8852R
LA-2FE	LA-10081	0.66–1.68	Sediment	CALA-01-0079	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10081	3.25–4.25	Sediment	CALA-01-0080	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10085	0–0.69	Sediment	CALA-01-0081	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10138	0–0.66	Sediment	CALA-01-0083	—	8848R	—	8848R	—	—	8848R
LA-2FE	LA-10139	0–0.3	Sediment	CALA-01-0084	—	8848R	—	8848R	—	—	—
LA-2FE	LA-10141	0–0.42	Sediment	CALA-01-0085	—	8848R	—	8848R	—	—	—
LA-2FE	LA-10142	0–0.78	Sediment	CALA-01-0086	—	8848R	—	8848R	—	—	8848R
LA-2FE	LA-10143	0.13–0.42	Sediment	CALA-01-0087	—	8848R	—	8848R	—	—	8848R
LA-2FE	LA-10144	0.36–1.18	Sediment	CALA-01-0088	—	8848R	—	8848R	—	—	8848R
LA-2FE	LA-10145	0–0.33	Sediment	CALA-01-0089	—	8848R	—	8848R	—	—	—
LA-2FE	LA-10075	0–0.26	Sediment	CALA-01-0090	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10075	0.26–0.66	Sediment	CALA-01-0091	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10075	0.66–1.05	Sediment	CALA-01-0092	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10075	1.05–1.57	Sediment	CALA-01-0093	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10075	1.57–1.97	Sediment	CALA-01-0094	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10076	0–0.92	Sediment	CALA-01-0095	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10076	1.57–2.17	Sediment	CALA-01-0096	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10076	2.17–2.66	Sediment	CALA-01-0097	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10077	0–0.36	Sediment	CALA-01-0098	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10077	0.36–0.72	Sediment	CALA-01-0099	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10077	0.85–1.22	Sediment	CALA-01-0100	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10077	1.22–1.83	Sediment	CALA-01-0101	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10078	0–0.33	Sediment	CALA-01-0102	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10078	0.76–1.12	Sediment	CALA-01-0103	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10079	0–0.49	Sediment	CALA-01-0104	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10080	0–1.57	Sediment	CALA-01-0105	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10081	0–0.66	Sediment	CALA-01-0106	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10081	2.39–3.25	Sediment	CALA-01-0107	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10081	4.27–4.76	Sediment	CALA-01-0108	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10081	0.66–1.68	Sediment	CALA-01-0109	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10082	0.92–1.44	Sediment	CALA-01-0110	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10083	0–0.78	Sediment	CALA-01-0111	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10083	0.78–1.42	Sediment	CALA-01-0112	—	8852R	—	8852R	—	—	8852R

Table D-7.2-1 (continued)

Reach	Location ID	Depth (ft)	Media	Sample ID	Americium-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
LA-2FE	LA-10084	0–0.29	Sediment	CALA-01-0113	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10084	0.29–1.18	Sediment	CALA-01-0114	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10084	1.18–2.07	Sediment	CALA-01-0115	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10085	0–0.69	Sediment	CALA-01-0116	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10086	0–0.36	Sediment	CALA-01-0117	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10087	0.42–0.92	Sediment	CALA-01-0118	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10087	0.92–1.22	Sediment	CALA-01-0119	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10088	0–1.22	Sediment	CALA-01-0120	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10089	0–0.23	Sediment	CALA-01-0121	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10089	0.46–1.48	Sediment	CALA-01-0122	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10090	0–0.17	Sediment	CALA-01-0123	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10091	0–0.1	Sediment	CALA-01-0124	—	8852R	—	8852R	—	—	8852R
LA-2FE	LA-10094	0–0.63	Sediment	CALA-01-0125	—	8858R	—	8858R	—	—	8858R
LA-2FE	LA-10095	0–0.49	Sediment	CALA-01-0126	—	8858R	—	8858R	—	—	
LA-2FE	LA-10096	0–0.53	Sediment	CALA-01-0127	—	8858R	—	8858R	—	—	8858R
LA-2FE	LA-10097	0–0.66	Sediment	CALA-01-0128	—	8858R	—	8858R	—	—	8858R
LA-2FE	LA-10098	0.23–0.66	Sediment	CALA-01-0129	—	8858R	—	8858R	—	—	8858R
LA-2FE	LA-10098	0.66–1.48	Sediment	CALA-01-0130	—	8858R	—	8858R	—	—	8858R
LA-3E	LA-00110	0–0.41	Sediment	04LA-97-0105	—	3337R	—	—	—	—	—
LA-3E	LA-00110	0.62–0.91	Sediment	04LA-97-0106	—	3337R	—	—	—	—	—
LA-3E	LA-00110	1.33–1.7	Sediment	04LA-97-0107	—	3337R	—	—	—	—	—
LA-3E	LA-00110	1.79–2.62	Sediment	04LA-97-0108	—	3337R	—	—	—	—	—
LA-3E	LA-00112	0–0.16	Sediment	04LA-97-0109	—	3337R	—	—	—	—	—
LA-3E	LA-00119	0–0.16	Sediment	04LA-97-0110	—	3337R	—	—	—	—	—
LA-3E	LA-00121	0–0.54	Sediment	04LA-97-0111	—	3337R	—	—	—	—	—
LA-3E	LA-00114	0–0.54	Sediment	04LA-97-0112	—	3337R	—	—	—	—	—
LA-3E	LA-00114	1.04–1.58	Sediment	04LA-97-0113	—	3337R	—	—	—	—	—
LA-3E	LA-00114	1.58–2	Sediment	04LA-97-0114	—	3337R	—	—	—	—	—
LA-3E	LA-00114	2–2.95	Sediment	04LA-97-0115	—	3337R	—	—	—	—	—
LA-3E	LA-00115	0–0.41	Sediment	04LA-97-0116	—	3337R	—	—	—	—	—
LA-3E	LA-00115	0.41–0.91	Sediment	04LA-97-0117	—	3337R	—	—	—	—	—
LA-3E	LA-00115	1.29–1.75	Sediment	04LA-97-0118	—	3337R	—	—	—	—	—
LA-3E	LA-00115	1.75–2.45	Sediment	04LA-97-0119	—	3337R	—	—	—	—	—
LA-3E	LA-00117	0.33–0.91	Sediment	04LA-97-0120	—	3337R	—	—	—	—	—
LA-3E	LA-00117	0.91–1.5	Sediment	04LA-97-0121	—	3337R	—	—	—	—	—
LA-3E	LA-00117	1.5–2.41	Sediment	04LA-97-0122	—	3337R	—	—	—	—	—
LA-3E	LA-00117	1.5–2.41	Sediment	04LA-97-0123	—	3337R	—	—	—	—	—
LA-3E	LA-00117	2.41–3	Sediment	04LA-97-0124	—	3337R	—	—	—	—	—
LA-3E	LA-00117	3–3.91	Sediment	04LA-97-0125	—	3337R	—	—	—	—	—

Table D-7.2-1 (continued)

Reach	Location ID	Depth (ft)	Media	Sample ID	Americium-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
LA-3E	LA-00118	0–0.54	Sediment	04LA-97-0126	—	3337R	—	—	—	—	—
LA-3E	LA-00118	0.54–1.5	Sediment	04LA-97-0127	—	3337R	—	—	—	—	—
LA-3E	LA-00118	0.54–1.5	Sediment	04LA-97-0128	—	3337R	—	—	—	—	—
LA-3E	LA-00118	1.5–2.33	Sediment	04LA-97-0129	—	3337R	—	—	—	—	—
LA-3E	LA-00113	0–0.16	Sediment	04LA-97-0130	—	3337R	—	3337R	—	—	—
LA-3E	LA-00120	0–0.29	Sediment	04LA-97-0131	—	3337R	—	3337R	—	—	—
LA-3E	LA-00111	0–0.54	Sediment	04LA-97-0132	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00111	0.54–0.91	Sediment	04LA-97-0133	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00111	1.12–2.08	Sediment	04LA-97-0134	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00111	2.08–2.62	Sediment	04LA-97-0135	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	0–0.7	Sediment	04LA-97-0136	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	0.7–1.04	Sediment	04LA-97-0137	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	1.04–1.33	Sediment	04LA-97-0138	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	1.62–2.08	Sediment	04LA-97-0139	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	2.08–2.62	Sediment	04LA-97-0140	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	2.62–2.87	Sediment	04LA-97-0141	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	2.87–3.54	Sediment	04LA-97-0142	—	3337R	—	3337R	—	—	3337R
LA-3E	LA-00109	1.33–1.62	Sediment	04LA-97-0143	3314R	3314R	3314	3314R	3314R	3314R	3314R
LA-3E	LA-00110	0.91–1.33	Sediment	04LA-97-0145	3314R	3314R	3314R	3314R	3314R	3314R	3314R
LA-3E	LA-00111	0.91–1.12	Sediment	04LA-97-0147	3314R	3314R	3314R	3314R	3314R	3314R	3314R
LA-3E	LA-00114	0.54–1.04	Sediment	04LA-97-0148	3314R	3314R	3314R	3314R	3314R	3314R	3314R
LA-3E	LA-00115	0.91–1.33	Sediment	04LA-97-0149	3314R	3314R	3314R	3314R	3314R	3314R	3314R
LA-3E	LA-00116	0–0.16	Sediment	04LA-97-0150	3314R	3314R	3314R	3314R	3314R	3314R	3314R
LA-3W	LA-10099	0–0.49	Sediment	CALA-01-0069	—	8858R	8858R	8858R	8858R	8858R	8858R
LA-3W	LA-10101	0–0.39	Sediment	CALA-01-0070	—	8858R	8858R	8858R	8858R	8858R	8858R
LA-3W	LA-10101	0.82–1.64	Sediment	CALA-01-0075	—	8858R	8858R	8858R	8858R	8858R	8858R
LA-3W	LA-10102	0–0.42	Sediment	CALA-01-0076	—	8858R	8858R	8858R	8858R	8858R	8858R
LA-3W	LA-10102	0.59–1.32	Sediment	CALA-01-0077	—	8858R	8858R	8858R	8858R	8858R	8858R
LA-3W	LA-10105	0–0.5	Sediment	CALA-01-0078	—	8858R	8858R	8858R	8858R	8858R	8858R
LA-3W	LA-10099	0.49–1.08	Sediment	CALA-01-0131	—	8858R	—	8858R	—	—	8858R
LA-3W	LA-10099	1.08–1.5	Sediment	CALA-01-0132	—	8858R	—	8858R	—	—	8858R
LA-3W	LA-10100	0–0.29	Sediment	CALA-01-0133	—	8858R	—	8858R	—	—	—
LA-3W	LA-10101	0.39–0.82	Sediment	CALA-01-0134	—	8858R	—	8858R	—	—	8858R
LA-3W	LA-10103	0–0.33	Sediment	CALA-01-0135	—	8858R	—	8858R	—	—	8858R
LA-3W	LA-10104	0–0.23	Sediment	CALA-01-0137	—	8858R	—	8858R	—	—	—
LA-3W	LA-10105	0.56–0.82	Sediment	CALA-01-0138	—	8858R	—	8858R	—	—	8858R
LA-3W	LA-10106	0–0.29	Sediment	CALA-01-0139	—	8858R	—	8858R	—	—	—
LA-3W	LA-10107	0–0.92	Sediment	CALA-01-0140	—	8858R	—	8858R	—	—	8858R

*— = Sample not requested for this analysis.

Table D-7.2-2
Summary of Concentrations of
Selected Radionuclides from Reaches LA-2FE, LA-3W, and LA-3E

Reach	Analyte	No. of Samples	No. of NDs	Min ND (pCi/g)	Max ND (pCi/g)	No. of Detects	Min Detect (pCi/g)	Max Detect (pCi/g)	BV (pCi/g)
LA-2FE	Cesium-134	57	56	-0.18	0.18	1	0.12	0.12	n/a
LA-3E	Cesium-134	6	6	-0.056	0.09	0	n/a*	n/a	n/a
LA-3W	Cesium-134	16	16	-0.1	0.13	0	n/a	n/a	n/a
LA-2FE	Cobalt-60	57	57	-0.12	0.13	0	n/a	n/a	n/a
LA-3E	Cobalt-60	42	39	-0.047	0.12	3	0.181	0.206	n/a
LA-3W	Cobalt-60	16	16	-0.12	0.16	0	n/a	n/a	n/a
LA-2FE	Tritium	6	3	0.047	0.068	3	0.064	0.085	0.093
LA-3E	Tritium	8	6	-0.01	0.03	0	n/a	n/a	0.093
LA-3W	Tritium	6	3	0.03	0.081	3	0.057	0.132	0.093

*n/a = Not applicable.

Table D-7.3-1
Samples Collected for Organic Chemical Analyses in Reaches LA-2FE, LA-3E, and LA-3W

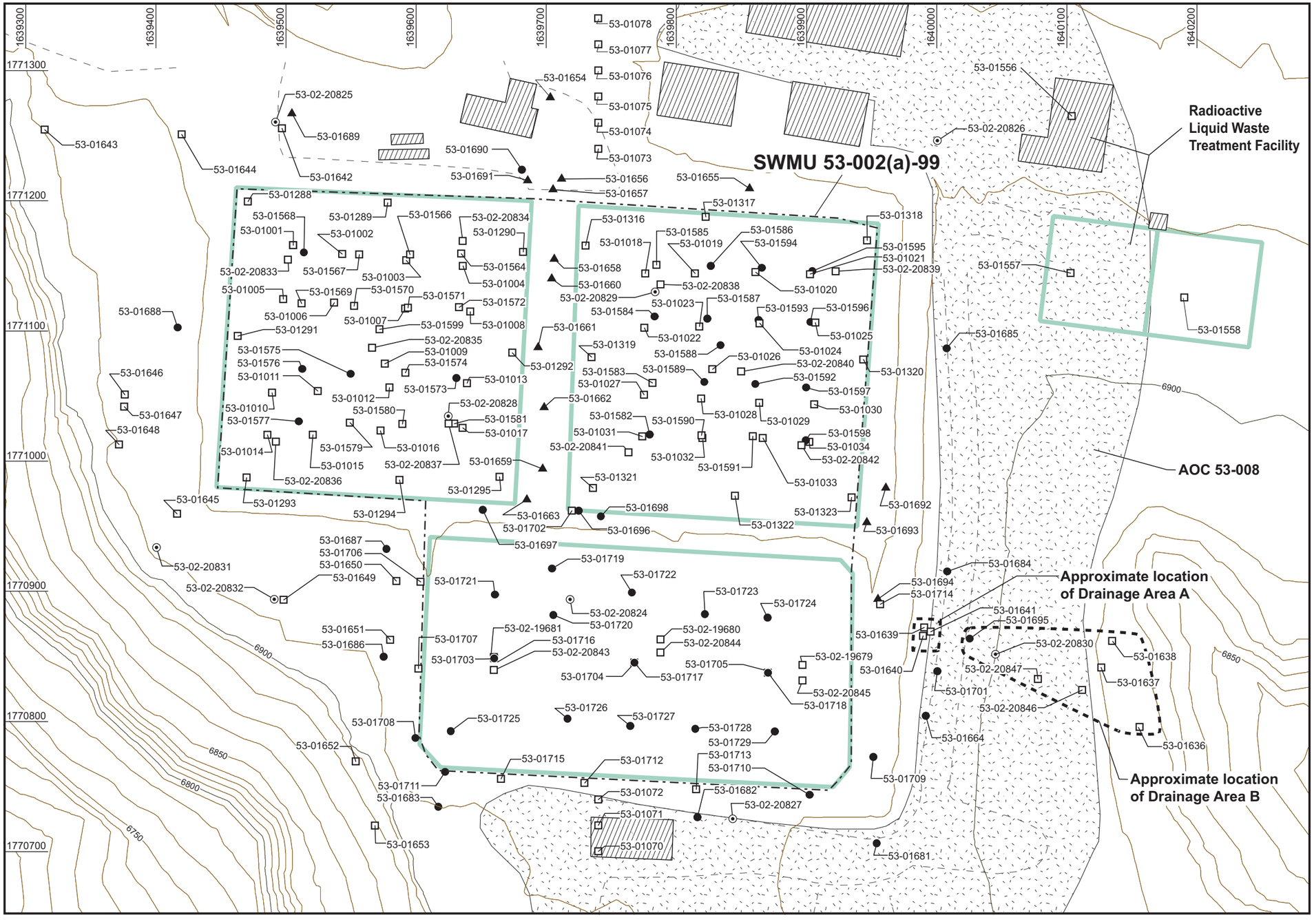
Reach	Location ID	Sample ID	Depth (ft)	Media	PCB	PEST	SVOC
LA-2FE	LA-10081	CALA-01-0067	1.67–2.39	Sediment	8849R	8849R	8849R
LA-2FE	LA-10082	CALA-01-0068	0.2–0.92	Sediment	8849R	8849R	8849R
LA-2FE	LA-10140	CALA-01-0071	0–0.72	Sediment	8845R	8845R	8845R
LA-2FE	LA-10144	CALA-01-0072	1.18–1.64	Sediment	8845R	8845R	8845R
LA-2FE	LA-10092	CALA-01-0073	0–0.56	Sediment	8849R	8849R	8849R
LA-2FE	LA-10093	CALA-01-0074	0.17–1.05	Sediment	8849R	8849R	8849R
LA-3E	LA-00109	04LA-97-0143	1.33–1.62	Sediment	3312R	3312R	—*
LA-3E	LA-00110	04LA-97-0145	0.91–1.33	Sediment	3312R	3312R	—
LA-3E	LA-00111	04LA-97-0147	0.91–1.12	Sediment	3312R	3312R	—
LA-3E	LA-00114	04LA-97-0148	0.54–1.04	Sediment	3312R	3312R	—
LA-3E	LA-00115	04LA-97-0149	0.91–1.33	Sediment	3312R	3312R	—
LA-3E	LA-00116	04LA-97-0150	0–0.16	Sediment	3312R	3312R	—
LA-3E	LA-00114	CALA-01-0173	0.53–1.05	Sediment	—	—	8728R
LA-3E	LA-00115	CALA-01-0174	0.92–1.28	Sediment	—	—	8728R
LA-3E	LA-00116	CALA-01-0175	0–0.17	Sediment	—	—	8728R
LA-3E	LA-00109	CALA-01-0176	1.34–1.64	Sediment	—	—	8728R
LA-3E	LA-00110	CALA-01-0177	0.92–1.31	Sediment	—	—	8728R
LA-3E	LA-00111	CALA-01-0178	0.92–1.12	Sediment	—	—	8728R
LA-3W	LA-10099	CALA-01-0069	0–0.49	Sediment	8855R	8855R	8855R
LA-3W	LA-10101	CALA-01-0070	0–0.39	Sediment	8855R	8855R	8855R
LA-3W	LA-10101	CALA-01-0075	0.82–1.64	Sediment	8855R	8855R	8855R
LA-3W	LA-10102	CALA-01-0076	0–0.42	Sediment	8855R	8855R	8855R
LA-3W	LA-10102	CALA-01-0077	0.59–1.32	Sediment	8855R	8855R	8855R
LA-3W	LA-10105	CALA-01-0078	0–0.5	Sediment	8855R	8855R	8855R

*— = Sample not requested for this analysis.

Table D-7.3-2
Summary of Concentrations of
Selected Organic Chemicals from Reaches LA-2FE, LA-3W, and LA-3E

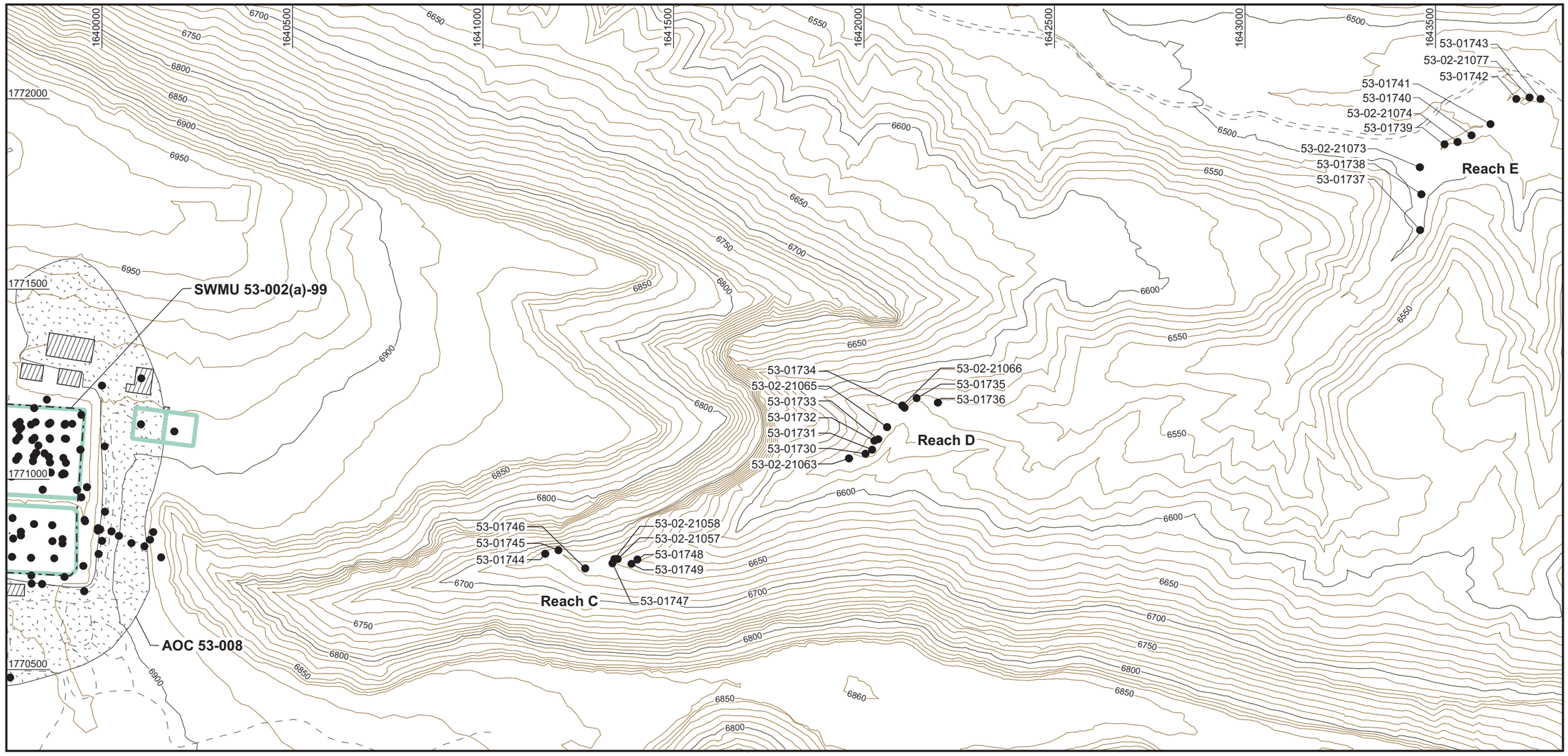
Reach	Analyte	No. of Samples	No. of NDs	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)
LA-2FE	Aroclor-1254	6	6	0.0022	0.039	0	n/a*	n/a
LA-3E	Aroclor-1254	6	6	0.033	0.073	0	n/a	n/a
LA-3W	Aroclor-1254	6	6	0.037	0.047	0	n/a	n/a
LA-2FE	Aroclor-1260	6	0	n/a	n/a	6	0.11	0.58
LA-3E	Aroclor-1260	6	2	0.033	0.034	4	0.034	0.24
LA-3W	Aroclor-1260	6	0	n/a	n/a	6	0.079	0.34
LA-2FE	Benzoic Acid	6	5	1.7	2	1	0.093	0.093
LA-3E	Benzoic Acid	6	6	1.9	8.4	0	8.5	9.1
LA-3W	Benzoic Acid	6	6	1.8	2.3	0	n/a	n/a
LA-2FE	DDE[4,4'-]	6	4	0.0092	0.01	2	0.0031	0.027
LA-3E	DDE[4,4'-]	6	6	0.0033	0.0035	0	0.0026	0.014
LA-3W	DDE[4,4'-]	6	6	0.0095	0.012	0	n/a	n/a
LA-2FE	DDT[4,4'-]	6	0	n/a	n/a	6	0.0084	0.087
LA-3E	DDT[4,4'-]	6	6	0.0033	0.0034	0	0.0037	0.029
LA-3W	DDT[4,4'-]	6	3	0.0095	0.012	3	0.02	0.075

*n/a = Not applicable.



Source: GISLab Map No. m200748, 082703, F3.0-1, FD1.0-1, FG4.0-1; TA-53 Inv/Rem Rpt; 012404; cf

Figure D-1.0-1. SWMU 53-002(a)-99 mesa-top sample locations



Source: GISLab Map No. M200749, 082703_TA-53 report, 010804, ptm Rev. for F3.0-3, FD-1.0-2, FG-5.1-14; TA-53 Inv/Rem Rpt; 012404; cf

Figure D-1.0-2. SWMU 53-002(a)-99 reach sample locations

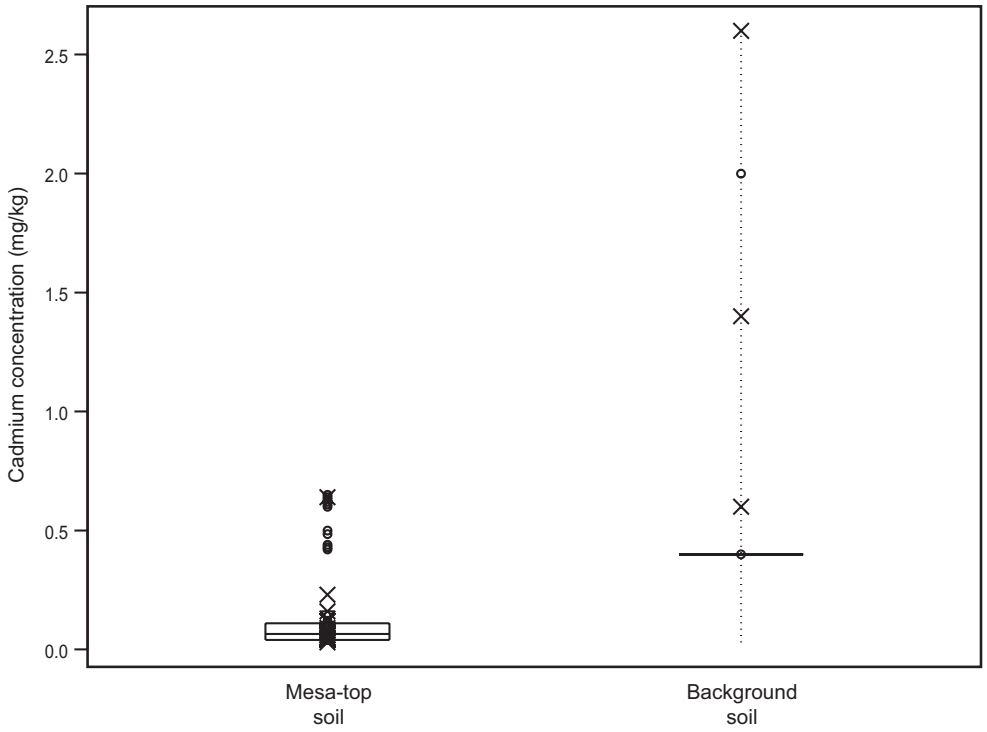


Figure D-4.1-1. Box plot of cadmium concentrations in mesa-top soil and ALLH background data

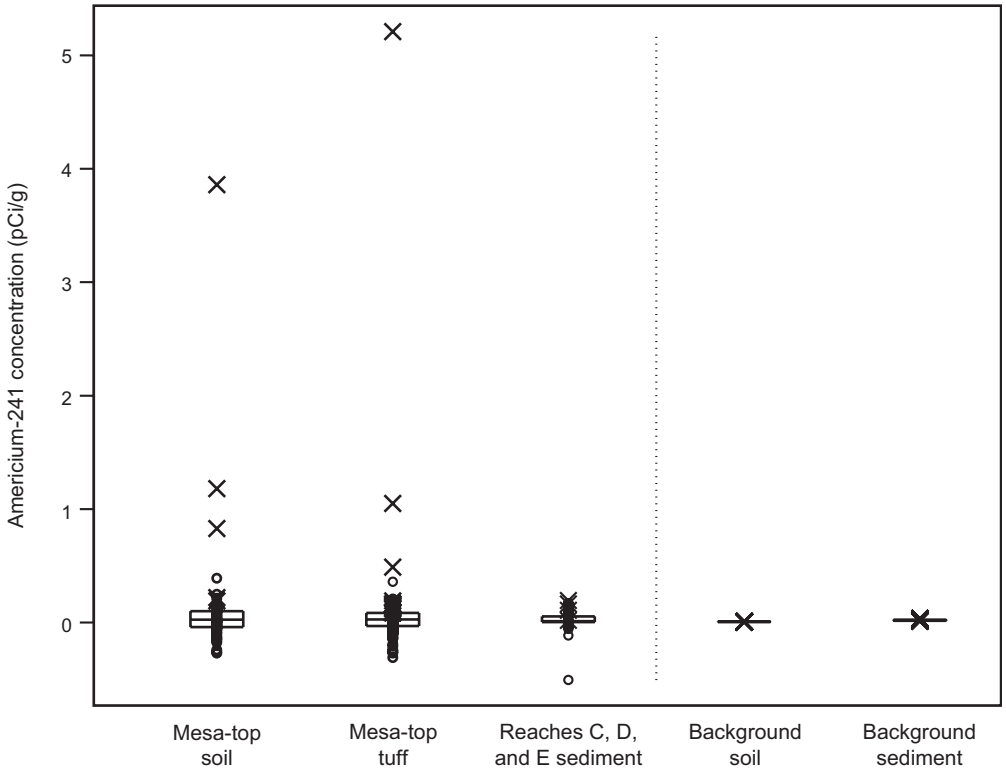


Figure D-4.2-1. Box plot of americium-241 concentrations in mesa-top soil; mesa-top tuff; Reaches C, D, and E sediment; ALLH background data; and sediment background data

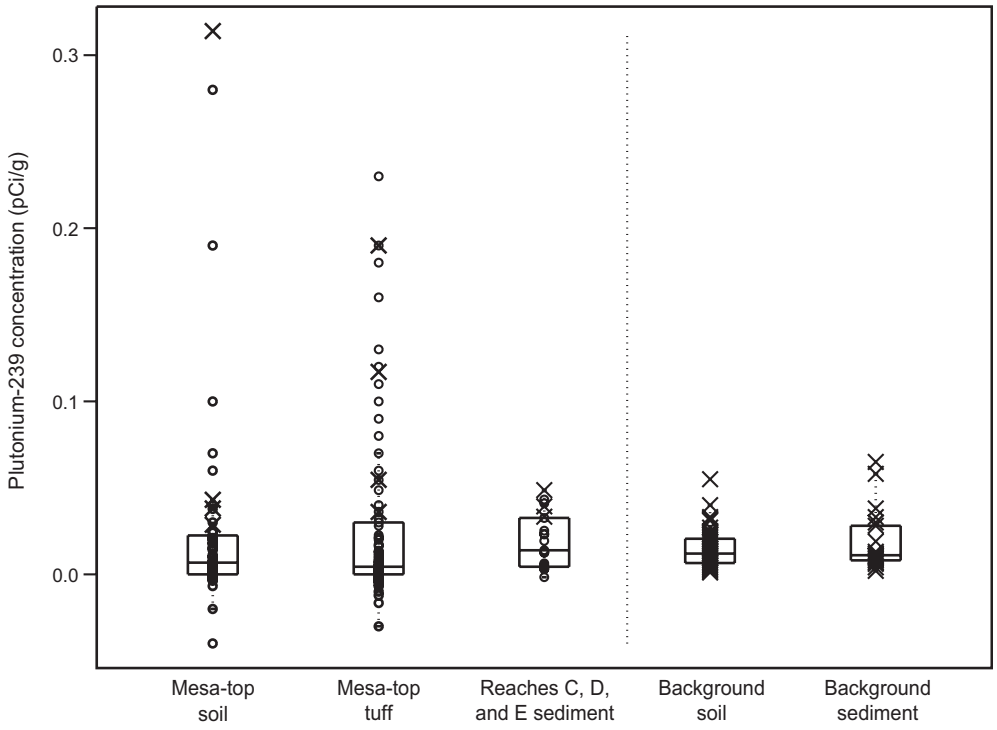


Figure D-4.2-2. Box plot of plutonium-239 concentrations in mesa-top soil; mesa-top tuff; Reaches C, D, and E sediment; ALLH background data; and sediment background data

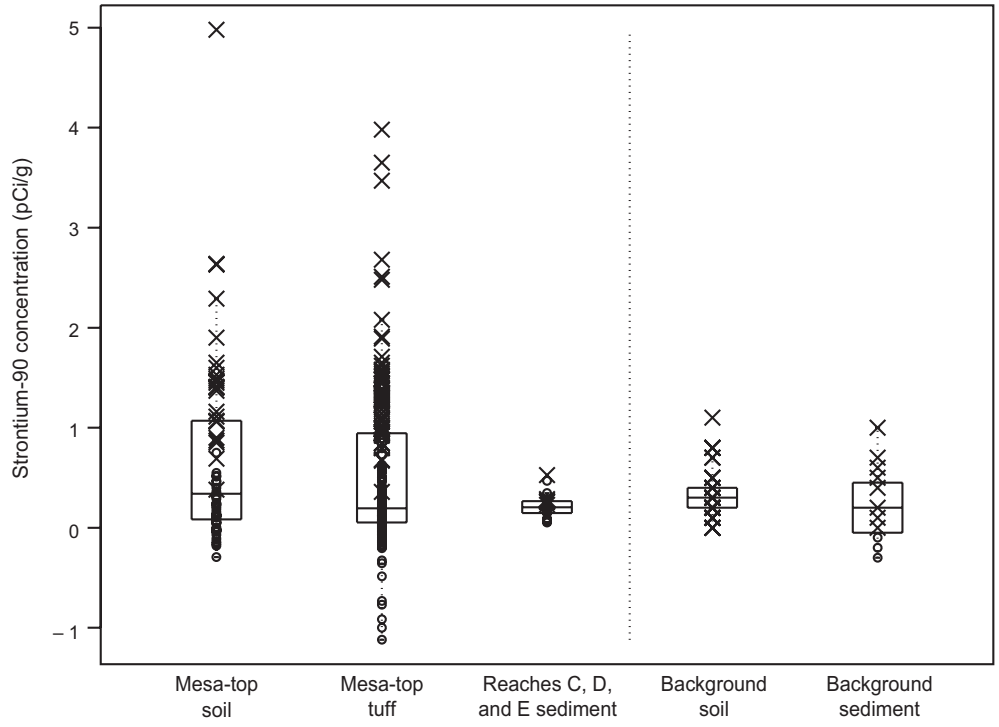


Figure D-4.2-3. Box plot of strontium-90 concentrations in mesa-top soil; mesa-top tuff; Reaches C, D, and E sediment; soil background data; and sediment background data

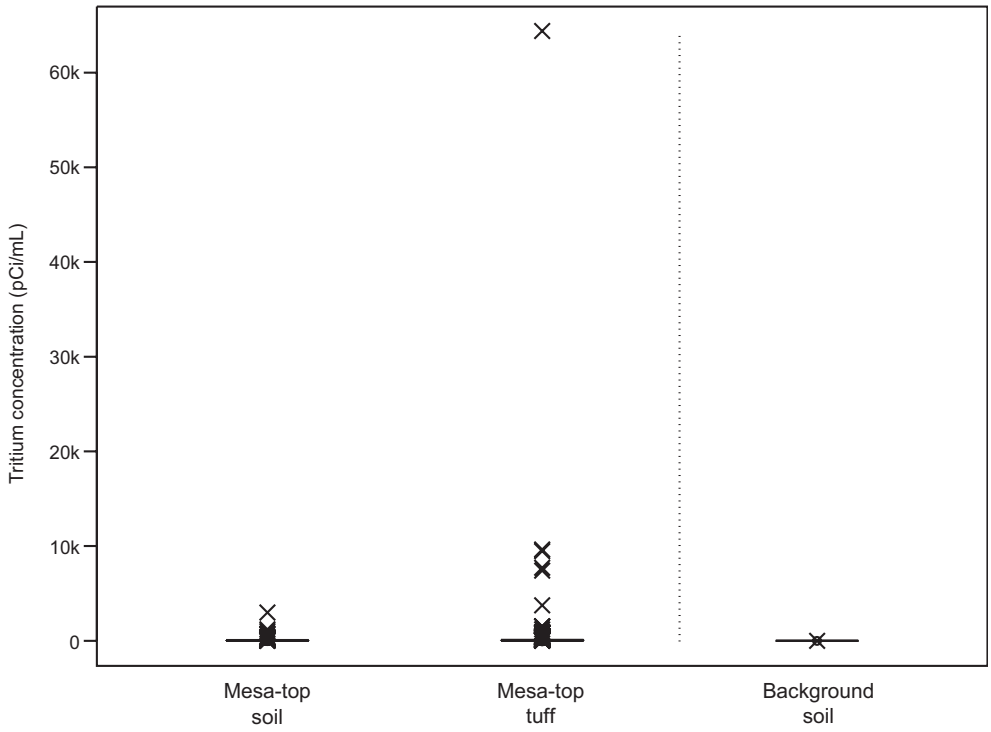


Figure D-4.2-4. Box plot of tritium concentrations in mesa-top soil, mesa-top tuff, and soil background data

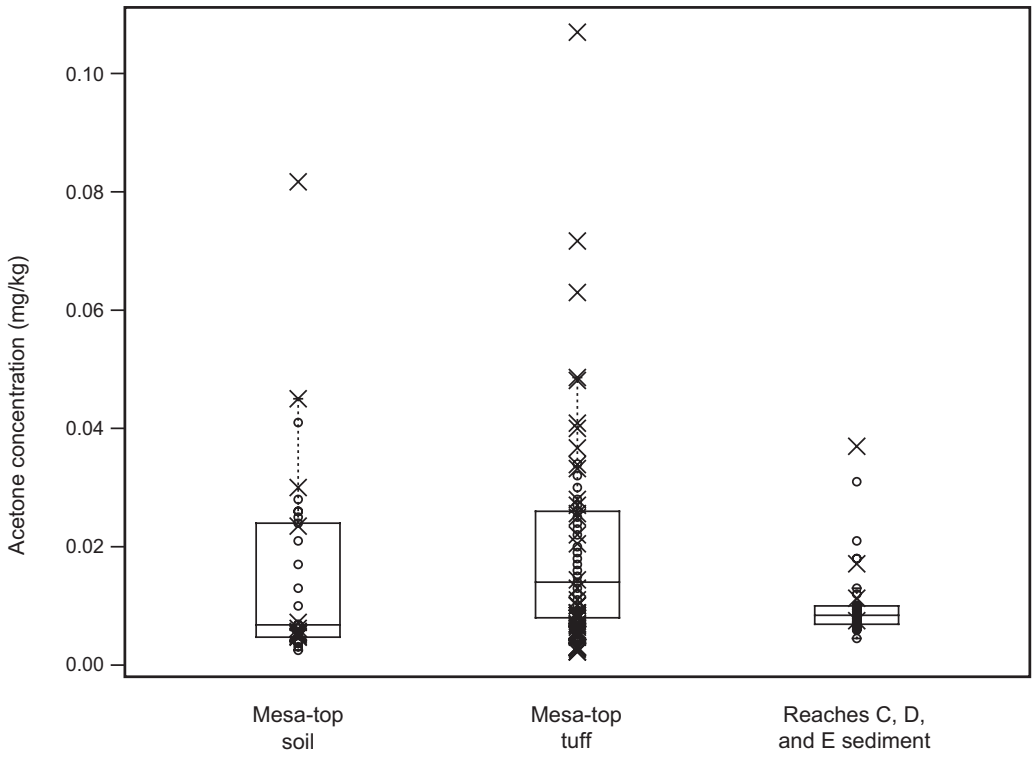


Figure D-4.3-1. Box plot of acetone concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment

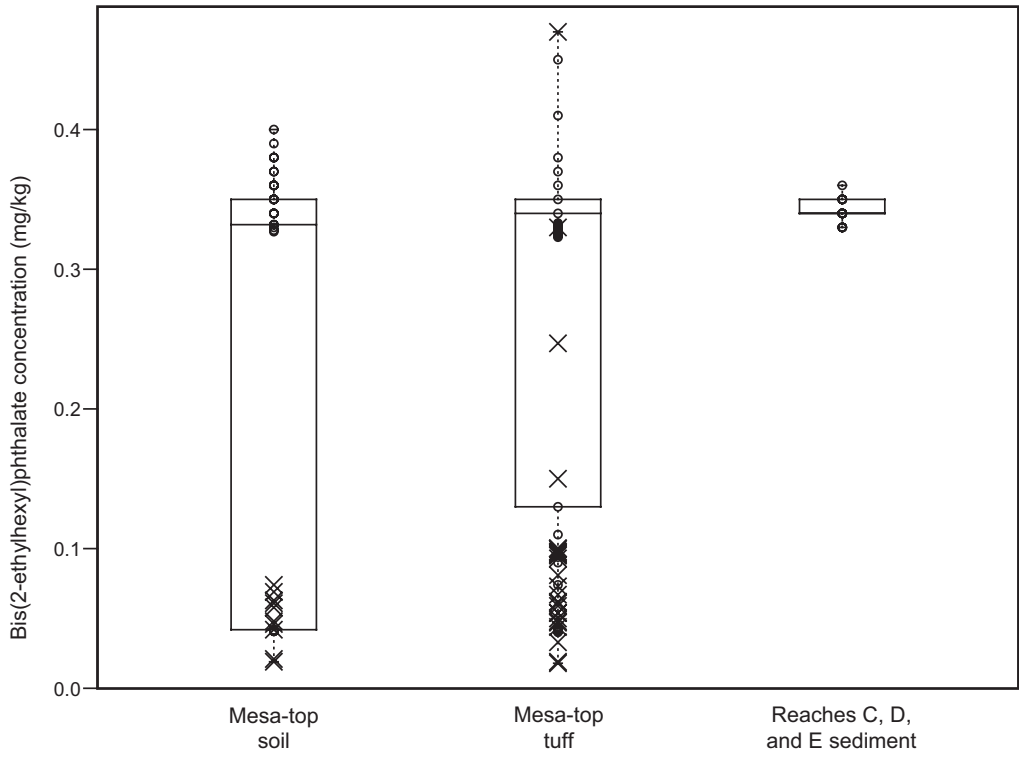


Figure D-4.3-2. Box plot of bis(2-ethylhexyl)phthalate concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment

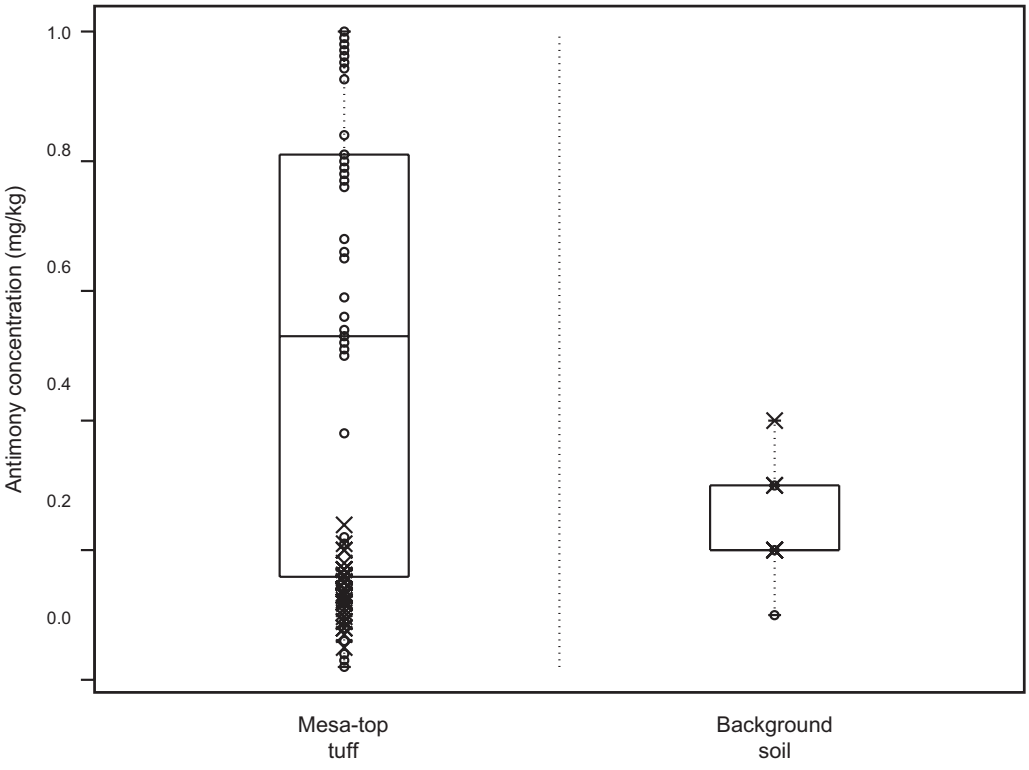


Figure D-5.1-1. Box plot of antimony concentrations in mesa-top tuff and Qbt 2, 3, and 4 background data

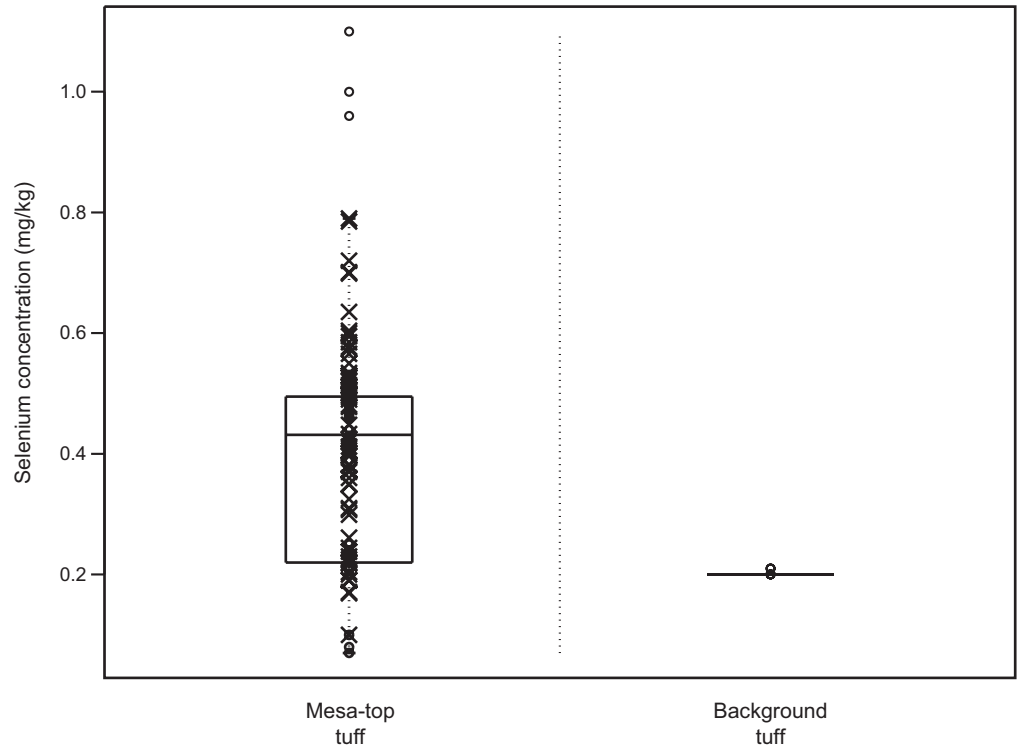


Figure D-5.1-2. Box plot of selenium concentrations in mesa-top tuff and Qbt 2, 3, and 4 background data

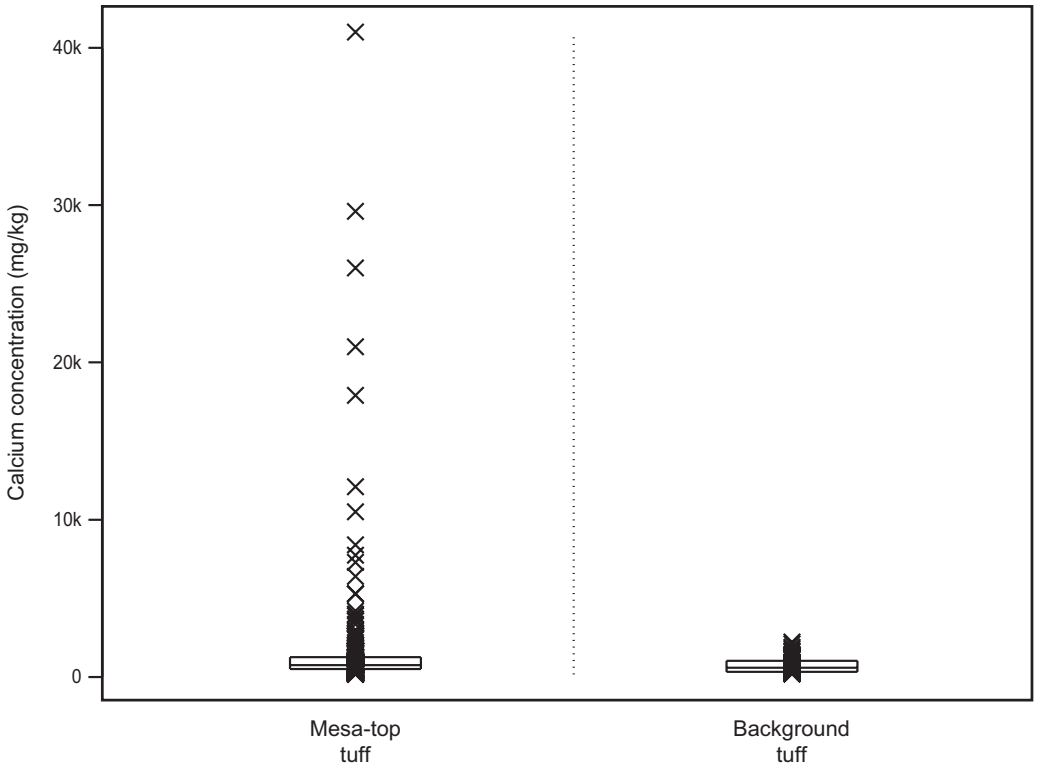


Figure D-5.1-3. Box plot of calcium concentrations in mesa-top tuff and Qbt 2, 3, and 4 background data

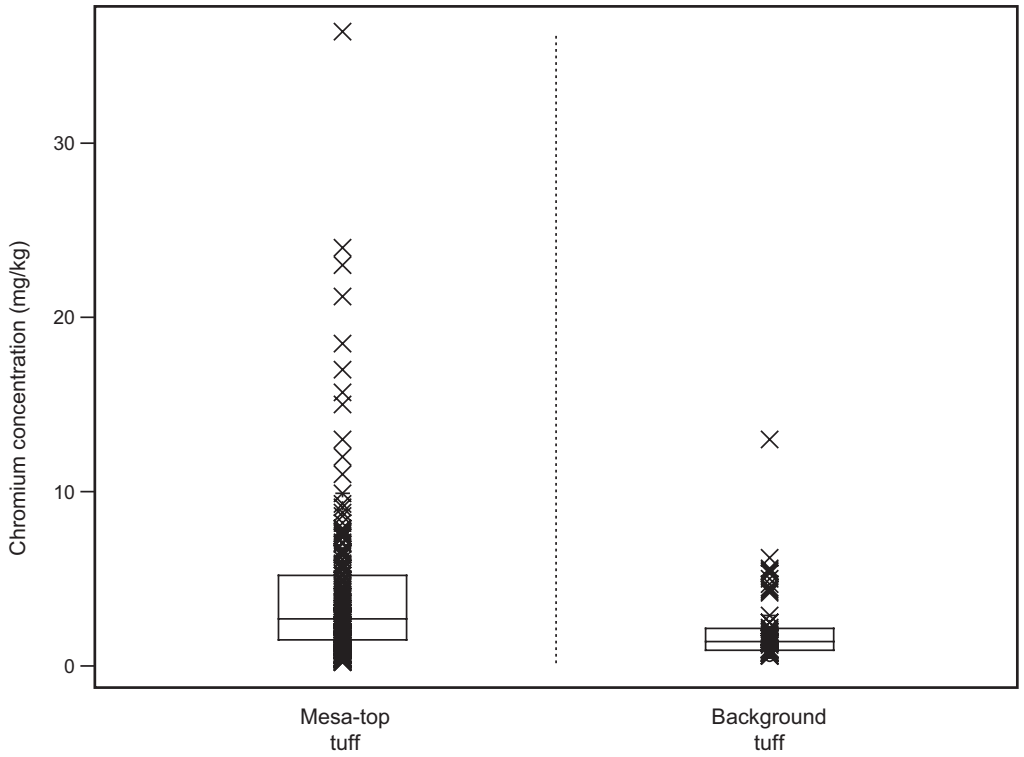


Figure D-5.1-4. Box plot of chromium concentrations in mesa-top tuff and Qbt 2, 3, and 4 background data

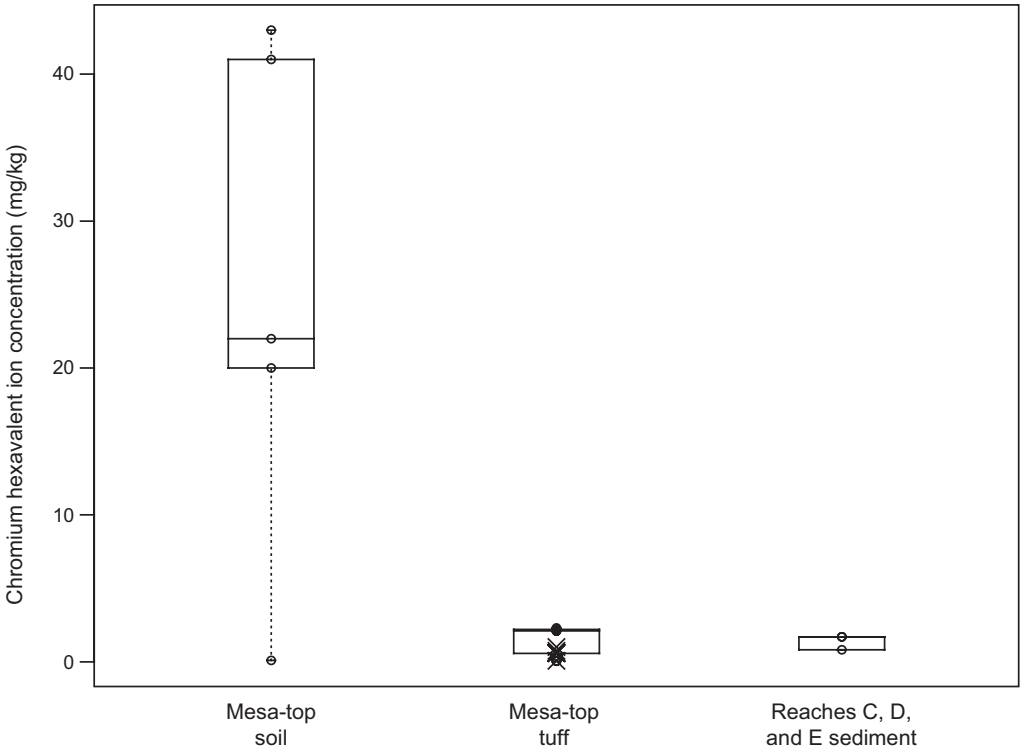


Figure D-5.1-5. Box plot of hexavalent chromium concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment

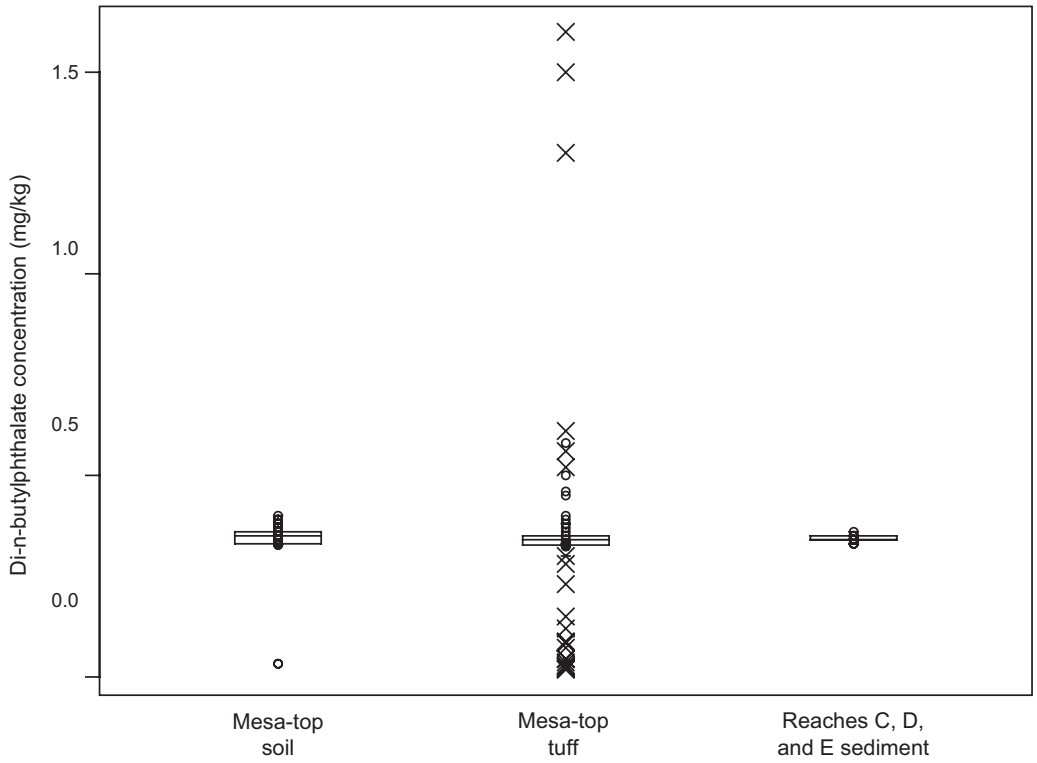


Figure D-5.3-1. Box plot of Di-n-butyl phthalate concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment

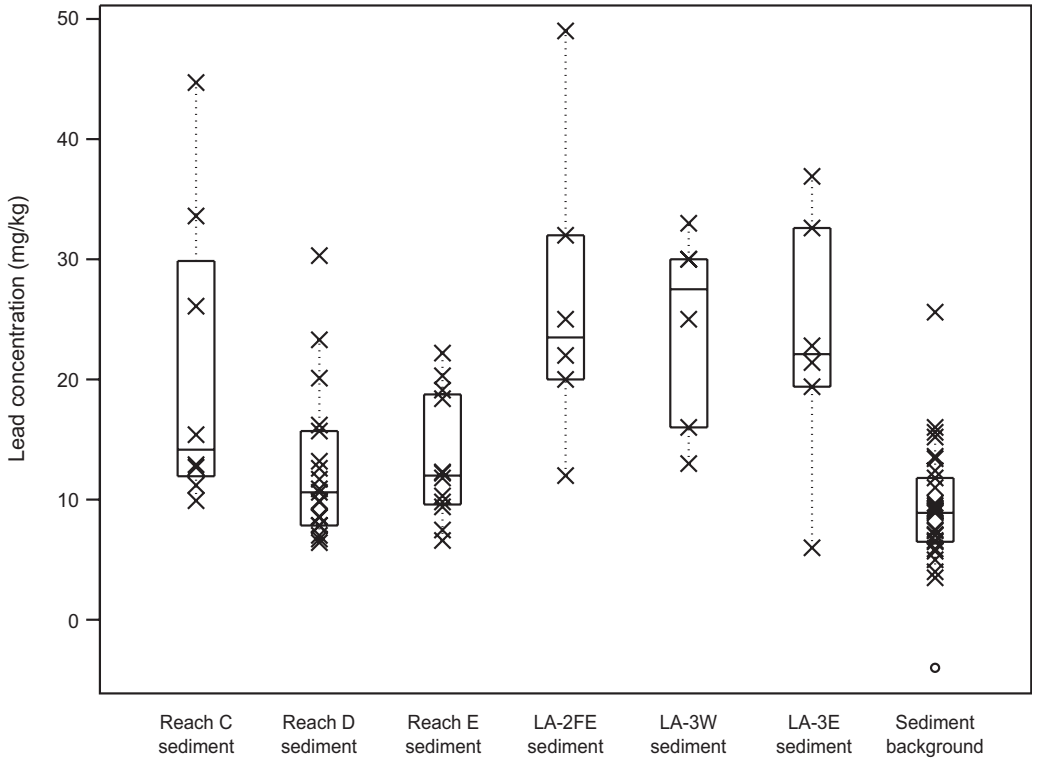


Figure D-6.1-1. Box plot of lead concentrations in Reaches C, D, and E sediment and sediment background data

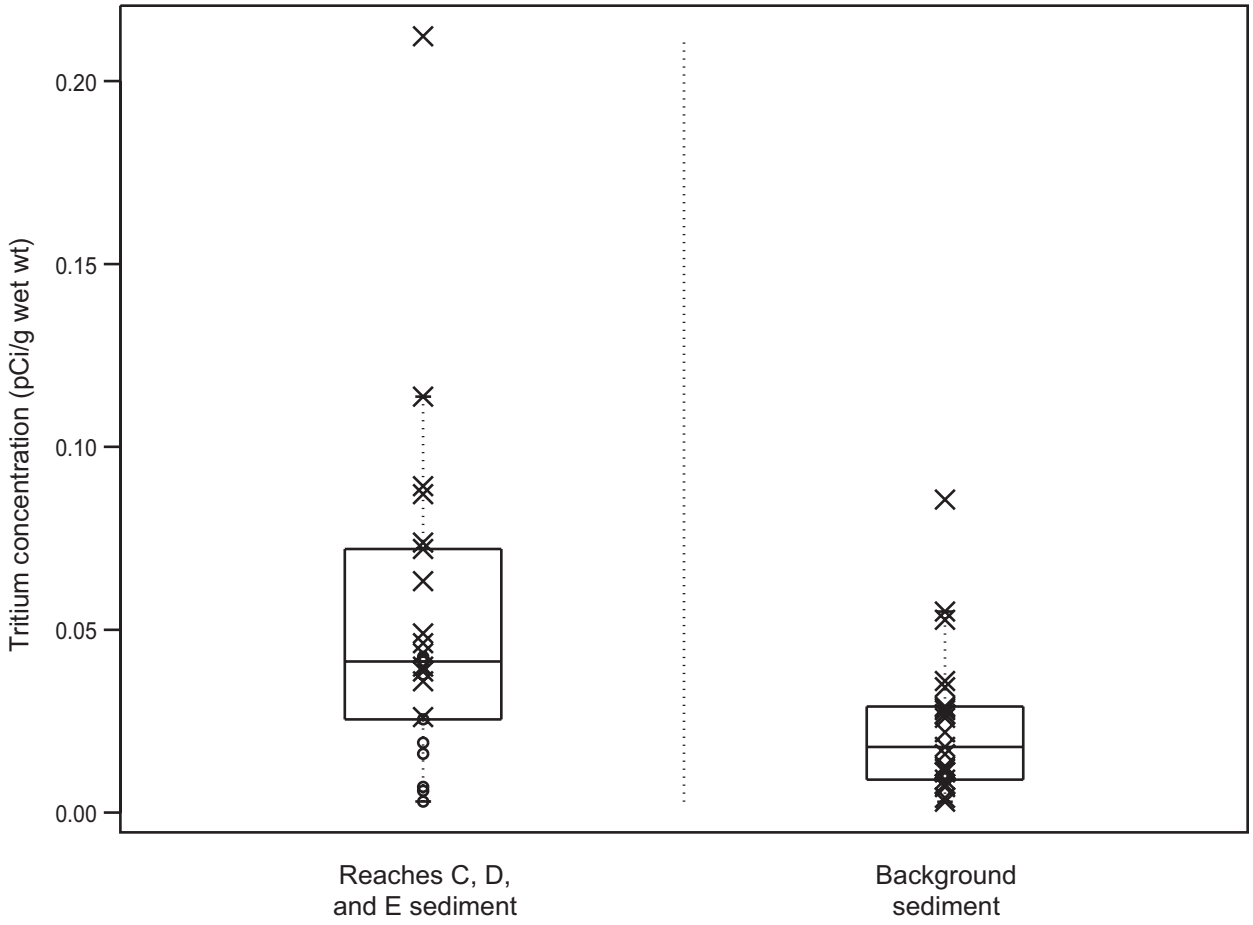


Figure D-6.2-1. Box plot of tritium concentrations in Reaches C, D, and E sediment and sediment background data

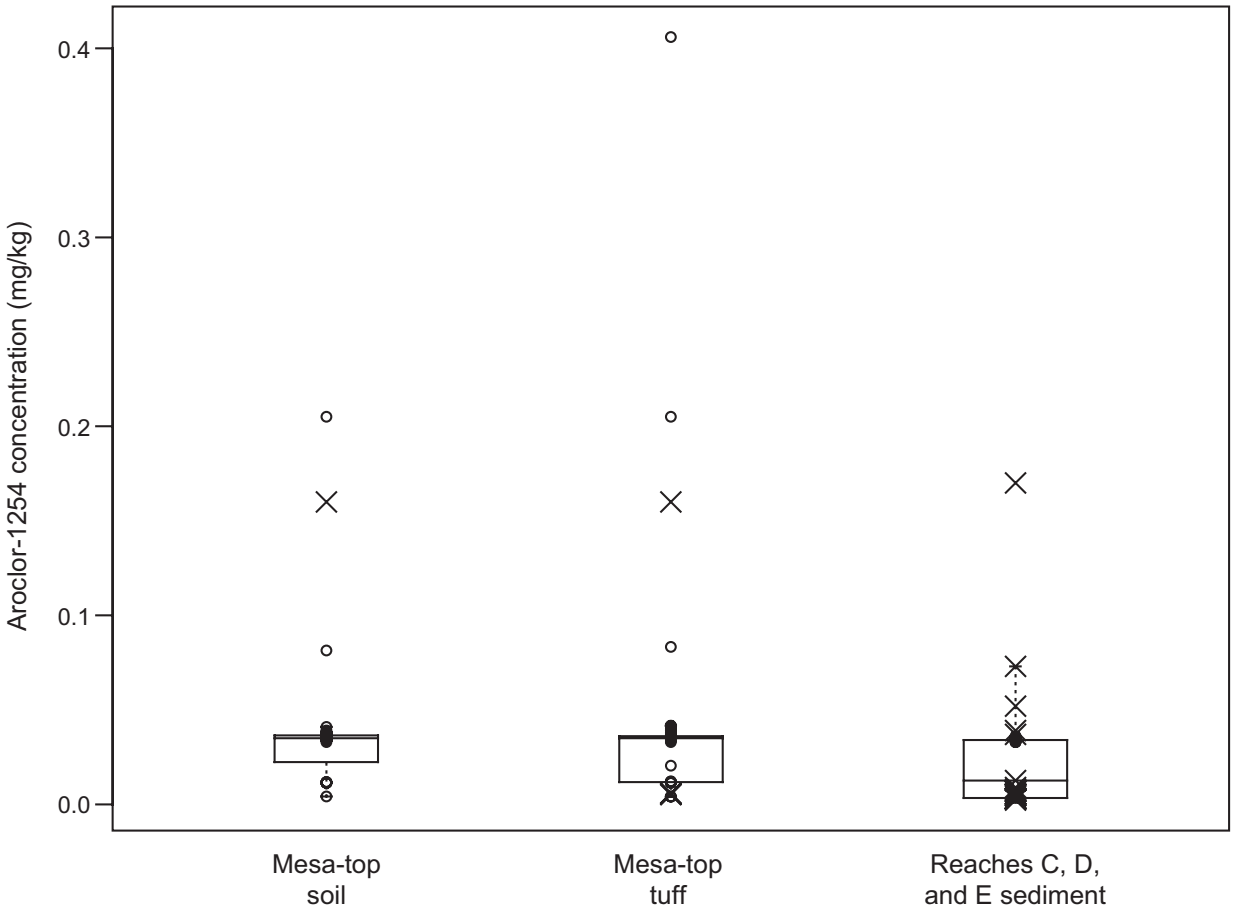


Figure D-6.3-1. Box plot of Aroclor-1254 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment

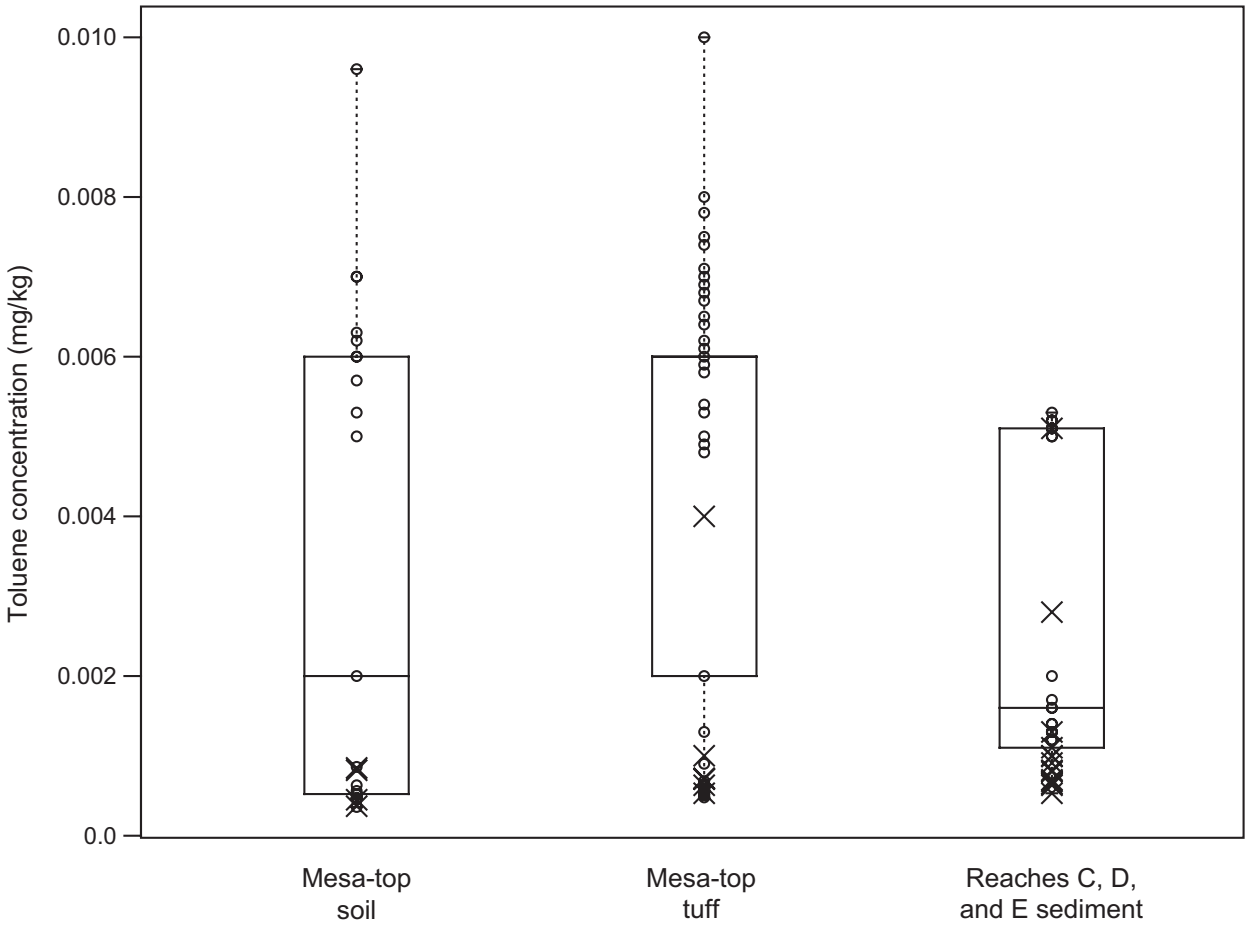
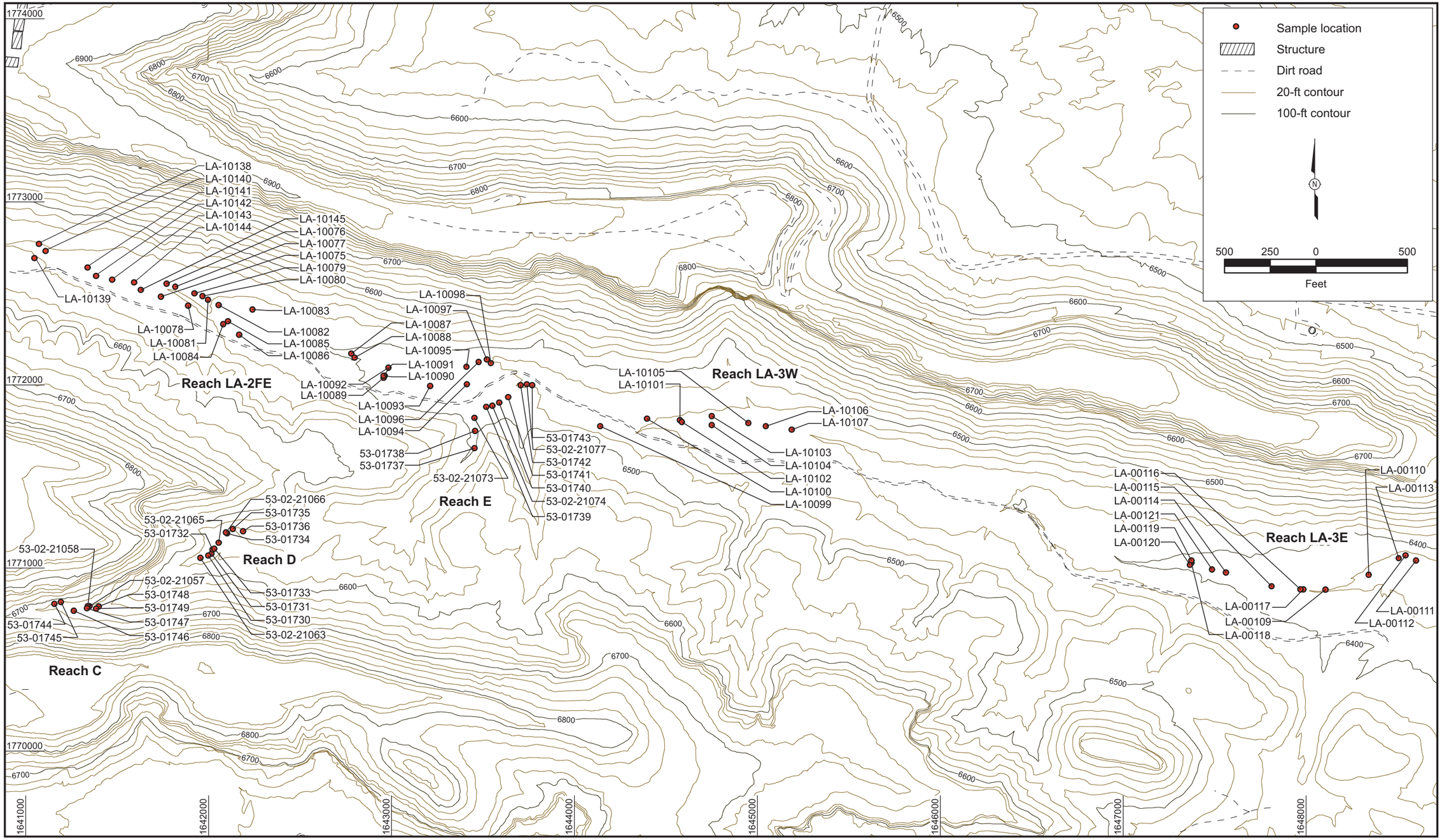


Figure D-6.3-2. Box plot of toluene concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, and E sediment



Source: GIS Lab Map No. M200874, 112003Rev for FD-7.0-1 and FG-4.0-20, TA-53 Inv/Rem Rpt, 012804, cf

Figure D-7.0-1. Sample locations in Reaches C, D, E, LA-2FE, LA-3E, and LA-3W

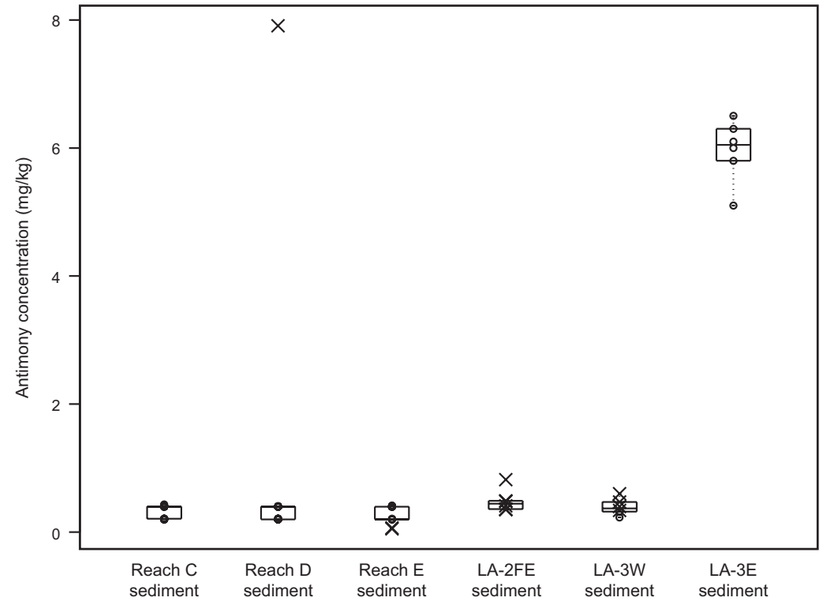


Figure D-7.1-1. Box plots for antimony concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

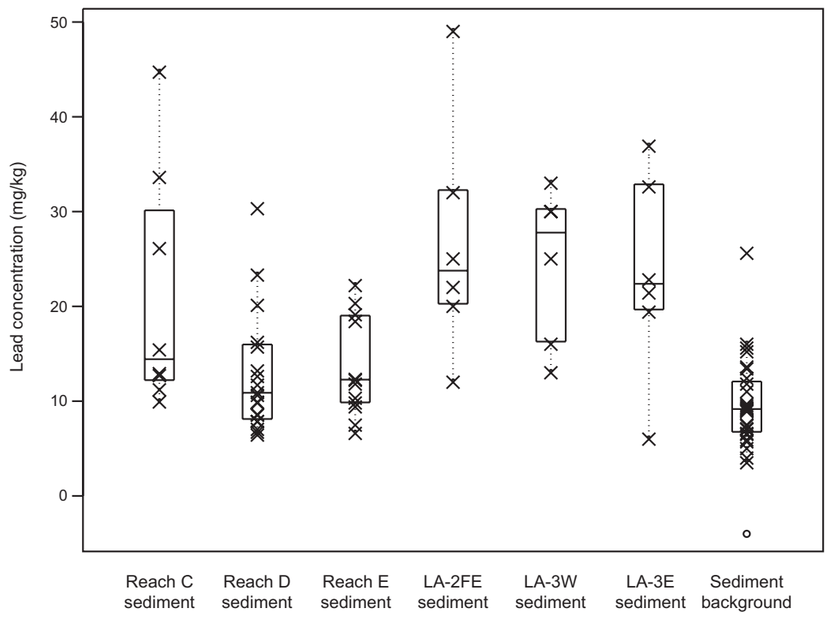


Figure D-7.1-2. Box plots for lead concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

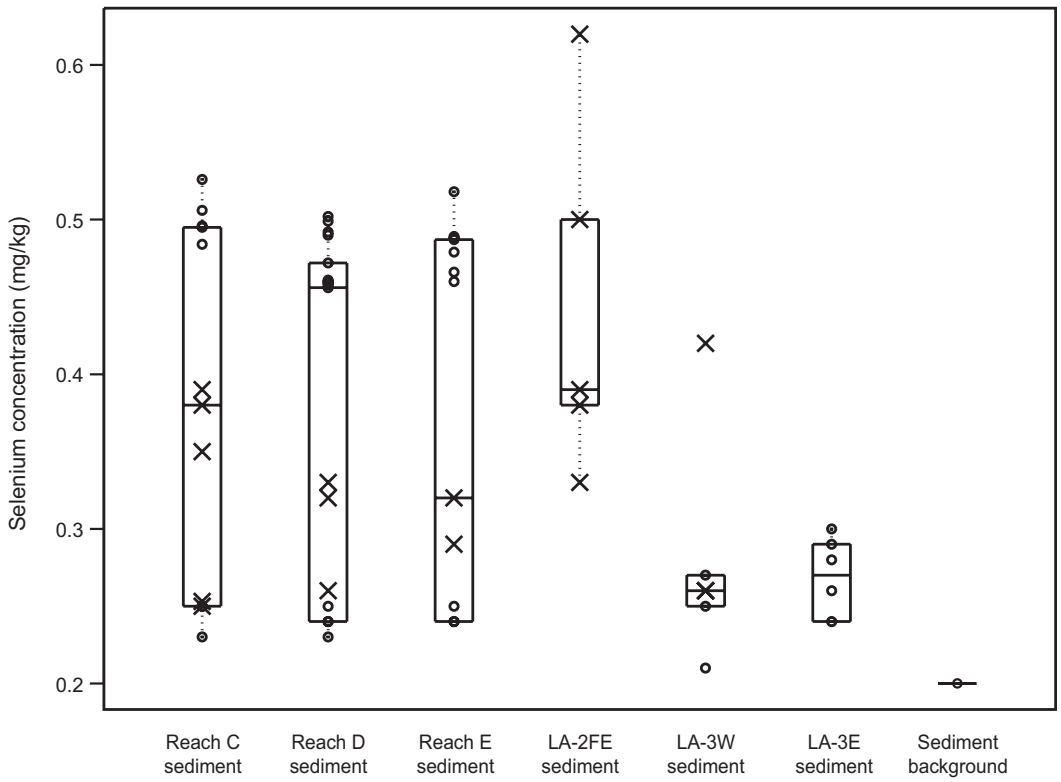


Figure D-7.1-3. Box plots for selenium concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

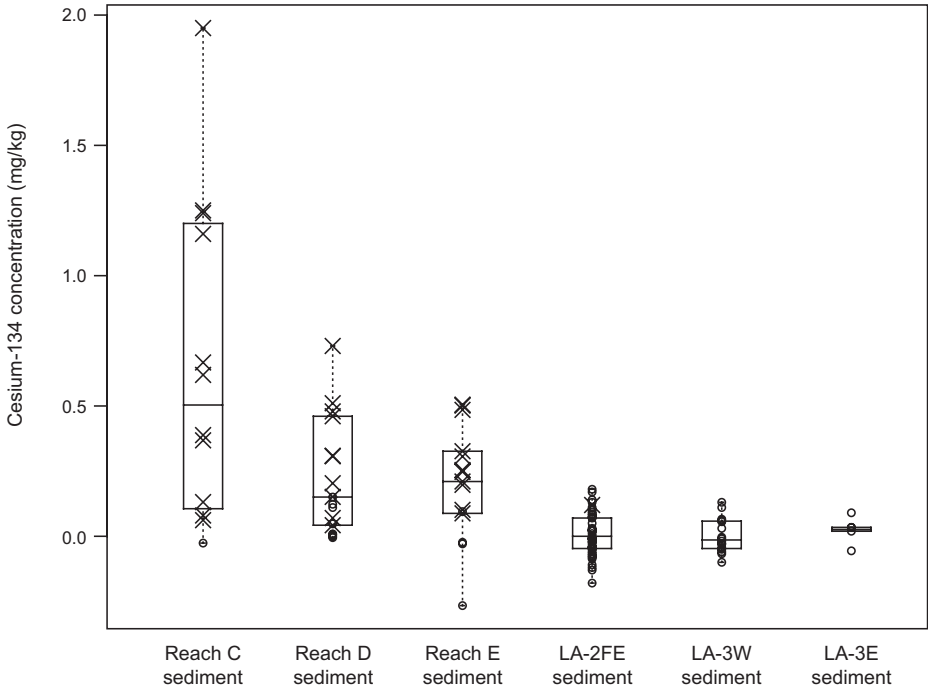


Figure D-7.2-1. Box plots for cesium-134 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

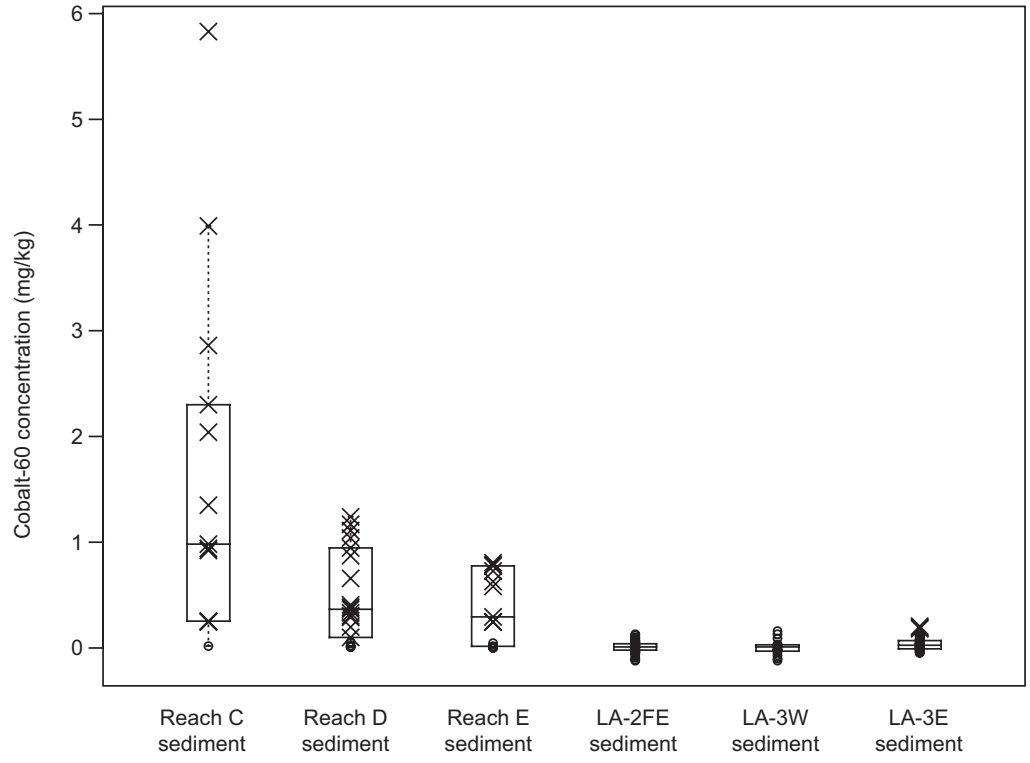


Figure D-7.2-2. Box plots for cobalt-60 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

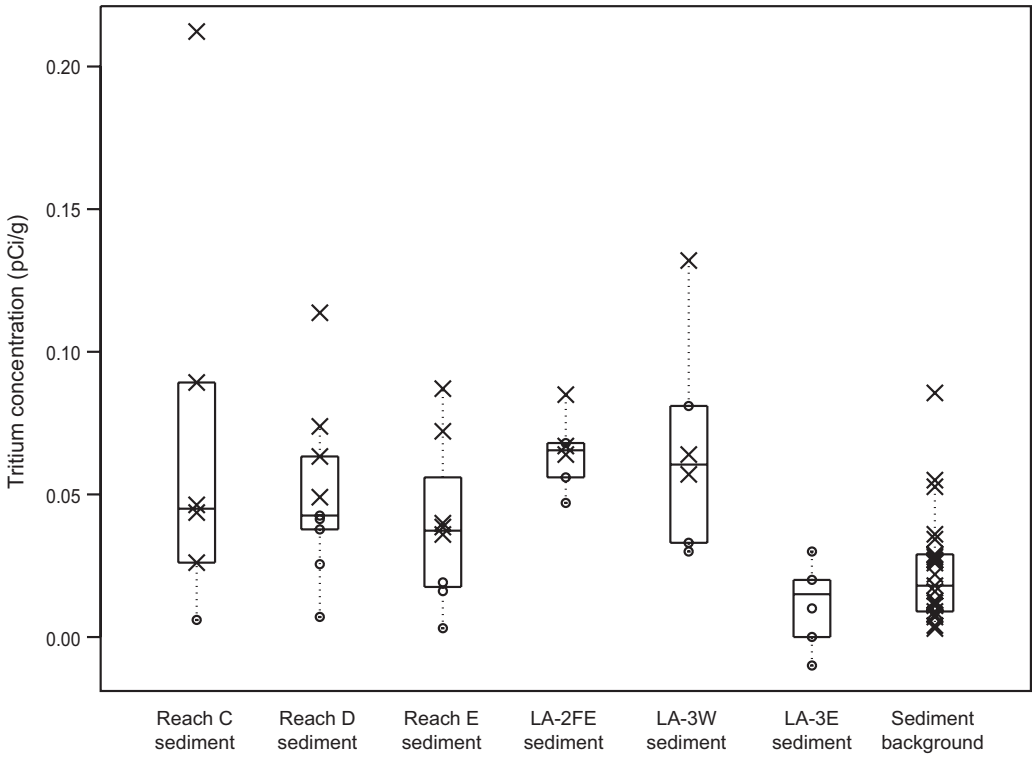


Figure D-7.2-3. Box plots for tritium concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

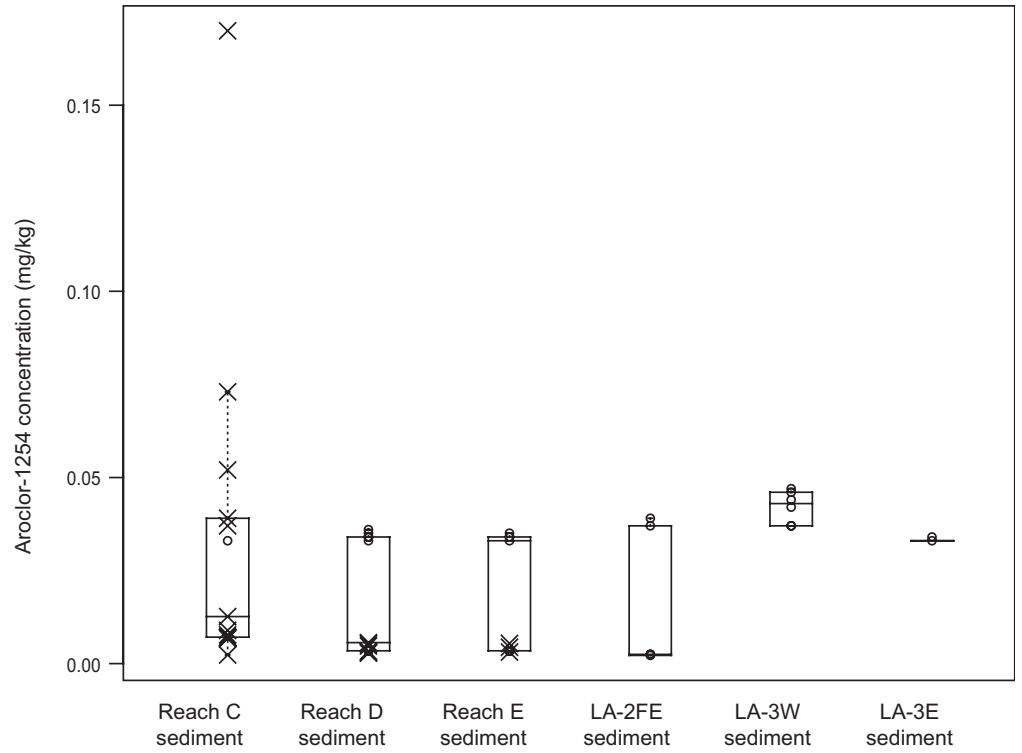


Figure D-7.3-1. Box plots for Aroclor-1254 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

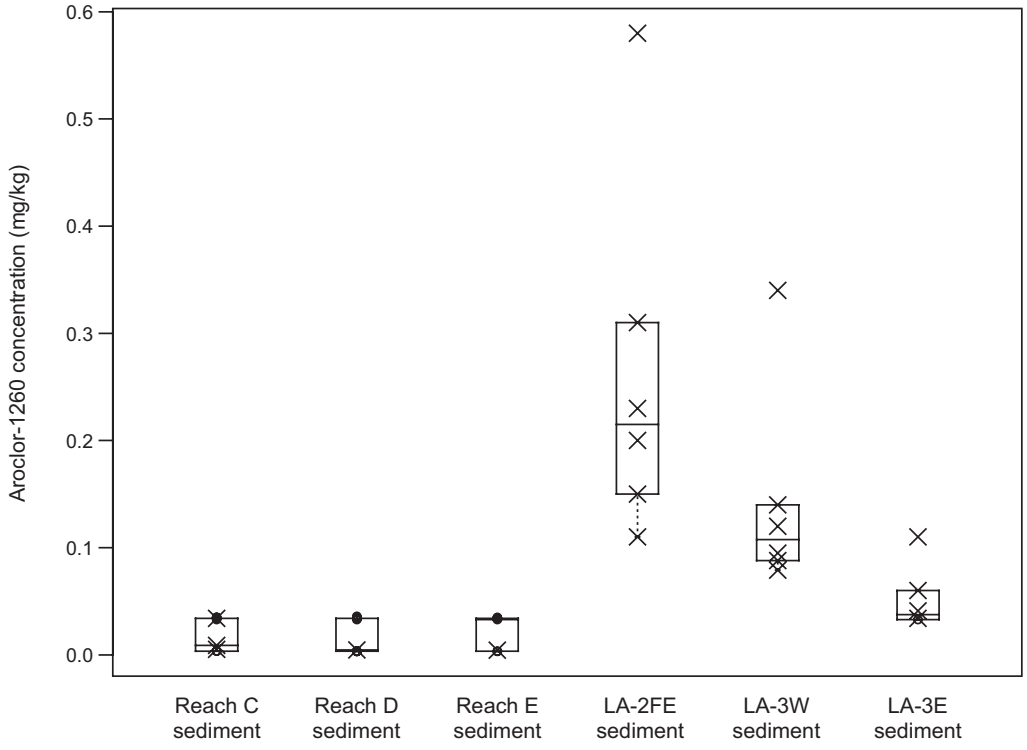


Figure D-7.3-2. Box plots for Aroclor-1260 concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

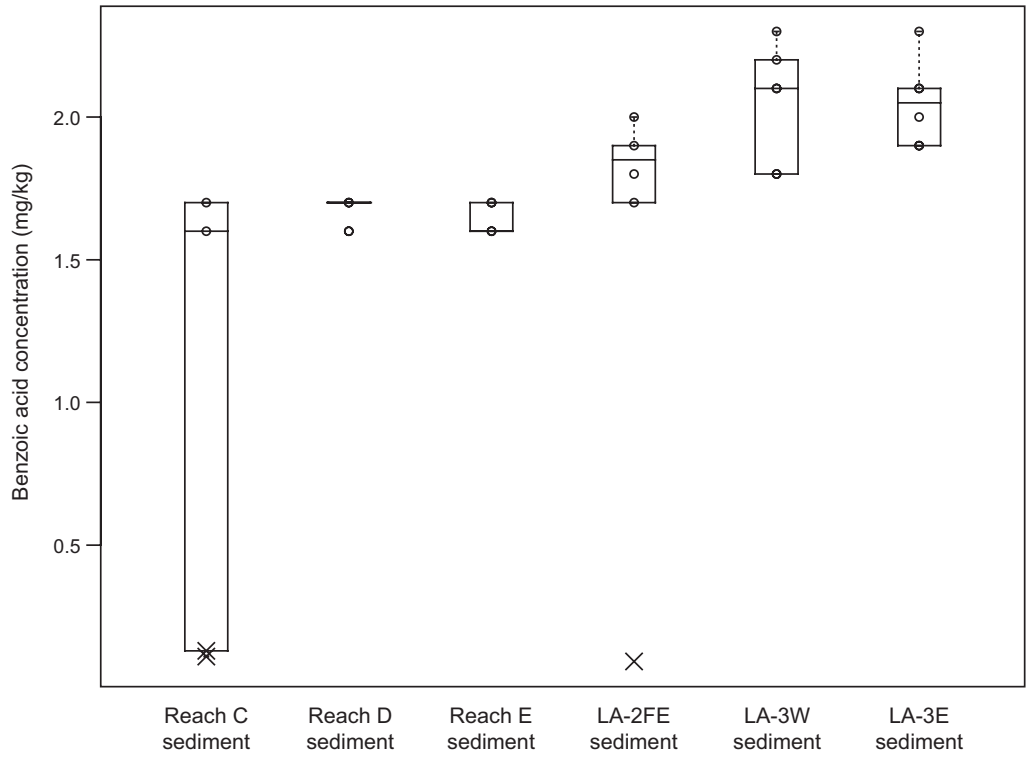


Figure D-7.3-3. Box plots for benzoic acid concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

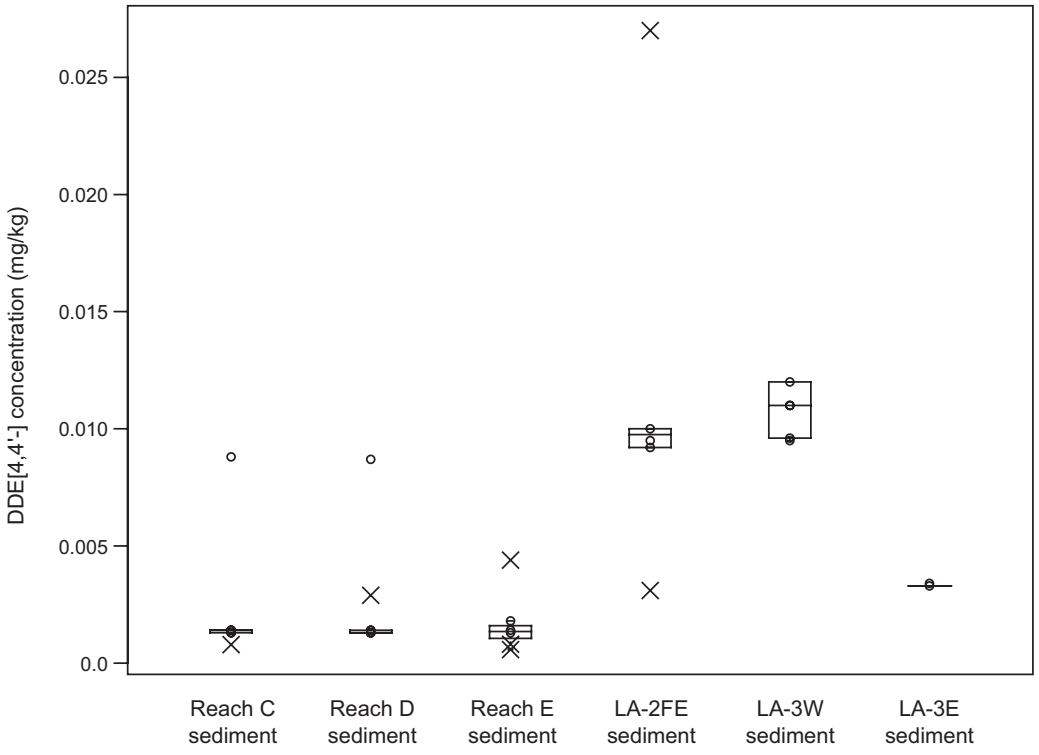


Figure D-7.3-4. Box plots for 4,4'-DDE concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

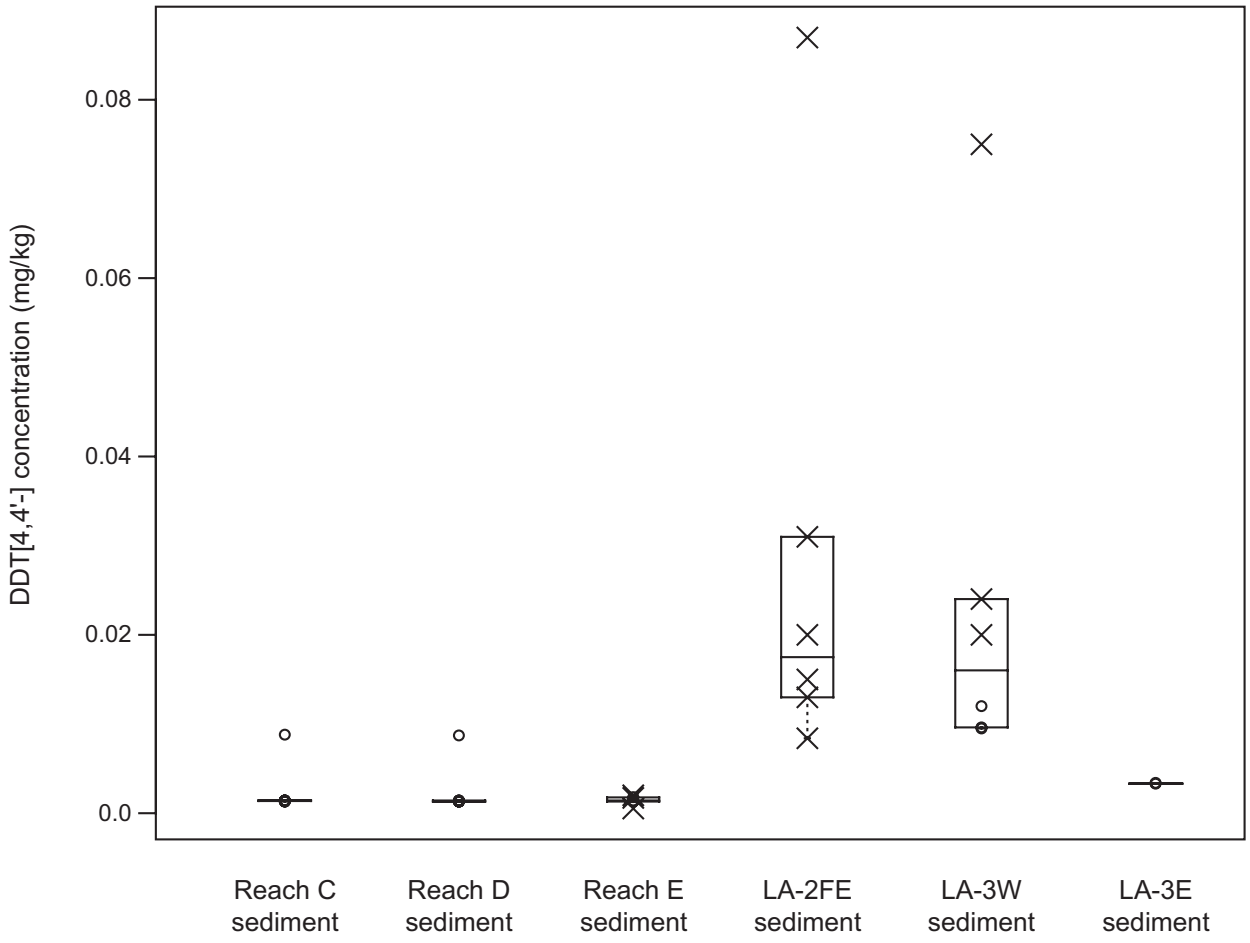


Figure D-7.3-5. Box plots for 4,4'-DDT concentrations in mesa-top soil; mesa-top tuff; and Reaches C, D, E, LA-2FE, LA-3W, and LA-3E sediment

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Appendix E

Analytical Suites and Results and Analytical Reports
(CDs included with this document)

One of the CDs included with this report contains the analytical data in the form of data tables. That CD is labeled “Appendix E, Analytical Suites and Results.”

As agreed to by the U.S. Department of Energy, Los Alamos National Laboratory, and the New Mexico Environment Department, all available analytical reports from the contract laboratories are included in this report. These are provided as a three-part CD set labeled “Appendix E, Analytical Reports.”

Copies of the field chain-of-custody forms have been provided in hard copy to the New Mexico Environment Department. All other copies of the report contain the same chain-of-custody forms in electronic form only.

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Appendix F

Summaries of 2000 and 2002 Interim Actions

F-1.0 INTRODUCTION

This appendix summarizes the interim actions (IAs) performed at the southern and northern impoundments of consolidated Solid Waste Management Unit (SWMU) 53-002(a)-99 at Technical Area (TA) 53 in Los Alamos National Laboratory (LANL or the Laboratory). These activities took place during the spring and summer of 2000 for the southern impoundment, SWMU 53-002(b), and during the spring and summer of 2002 for the northern impoundments, SWMU 53-002(a). Additional material was also removed from the southern impoundment and drainage channels in 2002. During 2000, the southern impoundment was remediated, and all sludge and liner material were removed. Sampling for the nature and extent of contamination was also conducted in 2002, as directed in the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan and the sampling and analysis plan (SAP) for SWMUs 53-002(a,b) (LANL 1998, 58841). During the 2002 IA, which was conducted in accordance with the approved IA plan for the site (LANL 2001, 71352), additional activities were performed at the northern impoundments, including sampling for the nature and extent of contamination, as directed in the second addendum to the RFI work plan and the SAP (LANL 2002, 73646).

F-2.0 BACKGROUND

Consolidated SWMU 53-002(a)-99 is made up of SWMU 53-002(a) and SWMU 53-002(b). SWMU 53-002(a) consists of two surface impoundments (the northern impoundments), and SWMU 53-002(b) is a single surface impoundment (the southern impoundment).

F-2.1 Site Description and History of the Southern Impoundment

The southern impoundment, SWMU 53-002(b), was designed to hold 2.6 mil gal. of radioactive liquid wastewater from various TA-53 facilities and to treat the wastewater by the retention of solids, evaporation of liquids, and process of radioactive decay.

The southern impoundment was constructed in 1985 by excavating into the tuff, constructing surrounding berms of crushed tuff, and placing a Hypalon liner on the floor of the impoundment to the top of the berms (LANL 1992, 29413). The crushed tuff in the berms was compacted to 90% of the maximum density, as defined by the Modified Proctor (ASTM D1557). The southern impoundment is approximately 330 ft long by 180 ft wide by 6 ft deep.

From 1985 to 1989, the southern impoundment received excess wastewater discharges from the northern impoundments [SWMU 53-002(a)]. From 1989 until its deactivation in 1998, the southern impoundment received only radioactive liquid wastes. There were no known discharges from the southern impoundment.

F-2.2 Site Description and History of the Northern Impoundments

The northern impoundments, SWMU 53-002(a), were designed to hold 3.2 mil gal. of sanitary, industrial, and radioactive liquid wastewater (RLW) from various TA-53 facilities and to treat wastewater by retention of solids and evaporation of liquids.

The northern surface impoundments were built in 1969 by excavating into the tuff, constructing surrounding berms of crushed tuff, and placing a 4-in.-thick compacted clay liner on the floor of the impoundments (LANL 1992, 29413). The crushed tuff in the berms was compacted to 90% of the maximum density, as defined by the Modified Proctor (ASTM D1557). A 4- to 6-in. layer of gunite

(concrete) was sprayed onto the inside surface of the crushed tuff berm to stabilize the slope. Each impoundment is approximately 210 ft long by 210 ft wide by 6 ft deep.

The surface impoundments received various types of wastewater from throughout the Laboratory, including sanitary and RLW from lines serving 420 structures within TA-53. The capacity of the impoundments was frequently exceeded, and overflow was discharged to an unlined drainage ditch. To minimize such discharges, two turbine aerators were installed in each impoundment to enhance the evaporation of liquids. The southern impoundment, SWMU 53-002(b), was built in 1985 to receive the excess wastewater. From 1989 until their deactivation in 1993, the northern impoundments received only sanitary and industrial wastewater, as RLW was diverted to the southern impoundment. In 1992, when the Sanitary Wastewater System Consolidation (SWSC) became operational, all sanitary waste was diverted from the northern surface impoundments to the SWSC. At the time of the 2002 IA, the northern impoundments were inactive and dry; from 6 in. to as much as 18 in. of dried sludge had accumulated on the clay liner.

TA-53 is an industrial area currently used for various experimental physics programs. The Laboratory does not anticipate any change from this industrial use in the future (LANL 1995, 57224). Security measures such as Laboratory badges or escort for entry, along with the locked gate at the road to the impoundments, reduce the possibility of inadvertent site intrusion.

F-3.0 OBJECTIVE AND SCOPE FOR IA AT SWMU 53-002(A)-99

The rationale for conducting the IA at SWMU 53-002(a)-99 was to reduce the potential risk/dose associated with contaminants present at the impoundments by removing the contaminant source. The screening levels used to determine the potential risk and dose at the impoundments were based on residential and industrial exposure scenarios. They correspond to a dose of 15 mrem/yr for a residential scenario and a dose of 30 mrem/yr for an industrial scenario for radionuclides, a 10^{-6} cancer risk for carcinogens, and a hazard quotient/hazard index of 1 for noncarcinogens (LANL 2001, 71352, p. 2).

The IAs for both the northern and southern impoundments included the following activities:

- Removing all dried sludge and clay liner and additional source media from both northern impoundments and the sludge and Hypalon liner from the southern impoundment and any additional source media (if any) to reduce the concentrations of chemicals of potential concern within those media
- Managing the waste
- Packaging and transporting the waste to an appropriate facility
- Confirming that all the sludge and all the clay liner have been removed
- Verifying, by collecting confirmatory samples, that removal activities have reduced the potential risk and dose to acceptable levels
- Preparing an IA summary report describing the remedial activities performed at the site, the analytical results for samples collected following the IA, and the data assessments

F-3.1 Southern Impoundments

No specific cleanup levels were established for the IA; the objective was to remove all the sludge and the Hypalon liner from the southern impoundment. Following the remediation, sampling was conducted to determine the extent of any contamination beneath the southern impoundment to a depth of 15 ft.

F-3.2 Northern Impoundments

No specific cleanup levels were proposed for the IA. The objective was to remove all the sludge and clay liner, thereby reducing the potential risk and dose to receptors at the site (LANL 2001, 71352, p. 18). The extent of the removal activities was defined by the boundaries of the impoundments. Additional remediation work was performed in the drainage area to the east of the impoundments when the material in the impoundments was excavated. This work was performed to further reduce risk/dose at the site, and the crew and equipment already on-site were deployed to avoid the cost of remobilizing the team at a later date.

F-4.0 IA FIELD ACTIVITIES

F-4.1 Health and Safety Monitoring

Because of the high concentrations of some radionuclides in the sludge and the relatively high dose rates at the southern impoundment, the source-removal work was conducted under the requirements of Site-Specific Health and Safety Plan #248 as well as a radiological work permit issued by Los Alamos Neutron Science Center Health Physics Operations personnel (ESH-1, now HSR-1). Monitoring during this activity was extensive and included high-volume air monitoring, lapel air samplers, and real-time thermoluminescent dosimeters. The results of the monitoring allowed for day-to-day decisions to be made regarding appropriate personal protective equipment (PPE) and the continued evaluation of the health and safety of all workers.

F-4.2 Southern Impoundment

Mobilization for the IA activities began in May 2000 with the delivery of waste containers, which were placed around the perimeter and in the immediate vicinity of the southern impoundment. The equipment used for the source removal were two skylifts, one rubber-tired backhoe, one skid-steer Bobcat equipped with a hydraulically operated curved moldboard blade, one pressure washer, and various equipment trailers. Section F-5.0 presents information on managing the investigation-derived waste (IDW).

F-4.2.1 Unexpected Events

During source-removal activities, monsoon storms resulted in accumulations of rainwater within the impoundment. Because the water was potentially contaminated from contact with the remaining sludge, the liner could not be cut until the water had been removed. The water was pumped into 10,000 gal. poly tanks and stored on-site until sampling and disposal could take place.

A small amount of gasoline was accidentally spilled on the ground during IA activities at the southern impoundment. Approximately 200 lb of gasoline-contaminated soil was placed in a 55-gal drum. The soil was classified as New Mexico Special Waste (NMSW) and taken to TA-54, Area L, before it was disposed of off-site.

F-4.2.2 Sludge Removal

The sludge removal began with the construction of an entrance into the southern impoundment by removing a section of the berm that surrounds the impoundment. The entrance was located on the southern side of the impoundment and was large enough to allow equipment to move in and out of the impoundment. The sludge was first consolidated using a skid-steer Bobcat to push the sludge into piles, after which the backhoe loaded the piles of sludge into B-25 waste containers, each with a capacity of

about 3 yd^3. Included in the sludge piles was any vegetation that had been growing inside the impoundment.

F-4.2.3 Liner Removal

When all the sludge had been consolidated and loaded into containers, the liner was cut, rolled into manageable packages, and wrapped with 6-ml-thick high-density polyethylene (HDPE). The rolls were placed in rolloff bins for transport to TA-54.

F-4.2.4 Defining Extent of Contamination at the Southern Impoundment

Following the remediation of all the sludge and the Hypalon liner from the southern impoundment, sampling was conducted to determine the extent of any contamination beneath the southern impoundment to a depth of 15 ft. Table F-4.2-1 summarizes the information for the samples collected beneath the liner within the southern impoundment. (An X in the table indicates the analyses were requested for each sample.) A total of 55 samples were collected from various depths at 14 locations. The data are located with all other data on the attached CD containing Appendix D.

F-4.2.5 Sand/Source Removal

After sludge and clay material were removed from the northern impoundments in 2002, the ramp to the impoundments and the contaminated media below the former liner were excavated to clean tuff (based on field-screening results), the depth to which varied according to the thickness of the fill. The average depth of excavation was approximately 1 to 1.5 ft. No fill was added to the impoundment after the contaminated media were excavated. The excavated material was placed in rolloff bins for transport to TA-54.

F-4.3 Northern Impoundments

Mobilization for the IA activities began in early summer of 2002 with the delivery of waste containers, which were placed in the immediate vicinity of the southern impoundment. Section F-5.0 presents information on the IDW management.

F-4.3.1 Northeastern Impoundment

The activities began with creating an access point from the southern impoundment by cutting an opening through the berm separating the northeastern and southern impoundments with an hydraulically operated tracked excavator. Subsequently, compacted tuff removed from the berm was used to fill in the trench created during the remediation of the southern impoundment and to build a ramp onto the northeastern impoundment because of the difference in elevation between the impoundments. The remaining tuff was piled to the side of the entrance.

A contaminant-free pad was constructed immediately inside the opening in the berm by removing all the sludge and the clay liner from the location and adding a layer of clean tuff material. The pad allowed the truck carrying waste containers to enter the impoundment, to be loaded with waste, and to exit the impoundment without transporting contaminants out of the impoundment on its tires or other parts.

The materials removed from the northeastern impoundment were separated into two categories: (1) sludge and clay liner and (2) debris. The sludge and clay liner category consisted of all the sludge,

clay liner, concrete, and any vegetation that had been growing within the impoundment. The debris category consisted of lumber and vitrified clay pipe (VCP).

Removal of the sludge and clay liner began by scraping the floor of the impoundment down to the underlying tuff, using the front-end loader. The sludge layer varied in thickness from about 6 to 32 in., with a typical thickness in most of the impoundment of about 4–6 in. The thickness of the clay liner was uniform at approximately 6 in. throughout most of the impoundment, with the exception of the edges and corners where it varied from 6 to 24 in. Once the tuff was encountered, both the sludge and clay liner were removed and placed in a convenient location within the impoundment before they were loaded. Before loading, the material was mixed to ensure the mixture of sludge and clay liner was consistent. During the mixing process, water was added to control dust before the material was placed in rolloff bins for transport to TA-54.The average depth of excavation for the impoundment was approximately 1 to 1.5 ft, including 0.5 ft of clay liner and 0.25 to 0.5 ft of tuff below the liner. No fill was added to the impoundment after the contaminated media were excavated.

F-4.3.2 Northwestern Impoundment

The remediation activities began with creating an access point from the southern impoundment by cutting an opening through the berm that separates the northwestern and southern impoundments with a hydraulically operated tracked excavator. The compacted tuff was removed from the berm and subsequently used to build a ramp onto the northwestern impoundment because the elevation of northwestern impoundment was higher than the southern impoundment. The remaining tuff was piled to the side of the entrance.

A contaminant-free pad was constructed immediately inside the opening in the berm by removing all the sludge and clay liner from the entrance of the impoundment and then adding a layer of clean tuff material. The pad allowed the truck carrying waste containers to enter the impoundment, to be loaded with waste, and to exit without transporting contaminants out of the impoundment.

The materials removed from the northwestern impoundment were separated into two categories: (1) sludge and clay liner and (2) debris. The sludge and clay liner category consisted of all the sludge, clay liner, concrete, and any vegetation that had been growing within the impoundment. The debris category consisted of lumber and VCP.

Removal of the sludge and clay liner began by scraping to tuff using the front-end loader. The sludge layer thickness varied from about 6 in. to 32 in. It was thickest at the impoundment inlet and in the area of the corner nearest to the inlet. Throughout the rest of the impoundment, the thickness was uniform at 4–6 in. The thickness of the clay liner was uniform at approximately 6 in. throughout most of the impoundment, with the exception of the edges and corners where it varied from 6 to 24 in. Once the tuff was encountered, both the sludge and clay liner were removed. Before it was loaded, the material was mixed to ensure a consistent mixture of sludge and clay liner. During the mixing process, water was added to control dust before the material was loaded into waste containers. The excavated material was placed in rolloff bins for transport to TA-54.The average depth of excavation for the impoundment was approximately 1 to 1.5 ft, including 0.5 ft of clay liner, and 0.25 to 0.5 ft of tuff below the liner. No additional fill was added to the impoundment after excavation of the contaminated media.

F-4.4 Outfall Drainage

Remedial activities within the outfall drainage west of the Los Alamos Canyon tributary consisted of removing contaminated sediments and soils. These activities were not directed by the second addendum

to the RFI work plan and SAP (LANL 2002, 73646) or by the IA plan (LANL 2001, 71352); instead, they were undertaken to reduce the dose and risk associated with contaminants in the drainage. A field team and equipment already on-site for the IA were directed to remove the small additional amount of material in the drainage, thus avoiding additional mobilization costs.

The contaminated material was distributed along an area approximately 20 ft wide and 100 ft long. The depth of the material varied because sediment had accumulated within pockets throughout the drainage area. The material removal was conducted using a hydraulically operated tracked excavator that removed all the material down to the tuff and then loaded it into waste containers. The specific amounts of waste material removed and managed are discussed in Section F-5.0 of this appendix.

F-4.5 Sampling Activities

As specified in the second addendum (LANL 2002, 73646, p. 43) and in the IA plan (LANL 2001, 71352, p. 23), after the sludge and clay liner were removed, confirmation samples were taken within the northern impoundments. A number of confirmation samples also were taken within the southern impoundment, after the northern impoundments had been remediated and all waste containers had been moved through the southern impoundment and shipped to TA-54. More sampling was conducted after the impacted soil and sediment within the outfall drainage area had been removed. In addition, to better define the nature and extent of contamination in, beneath, and surrounding the impoundments, borehole samples were collected. Nature and extent sampling was performed as directed in the second addendum (LANL 2002, 73646, pp. 45–51).

F-4.5.1 Confirmatory Sampling

On August 15, 2002, field team personnel collected surface soil confirmation samples from the impoundments and the outfall area east of the southern impoundment. Samples were collected with a dry-decontaminated stainless-steel hand auger and were homogenized using a stainless-steel bowl and spoon. Each sample was collected from the post-excavation surface to a depth of 0.4 ft or 0.5 ft, depending upon the refusal depth of the hand auger. Within each impoundment, one of the surface confirmation samples was collected in conjunction with an extent-sampling borehole.

For each of the confirmation sample locations, Table F-4.5-1 shows the field identity label (“Field ID”), the impoundment or other location description (“Impoundment”), the Facility for Information Management, Analysis, and Display (FIMAD) sample location ID (“Location ID”), and the corresponding coordinates. The sample locations are presented graphically in Figure F-4.5-1.

For each of the confirmation samples, Table F-4.5-2 shows FIMAD sample location ID (“Location ID”), sample identification number (“Sample ID”), field quality-control sample type (if applicable), depth interval, and analyses requested (indicated by an X).

In accordance with LANL-ER-SOP-1.04, “Sample Control and Field Documentation,” field personnel completed a sample collection log and associated chain-of-custody (COC) form for each sample. Field quality control samples consisted of duplicate samples collected at a frequency of at least one duplicate for every 20 regular samples. Before the samples left TA-53, a radiation control technician (RCT) from HSR-1 (the Health Physics Operations group at the Laboratory) screened the samples and the sample cooler for radioactivity. Samples were transported to the Sample Management Office (SMO) in a sealed cooler chilled to approximately 4°C. When samples arrived at the SMO, SMO personnel reviewed and approved the COCs and accepted custody of the samples. To ensure that U.S. Department of Transportation (DOT) regulations were not violated, a portion of each sample was delivered to the

American Radiation Services laboratory for radiological screening before the SMO shipped the samples off-site to the analytical laboratory. Samples were analyzed at one or more off-site laboratories on a standard 30-day turnaround schedule.

Southern Impoundment

Within the southern impoundment, three confirmation samples were collected from the post-excavation surface, one each at locations 53-02-20843, 53-02-20844, and 53-02-20845 (Table F-4.4-1). To represent the surface immediately beneath the former clay sludge and liner removed in 2000, the confirmation samples were not located within the backfilled tuff in the center of the impoundment.

Northeastern Impoundment

Within the northeastern impoundment, six confirmation samples (including one duplicate) were collected from the post-excavation surface at locations 53-02-20838 through 53-02-20842 (Table F-4.5-1). Sample 53-02-20838 was located near the borehole named BH1 (sample location 53-02-20829).

Northwestern Impoundment

Within the northwestern impoundment, five confirmation samples were collected from the post-excavation surface, one each at locations 53-02-20833 through 53-02-20837 (Table F-4.5-1). Sample 53-02-20837 was located near the borehole named BH2 (sample location 53-02-20828) and a fracture exposed during excavation.

Outfall Drainage

Within the outfall drainage east of the southern impoundment, two confirmation samples were collected from the post-excavation bedrock surface, one each at locations 53-02-20846 and 53-02-20847 (Table F-4.5-1). These locations were selected based on elevated radioactivity in previous sample results and on radiological surveying during removal of the topsoil.

F-4.5.2 Extent Sampling

From July 24, 2002, to August 14, 2002, field team personnel collected extent samples from seven hollow-stem auger boreholes drilled by Stewart Brothers Drilling Company and from two shallow auger holes drilled with portable hand-held equipment. The boreholes and associated extent sampling were placed strategically to fill data gaps and meet assessment goals pursuant to the second addendum to the RFI work plan and SAP (LANL 1998, 58841).

The hollow-stem auger boreholes consisted of three 50-ft boreholes (BH1, BH2, and BH3), three 200-ft boreholes (BH4, BH5, and BH6), and one 300-ft borehole (BH7), all of which were located around and within the three former surface impoundments (Figure F-4.5-1). The boreholes were drilled using a Failing F-10 drill rig. The shallow auger holes (AH1 and AH2) were located in an area inaccessible to the drill rig. The drilling of these holes was attempted using a hand auger that met refusal on the welded tuff bedrock; AH1 and AH2 were completed with a Bosch rotating hammer drill.

F-5.0 WASTE MANAGEMENT

All waste generated during the IA activities was managed in accordance with applicable standard operating procedures (SOPs), which incorporate the requirements of all applicable U.S. Environmental Protection Agency (EPA) and New Mexico Environment Department (NMED) regulations, U.S. Department of Energy (DOE) orders, and Laboratory Implementation Requirements (LIRs). The SOPs used during the characterization and management of waste are

- SOP-01.06, Management of Environmental Restoration Project Waste
- SOP-01.10, Waste Characterization.

Before field investigation activities began, Waste Characterization Strategy Forms (WCSF) were prepared and approved per requirements of SOP 01.10. The WCSF provides detailed information on IDW characterization, management, containerization, and volumes. The IDW characterization was completed through a combination of acceptable knowledge (AK) from historical data, AK from site characterization data, and direct waste sampling. The wastes were shipped under the requirements of 49 CFR Part 173, Subpart I to TA-54, Area G, for disposal. The volumes and types of waste for each of the remediated areas are reported below by site. The volumes reported on the shipping documentation differ from the volume actually shipped. Volume estimates were made for the shipping manifest before loading; the actual volumes were measured more accurately on the loaded containers during remediation activities. Only the actual volumes are reported in Tables F-5.1-1 and F-5.2-1 through F-5.2-4. A CD containing all applicable waste documentation, such as the WCSFs, Waste Profile Forms (WPFs), and manifests, has been included with this appendix as Attachment F-1.

The selection of waste containers was based on appropriate DOT requirements, waste types, and estimated volumes of IDW to be generated. Immediately following containerization, each waste container was individually labeled with a unique identification number and with information regarding waste classification, item(s), radioactivity, and date generated. The wastes were contained in clearly marked accumulation areas within the SWMU boundary and approved per the WCSF.

F-5.1 Investigation-Derived Waste

The IDW generated during the IA of SWMU 53-002(a)-99 was managed to protect human health and the environment, comply with applicable regulatory requirements, and adhere to the Laboratory's waste minimization goals. IDW is solid waste generated as a result of field investigation activities and may include, but is not limited to, drill cuttings; purge water; contaminated PPE, sampling supplies, and plastic; fluids from the decontamination of PPE and sampling equipment; and all other wastes potentially contacting contaminants.

The IDW waste streams associated with the IAs at SWMU 53-002(a)-99 are summarized below and identified in Table F-5.1-1, along with the year of the IA and the method of on-site management.

Spent PPE. The spent PPE waste stream consisted of PPE that has potentially "contacted" contaminated environmental media (i.e., core and/or drill cuttings) and could not be decontaminated. The bulk of this waste stream consisted of gloves. The Anti-C coveralls were sent to the Laboratory laundry for decontamination. Spent PPE was collected in containers at personnel decontamination stations. Characterization of this waste stream was performed through AK of the waste materials, the methods of generation, and historic data from the environmental media with which the materials were in contact. The waste was designated as nonregulated low-level radioactive waste (LLW) and disposed of at TA-54.

Disposable sampling supplies. The disposable sampling supplies waste stream consisted of all equipment and materials used during sample collection that came into direct contact with contaminated environmental media and could not be decontaminated. This waste stream consisted primarily of paper and plastic items collected in bags at the sampling locations. Characterization of the waste stream was performed with AK of the waste materials, the methods of generation, and the historic analytical results from the sampling of the environmental media with which the materials were in contact. The wastes were designated as nonregulated LLW disposed of at TA-54.

Decontamination materials. Dry decontamination methods were used exclusively at the site. The decontamination waste stream consisted of paper towel wastes from decontamination activities collected in containers at the point of generation. Characterization of the waste stream was performed with AK of the waste materials, the methods of generation, and the historic analytical results from the sampling of the environmental media with which the materials were in contact. The wastes were designated as nonregulated LLW, disposed of at TA-54.

F-5.2 Remediation Wastes

The remediation waste streams associated with the IAs at SWMU 53-002(a)-99 are summarized below and identified in Table F-5.1-1, along with the year of the IA and the method of on-site management.

Excavated Material(s). This waste stream consisted of sludge, clay liner, sand, and soil/sediment from all three impoundments and the outfall drainage excavated during field activities. The excavated materials were collected and containerized where they were generated. The waste stream was characterized with analytical results from historical data from the site. The maximum detected concentrations of radionuclides were compared with background/fallout values and designated as regulated LLW; the waste was disposed of at TA-54. (The actual volume of the excavated materials is presented in Tables F-5.2-1 through F-5.2-4.)

Poly tanks. This waste stream consisted of two 10,000 gal. poly (plastic) tanks used to store rainwater pumped from the southern impoundment. The tanks were pumped out and later cut up and containerized at the point of generation (i.e., at the excavation), designated as nonregulated LLW, and disposed of at TA-54.

Hypalon liner. This waste stream was removed and containerized at the point of generation. The rubberized liner covering the southern impoundment was cut up, rolled into packages, wrapped with polyethylene, strapped, and placed in rolloff bins. The bins were surveyed for radioactive contamination and staged for shipment to TA-54 as regulated LLW.

Liquid Waste. The liquid waste stream was generated from rain water collected in the excavation areas. The rain water was pumped out of the impoundments into two 10,000 gal. poly tanks. The contents of the tank were pumped and transported to the TA-53 RLW impoundments for processing.

Drainline pipe. The drainline pipe waste stream consisted of piping between the impoundments that had been removed during the IA along with other debris. This waste stream was removed and containerized at the point of generation (i.e., at the excavation), and designated as nonregulated LLW, and disposed of at TA-54.

A more detailed description of waste generation and management during the IA of the southern and northern impoundments and the outfall drainage area is provided below.

F-5.2.2 Southern Impoundment

The volumes and types of waste generated during both the 2000 and the 2002 IA remediation activities within the southern impoundment are reported in Table F-5.2-1. All waste management was performed by the Remedial Action Waste Management Coordinator according to Laboratory waste-disposal requirements. Except for liquid waste and NMSW, all wastes were transported to the Laboratory's TA-54, Area G, for disposal.

Accumulated Rainwater

During source-removal activities, monsoon storms resulted in accumulations of rainwater within the impoundment. Because the water was potentially contaminated by contacting the remaining sludge, the liner could not be cut until the water had been removed. The water was pumped into two large (10,000 gal.) poly tanks and stored on-site within the nonhazardous/radioactive waste storage area that was cordoned off, posted, and managed within the boundary of the work area as described in SOP 1.06, until sampling and disposal could take place. After the analysis of water in the poly tanks was available, the water was suctioned from the poly tanks into TA-53 RLW facility tanker trucks and transported to the TA-53 RLW treatment evaporation basin located east of the SWMU site. Small amounts of vermiculite were added to the poly tanks to absorb residual water. The poly tanks remained in the cordoned off waste area within the southern impoundment until the 2002 IA of the northern impoundments was complete. At that time, the poly tanks were cut up and placed in rolloff bins for disposal at TA-54.

Sludge

Excavated sludge from within the southern impoundment was loaded into 54 B-25 waste containers, each holding approximately 2.41 m^3 of sludge. Once filled, the B-25 containers were sealed with a foam adhesive aerosol spray within the impoundment, then transferred outside the impoundment using the skylift. After the container was placed outside the impoundment, another skylift picked up the container and placed it on a pad where dry decontamination of the container exterior was performed. As decontamination was completed, RCTs conducted direct and smear surveys of each container. The containers were then placed in the on-site cordoned off, posted, nonhazardous/radioactive waste storage area, per SOP 1.06, until they were shipped to TA-54.

Liner

When all the sludge had been consolidated and loaded into containers, the liner was cut, rolled into manageable packages, and wrapped with 6-ml-thick HDPE. The rolls were placed in rolloff bins for transport to TA-54. Heavy-duty nylon straps were placed around the inside of the rolloff bins so that the rolls of liner could be lifted out by crane at TA-54. The rolloff containers were surveyed for radioactive contamination and staged within the on-site cordoned off, posted, nonhazardous/radioactive waste storage area per SOP 1.06, until they were shipped to TA-54.

2002 Sand/Source Removal

After the northern impoundments sludge and clay material were removed in 2002, the ramp to the impoundments and contaminated media below the former liner in the southern impoundment were excavated until clean tuff was reached. The excavated material was placed in rolloff bins for later transport to TA-54. The rolloff containers were surveyed for radioactive contamination and staged within the on-site cordoned off, posted, nonhazardous/radioactive waste storage area, per SOP 1.06, until they were shipped to TA-54.

New Mexico Special Waste

This waste stream consisted of gasoline-contaminated soil resulting from an accidental spill from equipment during IA activities at the southern impoundment. It was containerized in a 55-gal. drum and taken to TA-54 Area L before it was disposed of off-site.

F-5.2.3 Northern Impoundments

Northeastern Impoundment Sludge and Clay Liner

The IA activities within the northeastern impoundment were conducted in 2002 and included removing the sludge and clay liner using a front-end loader to place the excavated material into rolloff containers for transport and disposal. The debris within the impoundment was also collected using the front-end loader to deposit the debris into rolloff waste containers. Once a waste container was loaded, it was surveyed for radioactive contamination and staged within the on-site cordoned off, posted, nonhazardous/radioactive waste storage area, per SOP 1.06, located within the southern impoundment until it was shipped to TA-54.

The volumes and types of waste generated during the remediation activities within the northeastern impoundment are reported in Table F-5.2-2.

Northwestern Impoundment Sludge and Clay Liner

The IA activities within the northwestern impoundment also included removing the sludge and clay liner using a front-end loader and loading the excavated material into rolloff containers for transport and disposal. The debris within the impoundment was also collected using the front-end loader to deposit the debris into rolloff waste containers. Once a waste container was loaded, it was surveyed for radioactive contamination and staged within the cordoned off, posted, nonhazardous/radioactive waste storage area, per SOP 1.06, located within the southern impoundment until it was shipped to TA-54.

The volumes and types of waste generated during the remediation activities within the northwestern impoundment are reported in Table F-5.2-3.

Outfall Drainage

The contaminated material was removed using a hydraulically operated tracked excavator that removed all the material down to the tuff and then loaded the material into 20 yd^3 rolloff containers. Once a waste container was loaded, it was surveyed for radioactive contamination and staged within the on-site cordoned off, posted, nonhazardous/radioactive waste storage, per SOP 1.06, located within the southern impoundment until it was shipped TA-54.

The volumes and types of waste generated during the remediation activities within the outfall drainage are reported in Table F-5.2-4.

F-6.0 REFERENCES

The following list includes all documents cited in Appendix F. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the ENV-ERS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the ENV-ERS reference set titled "Reference Set for Operable Unit 1100."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; US Environmental Protection Agency, Region 6; and ENV-ERS project. The sets were developed to ensure that the administrative authority has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the administrative authority are not included.

LANL (Los Alamos National Laboratory), June 1992. "RCRA Part B Permit Application, Surface Impoundments, Technical Area 53," Los Alamos National Laboratory document, New Mexico. (LANL 1992, 29413)

LANL (Los Alamos National Laboratory), June 1998. "RFI Work Plan and SAP for Potential Release Sites 53-002(a, b) and Associated Piping and Drainages at TA-53," Los Alamos National Laboratory document LA-UR-98-2547, Los Alamos, New Mexico. (LANL 1998, 58841)

LANL (Los Alamos National Laboratory), 1995. "Site Development Plan, Annual Update 1995," Los Alamos, New Mexico. (LANL 1995, 57224)

LANL (Los Alamos National Laboratory), November 2001. "Interim Action Plan for Potential Release Site 53-002(a)," Los Alamos National Laboratory document LA-UR-01-5535, Los Alamos, New Mexico. (LANL 2001, 71352)

LANL (Los Alamos National Laboratory), July 2002. "Addendum II to the RFI Work Plan and SAP for Potential Release Sites 53-002(a, b) and Associated Piping and Drainages at TA-53," Los Alamos National Laboratory document LA-UR-02-4013, Los Alamos, New Mexico. (LANL 2002, 73646)

Table F-4.2-1
Samples Collected beneath Liner within Southern Impoundment

Location ID	Sample ID	Depth (in.)	Type	Description	Radionuclides	Inorganic Chemicals	PEST/PCB	SVOC	VOC	HEXCR	HERB
53-1716	RE53-00-0040	0–6	EM[a]	Sand-fill	X	X	X	X	X	—[b]	—
53-1716	RE53-00-0041	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1716	RE53-00-0042	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1716	RE53-00-0043	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1717	RE53-00-0044	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1717	RE53-00-0090	12–24	QBT2	Tuff	X	X	X	X	X	X	—
53-1717	RE53-00-0091	48–60	QBT2	Tuff	X	X	X	X	X	X	—
53-1717	RE53-00-0092	168–180	QBT2	Tuff	X	X	X	X	X	X	—
53-1718	RE53-00-0045	0–6	EM	Sand-fill	X	X	X	X	X		—
53-1718	RE50-00-0093	12–24	QBT2	Tuff	X	X	X	X	X	X	X
53-1718	RE53-00-0094	48–60	QBT2	Tuff	X	X	X	X	X	X	X
53-1718	RE53-00-0095	168–180	QBT2	Tuff	X	X	X	X	X	X	X
53-1719	RE53-00-0046	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1719	RE53-00-0047	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1719	RE53-00-0048	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1719	RE53-00-0049	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1720	RE53-00-0050	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1720	RE53-00-0051	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1720	RE53-00-0052	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1720	RE53-00-0053	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1721	RE53-00-0054	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1721	RE53-00-0055	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1721	RE53-00-0056	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1721	RE53-00-0057	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1722	RE53-00-0058	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1722	RE53-00-0059	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1722	RE53-00-0060	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1722	RE53-00-0061	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1723	RE53-00-0062	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1723	RE53-00-0063	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1723	RE53-00-0064	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1723	RE53-00-0065	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1724	RE53-00-0066	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1724	RE53-00-0067	12–24	QBT2	Tuff	X	X	X	X	X	—	—

Table F-4.2-1 (continued)

Location ID	Sample ID	Depth (in.)	Type	Description	Radionuclides	Inorganic Chemicals	PEST/PCB	SVOC	VOC	HEXCR	HERB
53-1724	RE53-00-0068	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1724	RE53-00-0069	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1725	RE53-00-0070	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1725	RE53-00-0071	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1725	RE53-00-0072	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1725	RE53-00-0073	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1726	RE53-00-0074	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1726	RE53-00-0075	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1726	RE53-00-0076	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1726	RE53-00-0077	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1727	RE53-00-0078	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1727	RE53-00-0079	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1727	RE53-00-0080	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1727	RE53-00-0081	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1728	RE53-00-0082	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1728	RE53-00-0083	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1728	RE53-00-0084	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1728	RE53-00-0085	168–180	QBT2	Tuff	X	X	X	X	X	—	—
53-1729	RE53-00-0086	0–6	EM	Sand-fill	X	X	X	X	X	—	—
53-1729	RE53-00-0087	12–24	QBT2	Tuff	X	X	X	X	X	—	—
53-1729	RE53-00-0088	48–60	QBT2	Tuff	X	X	X	X	X	—	—
53-1729	RE53-00-0089	168–180	QBT2	Tuff	X	X	X	X	X	—	—

[a] EM = Engineered material.

[b] — = Analysis not requested.

Table F-4.5-1
Confirmation Sample Locations

Field ID	Impoundment	Location ID	Easting	Northing	Elevation
CS 1	Northwestern	53-02-20833	1639501.6	1771154.8	6915.4
CS 2	Northwestern	53-02-20834	1639635.9	1771169.2	6914.1
CS 3	Northwestern	53-02-20835	1639566.1	1771087.0	6915.2
CS 4	Northwestern	53-02-20836	1639492.2	1771014.8	6915.2
CS BH2	Northwestern	53-02-20837	1639624.9	1771028.8	6914.4
CS BH1	Northeastern	53-02-20838	1639788.0	1771135.7	6915.8
CS 7	Northeastern	53-02-20839	1639922.5	1771145.8	6915.4
CS 8	Northeastern	53-02-20840	1639849.8	1771068.8	6915.5
CS 9	Northeastern	53-02-20841	1639763.2	1771006.7	6915.0
CS 10	Northeastern	53-02-20842	1639896.0	1771012.2	6913.7
CS 11	Southern	53-02-20843	1639659.8	1770839.3	6909.7
CS 12	Southern	53-02-20844	1639787.8	1770852.7	6909.7
CS 13	Southern	53-02-20845	1639896.9	1770831.3	6909.5
CS - 95 ft*	Outfall	53-02-20846	1640111.9	1770824.0	6890.0
CS - 40 ft*	Outfall	53-02-20847	1640077.7	1770832.6	6896.2

*From gravel road.

Table F-4.5-2
Confirmation Samples

Location ID	Sample ID	Field QC Type	Depth (ft)	Gamma Spec.	Gross Alpha, Beta, Gamma RV[a]
53-02-20833	RE53-02-46731	n/a[b]	0–0.5	X	X
53-02-20834	RE53-02-46732	n/a	0–0.5	X	X
53-02-20835	RE53-02-46733	n/a	0–0.5	X	X
53-02-20836	RE53-02-46734	n/a	0–0.4	X	X
53-02-20837	RE53-02-46735	n/a	0–0.5	X	X
53-02-20838	RE53-02-46736	n/a	0–0.3	X	X
53-02-20839	RE53-02-46737	n/a	0–0.5	X	X
53-02-20839	RE53-02-46730	FD[c]	0–0.5	X	X
53-02-20840	RE53-02-46738	n/a	0–0.5	X	X
53-02-20841	RE53-02-46739	n/a	0–0.5	X	X
53-02-20842	RE53-02-46740	n/a	0–0.5	X	X
53-02-20843	RE53-02-46741	n/a	0–0.5	X	X
53-02-20844	RE53-02-46742	n/a	0–0.4	X	X
53-02-20845	RE53-02-46743	n/a	0–0.4	X	X
53-02-20846	RE53-02-46744	n/a	0–0.5	X	X
53-02-20847	RE53-02-46745	n/a	0–0.3	X	X

[a] RV = Radiological van analysis.

[b] n/a = Not applicable.

[c] FD = Field duplicate.

Table F-5.1-1
Summary of Waste Generation and Management

Waste Stream	Year of IA	On-Site Management	Disposal Facility
IDW			
Spent PPE	2000 and 2002	Collected in plastic bags within the exclusion area then deposited in rolloff containers	TA-54 Area G
Decontamination materials	2000 and 2002	Collected in rolloff containers	TA-54 Area G
Disposable sampling supplies	2000 and 2002	Collected in rolloff containers	TA-54 Area G
Remediation Waste			
Sludge – Southern Impoundment	2000 and 2002	Collected in B-25 containers	TA-54 Area G
Sludge and clay liner – Northern Impoundments	2002	Collected in rolloff containers	TA-54 Area G
Sand	2002	Collected in rolloff containers	TA-54 Area G
Soil	2002	Collected in rolloff containers	TA-54 Area G
Liquid waste	2000	Collected in poly tanks	TA-53 RLW Evaporation Pond
Poly tanks	2002	Cut up and collected in rolloff containers	TA-54 Area G
Hypalon liner	2000	Collected in rolloff containers	TA-54 Area G
Jute matting	2000	Collected in rolloff containers	TA-54 Area G
Drainline pipe	2002	Collected in rolloff containers	TA-54 Area G
Other			
New Mexico Special Waste (NMSW)	2000	Collected in 55-gal. drum	Off-site NMSW Facility
Unused chemical products	2000	Collected in Satellite Accumulation Area	Off-site hazardous waste disposal facility

Table F-5.2-1
Waste Volumes for Southern Impoundment

Waste Type	Number of Waste Containers	Volume Determined by Field Measurements (cubic meters except as noted)	DOT Waste Shipment Classification
2000 IA			
Sludge	54[a]	126	Regulated LLW
Liner	3[b]	25	Regulated LLW
Rainwater	2[c]	18,925 L	Regulated LLW
2002 IA			
Sludge	1[a]	2.41	Regulated LLW
Sand	5[b]	42.8	Nonregulated LLW
Poly tanks	1[b]	11.3	Nonregulated LLW

[a] B-25 waste container.

[b] 20 yd^3 rolloff container.

[c] 10,000 gal. poly tanks, both partially filled.

Table F-5.2-2
Waste Volumes for Northeastern Impoundment

Waste Type	Number of Waste Containers	Volume Determined by Field Measurements (cubic meters)	DOT Waste Shipment Classification
Sludge and clay liner	159*	1361.04	Nonregulated LLW
Debris	1*	8.5	Nonregulated LLW

*20 yd^3 rolloff container.

Table F-5.2-3
Waste Volumes for Northwestern Impoundment

Waste Type	Number of Waste Containers	Volume Determined by Field Measurements (cubic meters)	DOT Waste Shipment Classification
Sludge and clay liner	222*	1900.32	Nonregulated LLW
Debris	2*	17	Nonregulated LLW

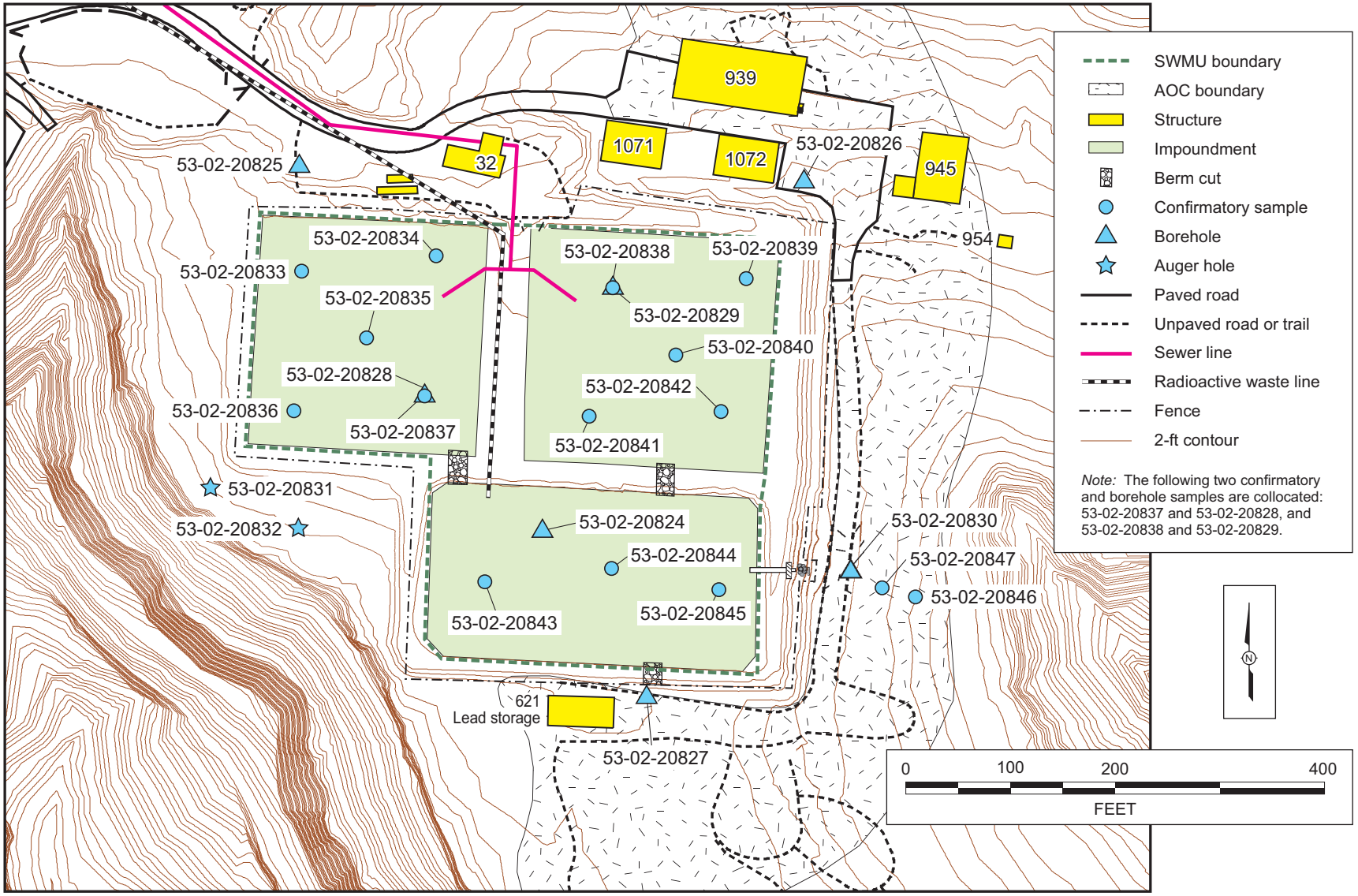
*20 yd^3 rolloff container.

Table F-5.2-4
Waste Volumes for Outfall Drainage

Waste Type	Number of Waste Containers	Volume Determined by Field Measurements (cubic meters)	DOT Waste Shipment Classification
Soil	8*	68.48	Nonregulated LLW

*20 yd^3 rolloff container.

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Source: R. Budd, VCA 53-002(a,b) Add II
Rev. SAIC Field Investigation, 092602, cf
Rev for F6-1 (App F), TA-53 Investigation Rpt, 012704, cf

Figure F-4.4-1. Confirmatory, borehole, and auger-hole sample locations

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Attachment 1 to Appendix F

Waste Management Documentation
(CD on inside back cover of this report)

This appendix contains the waste management records for all waste streams generated during the 2000 and 2002 interim actions at Consolidated Unit 53-002(a)-99. The appendix is organized in a series of pdf files. One file contains the Waste Characterization Strategy Forms that were prepared to address characterization approaches, on-site waste management, and final disposition options. The remaining pdfs contain the Waste Profile Forms (WPFs) that were prepared for each of the waste streams generated. Each pdf is named according to the WPF number that it contains; along with each pdf is the related documentation for that waste stream, such as Chemical Waste Disposal Request forms and waste manifests.

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Appendix G

Risk Assessment

EXECUTIVE SUMMARY

Between 1994 and 2002, Los Alamos National Laboratory (the Laboratory) Risk Reduction and Environmental Stewardship–Remediation Services (RRES-RS) project personnel conducted investigation and sampling activities at Solid Waste Management Unit (SWMU) 53-002(a)-99 to determine the nature and extent of contamination from past activities conducted at the site.

SWMU 53-002(a)-99 is within Laboratory Technical Area 53 (TA-53) and comprises three liquid waste impoundments formerly used for holding and treating radioactive, sanitary, and industrial waste streams. The impoundments are now inactive. Also within TA-53 are Area of Concern 53-008, the Los Alamos Neutron Science Center, and the Accelerator Production of Tritium Project Office. Facilities at TA-53 are the Medical Isotope Production Facility, the Proton Radiography Facility, and the Weapons Neutron Research Facility.

Remediation activities were conducted at SWMU 53-002(a)-99 in 2000 and 2002. The remediation efforts entailed removal of all the sludge and liner from the three impoundments, excavation of the interior of the impoundments to the tuff bedrock, and excavation of selected areas within a mesa-top drainage area to which the impoundments formerly discharged. The purpose of the site remediation was to remove contaminated soil and sediment.

To characterize the nature and extent of residual contamination after remediation, analyses were conducted of soil and tuff samples that were collected from the mesa top within and around the impoundments and from two drainage areas east of the impoundments. Sediment samples from reaches in a tributary canyon east of the site were also collected and analyzed. Analysis of the sampling results shows that the investigation has defined the nature and extent of residual contamination at SWMU 53-002(a)-99.

This appendix presents the human health and ecological risk assessments for SWMU 53-002(a)-99. The assessments indicate that no potential unacceptable risk exists to humans or the environment at the site. Specifically, the calculated risk parameters are below the target levels established by the New Mexico Environmental Department. In addition, the total radiological dose of 8.0 mrem/yr is less than the Department of Energy's target dose of 15 mrem/yr. Therefore, additional corrective action or characterization is not warranted for SWMU 53-002(a)-99.

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G-1.0 INTRODUCTION

The consolidated solid waste management unit (SWMU) addressed in this appendix, SWMU 53-002(a)-99, contains both hazardous and radioactive components. SWMU 53-002(a)-99 is located within Los Alamos National Laboratory (the Laboratory) Technical Area 53 (TA-53) and is included in the Hazardous and Solid Waste Amendments (HSWA) module (referred to as Module VIII) of the Laboratory's Hazardous Waste Facility Permit (EPA 1990, 01585; EPA 1994, 44146). Module VIII is enforced by the New Mexico Environment Department (NMED).

The three impoundments within SWMU 53-002(a)-99 are adjacent to one another, with two impoundments in the northern area of the site and the third impoundment within the southern area. Within SWMU 53-002(a)-99, SWMU 53-002(a) contains the northern impoundments and SWMU 53-002(b) contains the southern impoundment. Before 1997, SWMU 53-002(a) and SWMU 53-002(b) were considered treatment, storage, and disposal (TSD) units regulated under the Resource Conservation and Recovery Act (RCRA). RCRA activities within SWMU 53-002(a)-99 have been conducted in accordance with Module VIII since NMED approval of a status change request in 1997. In addition, an outfall to which the northern impoundments formerly discharged was permitted by the National Pollutant Discharge Elimination System (NPDES).

TA-53 is an industrial area under Laboratory (institutional) control and is expected to remain so for the reasonably foreseeable future. Ongoing activities within TA-53 facilities are related to research and development in accelerator technology, neutron science, materials science, and high-power microwaves. The impoundments within SWMU 53-002(a)-99 are currently inactive. Area of Concern (AOC) 53-008, which borders SWMU 53-002(a)-99 on the east, north, and south, is currently used for storage of equipment from activities conducted within TA-53.

Remediation activities conducted at SWMU 53-002(a)-99 have removed the source of site contamination, and investigation activities have defined the nature and extent of residual contamination. Based upon the results of the human health and ecological risk assessments in this appendix, recommendations are made for disposition of the site.

G-2.0 BACKGROUND

Construction of TA-53 facilities began with site preparation in early 1967, and major construction started in October 1968. The first full year of operation was 1974. Within TA-53 and the mesa-top area around SWMU 53-002(a)-99, are the storage area (AOC 53-008), which is used to temporarily store shielding blocks and other large items, and a single permanent structure (Building 621), which is used to store lead bricks used in accelerator operations. Also within the mesa-top area around SWMU 53-002(a)-99 are Structure 32, a shed used to store miscellaneous nonchemical maintenance items, and Structures 1071 and 1072, in which oil used in accelerator operations is stored. TA-53 is on Mesita de Los Alamos, which is bounded on the north by Los Alamos Canyon and on the south by Sandia Canyon. Figure G-2.0-1 shows the area of TA-53 occupied by SWMU 53-002(a)-99, AOC 53-008, and nearby structures.

The northern impoundments within SWMU 53-002(a)-99 were designed with a combined total holding capacity of 3.2 million gallons. The southern impoundment was designed to hold 2.5 million gallons. Figure 2.0-3 in the investigation/remediation report shows the configuration of the impoundments at SWMU 53-002(a)-99. Historically, discharges of radioactive, sanitary, and industrial waste were made to the impoundments from lines serving 420 structures at TA-53. Discharges were also made from vacuum trucks that collected septic sludge from throughout the Laboratory and directly discharged it to the impoundment surfaces. Industrial wastewater discharged to the impoundments has been identified as

liquid waste from industrial equipment, such as chillers, water heaters, pressure relief valves, air conditioners, boilers, compressors, and vacuum pumps, used at TA-53 facilities. The septic sludge discharged to the impoundments was not characterized before discharge but had the potential to contain both radionuclides and hazardous constituents (LANL 1998, 58366).

The northern impoundments were constructed in 1969 and used from 1970 to 1993. The southern impoundment was constructed in 1985 and used from 1985 to 1998. Radioactive wastewater discharges were segregated from sanitary/industrial discharges in 1989. From 1989 until its deactivation in 1998, the southern impoundment received only radioactive wastewater. The northern impoundments received only sanitary and industrial wastewaters from 1989 until 1993, when the impoundments were removed from service. After the impoundments were taken out of service, dry conditions made it possible for dust particulates to become airborne and disperse contaminants to the surrounding soil surface, and best management practices (jute matting overlain on the sludge) were implemented to minimize windblown particulate transport from the northern impoundments.

The southern impoundments were constructed to receive excess discharges and eliminate effluent releases from the northern impoundments, in which the holding capacity was periodically exceeded. Before construction of the southern impoundment, an outfall from the northern impoundments carried effluent overflow into a drainage channel on the south side of the impoundments. The channel flowed to the east into a tributary canyon of Los Alamos Canyon. A drainage channel present on the east side of the north-south road also historically received overflow from the northern impoundments. Identified in Figure G-2.0-1 as Drainage Areas A and B, this area was selectively excavated during site remediation activities. The drainage channel on the south side of the northern impoundments was destroyed when the southern impoundment was built. An overflow valve on the east side of the impoundments was locked in 1989.

G-3.0 SITE DESCRIPTION

The SWMU 53-002(a)-99 site is described in detail in the document, “RFI Work Plan and SAP for SWMUs 53-002(a,b) and Associated Piping and Drainages at TA-53” (LANL 1998, 58841). The description in this section is summarized from that document. Although inactive, the impoundments in SWMU 53-002(a)-99 are largely intact, and each is surrounded by an earthen berm approximately 6 ft high (see Photographs G-3.0-1 and G-3.0-2).

SWMU 53-002(a)-99 is located in a disturbed area of the mesa top near the eastern edge of Mesita de Los Alamos. Piñon and juniper woodland with a sparse grass and shrub understory surround the site area (see Photograph G-3.0-3). Within the impoundments, the ground is mostly bare with weedy angiosperm species growing intermittently. The bottoms of the impoundments are currently unlined and have floors of either crushed tuff or intact tuff bedrock.

A variety of shrubs and small plants have become established on the upper and outer surfaces (sloping away from the impoundment) of the impoundment berms. Since the removal of the sludge and liner, a few shrubs have appeared inside the impoundments themselves (see Photographs G-3.0-4, G-3.0-5, and G-3.0-6). The reach areas in the tributary canyon east of the site are predominantly ponderosa pine woodland with grassland/shrubland and some piñon/juniper.

Surface water on the mesa top around SWMU 53-002(a)-99 is ephemeral, occurring in response to snowmelt and rainstorms. Runoff from the area drains mainly to the east through the tributary canyon, which leads to Los Alamos Canyon. Historically, discharges from the impoundments were also directed to the east. Within the impoundments, surface water may infiltrate to the shallow subsurface below the

impoundment bottoms or evaporate, depending upon amount and rate. The impoundment bottoms, which are lower than the ground surface of the surrounding areas, tend to collect surface water so that it does not drain outward.

Surface water flow into the impoundments from areas outside the impoundments is restricted by the height of the berms and by the gunite lining that remains in place on most the berms' inner surfaces (sloping into the impoundments). Flow into the southern impoundment could occur through an opening into the impoundment; however, the ground surface in this area generally slopes to the east, tending to carry surface runoff flow away from, rather than through, the opening. The vegetation on the upper and outer surfaces of the berms substantially stabilizes these surfaces against erosion.

Groundwater underlies the site at 1000 ft below ground surface (bgs) in the regional aquifer, the upper surface of which is contained within the conglomerates and sandstones of the Puye Formation. Groundwater flow direction in the aquifer is to the east-southeast, toward the Rio Grande. Groundwater flow velocity ranges from about 20 to 250 ft/yr (LANL 1998, 58841, p. 2-7). Details for the aquifer, including depths to the aquifer, flow directions and rates, and well locations, are presented in a number of Laboratory documents (LANL 1997, 55622; LANL 2000, 66802; Purtymun 1995, 45344). Section 6.0 of the investigation/remediation report discusses types of groundwater in the site vicinity.

G-4.0 SAMPLING RESULTS

The sampling results for SWMU 53-002(a)-99 are described in detail in Appendix D and Section 6.0 of the TA-53 investigation/remediation report and are summarized here.

The concentrations used to define the nature and extent of contamination at SWMU 53-002(a)-99 were obtained from environmental samples collected in 1994/1995, 1999/2000, and 2002. Only data for samples for mesa-top soil and tuff and for reach sediment that remained in place after site remediation were used for the human health and ecological risk assessments. Results for samples from materials that were removed during the remediation were not included because the removed materials no longer affect human or ecological receptors.

The selection of sampling locations was influenced by knowledge of the site's history and by site surface conditions, including the historical discharge to the east and the generally eastward slope of the site surface. Sampling in areas to the east of the site was conducted in AOC 53-008, in Drainage Areas A and B (the drainage channel to which the NPDES outfall discharged), and in Reaches C, D, and E in the tributary canyon. Figure G-4.0-1 shows the samples by location on the mesa-top, and Figure G-4.0-2 shows sampling locations for the reaches.

In addition to site history and surface conditions, a gamma radiation survey conducted in 1999 also influenced the selection of sampling location, particularly the selection and elimination of locations south and southwest of the site. The results of the gamma radiation survey, which are presented in Tables 3.0-1, 3.0-2, and 3.0-3 of the investigation/remediation report, indicated higher radiation levels in some mesa-top areas south and southwest of SWMU 53-002(a)-99 and in Drainage Area B; consequently, locations in these areas were included for sample collection. Survey results for a tributary canyon on the mesa top west of SWMU 53-002(a)-99 and for Sandia Canyon, to which this tributary flows, were substantially lower. Consequently, sampling locations were not identified and sample collection was not conducted in these areas. A complete discussion of the gamma radiation survey is presented in Section 3.2 of the investigation/remediation report.

Vertical extent of contamination was determined by analysis of the results from samples that were collected from the mesa top in the northern and southern impoundments and in locations, including

AOC 53-008, around the impoundments (see Figure G-4.0-1). Samples were collected from the surface to 300 ft bgs. Fourteen locations in the southern impoundment and seventeen locations in the northern impoundments (eight in the northwestern and nine in the northeastern) were sampled to 15 ft bgs. In addition to the sampling locations within the impoundments, thirty-four locations around the impoundments were sampled to depths ranging from 6.5 to 30 ft. Confirmatory samples collected in 2002 were from auger hole locations to 5.5 and 5.9 ft bgs, from three borehole locations to 50 ft bgs, from three borehole locations to 200 ft bgs, and from one borehole location to 300 ft bgs. Table 4.2-1 in the investigation/remediation report gives the locations for each borehole.

Lateral extent was determined by analysis of the results from samples that were collected from the mesa top within and outside the impoundments and AOC 53-008 and for samples that were collected from Reaches C, D, and E. As indicated on Figure G-4.0-2, Reach C is closest to SWMU 53-002(a)-99; Reach D is approximately 640 ft east-northeast of Reach C; and Reach E is approximately 1500 ft east-northeast of Reach D.

The sampling data for SWMU 53-002(a)-99 are reviewed in Appendix D and summarized in Tables G-4.0-1 through G-4.0-10. The data summaries in these tables present the following information for each analyte in each medium (soil, tuff, and sediment) at the site: the number of samples, the number of detects, the minimum and maximum values of detected and nondetected concentrations, and the mean site concentration. For the inorganic chemicals and radionuclides the background values (BVs), where available, are also provided. BVs are from “Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory” (LANL 1998, 59730).

The representative concentration used for the risk screening assessments was the 95% upper confidence level (UCL) of the mean or the maximum detected concentration if the number of detects in the data set was insufficient to calculate a 95% UCL. The 95% UCLs were calculated following U.S. Environmental Protection Agency (EPA) guidance “Calculating Exposure Point Concentrations at Hazardous Waste Sites” (EPA 2002, 73593). A summary of the procedure for UCL calculation is included in Attachment 1 to this appendix. The human health risk assessment for the mesa top used the concentrations for soil and tuff samples collected from the surface to 12 ft bgs; the ecological risk assessment for the mesa top used the concentrations for soil and tuff samples collected from the surface to 5 ft bgs. The Reach C, D, and E samples were all for surface or near-surface sediment, therefore the human health and ecological risk assessments used the data for all of the Reach C, D, E samples. Tables G-4.0-11 through G-4.0-13 show the organic and inorganic chemical and radionuclide 95% UCLs, respectively.

Mesa Top

The chemicals of potential concern (COPCs) identified by the data review for mesa-top soil and tuff are the organic chemicals acetone, acenaphthene, Aroclor-1254, Aroclor-1260, benzene, benzo(g,h,i)perylene, benzoic acid, benzyl alcohol, benzene hexachloride (BHC) [alpha-], BHC[gamma-], bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butanone[2-], butylbenzene[sec-], butylbenzylphthalate, chloroethane, dichlorodiphenyldichloroethane (DDD[4,4’-]), dichlorophenyltrichloroethane (DDE[4,4’-]), dichlorodiphenyltrichloroethane (DDT[4,4’-]), dichlorodifluoromethane, dieldrin, diethylphthalate, di-n-butyl phthalate, endrin, fluoranthene, heptachlor, isopropyltoluene[4-], methyl-2-pentanone[4-], methylene chloride, methylphenol[3-], methylphenol[4-], phenol, pyrene, tetrachloroethene, trichloro-1,2,2-trifluoroethane[1,1,2-], trichloroethene, trichlorofluoromethane, trimethylbenzene[1,2,4-], and toluene; the inorganic chemicals arsenic, barium, calcium, chromium (total), hexavalent chromium, nickel, selenium, and silver; and the radionuclides americium-241, cesium-134, cobalt-60, sodium-22, strontium-90, tritium, uranium-234, uranium-235, and uranium-238.

Organic Chemicals

Tables G-4.0-1 and G-4.0-2, respectively, present the data summaries for organic chemical concentrations and COPCs in mesa-top soil and mesa-top tuff. Identification of organic COPCs is based on detection status. Figures G-4.0-3 and G-4.0-4 show the organic COPCs that were detected in the samples for mesa-top soil and mesa-top tuff, respectively. The distribution of detections for the organic chemicals is random across the site, and the detections are infrequent and at trace levels. Overall, the concentrations of the organic COPCs decreases with depth.

Inorganic Chemicals

Tables G-4.0-3 (mesa-top soil) and G-4.0-4 (mesa-top tuff) present the summaries of inorganic chemical data. The inorganic COPCs for mesa-top soil and tuff are arsenic, barium, calcium, chromium (total), hexavalent chromium, nickel, selenium, and silver. Figures G-4.0-5 and G-4.0-6 show, respectively, the locations of mesa-top soil and mesa-top tuff samples in which inorganic COPCs were detected above BVs. Inorganic COPCs were detected above BVs in mesa-top soil samples from within the southern impoundment only. Mesa-top tuff samples in which detected COPC concentrations were above BV were primarily from locations either within the impoundments or east of the impoundments in Drainage Areas A and B. Exceptions to this general trend for detections in mesa-top tuff include barium detections above background in samples from one location west of the impoundments, a chromium detection in a sample from a location north of the impoundments, and detections of chromium and barium in samples from two locations south of the impoundments.

In most locations, the detected concentrations for inorganic COPCs in mesa top samples decrease or remain the same with sampling depth. At locations where the detected concentration for an inorganic COPC increases with depth, the increase is very slight. Hexavalent chromium, detected in only four of twenty-four mesa-top tuff samples, shows a slight increase at sampling location 53-01718, with detected concentrations of 0.57 mg/kg at 1–2 ft bgs, 0.6 mg/kg at 4–5 ft bgs, and 0.62 mg/kg at 14–15 ft bgs. Selenium detected concentrations tend to remain the same or decrease with sample depth. The detected concentrations for selenium in samples from within the impoundments range from 0.1 to 0.79 mg/kg in mesa-top soil samples (BV is 1.52 mg/kg) and from 0.04 to 1.1 mg/kg in samples from mesa-top tuff (the BV is 0.3 mg/kg). Calcium detected concentrations decrease markedly with depth in mesa-top soil samples at location 53-01682, from 34000 mg/kg at 1–2 ft bgs to 21000 mg/kg at 4–5 ft bgs to 860 mg/kg at 14–15 ft bgs.

Radionuclides

Tables G-4.0-5 and G-4.0-6 present the data summaries for radionuclides in mesa-top soil and in mesa-top tuff, respectively. The radionuclide COPCs for the mesa top are americium-241, cesium-134, cobalt-60, sodium-22, strontium-90, tritium, uranium-234, uranium-235, and uranium-238. Figures G-4.0-7 and G-4.0-8 show the locations where radionuclide COPCs were detected above BVs in the mesa-top soil samples and mesa-top tuff samples, respectively. Most of the radionuclides detected above BVs are located within the impoundments or within the drainage areas east of the impoundments. Overall, the radionuclides show a decreasing trend with depth within the impoundments, and most of the radionuclides are contained within the impoundments. Only one location in the northwestern impoundment returned a subsurface (>5 ft bgs) sample with a radionuclide concentration above BV; the rest of the detected values above BVs were from samples collected at northwestern impoundment surface locations only. The majority of the samples in the northeastern impoundment have a trend of decreasing radionuclide concentrations with depth. The samples with detected radionuclides from locations north of the impoundments are probably indicative of leaks from the pipes that deposited the

wastewater in the impoundments. Levels of contaminant concentrations in samples from the locations on the east side of the impoundments were very low, slightly above BVs.

Detected concentrations for the radionuclide COPCs tend to exhibit a decreasing trend with increasing sampling depth, similar to the trend observed in detected concentrations for the organic and inorganic COPCs. Examples of this trend include concentrations for sodium-22, americium-241, and cobalt-60. At location 53-01722, the detected concentration for sodium-22 in the surface sample is 16.2 pCi/g; at 1–2 ft bgs the concentration is 9.96 pCi/g; and at 4–5 ft bgs the concentration is 2.8 pCi/g. At location 53-01718 the concentration for americium-241 decreases from 5.21 pCi/g in the 1–2 ft bgs sample to 1.05 pCi/g in the sample from 4–5 ft bgs. The concentration for cobalt-60 decreases at both location 53-01718 and location 53-01584. At location 53-01718, the detected concentrations and sampling depths for cobalt-60 are 8.49 pCi/g (1–2 ft bgs) and 1.46 pCi/g (4–5 ft bgs). The cobalt-60 detected concentrations at location 53-01584 are 0.059 pCi/g (4–5 ft bgs) and 0.050 pCi/g (14–15 ft bgs).

Exceptions to the decreasing trend for radionuclides in mesa-top media occur for COPCs in samples from locations 53-01684, 53-01597, and 53-01584. In samples from location 53-01684, concentrations for strontium-90 increase slightly with depth from 3.5 pCi/g at 4–5 bgs to 4.0 pCi/g at 14–15 ft bgs; concentrations for uranium-238 increase slightly with depth from 2.53 pCi/g at 1–2 ft bgs to 2.8 pCi/g at 14–15 ft bgs; and the only detected concentration for uranium-234 (2.7 pCi/g) is in the sample from 14–15 ft bgs. Similarly, only the sample from 14–15 ft bgs at location 53-01597 has a detected concentration for sodium-22 (0.19 pCi/g), and the only detected concentration for americium-241 (0.0837 pCi/g), from location 53-01584, is likewise for the sample from 14–15 ft bgs.

Tritium

Tritium detections at SWMU 53-002(a)-99 occur in media samples from locations at various depths distributed across the mesa top. Figures G-4.0-9 and G-4.0-10 show the sampling locations and depths for which detected tritium concentrations were reported. Table G-4.0-7 provides the tritium concentrations in pCi/mL and in pCi/g; however, for comparison to the BV, which is expressed in pCi/mL, the values given on the figures are in pCi/mL only. As documented on Figures G-4.0-9 and G-4.0-10, tritium shows an overall decreasing trend with depth. Values shown are for tritium concentrations in samples from borehole locations at 50 ft bgs (locations 53-02-20828, 53-02-20829, and 53-02-20830), 200 ft bgs (locations 53-02-20825, 53-02-20826, and 53-02-20827), and 300 ft bgs (location 53-02-20824).

The tritium bubble plots on Figures G-4.0-11 through G-4.0-14 present tritium concentrations for mesa-top samples from 0–5, 5–15, 15–30, and from below 30 ft bgs, respectively. Again, a decreasing trend for tritium is shown with sampling depth. Further, the plots indicate that tritium tended to migrate eastward at the site: of the few samples plotted with detected concentrations from below 5 ft bgs for sampling locations outside the impoundments, all are from locations on the east side of the impoundments.

Figure G-4.0-15 plots the actual tritium concentrations (converted to pCi/L) with sampling depth from the 2002 boreholes. Borehole 3, location 53-02-20830, shows increasing concentrations of tritium from 30 ft bgs to 50 ft bgs; overall, however, the tritium concentrations for samples from this borehole show a decreasing trend with relation to sample depth. The trend in concentrations for other sampling depths in borehole 3 is similar to the trends in the 300-ft and 200-ft bgs boreholes. Because of these similarities, the tritium concentration increase noted above in samples from 30 ft to 50 ft bgs from borehole 3 is not expected to continue in samples from depths greater than 50 bgs.

The highest tritium concentration, 6533 pCi/g, is for a sample from 14–15 ft bgs from location 53-01597 within the northeastern impoundment (see Figure G-4.0-12). Because the concentrations for samples from different depths at the same sampling location and in nearby locations are from two orders of

magnitude to many hundreds of times lower, the concentration is not representative of tritium concentrations beneath the impoundments. The concentration for the sample from 4–5 ft bgs from location 53-01597 is 48.9 pCi/g. Given that tritium is transported in the vapor phase, a two orders of magnitude increase in detected tritium within 10 ft at location 53-01597 is not likely. Detected tritium concentrations in samples from locations near location 53-01597 are 100 times lower than the 6533 pCi/g concentration. At location 53-01592, approximately 40 ft west of location 53-01597, the concentration for tritium in the sample from 14–15 ft bgs is 15.5 pCi/g; at location 53-01598, approximately 40 ft south of location 53-01597, the detected tritium concentration is 44.7 pCi/g, again in the sample from 14–15 ft bgs; finally, the three detected concentrations for tritium in samples from borehole 53-02-20829, approximately 80 ft northeast of location 53-01597, are 14 pCi/g (24–25 ft bgs), 10 pCi/g (36.7–37.5 ft bgs), and 6 pCi/g (49.2–50 ft bgs).

Migration of tritium occurs in the gas phase in subsurface tuff. Because existing data indicated that tritium was a contaminant in the wastewater, a numerical simulation was conducted to evaluate potential worst-case tritium extent in subsurface tuff associated with wastewater seepage (LANL 2002, 73646). The model results indicated that after 25 years of seepage (1970–1995), the leading edge of the tritium plume should extend to a depth of 370 ft bgs with concentrations of approximately 100,000 pCi/L at 220 ft bgs. The actual data from the 2002 boreholes had detects for tritium above 150 ft bgs. The boreholes drilled to 200 and 300 ft bgs had nondetects for tritium below 150 ft bgs. This finding shows that the actual conditions are not the same as the model predicted; i.e., the model overestimated the seepage and/or the amount of wastewater discharged to the environment.

Reaches

The COPCs identified by the data review for reach sediments are the organic chemicals acetone, Aroclor-1254, Aroclor-1260, benzoic acid, bromomethane, D[2,4-], dalapon, DB[2,4-], DDE[4,4'-], DDT[4,4'-], dichlorobenzene[1,2-], dichlorobenzene[1,3-], dichlorobenzene[1,4-], fluoranthene, hexachlorobenzene, isopropyltoluene[4-], pyrene, tetrachloroethene, trichloroethene, toluene, and xylene (total); the inorganic chemicals antimony, lead, and selenium; and the radionuclides cesium-134, cobalt-60, and tritium.

Organic Chemicals

Table G-4.0-8 presents the data summaries for organic COPCs in reach sediment samples. Identification of organic COPCs is based on detection status. The sampling locations for organic COPCs in sediment from Reaches C, D, and E are shown in Figure G-4.0-16. As illustrated on the figure, detections of organic COPCs in these samples are infrequent and the detected concentrations are at trace levels. Among the organic COPCs, detected concentrations for Aroclor-1254 show a decreasing trend eastward from Reach C to Reach E.

Inorganic Chemicals

Table G-4.0-9 presents the data summaries for inorganic chemicals in reach sediment samples. Inorganic COPCs for reach sediment are antimony, lead, and selenium. Figure G-4.0-17 shows the sediment sampling locations with detected concentrations above the BVs for the inorganic COPCs. The only detected concentration for antimony (7.9 mg/kg) is from a sample from location 53-02-21074 in Reach D. Detected concentrations for lead decrease in samples from across Reaches C, D, and E, from the highest concentration (44.7 mg/kg) at location 53-01746 in Reach C to 20 mg/kg and 22 mg/kg at locations 53-01738 and 53-01740 in Reach E, respectively. The detected concentrations for selenium also decrease toward the east and range from 0.39 mg/kg to 0.32 mg/kg.

Radionuclides

Table G-4.0-10 presents the data summaries for radionuclides in reach sediment samples. Radionuclide COPCs for reach sediment are cesium-134, cobalt-60, and tritium. Figure G-4.0-18 shows the locations and detected concentrations above BVs for radionuclide COPCs in reach sediment samples. Detected concentrations for cesium-134 and cobalt-60 show a decreasing eastward trend toward Reach E.

Tritium

Figure G-4.0-19 shows sample locations and tritium concentrations above BV for samples from reach sediment. Detected concentrations exceed BV in only two samples, one from Reach C (0.212 pCi/g, from location 53-01748) and one from Reach D (0.114 pCi/g, from location 53-01736), and show a decreasing trend toward Reach E (not detected).

Reaches in Los Alamos Canyon

To further define the extent of the contaminants from SWMU 53-002(a)-99 and to determine if contaminants from SWMU 53-002(a)-99 are in Los Alamos Canyon, results for samples from additional locations within Los Alamos Canyon were analyzed and reviewed. The data sets used from these samples are not final and were used primarily for comparison purposes. The final data sets for Los Alamos Canyon are included in the investigation report for Los Alamos Canyon and Pueblo Canyon, (LANL 2004, 88000).

The additional sampling locations within Los Alamos Canyon are shown on Figure G-4.0-20. The locations are within three reaches: Reach LA-2FE, above the confluence of Los Alamos Canyon with the tributary canyon; Reach LA-3W, in Los Alamos Canyon below the confluence; and Reach LA-3E, farther down the canyon from the confluence and Reach LA-3W.

Organic Chemicals

Six sediment samples were collected from each of the three reaches and analyzed for organic chemicals. Appendix D presents the sampling results, and the box plots in Appendix D show the range of concentrations. Aroclor-1254 was not detected in any samples. A source for Aroclor-1260 contamination farther up the canyon may be indicated by the increased concentrations in Reaches LA-2FE, LA-3W, and LA-3E over the concentrations detected in samples from Reaches C, D, and E. The maximum detected concentrations of Aroclor-1260 in samples from Reaches LA-2FE, LA-3W, and LA-3E (0.58 mg/kg, 0.34 mg/kg, and 0.24 mg/kg, respectively) are all higher than the maximum detected concentration from Reaches C, D, and E (0.034 mg/kg). Aroclor-1260 decreased in concentration from Reach C to Reach E (0.034 mg/kg to 0.0045 mg/kg) and did not increase in concentration below the confluence with Los Alamos Canyon. Benzoic acid was detected in one sample from Reach LA-2FE, but not in samples from Reaches LA-3W or LA-3E, and decreased from Reach C to Reach E in the tributary canyon (0.13 mg/kg to undetected).

The only DDE[4,4'-] that was detected in Los Alamos Canyon was from Reach LA-2FE (0.027 mg/kg), which is upcanyon of Reaches C, D, and E. DDE[4,4'-] was detected in the tributary canyon at concentrations ranging from 0.00058 mg/kg to 0.0044 mg/kg. However, there were no detected concentrations of DDE[4,4'-] in the samples collected from Reaches LA-3W and LA-3E below the confluence with Los Alamos Canyon. Detected concentrations of DDT[4,4'-] were reported from Reach LA-2FE (0.087 mg/kg), LA-3W (0.075 mg/kg) and LA-3E (0.029 mg/kg), all at higher concentrations than the concentrations detected in the tributary canyon (maximum of 0.002 mg/kg), indicating that an upcanyon source contributed to the DDE and DDT detected in Los Alamos Canyon

reaches. Based on these results, there is no increase in DDE and DDT concentrations in Los Alamos Canyon from DDE and DDT concentrations in the tributary canyon.

Inorganic Chemicals

As discussed in Appendix D, six sediment samples were collected in each reach and analyzed for inorganic chemicals. Data from Reach LA-2FE show higher concentrations of antimony, lead, and selenium than data from Reaches C, D, and E. This indicates that there is another source for these contaminants farther upcanyon. Below the confluence of Los Alamos Canyon and the tributary canyon, detected concentrations for antimony, lead, and selenium decrease, but antimony still has higher detected concentrations than those detected in Reaches C, D, and E. The range of concentrations for lead in samples collected from Reaches LA-2FE, LA-3W, and LA-3E is the same as that in samples collected for SWMU 53-002(a)-99 and Reaches C, D, and E. Selenium had one detected concentration in LA-3W that was greater than the maximum concentrations detected in Reaches C, D, and E, and one that was in the same range as detections in Reaches C, D, and E. Selenium was not detected in LA-3E.

Radionuclides

Sediment samples were collected and analyzed for radionuclides. The only detect for cesium-134 was for Reach LA-2FE, which indicates that there is another source for cesium-134 farther up in Los Alamos Canyon. The detected concentration for cesium-134 in Reach LA-2FE (0.12 pCi/g) is less than most detected concentrations in Reaches C, D, and E (from 1.95 pCi/g to 0.042 pCi/g). Cobalt-60 has no detected concentrations in Reach LA-2FE or LA-3W, but does have three detected concentrations in LA-3E ranging from 0.18 pCi/g to 0.21 pCi/g. These concentrations are less than the concentrations from Reaches C, D, and E, indicating a decreasing trend.

Tritium

Tritium was detected in three samples in Reach LA-2FE at concentrations ranging from 0.064 pCi/g to 0.085 pCi/g, and from three samples in Reach LA-3W at concentrations ranging from 0.057 pCi/g to 0.13 pCi/g but was not detected in Reach LA-3E. The BV for tritium in sediment is 0.093 pCi/g, which is very close to the value of 0.13 pCi/g, indicating that it is only slightly above background. Tritium was detected in two samples from the tributary canyon, one in Reach C and one in Reach D. Tritium was not detected in Reach E.

A decreasing trend in the drainage is shown for antimony, lead, selenium, cesium-134, cobalt-60, tritium, Aroclor-1254, Aroclor-1260, and benzoic acid. DDE[4,4'-], and DDT[4,4'-] show a decreasing trend from Reach LA-2FE down Los Alamos Canyon and do not increase in concentration below the confluence with the tributary canyon.

G-5.0 CONCEPTUAL SITE MODEL

The conceptual site model is described in the RFI work plan and sampling and analysis plan for SWMUs 53-002(a) and 53-002(b) and associated piping and drainages at TA-53 (LANL 1998, 58841, pp. 2-29–38). Figure G-5.0-1 shows the conceptual model. The source of the contaminants at SWMU 53-002(a)-99 was the sludge within the impoundments. The conceptual site model identifies the following potential release mechanisms:

- discharges from the northern impoundments into the unlined drainage ditch, which drained into the tributary of Los Alamos Canyon

- seepage below the impoundments
- particulate suspension of contaminants

The bulk of the contamination was removed with the sludge and liners, but the results of the sampling showed that residual contamination remained within the drainage channel and within and beneath the impoundments. Results of investigative and confirmatory sampling showed that removal of the sludge and liners in the impoundments eliminated the primary source of contamination, and removal of some of the tuff beneath the impoundments and of soil and tuff from the mesa-top drainage area took away the secondary sources of residual contamination. Based on these findings, the conceptual site model does not need to be revised.

A primary source of releases from the impoundments was the discharge of wastewater from the NPDES outfall. Contaminants associated with these discharges were those with relatively greater solubility in water, since solids associated with disposed sludge settled to the bottom of the impoundments and were not likely to flow through the overflow pipe. Receiving media for releases from the outfall include soil and tuff underlying the former drainage ditch, sediments in the tributary canyon, and colluvium/alluvium in Los Alamos Canyon, where it is joined by the tributary canyon.

A second release mechanism for contaminants at SWMU 53-002(a)-99 was seepage through the impoundment berms and/or bottoms. The receiving media for these releases were the crushed tuff below the liners and the underlying consolidated tuff. Evidence that water seeped below the impoundments was obtained from moisture measurements in eight boreholes advanced in the area of the impoundments in 1991. Tuff moisture content values for samples from the boreholes beneath the impoundments ranged between 5% and 18%, whereas typical values at TA-53 range from 2% to 4% (LANL 1998, 58841). As with the outfall discharges, this pathway was correlated with contaminant water solubility. Contaminants released by leakage through the impoundment liners partitioned onto the organic-rich sludge at the bottom of the impoundments. The northern impoundments were constructed with a clay liner, which also acted, through cation exchange, as an adsorbing medium.

While the impoundments were active, liquid effluent seeped into the dry tuff beneath the impoundments and moved under the forces of gravity and capillary suction (Stauffer 2003, 80930). Gravity pulls water down while capillary suction pulls water from areas of higher moisture to areas of lower moisture. During the period of active seepage, high moisture levels allow water to move to depth. After the source was removed, capillary forces continued to spread the subsurface effluent into regions of lower moisture levels leading to a much slower liquid flow rate. When liquid flow is eliminated, vapor transport becomes more important.

A third release mechanism was airborne dispersion of contaminants. According to predominant wind directions, contamination is expected to have been deposited on surrounding surface soil after releases of dust particulates by winds. Concentrations within these depositions are expected to have decreased with distance from the impoundments. Volatile organic chemicals potentially present on the sludge also volatilized to the atmosphere.

Environmental Fate and Transport

The evaluation of environmental fate addresses the chemical processes that affect the persistence of a chemical in the environment. The evaluation of transport addresses the physical processes affecting mobility along the migration pathway. Seepage into soils and tuff depends on the rate of precipitation or snowmelt, antecedent soil water status, depth of soil, and soil hydraulic properties. Seepage into the tuff

also depends on the unsaturated flow properties of the tuff. Joints and fractures in the tuff may provide additional pathways for moisture to enter the subsurface regime.

Organic Chemicals

Table G-5.0-1 shows physiochemical properties of most of the organic COPCs identified for the site, including acenaphthene, acetone, Aroclor-1254, Aroclor-1260, benzene, benzoic acid, benzyl alcohol, bis(2-chloroethyl)ether, bis(2-ethylhexyl)phthalate, butanone[2-], butylbenzene, chloroethane, dichlorobenzene[1,2-], dichlorobenzene[1,3-], dichlorobenzene[1,4-], dichlorodifluoromethane, dieldrin, diethylphthalate, di-n-butylpththalate, D[2,4-], dalapon, DB[2,4-], DDD[4,4'-], DDE[4,4'-], DDT[4,4'-], endrin, fluoranthene, heptachlor, hexachlorobenzene, isopropyltoluene[4], methyl-2-pentanone[4-], methylene chloride, phenol, pyrene, tetrachloroethene, toluene, trichloroethene, trichlorofluoromethane, and xylene (total). The physiochemical properties of organic chemicals are important when evaluating the fate and transport. Information presented in the following paragraphs about the physiochemical properties of site organic COPCs is presented to illustrate some aspects of the fate and transport tendencies of the COPCs. The information is summarized from Ney (1995, 58210).

Water solubility is perhaps the most important chemical characteristic used to assess the mobility of organic chemicals. The higher the water solubility of a chemical, the more likely it is to be mobile and the less likely it is to accumulate, bioaccumulate, volatilize, or persist in the environment. A highly soluble chemical (water solubility greater than 1000 mg/L) is prone to biodegradation and metabolism that may detoxify the parent chemical. Acetone, benzene, benzoic acid, benzyl alcohol, bis(2-chloroethyl)ether, butanone[2-], chloroethane, methyl-2-pentanone[4-], methylene chloride, phenol, trichloroethene, and trichlorofluoromethane have water solubilities greater than 1000 mg/L. Toluene, another organic COPC for the site, has a water solubility of 558 mg/L, which means that it also is mobile, although less so than acetone.

The lower the water solubility of a chemical (especially lower than 10 mg/L), the more likely it will be immobilized by adsorption. Chemicals with lower water solubility tend to be more likely to accumulate or bioaccumulate and persist in the environment, to be slightly prone to biodegradation, and to be metabolized in plants and animals. Acenaphthene, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, DDD[4,4'-], DDE[4,4'-], DDT[4,4'-], dieldrin, endrin, fluoranthene, hexachlorobenzene, and pyrene have water solubilities less than 10 mg/L. The water solubility of di-n-butyl phthalate, also an organic COPC for the site, is 10.8 mg/L, which is slightly greater than 10 mg/L and indicates that di-n-butyl phthalate too is likely to be immobile.

Vapor pressure is a chemical characteristic used to evaluate the tendency of organic chemicals to volatize. Chemicals with vapor pressure greater than 0.01 millimeter mercury (mm Hg) are more likely to volatilize and diffuse through the soil pore gas, with potential release to the atmosphere. Organic COPCs that have vapor pressure values greater than 0.01 mm Hg are acetone, benzene, butanone[2-], methyl-2-pentanone[4-], methylene chloride, tetrachloroethene, trichloroethene, trichlorofluoromethane, toluene, and xylene (total). Chemicals with vapor pressures less than 0.000001 mm Hg are less likely to volatilize and therefore tend to remain immobile. Organic COPCs that have vapor pressure values less than 0.000001 mm Hg are acenaphthene, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, DDD[4,4'-], DDE[4,4'-], DDT[4,4'-], diethylphthalate, di-n-butyphthalate, endrin, fluoranthene, heptachlor, hexachlorobenzene, and pyrene. The vapor pressures of Aroclor-1254 and Aroclor-1260 (0.0000771 and 0.0000405 mm Hg, respectively) are not much greater than 0.000001 mm Hg, and these chemicals, which are also site organic COPCs, will also tend to remain immobile.

The octanol water partition coefficient (K_{ow}) is an indicator of a chemical's potential to bioaccumulate or bioconcentrate in the fatty tissues of living organisms. The unitless K_{ow} value is an indicator of water solubility, mobility, sorption, and bioaccumulation. The higher the K_{ow} value above 1000, the greater the affinity the chemical has for bioaccumulation/bioconcentration in the food chain, the greater its potential for sorption in soil, and the lower its mobility (Ney 1995, 58210). Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, DDD[4,4'-], DDE[4,4'-], DDT[4,4'-], di-n-butyl phthalate, and heptachlor are the organic chemicals with highest K_{ow} values.

A K_{ow} of less than 500 indicates high water solubility, mobility, little to no affinity for bioaccumulation, and degradability by microbes, plants, and animals. Organic COPCs identified that have lowest K_{ow} values (less than 500) are acetone, benzene, benzoic acid, benzyl alcohol, bis(2-chlorethyl)ether, butanone[2-], dichlorodifluoromethane, methyl-2-pentanone[4-], methylene chloride, phenol, tetrachloroethene, toluene, trichloroethene, and trichlorofluoromethane.

Inorganic Chemicals

Antimony, arsenic, barium, calcium, chromium, hexavalent chromium, lead, nickel, selenium, and silver were retained as COPCs in the soil, sediment, and tuff by the data review presented in Appendix D. In general, and particularly in a semiarid climate, inorganic chemicals are not highly soluble or mobile in the environment, although there are some exceptions. Information about the fate and transport properties of some inorganic chemicals was obtained from individual chemical profiles published by the Agency for Toxic Substances and Disease Registry (ATSDR 1997, 56531). The information for these organic chemicals is also available from the agency's web site at http://www.atsdr.cdc.gov/toxprofiles.

Arsenic is insoluble in water and tends to adsorb to soils or sediments. Arsenic is stable in dry air. Arsenic compounds also tend to absorb to soils or sediments, leaching usually results in transportation over short distances in soil. Terrestrial plants may accumulate arsenic by root uptake from the soil (ATSDR 1997, 56531). Some of antimony's chemical traits are similar to arsenic (ATSDR 1997, 56531). Therefore, the information about arsenic is applicable to antimony as well.

Barium reacts with metal oxides and hydroxides in soil and is subsequently adsorbed onto soil particles. Barium is also adsorbed onto soil and subsoil through electrostatic interactions. The cation exchange capacity of the sorbent largely controls the retention of barium in the soil. Barium is also strongly adsorbed by clay minerals. Relative to the amount of barium found in soil, little is bioconcentrated by plants (ATSDR 1997, 56531).

Most chromium in soil is immobilized due to its adsorption and complexation with soil materials. Chromium in the aquatic phase occurs in the soluble state or as suspended solids adsorbed onto clayey materials, organic chemicals, or iron oxides. Soluble chromium (hexavalent) may persist in some bodies of water for a long time, but will eventually be reduced to trivalent chromium. Chromium has a low mobility for translocation from roots to the above ground parts of plants (ATSDR 1997, 56531).

Most lead is retained in soil, and very little is transported into surface water or groundwater. It sorbs strongly to organic matter in soil. Plants and animals may bioconcentrate lead, but biomagnification has not been detected. Although the bioavailability of lead in soil to plants is limited because of the strong absorption of lead to soil organic matter, bioavailabilty increases as the pH and the organic matter content of the soil are reduced (ATSDR 1997, 56531).

Nickel is strongly adsorbed by soil. Nickel is not biomagnified in the food chain (ATSDR 1997, 56531).

In general, selenium is stable in soils and is found at low levels in water due to its ability to coprecipitate with sediments. The soluble selenates are readily taken up by plants and converted to organic compounds. Selenium is bioaccumulated by aquatic organisms and may also biomagnify in aquatic organisms (ATSDR 1997, 56531).

The transport and partitioning of silver in surface waters and soils is influenced by the particular form of the compound. The mobility of silver in soils is affected by drainage, oxidation-reduction potential and pH conditions, and the presence of organic matter. In soil, silver is toxic to soil microorganisms and inhibits bacterial enzymes. Therefore, biotransformation is not expected to be a significant process (ATSDR 1997, 56531).

Radionuclides

Several of the radionuclide COPCs are actinides and have similar chemical properties. In general, the actinide nuclides form comparatively insoluble compounds in the environment and are not considered biologically mobile. The actinides are transported in ecosystems mainly by physical and sometimes chemical processes. Uptake of actinides by plants from soil is generally low (Whicker and Schultz 1982, 58209).

Under oxidizing conditions, americium preferentially binds to fine soil or sediment particles and to organic matter with high surface-to-volume ratios; therefore, it is likely to be transported and deposited with sediments or remain relatively immobile in the subsurface (Whicker and Schultz 1982, 58209).

Uranium-234, uranium-235, and uranium-238 have long half lives (2.5×10^5, 7.0×10^8, and 4.5×10^9, respectively). The mobility of uranium in soil depends on the soil pH, oxidation-reduction potential, soil porosity, soil particle size, and the amount of water available. The sorption of uranium in most soils is such that it may not leach readily from soil surface to groundwater, particularly in soils containing clay and iron oxide (ATSDR 1997, 56531). Uranium may be transported to vegetation by air or water. It can be deposited onto plants by direct deposition or resuspension. In water, uranium adsorbs strongly to mineral surfaces and tends to partition into organic matter, thereby reducing its mobility.

Cobalt-60 is considered a heavy metal. Cobalt occurs as a microconstituent of plants and animals and plays a role in certain biochemical reactions. Cobalt radionuclides are readily accumulated from the environment by aquatic and terrestrial organisms (Whicker and Schultz 1982, 58209). Cobalt may be taken up from soil by plants, but the translocation of cobalt from roots to aboveground parts of plants is not significant in most soils. The mobility of cobalt in soil is inversely related to how strongly it is adsorbed by soil constituents. Clay minerals have been shown to adsorb relatively smaller amounts of cobalt than oxide materials (ATSDR 1997, 56531).

Strontium-90 is chemically similar to calcium and will tend to lodge in tissues such as bones when ingested. Sodium-22 is also chemically similar to calcium, with the exception that it will not lodge in bones. Both strontium-90 and sodium-22 can form relatively soluble compounds, which enhances their mobility.

Cesium is chemically analogous to major nutrient elements such as potassium, and therefore cesium is not likely to accumulate in biota with an abundance of a major nutrient. Soils and sediments of high clay content can effectively immobilize cesium by chemical binding. In such systems, the soil acts like a sink for cesium and, in time, very little of the nuclide is available for biological incorporation (Whicker and Schultz 1982, 58209).

Tritium

Tritium is produced continually in the atmosphere by cosmic rays and also by nuclear reactors and nuclear detonations. Tritium's half life is 12.32 yr. Upon release to the environment, tritium generally follows the hydrologic cycle, but its behavior is determined by the source term. If released in liquid form, the tritiated water is diluted in surface waters and subject to physical dispersion, percolation, and evaporation (Whicker and Schultz 1982, 58209). Tritium enters plants through the roots, leaves, and stems. It enters animals through ingestion, inhalation, and direct absorption through skin.

The conceptual model of tritium released from the impoundments and transported within the tuff assumes that the majority of tritium was released in the form of liquid over a defined period of time (1970–1998). Although tritium forms "heavy" water, it behaves nearly identically to normal water with respect to transport in the environment.

G-6.0 HUMAN HEALTH RISK SCREENING LEVELS

The human health screening assessment was performed according to guidance outlined in the draft installation work plan (LANL 2000, 66802) and in the "Human Health Risk-Based Screening Methodology" (LANL 2002, 72639). Sample values to 12 ft bgs were considered in this evaluation as media (soil and tuff) from that depth could be excavated and brought to the surface (LANL 2002, 72639).

Land use at SWMU 53-002(a)-99 is currently industrial and is expected to remain industrial for the reasonably foreseeable future. The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment at the site is moderate because the site has restricted access. During the workday the site is open to LANL workers who may be in the area of SWMU 53-002(a)-99 storing or removing equipment at AOC 53-008. In addition, there is the potential for intrusive activities related to construction and utility placement at some time in the future. The construction worker scenario was evaluated in the Laboratory's response to NMED's Notice of Disapproval (NOD) comment (LANL 2005, 89375).

A total of 32 COPCs were identified at SWMU 53-002(a)-99 based on the data review (Appendix D). Twenty-four are COPCs for the mesa and eighteen are COPCs in Reaches C, D, and E. The reach samples are used to discuss extent of contamination and are screened for risk within the tributary canyon. These COPCs are evaluated further in this section by comparing the 95% UCL to the specific soil screening levels (SSLs) for each chemical.

The SSLs are from EPA Region 6 (EPA 2003, 81724) for an industrial outdoor worker scenario with an exposure of 8 hr/day and 250 days/yr. The residential SSLs are from NMED (NMED 2000, 68554), and if NMED does not have an SSL for a COPC, EPA Region 6 (EPA 2003, 81724). The EPA Region 6 SSLs for carcinogens are adjusted from a 10^{-6} risk level to a 10^{-5} risk level. The residential screening is presented for comparison purposes only. The construction worker SSLs were obtained from NMED guidance (NMED 2004, 85615) and used in the evaluation of this scenario (LANL 2005, 89375).

The SSLs for carcinogens are based on the NMED target risk level of $10^{-5}$and SSLs for noncarcinogens are based on a hazard quotient (HQ) of 1.0 (NMED 2000, 68554). The screening action levels (SALs) for radionuclides are based on a dose of 15 mrem/yr and derived according to the Laboratory document "Derivation and Use of Radionuclide Screening Action Levels" (LANL 2001, 69683). The SALs used are obtained from RESRAD Version 6.21 (LANL 2002, 73705) (See Table G-6.0-1). Printouts of the industrial SALs and residential SALs from RESRAD Version 6.21 are included as Attachment 2 to this appendix.

The SALs presented in the printouts are the screening levels derived for all radionuclides routinely evaluated, not just for those radionuclides evaluated for this investigation.

Calcium does not have a published toxicity value but is among those elements identified in Section 5.9.4 of the EPA "Risk Assessment Guidance for Superfund" (EPA 1989, 08021) as an essential macronutrient. The recommended daily allowance (RDA) for calcium is 1.0 g/day (National Research Council 1989, 64000). The maximum value of calcium in the samples (41000 mg/kg) is more than six times the BV (6120 mg/kg). However, human receptor would need to ingest the equivalent of 24 g/day of soil/tuff at the maximum concentration to reach the RDA; therefore, calcium is not expected to result in adverse health effects and is eliminated as a COPC.

The representative concentration used in this screening assessment was the 95% UCL of the mean calculated following EPA guidance "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 73593). The UCLs were calculated using normal, lognormal, or nonparametric (Chebyshev's) tests depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limits. The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, a constant value was added to all results in order to make all values positive for purposes of the UCL calculations, because the ProUCL program cannot handle negative values. The outputs from the calculations were then readjusted by subtracting the same constant value before reporting. UCLs were calculated using data from both soil and tuff at depths from 0–12 ft. **Maximum detected concentrations were used as the representative concentration if there were too few samples or too few detect to calculate a 95% UCL.**

A summary of the UCL calculation is included in Attachment 1 to this appendix. The 95% UCL for each COPC was compared with the SSL for carcinogens and radionuclides and one-tenth the SSL for noncarcinogens because more than one noncarcinogenic COPC has been identified. The 95% UCLs used in the screening assessment are presented in Tables G-4.0-11, G-4.0-12, and G-4.0-13.

G-7.0 HUMAN HEALTH RISK ASSESSMENT RESULTS

Mesa Top

The 95% UCLs or maximum detected concentrations of noncarcinogenic COPCs were all less than their respective SSLs and less than one-tenth the SSLs. The hazard index (HI) for the noncarcinogenic COPCs (the sum of the ratios of representative concentration divided by the screening value) is approximately 0.03 (see Table G-7.0-1), which is less than the NMED target HI of 1.0 (NMED 2000, 68554).

The 95% UCLs or maximum detected concentrations of the carcinogenic COPCs were less than their respective SSLs. The total potential excess cancer risk from exposure to carcinogenic COPCs at SWMU 53-002(a)-99 is approximately 2×10^{-6} (see Table G-7.0-2), which is less than the NMED target level for carcinogenic risk of 1×10^{-5} (1 in 100,000) (NMED 2000, 68554).

The 95% UCLs for radionuclide COPCs were all less than their respective industrial SALs. The total estimated radionuclide dose, mainly from cobalt-60 and sodium-22, is approximately 8.0 mrem/yr (see Table G-7.0-3), which is below the U.S. Department of Energy (DOE) acceptable target dose for free release of property of 15 mrem/yr (DOE 2000, 67489).

Reaches C, D, and E

The 95% UCLs or maximum detected concentrations of noncarcinogenic COPCs were all less than their respective SSLs and less than one-tenth the SSLs. The HI is approximately 0.03 (see Table G-7.0-4), which is less than the NMED target HI of 1.0 (NMED 2000, 68554).

The 95% UCLs or maximum detected concentrations of the carcinogenic COPCs were less than their respective SSLs. The total potential excess cancer risk from exposure to carcinogenic COPCs within the reaches at SWMU 53-002(a)-99 is approximately 3×10^{-7} (see Table G-7.0-5), which is less than the NMED target level for carcinogenic risk of 1×10^{-5} (1 in 100,000) (NMED 2000, 68554).

The 95% UCLs for radionuclide COPCs were all less than their respective industrial SALs. The total estimated radionuclide dose, predominantly from cobalt-60 (5.1 mrem/yr), is approximately 6.2 mrem/yr (see Table G-7.0-6), which is less than the DOE acceptable target dose for free release of property of 15 mrem/yr (DOE 2000, 67489).

G-7.1 Uncertainty Analysis

The analysis in this human health risk assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs is not anticipated to affect the assessment.

Another data evaluation uncertainty relates to the use of the 95% UCL as the representative concentration for each COPC. Use of the 95% UCL may result in an overestimation of risk for analytes that have elevated detection limits. In this assessment, four detection limits for hexavalent chromium were elevated (22, 43, 20, and 41 mg/kg), and the rest were below 2.3 mg/kg. The four detected hexavalent chromium concentrations were 0.06, 0.57, 0.6, and 0.62 mg/kg. Because the 95% UCL uses one-half the detection limit, the higher detection limits for hexavalent chromium increase the 95% UCL and overestimate the potential risk for hexavalent chromium.

Exposure Assessment

Four exposure assessment uncertainties were identified for the risk assessment: (1) the identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of data.

The receptor (industrial outdoor worker) and user scenario used in the assessment are subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the SSL are that the potentially exposed individual is an industrial outdoor worker who is likely to be on site for 8 hr/day for 250 days/yr (EPA 2003, 81724). Laboratory workers will not be on site 8 hr/day 250 days/yr. The receptor/user scenario particularly overestimates exposure in the tributary canyon and Los Alamos Canyon. No workers will work in either Los Alamos Canyon or in the tributary canyon leading to it. The tributary is behind a fence. Badge holders are known to jog in the area (which would therefore

possibly support a trail-user/recreational scenario), but no trails used for jogging are near the tributary. By using the industrial outdoor worker scenario to assess risk, the screening assessment overestimates the exposure and is protective of a recreational user. As a result, risk, hazard, and dose are also overestimated. In addition, the construction worker scenario was evaluated in response to NMED's comment in its NOD (LANL 2005, 89375).

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 81724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be reasonably expected.

Analytical data from 0 ft bgs to 12 ft bgs were used in the screening assessment, but the receptor cannot be exposed to the entire depth profile unless the area is excavated. Using the analytical data from 0 ft bgs to 12 ft bgs may therefore overestimate the potential risk to receptors. The total dose on the mesa top is driven by cobalt-60 and sodium-22, which are COPCs in the tuff only. The assumption that exposure may occur to tuff at depth overestimates the total dose unless the tuff is excavated and pulverized.

Toxicity Assessment

The primary uncertainty associated with the screening values relates to the derivation of screening values from EPA toxicity values (reference doses [RfDs] and slope factors [SFs]) (EPA 2001, 70109; EPA 1997, 58968). Uncertainties were identified in three areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, and (3) interindividual variability in the human population.

The SFs and RfDs are often determined based on extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship.

The SFs and RfDs can often contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between two exposure routes could result in an over- or underestimation of risk or hazard.

For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures and in determining the no observed adverse effect level (NOAEL). The NOAEL/uncertainty factor approach incorporates a factor of 10 to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals are generally unknown and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively but that act by different mechanisms and on different target organs.

The use of values for radionuclides without correction for decay is another uncertainty. In the screening assessment, the 95% UCLs were derived from the values of sampling results reported by the fixed analytical laboratory for samples collected from SWMU 53-002(a)-99 during sampling activities conducted from 1994 to 2002. Of the COPCs, cobalt-60 has a half-life of 5.27 years, cesium-134 has a half-life of 2.06 years, and sodium-22 has a half-life of 2.6 years. For cesium-134, the maximum concentration (14.6 pCi/g) was collected on July 9, 1999, and the next two highest concentrations (6.22 and 2.29 pCi/g) were collected in 1995. Table G-7.1-1 shows the three maximum concentrations for cesium-134, cobalt-60, and sodium-22, their collection date, their decay-corrected concentrations, and the percentage concentration decrease since the sample was collected. The percentage concentration decreases for the three radionuclides after decay-correction of the concentrations is from 17% to 94%. The same effect can be seen for cobalt-60 concentrations in the reach samples, where it contributes 82% of the total dose. If the concentrations used to calculate the UCL for these samples are decay-corrected to January 31, 2004, the 95% UCL decreases from 1.49 pCi/g to 1.04 pCi/g, a more than 25% difference. By not correcting for decay, the screening overestimates the dose from the short-lived radionuclides by approximately 25% or more.

The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, a surrogate was used to establish toxicity values for 4-isopropyltoluene in samples from within Reaches C, D, and E. The surrogate isopropylbenzene is structurally similar to 4-isopropyltoluene. The difference between the two chemicals, a carbon molecule for 4-isopropyltoluene, makes the surrogate chemical less reactive. Use of the surrogate may therefore underestimate the risk from 4-isopropyltoluene. However, because 4-isopropyltoluene was only detected in four of forty-three samples and detected at trace levels, the uncertainty associated with use of isopropylbenzene as a surrogate for 4-isopropyltoluene does not affect the risk assessment results.

G-7.2 Interpretation

Based on an industrial outdoor worker scenario, the HI (0.03) is less than the NMED target level of 1.0, the carcinogenic risk (2×10^{-6}) is less than the NMED target level of 1×10^{-5}, and the radiological dose (8.0 mrem/yr) is less than the DOE target dose of 15 mrem/yr. The total dose for an industrial outdoor worker on the mesa top is equivalent to a total risk of 3.5×10^{-5} based on a comparison to EPA preliminary remediation goals for radionuclides (epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate that there is no potential for unacceptable dose/risk to human health at SWMU 53-002(a)-99 on the mesa top.

Based on an industrial outdoor worker scenario, the HI (0.03) is less than the NMED target level of 1.0, the carcinogenic risk (3×10^{-7}) is less than the NMED target level of 1×10^{-5}, and the radiological dose (6.2 mrem/yr) is less than the DOE target dose of 15 mrem/yr. The total dose for an industrial outdoor worker in the tributary canyon reaches is equivalent to a total risk of 3×10^{-5} based on a comparison to EPA preliminary remediation goals for radionuclides (epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate that there is no potential for unacceptable dose/risk to human health in the reaches below SWMU 53-002(a)-99.

G-8.0 ECOLOGICAL SCREENING LEVELS

The approach for conducting ecological assessments is described in the “Screening Level Ecological Risk Assessment Methods” (LANL 1999, 64783).

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the SWMU.

The mesa-top area where SWMU 53-002(a)-99 is located is disturbed and surrounded by piñon and juniper. Much of the area within the impoundments is bare ground, with weedy angiosperm species growing intermittently. The impoundments are not a suitable habitat for threatened or endangered species because the ground lacks vegetation. But the area surrounding the impoundments is within the habitat of threatened and endangered species. The reach area is predominantly ponderosa pine with grassland/shrubland and some piñon/juniper.

There is no potential for contamination of surface water or aquatic receptors because there are no surface water bodies in or near SWMU 53-002(a)-99. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1000 ft bgs); furthermore, removing the source also eliminates the driver for transport. The potential contact with contaminants is by vapors and root uptake by plants. Other exposure pathways are food-web transport, soil ingestion, dermal contact, external irradiation, and dust inhalation.

Exposure point concentrations are determined from samples collected between the ground surface and 5 ft bgs (LANL 1999, 64783) for the mesa top. The tuff was included in the screening assessment because some of the tuff is crushed, which is easier to burrow into than welded tuff. In addition, some plants are starting to grow within the impoundments, and their root system will break up small sections of the tuff, thereby gradually allowing easier access for ecological receptors. The 95% UCLs were calculated for the mesa-top samples and separately for the reaches.

For the reach samples, exposure-point concentrations are determined from the samples collected within the sediment. Although the sample collection logs state that the sampling media is sediment, the exposure-point concentrations were compared to soil ecological screening levels (ESLs) because the reach area is an ephemeral stream (meaning that it only flows as a result of precipitation), and the receptors are terrestrial.

The purpose of the ecological screening evaluation is to identify chemicals of potential ecological concern (COPECs) for SWMU 53-002(a)-99 and the reaches. The evaluation involves the calculation of hazard quotients (HQs) for all COPCs and all screening receptors (LANL 1999, 64783). The HQs are the ratios of the exposure point concentrations (95% UCLs or maximum detected concentrations) to the ESLs. The HI is a sum of HQs. An HQ greater than 1.0 is considered an indication of potential adverse impacts. COPCs with HQs greater than 0.3 are identified as COPECs and are evaluated further. ESLs for terrestrial receptors were obtained from the Laboratory's ECORISK database, Version 2.0 (LANL 2003, 80117).

The mesa top samples are screened separately from the reach samples because the areas are very different and separate. The mesa top within the impoundments is bare with soil and tuff on the surface. The exterior of the impoundments is vegetated in some areas, mainly on the berms, but there is also some vegetation near Drainage Area B. The reach samples were collected within a canyon drainage that is vegetated by ponderosa pine and to a lesser extent by piñon/juniper.

Mesa Top

Table G-8.0-1 shows the range of tuff and soil background concentrations for inorganic chemicals (LANL 1998, 59730). The 95% UCLs for arsenic, barium, chromium (total), and nickel are within the range of tuff

and soil background concentrations; therefore they are eliminated as COPECs because exposure across the site is similar to background.

Results of the comparison of the 95% UCLs or maximum detected concentrations with the final soil ESLs for the mesa top are shown in Table G-8.0-2. COPCs with HQs greater than 0.3 are retained as COPECs. Hexavalent chromium, selenium, and silver are retained as inorganic COPECs, and acenaphthene, Aroclor-1254, diethylphthalate, and di-n-butyl phthalate are retained as organic COPECs. HQ values for the radionuclides and the remaining organic COPCs presented in Table G-8.0-2 are less than 0.3; therefore these COPCs are eliminated as COPECs.

There are no ESLs for several organic COPCs including benzyl alcohol, bis(2-chloroethyl)ether, butylbenzene(sec-), chloroethane, dichlorodifluoromethane, isopropyltoluene[4-], methyl-2-pentanone[4-], trichloro-1,2,2-trifluoroethane[1,1,2-], trichlorofluoromethane, and trimethylbenzene[1,2,4-], nor is there a surrogate with an ESL. These organic COPCs are discussed further in the uncertainty analysis section.

The HI analysis for ecological receptors is presented in Table G-8.0-3. The HI for each receptor is the sum of HQs for chemicals that have common toxicological endpoints for that receptor. For the purposes of ecological screening, nonradionuclides are assumed to have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected.

As discussed in Appendix D, hexavalent chromium has four high detection limits. If the 95% UCL is run without these values in the data set, a more representative 95% UCL of 1.23 mg/kg is obtained. The 95% UCL value calculated without the four high detection values is used in the HI analysis and is discussed in the uncertainty analysis.

According to the HI analysis, the carnivorous kestrel (surrogate for the Mexican spotted owl), the herbivorous robin, the cottontail, the shrew, and the deer mouse are receptors that have HIs less than 1.0. However, the plant, earthworm, robin (omnivore), robin (insectivore), kestrel (omnivore), and red fox may be potentially impacted by COPECs because they have HIs greater than 1.0.

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of threatened and endangered species (EPA 1999, 70086). One approach to address the potential effects on populations on the mesa-top of SWMU 53-002(a)-99 is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor home range and its dispersal distance (Bowman et al. 2002, 73475). Bowman et al. (2002, 73475) estimate that the median dispersal distance for mammals is seven times the linear dimension of the home range (i.e., the square root of the home range area). If only the dispersal distances for the mammals with home ranges within the range of the screening receptors are used (Bowman et al. 2002, 73475), the median dispersal distance becomes 3.6 times the square root of the home range (R^2=0.91). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$ or approximately 40HR. This results in population areas of approximately 16.8 ha (40 x 0.42 ha) for the robin, 4240 ha (40 x 106 ha) for the kestrel, and 41,520 ha (40 x 1038 ha) for the red fox (EPA 1993, 59109).

The area of SWMU 53-002(a)-99 mesa top is 3.25 ha. The population area use factor (PAUF) is estimated by dividing the SWMU area by the population area of the receptor. The resulting value is multiplied by the receptor HI to determine if there is a potential impact on the population.

The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have home ranges from which a PAUF would be developed. The HQs and HIs for these receptors at this site are discussed in the uncertainty analysis for this section. Based on the PAUF assessment, the adjusted HIs for the robin (insectivore and omnivore) are 1.1 and 0.6, respectively, the adjusted HI for the kestrel is 0.0009, and the adjusted HI for the red fox is 0.00009 (Table G-8.0-4). The potential risk to receptors from the COPECs is discussed in the uncertainty analysis.

Reaches C, D, and E

Table G-8.0-5 shows the range of soil background concentrations for inorganic chemicals (LANL 1998, 59730). Soil is used for the comparison because the reach samples are from an ephemeral drainage and are more like soil than sediment. Based on a comparison of the 95% UCL and the background concentrations, the 95% UCLs for antimony, lead, and selenium are within the range of background concentrations and are eliminated as COPECs.

Results of the comparison of the 95% UCLs or maximum detected concentrations with the final ESLs for Reaches C, D, and E are shown in Table G-8.0-6. Aroclor-1254 has an HQ greater than 0.3 and is retained as a COPEC. The remaining organic COPCs and the radionuclides have HQs less than 0.3 and are eliminated as COPECs.

There are no ESLs for bromomethane, isopropyltoluene[4-], D[2,4-], dalapon, DB[2,4-], and hexachlorobenzene, nor are there surrogates with an ESL. Therefore, these organic COPECs are discussed in the uncertainty analysis.

Aroclor-1254 is evaluated further in Table G-8.0-7 by calculating the HQs for the COPEC/receptor combination. Based on the HI analysis, HIs are 1.0 or less, which indicates the receptors are not impacted by Aroclor-1254.

G-8.1 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the SWMU. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at SWMU 53-002(a)-99.

The COPC concentrations used in all exposure calculations of HQs were the 95% UCLs or maximum detected concentrations in the soil/tuff to a depth of 5 ft, thereby conservatively estimating the site concentrations of each COPC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This results in an overestimation of the potential risk because concentrations of COPCs varied across the site and were infrequently detected.

The chemical form of the individual COPCs was not determined as part of this investigation. This is largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic and organic COPECs are not generally 100% bioavailable to receptors in the natural environment due to the adsorption of chemical constituents to matrix surfaces (e.g., soils), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 1999, 64783) and the values were biased toward overestimating the potential risk to receptors.

There is no ESL available for isopropyltoluene[4-], and this chemical cannot be evaluated quantitatively. Concentrations of isopropyltoluene[4-] were detected in four of forty-three samples at 0.0016, 0.0063, 0.344, and 0.030 mg/kg. EPA has not issued any screening levels for this chemical, but isopropylbenzene can serve as a surrogate. There are no ESLs for isopropylbenzene, but the EPA Region 6 residential SSL is 370 mg/kg (EPA 2003, 81724), which indicates very low potential toxicity from this chemical. This chemical was detected infrequently across the site and at trace levels. Therefore, isopropyltoluene[4-] does not present a potential ecological risk to receptors at this site.

There is no ESL available for trichlorofluoromethane and this chemical cannot be evaluated quantitatively. Trichlorofluoromethane was detected in four of sixty-two samples each at a concentration of 0.002 mg/kg. The EPA Region 6 residential SSL is 390 mg/kg (EPA 2003, 81724), which indicates very low potential toxicity from this chemical. This chemical was detected infrequently across the site and at trace levels. Therefore, trichlorofluoromethane does not present a potential ecological risk to receptors at this site.

There are no ESLs available for benzyl alcohol, bis(2-chloroethyl)ether, butylbenzene(sec-), chloroethane, dichlorodifluoromethane, methyl-2-pentanone[4-], trichloro-1,2,2-trifluorormethane[1,1,2-], and trimethylbenzene[1,2,4-] on the mesa top or for bromomethane and hexachlorobenzene in the reaches. All these organic chemicals were detected in only one or two samples from 0–5 ft bgs at concentrations below or at the EQLs (approximately 0.3 mg/kg for SVOCs and 0.005 mg/kg to 0.006 mg/kg for volatile organic compounds). Because of the infrequent detection and trace concentrations for these organic COPCs, they do not present a potential ecological risk to receptors at this site.

There are no ESLs available for D[2,4-], dalapon, and DB[2,4-], and these organic chemicals cannot be evaluated quantitatively. Each of these organic chemicals was detected in one of three samples at concentrations of 0.16 mg/kg (D[2,4-]), 0.22 mg/kg (dalapon), and 0.2 mg/kg (DB[2,4-]) in the reaches. These chemicals were detected infrequently and at trace levels. Therefore, these chemicals do not present a potential ecological risk to receptors at this site.

Chemicals with HQs greater than 0.3 are discussed below. Those chemicals (antimony, arsenic, barium, chromium (total), lead, and nickel) that were compared to background concentrations and eliminated earlier are not included.

The 95% UCL for hexavalent chromium (19.37 mg/kg) is because of the elevated detection limits of 22, 43, 41, and 20 mg/kg. The rest of the detection limits were less than 2.3 mg/kg. If the four samples with elevated detection limits are removed from the dataset, then the 95% UCL is 1.23 mg/kg. The HIs for hexavalent chromium are less than 1.0 for the mammalian receptors and less than 10 for the plant and earthworm (Table G-8.0-3). Hexavalent chromium was analyzed in twenty-four samples, and four detected concentrations were reported at 0.06, 0.57, 0.6, and 0.62 mg/kg. One concentration (0.06 mg/kg) was detected in the northeast impoundment at a depth of 1–2 ft bgs. The other three concentrations were detected at location 53-01718 in the southern impoundment at the following depths: 1–2 ft bgs (0.57 mg/kg), 4–5 ft bgs (0.6 mg/kg), and 14–15 ft bgs (0.62 mg/kg). Because hexavalent chromium was detected in only four samples at two locations at less than 1 mg/kg across a 3.2 ha site, exposure is limited and does not cause a potential risk to ecological receptors. Therefore, hexavalent chromium is not retained as a COPEC.

Selenium was detected once above the BV (1.52 mg/kg) in soil on the mesa top and was detected above the BV (0.3 mg/kg) in 52 Qbt3 samples. The detected concentrations of selenium in tuff ranged from 0.31 mg/kg to 0.79 mg/kg with a 95% UCL of 0.36 mg/kg. These concentrations of selenium are similar to background concentrations, which ranged from 0.1 to 1.7 in soil (LANL 1998, 59730), and are not indicative of a release from the impoundments. Therefore, selenium is not retained as a COPEC.

The individual HQs for silver were well within the acceptable limits for terrestrial wildlife receptors with the exception for the plant. Silver was detected five times in mesa top soil samples from the southern impoundment. The concentrations of silver (from mg/kg 1.1 to 1.5 mg/kg) are similar to background (1 mg/kg) and are not indicative of a release from the impoundments. Therefore, silver was not retained as a COPEC.

Acenaphthene was detected in one sample on the mesa top and generated a maximum HQ of 1.2 for the plant, while all other HQs were less than 0.3. The mesa-top vegetation has been affected by the operations at TA-53 as well as the remediation of the impoundments. The HQ of 1.2 is equivalent to 1.0, and because it is the result of one detected concentration, it is unlikely to impact the vegetation in the area. Therefore, acenaphthene is not retained as a COPEC.

Aroclor-1254 was detected in four samples on the mesa top from 0-5 ft bgs with concentrations ranging from 0.0051 mg/kg to 0.16 mg/kg and resulting in a maximum HQ of 3.9 for the robin insectivore. In addition, other HQs were 2.0 for the robin omnivore, 1.1 for the red fox, 0.9 for kestrel omnivore, and 0.73 for the kestrel carnivore. All other HQs were 0.4 or less. The infrequent detection and low concentrations (detected concentrations were slightly higher than the EQLs) are unlikely to impact receptors on the mesa top. In addition, PAUF-adjusted HIs for these receptors are 1.1 or less (Table G-8.0-4). Therefore, Aroclor-1254 is not retained as a COPEC on the mesa top.

In the reach samples, three sample values were reported above the final ESL (0.041 mg/kg) for Aroclor-1254. Table G-8.0-7 shows that HQs greater than 0.3 were generated for the robin (omnivore [0.51] and insectivore [1.0]). Because the maximum HI for Aroclor-1254 is 1.0, exposure across the site does not exceed the NOAEL for the robin. Therefore, Aroclor-1254 is not retained as a COPEC for Reaches C, D, and E.

Di-n-butyl phthalate generated a maximum HQ of 1.1 for the mesa top. The HI for the robin (insectivore) was 1.5, and the rest of the HIs are less than 0.3. The PAUF-adjusted HQ for the robin (insectivore) is 0.2, indicating no risk of population-level effects from di-n-butyl phthalate. Di-n-butyl phthalate is not retained as a COPEC.

Diethylphthalate was detected in one sample from 0-5 ft bgs on the mesa top and generated a maximum HQ of 0.32 for the robin insectivore, while the other HQs were less than 0.3. The ESL comparisons were done using di-n-butyl phthalate as a surrogate, which may overestimate the potential ecological risk of diethylphthalate. In addition, the low HQ and infrequent occurrence of diethylphthalate on the mesa top are unlikely to impact receptors. Therefore, diethylphthalate is not retained as a COPEC.

The HIs for the robin insectivore and omnivore, the kestrel omnivore, and the red fox were above 1.0 based on the HI analysis presented in Table G-8.0-3. The HIs for the other receptors were less than 1.0. The evaluation of the greater than 1.0 HIs using the PAUF results in adjusted HIs less than 1.0 for these receptors, except for the robin insectivore, which has an adjusted HI of 1.1. The HI of 1.1 is equivalent to 1.0 and is influenced primarily by Aroclor-1254. The other three detected concentrations of Aroclor-1254 are two orders of magnitude less than the maximum detected concentration used in the screening assessment. If the average detected concentration of Aroclor-1254 rather than the maximum detected concentration is used in the assessment, the Aroclor-1254 HQ for the robin insectivore is 1.1, the HI is 2.9, and the PAUF-adjusted HI is 0.6. Therefore, there is no potential unacceptable ecological to receptors at this site.

G-9.0 ECOLOGICAL RISK ASSESSMENT RESULTS

The inorganic COPEC concentrations were similar to background concentrations, and the organic COPECs were infrequently detected at trace levels. Radionuclides were determined to not affect ecological receptors; all the HQs for radionuclides were less than 0.1. In addition, population-level analysis indicated that no potential ecological impacts are present. As a result of the screening assessment for ecological risk, no COPECs are retained at SWMU 53-002(a)-99.

G-10.0 CONCLUSIONS AND RECOMMENDATIONS

The COPCs retained by the data review were assessed for their potential to pose an unacceptable risk to human and ecological receptors. On the mesa top, the human health screening assessment was based on an industrial outdoor worker scenario. The assessment found that all noncarcinogenic COPCs had 95% UCLs or maximum concentrations less than one-tenth their individual SSLs. None of the carcinogenic COPCs had 95% UCLs greater than their SSL. The HI for noncarcinogenic COPCs was less than 1.0 (0.03) and the total incremental cancer risk was 2×10^{-6}. These values do not exceed NMED target levels for systemic hazard and cancer risk (NMED 2000, 68554) and therefore do not pose an unacceptable risk to human health. The total radiological dose of 8.0 mrem/yr is less than the DOE target dose of 15 mrem/yr. The total dose for an industrial outdoor worker on the mesa top is equivalent to a total risk of 3.5×10^{-5} based on a comparison to EPA industrial preliminary remediation goals for radionuclides (epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate that there is no potential unacceptable risk to human health on the mesa at SWMU 53-002(a)-99.

On the mesa top, the ecological screening assessment identified di-n-butyl phthalate, hexavalent chromium, selenium, and silver as COPECs. The COPECs were evaluated in the context of exposure and background and were found not to pose a potential for adverse impacts to ecological receptors.

The COPCs retained by the data review for Reaches C, D, and E were assessed for their potential to pose an unacceptable risk to human and ecological receptors. Based on an industrial outdoor worker scenario, the HI (0.03) is less than the NMED target level of 1.0, the carcinogenic risk (3×10^{-7}) is less than NMED's target level of 1×10^{-5}, and the radiological dose (6.2 mrem/yr) is less than the DOE target dose of 15 mrem/yr. The total dose for an industrial outdoor worker in the tributary canyon reaches is equivalent to a total risk of 3×10^{-5} based on a comparison to EPA industrial preliminary remediation goals for radionuclides (epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate that there is no potential unacceptable risk to human health at in the reaches below SWMU 53-002(a)-99.

Several inorganic and organic COPECs were identified on the mesa top. Most organic COPECs were present at trace concentrations, and all were detected infrequently. A population-level analysis indicated that no potential ecological impacts are present on the mesa top. Within Reaches C, D, and E, the ecological screening assessment identified Aroclor-1254 as a COPEC. Aroclor-1254 was evaluated in the context of exposure and was found not to pose a potential for adverse impacts to ecological receptors.

A number of inorganic and organic chemicals and radionuclides were detected in the mesa-top samples. The concentrations are generally low and decrease with distance (vertical and lateral) from the impoundments. Measurements of water content, anion concentrations, and stable isotopes beneath the impoundments indicate that vertical infiltration has occurred but that contamination from the impoundments has not moved beyond the 150 ft depth.

The screening assessments for human health and the environment do not indicate a potential unacceptable risk to human or ecological receptors. Therefore, neither additional corrective action nor additional sampling is needed at SWMU 53-002(a)-99.

G-11.0 REFERENCES

The following list includes all documents cited in this report within Appendix G. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the RRES-RS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the RRES-RS project reference set titled "Reference Set for Operable Unit 1100."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; US Environmental Protection Agency, Region 6; and RRES-RS project. The sets were developed to ensure that the administrative authority has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the administrative authority are not included.

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Table G-4.0-1
Summary of Sampling Results for
Organic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)
Acenaphthene	73	72	0.0429	0.41	1	0.3	0.3	0.32
Acetone	62	43	0.0025	0.041	19	0.0047	0.082	0.019
Aroclor-1254	75	74	0.00414	0.205	1	0.16	0.16	0.036
Aroclor-1260	75	75	0.00367	0.205	0	n/a[b]	n/a	0.034
BHC[alpha-]	32	32	0.000829	0.332	0	n/a	n/a	0.044
BHC[gamma-]	32	32	0.000829	0.332	0	n/a	n/a	0.044
Benzene	62	61	0.000407	0.0096	1	0.0003	0.0003	0.0048
Benzo(g,h,i)perylene	77	76	0.0378	0.41	1	0.018	0.018	0.31
Benzoic Acid	77	77	0.0201	4	0	n/a	n/a	1.69
Benzyl Alcohol	77	77	0.0611	1.6	0	n/a	n/a	0.66
Bis(2-chloroethyl)ether	77	76	0.0416	0.41	1	0.084	0.084	0.31
Bis(2-ethylhexyl)phthalate	77	67	0.0407	0.41	10	0.019	0.074	0.28
Bromomethane	62	62	0.000881	0.019	0	n/a	n/a	0.0096
Butanone[2-]	62	61	0.00336	0.039	1	0.011	0.011	0.019
Butylbenzene[sec-]	58	58	0.000269	0.0096	0	n/a	n/a	0.0051
Butylbenzylphthalate	77	76	0.0318	0.41	1	0.055	0.055	0.31
Chloroethane	62	60	0.00132	0.019	2	0.00052	0.0026	0.0094
DB[2,4-]	12	12	0.0398	0.44	0	n/a	n/a	0.20
DDD[4,4'-]	29	29	0.0033	0.332	0	n/a	n/a	0.056
DDE[4,4'-]	32	31	0.00166	0.332	1	0.00032	0.00032	0.047
DDT[4,4'-]	29	28	0.00051	0.332	1	0.00073	0.00073	0.056
D[2,4-]	12	12	0.0199	0.44	0	n/a	n/a	0.16
Dalapon	12	12	0.0199	2.6	0	n/a	n/a	0.88
Di-n-butylphthalate	77	69	0.0322	0.5	8	0.018	1.6	0.34
Dichlorobenzene[1,2-]	139	139	0.000205	0.41	0	n/a	n/a	0.18
Dichlorobenzene[1,3-]	139	139	0.000269	0.41	0	n/a	n/a	0.18
Dichlorobenzene[1,4-]	139	139	0.000251	0.41	0	n/a	n/a	0.18
Dichlorodifluoromethane	62	62	0.000705	0.019	0	n/a	n/a	0.0096
Dieldrin	32	32	0.00166	0.332	0	n/a	n/a	0.047
Diethylphthalate	77	75	0.019	0.4	2	0.054	0.06	0.29
Endrin	32	32	0.00166	0.332	0	n/a	n/a	0.047
Fluoranthene	77	76	0.0291	0.41	1	0.041	0.041	0.31
Heptachlor	32	30	0.0017	0.332	2	0.00101	0.0011	0.046
Hexachlorobenzene	77	77	0.0411	0.41	0	n/a	n/a	0.32
Isopropyltoluene[4-]	58	58	0.000226	0.0096	0	n/a	n/a	0.0051

Table G-4.0-1 (continued)

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)
Methyl-2-pentanone[4-]	62	62	0.00367	0.039	0	n/a	n/a	0.020
Methylene Chloride	62	59	0.000566	0.048	3	0.013	0.013	0.0086
Methylphenol[3-]	31	31	0.0464	0.39	0	n/a	n/a	0.25
Methylphenol[4-]	73	72	0.0464	0.73	1	0.024	0.024	0.32
Phenol	77	77	0.0325	0.41	0	n/a	n/a	0.32
Pyrene	77	76	0.0313	0.41	1	0.038	0.038	0.31
Tetrachloroethene	62	62	0.000406	0.0096	0	n/a	n/a	0.0049
Toluene	62	58	0.00036	0.0096	4	0.00037	0.00085	0.0043
Trichloro-1,2,2-trifluoroethane[1,1,2-]	58	57	0.000922	0.0096	1	0.017	0.017	0.0054
Trichloroethene	62	57	0.000579	0.008	5	0.00086	0.0013	0.0043
Trichlorofluoromethane	62	58	0.001	0.0096	4	0.002	0.002	0.0031
Trimethylbenzene[1,2,4-]	58	58	0.000204	0.0096	0	n/a	n/a	0.0051
Xylene (Total)	62	62	0.000586	0.0096	0	n/a	n/a	0.0051

[a] ND = Nondetect.
[b] n/a = Not applicable.

Table G-4.0-2
Summary of Sampling Results for Organic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)
Acenaphthene	160	160	0.0424	0.45	0	n/a[b]	n/a	0.29
Acetone	192	138	0.004	0.034	54	0.00222	0.107	0.017
Aroclor-1254	211	207	0.00403	0.406	4	0.00508	0.16	0.030
Aroclor-1260	211	210	0.00363	0.406	1	0.018	0.018	0.028
BHC[alpha-]	166	163	0.000807	0.333	3	0.000754	0.00080	0.093
BHC[gamma-]	164	158	0.000807	0.333	6	0.000593	0.00078	0.094
Benzene	192	191	0.00042	0.01	1	0.00027	0.00027	0.0045
Benzo(g,h,i)perylene	206	206	0.0374	0.45	0	n/a	n/a	0.30
Benzoic Acid	206	204	0.0199	4	2	0.076	0.19	1.20
Benzyl Alcohol	206	205	0.0604	1.6	1	0.025	0.025	0.47
Bis(2-chloroethyl)ether	206	206	0.0411	0.45	0	n/a	n/a	0.30
Bis(2-ethylhexyl)phthalate	206	179	0.0402	0.45	27	0.018	0.47	0.26
Bromomethane	192	192	0.00091	0.02	0	n/a	n/a	0.0086
Butanone[2-]	192	187	0.00347	0.04	5	0.0014	0.0053	0.017
Butylbenzene[sec-]	146	145	0.000278	0.01	1	0.006	0.006	0.0053
Butylbenzylphthalate	206	204	0.0315	0.45	2	0.018	0.09	0.30
Chloroethane	192	190	0.00136	0.02	2	0.0021	0.004	0.0086
DB[2,4-]	59	59	0.00398	0.45	0	n/a	n/a	0.076
DDD[4,4'-]	163	162	0.0018	0.333	1	0.00305	0.0030	0.10
DDE[4,4'-]	163	163	0.00161	0.333	0	n/a	n/a	0.097
DDT[4,4'-]	163	161	0.0018	0.333	2	0.00034	0.0020	0.099
D[2,4-]	59	59	0.00199	0.45	0	n/a	n/a	0.049
Dalapon	59	59	0.00199	2.7	0	n/a	n/a	0.21
Di-n-butylphthalate	206	190	0.0318	0.58	16	0.02	1.5	0.29
Dichlorobenzene[1,2-]	398	398	0.000212	0.45	0	n/a	n/a	0.16
Dichlorobenzene[1,3-]	398	398	0.000278	0.45	0	n/a	n/a	0.16
Dichlorobenzene[1,4-]	398	398	0.000259	0.45	0	n/a	n/a	0.16
Dichlorodifluoromethane	192	189	0.000728	0.02	3	0.002	0.006	0.0085
Dieldrin	163	160	0.00161	0.333	3	0.000898	0.00097	0.097
Diethylphthalate	206	205	0.035	0.45	1	0.058	0.058	0.30
Endrin	163	161	0.00161	0.333	2	0.000835	0.00085	0.097
Fluoranthene	206	206	0.0288	0.45	0	n/a	n/a	0.30
Heptachlor	163	160	0.00161	0.333	3	0.000935	0.00168	0.096
Hexachlorobenzene	206	206	0.0407	0.45	0	n/a	n/a	0.30
Isopropyltoluene[4-]	146	142	0.000234	0.01	4	0.00049	0.0024	0.0051
Methyl-2-pentanone[4-]	192	189	0.00379	0.04	3	0.00099	0.0016	0.019

Table G-4.0-2 (continued)

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)
Methylene Chloride	192	187	0.000584	0.036	5	0.001	0.0047	0.0068
Methylphenol[3-]	96	95	0.0459	0.4	1	0.37	0.37	0.25
Methylphenol[4-]	160	159	0.0459	0.73	1	0.032	0.032	0.34
Phenol	206	205	0.0322	0.45	1	0.029	0.029	0.30
Pyrene	206	206	0.031	0.45	0	n/a	n/a	0.30
Tetrachloroethene	192	191	0.000419	0.01	1	0.00045	0.00045	0.0045
Toluene	192	185	0.000478	0.01	7	0.00053	0.004	0.0042
Trichloro-1,2,2-trifluoroethane[1,1,2-]	146	146	0.000952	0.01	0	n/a	n/a	0.0054
Trichloroethene	192	187	0.000597	0.01	5	0.00048	0.00097	0.0044
Trichlorofluoromethane	192	191	0.001	0.016	1	0.001	0.001	0.0037
Trimethylbenzene[1,2,4-]	146	144	0.000211	0.01	2	0.00038	0.00047	0.0052
Xylene (Total)	192	192	0.000605	0.01	0	n/a	n/a	0.0050

[a] ND = Nondetect.
[b] n/a = Not applicable.

Table G-4.0-3
Summary of Sampling Results for
Inorganic Chemicals in Mesa-Top Soil at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)	BV[b] (mg/kg)
Aluminum	90	0	n/a[c]	n/a	90	650	17800	5312.2	29200
Antimony	77	50	0.08	5.4	27	0.05	0.75	1.26	0.83
Arsenic	90	11	0.39	2.1	79	0.48	4.6	1.87	8.17
Barium	90	0	n/a	n/a	90	10	260	57.93	295
Beryllium	90	0	n/a	n/a	90	0.15	2.7	0.61	1.83
Cadmium	90	61	0.04	0.65	29	0.03	0.64	0.16	0.4
Calcium	90	0	n/a	n/a	90	370	34000	3132.9	6120
Chromium	90	0	n/a	n/a	90	0.77	17	4.48	19.3
Hexavalent Chromium	5	5	0.1	43	0	n/a	n/a	25.2	n/a
Cobalt	90	3	0.8	0.85	87	0.1	4.2	1.85	8.64
Copper	90	0	n/a	n/a	90	0.81	18	3.46	14.7
Iron	90	0	n/a	n/a	90	1320	12000	5660.1	21500
Lead	90	0	n/a	n/a	90	2.9	76.9	9.08	22.3
Magnesium	90	0	n/a	n/a	90	206	3870	1103.8	4610
Manganese	90	0	n/a	n/a	90	63.2	430	189.5	671
Mercury	90	60	0.01	0.22	30	0.00333	0.0739	0.057	0.1
Nickel	90	1	1.9	1.9	89	0.92	15.3	4.13	15.4
Potassium	90	2	223	288	88	250	2500	850.1	3460
Selenium	79	55	0.07	2.1	24	0.103	1.2	0.46	1.52
Silver	90	73	0.1	1	17	0.18	1.5	0.47	1
Sodium	90	1	0.51	0.51	89	25.6	1000	113.1	915
Thallium	90	44	0.0515	1	46	0.03	0.67	0.25	0.73
Vanadium	90	0	n/a	n/a	90	2.5	21.3	8.32	39.6
Zinc	90	0	n/a	n/a	90	0.022	63.4	25.3	48.8

[a] ND = Nondetect.

[b] Background values taken from LANL 1998, 59730.

[c] n/a = Not applicable.

Table G-4.0-4
Summary of Sampling Results for
Inorganic Chemicals in Mesa-Top Tuff at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)	BV[b] (mg/kg)
Aluminum	195	0	n/a[c]	n/a	195	4.6	12000	1366	7340
Antimony	151	110	0.02	1	41	0.05	0.239	0.52	0.5
Arsenic	195	5	0.41	1.6	190	0.17	3.6	1.29	2.79
Barium	195	0	n/a	n/a	195	1.5	130	17.3	46
Beryllium	195	9	0.45	0.91	186	0.0701	1.3	0.36	1.21
Cadmium	195	103	0.03	0.5	92	0.0108	0.6	0.096	1.63
Calcium	195	0	n/a	n/a	195	173	41000	1929.8	2200
Chromium	197	0	n/a	n/a	197	0.21	36.4	4.08	7.14
Hexavalent chromium	24	20	0.041	2.3	4	0.06	0.62	1.44	n/a
Cobalt	195	0	n/a	n/a	195	0.031	4.6	0.64	3.14
Copper	195	7	0.08	0.09	188	0.09	9.22	1.30	4.66
Iron	195	0	n/a	n/a	195	295	11000	2409.5	14500
Lead	195	0	n/a	n/a	195	1.27	41	5.70	11.2
Magnesium	195	7	17.9	51.5	188	17.4	3110	353.7	1690
Manganese	195	0	n/a	n/a	195	32	460	156	482
Mercury	195	140	0.01	0.12	55	0.00265	0.302	0.04	0.1
Nickel	195	32	0.71	6.4	163	0.21	18.6	2.67	6.58
Potassium	195	17	103	532	178	73.60001	2000	296.1	3500
Selenium	188	120	0.07	1.1	68	0.1	0.79	0.40	0.3
Silver	195	168	0.016	1	27	0.042	1.1	0.52	1
Sodium	195	0	n/a	n/a	195	27.7	1200	137.3	2770
Thallium	195	142	0.02	1.5	53	0.03	0.86	0.33	1.1
Vanadium	195	0	n/a	n/a	195	0.48	17	2.46	17
Zinc	195	0	n/a	n/a	195	6.47	84	24.9	63.5

[a] ND = Nondetect.

[b] Background values taken from LANL 1998, 59730.

[c] n/a = Not applicable.

Table G-4.0-5
Summary of Sampling Results for Radionuclides in Mesa-Top Soil at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (pCi/g)	Max ND (pCi/g)	No. of Detects	Min Detect (pCi/g)	Max Detect (pCi/g)	Mean Site (pCi/g)	BV[b] (pCi/g)
Americium-241	95	89	-0.27	0.39	6	0.19	3.86	0.083	0.013
Cesium-134	95	89	-0.056	0.146	6	0.09	14.6	0.25	n/a[c]
Cesium-137	95	79	-0.08	0.14	16	0.113	0.89	0.074	1.65
Cobalt-60	95	80	-0.08	0.29	15	0.0936	13	0.44	n/a
Europium-152	84	84	-0.23	0.88	0	n/a	n/a	0.072	n/a
Plutonium-238	76	74	-0.0131	0.33	2	0.0562	0.37	0.039	0.023
Plutonium-239	76	72	-0.04	0.28	4	0.0287	0.314	0.025	0.054
Ruthenium-106	95	95	-1.05	3.71	0	n/a	n/a	0.15	n/a
Sodium-22	92	77	-0.16	0.16	15	0.172	21.9	0.65	n/a
Strontium-90	68	44	-0.294	0.75	24	0.381	4.98	0.65	1.31
Tritium (pCi/mL)	77	25	-23.2	137.2	52	0.73	2980	133.6	0.766
Uranium-234	76	6	1.03	2.12	70	0.58	2.27	1.10	2.59
Uranium-235	95	61	-0.34	0.29	34	0.0254	0.132	0.07	0.2
Uranium-238	76	5	1.09	2.49	71	0.656	2.53	1.11	2.29

[a] ND = Nondetect.
[b] Background values taken from LANL 1998, 59730.
[c] n/a = Not applicable.

Table G-4.0-6
Summary of Sampling Results for Radionuclides in Mesa-Top Tuff at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (pCi/g)	Max ND (pCi/g)	No. of Detects	Min Detect (pCi/g)	Max Detect (pCi/g)	Mean Site (pCi/g)	BV[b] (pCi/g)
Americium-241	223	208	-0.31	0.36	15	0.0837	5.21	0.052	n/a[c]
Cesium-134	223	195	-0.054	0.142	28	0.0374	2.29	0.075	n/a
Cesium-137	223	220	-0.105	0.12	3	0.0416	0.44	-0.0096	n/a
Cobalt-60	222	161	-0.066	0.45	61	0.0455	8.49	0.32	n/a
Europium-152	223	222	-0.32	0.77	1	0.79	0.79	0.064	n/a
Plutonium-238	185	182	-0.01	0.258	3	0.128	0.165	0.043	n/a
Plutonium-239	185	181	-0.03	0.23	4	0.036	0.19	0.024	n/a
Ruthenium-106	222	222	-0.62	1.18	0	n/a	n/a	0.023	n/a
Sodium-22	189	160	-0.06	0.225	29	0.0767	10.1	0.31	n/a
Strontium-90	208	143	-1.12	0.85	65	0.358	3.98	0.50	n/a
Tritium (pCi/mL)	287	129	-64.4	134.2	158	1.14	64397.	458.1	n/a
Uranium-234	186	9	0.963	2.3	177	0.7	2.7	1.28	1.98
Uranium-235	223	186	-0.42	0.388	37	0.033	0.31	0.093	0.09
Uranium-238	182	8	0.868	2.24	174	0.73	2.82	1.30	1.93

[a] ND = Nondetect.
[b] Background values taken from LANL 1998, 59730.
[c] n/a = Not applicable.

Table G-4.0-7
Tritium Concentrations Cross-Reference

Sample ID	Location ID	Depth (ft)	Media Code	Qualifier	Result (pCi/g)	Result (pCi/mL)	Percent Moisture	Moisture Method
RE53-99-0183	53-01639	0–0.33	ALLH	None	0.17	1.67	11.2	Wwf[a]
RE53-99-0184	53-01640	0–0.33	ALLH	None	0.14	1.48	10.2	Wwf
RE53-99-0185	53-01641	0–0.33	ALLH	None	0.11	0.94	13.1	Wwf
RE53-99-0179	53-01642	4.5–5	ALLH	None	0.21	3.22	6.5	Wwf
RE53-99-0175	53-01645	1–1.33	ALLH	None	0.12	4.29	2.7	Wwf
RE53-99-0168	53-01647	0–0.25	ALLH	None	0.11	0.73	15.5	Wwf
RE53-99-0169	53-01648	0–0.5	ALLH	None	0.07	1.62	4.6	Wwf
RE53-99-0176	53-01648	0.67–1	ALLH	None	0.077	1.39	5.5	Wwf
RE53-99-0170	53-01649	0–0.5	ALLH	None	0.25	3.45	7.2	Wwf
RE53-99-0172	53-01651	0–0.5	ALLH	None	0.45	5.50	8.1	Wwf
RE53-99-0174	53-01651	0.5–0.67	ALLH	None	0.39	6.68	5.9	Wwf
RE53-99-0182	53-01653	0–0.5	ALLH	None	0.078	3.25	2.4	Wwf
0253-95-0184	53-01020	3.67–4.5	FILL	None	4.54	38.9	10.2	Wwf
0253-95-0196	53-01024	1.5–2.5	FILL	None	2.26	20.8	12.2	Grav[b]
0253-95-0230	53-01033	1.5–2.5	FILL	None	5.49	39.8	16	Grav
0253-95-0233	53-01034	2–3	FILL	None	1.30	12.4	11.7	Grav
RE53-99-0322	53-01702	1–2	FILL	J	3.02	41.84	7.78	Grav
RE53-00-0046	53-01719	0–0.5	FILL	J+	3.43	175	2	Grav
RE53-00-0050	53-01720	0–0.5	FILL	None	2.84	73.8	4	Grav
RE53-00-0054	53-01721	0–0.5	FILL	None	15.57	327	5	Grav
RE53-00-0058	53-01722	0–0.5	FILL	None	114.62	2980	4	Grav
RE53-00-0062	53-01723	0–0.5	FILL	None	13.35	347	4	Grav
RE53-00-0066	53-01724	0–0.5	FILL	None	57.62	1210	5	Grav
RE53-00-0070	53-01725	0–0.5	FILL	None	3.96	136	3	Grav
RE53-00-0074	53-01726	0–0.5	FILL	None	12.23	420	3	Grav
RE53-00-0078	53-01727	0–0.5	FILL	None	16.85	438	4	Grav
RE53-00-0082	53-01728	0–0.5	FILL	None	5.12	133	4	Grav
RE53-00-0086	53-01729	0–0.5	FILL	None	19.60	673	3	Grav
RE53-02-46605	53-02-20824	110–111.3	QBT1V	J	11	177.42	6.2	Wwf
RE53-02-46606	53-02-20824	120–120.6	QBT1V	J	10.4	108.33	9.6	Wwf
RE53-02-46607	53-02-20824	130–131.4	QBT1V	J	7.25	66.51	10.9	Wwf
RE53-02-46608	53-02-20824	140–140.5	QBT1V	J	1.45	10.66	13.6	Wwf
RE53-02-46640	53-02-20825	139.5–140	QBT1V	None	2.05	29.29	7	Wwf
0253-95-0103	53-01001	1.5–2.5	QBT2	None	0.51	18	2.91	Grav
0253-95-0106	53-01002	1.5–2.5	QBT2	None	0.49	16.8	3.02	Grav
0253-95-0110	53-01003	1.5–2.5	QBT2	None	0.92	21.8	4.43	Grav

Table G-4.0-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Qualifier	Result (pCi/g)	Result (pCi/mL)	Percent Moisture	Moisture Method
0253-95-0113	53-01004	1.5–2.5	QBT2	None	0.88	22.4	4.08	Grav
0253-95-0116	53-01005	1.5–2.42	QBT2	None	0.56	11.8	4.99	Grav
0253-95-0119	53-01006	1.5–2.5	QBT2	None	0.90	20.4	4.61	Grav
0253-95-0122	53-01007	1.5–2.5	QBT2	None	0.74	21.5	3.58	Grav
0253-95-0126	53-01008	1.5–2.5	QBT2	None	0.62	23.4	2.72	Grav
0253-95-0129	53-01009	1.5–2.5	QBT2	None	0.66	15.9	4.33	Grav
0253-95-0132	53-01010	1.5–2.5	QBT2	None	0.54	12.2	4.67	Grav
0253-95-0135	53-01011	1.5–2.5	QBT2	None	0.25	8.49	2.99	Grav
0253-95-0138	53-01012	1.5–2.5	QBT2	None	0.67	18	3.89	Grav
0253-95-0142	53-01013	1.5–2.5	QBT2	None	1.07	15.6	7.33	Grav
0253-95-0145	53-01014	1.5–2.5	QBT2	None	1.09	20	5.74	Grav
0253-95-0148	53-01015	1.5–2.5	QBT2	None	0.71	15	4.98	Grav
0253-95-0151	53-01016	1.5–2.5	QBT2	None	0.87	18.7	4.87	Grav
0253-95-0154	53-01017	1.5–2.5	QBT2	None	1.12	20.9	5.67	Grav
0253-95-0177	53-01018	3.5–4.83	QBT2	None	2.57	38.9	7.06	Grav
0253-95-0181	53-01019	2.17–3	QBT2	None	25.62	293	9.58	Grav
0253-95-0187	53-01021	1.58–2.5	QBT2	None	1.81	17.8	11.3	Grav
0253-95-0190	53-01022	1.5–2.5	QBT2	None	2.22	47.7	4.89	Grav
0253-95-0193	53-01023	1.5–2.5	QBT2	None	6.01	71.1	9.23	Grav
0253-95-0205	53-01025	1.5–2.5	QBT2	None	2.26	18.3	14.1	Grav
0253-95-0208	53-01026	1.5–2.5	QBT2	None	1.76	22.9	8.32	Grav
0253-95-0211	53-01027	1.5–2.5	QBT2	None	0.81	13.7	6.31	Grav
0253-95-0214	53-01028	1.5–2.5	QBT2	None	1.74	30	6.17	Grav
0253-95-0217	53-01029	1.5–2.5	QBT2	None	4.78	43	12.5	Grav
0253-95-0220	53-01030	1.5–2.5	QBT2	None	2.25	20.1	12.6	Grav
0253-95-0223	53-01031	1.5–2.5	QBT2	None	1.37	29	4.96	Grav
0253-95-0227	53-01032	1.5–3	QBT2	None	3.57	47.8	8.08	Grav
0253-95-0155	53-01288	1.5–2.5	QBT2	None	10.44	298	3.63	Grav
0253-95-0156	53-01289	1–1.67	QBT2	None	2.80	104	2.77	Grav
0253-95-0157	53-01290	0.67–1.5	QBT2	None	0.36	9.31	4.06	Grav
0253-95-0158	53-01291	1.5–2.17	QBT2	None	0.94	13.2	7.64	Grav
0253-95-0159	53-01292	1.5–2.5	QBT2	None	0.47	13.8	3.55	Grav
0253-95-0160	53-01293	1.5–2.17	QBT2	None	15.81	368	4.49	Grav
0253-95-0161	53-01294	1.5–2.5	QBT2	None	0.28	13	2.18	Grav
0253-95-0162	53-01295	1.5–2.5	QBT2	None	0.60	10.2	6.21	Grav
0253-95-0234	53-01316	2–3.67	QBT2	None	0.91	22	4.33	Grav
0253-95-0236	53-01317	0.67–2	QBT2	None	6.40	52.8	13.8	Grav
0253-95-0237	53-01318	1.17–2.5	QBT2	None	2.87	31.6	10	Grav

Table G-4.0-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Qualifier	Result (pCi/g)	Result (pCi/mL)	Percent Moisture	Moisture Method
0253-95-0238	53-01319	1.5–2.33	QBT2	None	0.33	7.59	4.51	Grav
0253-95-0239	53-01320	1–2.33	QBT2	None	0.76	7.08	12	Grav
0253-95-0241	53-01321	1.5–2.67	QBT2	None	1.64	22.1	8.03	Grav
0253-95-0242	53-01322	1–2.67	QBT2	None	1.95	20	10.8	Grav
0253-95-0243	53-01323	2.5–3.67	QBT2	None	2.43	24.5	11	Grav
RE53-99-0115	53-01573	4–5	QBT2	None	0.46	11.54	4	Wwf
RE53-99-0116	53-01573	14–15	QBT2	None	0.41	6.37	6.5	Wwf
RE53-99-0117	53-01575	4–5	QBT2	None	0.065	1.14	5.7	Wwf
RE53-99-0118	53-01575	14–15	QBT2	None	0.49	4.65	10.6	Wwf
RE53-99-0119	53-01576	4–5	QBT2	None	0.18	2.97	5.9	Wwf
RE53-99-0120	53-01576	14–15	QBT2	None	0.26	3.67	7	Wwf
RE53-99-0121	53-01577	4–5	QBT2	None	0.13	1.89	6.8	Wwf
RE53-99-0122	53-01577	14–15	QBT2	None	0.38	5.03	7.5	Wwf
RE53-99-0125	53-01582	4–5	QBT2	None	0.27	4.1	7.1	Grav
RE53-99-0126	53-01582	14–15	QBT2	None	1.40	18.1	8.4	Grav
RE53-99-0123	53-01584	4–5	QBT2	None	0.08	1.25	6.9	Grav
RE53-99-0124	53-01584	14–15	QBT2	None	0.38	4.93	8.3	Grav
RE53-99-0133	53-01586	14–15	QBT2	None	26.10	399	7	Grav
RE53-99-0132	53-01586	4–5	QBT2	None	17.04	159	12	Grav
RE53-99-0131	53-01587	14–15	QBT2	None	8.61	157	5.8	Grav
RE53-99-0130	53-01587	4–5	QBT2	None	4.78	79.4	6.4	Grav
RE53-99-0135	53-01588	14–15	QBT2	None	0.76	13.4	6	Grav
RE53-99-0134	53-01588	4–5	QBT2	None	0.52	7.88	7	Grav
RE53-99-0129	53-01589	14–15	QBT2	None	0.42	7.49	6	Grav
RE53-99-0128	53-01589	4–5	QBT2	None	0.29	4.04	7.6	Grav
RE53-99-0141	53-01592	14–15	QBT2	None	15.54	404	4	Grav
RE53-99-0140	53-01592	4–5	QBT2	None	8.52	115	8	Grav
RE53-99-0139	53-01593	14–15	QBT2	None	8.04	142	6	Grav
RE53-99-0138	53-01593	4–5	QBT2	None	2.67	20.5	15	Grav
RE53-99-0137	53-01594	14–15	QBT2	None	9.45	127.64	7.4	Wwf
RE53-99-0136	53-01594	4–5	QBT2	None	2.91	18.52	15.7	Wwf
RE53-99-0149	53-01595	14–15	QBT2	None	30.55	320.90	9.52	Wwf
RE53-99-0145	53-01597	14–15	QBT2	None	6532.57	64397.77	11.29	Grav
RE53-99-0144	53-01597	4–5	QBT2	None	48.91	306.38	19	Grav
RE53-99-0143	53-01598	14–15	QBT2	None	44.67	524.38	9.3	Grav
RE53-99-0171	53-01650	0–0.42	QBT2	None	0.68	13.04	5.2	Wwf
RE53-99-0234	53-01655	14–15	QBT2	None	24.67	243.72	11.3	Grav
RE53-99-0233	53-01655	10–12.5	QBT2	None	8.68	78.49	12.4	Grav

Table G-4.0-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Qualifier	Result (pCi/g)	Result (pCi/mL)	Percent Moisture	Moisture Method
RE53-99-0240	53-01657	13–14	QBT2	J	3.23	69.17	4.9	Grav
RE53-99-0288	53-01660	24–25	QBT2	None	5.26	109.83	5.0	Grav
RE53-99-0284	53-01661	13–14	QBT2	J	2.67	58.60	4.8	Grav
RE53-99-0292	53-01663	9–10	QBT2	None	6.24	89.70	7.5	Grav
RE53-99-0293	53-01663	13–14	QBT2	None	7.88	90.53	9.5	Grav
RE53-99-0298	53-01691	9–10	QBT2	J	3.11	25.41	13.9	Grav
RE53-99-0300	53-01692	24–25	QBT2	None	9.32	130.55	7.7	Grav
RE53-99-0299	53-01692	13–14	QBT2	J	3.9	27.70	16.4	Grav
RE53-99-0303	53-01693	24–25	QBT2	None	17.92	231.52	8.4	Grav
RE53-99-0302	53-01693	13–14	QBT2	None	10.41	78.41	15.3	Grav
RE53-99-0301	53-01693	9–10	QBT2	J	2.24	18.09	14.1	Grav
RE53-99-0306	53-01694	24–25	QBT2	None	11.52	207.68	5.9	Grav
RE53-99-0304	53-01694	9–10	QBT2	None	86.76	776.46	12.6	Grav
RE53-99-0305	53-01694	13–14	QBT2	None	119.29	1010.77	13.4	Grav
RE53-99-0312	53-01695	14–15	QBT2	None	16.74	375.87	4.7	Grav
RE53-99-0311	53-01695	4–5	QBT2	None	25.1	546.88	4.8	Grav
RE53-99-0310	53-01695	1–2	QBT2	J	4.78	88.23	5.7	Grav
RE53-99-0315	53-01696	14–15	QBT2	None	0.58	11.07	5.2	Wwf
RE53-99-0313	53-01696	12–24	QBT2	None	0.48	5.62	8.5	Wwf
RE53-99-0314	53-01696	4–5	QBT2	None	0.78	8.91	8.8	Wwf
RE53-99-0321	53-01697	14–15	QBT2	None	0.17	5.445	3.2	Wwf
RE53-99-0320	53-01697	4–5	QBT2	None	1.33	15.34	8.7	Wwf
RE53-99-0319	53-01697	1–2	QBT2	None	0.81	8.87	9.1	Wwf
RE53-99-0318	53-01698	14–15	QBT2	None	13.29	170.33	7.8	Wwf
RE53-99-0316	53-01698	1–2	QBT2	None	2.41	28.68	8.4	Wwf
RE53-99-0317	53-01698	4–5	QBT2	None	9.58	114.06	8.4	Wwf
RE53-99-0307	53-01701	1–2	QBT2	None	8.66	225.86	4	Grav
RE53-99-0309	53-01701	14–15	QBT2	None	20.04	456.19	4.6	Grav
RE53-99-0308	53-01701	4–5	QBT2	None	23.7	456.35	5.5	Grav
RE53-00-0042	53-01716	4–5	QBT2	J+	6	156	4	Grav
RE53-00-0041	53-01716	1–2	QBT2	J+	29.66	524	6	Grav
RE53-00-0043	53-01716	14–15	QBT2	J+	1.41	6.85	26	Grav
RE53-00-0092	53-01717	14–15	QBT2	None	1	101	1	Grav
RE53-00-0091	53-01717	4–5	QBT2	J+	16.35	425	4	Grav
RE53-00-0094	53-01718	4–5	QBT2	None	31.5	819	4	Grav
RE53-00-0095	53-01718	14–15	QBT2	None	2.63	68.3	4	Grav
RE53-00-0093	53-01718	1–2	QBT2	None	42.86	900	5	Grav
RE53-00-0047	53-01719	1–2	QBT2	J+	143.85	3740	4	Grav

Table G-4.0-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Qualifier	Result (pCi/g)	Result (pCi/mL)	Percent Moisture	Moisture Method
RE53-00-0048	53-01719	4–5	QBT2	J+	352.38	7400	5	Grav
RE53-00-0049	53-01719	14–15	QBT2	J+	72.38	1520	5	Grav
RE53-00-0051	53-01720	1–2	QBT2	None	43.67	917	5	Grav
RE53-00-0053	53-01720	14–15	QBT2	None	36.14	759	5	Grav
RE53-00-0052	53-01720	4–5	QBT2	None	48.28	853	6	Grav
RE53-00-0057	53-01721	14–15	QBT2	None	2.81	96.6	3	Grav
RE53-00-0055	53-01721	1–2	QBT2	None	20.08	522	4	Grav
RE53-00-0056	53-01721	4–5	QBT2	None	12.19	317	4	Grav
RE53-00-0061	53-01722	14–15	QBT2	None	436.42	7710	6	Grav
RE53-00-0060	53-01722	4–5	QBT2	None	630	9630	7	Grav
RE53-00-0059	53-01722	1–2	QBT2	None	781.10	9460	9	Grav
RE53-00-0063	53-01723	1–2	QBT2	None	12.82	440	3	Grav
RE53-00-0064	53-01723	4–5	QBT2	None	4.81	165	3	Grav
RE53-00-0065	53-01723	14–15	QBT2	None	9	159	6	Grav
RE53-00-0068	53-01724	4–5	QBT2	None	46.54	1210	4	Grav
RE53-00-0067	53-01724	1–2	QBT2	None	73.33	1540	5	Grav
RE53-00-0069	53-01724	14–15	QBT2	None	23.77	420	6	Grav
RE53-00-0071	53-01725	1–2	QBT2	None	11.27	387	3	Grav
RE53-00-0073	53-01725	14–15	QBT2	None	7.54	196	4	Grav
RE53-00-0072	53-01725	4–5	QBT2	None	23.24	488	5	Grav
RE53-00-0077	53-01726	14–15	QBT2	None	0.50	17.2	3	Grav
RE53-00-0075	53-01726	1–2	QBT2	None	16.88	439	4	Grav
RE53-00-0076	53-01726	4–5	QBT2	None	4.54	118	4	Grav
RE53-00-0079	53-01727	1–2	QBT2	None	8.65	441	2	Grav
RE53-00-0081	53-01727	14–15	QBT2	None	1.44	49.5	3	Grav
RE53-00-0080	53-01727	4–5	QBT2	None	4	104	4	Grav
RE53-00-0084	53-01728	4–5	QBT2	None	3.23	111	3	Grav
RE53-00-0085	53-01728	14–15	QBT2	None	0.74	25.3	3	Grav
RE53-00-0083	53-01728	1–2	QBT2	None	11.85	308	4	Grav
RE53-00-0087	53-01729	1–2	QBT2	None	30.35	789	4	Grav
RE53-00-0088	53-01729	4–5	QBT2	None	20.35	529	4	Grav
RE53-00-0089	53-01729	14–15	QBT2	None	4.92	128	4	Grav
RE53-02-46598	53-02-20824	40–40.5	QBT2	J	19.7	458.14	4.3	Wwf
RE53-02-46597	53-02-20824	30–31.8	QBT2	J	20.4	400	5.1	Wwf
RE53-02-46594	53-02-20824	20–20.5	QBT2	J	13.5	228.81	5.9	Wwf
RE53-02-46593	53-02-20824	10.4–10.7	QBT2	J	31.7	519.67	6.1	Wwf
RE53-02-46600	53-02-20824	60–60.5	QBT2	J	9.99	293.82	3.4	Wwf
RE53-02-46599	53-02-20824	50–51.7	QBT2	J	11.9	297.5	4	Wwf

Table G-4.0-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Qualifier	Result (pCi/g)	Result (pCi/mL)	Percent Moisture	Moisture Method
RE53-02-46601	53-02-20824	70–71.1	QBT2	J	10.1	202	5	Wwf
RE53-02-46602	53-02-20824	80–80.7	QBT2	J	11.6	184.13	6.3	Wwf
RE53-02-46603	53-02-20824	90–91.2	QBT2	J	11.6	184.13	6.3	Wwf
RE53-02-46604	53-02-20824	100–101.2	QBT2	J	11.6	165.71	7	Wwf
RE53-02-46671	53-02-20827	9.5–10	QBT2	None	0.34	15.45	2.2	Wwf
RE53-02-46706	53-02-20828	29–30	QBT2	None	0.4	7.69	5.2	Wwf
RE53-02-46707	53-02-20828	48.5–50	QBT2	None	0.56	10.18	5.5	Wwf
RE53-02-46718	53-02-20829	36.7–37.5	QBT2	None	0.62	10.33	6	Wwf
RE53-02-46711	53-02-20829	49.2–50	QBT2	None	0.35	5.74	6.1	Wwf
RE53-02-46710	53-02-20829	24–25	QBT2	None	1.55	13.96	11.1	Wwf
RE53-02-46714	53-02-20830	28.9–30	QBT2	None	5.14	171.33	3	Wwf
RE53-02-46715	53-02-20830	49–50	QBT2	None	11.2	350	3.2	Wwf
RE53-00-0004	53-01706	2–3	QBT3	None	0.81	18.04	4.5	Wwf
RE53-00-0005	53-01707	3.5–4.5	QBT3	None	0.52	10.73	4.8	Wwf
RE53-00-0006	53-01708	5–6	QBT3	None	0.31	6.41	4.8	Wwf
RE53-00-0007	53-01709	8–9	QBT3	None	0.89	11.51	7.7	Wwf
RE53-00-0008	53-01710	6.5–7.5	QBT3	None	1.87	17.81	10.5	Wwf
RE53-00-0009	53-01711	5.5–6.5	QBT3	None	2.82	40.88	6.9	Wwf
RE53-00-0010	53-01712	4–5	QBT3	None	1.35	18.27	7.4	Wwf
RE53-00-0011	53-01713	4–5	QBT3	None	1.22	10.97	11.1	Wwf
RE53-00-0012	53-01714	3–4	QBT3	None	8.42	263.18	3.2	Wwf
RE53-00-0013	53-01715	4.5–5.5	QBT3	None	0.60	9.36	6.4	Wwf
RE53-01-0051	53-01732	0–0.39	SED	None	0.074	1.92	4	Grav
RE53-01-0049	53-01735	0–0.2	SED	None	0.063	1.41	4.7	Grav
RE53-01-0045	53-01736	0–0.42	SED	None	0.049	1.49	3.4	Grav
RE53-01-0046	53-01736	0.69–0.85	SED	None	0.114	1.61	7.6	Grav
RE53-01-0001	53-01737	0–0.36	SED	None	0.072	1.64	4.6	Grav
RE53-01-0014	53-01739	0–0.23	SED	None	0.036	1.67	2.2	Grav
RE53-01-0015	53-01740	0–0.26	SED	None	0.040	1.18	3.5	Grav
RE53-01-0024	53-01741	0–0.29	SED	None	0.087	5.89	1.5	Grav
RE53-01-0025	53-01742	0.36–0.49	SED	None	0.039	1.11	3.6	Grav
RE53-01-0018	53-01744	0.39–0.76	SED	None	0.089	2.03	4.6	Grav
RE53-01-0019	53-01745	0.2–0.46	SED	None	0.026	1.03	2.6	Grav
RE53-01-0002	53-01746	0.29–0.59	SED	None	0.046	1.37	3.5	Grav
RE53-01-0020	53-01747	0.23–0.63	SED	None	0.044	0.747	6.2	Grav
RE53-01-0022	53-01748	0.36–0.63	SED	None	0.21	4.93	4.5	Grav

[a] Wwf = Water weight fraction.

[b] Grav = Gravimetric.

Table G-4.0-8
Summary of Sampling Results for Organic Chemicals in Reach Sediment at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)
Acenaphthene	47	47	0.0167	0.36	0	n/a[c]	n/a	0.18
Acetone	43	39	0.0045	0.031	4	0.0075	0.037	0.010
Aroclor-1254	47	26	0.0033	0.036	21	0.0023	0.17	0.023
Aroclor-1260	47	42	0.0033	0.036	5	0.0045	0.034	0.019
Benzene	43	43	0.0012	0.0054	0	n/a	n/a	0.0032
Benzo(g,h,i)perylene	47	47	0.00167	0.36	0	n/a	n/a	0.17
Benzoic Acid	23	21	1.6	1.7	2	0.11	0.13	1.52
Benzyl Alcohol	23	23	0.33	0.36	0	n/a	n/a	0.34
BHC[alpha-]	27	27	0.00067	0.0088	0	n/a	n/a	0.0013
BHC[gamma-]	27	27	0.00067	0.0088	0	n/a	n/a	0.0013
Bis(2-chloroethyl)ether	23	23	0.33	0.36	0	n/a	n/a	0.34
Bis(2-ethylhexyl)phthalate	23	23	0.33	0.36	0	n/a	n/a	0.34
Bromomethane	45	44	0.00067	0.012	1	0.0012	0.0012	0.0052
Butanone[2-]	43	43	0.0059	0.022	0	n/a	n/a	0.014
Butylbenzene[sec-]	43	43	0.0012	0.0054	0	n/a	n/a	0.0032
Butylbenzylphthalate	23	23	0.33	0.36	0	n/a	n/a	0.34
Chloroethane	43	43	0.0012	0.011	0	n/a	n/a	0.0053
D[2,4-]	3	2	0.082	0.083	1	0.16	0.16	0.11
Dalapon	3	2	0.041	0.042	1	0.22	0.22	0.10
DB[2,4-]	3	2	0.082	0.083	1	0.2	0.2	0.12
DDD[4,4'-]	27	27	0.0013	0.0088	0	n/a	n/a	0.0019
DDE[4,4'-]	27	22	0.0013	0.0088	5	0.00058	0.0044	0.0020
DDT[4,4'-]	27	24	0.0013	0.0088	3	0.00052	0.002	0.0019
Dichlorobenzene[1,2-]	66	65	0.0012	0.36	1	0.00057	0.00057	0.12
Dichlorobenzene[1,3-]	66	65	0.0012	0.36	1	0.00069	0.00069	0.12
Dichlorobenzene[1,4-]	68	67	0.0012	0.36	1	0.0015	0.0015	0.12
Dichlorodifluoromethane	43	43	0.0012	0.011	0	n/a	n/a	0.0053
Dieldrin	27	27	0.0013	0.0088	0	n/a	n/a	0.0019
Diethylphthalate	23	23	0.33	0.36	0	n/a	n/a	0.34
Di-n-butylphthalate	23	23	0.33	0.36	0	n/a	n/a	0.34
Endrin	27	27	0.0013	0.0088	0	n/a	n/a	0.0019
Fluoranthene	47	46	0.00167	0.36	1	0.088	0.088	0.16
Heptachlor	27	27	0.00067	0.0088	0	n/a	n/a	0.0013
Hexachlorobenzene	23	22	0.33	0.36	1	0.23	0.23	0.34
Isopropyltoluene[4-]	43	39	0.0012	0.0054	4	0.0016	0.344	0.012

Table G-4.0-8 (continued)

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)
Methyl-2-pentanone[4-]	43	43	0.0059	0.022	0	n/a	n/a	0.014
Methylene Chloride	47	47	0.0032	0.013	0	n/a	n/a	0.0079
Methylphenol[3-]	0	1	n/a	n/a	1	n/a	n/a	n/a
Methylphenol[4-]	23	23	0.33	0.36	0	n/a	n/a	0.34
Phenol	23	23	0.33	0.36	0	n/a	n/a	0.34
Pyrene	47	46	0.00167	0.36	1	0.0101	0.0101	0.18
Tetrachloroethene	43	42	0.0012	0.0054	1	0.00073	0.00073	0.0031
Toluene	43	29	0.0012	0.0053	14	0.00053	0.0051	0.0028
Trichloro-1,2,2-trifluoroethane[1,1,2-]	26	26	0.0051	0.0101	0	n/a	n/a	0.0077
Trichloroethene	44	42	0.00044	0.0053	2	0.00057	0.00061	0.0020
Trichlorofluoromethane	43	43	0.0012	0.011	0	n/a	n/a	0.0053
Trimethylbenzene[1,2,4-]	43	43	0.0012	0.0054	0	n/a	n/a	0.0032
Xylene (Total)	19	18	0.005	0.0054	1	0.0015	0.0015	0.0050

[a] ND = Nondetect.
[b] n/a = Not applicable.

Table G-4.0-9
Summary of Sampling Results for Inorganic Chemicals in Reach Sediment at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (mg/kg)	Max ND (mg/kg)	No. of Detects	Min Detect (mg/kg)	Max Detect (mg/kg)	Mean Site (mg/kg)	BV[b] (mg/kg)
Aluminum	47	0	n/a[c]	n/a	47	865	9670	4761.2	15400
Antimony	47	44	0.2	0.431	3	0.0517	7.91	0.45	0.83
Arsenic	47	1	0.67	0.67	46	0.22	2.5	1.25	3.98
Barium	47	0	n/a	n/a	47	9.6	73.4	43.3	127
Beryllium	47	1	0.31	0.31	46	0.1	1.1	0.54	1.31
Cadmium	47	3	0.014	0.49	44	0.019	0.2	0.12	0.4
Calcium	47	0	n/a	n/a	47	503	3210	1644.5	4420
Chromium	47	0	n/a	n/a	47	0.55	6.99	3.36	10.5
Hexavalent chromium	3	3	0.82	1.7	0	n/a	n/a	1.41	n/a
Cobalt	47	0	n/a	n/a	47	0.36	2.7	1.57	4.73
Copper	47	2	0.9	1.2	45	1.7	12.1	5.11	11.2
Iron	47	0	n/a	n/a	47	1750	9060	5797.5	13800
Lead	39	0	n/a	n/a	39	6.42	44.7	14.5	19.7
Magnesium	47	0	n/a	n/a	47	264	1570	896.9	2370
Manganese	47	0	n/a	n/a	47	56.2	424	227.8	543
Mercury	47	27	0.00451	0.018	20	0.00958	0.0342	0.015	0.1
Nickel	47	0	n/a	n/a	47	0.61	4.61	2.57	9.38
Potassium	47	0	n/a	n/a	47	169	1630	867.6	2690
Selenium	47	37	0.23	0.526	10	0.25	0.39	0.37	0.3
Silver	47	16	0.029	0.13	31	0.0199	0.33	0.090	1
Sodium	47	0	n/a	n/a	47	15.3	216	98.2	1470
Thallium	47	17	0.062	0.065	30	0.0276	0.25	0.072	0.73
Vanadium	47	0	n/a	n/a	47	1.2	12.9	6.91	19.7
Zinc	47	0	n/a	n/a	47	13.9	49.8	31.8	60.2

[a] ND = Nondetect.
[b] Background values taken from LANL 1998, 59730.
[c] n/a = Not applicable.

Table G-4.0-10
Summary of Sampling Results for Radionuclides in Reach Sediment at SWMU 53-002(a)-99

Analyte	No. of Samples	No. of NDs[a]	Min ND (pCi/g)	Max ND (pCi/g)	No. of Detects	Min Detect (pCi/g)	Max Detect (pCi/g)	Mean Site (pCi/g)	BV[b] (pCi/g)
Americium-241	47	43	-0.507	0.171	4	0.0185	0.194	0.020	0.04
Cesium-134	46	13	-0.266	0.15	33	0.0424	1.95	0.33	n/a[c]
Cesium-137	46	5	0.0411	0.223	41	0.0456	1.02	0.41	0.9
Cobalt-60	47	10	-0.0008	0.0549	37	0.0999	5.83	0.80	n/a
Europium-152	47	47	-0.15	0.0549	0	n/a	n/a	-0.028	n/a
Plutonium-238	23	23	-0.00126	0.0166	0	n/a	n/a	0.0034	0.006
Plutonium-239	23	20	-0.0017	0.0432	3	0.0333	0.0487	0.019	0.068
Ruthenium-106	47	47	-0.353	0.289	0	n/a	n/a	-0.0073	n/a
Sodium-22	24	24	-0.0445	0.0535	0	n/a	n/a	0.0067	n/a
Strontium-90	23	18	0.0517	0.47	5	0.229	0.526	0.21	1.04
Tritium (pCi/g wet wt)	23	9	0.0031	0.043	14	0.026	0.21	0.052	0.093
Uranium-234	23	0	n/a	n/a	23	0.352	2.05	1.34	2.59
Uranium-235	47	40	0.015	0.345	7	0.0292	0.0845	0.11	0.2
Uranium-238	23	0	n/a	n/a	23	0.35	2.25	1.37	2.29

[a] ND = Nondetect.
[b] Background values taken from LANL 1998, 59730.
[c] n/a = Not applicable.

Table G-4.0-11
Organic Chemical 95% UCLs*

COPC	Mesa Samples						Reach Samples		
	0–12 ft Depth			0–5 ft Depth					
	n[a]	95 % UCL (mg/kg)	dist[b]	n[a]	95% UCL (mg/kg)	dist[b]	n[a]	95% UCL (mg/kg)	dist[b]
Acetone	170	0.016	None[c]	150	0.016	None	43	0.0098	None
Aroclor-1254	Not a COPC			Not a COPC			47	0.041	None
Aroclor-1260	Not a COPC			Not a COPC			47	0.017	None
Benzoic Acid	Not a COPC			Not a COPC			23	0.85	None
Bis(2-ethylhexyl)phthalate	190	0.16	None	168	0.15	None	Not a COPC		
Di-n-butylphthalate	190	0.19	None	168	0.19	None	Not a COPC		
Toluene	170	0.0023	None	150	0.0021	None	43	0.0023	None
DDE[4,4'-]	Not a COPC			Not a COPC			27	0.0022	None
DDT[4,4'-]	Not a COPC			Not a COPC			27	0.0019	None
Isopropyltoluene[4-]	Not a COPC			Not a COPC			43	0.06	None

**Note:* COPCs not listed were assessed using the maximum detected concentration.

[a] Number of samples.

[b] 95% UCL calculated based on normal, lognormal (logN), or nonparametric (Chebyshev's) tests.

[c] None indicates neither normal nor lognormal distribution and nonparametric test was used to calculate the 95% UCL.

Table G-4.0-12
Inorganic Chemical 95% UCLs

Analytes	Mesa Samples						Reach Samples		
	0–12 ft Depth			0–5 ft Depth					
	n[a]	95% UCL (mg/kg)	dist[b]	n[a]	95% UCL (mg/kg)	dist[b]	n[a]	95% UCL (mg/kg)	dist[b]
Antimony	Not a COPC						47	1.03	None
Arsenic	199	1.72	None[c]	179	1.67	None	Not a COPC		
Barium	199	49.45	None	179	51.16	None	Not a COPC		
Chromium (total)	200	4.42	logN	180	4.47	logN	Not a COPC		
Hexavalent chromium	19	19.37	None	19	19.37	None	Not a COPC		
Lead	Not a COPC						39	16.57	logN
Nickel	199	3.46	logN	179	3.49	logN	Not a COPC		
Selenium	186	0.35	None	168	0.36	None	47	0.27	None
Silver	199	0.41	None	179	0.43	None	Not a COPC		

[a] Number of samples.

[b] 95% UCL calculated based on normal, lognormal (logN), or nonparametric (Chebyshev's) tests.

[c] None indicates neither normal nor lognormal distribution and nonparametric test was used to calculate the 95% UCL.

Table G-4.0-13
Radionuclide 95% UCLs

Analyte	Mesa Samples						Reach Samples		
	0–12 ft Depth			0–5 ft Depth					
	n[a]	95% UCL (pCi/g)	dist[b]	n[a]	95% UCL(pCi/g)	dist[b]	n[a]	95% UCL (pCi/g)	dist[b]
Americium-241	221	0.21	None[c]	201	0.23	None	Not a COPC		
Cesium-134	221	0.50	None	201	0.55	None	46	0.59	None
Cobalt-60	221	0.95	None	201	1.04	None	47	1.49	None
Sodium-22	204	1.33	None	184	1.47	None	Not a COPC		
Strontium-90	180	0.73	None	162	0.66	None	Not a COPC		
Tritium	190	26.07	None	166	28.89	None	23	0.067	None
Uranium-234	185	1.24	None	165	1.21	None	Not a COPC		
Uranium-235	221	0.11	None	201	0.11	None	Not a COPC		
Uranium-238	183	1.26	None	163	1.23	None	Not a COPC		

[a] Number of samples.

[b] 95% UCL calculated based on normal, lognormal (logN), or nonparametric (Chebyshev's) tests.

[c] None indicates neither normal nor lognormal distribution and nonparametric test was used to calculate the 95% UCL.

Table G-5.0-1
Physiochemical Properties of Organic COPCs

Name	Water Solubility (mg/L)[a]	Vapor Pressure (mm Hg)[a] at 25°C	Kow[a,b]	Koc[a,c]
Acenaphthene	3.8	4.93E-06	9.22E+03	4.9E+03
Acetone	6.04E+05	2.99E-01	6.00E-01	9.51E-01
Aroclor-1254[d]	1.2E-02	7.71E-05	3.2E+06	No data
Aroclor-1260	2.7E-03	4.05E-05	6.3E+06	No data
Benzene	1.78E+03	1.75E-01	137	62
Benzoic Acid	2.7E+03	No data	74.1	No data
Benzyl alcohol	4E+04	1.4E-04	12.6	10.2
Bis(2-chloroethyl)ether	1.18E+04	1.76E-03	20	76
Bis(2-ethylhexyl)phthalate	3.96E-01	8.49E-09	1.6E+05	1.11E+05
Butanone[2-]	2.4E+05	1.2E-01	1.91	2.34
Butylbenzylphthalate	2.58	1.58E-08	2.59E+04	1.37E+04
Chloroethane	5.74E+03	1.6E+02	1.26E+03	3.71E+02
DDD[4,4'-]	7.33E-02	1.14E-09	1.32E+06	4.58E+04
DDE[4,4'-]	1.92E-02	7.45E-09	1.80E+06	8.64E+02
DDT[4,4'-]	3.41E-03	5.17E-10	1.17E+06	6.78E+05
Dichlorobenzene[1,2-]	125	1.79E-03	2.79E+03	3.79E+02
Dichlorobenzene[1,3-]	68.8	3.03E-03	3.39E+03	8.03E+03

Table G-5.0-1 (continued)

Name	Water Solubility (mg/L)[a]	Vapor Pressure (mm Hg)[a] at 25°C	Kow[a,b]	Koc[a,c]
Dichlorobenzene[1,4-]	73	1.39E-03	2.58E+03	6.16E+02
Dichlorodifluoromethane	300	6.4	144	6.85
Dieldrin	1.87E-01	1.39E-03	1.86E+05	2.55E+04
Diethylphthalate	880	2.17E-06	2.73E+04	82
Di-n-butylphthalate	10.8	5.55E-08	5.25E+04	1.57E+03
Endrin	2.46E-01	7.68E-10	7.79E+04	1.08E+04
Fluoranthene	2.32E-01	1.07E-08	1.21E+05	4.91E+04
Heptachlor	27.3	4.29E-07	1.04E+05	9.53E+03
Haxachlorobenzene	8.62E-03	1.62E-08	3.18E+05	8.0E+04
Isopropyltoluene[4-]	56	6.00E-03	4.10E+03	9.31E+03
Methyl-2-pentanone[4-]	2E+04	2.5E-02	15.5	12
Methylene chloride	1.74E+04	4.87E-01	18	10
Phenol	9.08E+04	5.74E-04	30	22
Pyrene	1.3E-01	5.59E-09	1E+05	6.8E+04
Tetrachloroethene	232	2.42E-02	351	265
Toluene	558	3.71E-02	465	140
Trichloroethene	1.18E+03	9.48E-02	271	94
Trichlorofluoromethane	1.1E+03	1.1	340	134
Xylene (total)	186	1.06E-02	1480	311

[a] Denotes reference information from http://www.epa.gov/earth1r6/6pd/rcra_c/pd-o/appd1a.pdf.

[b] K_{ow} = Octanol water partition coefficient.

[c] K_{oc} = Adsorption coefficient.

[d] Denotes reference information from http://www.atsdr.cdc.gov/toxprofiles/tp17-c4.pdf.

Table G-6.0-1
Radionuclide SALs

Radionuclide	Industrial SAL* (pCi/g)	Residential SAL* (pCi/g)
Americium-241	140.3	39.09
Cesium-134	8.25	N/a
Cobalt-60	4.38	1.21
Sodium-22	5.52	1.54
Strontium-90	1615	5.75
Tritium	15140	888.6
Uranium-234	1087	63.28
Uranium-235	73.09	16.82
Uranium-238	351.1	86.16

[a] From RESRAD Version 6.21.

[b] n/a = Not applicable.

Table G-7.0-1
Screening Evaluation for SWMU 53-002(a)-99 Noncarcinogenic COPCs, Mesa-Top Samples

Analyte	95% UCL (mg/kg)	Industrial SSL[a] (mg/kg)	0.1 Industrial SSL (mg/kg)	HQ	Residential SSL[b] (mg/kg)	HQ
Arsenic	1.72	280	28	6.14E-03	22[c]	7.82E-02
Barium	49.45	79000	7900	6.26E-04	5200	9.51E-03
Hexavalent chromium	19.37	3400	340	5.70E-03	230	8.42E-02
Nickel	3.46	23000	2300	1.50E-04	1500	2.31E-03
Selenium	0.35	5700	570	6.14E-05	380	9.21E-04
Silver	0.41	5700	570	7.19E-05	380	1.08E-03
Acenaphthene	0.3[d]	33000	490	9.1E-06	2800	1.1E-04
Acetone	0.016	1.0E+05	1.0E+04	1.6E-07	1600[c]	1.00E-05
Aroclor-1254	0.16[d]	12	1.2	1.33E-02	1.1	1.5E-01
Benzoic acid	0.19[d]	100,000	10,000	1.9E-06	100,000[c]	1.9E-06
Benzo(g,h,i)perylene[e]	0.018[d]	32000	3200	5.63E-07	1800	1.0E-05
Benzyl alcohol	0.025[d]	100,000	10,000	2.5E-07	18,000[c]	1.4E-06
Butanone[2-]	0.011[d]	34000	8900	3.24E-07	37000	2.97E-07
Butylbenzene[sec-]	0.006[d]	220	22	2.73E-05	110[c]	5.45E-05
Butylbenzylphthalate	0.09[d]	240	24	3.75E-04	240[c]	3.75E-04
Dichlorodifluoromethane	0.006[d]	340	7.1	1.76E-05	90	6.67E-05
Diethylphthalate	0.06[d]	100,000	10,000	6.0E-07	49000	1.22E-06
Di-n-butylphthalate	0.19	68000	6800	2.79E-06	6100	3.11E-05
Endrin	0.00085[d]	210	4.4	4.05E-06	18	4.72E-05
Fluoranthene	0.041[d]	24000	530	1.71E-06	2300	1.78E-05
Isopropyltoluene[4-][f]	0.0024[d]	580	58	4.14E-06	370	6.49E-06
Methyl-2-pentanone[4-][g]	0.0016[d]	17000	1700	9.41E-08	5800[c]	2.76E-07
Methylphenol[3-]	0.0047[d]	34000	3400	1.38E-07	3100[c]	1.52E-06
Methylphenol[4-]	0.37[d]	3400	340	1.09E-04	310[c]	1.2E-03
Phenol	0.032[d]	100,000	10,000	3.2E-07	37000	8.65E-07
Pyrene	0.038[d]	32000	430	1.19E-06	1800	2.11E-05
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0.017[d]	5600	560	3.04E-06	5600[c]	3.04E-06
Toluene	0.0023	520	52	4.42E-06	180	1.28E-05
Trichlorofluoromethane	0.002[d]	1400	140	1.43E-06	390[c]	5.13E-06
Trimethylbenzene[1,2,4-]	0.00047[d]	190	19	2.47E-06	52[c]	9.04E-06
			HI	**0.03**	**HI**	**0.3**

[a] Value from EPA Region VI Industrial – Outdoor Worker (EPA 2003, 81724).
[b] Value from NMED – Residential (NMED 2000, 68554).
[c] Value from EPA Region VI Residential (EPA 2003, 81724).
[d] Maximum value.
[e] SSL for pyrene used as a surrogate based on structural similarity.
[f] SSL for isopropylbenzene from EPA Region VI (EPA 2003, 81724) used as a surrogate based on structural similarity.
[g] Called methyl isobutyl ketone by EPA Region VI (EPA 2003, 81724).

Table G-7.0-2
Screening Evaluation for SWMU 53-002(a)-99 Carcinogenic COPCs, Mesa-Top Samples

Analyte	95% UCL (mg/kg)	Industrial SSL[a] (mg/kg)	Cancer Risk	Residential SSL[b] (mg/kg)	Cancer Risk
Arsenic	1.72	18	9.56E-07	3.9	4.41E-06
Chromium (total)	4.42	5000	8.84E-09	2100[d]	2.10E-08
Hexavalent chromium	19.37	710	2.73E-07	230	8.42E-07
Aroclor-1254	0.16[c]	8.3	1.93E-07	2.2	7.27E-07
Aroclor-1260	0.018[c]	8.3	2.17E-08	2.2	8.2E-08
Benzene	0.0003[c]	16	1.88E-10	6.4	4.69E-10
BHC[alpha-]	0.00077[c]	4.0	1.93E-09	0.9	8.56E-09
BHC[gamma-]	0.00078[c]	19	4.11E-10	4.4	1.77E-09
Bis(2-chloroethyl)ether	0.084[c]	6.2	1.35E-07	4.4	1.91E-07
Bis(2-ethylhexyl)phthalate	0.16	1400	1.14E-09	350	4.57E-09
Chloroethane	0.004[c]	7.2	5.56E-09	3.0[d]	1.33E-08
DDD[4,4'-]	0.00305[c]	110	2.77E-10	24	1.27E-09
DDE[4,4'-]	0.00032[c]	78	4.1E-11	17	1.88E-10
DDT[4,4'-]	0.002[c]	78	2.56E-10	17	1.18E-09
Dieldrin	0.00097[c]	1.2	8.08E-09	0.3	3.23E-08
Heptachlor	0.00168[c]	4.3	3.91E-09	1.1	1.53E-08
Methylene chloride	0.013[c]	220	5.91E-10	650	2.0E-10
Tetrachloroethene	0.0045[c]	17	2.64E-09	49	9.18E-10
Trichloroethene	0.0013[c]	1.0	1.30E-08	16	8.12E-10
Total Excess Cancer Risk			**2E-06**	**Total Excess Cancer Risk**	**6E-06**

[a] Value from EPA Region VI Industrial – Outdoor Worker (EPA 2003, 81724).

[b] Value from NMED – Residential (NMED 2000, 68554).

[c] Maximum value.

[d] Value from EPA Region VI Residential (EPA 2003, 81724).

Table G-7.0-3
Screening Evaluation for SWMU 5-002(a)-99 Radionuclides, Mesa-Top Samples

Radionuclide	95% UCL	Industrial SAL* (pCi/g)	Total Dose (mrem/yr)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.21	140.3	0.022	39	0.08
Cesium-134	0.5	8.255	0.909	2.3	3.26
Cobalt-60	0.95	4.378	3.255	1.2	11.88
Sodium-22	1.33	5.524	3.612	1.5	13.30
Strontium-90	0.73	1615	0.007	5.7	1.92
Tritium	26.07	15140	0.026	890	0.44
Uranium-234	1.24	1087	0.017	63	0.30
Uranium-235	0.11	73.09	0.023	17	0.10
Uranium-238	1.26	351.1	0.054	86	0.22
		Total Dose	**8.0**	**Total Dose**	**31.5**

*From RESRAD 6.21.

Table G-7.0-4
Screening Evaluation for SWMU 53-002(a)-99 Noncarcinogenic COPCs, Reach Sediment Samples

Chemical	95% UCL (mg/kg)	Industrial SSL[a] (mg/kg)	0.1 Industrial SSL (mg/kg)	HQ	Residential SSL[b] (mg/kg)	HQ
Antimony	1.03	450	45	2.29E-03	30	3.43E-02
Lead	16.57	800	80	2.1E-02	400	4.14E-02
Selenium	0.27	5700	570	4.74E-05	380	7.11E-04
Acetone	0.0098	1.0E+05	1.0E+04	9.8E-08	1600[c]	6.13E-06
Aroclor 1254	0.041	12	1.2	3.42E-03	1.1[c]	3.73E-02
Benzoic Acid	0.85	1.00E+05	1.0E+04	8.50E-06	1.00E+05[c]	8.50E-06
Bromomethane	0.0012[e]	15	1.5	8.0E-05	3.7	3.24E-04
D[2,4-]	0.16[e]	8500	850	1.88E-05	690[c]	2.32E-04
Dalapon	0.22[e]	2.1E+04	2100	1.05E-05	1800[c]	1.22E-04
DB[2,4-]	0.2[e]	5500	550	3.64E-05	490[c]	4.08E-04
Dichlorobenzene[1, 2-]	0.00057[e]	370	37	1.54E-06	85	6.7E-06
Dichlorobenzene[1, 3-]	0.00069[e]	160	16	4.31E-06	12	5.75E-05
Fluoranthene	0.088[e]	24000	2400	3.67E-06	2300	3.83E-05
4-Isopropyltoluene[d]	0.06	580	58	1.03E-04	370[c]	1.62E-04
Pyrene	0.0101[e]	10000	1000	1.01E-06	1800	5.61E-06
Toluene	0.0023	520	52	4.42E-06	180	1.28E-05
Xylene (total)	0.0015	210	21	7.14E-06	63	2.38E-05
			HI	**0.03**	**HI**	**0.1**

[a] Value from EPA Region VI Industrial – Outdoor Worker (EPA 2003, 81724).

[b] Value from NMED – Residential (NMED 2000, 68554).

[c] Value from EPA Region VI Residential (EPA 2003, 81724).

[d] SSL for Isopropylbenzene used as a surrogate for 4-isopropyltoluene (EPA 2003, 81724).

[e] Maximum value.

Table G-7.0-5
Screening Evaluation for SWMU 53-002(a)-99 Carcinogenic COPCs, Reach Sediment Samples

Chemical	95% UCL (mg/kg)	Industrial SSL[a] (mg/kg)	Cancer Risk	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor 1254	0.041	8.3	4.94E-08	2.2[c]	1.86E-07
Aroclor 1260	0.017	8.3	2.05E-08	2.2[c]	7.73E-08
4,4-DDE	0.0022	78	2.82E-10	17	1.29E-09
4,4-DDT	0.0019	78	2.44E-10	17	1.12E-09
Dichlorobenzene[1,4-]	0.0015[d]	81	1.85E-10	32	4.69E-10
Hexachlorobenzene	0.23[d]	12	1.92E-07	3.0	7.67E-07
Tetrachlororethene	0.00073[d]	17	4.29E-10	49	1.49E-10
Trichloroethene	0.00061[d]	1.0	6.1E-09	16	3.81E-10
Total Excess Cancer Risk			**3E-07**		**1E-06**

[a] Value from EPA Region VI Industrial – Outdoor Worker (EPA 2003, 81724).
[b] Value from NMED – Residential (NMED 2000, 68554).
[c] Value from EPA Region VI Residential (EPA 2003, 81724).
[d] Maximum value used.

Table G-7.0-6
Screening Evaluation for SWMU 53-002(a)-99 Radionuclides, Reach Sediment Samples

Radionuclide	95% UCL	Industrial SAL* (pCi/g)	Total Dose (mrem/yr)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Cesium-134	0.59	8.3	1.1	2.3	3.8
Cobalt-60	1.49	4.4	5.1	1.2	18.6
Tritium	0.067	15140	6.64E-05	890	0.001
		Total Dose	**6.2**	**Total Dose**	**22.4**

*From RESRAD 6.21.

Table G-7.1-1
Radionuclide Decay Corrections

Radionuclide	Half Life (years)	Location ID	Sample ID	Date Collected	Reported Value (pCi/g)	Decay-corrected Value (pCi/g)	Change
Cesium-134	2.06	53-01640	RE53-99-0184	7/9/1999	14.6	3.19	78%
Cesium-134	2.06	53-01070	0253-95-0029	5/10/1995	6.22	0.34	94%
Cesium-134	2.06	53-01316	0253-95-0234	11/29/1995	2.29	0.15	93%
Cobalt-60	5.27	53-02-20845	RE53-02-46743	8/15/2002	13	10.76	17%
Cobalt-60	5.27	53-01640	RE53-99-0184	7/9/1999	8.93	4.94	45%
Cobalt-60	5.27	53-01718	RE53-00-0093	9/15/2000	8.49	5.48	36%
Sodium-22	2.6	53-02-20843	RE53-02-46741	8/15/2002	21.9	14.92	32%
Sodium-22	2.6	53-01722	RE53-00-0058	9/18/2000	16.2	6.67	59%
Sodium-22	2.6	53-02-20845	RE53-02-46743	8/15/2002	12	8.18	32%

Table G-8.0-1
Comparison of 95% UCLs to Background Concentrations

Analyte	95% UCL	Range of Background Concentrations for Tuff				Range of Background Concentrations for Soil			
		Minimum	Median	Maximum	Mean	Minimum	Median	Maximum	Mean
Arsenic	1.67	0.25	0.7	5	0.881	0.3	4	9.3	3.95
Barium	51.16	1.4	19	51.6	20.9	21	130	410	143
Chromium (total)	4.47	0.25	1.35	13	1.98	1.9	8.6	36.5	9.05
Nickel	3.49	0.5	1	7	1.87	1	7	29	7.07
Selenium	0.36	0.1	0.1	0.105	0.101	0.1	0.3	1.7	0.447

Table G-8.0-2
Final ESL Comparison for SWMU 53-002(a)-99, Mesa Top

Analyte	95% UCL	Final ESL [a]	Receptor	Hazard Quotient	COPEC in Soil
Organic Chemicals (mg/kg)					
Acenaphthene	0.3[b]	0.25	Plant	**1.2**	Yes
Acetone	0.016	3.8	Deer mouse	0.0042	No
Aroclor-1254	0.16[b]	0.041	Robin (insectivore)	**3.9**	Yes
Aroclor-1260	0.018[b]	0.14	Fox	0.13	No
Benzene	0.0003[b]	55	Deer mouse	5.5E-06	No
Benzoic acid	0.076[b]	7.3	Deer mouse	0.01	No
BHC[alpha-] [c]	0.0008[b]	0.034	Shrew	0.024	No
BHC[gamma-]	0.00078[b]	0.034	Shrew	0.022	No
Bis(2-ethylhexyl)phthalate	0.15	1	Robin (insectivore)	0.15	No
Butanone[2-]	0.0053[b]	1300	Deer mouse	4.1E-06	No
Butylbenzylphthalate	0.09[b]	340	Shrew	0.00026	No
DDD[4,4'-] [d]	0.0031[b]	0.032	Robin (insectivore)	0.1	No
DDE[4,4'-]	0.00032[b]	0.032	Robin (insectivore)	0.01	No
DDT[4,4'-]	0.002[b]	0.09	Robin (insectivore)	0.022	No
Dieldrin	0.00097[b]	0.03	Shrew	0.032	No
Diethylphthalate [e]	0.054[b]	0.17	Robin (insectivore)	**0.32**	Yes
Di-n-butylphthalate	0.19	0.17	Robin (insectivore)	**1.12**	Yes
Endrin	0.00085[b]	0.0034	Plant	0.25	No
Fluoranthene	0.041[b]	26	Shrew	0.0016	No
Heptachlor	0.0011[b]	0.059	Shrew	0.019	No
Methylene chloride	0.013[b]	7.1	Deer mouse	0.0018	No
Methylphenol[4-] [f]	0.032[b]	0.79	Plant	0.041	No
Phenol	0.029[b]	0.79	Plant	0.037	No
Pyrene	0.038[b]	15	Shrew	0.0025	No
Toluene	0.0021	70	Shrew	0.00003	No
Trichloroethene	0.0013[b]	270	Deer Mouse	4.8E-06	No
Inorganic Chemicals (mg/kg)					
Hexavalent chromium	19.37	0.2	Earthworm	**96.85**	Yes
Selenium	0.36	0.1	Plant	**3.60**	Yes
Silver	0.43	0.05	Plant	**8.60**	Yes
Radionuclides (pCi/g)					
Americium-241	0.23	44	Earthworm	0.005	No
Cesium-134	0.55	320	Fox	0.002	No
Cobalt-60	1.04	550	Earthworm	0.002	No
Sodium-22	1.47	3400	Fox	0.0004	No
Strontium-90	0.66	560	Fox	0.001	No

Table G-8.0-2 (continued)

Analyte	95% UCL	Final ESL [a]	Receptor	Hazard Quotient	COPEC in Soil
Tritium	28.89	36000	Plant	0.001	No
Uranium-234	1.21	51	Earthworm	0.024	No
Uranium-235	0.11	55	Earthworm	0.002	No
Uranium-238	1.23	55	Earthworm	0.022	No

[a] From LANL's Ecorisk Database Version 2.0 (LANL 2003, 80117).

[b] Maximum value.

[c] ESL for BHC[gamma-] used as a surrogate based on structural similarity.

[d] ESL for DDE[4,4'-] used a surrogate based on structural similarity.

[e] ESL for di-n-butyl phthalate used as a surrogate based on structural similarity.

[f] ESL for phenol used as a surrogate based on structural similarity.

Table G-8.0-3
HI Analysis for SWMU 53-002(a)-99, Mesa Top

Analyte	95% UCL	Receptor										
		Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Hexavalent chromium	1.23	<0.01	<0.01	<0.01	0.01	0.02	0.02	<0.01	0.01	<0.01	**6.15**	**3.51**
Selenium	0.36	<0.01	<0.01	0.04	0.04	0.18	**0.33**	<0.01	**0.40**	0.19	0.05	**3.6**
Silver	0.43	<0.01	<0.01	<0.01	0.01	0.02	0.03	<0.01	<0.01	<0.01	—[a]	**8.6**
Acenaphthene	0.3[b]	<0.01	—	—	—	—	—	<0.01	<0.01	<0.01	—	**1.2**
Aroclor-1254	0.16[b]	**1.1**	**0.73**	**0.9**	0.11	**2**	**3.9**	<0.01	**0.4**	0.2	—	<0.01
Diethylphthalate	0.054[b]	<0.01	0.015	0.041	0.061	0.2	**0.32**	<0.01	<0.01	<0.01	—	<0.01
Di-n-butylphthalate	0.19	<0.01	0.05	0.17	0.21	**0.66**	**1.12**	<0.01	<0.01	<0.01	—	<0.01
HI for Receptor		1.1	0.75	1.1	0.44	3.1	**5.7**	<0.01	0.81	0.39	**6.2**	**16.9**

[a] — = Not applicable.

[b] Maximum value used.

Table G-8.0-4
HI Summary with PAUF Adjustment for SWMU 53-002(a)-99, Mesa Top

Receptor	Unadjusted HI	Population Area (ha)	Population Area Use Factor (PAUF)	HI Adjusted by PAUF
Robin-Insectivore	5.7	16.8	0.19	1.1
Robin-Omnivore	3.1	16.8	0.19	0.6
Kestrel-Omnivore	1.1	4240	0.0008	0.0009
Red Fox	1.1	41520	0.00008	0.00009

Table G-8.0-5
Comparison of 95% UCLs to Background Concentrations

Analyte	95% UCL	Range of Background Concentrations for Soil				Range of Background Concentrations for Sediment			
		Minimum	Median	Maximum	Mean	Minimum	Median	Maximum	Mean
Antimony	1.03	0.1	0.5	1	0.505	na*	na	na	na
Lead	16.57	2	12	28	12.7	2	8.9	25.6	9.25
Selenium	0.27	0.1	0.3	1.7	0.447	0.1	0.1	0.1	0.1

*na = No background values exist for sediment for antimony.

Table G-8.0-6
Final ESL Comparison for SWMU 53-002(a)-99, Reaches

Analytes	95%UCL	Final Soil ESL [a]	Receptor	Hazard Quotient	COPEC in Sediment
Organic chemicals (mg/kg)					
Acetone	0.0098	3.8	Deer mouse	0.0026	No
Aroclor-1254	0.041	0.041	Robin (insectivore)	**1.00**	Yes
Aroclor-1260	0.017	0.14	Robin (insectivore)	0.12	No
Benzoic Acid	0.85	7.3	Deer mouse	0.12	No
4,4'-DDE	0.0022	0.032	Robin (insectivore)	0.07	No
4,4'-DDT	0.0019	0.09	Robin (insectivore)	0.02	No
Dichlorobenzene[1,2-][b]	0.00057[c]	1.2	Earthworm	4.75E-04	No
Dichlorobenzene[1,3-][b]	0.00069[c]	1.2	Earthworm	5.75E-04	No
Dichlorobenzene[1,4-]	0.0015[c]	1.2	Earthworm	0.0013	No
Fluoranthene	0.088[c]	26	Shrew	0.0034	No
Pyrene	0.0101[c]	15	Shrew	6.73E-04	No
Tetrachloroethene	0.00073[c]	5.4	Deer mouse	1.34E-04	No
Toluene	0.0023	70	Shrew	3.29E-05	No
Trichloroethene	0.00061[c]	270	Deer mouse	2.26E-06	No
Xylene (total)	0.0015	5.4	Shrew	2.78E-04	No
Radionuclides (pCi/g)					
Americium-241	0.086	44	Earthworm	1.95E-03	No
Cesium-134	0.59	320	Fox	1.84E-03	No
Cobalt-60	1.49	550	Earthworm	2.71E-03	No
Tritium	0.067	36000	Plant	1.86E-06	No

[a] From LANL's Ecorisk Database Version 2.0 (LANL 2003, 80117).

[b] ESL for 1,4-dichlorobenzene used as a surrogate based on structural similarity.

[c] Maximum value used.

Table G-8.0-7
HI Analysis for SWMU 53-002(a)-99, Reaches

Receptor	95% UCL	Red Fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Aroclor-1254	0.041	0.27	0.19	0.24	0.03	**0.51**	**1.0**	<0.01	0.09	0.05	—*	<0.01

*— = no HQ because an ESL for earthworm and Aroclor-1254 is not available.

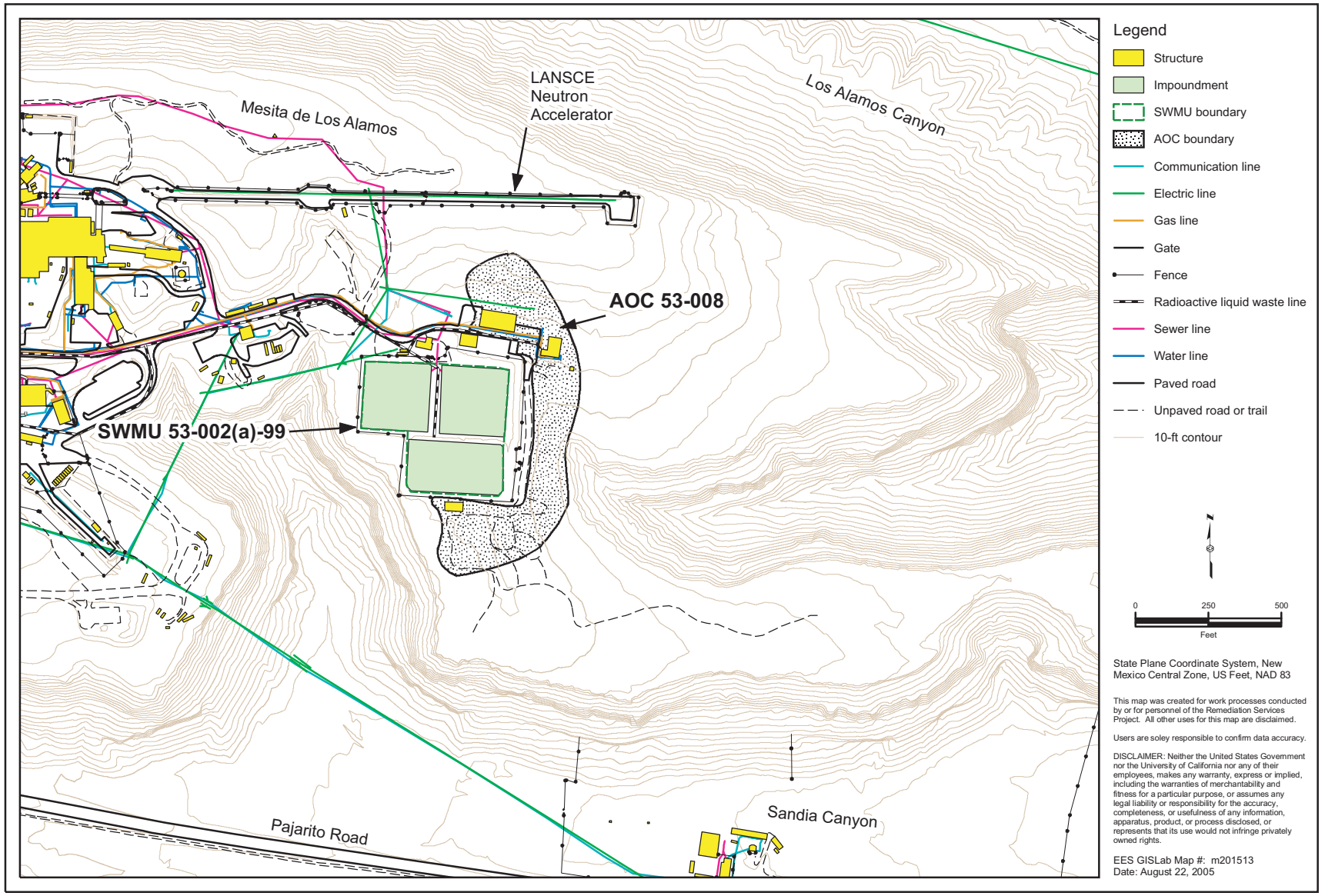
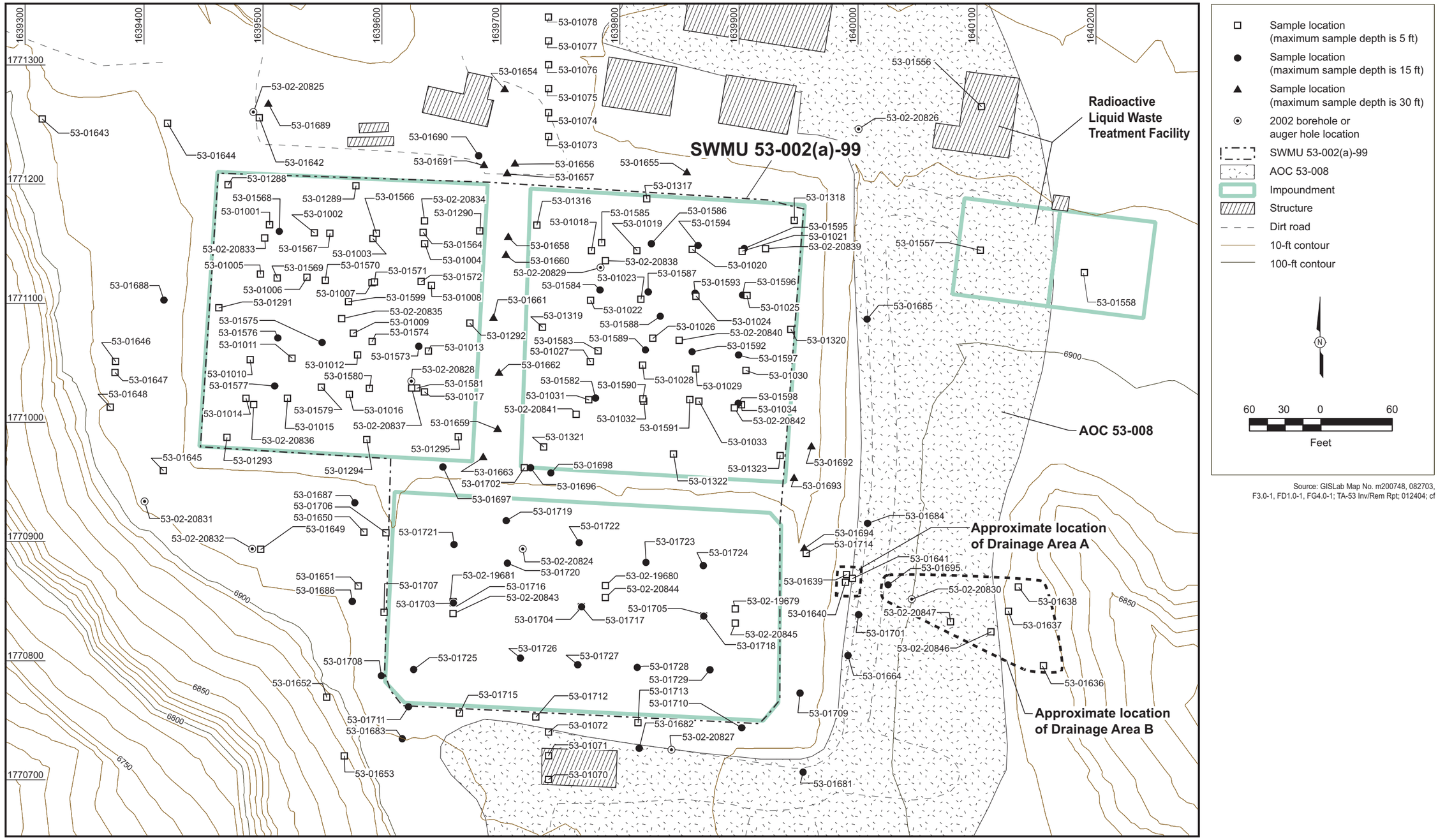


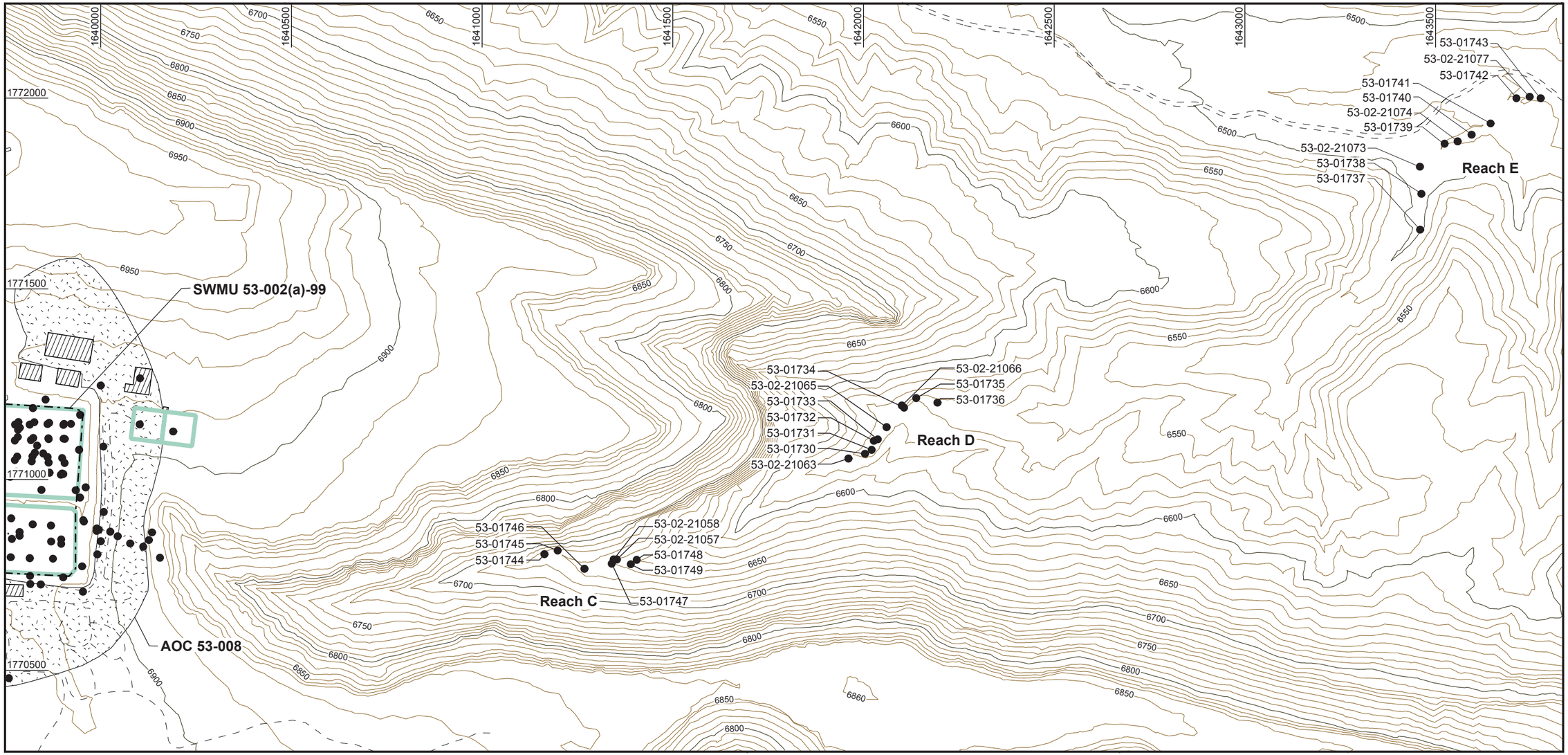
Figure G-2.0-1. East end of TA-53, including SWMU 53-002(a)-99, AOC 53-008, Los Alamos Canyon, and Sandia Canyon

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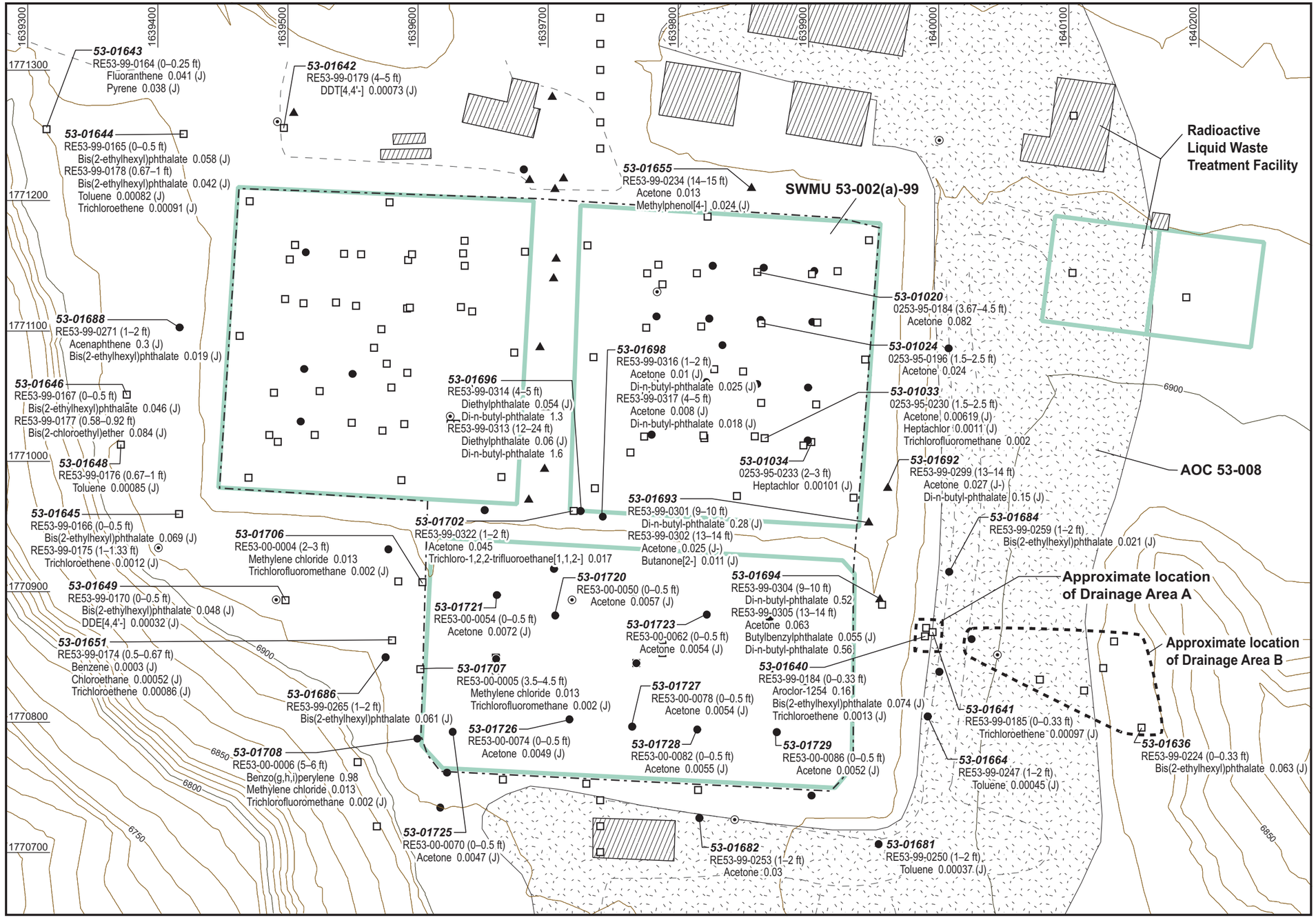
Source: GISLab Map No. m200748, 082703, F3.0-1, FD1.0-1, FG4.0-1; TA-53 Inv/Rem Rpt; 012404; cf

Figure G-4.0-1. SWMU 53-002(a)-99 mesa-top sample locations



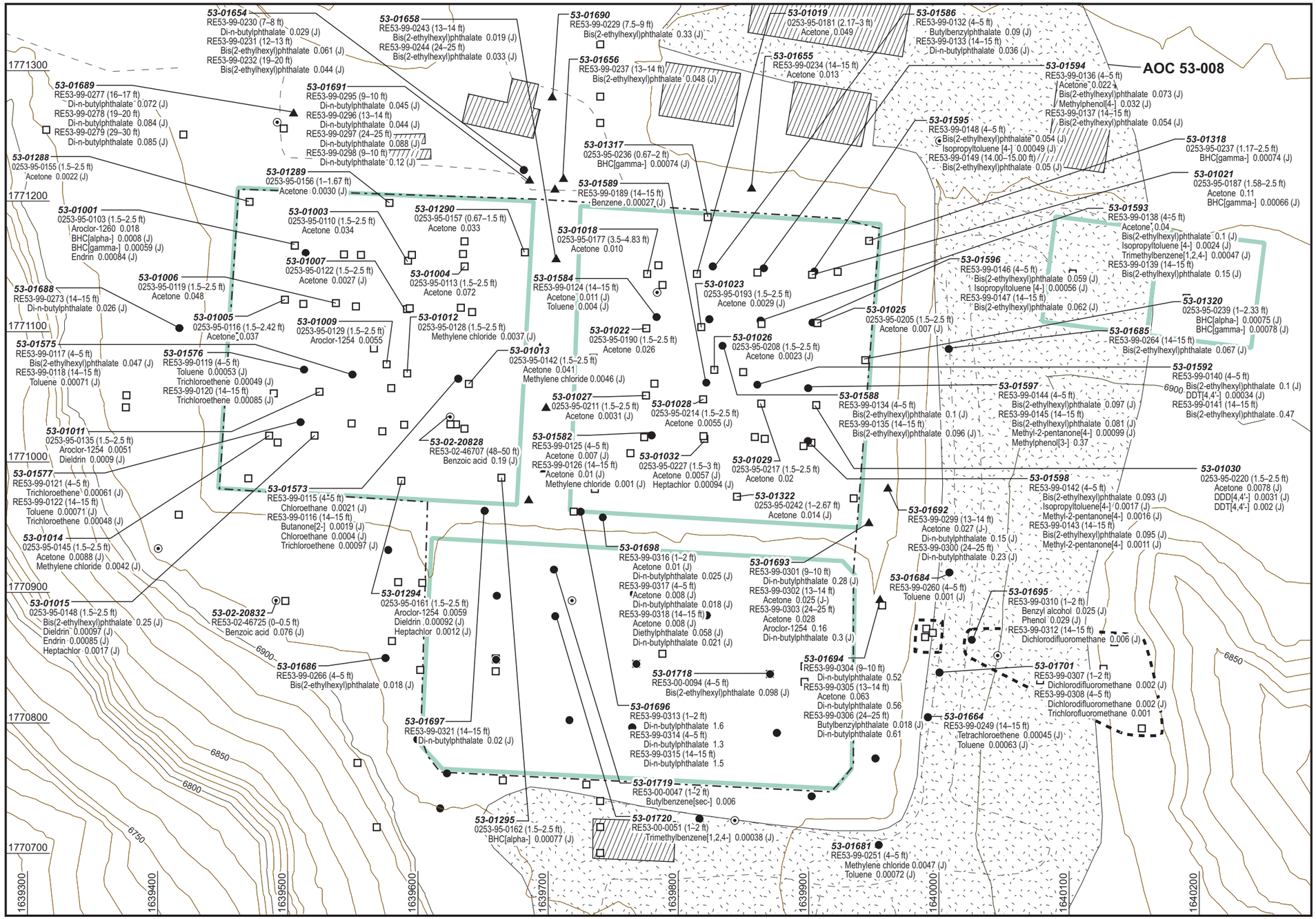
Source: GISLab Map No. M200749, 082703_TA-53 report, 010804, ptm
Rev. for F3.0-3, FD-1.0-2, FG-4.0-2; TA-53 Inv/Rem Rpt; 012804; cf

Figure G-4.0-2. SWMU 53-002(a)-99 reach sample locations



Source: GISLab Map No. M200748, 082703, modified for F4.0-3, TA-53 Inv/Rem Rpt, 012804, cf modified for F4.0-3, TA-53 rpt Rev. 1, 082205, ptm

Figure G-4.0-3. Organic COPCs detected in mesa-top soil samples at SWMU 53-002(a)-99



Sample location (maximum sample depth is 5 ft)
Sample location (maximum sample depth is 15 ft)
Sample location (maximum sample depth is 30 ft)
2002 borehole or auger hole location
SWMU 53-002(a)-99
AOC 53-008
Impoundment
Structure
Dirt road
10-ft contour
100-ft contour

Notes: Units are mg/kg

J = The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.

J- = The analytel was positively identified, and the result is likely to be biased low.

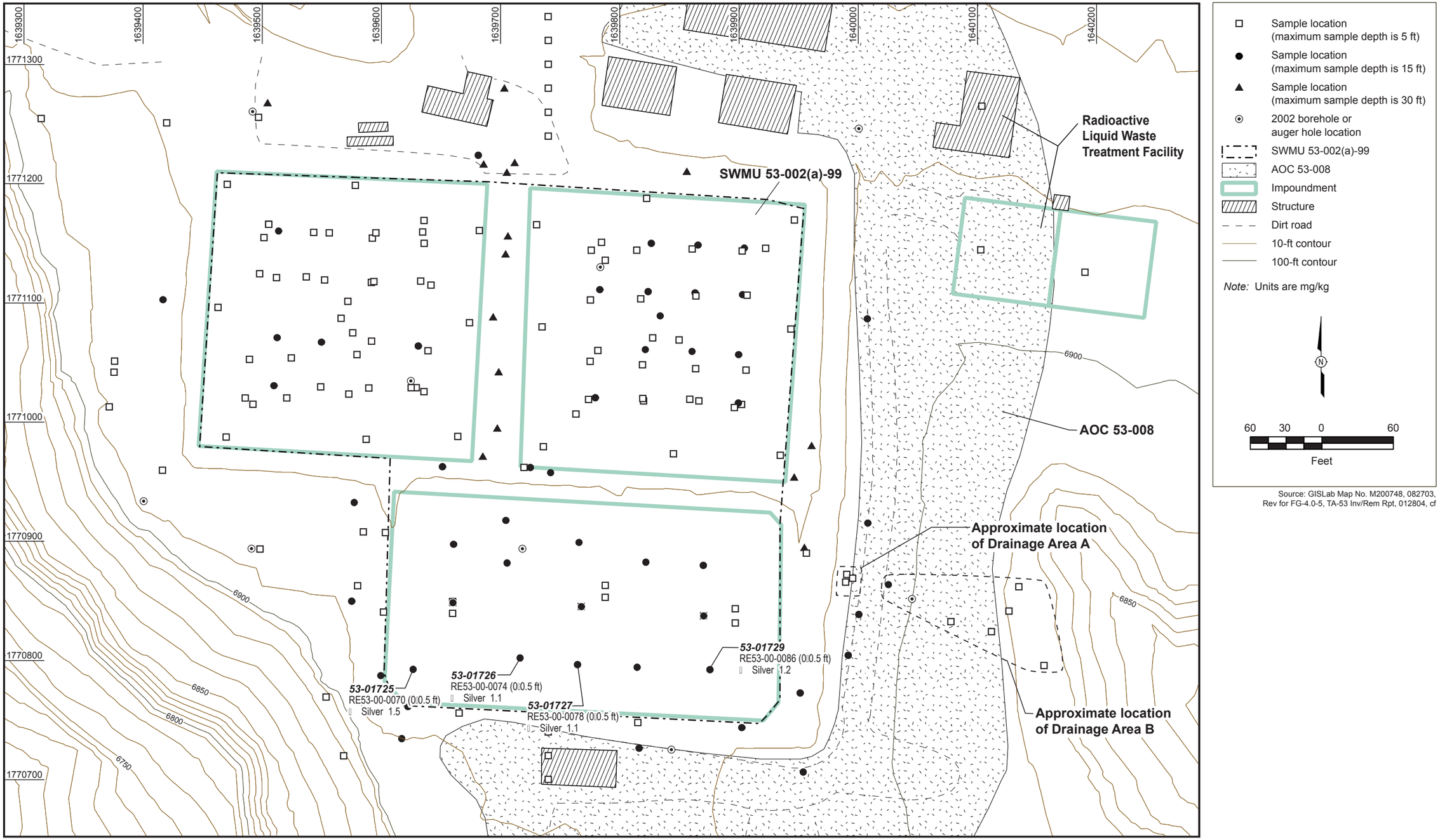
N

60 30 0 60

Feet

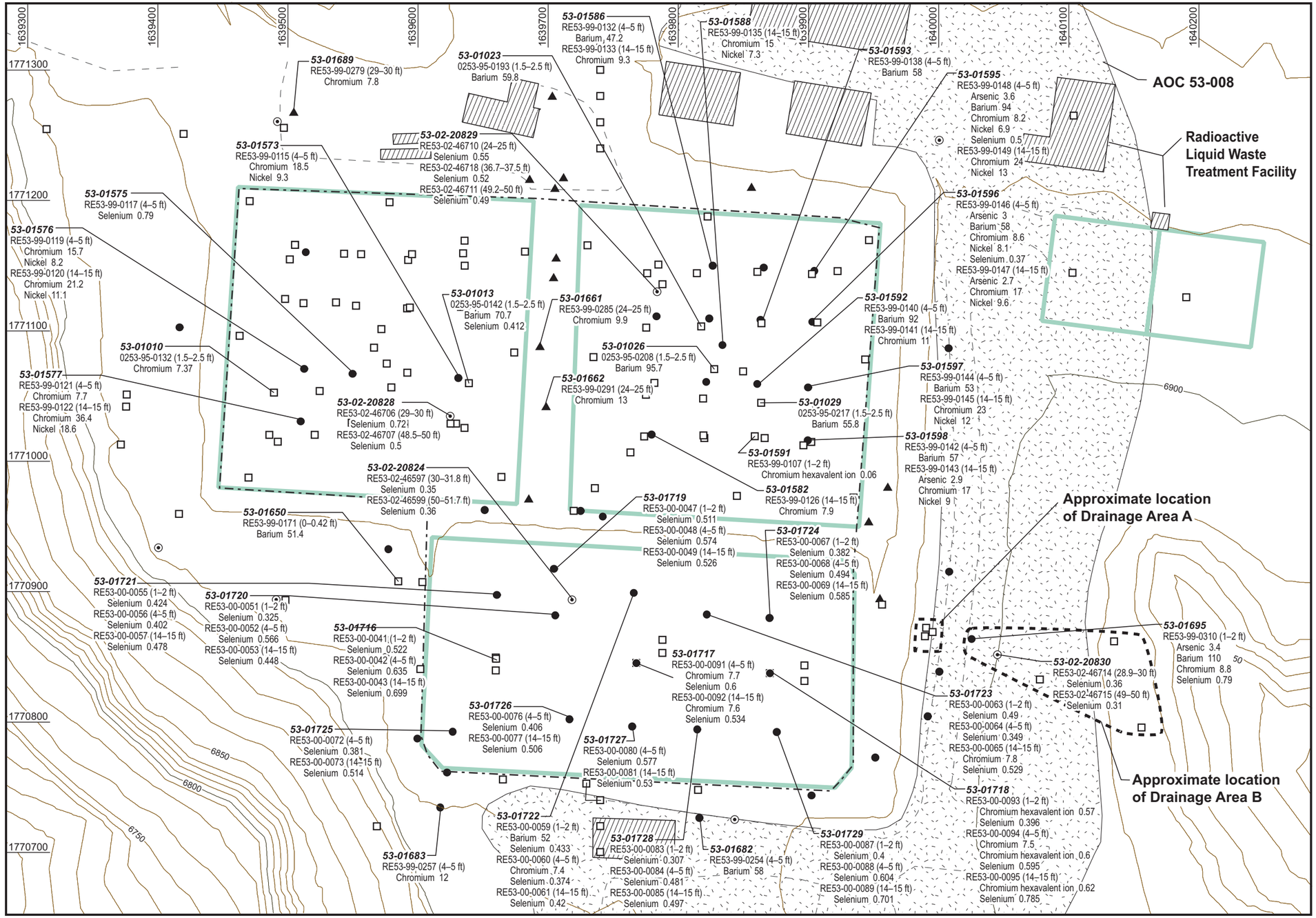
Source: GISLab Map No. M200748, 082703 modified for FG-4.0-4, TA-53 Inv/Rem Rpt, 012804, cf modified for FG-4.0-4, TA-53 rpt Rev. 1, 082205, ptm

Figure G-4.0-4. Organic COPCs detected in mesa-top tuff samples at SWMU 53-002(a)-99



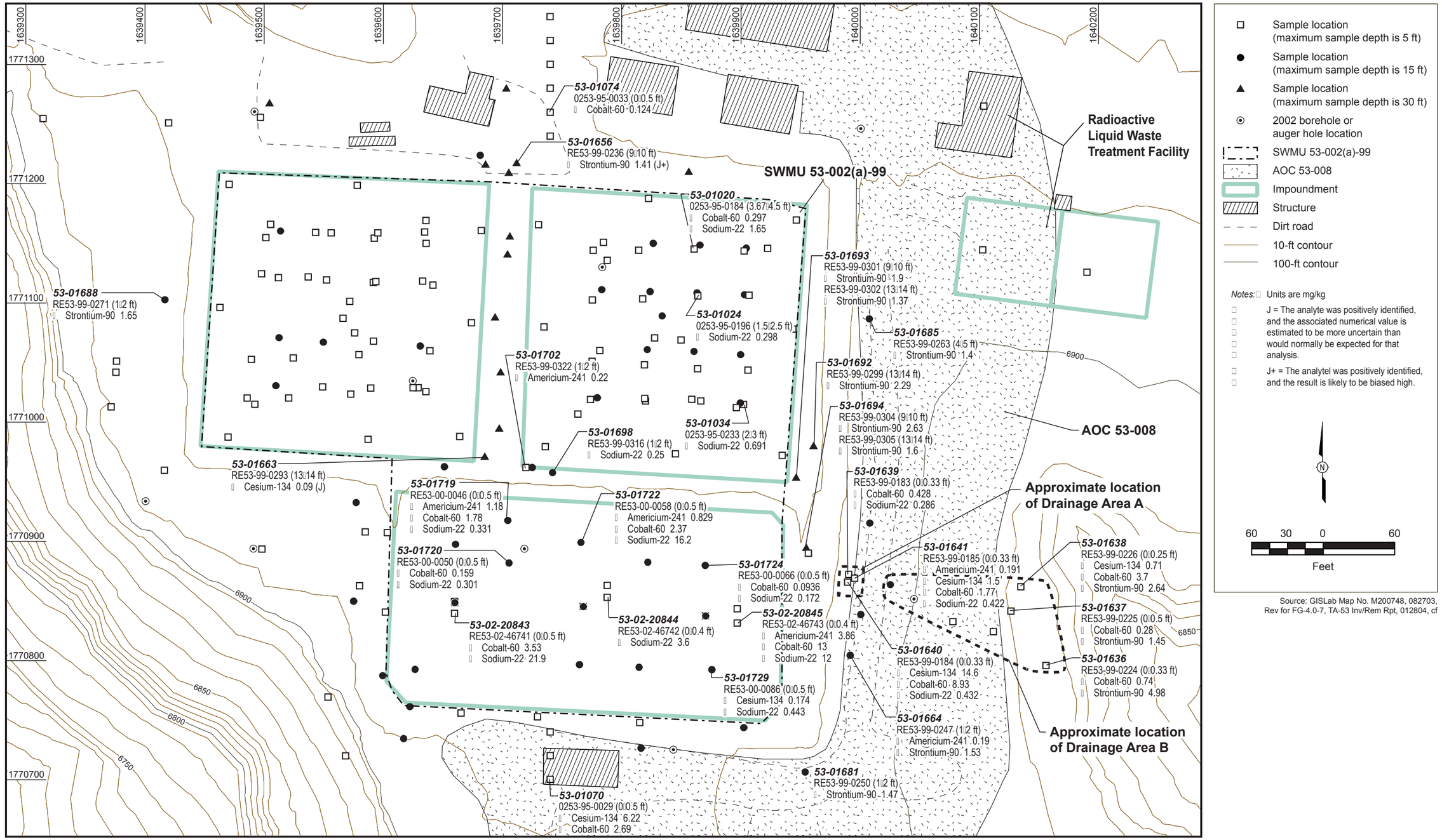
Source: GISLab Map No. M200748, 082703, Rev for FG-4.0-5, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-5. Inorganic COPCs detected above background values in mesa-top soil samples at SWMU 53-002(a)-99



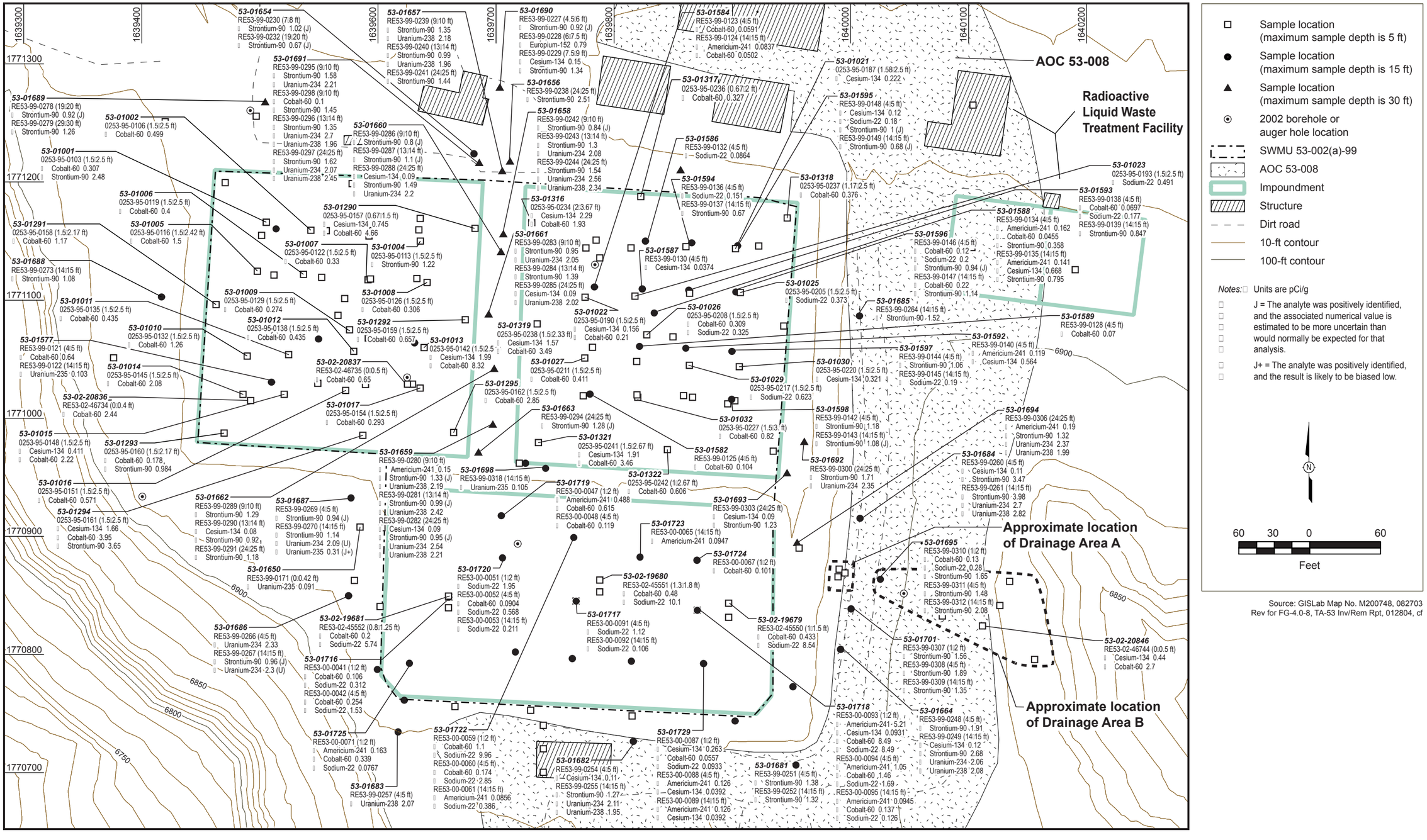
Source: GISLab Map No. M200748, 082703, Rev for FG-4.0-6, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-6. Inorganic COPCs detected above background values in mesa-top tuff samples at SWMU 53-002(a)-99



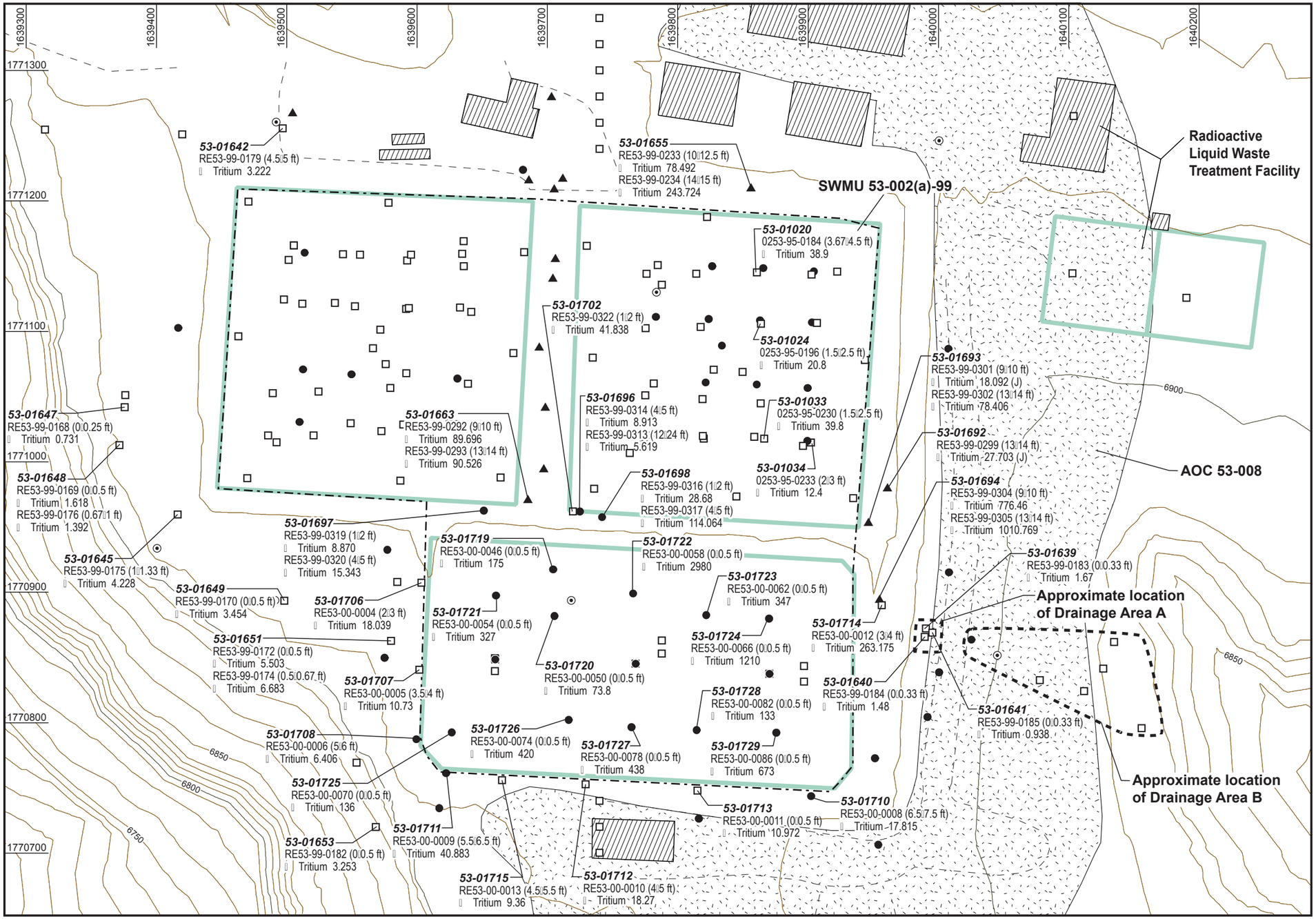
Source: GISLab Map No. M200748, 082703, Rev for FG-4.0-7, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-7. Radionuclide COPCs detected above background values in mesa-top soil samples at SWMU 53-002(a)-99



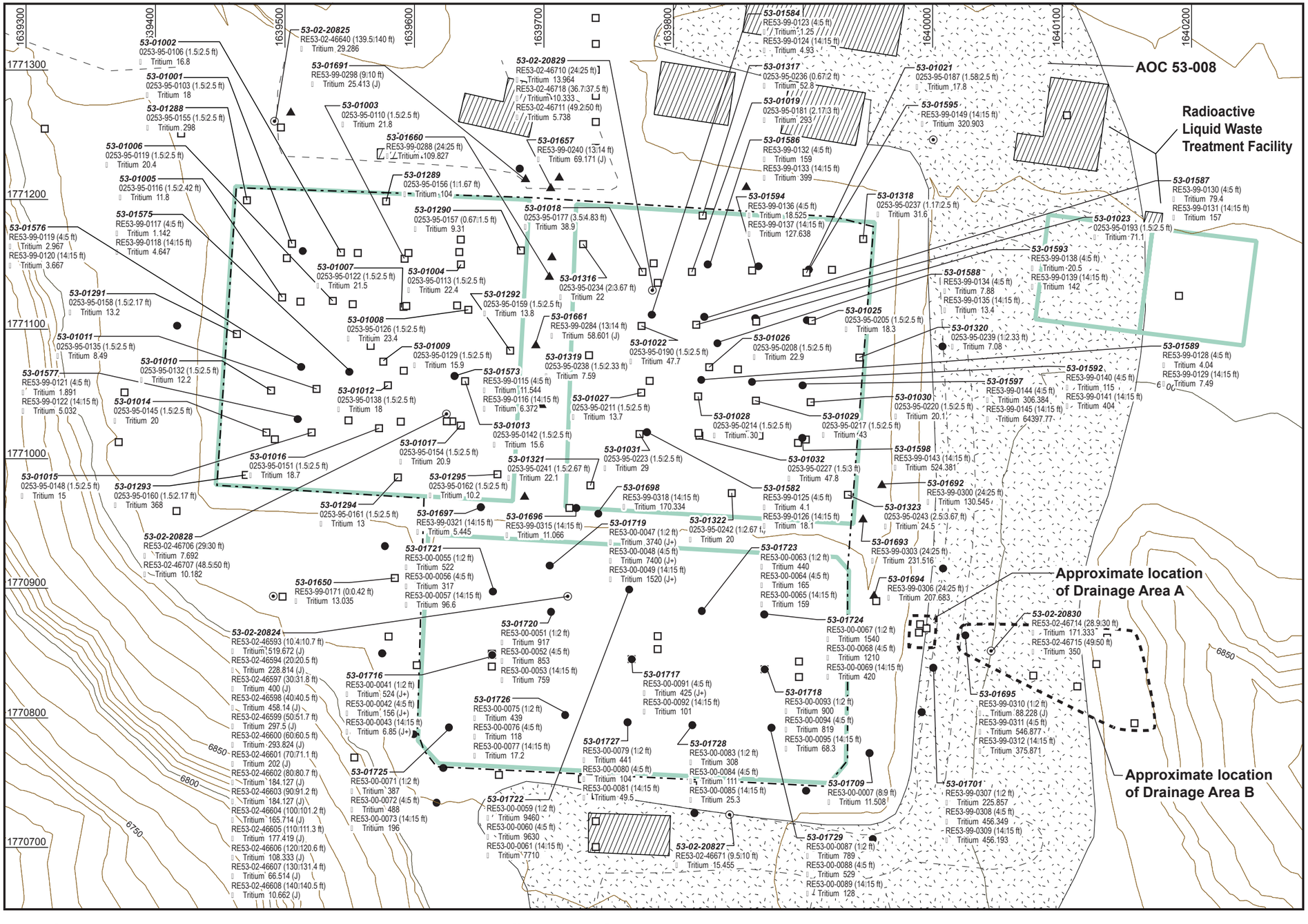
Source: GISLab Map No. M200748, 082703
Rev for FG-4.0-8, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-8. Radionuclide COPCs detected above background values in mesa-top tuff samples at SWMU 53-002(a)-99



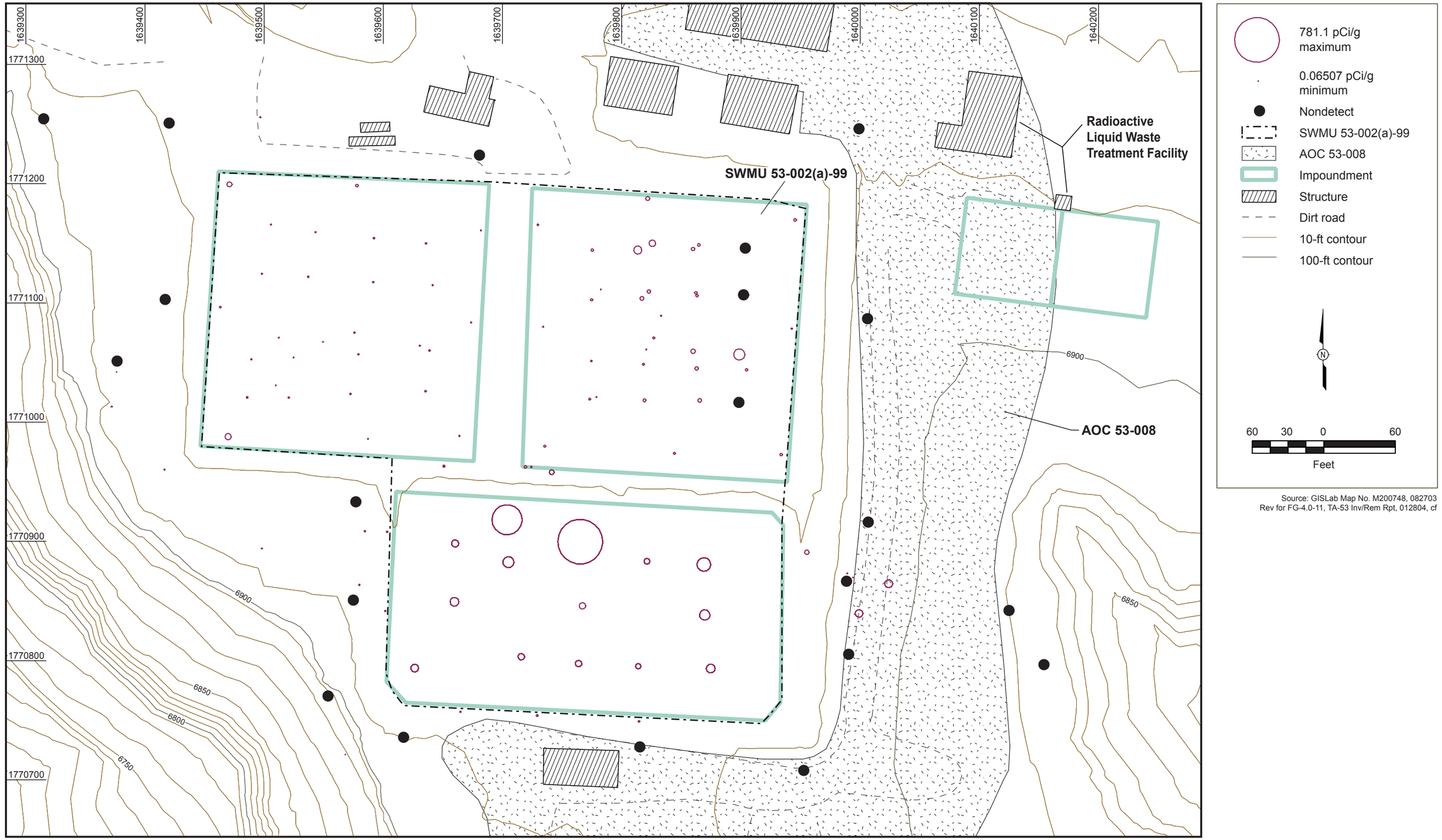
Source: GISLab Map No. M200748, 082703, Rev. for FG-4.0-9, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-9. Tritium detected above background value in mesa-top soil samples at SWMU 53-002(a)-99



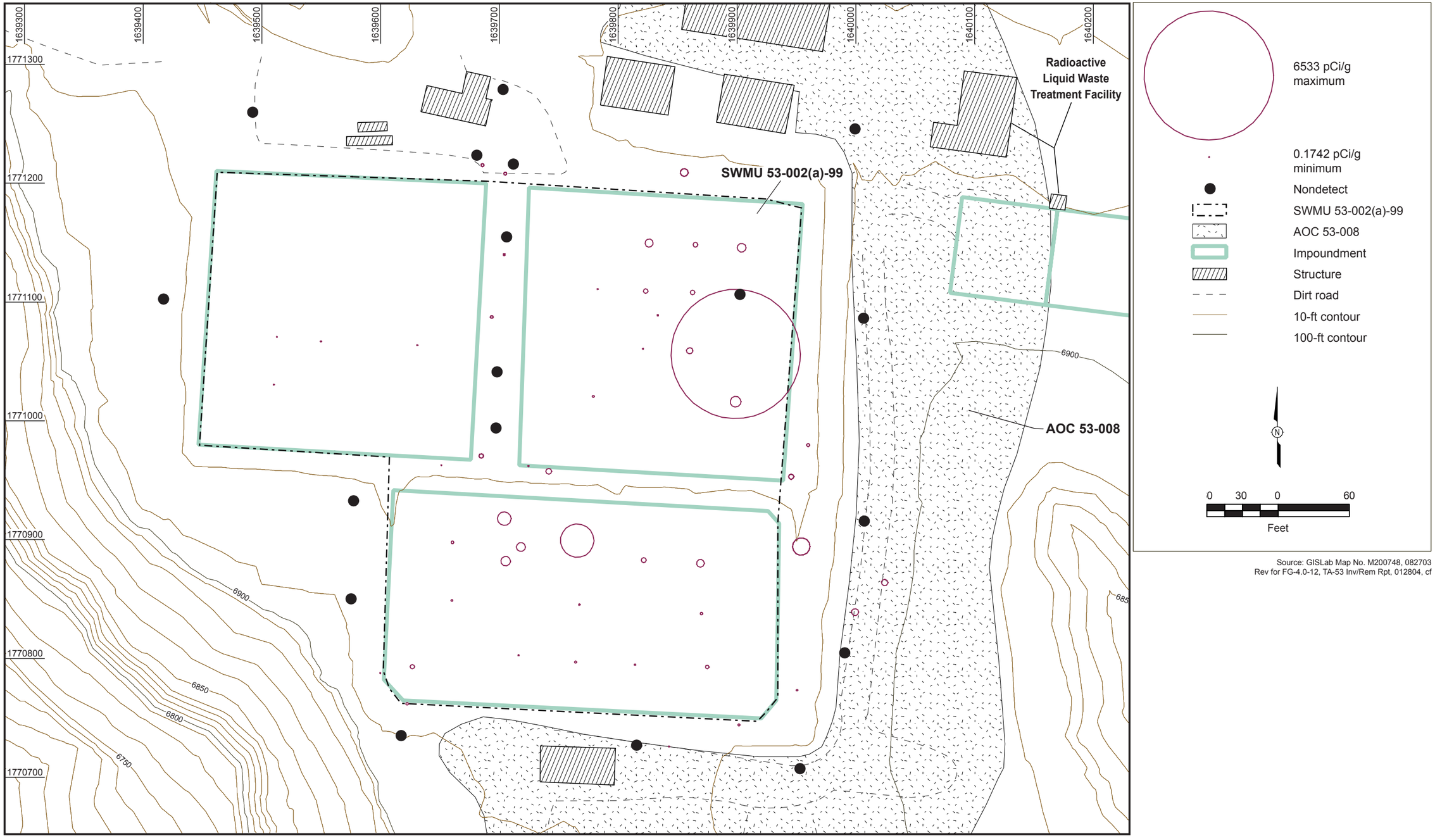
Source: GISLab Map No. M200748, 082703
Rev for FG-4.0-10, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-10. Tritium detected above background value in mesa-top tuff samples at SWMU 53-002(a)-99



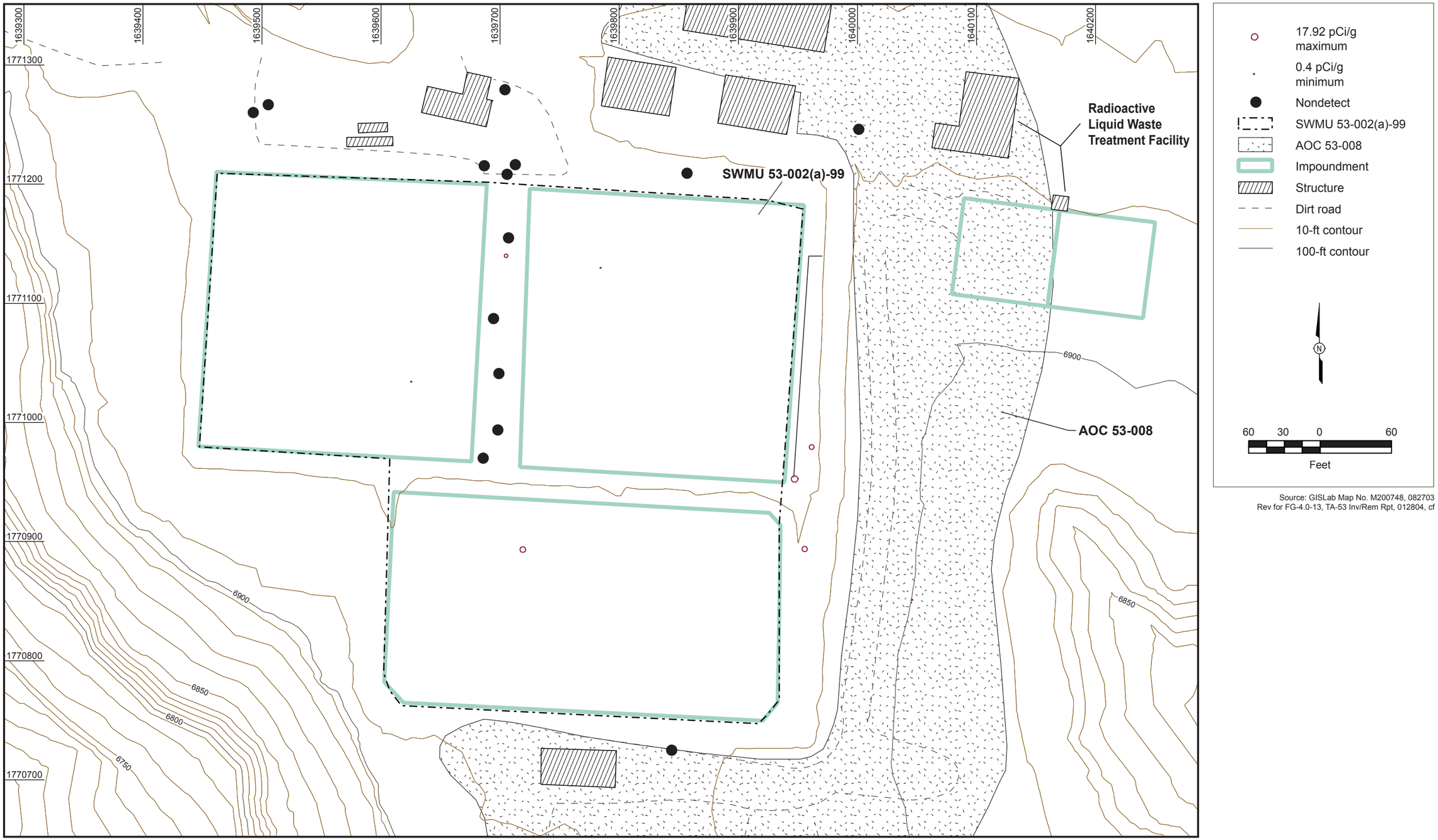
Source: GISLab Map No. M200748, 082703
Rev for FG-4.0-11, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-11. Tritium bubble plot for samples from 0 to 5 ft bgs at SWMU 53-002(a)-99



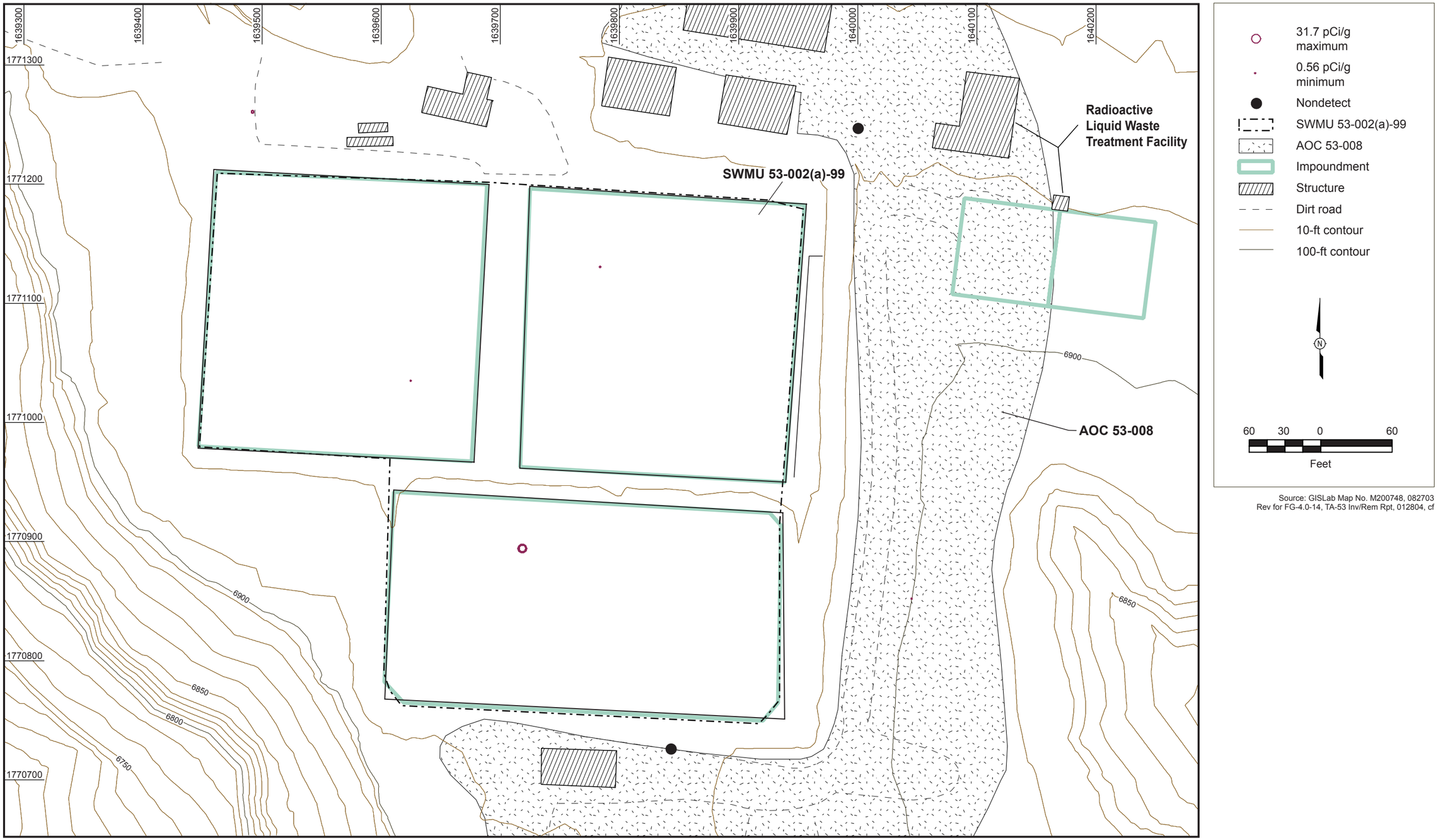
Source: GISLab Map No. M200748, 082703
Rev for FG-4.0-12, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-12. Tritium bubble plot for samples from 5 to 15 ft bgs at SWMU 53-002(a)-99



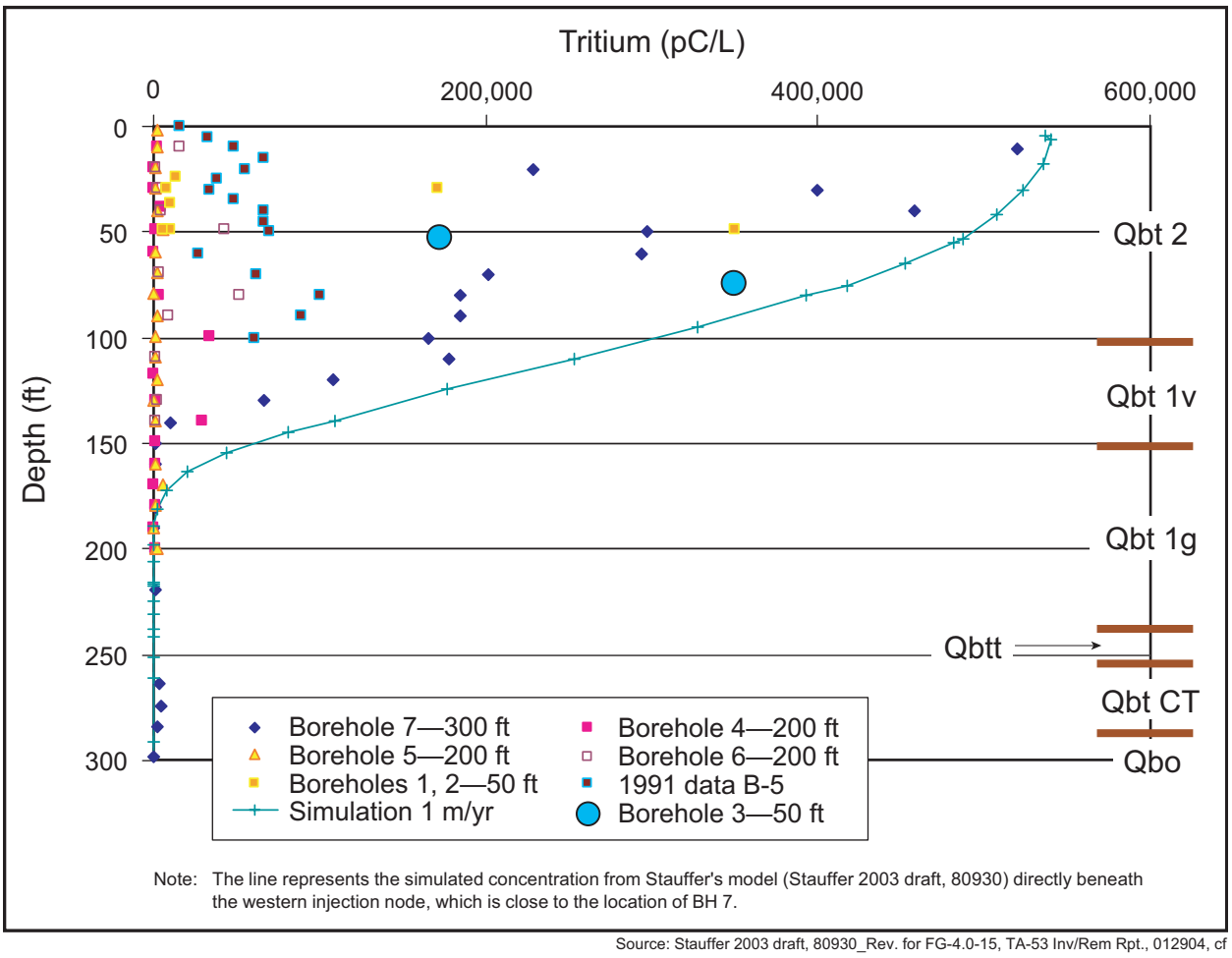
Source: GISLab Map No. M200748, 082703
Rev for FG-4.0-13, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-13. Tritium bubble plot for samples from 15 to 30 ft bgs at SWMU 53-002(a)-99



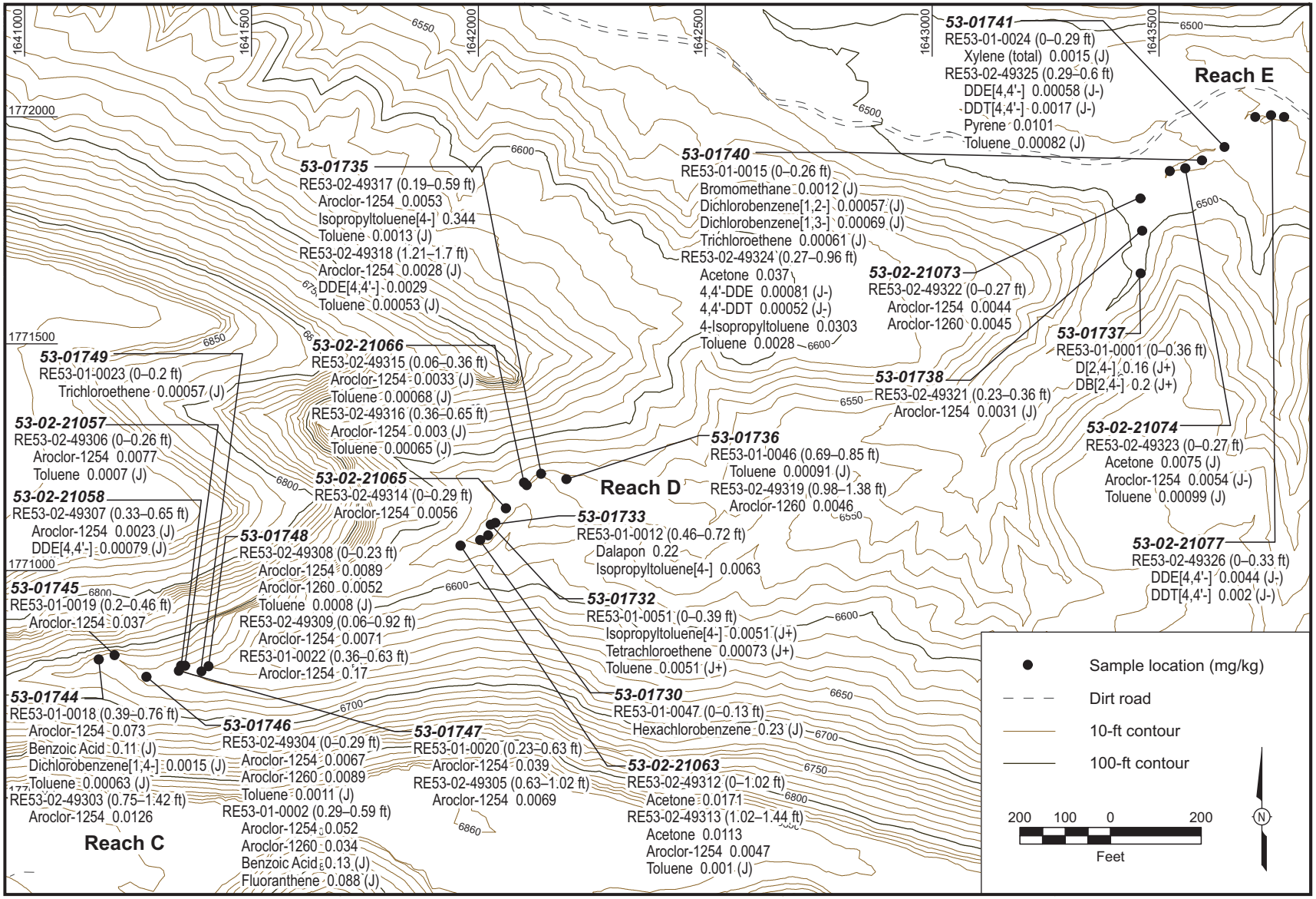
Source: GISLab Map No. M200748, 082703
Rev for FG-4.0-14, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-14. Tritium bubble plot for samples >30 ft bgs at SWMU 53-002(a)-99



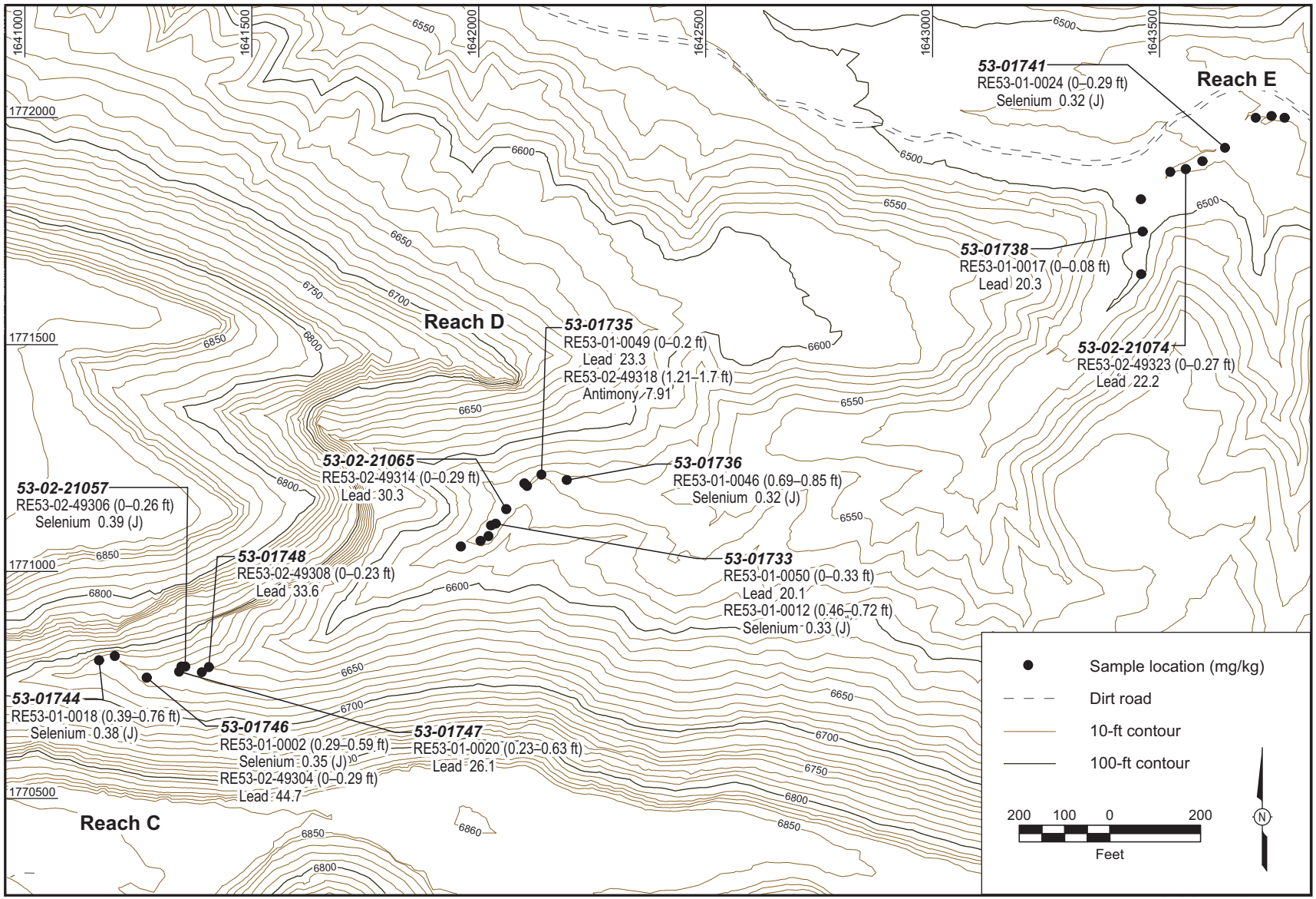
Source: Stauffer 2003 draft, 80930_Rev. for FG-4.0-15, TA-53 Inv/Rem Rpt., 012904, cf

Figure G-4.0-15. Actual tritium concentrations in pCi/L from the 2002 boreholes



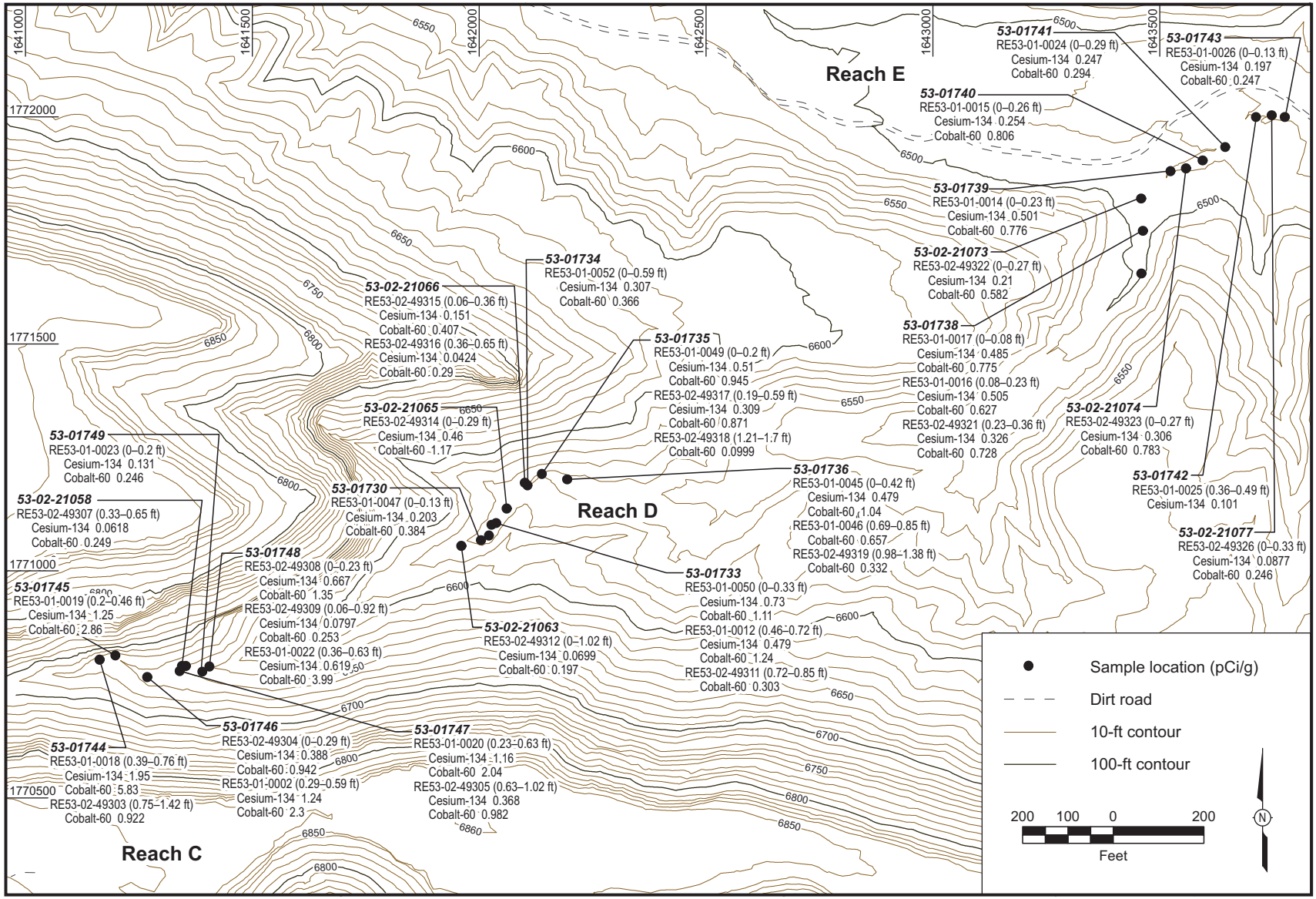
Source: GISLab Map No. M200749, 082703; modified for FG-4.0-16, TA-53 Inv/Rem Rpt, 012804, cf; modified for FG-4.0-16, TA-53 rpt Rev. 1, 082205, ptm

Figure G-4.0-16. Organic COPCs detected in SWMU 53-002(a)-99 reach samples



Source: GISLab Map No. M200749, 082703_Rev for FG-4.0-17, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-17. Inorganic COPCs detected above background values in SWMU 53-002(a)-99 reach samples



Source: GISLab Map No. M200749, 082703_Rev for FG-4.0-18, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-18. Radionuclide COPCs detected above background values in SWMU 53-002(a)-99 reach samples

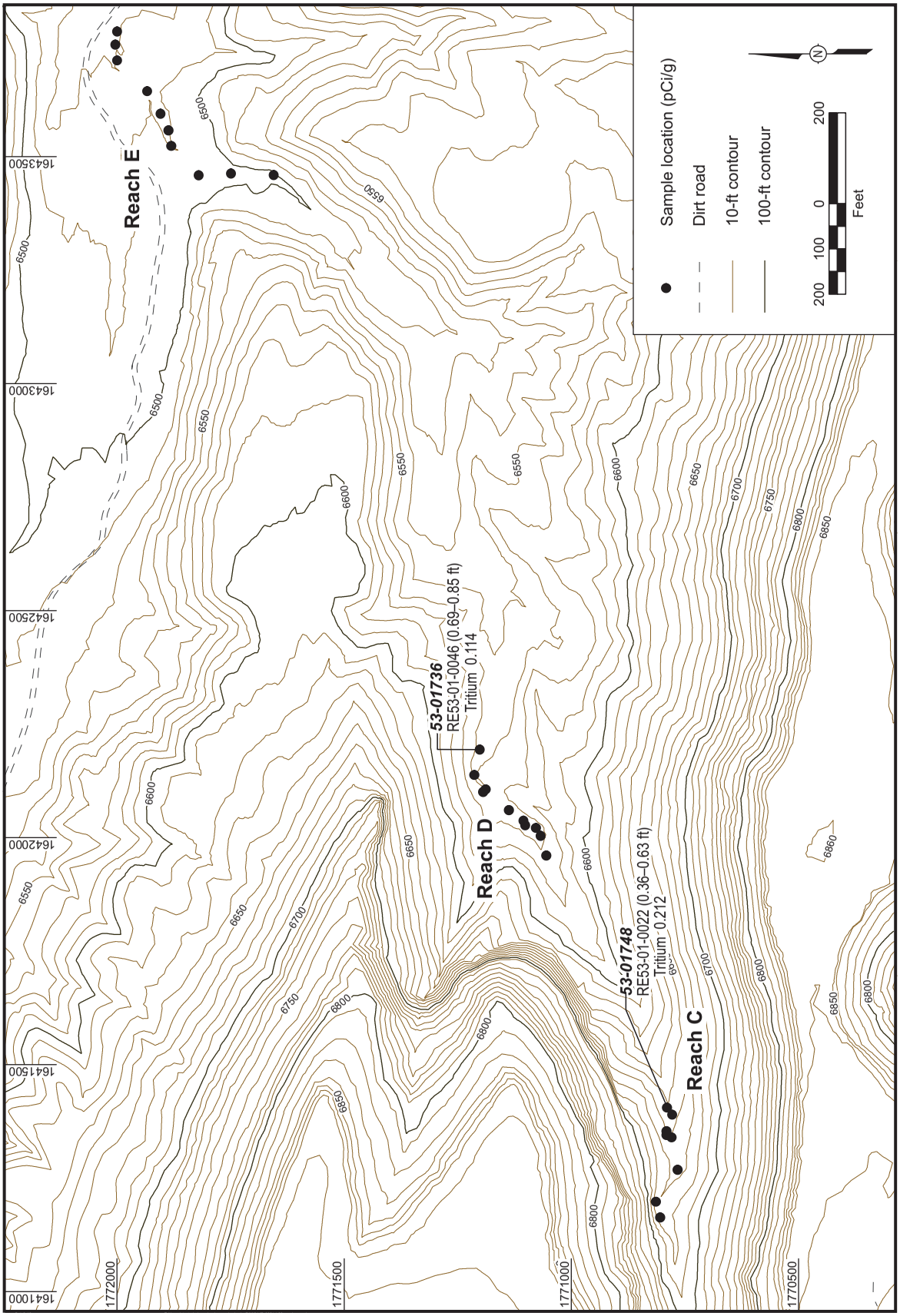
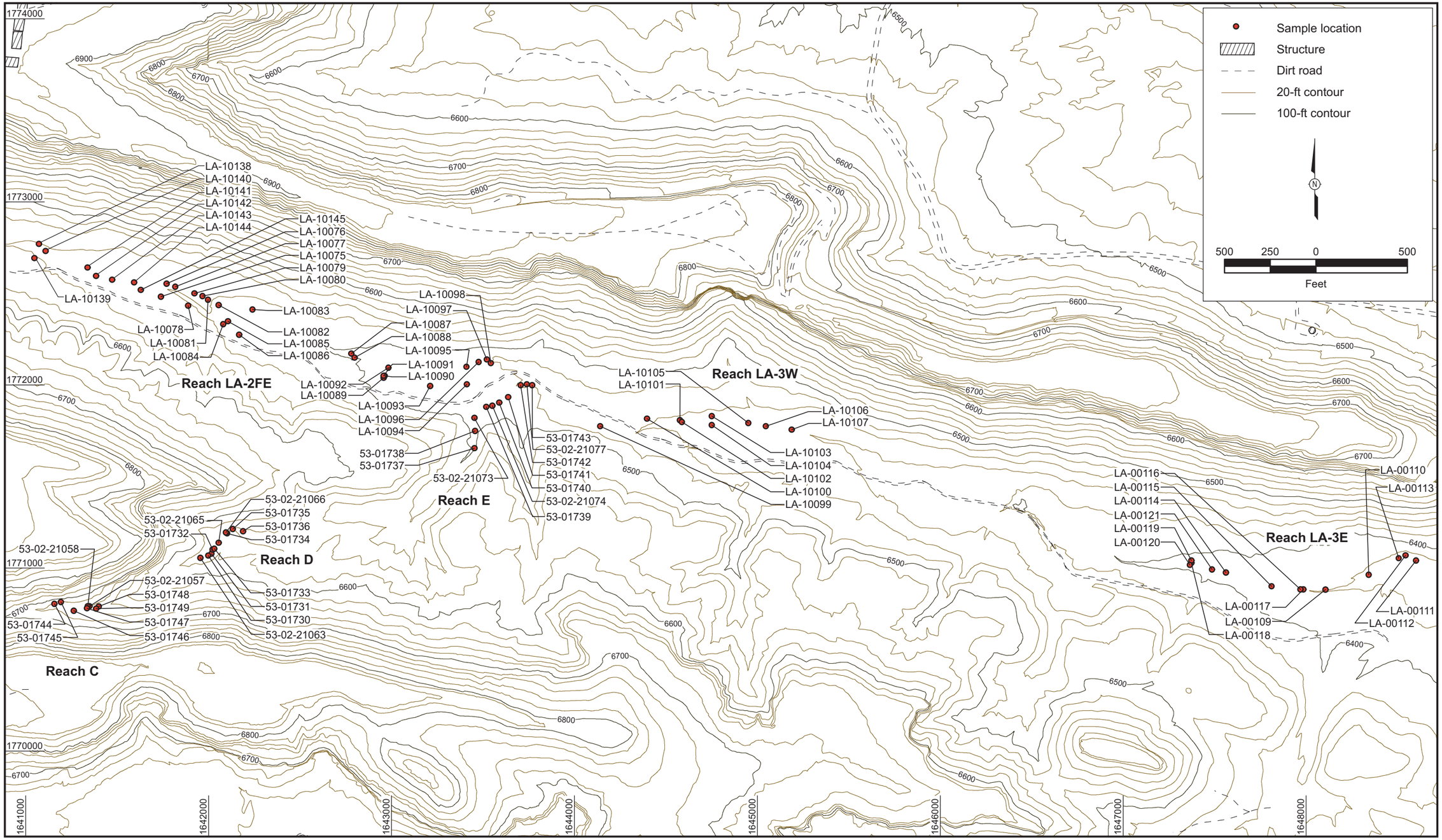


Figure G-4.0-19. Tritium detected above background value in SWMU 53-002(a)-99 reach samples

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Source: GIS Lab Map No. M200874, 112003_Rev for FD-7.1-0 and FG-4.0-20, TA-53 Inv/Rem Rpt, 012804, cf

Figure G-4.0-20. Sample locations in Reaches C, D, E, LA-2FE, LA-3E, and 3W

Figure G-5.0-1. Conceptual site model of contaminant transport and exposure at SWMU 53-002(a)-99



Photograph G-3.0-1. Post-remediation view of northeastern (foreground) and southern (background) impoundments, looking southeast



Photograph G-3.0-2. Post-remediation view of northwestern impoundment, looking south



Photograph G-3.0-3. View of AOC 53-008 storage area, to the south of southern impoundment



Photograph G-3.0-4. View of berm on eastern side of impoundments, looking south



Photograph G-3.0-5. View of inside of southern impoundment



Photograph G-3.0-6. Berm on northern side of northern impoundments, stabilized by vegetation; looking east-southeast

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Attachment 1 to Appendix G

UCL Calculations

UCL CALCULATIONS

The U.S. Environmental Protection Agency (EPA) guidance, "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 73593), and recommendations in the user's guide for the software program ProUCL (Lockheed Martin 2002, 73767) were followed to calculate the upper confidence limits (UCLs) for Solid Waste Management Unit 53-002(a)-99 chemicals of potential concern (COPCs). For individual chemical constituents, the UCL calculations were performed using detected concentrations. Nondetected concentrations for inorganic and organic chemicals were included at one-half of the detection limit. The radionuclide data were used as reported only if all of the reported results (detects and nondetects) were positive. If any of the reported radionuclide results were negative, a constant value was added to the dataset to make all values positive for the purposes of the UCL calculations, because the ProUCL program cannot handle negative values. Outputs from the calculations performed using the constant value were readjusted by subtracting the same constant value before reporting. For the UCLs for human health evaluation, the results for a particular COPC were used if the sample was collected at a depth of less than 12 ft. The UCLs for ecological evaluation were based on the data for a particular analyte where the sample collected was at a depth of less than 5 ft.

The EPA recommends using the average concentration to represent "a reasonable estimate of the concentration likely to be contacted over time" (EPA 1989, 08021) and using the 95% (UCL) "because of the uncertainty associated with estimating the true average concentration at a site" (EPA 1989, 08021). The choice of UCL calculation method is based on the p-value for the data distribution as established by performing the Shapiro-Wilk W-test. If the p-value indicates that the untransformed data are not significantly different from normal (p-value greater than 0.05), then the normal distribution is assumed. If the p-value is less than 0.05, then normality is rejected and lognormality is considered. If the log-transformed data are not significantly different from normal, then lognormality is assumed. If the p-value is less than 0.05, then lognormality is rejected and a nonparametric (distribution-free) UCL calculation method is used.

For data with a normal distribution, the UCL is based upon the t-statistic. For data with a lognormal distribution, the UCL is based upon the Land method, which uses the H-statistic (EPA 2002, 73593, Exhibit 3; Gilbert 1987, 0312). Depending upon the degree of skew present in the data and sample size, an alternative to the H-statistic may be used (EPA 2002, 73593, Exhibit 7; Lockheed Martin 2002, 73761, Table 1). The alternative is based on the Chebyshev inequality, which uses minimum variance unbiased estimates of the lognormal parameters (EPA 2002, 73593, Exhibits 5 and 6). For data distributions that are neither normal nor lognormal, a nonparametric estimate is used. The nonparametric estimate used in these calculations is based on the Chebyshev inequality, which uses the sample mean (arithmetic average) and sample standard deviation (EPA 2002, 73593, Exhibit 12). If the calculated UCL is larger than the maximum result, the maximum for the UCL is used (EPA 1989, 08021, pp. 6–22). The 95% UCLs calculated by ProUCL are presented in Tables G-4.0-11, G-4.0-12, and G-4.0-13.

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Attachment 2 to Appendix G

Radionuclide Industrial and Residential SALs

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Dose Conversion Factor (and Related) Parameter Summary
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Menu	Parameter	Current Value	Default	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.720E+00	6.720E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Co-60	2.190E-04	2.190E-04	DCF2(3)
B-1	Cs-134	4.630E-05	4.630E-05	DCF2(4)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(5)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(6)
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(8)
B-1	Eu-155	4.140E-05	4.140E-05	DCF2(9)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(10)
B-1	H-3	6.400E-08	6.400E-08	DCF2(11)
B-1	I-129	1.740E-04	1.740E-04	DCF2(12)
B-1	K-40	1.240E-05	1.240E-05	DCF2(13)
B-1	Na-22	7.660E-06	7.660E-06	DCF2(14)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(15)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(16)
B-1	Pb-210+D	2.320E-02	2.320E-02	DCF2(17)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(18)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(19)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(20)
B-1	Ra-226+D	8.600E-03	8.600E-03	DCF2(21)
B-1	Ra-228+D	5.080E-03	5.080E-03	DCF2(22)
B-1	Ru-106+D	4.770E-04	4.770E-04	DCF2(23)
B-1	Sr-90+D	1.310E-03	1.310E-03	DCF2(24)
B-1	Tc-99	8.330E-06	8.330E-06	DCF2(25)
B-1	Th-228+D	3.450E-01	3.450E-01	DCF2(26)
B-1	Th-229+D	2.160E+00	2.160E+00	DCF2(27)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(28)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(29)
B-1	U-233	1.350E-01	1.350E-01	DCF2(30)
B-1	U-234	1.320E-01	1.320E-01	DCF2(31)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(32)
B-1	U-236	1.250E-01	1.250E-01	DCF2(33)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(34)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.480E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Co-60	2.690E-05	2.690E-05	DCF3(3)
D-1	Cs-134	7.330E-05	7.330E-05	DCF3(4)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(5)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(6)
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(8)
D-1	Eu-155	1.530E-06	1.530E-06	DCF3(9)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(10)
D-1	H-3	6.400E-08	6.400E-08	DCF3(11)
D-1	I-129	2.760E-04	2.760E-04	DCF3(12)
D-1	K-40	1.860E-05	1.860E-05	DCF3(13)
D-1	Na-22	1.150E-05	1.150E-05	DCF3(14)
D-1	Np-237+D	4.440E-03	4.440E-03	DCF3(15)
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(16)

Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Default	Parameter Name
D-1	Pb-210+D	7.270E-03	7.270E-03	DCF3(17)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(18)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(19)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(20)
D-1	Ra-226+D	1.330E-03	1.330E-03	DCF3(21)
D-1	Ra-228+D	1.440E-03	1.440E-03	DCF3(22)
D-1	Ru-106+D	2.740E-05	2.740E-05	DCF3(23)
D-1	Sr-90+D	1.530E-04	1.530E-04	DCF3(24)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(25)
D-1	Th-228+D	8.080E-04	8.080E-04	DCF3(26)
D-1	Th-229+D	4.030E-03	4.030E-03	DCF3(27)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(28)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(29)
D-1	U-233	2.890E-04	2.890E-04	DCF3(30)
D-1	U-234	2.830E-04	2.830E-04	DCF3(31)
D-1	U-235+D	2.670E-04	2.670E-04	DCF3(32)
D-1	U-236	2.690E-04	2.690E-04	DCF3(33)
D-1	U-238+D	2.690E-04	2.690E-04	DCF3(34)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Co-60 , plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(3,1)
D-34	Co-60 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(3,2)
D-34	Co-60 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,3)
D-34				
D-34	Cs-134 , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Cs-134 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(4,2)
D-34	Cs-134 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(4,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(5,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(5,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(5,3)
D-34				
D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(6,2)
D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(6,3)
D-34				
D-34	Eu-154 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	Eu-154 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(8,2)
D-34	Eu-154 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(8,3)
D-34				
D-34	Eu-155 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	Eu-155 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(9,2)
D-34	Eu-155 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(9,3)

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Default	Parameter Name
D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(10,2)
D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(10,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(11,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(11,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(11,3)
D-34				
D-34	I-129 , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(12,1)
D-34	I-129 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	7.000E-03	7.000E-03	RTF(12,2)
D-34	I-129 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(12,3)
D-34				
D-34	K-40 , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(13,1)
D-34	K-40 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(13,2)
D-34	K-40 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	7.000E-03	7.000E-03	RTF(13,3)
D-34				
D-34	Na-22 , plant/soil concentration ratio, dimensionless	5.000E-02	5.000E-02	RTF(14,1)
D-34	Na-22 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-02	8.000E-02	RTF(14,2)
D-34	Na-22 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.000E-02	4.000E-02	RTF(14,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(15,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(15,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(15,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(16,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(16,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(16,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(17,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(17,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(17,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(18,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(19,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(20,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(20,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(20,3)
D-34				
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(21,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(21,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(21,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(22,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(22,3)

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Default	Parameter Name
D-34	Ru-106+D , plant/soil concentration ratio, dimensionless	3.000E-02	3.000E-02	RTF(23,1)
D-34	Ru-106+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(23,2)
D-34	Ru-106+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.300E-06	3.300E-06	RTF(23,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(24,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(24,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(24,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(25,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(25,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(25,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(26,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(26,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(26,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(27,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(27,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(27,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(28,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(28,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(28,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(29,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(29,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(29,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(30,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(30,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(30,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(31,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(31,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(31,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(32,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(32,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(32,3)
D-34				
D-34	U-236 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(33,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(33,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(33,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(34,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(34,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(34,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)

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Dose Conversion Factor (and Related) Parameter Summary (continued)
File: HEAST 1995 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(3,2)
D-5	Cs-134 , fish	2.000E+03	2.000E+03	BIOFAC(4,1)
D-5	Cs-134 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(4,2)
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(5,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(6,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(6,2)
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(8,1)
D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(8,2)
D-5	Eu-155 , fish	5.000E+01	5.000E+01	BIOFAC(9,1)
D-5	Eu-155 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(9,2)
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(10,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(10,2)
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(11,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(11,2)
D-5	I-129 , fish	4.000E+01	4.000E+01	BIOFAC(12,1)
D-5	I-129 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(12,2)
D-5	K-40 , fish	1.000E+03	1.000E+03	BIOFAC(13,1)
D-5	K-40 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(13,2)
D-5	Na-22 , fish	2.000E+01	2.000E+01	BIOFAC(14,1)
D-5	Na-22 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(14,2)
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(15,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(15,2)
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(16,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(16,2)
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(17,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(17,2)
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(18,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(18,2)
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(19,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(19,2)

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Dose Conversion Factor (and Related) Parameter Summary (continued)
File: HEAST 1995 Morbidity

Menu	Parameter	Current Value	Default	Parameter Name
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(20,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(20,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(21,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(21,2)
D-5				
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(22,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22,2)
D-5				
D-5	Ru-106+D , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	Ru-106+D , crustacea and mollusks	3.000E+02	3.000E+02	BIOFAC(23,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(24,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(24,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(25,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(25,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(26,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(26,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(27,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(27,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(28,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(28,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(29,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(29,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(30,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(30,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(31,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(31,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(32,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(32,2)
D-5				
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(33,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(33,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(34,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(34,2)

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Site-Specific Parameter Summary

Menu	Parameter		User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)		4.050E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)		2.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)		1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)		1.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)		0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)		1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)		3.000E+01	3.000E+00	---	T(3)
R011	Times for calculations (yr)		1.000E+02	1.000E+01	---	T(4)
R011	Times for calculations (yr)		1.000E+03	3.000E+01	---	T(5)
R011	Times for calculations (yr)		not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)		not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)		not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)		not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)		not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g):	Am-241	1.000E+01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g):	Co-60	1.000E+01	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g):	Cs-134	1.000E+01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g):	Cs-137	1.000E+01	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g):	Eu-152	1.000E+01	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g):	Eu-154	1.000E+01	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g):	Eu-155	1.000E+01	0.000E+00	---	S1(9)
R012	Initial principal radionuclide (pCi/g):	H-3	1.000E+01	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g):	I-129	1.000E+01	0.000E+00	---	S1(12)
R012	Initial principal radionuclide (pCi/g):	K-40	1.000E+01	0.000E+00	---	S1(13)
R012	Initial principal radionuclide (pCi/g):	Na-22	1.000E+01	0.000E+00	---	S1(14)
R012	Initial principal radionuclide (pCi/g):	Np-237	1.000E+01	0.000E+00	---	S1(15)
R012	Initial principal radionuclide (pCi/g):	Pu-238	1.000E+01	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g):	Pu-239	1.000E+01	0.000E+00	---	S1(19)
R012	Initial principal radionuclide (pCi/g):	Pu-240	1.000E+01	0.000E+00	---	S1(20)
R012	Initial principal radionuclide (pCi/g):	Ra-226	1.000E+01	0.000E+00	---	S1(21)
R012	Initial principal radionuclide (pCi/g):	Ra-228	1.000E+01	0.000E+00	---	S1(22)
R012	Initial principal radionuclide (pCi/g):	Ru-106	1.000E+01	0.000E+00	---	S1(23)
R012	Initial principal radionuclide (pCi/g):	Sr-90	1.000E+01	0.000E+00	---	S1(24)
R012	Initial principal radionuclide (pCi/g):	Tc-99	1.000E+01	0.000E+00	---	S1(25)
R012	Initial principal radionuclide (pCi/g):	Th-228	1.000E+01	0.000E+00	---	S1(26)
R012	Initial principal radionuclide (pCi/g):	Th-230	1.000E+01	0.000E+00	---	S1(28)
R012	Initial principal radionuclide (pCi/g):	Th-232	1.000E+01	0.000E+00	---	S1(29)
R012	Initial principal radionuclide (pCi/g):	U-234	1.000E+01	0.000E+00	---	S1(31)
R012	Initial principal radionuclide (pCi/g):	U-235	1.000E+01	0.000E+00	---	S1(32)
R012	Initial principal radionuclide (pCi/g):	U-238	1.000E+01	0.000E+00	---	S1(34)
R012	Concentration in groundwater (pCi/L):	Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L):	Co-60	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L):	Cs-134	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L):	Cs-137	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L):	Eu-152	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L):	Eu-154	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L):	Eu-155	not used	0.000E+00	---	W1(9)
R012	Concentration in groundwater (pCi/L):	H-3	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L):	I-129	not used	0.000E+00	---	W1(12)
R012	Concentration in groundwater (pCi/L):	K-40	not used	0.000E+00	---	W1(13)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R012	Concentration in groundwater (pCi/L): Na-22	not used	0.000E+00	---	W1(14)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(15)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(19)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(20)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(21)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(22)
R012	Concentration in groundwater (pCi/L): Ru-106	not used	0.000E+00	---	W1(23)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(24)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(25)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(26)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(28)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(29)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(31)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(32)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(34)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	5.550E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	9.990E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.760E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	not used	1	---	NS

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.913E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.190E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Cs-134				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.190E-07	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.190E-07	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Eu-155				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.520E-04	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for I-129				
R016	Contaminated zone (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.289E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for K-40				
R016	Contaminated zone (cm**3/g)	5.500E+00	5.500E+00	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+00	5.500E+00	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.500E+00	5.500E+00	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.116E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for Na-22				
R016	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.175E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.620E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.950E-08	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)

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Site-Specific Parameter Summary (continued)

0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.950E-08	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.950E-08	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.697E-06	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.697E-06	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for Ru-106				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.520E-04	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(24)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(24,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(24)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.950E-06	ALEACH(24)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(24)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(25)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(25,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(25)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.520E-04	ALEACH(25)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(25)

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R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(26)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(26,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(26)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(26)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(26)
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(28)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(28,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(28)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(28)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(28)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(29)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(29,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(29)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(29)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(29)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(31)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(31,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(31)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(31)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(31)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(32)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(32,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(32)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(32)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(32)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(34)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(34,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(34)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(34)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(34)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.913E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

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0 Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.188E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(27)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(27,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(27)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(27)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(27)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(30)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(30,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(30)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(30)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(30)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(33)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(33,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(33)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(33)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(33)
R017	Inhalation rate (m**3/yr)	1.402E+04	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.000E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	1.000E+00	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	0.000E+00	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.283E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	not used	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	not used	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	1.095E+02	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	not used	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	not used	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI
R019	Mass loading for foliar deposition (g/m**3)	not used	1.000E-04	---	MLFD

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	not used	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	not used	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	not used	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	not used	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	not used	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	not used	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	not used	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	not used	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	not used	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	not used	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	not used	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.000E+00	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	not used	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	not used	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV
R021	Total porosity of the building foundation	not used	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Volumetric water content of the foundation	not used	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	not used	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	not used	5.000E-01	---	REXG
R021	Height of the building (room) (m)	not used	2.500E+00	---	HRM
R021	Building interior area factor	not used	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	not used	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	1.500E-01	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	5	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	suppressed
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	suppressed
8 -- soil ingestion	active
9 -- radon	active
Find peak pathway doses	active

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Contaminated Zone Dimensions		Initial Soil Concentrations, pCi/g	
Area:	405000.00 square meters	Am-241	1.000E+01
Thickness:	2.00 meters	Co-60	1.000E+01
Cover Depth:	0.00 meters	Cs-134	1.000E+01
		Cs-137	1.000E+01
		Eu-152	1.000E+01
		Eu-154	1.000E+01
		Eu-155	1.000E+01
		H-3	1.000E+01
		I-129	1.000E+01
		K-40	1.000E+01
		Na-22	1.000E+01
		Np-237	1.000E+01
		Pu-238	1.000E+01
		Pu-239	1.000E+01
		Pu-240	1.000E+01
		Ra-226	1.000E+01
		Ra-228	1.000E+01
		Ru-106	1.000E+01
		Sr-90	1.000E+01
		Tc-99	1.000E+01
		Th-228	1.000E+01
		Th-230	1.000E+01
		Th-232	1.000E+01
		U-234	1.000E+01
		U-235	1.000E+01
		U-238	1.000E+01

0
Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 1.500E+01 mrem/yr
Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
TDOSE(t):	2.001E+02	1.811E+02	8.844E+01	8.018E+01	7.833E+01
M(t):	1.334E+01	1.207E+01	5.896E+00	5.345E+00	5.222E+00

0Maximum TDOSE(t): 2.001E+02 mrem/yr at t = 0.000E+00 years

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Summary : Site Worker RME SALs 01-28-03 File: WORK_RME.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
0 Water Independent Pathways (Inhalation excludes radon)
0

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.963E-02	0.0005	6.061E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.092E-01	0.0045
Co-60	3.425E+01	0.1711	2.803E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.301E-03	0.0000
Cs-134	1.816E+01	0.0907	5.372E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.556E-02	0.0001
Cs-137	7.610E+00	0.0380	4.308E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.236E-02	0.0001
Eu-152	1.543E+01	0.0771	2.942E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.579E-03	0.0000
Eu-154	1.667E+01	0.0833	3.757E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.296E-03	0.0000
Eu-155	3.874E-01	0.0019	5.278E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.570E-04	0.0000
H-3	0.000E+00	0.0000	9.894E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.007E-05	0.0000
I-129	2.944E-02	0.0001	2.376E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.898E-02	0.0003
K-40	2.347E+00	0.0117	1.694E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.650E-03	0.0000
Na-22	2.715E+01	0.1357	9.187E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.524E-03	0.0000
Np-237	2.495E+00	0.0125	7.377E-02	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+00	0.0055
Pu-238	3.433E-04	0.0000	5.334E-02	0.0003	2.502E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.968E-01	0.0040
Pu-239	6.706E-04	0.0000	5.861E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.849E-01	0.0044
Pu-240	3.355E-04	0.0000	5.860E-02	0.0003	7.773E-22	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.849E-01	0.0044
Ra-226	2.528E+01	0.1263	1.223E-03	0.0000	5.438E-01	0.0027	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.604E-01	0.0018
Ra-228	1.628E+01	0.0813	7.943E-03	0.0000	2.448E-01	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.704E-01	0.0019
Ru-106	2.108E+00	0.0105	4.710E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.951E-03	0.0000
Sr-90	5.492E-02	0.0003	1.769E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.780E-02	0.0002
Tc-99	2.866E-04	0.0000	1.137E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.648E-04	0.0000
Th-228	1.929E+01	0.0964	3.954E-02	0.0002	1.328E+00	0.0066	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.694E-01	0.0008
Th-230	8.232E-03	0.0000	4.454E-02	0.0002	1.178E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.371E-01	0.0007
Th-232	9.320E-01	0.0047	2.244E-01	0.0011	1.023E-02	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.046E-01	0.0035
U-234	9.169E-04	0.0000	1.803E-02	0.0001	3.535E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.075E-02	0.0004
U-235	1.719E+00	0.0086	1.681E-02	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.678E-02	0.0003
U-238	3.439E-01	0.0017	1.612E-02	0.0001	2.506E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-02	0.0003
Total	1.906E+02	0.9525	6.838E-01	0.0034	2.127E+00	0.0106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.690E+00	0.0334

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

0 Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.069E+00	0.0053
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.426E+01	0.1712
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.817E+01	0.0908
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.622E+00	0.0381
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.543E+01	0.0771
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.667E+01	0.0833
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.877E-01	0.0019
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.904E-03	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.845E-02	0.0005
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.351E+00	0.0117
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.715E+01	0.1357
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.678E+00	0.0184
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.505E-01	0.0042
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.442E-01	0.0047
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.439E-01	0.0047
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.618E+01	0.1308
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.690E+01	0.0844
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.113E+00	0.0106
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.289E-02	0.0005
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.525E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.083E+01	0.1041
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.900E-01	0.0009
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.871E+00	0.0093
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.970E-02	0.0004
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.803E+00	0.0090
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.273E-01	0.0021
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.001E+02	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
0 Water Independent Pathways (Inhalation excludes radon)
0

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.948E-02	0.0005	6.051E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.078E-01	0.0050
Co-60	3.003E+01	0.1658	2.458E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.525E-03	0.0000
Cs-134	1.297E+01	0.0716	3.838E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.112E-02	0.0001
Cs-137	7.436E+00	0.0411	4.210E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.207E-02	0.0001
Eu-152	1.465E+01	0.0809	2.793E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.499E-03	0.0000
Eu-154	1.541E+01	0.0851	3.473E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.122E-03	0.0000
Eu-155	3.368E-01	0.0019	4.590E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.104E-04	0.0000
H-3	0.000E+00	0.0000	3.605E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.669E-06	0.0000
I-129	2.943E-02	0.0002	2.375E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.894E-02	0.0004
K-40	2.347E+00	0.0130	1.694E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.650E-03	0.0000
Na-22	2.080E+01	0.1149	7.038E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.934E-03	0.0000
Np-237	2.495E+00	0.0138	7.377E-02	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+00	0.0061
Pu-238	3.406E-04	0.0000	5.292E-02	0.0003	3.746E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.905E-01	0.0044
Pu-239	6.706E-04	0.0000	5.861E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.849E-01	0.0049
Pu-240	3.355E-04	0.0000	5.860E-02	0.0003	2.226E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.848E-01	0.0049
Ra-226	2.527E+01	0.1395	1.318E-03	0.0000	5.436E-01	0.0030	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.150E-01	0.0023
Ra-228	1.993E+01	0.1101	1.832E-02	0.0001	5.958E-01	0.0033	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.767E-01	0.0021
Ru-106	1.059E+00	0.0058	2.366E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.487E-03	0.0000
Sr-90	5.363E-02	0.0003	1.727E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.691E-02	0.0002
Tc-99	2.863E-04	0.0000	1.136E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.645E-04	0.0000
Th-228	1.343E+01	0.0742	2.752E-02	0.0002	9.242E-01	0.0051	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-01	0.0007
Th-230	1.918E-02	0.0001	4.454E-02	0.0002	3.534E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.372E-01	0.0008
Th-232	3.140E+00	0.0173	2.260E-01	0.0012	6.279E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.498E-01	0.0041
U-234	9.171E-04	0.0000	1.803E-02	0.0001	2.474E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.075E-02	0.0004
U-235	1.719E+00	0.0095	1.681E-02	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.683E-02	0.0004
U-238	3.439E-01	0.0019	1.612E-02	0.0001	3.758E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-02	0.0004
Total	1.716E+02	0.9474	6.770E-01	0.0037	2.127E+00	0.0117	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.727E+00	0.0371

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

0 Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.068E+00	0.0059
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.004E+01	0.1659
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.298E+01	0.0717
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.448E+00	0.0411
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.465E+01	0.0809
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.541E+01	0.0851
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.372E-01	0.0019
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.608E-03	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.839E-02	0.0005
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.351E+00	0.0130
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.080E+01	0.1149
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.678E+00	0.0203
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.438E-01	0.0047
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.442E-01	0.0052
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.438E-01	0.0052
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.622E+01	0.1448
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.092E+01	0.1155
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.062E+00	0.0059
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.071E-02	0.0005
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.519E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.450E+01	0.0801
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.013E-01	0.0011
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.179E+00	0.0231
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.970E-02	0.0005
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.803E+00	0.0100
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.273E-01	0.0024
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.811E+02	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
0 Water Independent Pathways (Inhalation excludes radon)
0

Radio-	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	9.496E-02	0.0011	5.775E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.664E-01	0.0098
Co-60	6.628E-01	0.0075	5.425E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.219E-04	0.0000
Cs-134	7.574E-04	0.0000	2.241E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.492E-07	0.0000
Cs-137	3.805E+00	0.0430	2.154E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.178E-03	0.0001
Eu-152	3.243E+00	0.0367	6.182E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.317E-04	0.0000
Eu-154	1.569E+00	0.0177	3.537E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.161E-04	0.0000
Eu-155	5.853E-03	0.0001	7.975E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.394E-06	0.0000
H-3	0.000E+00	0.0000	6.909E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.033E-19	0.0000
I-129	2.898E-02	0.0003	2.339E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.789E-02	0.0008
K-40	2.345E+00	0.0265	1.693E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.647E-03	0.0001
Na-22	9.181E-03	0.0001	3.106E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.534E-07	0.0000
Np-237	2.495E+00	0.0282	7.377E-02	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+00	0.0126
Pu-238	2.709E-04	0.0000	4.209E-02	0.0005	2.672E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.287E-01	0.0071
Pu-239	6.700E-04	0.0000	5.856E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.842E-01	0.0100
Pu-240	3.345E-04	0.0000	5.842E-02	0.0007	5.189E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.821E-01	0.0100
Ra-226	2.496E+01	0.2822	3.086E-03	0.0000	5.368E-01	0.0061	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.433E+00	0.0162
Ra-228	1.214E+00	0.0137	1.805E-03	0.0000	6.002E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.677E-02	0.0002
Ru-106	2.255E-09	0.0000	5.039E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.296E-12	0.0000
Sr-90	2.689E-02	0.0003	8.658E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.850E-02	0.0002
Tc-99	2.785E-04	0.0000	1.105E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.545E-04	0.0000
Th-228	3.672E-04	0.0000	7.524E-07	0.0000	2.527E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.225E-06	0.0000
Th-230	3.346E-01	0.0038	4.455E-02	0.0005	7.139E-03	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.498E-01	0.0017
Th-232	3.529E+01	0.3990	2.701E-01	0.0031	1.523E+00	0.0172	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.228E+00	0.0139
U-234	9.632E-04	0.0000	1.804E-02	0.0002	9.823E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.077E-02	0.0008
U-235	1.720E+00	0.0195	1.713E-02	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.931E-02	0.0008
U-238	3.439E-01	0.0039	1.612E-02	0.0002	2.835E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-02	0.0008
Total	7.815E+01	0.8836	6.615E-01	0.0075	2.127E+00	0.0240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.504E+00	0.0848

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

0 Water Dependent Pathways

0 Radio- Nuclide	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.019E+00	0.0115
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.629E-01	0.0075
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.581E-04	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.811E+00	0.0431
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.243E+00	0.0367
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.569E+00	0.0177
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.858E-03	0.0001
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.916E-16	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.690E-02	0.0011
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.350E+00	0.0266
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.182E-03	0.0001
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.678E+00	0.0416
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.710E-01	0.0076
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.434E-01	0.0107
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.409E-01	0.0106
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.693E+01	0.3045
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.293E+00	0.0146
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.261E-09	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.548E-02	0.0005
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.341E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.964E-04	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.361E-01	0.0061
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.831E+01	0.4332
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.978E-02	0.0010
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.807E+00	0.0204
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.272E-01	0.0048
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.844E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	8.490E-02	0.0011	5.160E-02	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.741E-01	0.0097
Co-60	6.662E-05	0.0000	5.453E-11	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.226E-08	0.0000
Cs-134	4.572E-14	0.0000	1.353E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.919E-17	0.0000
Cs-137	7.550E-01	0.0094	4.274E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.226E-03	0.0000
Eu-152	8.513E-02	0.0011	1.623E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.709E-06	0.0000
Eu-154	6.326E-03	0.0001	1.426E-08	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.712E-07	0.0000
Eu-155	3.303E-07	0.0000	4.501E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.044E-10	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	2.793E-02	0.0003	2.254E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.542E-02	0.0008
K-40	2.342E+00	0.0292	1.690E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.640E-03	0.0001
Na-22	7.313E-11	0.0000	2.474E-18	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.798E-15	0.0000
Np-237	2.495E+00	0.0311	7.377E-02	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+00	0.0138
Pu-238	1.560E-04	0.0000	2.421E-02	0.0003	8.340E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.616E-01	0.0045
Pu-239	6.688E-04	0.0000	5.844E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.824E-01	0.0110
Pu-240	3.320E-04	0.0000	5.799E-02	0.0007	9.304E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.756E-01	0.0109
Ra-226	2.421E+01	0.3020	4.060E-03	0.0001	5.207E-01	0.0065	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.002E+00	0.0250
Ra-228	2.628E-04	0.0000	3.908E-07	0.0000	1.300E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.631E-06	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	5.079E-03	0.0001	1.636E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.496E-03	0.0000
Tc-99	2.605E-04	0.0000	1.034E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.316E-04	0.0000
Th-228	3.550E-15	0.0000	7.275E-18	0.0000	2.443E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.118E-17	0.0000
Th-230	1.080E+00	0.0135	4.464E-02	0.0006	2.316E-02	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.050E-01	0.0026
Th-232	3.650E+01	0.4552	2.719E-01	0.0034	1.583E+00	0.0197	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.244E+00	0.0155
U-234	1.410E-03	0.0000	1.806E-02	0.0002	1.055E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.086E-02	0.0009
U-235	1.726E+00	0.0215	1.854E-02	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.786E-02	0.0010
U-238	3.438E-01	0.0043	1.612E-02	0.0002	1.006E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.725E-02	0.0008
Total	6.967E+01	0.8689	6.393E-01	0.0080	2.127E+00	0.0265	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.746E+00	0.0966

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

0 Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.106E-01	0.0114
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.664E-05	0.0000
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.576E-14	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.562E-01	0.0094
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.514E-02	0.0011
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.327E-03	0.0001
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.307E-07	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.337E-02	0.0012
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.346E+00	0.0293
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.314E-11	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.678E+00	0.0459
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.860E-01	0.0048
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.415E-01	0.0117
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.339E-01	0.0116
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.674E+01	0.3335
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.798E-04	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.591E-03	0.0001
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.931E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.833E-15	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.352E+00	0.0169
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.960E+01	0.4939
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.034E-02	0.0011
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.823E+00	0.0227
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.272E-01	0.0053
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.018E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Summary : Site Worker RME SALs 01-28-03 File: WORK_RME.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	2.032E-02	0.0003	1.213E-02	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.820E-01	0.0023
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	7.031E-10	0.0000	3.980E-16	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.142E-12	0.0000
Eu-152	4.031E-22	0.0000	1.144E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.387E-15	0.0000
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	1.735E-02	0.0002	1.400E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.064E-02	0.0005
K-40	2.298E+00	0.0293	1.659E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.552E-03	0.0001
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	2.493E+00	0.0318	7.385E-02	0.0009	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.110E+00	0.0142
Pu-238	1.257E-05	0.0000	2.634E-05	0.0000	2.603E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.220E-04	0.0000
Pu-239	6.532E-04	0.0000	5.694E-02	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.598E-01	0.0110
Pu-240	3.018E-04	0.0000	5.271E-02	0.0007	1.092E-12	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.958E-01	0.0102
Ra-226	1.637E+01	0.2090	2.841E-03	0.0000	3.520E-01	0.0045	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.408E+00	0.0180
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	2.514E-12	0.0000	8.097E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.730E-12	0.0000
Tc-99	1.103E-04	0.0000	4.376E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.403E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	8.850E+00	0.1130	4.563E-02	0.0006	1.903E-01	0.0024	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.712E-01	0.0111
Th-232	3.650E+01	0.4660	2.719E-01	0.0035	1.583E+00	0.0202	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.244E+00	0.0159
U-234	4.365E-02	0.0006	1.834E-02	0.0002	9.186E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.506E-02	0.0010
U-235	1.816E+00	0.0232	3.900E-02	0.0005	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.969E-01	0.0025
U-238	3.431E-01	0.0044	1.613E-02	0.0002	8.997E-07	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.729E-02	0.0009
Total	6.875E+01	0.8778	5.895E-01	0.0075	2.126E+00	0.0271	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.856E+00	0.0875

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

0 Water Dependent Pathways

Radio-	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.144E-01	0.0027
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.042E-10	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.531E-15	0.0000
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.801E-02	0.0007
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.302E+00	0.0294
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.677E+00	0.0469
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.612E-04	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.174E-01	0.0117
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.488E-01	0.0108
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.813E+01	0.2315
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.253E-12	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.510E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.957E+00	0.1271
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.960E+01	0.5056
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.380E-01	0.0018
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.052E+00	0.0262
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.266E-01	0.0054
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.833E+01	1.0000

0*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0Parent (i)	Product (j)	Branch Fraction*	t= 0.000E+00	DSR(j,t) 1.000E+00	(mrem/yr)/(pCi/g) 3.000E+01	1.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.069E-01	1.068E-01	1.019E-01	9.105E-02	2.138E-02
Am-241	Np-237	1.000E+00	5.954E-08	1.785E-07	3.546E-06	1.106E-05	5.920E-05
Am-241	U-233	1.000E+00	2.215E-15	1.550E-14	6.085E-12	6.365E-11	4.146E-09
Am-241	Th-229	1.000E+00	2.745E-18	4.117E-17	3.077E-13	1.069E-11	7.484E-09
Am-241	äDSR(j)		1.069E-01	1.068E-01	1.019E-01	9.106E-02	2.144E-02
0Co-60	Co-60	1.000E+00	3.426E+00	3.004E+00	6.629E-02	6.664E-06	0.000E+00
0Cs-134	Cs-134	1.000E+00	1.817E+00	1.298E+00	7.581E-05	4.576E-15	0.000E+00
0Cs-137	Cs-137	1.000E+00	7.622E-01	7.448E-01	3.811E-01	7.562E-02	7.042E-11
0Eu-152	Eu-152	7.208E-01	1.112E+00	1.056E+00	2.338E-01	6.137E-03	2.906E-23
0Eu-152	Eu-152	2.792E-01	4.309E-01	4.090E-01	9.055E-02	2.377E-03	1.126E-23
Eu-152	Gd-152	2.792E-01	6.468E-18	1.896E-17	2.013E-16	2.517E-16	2.531E-16
Eu-152	äDSR(j)		4.309E-01	4.090E-01	9.055E-02	2.377E-03	2.531E-16
0Eu-154	Eu-154	1.000E+00	1.667E+00	1.541E+00	1.569E-01	6.327E-04	1.033E-34
0Eu-155	Eu-155	1.000E+00	3.877E-02	3.372E-02	5.858E-04	3.307E-08	0.000E+00
0H-3	H-3	1.000E+00	9.904E-04	3.608E-04	6.916E-17	0.000E+00	0.000E+00
0I-129	I-129	1.000E+00	9.845E-03	9.839E-03	9.690E-03	9.337E-03	5.801E-03
0K-40	K-40	1.000E+00	2.351E-01	2.351E-01	2.350E-01	2.346E-01	2.302E-01
0Na-22	Na-22	1.000E+00	2.715E+00	2.080E+00	9.182E-04	7.314E-12	0.000E+00
0Np-237	Np-237	1.000E+00	3.678E-01	3.678E-01	3.678E-01	3.678E-01	3.676E-01
Np-237	U-233	1.000E+00	2.053E-08	6.158E-08	1.252E-06	4.124E-06	4.092E-05
Np-237	Th-229	1.000E+00	3.392E-11	2.374E-10	9.456E-08	1.024E-06	9.847E-05
Np-237	äDSR(j)		3.678E-01	3.678E-01	3.678E-01	3.678E-01	3.677E-01
0Pu-238	Pu-238	1.000E+00	8.505E-02	8.438E-02	6.710E-02	3.860E-02	3.153E-05
Pu-238	U-234	1.000E+00	1.268E-08	3.791E-08	6.891E-07	1.763E-06	3.203E-06
Pu-238	Th-230	1.000E+00	7.823E-14	5.464E-13	2.022E-10	1.853E-09	5.170E-08
Pu-238	Ra-226	1.000E+00	1.203E-15	1.801E-14	1.285E-10	4.010E-09	1.252E-06
Pu-238	Pb-210	1.000E+00	5.220E-19	1.607E-17	1.807E-12	1.347E-10	8.202E-08
Pu-238	äDSR(j)		8.505E-02	8.438E-02	6.710E-02	3.860E-02	3.612E-05
0Pu-239	Pu-239	1.000E+00	9.442E-02	9.442E-02	9.434E-02	9.415E-02	9.174E-02
Pu-239	U-235	1.000E+00	8.876E-11	2.663E-10	5.412E-09	1.781E-08	1.749E-07
Pu-239	Pa-231	1.000E+00	1.132E-15	7.921E-15	3.157E-12	3.423E-11	3.337E-09
Pu-239	Ac-227	1.000E+00	2.520E-17	3.755E-16	2.296E-12	5.421E-11	8.828E-09
Pu-239	äDSR(j)		9.442E-02	9.442E-02	9.434E-02	9.415E-02	9.174E-02

Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0Parent (i)	Product (j)	Branch Fraction*	t= 0.000E+00	DSR(j,t) 1.000E+00	(mrem/yr)/(pCi/g) 3.000E+01	1.000E+02	1.000E+03
Pu-240	Pu-240	1.000E+00	9.439E-02	9.438E-02	9.409E-02	9.339E-02	8.488E-02
Pu-240	U-236	1.000E+00	1.255E-10	3.766E-10	7.645E-09	2.510E-08	2.380E-07
Pu-240	Th-232	1.000E+00	2.209E-20	1.546E-19	6.160E-17	6.670E-16	6.401E-14
Pu-240	Ra-228	1.000E+00	9.928E-21	1.452E-19	5.648E-16	8.646E-15	9.618E-13
Pu-240	Th-228	1.000E+00	1.219E-21	3.492E-20	8.141E-16	1.460E-14	1.713E-12
Pu-240	äDSR(j)		9.439E-02	9.438E-02	9.409E-02	9.339E-02	8.488E-02
0Ra-226	Ra-226	1.000E+00	2.615E+00	2.614E+00	2.581E+00	2.504E+00	1.693E+00
Ra-226	Pb-210	1.000E+00	2.821E-03	8.347E-03	1.115E-01	1.699E-01	1.204E-01
Ra-226	äDSR(j)		2.618E+00	2.622E+00	2.693E+00	2.674E+00	1.813E+00
0Ra-228	Ra-228	1.000E+00	1.306E+00	1.158E+00	3.510E-02	7.595E-06	0.000E+00
Ra-228	Th-228	1.000E+00	3.840E-01	9.347E-01	9.416E-02	2.039E-05	0.000E+00
Ra-228	äDSR(j)		1.690E+00	2.092E+00	1.293E-01	2.798E-05	0.000E+00
0Ru-106	Ru-106	1.000E+00	2.113E-01	1.062E-01	2.261E-10	2.646E-31	0.000E+00
0Sr-90	Sr-90	1.000E+00	9.289E-03	9.071E-03	4.548E-03	8.591E-04	4.253E-13
0Tc-99	Tc-99	1.000E+00	6.525E-05	6.519E-05	6.341E-05	5.931E-05	2.510E-05
0Th-228	Th-228	1.000E+00	2.083E+00	1.450E+00	3.964E-05	3.833E-16	0.000E+00
0Th-230	Th-230	1.000E+00	1.843E-02	1.843E-02	1.842E-02	1.841E-02	1.826E-02
Th-230	Ra-226	1.000E+00	5.665E-04	1.699E-03	3.433E-02	1.114E-01	9.149E-01
Th-230	Pb-210	1.000E+00	4.085E-07	2.834E-06	8.538E-04	5.445E-03	6.250E-02
Th-230	äDSR(j)		1.900E-02	2.013E-02	5.361E-02	1.352E-01	9.957E-01
0Th-232	Th-232	1.000E+00	9.077E-02	9.077E-02	9.077E-02	9.077E-02	9.077E-02
Th-232	Ra-228	1.000E+00	8.030E-02	2.286E-01	1.351E+00	1.386E+00	1.386E+00
Th-232	Th-228	1.000E+00	1.605E-02	9.850E-02	2.389E+00	2.483E+00	2.483E+00
Th-232	äDSR(j)		1.871E-01	4.179E-01	3.831E+00	3.960E+00	3.960E+00
0U-234	U-234	1.000E+00	8.970E-03	8.970E-03	8.968E-03	8.965E-03	8.923E-03
U-234	Th-230	1.000E+00	8.295E-08	2.488E-07	5.059E-06	1.666E-05	1.648E-04
U-234	Ra-226	1.000E+00	1.700E-09	1.190E-08	4.724E-06	5.075E-05	4.417E-03
U-234	Pb-210	1.000E+00	9.208E-13	1.372E-11	8.402E-08	1.983E-06	2.917E-04
U-234	äDSR(j)		8.970E-03	8.970E-03	8.978E-03	9.034E-03	1.380E-02
0U-235	U-235	1.000E+00	1.803E-01	1.803E-01	1.802E-01	1.802E-01	1.798E-01
U-235	Pa-231	1.000E+00	3.447E-06	1.034E-05	2.102E-04	6.919E-04	6.809E-03
U-235	Ac-227	1.000E+00	1.022E-07	7.089E-07	2.132E-04	1.365E-03	1.858E-02
U-235	äDSR(j)		1.803E-01	1.803E-01	1.807E-01	1.823E-01	2.052E-01

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0Parent (i)	Product (j)	Branch Fraction*	DSR(j,t) (mrem/yr)/(pCi/g) t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
U-238	U-238	1.000E+00	4.273E-02	4.273E-02	4.272E-02	4.272E-02	4.262E-02
U-238	U-234	1.000E+00	1.271E-08	3.814E-08	7.755E-07	2.555E-06	2.535E-05
U-238	Th-230	1.000E+00	7.838E-14	5.487E-13	2.187E-10	2.374E-09	2.341E-07
U-238	Ra-226	1.000E+00	1.205E-15	1.807E-14	1.363E-10	4.838E-09	4.326E-06
U-238	Pb-210	1.000E+00	5.227E-19	1.612E-17	1.898E-12	1.585E-10	2.768E-07
U-238	äDSR(j)		4.273E-02	4.273E-02	4.272E-02	4.272E-02	4.266E-02

*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BRF(1)*BRF(2)* ... BRF(j).
The DSR includes contributions from associated (half-life ó 0.5 yr) daughters.

0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 1.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Am-241	1.403E+02	1.405E+02	1.472E+02	1.647E+02	6.995E+02
Co-60	4.378E+00	4.994E+00	2.263E+02	2.251E+06	*1.131E+15
Cs-134	8.255E+00	1.155E+01	1.979E+05	*1.294E+15	*1.294E+15
Cs-137	1.968E+01	2.014E+01	3.936E+01	1.984E+02	2.130E+11
Eu-152	9.720E+00	1.024E+01	4.625E+01	1.762E+03	*1.765E+14
Eu-154	8.997E+00	9.734E+00	9.557E+01	2.371E+04	*2.639E+14
Eu-155	3.869E+02	4.449E+02	2.560E+04	4.537E+08	*4.651E+14
H-3	1.514E+04	4.157E+04	*9.594E+15	*9.594E+15	*9.594E+15
I-129	1.524E+03	1.524E+03	1.548E+03	1.606E+03	2.586E+03
K-40	6.379E+01	6.380E+01	6.383E+01	6.393E+01	6.516E+01
Na-22	5.524E+00	7.210E+00	1.634E+04	2.051E+12	*6.244E+15
Np-237	4.078E+01	4.078E+01	4.078E+01	4.078E+01	4.079E+01
Pu-238	1.764E+02	1.778E+02	2.235E+02	3.886E+02	4.153E+05
Pu-239	1.589E+02	1.589E+02	1.590E+02	1.593E+02	1.635E+02
Pu-240	1.589E+02	1.589E+02	1.594E+02	1.606E+02	1.767E+02
Ra-226	5.729E+00	5.720E+00	5.570E+00	5.610E+00	8.272E+00
Ra-228	8.876E+00	7.169E+00	1.160E+02	5.360E+05	*2.726E+14
Ru-106	7.098E+01	1.413E+02	6.635E+10	*3.347E+15	*3.347E+15
Sr-90	1.615E+03	1.654E+03	3.298E+03	1.746E+04	3.527E+13
Tc-99	2.299E+05	2.301E+05	2.366E+05	2.529E+05	5.975E+05
Th-228	7.201E+00	1.035E+01	3.784E+05	*8.192E+14	*8.192E+14
Th-230	7.897E+02	7.451E+02	2.798E+02	1.109E+02	1.507E+01
Th-232	8.016E+01	3.590E+01	3.916E+00	3.788E+00	3.788E+00
U-234	1.672E+03	1.672E+03	1.671E+03	1.660E+03	1.087E+03
U-235	8.321E+01	8.321E+01	8.302E+01	8.229E+01	7.309E+01
U-238	3.511E+02	3.511E+02	3.511E+02	3.511E+02	3.517E+02

*At specific activity limit

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+01	0.000E+00	1.069E-01	1.403E+02	1.069E-01	1.403E+02
Co-60	1.000E+01	0.000E+00	3.426E+00	4.378E+00	3.426E+00	4.378E+00
Cs-134	1.000E+01	0.000E+00	1.817E+00	8.255E+00	1.817E+00	8.255E+00
Cs-137	1.000E+01	0.000E+00	7.622E-01	1.968E+01	7.622E-01	1.968E+01
Eu-152	1.000E+01	0.000E+00	1.543E+00	9.720E+00	1.543E+00	9.720E+00
Eu-154	1.000E+01	0.000E+00	1.667E+00	8.997E+00	1.667E+00	8.997E+00
Eu-155	1.000E+01	0.000E+00	3.877E-02	3.869E+02	3.877E-02	3.869E+02
H-3	1.000E+01	0.000E+00	9.904E-04	1.514E+04	9.904E-04	1.514E+04
I-129	1.000E+01	0.000E+00	9.845E-03	1.524E+03	9.845E-03	1.524E+03
K-40	1.000E+01	0.000E+00	2.351E-01	6.379E+01	2.351E-01	6.379E+01
Na-22	1.000E+01	0.000E+00	2.715E+00	5.524E+00	2.715E+00	5.524E+00
Np-237	1.000E+01	0.000E+00	3.678E-01	4.078E+01	3.678E-01	4.078E+01
Pu-238	1.000E+01	0.000E+00	8.505E-02	1.764E+02	8.505E-02	1.764E+02
Pu-239	1.000E+01	0.000E+00	9.442E-02	1.589E+02	9.442E-02	1.589E+02
Pu-240	1.000E+01	0.000E+00	9.439E-02	1.589E+02	9.439E-02	1.589E+02
Ra-226	1.000E+01	50.3 ñ 0.1	2.702E+00	5.551E+00	2.618E+00	5.729E+00
Ra-228	1.000E+01	2.762 ñ 0.006	2.301E+00	6.518E+00	1.690E+00	8.876E+00
Ru-106	1.000E+01	0.000E+00	2.113E-01	7.098E+01	2.113E-01	7.098E+01
Sr-90	1.000E+01	0.000E+00	9.289E-03	1.615E+03	9.289E-03	1.615E+03
Tc-99	1.000E+01	0.000E+00	6.525E-05	2.299E+05	6.525E-05	2.299E+05
Th-228	1.000E+01	0.000E+00	2.083E+00	7.201E+00	2.083E+00	7.201E+00
Th-230	1.000E+01	1.000E+03	9.957E-01	1.507E+01	1.900E-02	7.897E+02
Th-232	1.000E+01	148.2 ñ 0.3	3.960E+00	3.788E+00	1.871E-01	8.016E+01
U-234	1.000E+01	1.000E+03	1.380E-02	1.087E+03	8.970E-03	1.672E+03
U-235	1.000E+01	1.000E+03	2.052E-01	7.309E+01	1.803E-01	8.321E+01
U-238	1.000E+01	0.000E+00	4.273E-02	3.511E+02	4.273E-02	3.511E+02

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Summary : Site Worker RME SALs 01-28-03 File: WORK_RME.RAD

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.069E+00	1.068E+00	1.019E+00	9.105E-01	2.138E-01
0Np-237	Am-241	1.000E+00	5.954E-07	1.785E-06	3.546E-05	1.106E-04	5.920E-04
Np-237	Np-237	1.000E+00	3.678E+00	3.678E+00	3.678E+00	3.678E+00	3.676E+00
Np-237	äDOSE(j)		3.678E+00	3.678E+00	3.678E+00	3.678E+00	3.676E+00
0U-233	Am-241	1.000E+00	2.215E-14	1.550E-13	6.085E-11	6.365E-10	4.146E-08
U-233	Np-237	1.000E+00	2.053E-07	6.158E-07	1.252E-05	4.124E-05	4.092E-04
U-233	äDOSE(j)		2.053E-07	6.158E-07	1.252E-05	4.124E-05	4.092E-04
0Th-229	Am-241	1.000E+00	2.745E-17	4.117E-16	3.077E-12	1.069E-10	7.484E-08
Th-229	Np-237	1.000E+00	3.392E-10	2.374E-09	9.456E-07	1.024E-05	9.847E-04
Th-229	äDOSE(j)		3.392E-10	2.374E-09	9.456E-07	1.024E-05	9.848E-04
0Co-60	Co-60	1.000E+00	3.426E+01	3.004E+01	6.629E-01	6.664E-05	0.000E+00
0Cs-134	Cs-134	1.000E+00	1.817E+01	1.298E+01	7.581E-04	4.576E-14	0.000E+00
0Cs-137	Cs-137	1.000E+00	7.622E+00	7.448E+00	3.811E+00	7.562E-01	7.042E-10
0Eu-152	Eu-152	7.208E-01	1.112E+01	1.056E+01	2.338E+00	6.137E-02	2.906E-22
Eu-152	Eu-152	2.792E-01	4.309E+00	4.090E+00	9.055E-01	2.377E-02	1.126E-22
Eu-152	äDOSE(j)		1.543E+01	1.465E+01	3.243E+00	8.514E-02	4.032E-22
0Gd-152	Eu-152	2.792E-01	6.468E-17	1.896E-16	2.013E-15	2.517E-15	2.531E-15
0Eu-154	Eu-154	1.000E+00	1.667E+01	1.541E+01	1.569E+00	6.327E-03	0.000E+00
0Eu-155	Eu-155	1.000E+00	3.877E-01	3.372E-01	5.858E-03	3.307E-07	0.000E+00
0H-3	H-3	1.000E+00	9.904E-03	3.608E-03	6.916E-16	0.000E+00	0.000E+00
0I-129	I-129	1.000E+00	9.845E-02	9.839E-02	9.690E-02	9.337E-02	5.801E-02
0K-40	K-40	1.000E+00	2.351E+00	2.351E+00	2.350E+00	2.346E+00	2.302E+00
0Na-22	Na-22	1.000E+00	2.715E+01	2.080E+01	9.182E-03	7.314E-11	0.000E+00
0Pu-238	Pu-238	1.000E+00	8.505E-01	8.438E-01	6.710E-01	3.860E-01	3.153E-04
0U-234	Pu-238	1.000E+00	1.268E-07	3.791E-07	6.891E-06	1.763E-05	3.203E-05
U-234	U-234	1.000E+00	8.970E-02	8.970E-02	8.968E-02	8.965E-02	8.923E-02
U-234	U-238	1.000E+00	1.271E-07	3.814E-07	7.755E-06	2.555E-05	2.535E-04
U-234	äDOSE(j)		8.970E-02	8.970E-02	8.970E-02	8.969E-02	8.952E-02
0Th-230	Pu-238	1.000E+00	7.823E-13	5.464E-12	2.022E-09	1.853E-08	5.170E-07
Th-230	Th-230	1.000E+00	1.843E-01	1.843E-01	1.842E-01	1.841E-01	1.826E-01
Th-230	U-234	1.000E+00	8.295E-07	2.488E-06	5.059E-05	1.666E-04	1.648E-03
Th-230	U-238	1.000E+00	7.838E-13	5.487E-12	2.187E-09	2.374E-08	2.341E-06
Th-230	äDOSE(j)		1.843E-01	1.843E-01	1.843E-01	1.843E-01	1.843E-01

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Ra-226	Pu-238	1.000E+00	1.203E-14	1.801E-13	1.285E-09	4.010E-08	1.252E-05
Ra-226	Ra-226	1.000E+00	2.615E+01	2.614E+01	2.581E+01	2.504E+01	1.693E+01
Ra-226	Th-230	1.000E+00	5.665E-03	1.699E-02	3.433E-01	1.114E+00	9.149E+00
Ra-226	U-234	1.000E+00	1.700E-08	1.190E-07	4.724E-05	5.075E-04	4.417E-02
Ra-226	U-238	1.000E+00	1.205E-14	1.807E-13	1.363E-09	4.838E-08	4.326E-05
Ra-226	äDOSE(j)		2.616E+01	2.616E+01	2.616E+01	2.615E+01	2.612E+01
0Pb-210	Pu-238	1.000E+00	5.220E-18	1.607E-16	1.807E-11	1.347E-09	8.202E-07
Pb-210	Ra-226	1.000E+00	2.821E-02	8.347E-02	1.115E+00	1.699E+00	1.204E+00
Pb-210	Th-230	1.000E+00	4.085E-06	2.834E-05	8.538E-03	5.445E-02	6.250E-01
Pb-210	U-234	1.000E+00	9.208E-12	1.372E-10	8.402E-07	1.983E-05	2.917E-03
Pb-210	U-238	1.000E+00	5.227E-18	1.612E-16	1.898E-11	1.585E-09	2.768E-06
Pb-210	äDOSE(j)		2.822E-02	8.350E-02	1.124E+00	1.754E+00	1.832E+00
0Pu-239	Pu-239	1.000E+00	9.442E-01	9.442E-01	9.434E-01	9.415E-01	9.174E-01
0U-235	Pu-239	1.000E+00	8.876E-10	2.663E-09	5.412E-08	1.781E-07	1.749E-06
U-235	U-235	1.000E+00	1.803E+00	1.803E+00	1.802E+00	1.802E+00	1.798E+00
U-235	äDOSE(j)		1.803E+00	1.803E+00	1.802E+00	1.802E+00	1.798E+00
0Pa-231	Pu-239	1.000E+00	1.132E-14	7.921E-14	3.157E-11	3.423E-10	3.337E-08
Pa-231	U-235	1.000E+00	3.447E-05	1.034E-04	2.102E-03	6.919E-03	6.809E-02
Pa-231	äDOSE(j)		3.447E-05	1.034E-04	2.102E-03	6.919E-03	6.809E-02
0Ac-227	Pu-239	1.000E+00	2.520E-16	3.755E-15	2.296E-11	5.421E-10	8.828E-08
Ac-227	U-235	1.000E+00	1.022E-06	7.089E-06	2.132E-03	1.365E-02	1.858E-01
Ac-227	äDOSE(j)		1.022E-06	7.089E-06	2.132E-03	1.365E-02	1.858E-01
0Pu-240	Pu-240	1.000E+00	9.439E-01	9.438E-01	9.409E-01	9.339E-01	8.488E-01
0U-236	Pu-240	1.000E+00	1.255E-09	3.766E-09	7.645E-08	2.510E-07	2.380E-06
0Th-232	Pu-240	1.000E+00	2.209E-19	1.546E-18	6.160E-16	6.670E-15	6.401E-13
Th-232	Th-232	1.000E+00	9.077E-01	9.077E-01	9.077E-01	9.077E-01	9.077E-01
Th-232	äDOSE(j)		9.077E-01	9.077E-01	9.077E-01	9.077E-01	9.077E-01
0Ra-228	Pu-240	1.000E+00	9.928E-20	1.452E-18	5.648E-15	8.646E-14	9.618E-12
Ra-228	Ra-228	1.000E+00	1.306E+01	1.158E+01	3.510E-01	7.595E-05	0.000E+00
Ra-228	Th-232	1.000E+00	8.030E-01	2.286E+00	1.351E+01	1.386E+01	1.386E+01
Ra-228	äDOSE(j)		1.386E+01	1.386E+01	1.386E+01	1.386E+01	1.386E+01
0Th-228	Pu-240	1.000E+00	1.219E-20	3.492E-19	8.141E-15	1.460E-13	1.713E-11
Th-228	Ra-228	1.000E+00	3.840E+00	9.347E+00	9.416E-01	2.039E-04	0.000E+00
Th-228	Th-228	1.000E+00	2.083E+01	1.450E+01	3.964E-04	3.833E-15	0.000E+00
Th-228	Th-232	1.000E+00	1.605E-01	9.850E-01	2.389E+01	2.483E+01	2.483E+01
Th-228	äDOSE(j)		2.483E+01	2.483E+01	2.483E+01	2.483E+01	2.483E+01
0Ru-106	Ru-106	1.000E+00	2.113E+00	1.062E+00	2.261E-09	0.000E+00	0.000E+00
0Sr-90	Sr-90	1.000E+00	9.289E-02	9.071E-02	4.548E-02	8.591E-03	4.253E-12

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Summary : Site Worker RME SALs 01-28-03 File: WORK_RME.RAD

Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	6.525E-04	6.519E-04	6.341E-04	5.931E-04	2.510E-04
0U-238	U-238	1.000E+00	4.273E-01	4.273E-01	4.272E-01	4.272E-01	4.262E-01

BRF(i) is the branch fraction of the parent nuclide.

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Summary : Site Worker RME SALs 01-28-03 File: WORK_RME.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+01	9.984E+00	9.529E+00	8.513E+00	2.000E+00
0Np-237	Am-241	1.000E+00	0.000E+00	3.236E-06	9.486E-05	2.992E-04	1.609E-03
Np-237	Np-237	1.000E+00	1.000E+01	1.000E+01	1.000E+01	9.999E+00	9.992E+00
Np-237	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	9.994E+00
0U-233	Am-241	1.000E+00	0.000E+00	7.079E-12	6.272E-09	6.715E-08	4.414E-06
U-233	Np-237	1.000E+00	0.000E+00	4.373E-05	1.312E-03	4.372E-03	4.357E-02
U-233	äS(j):		0.000E+00	4.373E-05	1.312E-03	4.372E-03	4.357E-02
0Th-229	Am-241	1.000E+00	0.000E+00	2.228E-16	5.943E-12	2.137E-10	1.517E-07
Th-229	Np-237	1.000E+00	0.000E+00	2.065E-09	1.857E-06	2.058E-05	1.996E-03
Th-229	äS(j):		0.000E+00	2.065E-09	1.857E-06	2.058E-05	1.996E-03
0Co-60	Co-60	1.000E+00	1.000E+01	8.768E+00	1.935E-01	1.945E-05	0.000E+00
0Cs-134	Cs-134	1.000E+00	1.000E+01	7.145E+00	4.172E-04	2.518E-14	0.000E+00
0Cs-137	Cs-137	1.000E+00	1.000E+01	9.772E+00	5.000E+00	9.921E-01	9.239E-10
0Eu-152	Eu-152	7.208E-01	7.208E+00	6.843E+00	1.515E+00	3.977E-02	1.883E-22
Eu-152	Eu-152	2.792E-01	2.792E+00	2.651E+00	5.867E-01	1.540E-02	7.294E-23
Eu-152	äS(j):		1.000E+01	9.493E+00	2.101E+00	5.517E-02	2.612E-22
0Gd-152	Eu-152	2.792E-01	0.000E+00	1.746E-14	2.722E-13	3.427E-13	3.446E-13
0Eu-154	Eu-154	1.000E+00	1.000E+01	9.243E+00	9.414E-01	3.795E-03	6.194E-34
0Eu-155	Eu-155	1.000E+00	1.000E+01	8.696E+00	1.511E-01	8.528E-06	0.000E+00
0H-3	H-3	1.000E+00	1.000E+01	3.643E+00	6.982E-13	0.000E+00	0.000E+00
0I-129	I-129	1.000E+00	1.000E+01	9.995E+00	9.843E+00	9.485E+00	5.892E+00
0K-40	K-40	1.000E+00	1.000E+01	1.000E+01	9.994E+00	9.979E+00	9.791E+00
0Na-22	Na-22	1.000E+00	1.000E+01	7.661E+00	3.381E-03	2.693E-11	0.000E+00
0Pu-238	Pu-238	1.000E+00	1.000E+01	9.921E+00	7.890E+00	4.538E+00	3.707E-03
0U-234	Pu-238	1.000E+00	0.000E+00	2.824E-05	7.572E-04	1.959E-03	3.571E-03
U-234	U-234	1.000E+00	1.000E+01	1.000E+01	9.998E+00	9.995E+00	9.948E+00
U-234	U-238	1.000E+00	0.000E+00	2.835E-05	8.504E-04	2.834E-03	2.824E-02
U-234	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	9.980E+00
0Th-230	Pu-238	1.000E+00	0.000E+00	1.273E-10	1.063E-07	9.966E-07	2.804E-05
Th-230	Th-230	1.000E+00	1.000E+01	1.000E+01	9.997E+00	9.991E+00	9.910E+00
Th-230	U-234	1.000E+00	0.000E+00	9.002E-05	2.700E-03	8.996E-03	8.938E-02
Th-230	U-238	1.000E+00	0.000E+00	1.276E-10	1.148E-07	1.275E-06	1.269E-04
Th-230	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Ra-226	Pu-238	1.000E+00	0.000E+00	1.839E-14	4.678E-10	1.512E-08	4.780E-06
Ra-226	Ra-226	1.000E+00	1.000E+01	9.996E+00	9.870E+00	9.574E+00	6.473E+00
Ra-226	Th-230	1.000E+00	0.000E+00	4.331E-03	1.291E-01	4.237E-01	3.496E+00
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-08	1.747E-05	1.921E-04	1.687E-02
Ra-226	U-238	1.000E+00	0.000E+00	1.842E-14	4.958E-10	1.822E-08	1.652E-05
Ra-226	äS(j):		1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.986E+00
0Pb-210	Pu-238	1.000E+00	0.000E+00	1.421E-16	9.249E-11	7.216E-09	4.466E-06
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-01	6.019E+00	9.257E+00	6.565E+00
Pb-210	Th-230	1.000E+00	0.000E+00	6.663E-05	4.523E-02	2.948E-01	3.405E+00
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-10	4.372E-06	1.067E-04	1.589E-02
Pb-210	U-238	1.000E+00	0.000E+00	1.423E-16	9.704E-11	8.485E-09	1.507E-05
Pb-210	äS(j):		0.000E+00	3.060E-01	6.064E+00	9.552E+00	9.986E+00
0Pu-239	Pu-239	1.000E+00	1.000E+01	1.000E+01	9.991E+00	9.971E+00	9.715E+00
0U-235	Pu-239	1.000E+00	0.000E+00	9.848E-09	2.953E-07	9.833E-07	9.696E-06
U-235	U-235	1.000E+00	1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.976E+00
U-235	äS(j):		1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.976E+00
0Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-13	9.372E-11	1.040E-09	1.023E-07
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-04	6.345E-03	2.113E-02	2.089E-01
Pa-231	äS(j):		0.000E+00	2.116E-04	6.345E-03	2.113E-02	2.089E-01
0Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-15	2.388E-11	5.835E-10	9.612E-08
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-06	2.258E-03	1.477E-02	2.023E-01
Ac-227	äS(j):		0.000E+00	3.332E-06	2.258E-03	1.477E-02	2.023E-01
0Pu-240	Pu-240	1.000E+00	1.000E+01	9.999E+00	9.968E+00	9.894E+00	8.993E+00
0U-236	Pu-240	1.000E+00	0.000E+00	2.960E-07	8.866E-06	2.944E-05	2.805E-04
0Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-18	6.565E-15	7.276E-14	7.045E-12
Th-232	Th-232	1.000E+00	1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
Th-232	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
0Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-19	3.912E-15	6.170E-14	6.931E-12
Ra-228	Ra-228	1.000E+00	1.000E+01	8.864E+00	2.688E-01	5.816E-05	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E+00	9.731E+00	1.000E+01	1.000E+01
Ra-228	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
0Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-20	3.136E-15	5.814E-14	6.893E-12
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E+00	4.025E-01	8.716E-05	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+01	6.961E+00	1.903E-04	1.840E-15	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-01	9.597E+00	1.000E+01	1.000E+01
Th-228	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
0Ru-106	Ru-106	1.000E+00	1.000E+01	5.023E+00	1.070E-08	1.252E-29	0.000E+00
0Sr-90	Sr-90	1.000E+00	1.000E+01	9.765E+00	4.896E+00	9.249E-01	4.578E-10

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Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Tc-99	Tc-99	1.000E+00	1.000E+01	9.990E+00	9.717E+00	9.089E+00	3.847E+00
0U-238	U-238	1.000E+00	1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.976E+00

BRF(i) is the branch fraction of the parent nuclide.
0RESCALC.EXE execution time = 5.07 seconds

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Dose Conversion Factor (and Related) Parameter Summary
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Menu	Parameter	Current Value	Default	Parameter Name
B-1	Dose conversion factors for inhalation, mrem/pCi:			
B-1	Ac-227+D	6.720E+00	6.720E+00	DCF2(1)
B-1	Am-241	4.440E-01	4.440E-01	DCF2(2)
B-1	Co-60	2.190E-04	2.190E-04	DCF2(3)
B-1	Cs-134	4.630E-05	4.630E-05	DCF2(4)
B-1	Cs-137+D	3.190E-05	3.190E-05	DCF2(5)
B-1	Eu-152	2.210E-04	2.210E-04	DCF2(6)
B-1	Eu-154	2.860E-04	2.860E-04	DCF2(8)
B-1	Eu-155	4.140E-05	4.140E-05	DCF2(9)
B-1	Gd-152	2.430E-01	2.430E-01	DCF2(10)
B-1	H-3	6.400E-08	6.400E-08	DCF2(11)
B-1	I-129	1.740E-04	1.740E-04	DCF2(12)
B-1	K-40	1.240E-05	1.240E-05	DCF2(13)
B-1	Na-22	7.660E-06	7.660E-06	DCF2(14)
B-1	Np-237+D	5.400E-01	5.400E-01	DCF2(15)
B-1	Pa-231	1.280E+00	1.280E+00	DCF2(16)
B-1	Pb-210+D	2.320E-02	2.320E-02	DCF2(17)
B-1	Pu-238	3.920E-01	3.920E-01	DCF2(18)
B-1	Pu-239	4.290E-01	4.290E-01	DCF2(19)
B-1	Pu-240	4.290E-01	4.290E-01	DCF2(20)
B-1	Ra-226+D	8.600E-03	8.600E-03	DCF2(21)
B-1	Ra-228+D	5.080E-03	5.080E-03	DCF2(22)
B-1	Ru-106+D	4.770E-04	4.770E-04	DCF2(23)
B-1	Sr-90+D	1.310E-03	1.310E-03	DCF2(24)
B-1	Tc-99	8.330E-06	8.330E-06	DCF2(25)
B-1	Th-228+D	3.450E-01	3.450E-01	DCF2(26)
B-1	Th-229+D	2.160E+00	2.160E+00	DCF2(27)
B-1	Th-230	3.260E-01	3.260E-01	DCF2(28)
B-1	Th-232	1.640E+00	1.640E+00	DCF2(29)
B-1	U-233	1.350E-01	1.350E-01	DCF2(30)
B-1	U-234	1.320E-01	1.320E-01	DCF2(31)
B-1	U-235+D	1.230E-01	1.230E-01	DCF2(32)
B-1	U-236	1.250E-01	1.250E-01	DCF2(33)
B-1	U-238+D	1.180E-01	1.180E-01	DCF2(34)
D-1	Dose conversion factors for ingestion, mrem/pCi:			
D-1	Ac-227+D	1.480E-02	1.480E-02	DCF3(1)
D-1	Am-241	3.640E-03	3.640E-03	DCF3(2)
D-1	Co-60	2.690E-05	2.690E-05	DCF3(3)
D-1	Cs-134	7.330E-05	7.330E-05	DCF3(4)
D-1	Cs-137+D	5.000E-05	5.000E-05	DCF3(5)
D-1	Eu-152	6.480E-06	6.480E-06	DCF3(6)
D-1	Eu-154	9.550E-06	9.550E-06	DCF3(8)
D-1	Eu-155	1.530E-06	1.530E-06	DCF3(9)
D-1	Gd-152	1.610E-04	1.610E-04	DCF3(10)
D-1	H-3	6.400E-08	6.400E-08	DCF3(11)
D-1	I-129	2.760E-04	2.760E-04	DCF3(12)
D-1	K-40	1.860E-05	1.860E-05	DCF3(13)
D-1	Na-22	1.150E-05	1.150E-05	DCF3(14)
D-1	Np-237+D	4.440E-03	4.440E-03	DCF3(15)

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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0 Menu	Parameter	Current Value	Default	Parameter Name
D-1	Pa-231	1.060E-02	1.060E-02	DCF3(16)
D-1	Pb-210+D	7.270E-03	7.270E-03	DCF3(17)
D-1	Pu-238	3.200E-03	3.200E-03	DCF3(18)
D-1	Pu-239	3.540E-03	3.540E-03	DCF3(19)
D-1	Pu-240	3.540E-03	3.540E-03	DCF3(20)
D-1	Ra-226+D	1.330E-03	1.330E-03	DCF3(21)
D-1	Ra-228+D	1.440E-03	1.440E-03	DCF3(22)
D-1	Ru-106+D	2.740E-05	2.740E-05	DCF3(23)
D-1	Sr-90+D	1.530E-04	1.530E-04	DCF3(24)
D-1	Tc-99	1.460E-06	1.460E-06	DCF3(25)
D-1	Th-228+D	8.080E-04	8.080E-04	DCF3(26)
D-1	Th-229+D	4.030E-03	4.030E-03	DCF3(27)
D-1	Th-230	5.480E-04	5.480E-04	DCF3(28)
D-1	Th-232	2.730E-03	2.730E-03	DCF3(29)
D-1	U-233	2.890E-04	2.890E-04	DCF3(30)
D-1	U-234	2.830E-04	2.830E-04	DCF3(31)
D-1	U-235+D	2.670E-04	2.670E-04	DCF3(32)
D-1	U-236	2.690E-04	2.690E-04	DCF3(33)
D-1	U-238+D	2.690E-04	2.690E-04	DCF3(34)
D-34	Food transfer factors:			
D-34	Ac-227+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(1,1)
D-34	Ac-227+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,2)
D-34	Ac-227+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(1,3)
D-34				
D-34	Am-241 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(2,1)
D-34	Am-241 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-05	5.000E-05	RTF(2,2)
D-34	Am-241 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-06	2.000E-06	RTF(2,3)
D-34				
D-34	Co-60 , plant/soil concentration ratio, dimensionless	8.000E-02	8.000E-02	RTF(3,1)
D-34	Co-60 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(3,2)
D-34	Co-60 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(3,3)
D-34				
D-34	Cs-134 , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(4,1)
D-34	Cs-134 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(4,2)
D-34	Cs-134 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(4,3)
D-34				
D-34	Cs-137+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(5,1)
D-34	Cs-137+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.000E-02	3.000E-02	RTF(5,2)
D-34	Cs-137+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	8.000E-03	8.000E-03	RTF(5,3)
D-34				
D-34	Eu-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(6,1)
D-34	Eu-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(6,2)
D-34	Eu-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(6,3)
D-34				
D-34	Eu-154 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(8,1)
D-34	Eu-154 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(8,2)
D-34	Eu-154 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(8,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Default	Parameter Name
D-34	Eu-155 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(9,1)
D-34	Eu-155 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(9,2)
D-34	Eu-155 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(9,3)
D-34				
D-34	Gd-152 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(10,1)
D-34	Gd-152 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(10,2)
D-34	Gd-152 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-05	2.000E-05	RTF(10,3)
D-34				
D-34	H-3 , plant/soil concentration ratio, dimensionless	4.800E+00	4.800E+00	RTF(11,1)
D-34	H-3 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.200E-02	1.200E-02	RTF(11,2)
D-34	H-3 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(11,3)
D-34				
D-34	I-129 , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(12,1)
D-34	I-129 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	7.000E-03	7.000E-03	RTF(12,2)
D-34	I-129 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-02	1.000E-02	RTF(12,3)
D-34				
D-34	K-40 , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(13,1)
D-34	K-40 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-02	2.000E-02	RTF(13,2)
D-34	K-40 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	7.000E-03	7.000E-03	RTF(13,3)
D-34				
D-34	Na-22 , plant/soil concentration ratio, dimensionless	5.000E-02	5.000E-02	RTF(14,1)
D-34	Na-22 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-02	8.000E-02	RTF(14,2)
D-34	Na-22 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	4.000E-02	4.000E-02	RTF(14,3)
D-34				
D-34	Np-237+D , plant/soil concentration ratio, dimensionless	2.000E-02	2.000E-02	RTF(15,1)
D-34	Np-237+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(15,2)
D-34	Np-237+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(15,3)
D-34				
D-34	Pa-231 , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(16,1)
D-34	Pa-231 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	5.000E-03	5.000E-03	RTF(16,2)
D-34	Pa-231 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(16,3)
D-34				
D-34	Pb-210+D , plant/soil concentration ratio, dimensionless	1.000E-02	1.000E-02	RTF(17,1)
D-34	Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-04	8.000E-04	RTF(17,2)
D-34	Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.000E-04	3.000E-04	RTF(17,3)
D-34				
D-34	Pu-238 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(18,1)
D-34	Pu-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(18,2)
D-34	Pu-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(18,3)
D-34				
D-34	Pu-239 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(19,1)
D-34	Pu-239 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(19,2)
D-34	Pu-239 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(19,3)
D-34				
D-34	Pu-240 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(20,1)
D-34	Pu-240 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(20,2)
D-34	Pu-240 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-06	1.000E-06	RTF(20,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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0 Menu	Parameter	Current Value	Default	Parameter Name
D-34	Ra-226+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(21,1)
D-34	Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(21,2)
D-34	Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(21,3)
D-34				
D-34	Ra-228+D , plant/soil concentration ratio, dimensionless	4.000E-02	4.000E-02	RTF(22,1)
D-34	Ra-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-03	1.000E-03	RTF(22,2)
D-34	Ra-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(22,3)
D-34				
D-34	Ru-106+D , plant/soil concentration ratio, dimensionless	3.000E-02	3.000E-02	RTF(23,1)
D-34	Ru-106+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	2.000E-03	2.000E-03	RTF(23,2)
D-34	Ru-106+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	3.300E-06	3.300E-06	RTF(23,3)
D-34				
D-34	Sr-90+D , plant/soil concentration ratio, dimensionless	3.000E-01	3.000E-01	RTF(24,1)
D-34	Sr-90+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	8.000E-03	8.000E-03	RTF(24,2)
D-34	Sr-90+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	2.000E-03	2.000E-03	RTF(24,3)
D-34				
D-34	Tc-99 , plant/soil concentration ratio, dimensionless	5.000E+00	5.000E+00	RTF(25,1)
D-34	Tc-99 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(25,2)
D-34	Tc-99 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	1.000E-03	1.000E-03	RTF(25,3)
D-34				
D-34	Th-228+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(26,1)
D-34	Th-228+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(26,2)
D-34	Th-228+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(26,3)
D-34				
D-34	Th-229+D , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(27,1)
D-34	Th-229+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(27,2)
D-34	Th-229+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(27,3)
D-34				
D-34	Th-230 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(28,1)
D-34	Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(28,2)
D-34	Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(28,3)
D-34				
D-34	Th-232 , plant/soil concentration ratio, dimensionless	1.000E-03	1.000E-03	RTF(29,1)
D-34	Th-232 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	1.000E-04	1.000E-04	RTF(29,2)
D-34	Th-232 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	5.000E-06	5.000E-06	RTF(29,3)
D-34				
D-34	U-233 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(30,1)
D-34	U-233 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(30,2)
D-34	U-233 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(30,3)
D-34				
D-34	U-234 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(31,1)
D-34	U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(31,2)
D-34	U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(31,3)
D-34				
D-34	U-235+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(32,1)
D-34	U-235+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(32,2)
D-34	U-235+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(32,3)
D-34				

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Default	Parameter Name
D-34	U-236 , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(33,1)
D-34	U-236 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(33,2)
D-34	U-236 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(33,3)
D-34				
D-34	U-238+D , plant/soil concentration ratio, dimensionless	2.500E-03	2.500E-03	RTF(34,1)
D-34	U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	3.400E-04	3.400E-04	RTF(34,2)
D-34	U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	6.000E-04	6.000E-04	RTF(34,3)
D-5	Bioaccumulation factors, fresh water, L/kg:			
D-5	Ac-227+D , fish	1.500E+01	1.500E+01	BIOFAC(1,1)
D-5	Ac-227+D , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(1,2)
D-5				
D-5	Am-241 , fish	3.000E+01	3.000E+01	BIOFAC(2,1)
D-5	Am-241 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(2,2)
D-5				
D-5	Co-60 , fish	3.000E+02	3.000E+02	BIOFAC(3,1)
D-5	Co-60 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(3,2)
D-5				
D-5	Cs-134 , fish	2.000E+03	2.000E+03	BIOFAC(4,1)
D-5	Cs-134 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(4,2)
D-5				
D-5	Cs-137+D , fish	2.000E+03	2.000E+03	BIOFAC(5,1)
D-5	Cs-137+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(5,2)
D-5				
D-5	Eu-152 , fish	5.000E+01	5.000E+01	BIOFAC(6,1)
D-5	Eu-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(6,2)
D-5				
D-5	Eu-154 , fish	5.000E+01	5.000E+01	BIOFAC(8,1)
D-5	Eu-154 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(8,2)
D-5				
D-5	Eu-155 , fish	5.000E+01	5.000E+01	BIOFAC(9,1)
D-5	Eu-155 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(9,2)
D-5				
D-5	Gd-152 , fish	2.500E+01	2.500E+01	BIOFAC(10,1)
D-5	Gd-152 , crustacea and mollusks	1.000E+03	1.000E+03	BIOFAC(10,2)
D-5				
D-5	H-3 , fish	1.000E+00	1.000E+00	BIOFAC(11,1)
D-5	H-3 , crustacea and mollusks	1.000E+00	1.000E+00	BIOFAC(11,2)
D-5				
D-5	I-129 , fish	4.000E+01	4.000E+01	BIOFAC(12,1)
D-5	I-129 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(12,2)
D-5				
D-5	K-40 , fish	1.000E+03	1.000E+03	BIOFAC(13,1)
D-5	K-40 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(13,2)
D-5				
D-5	Na-22 , fish	2.000E+01	2.000E+01	BIOFAC(14,1)
D-5	Na-22 , crustacea and mollusks	2.000E+02	2.000E+02	BIOFAC(14,2)
D-5				
D-5	Np-237+D , fish	3.000E+01	3.000E+01	BIOFAC(15,1)
D-5	Np-237+D , crustacea and mollusks	4.000E+02	4.000E+02	BIOFAC(15,2)

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Dose Conversion Factor (and Related) Parameter Summary (continued)
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Menu	Parameter	Current Value	Default	Parameter Name
D-5	Pa-231 , fish	1.000E+01	1.000E+01	BIOFAC(16,1)
D-5	Pa-231 , crustacea and mollusks	1.100E+02	1.100E+02	BIOFAC(16,2)
D-5				
D-5	Pb-210+D , fish	3.000E+02	3.000E+02	BIOFAC(17,1)
D-5	Pb-210+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(17,2)
D-5				
D-5	Pu-238 , fish	3.000E+01	3.000E+01	BIOFAC(18,1)
D-5	Pu-238 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(18,2)
D-5				
D-5	Pu-239 , fish	3.000E+01	3.000E+01	BIOFAC(19,1)
D-5	Pu-239 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(19,2)
D-5				
D-5	Pu-240 , fish	3.000E+01	3.000E+01	BIOFAC(20,1)
D-5	Pu-240 , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(20,2)
D-5				
D-5	Ra-226+D , fish	5.000E+01	5.000E+01	BIOFAC(21,1)
D-5	Ra-226+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(21,2)
D-5				
D-5	Ra-228+D , fish	5.000E+01	5.000E+01	BIOFAC(22,1)
D-5	Ra-228+D , crustacea and mollusks	2.500E+02	2.500E+02	BIOFAC(22,2)
D-5				
D-5	Ru-106+D , fish	1.000E+01	1.000E+01	BIOFAC(23,1)
D-5	Ru-106+D , crustacea and mollusks	3.000E+02	3.000E+02	BIOFAC(23,2)
D-5				
D-5	Sr-90+D , fish	6.000E+01	6.000E+01	BIOFAC(24,1)
D-5	Sr-90+D , crustacea and mollusks	1.000E+02	1.000E+02	BIOFAC(24,2)
D-5				
D-5	Tc-99 , fish	2.000E+01	2.000E+01	BIOFAC(25,1)
D-5	Tc-99 , crustacea and mollusks	5.000E+00	5.000E+00	BIOFAC(25,2)
D-5				
D-5	Th-228+D , fish	1.000E+02	1.000E+02	BIOFAC(26,1)
D-5	Th-228+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(26,2)
D-5				
D-5	Th-229+D , fish	1.000E+02	1.000E+02	BIOFAC(27,1)
D-5	Th-229+D , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(27,2)
D-5				
D-5	Th-230 , fish	1.000E+02	1.000E+02	BIOFAC(28,1)
D-5	Th-230 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(28,2)
D-5				
D-5	Th-232 , fish	1.000E+02	1.000E+02	BIOFAC(29,1)
D-5	Th-232 , crustacea and mollusks	5.000E+02	5.000E+02	BIOFAC(29,2)
D-5				
D-5	U-233 , fish	1.000E+01	1.000E+01	BIOFAC(30,1)
D-5	U-233 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(30,2)
D-5				
D-5	U-234 , fish	1.000E+01	1.000E+01	BIOFAC(31,1)
D-5	U-234 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(31,2)
D-5				
D-5	U-235+D , fish	1.000E+01	1.000E+01	BIOFAC(32,1)
D-5	U-235+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(32,2)

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Menu	Parameter	Current Value	Default	Parameter Name
D-5	U-236 , fish	1.000E+01	1.000E+01	BIOFAC(33,1)
D-5	U-236 , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(33,2)
D-5				
D-5	U-238+D , fish	1.000E+01	1.000E+01	BIOFAC(34,1)
D-5	U-238+D , crustacea and mollusks	6.000E+01	6.000E+01	BIOFAC(34,2)

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Site-Specific Parameter Summary

Menu	Parameter		User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R011	Area of contaminated zone (m**2)		4.050E+05	1.000E+04	---	AREA
R011	Thickness of contaminated zone (m)		2.000E+00	2.000E+00	---	THICK0
R011	Length parallel to aquifer flow (m)		1.000E+02	1.000E+02	---	LCZPAQ
R011	Basic radiation dose limit (mrem/yr)		1.500E+01	2.500E+01	---	BRDL
R011	Time since placement of material (yr)		0.000E+00	0.000E+00	---	TI
R011	Times for calculations (yr)		1.000E+00	1.000E+00	---	T(2)
R011	Times for calculations (yr)		3.000E+01	3.000E+00	---	T(3)
R011	Times for calculations (yr)		1.000E+02	1.000E+01	---	T(4)
R011	Times for calculations (yr)		1.000E+03	3.000E+01	---	T(5)
R011	Times for calculations (yr)		not used	1.000E+02	---	T(6)
R011	Times for calculations (yr)		not used	3.000E+02	---	T(7)
R011	Times for calculations (yr)		not used	1.000E+03	---	T(8)
R011	Times for calculations (yr)		not used	0.000E+00	---	T(9)
R011	Times for calculations (yr)		not used	0.000E+00	---	T(10)
R012	Initial principal radionuclide (pCi/g):	Am-241	1.000E+01	0.000E+00	---	S1(2)
R012	Initial principal radionuclide (pCi/g):	Co-60	1.000E+01	0.000E+00	---	S1(3)
R012	Initial principal radionuclide (pCi/g):	Cs-134	1.000E+01	0.000E+00	---	S1(4)
R012	Initial principal radionuclide (pCi/g):	Cs-137	1.000E+01	0.000E+00	---	S1(5)
R012	Initial principal radionuclide (pCi/g):	Eu-152	1.000E+01	0.000E+00	---	S1(6)
R012	Initial principal radionuclide (pCi/g):	Eu-154	1.000E+01	0.000E+00	---	S1(8)
R012	Initial principal radionuclide (pCi/g):	Eu-155	1.000E+01	0.000E+00	---	S1(9)
R012	Initial principal radionuclide (pCi/g):	H-3	1.000E+01	0.000E+00	---	S1(11)
R012	Initial principal radionuclide (pCi/g):	I-129	1.000E+01	0.000E+00	---	S1(12)
R012	Initial principal radionuclide (pCi/g):	K-40	1.000E+01	0.000E+00	---	S1(13)
R012	Initial principal radionuclide (pCi/g):	Na-22	1.000E+01	0.000E+00	---	S1(14)
R012	Initial principal radionuclide (pCi/g):	Np-237	1.000E+01	0.000E+00	---	S1(15)
R012	Initial principal radionuclide (pCi/g):	Pu-238	1.000E+01	0.000E+00	---	S1(18)
R012	Initial principal radionuclide (pCi/g):	Pu-239	1.000E+01	0.000E+00	---	S1(19)
R012	Initial principal radionuclide (pCi/g):	Pu-240	1.000E+01	0.000E+00	---	S1(20)
R012	Initial principal radionuclide (pCi/g):	Ra-226	1.000E+01	0.000E+00	---	S1(21)
R012	Initial principal radionuclide (pCi/g):	Ra-228	1.000E+01	0.000E+00	---	S1(22)
R012	Initial principal radionuclide (pCi/g):	Ru-106	1.000E+01	0.000E+00	---	S1(23)
R012	Initial principal radionuclide (pCi/g):	Sr-90	1.000E+01	0.000E+00	---	S1(24)
R012	Initial principal radionuclide (pCi/g):	Tc-99	1.000E+01	0.000E+00	---	S1(25)
R012	Initial principal radionuclide (pCi/g):	Th-228	1.000E+01	0.000E+00	---	S1(26)
R012	Initial principal radionuclide (pCi/g):	Th-230	1.000E+01	0.000E+00	---	S1(28)
R012	Initial principal radionuclide (pCi/g):	Th-232	1.000E+01	0.000E+00	---	S1(29)
R012	Initial principal radionuclide (pCi/g):	U-234	1.000E+01	0.000E+00	---	S1(31)
R012	Initial principal radionuclide (pCi/g):	U-235	1.000E+01	0.000E+00	---	S1(32)
R012	Initial principal radionuclide (pCi/g):	U-238	1.000E+01	0.000E+00	---	S1(34)
R012	Concentration in groundwater (pCi/L):	Am-241	not used	0.000E+00	---	W1(2)
R012	Concentration in groundwater (pCi/L):	Co-60	not used	0.000E+00	---	W1(3)
R012	Concentration in groundwater (pCi/L):	Cs-134	not used	0.000E+00	---	W1(4)
R012	Concentration in groundwater (pCi/L):	Cs-137	not used	0.000E+00	---	W1(5)
R012	Concentration in groundwater (pCi/L):	Eu-152	not used	0.000E+00	---	W1(6)
R012	Concentration in groundwater (pCi/L):	Eu-154	not used	0.000E+00	---	W1(8)
R012	Concentration in groundwater (pCi/L):	Eu-155	not used	0.000E+00	---	W1(9)
R012	Concentration in groundwater (pCi/L):	H-3	not used	0.000E+00	---	W1(11)
R012	Concentration in groundwater (pCi/L):	I-129	not used	0.000E+00	---	W1(12)

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R012	Concentration in groundwater (pCi/L): K-40	not used	0.000E+00	---	W1(13)
R012	Concentration in groundwater (pCi/L): Na-22	not used	0.000E+00	---	W1(14)
R012	Concentration in groundwater (pCi/L): Np-237	not used	0.000E+00	---	W1(15)
R012	Concentration in groundwater (pCi/L): Pu-238	not used	0.000E+00	---	W1(18)
R012	Concentration in groundwater (pCi/L): Pu-239	not used	0.000E+00	---	W1(19)
R012	Concentration in groundwater (pCi/L): Pu-240	not used	0.000E+00	---	W1(20)
R012	Concentration in groundwater (pCi/L): Ra-226	not used	0.000E+00	---	W1(21)
R012	Concentration in groundwater (pCi/L): Ra-228	not used	0.000E+00	---	W1(22)
R012	Concentration in groundwater (pCi/L): Ru-106	not used	0.000E+00	---	W1(23)
R012	Concentration in groundwater (pCi/L): Sr-90	not used	0.000E+00	---	W1(24)
R012	Concentration in groundwater (pCi/L): Tc-99	not used	0.000E+00	---	W1(25)
R012	Concentration in groundwater (pCi/L): Th-228	not used	0.000E+00	---	W1(26)
R012	Concentration in groundwater (pCi/L): Th-230	not used	0.000E+00	---	W1(28)
R012	Concentration in groundwater (pCi/L): Th-232	not used	0.000E+00	---	W1(29)
R012	Concentration in groundwater (pCi/L): U-234	not used	0.000E+00	---	W1(31)
R012	Concentration in groundwater (pCi/L): U-235	not used	0.000E+00	---	W1(32)
R012	Concentration in groundwater (pCi/L): U-238	not used	0.000E+00	---	W1(34)
R013	Cover depth (m)	0.000E+00	0.000E+00	---	COVER0
R013	Density of cover material (g/cm**3)	not used	1.500E+00	---	DENSCV
R013	Cover depth erosion rate (m/yr)	not used	1.000E-03	---	VCV
R013	Density of contaminated zone (g/cm**3)	1.600E+00	1.500E+00	---	DENSCZ
R013	Contaminated zone erosion rate (m/yr)	0.000E+00	1.000E-03	---	VCZ
R013	Contaminated zone total porosity	4.000E-01	4.000E-01	---	TPCZ
R013	Contaminated zone field capacity	2.000E-01	2.000E-01	---	FCCZ
R013	Contaminated zone hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCCZ
R013	Contaminated zone b parameter	5.300E+00	5.300E+00	---	BCZ
R013	Average annual wind speed (m/sec)	3.000E+00	2.000E+00	---	WIND
R013	Humidity in air (g/m**3)	5.550E+00	8.000E+00	---	HUMID
R013	Evapotranspiration coefficient	9.990E-01	5.000E-01	---	EVAPTR
R013	Precipitation (m/yr)	4.760E-01	1.000E+00	---	PRECIP
R013	Irrigation (m/yr)	0.000E+00	2.000E-01	---	RI
R013	Irrigation mode	overhead	overhead	---	IDITCH
R013	Runoff coefficient	2.000E-01	2.000E-01	---	RUNOFF
R013	Watershed area for nearby stream or pond (m**2)	1.000E+06	1.000E+06	---	WAREA
R013	Accuracy for water/soil computations	1.000E-03	1.000E-03	---	EPS
R014	Density of saturated zone (g/cm**3)	1.500E+00	1.500E+00	---	DENSAQ
R014	Saturated zone total porosity	4.000E-01	4.000E-01	---	TPSZ
R014	Saturated zone effective porosity	2.000E-01	2.000E-01	---	EPSZ
R014	Saturated zone field capacity	2.000E-01	2.000E-01	---	FCSZ
R014	Saturated zone hydraulic conductivity (m/yr)	1.000E+02	1.000E+02	---	HCSZ
R014	Saturated zone hydraulic gradient	2.000E-02	2.000E-02	---	HGWT
R014	Saturated zone b parameter	5.300E+00	5.300E+00	---	BSZ
R014	Water table drop rate (m/yr)	1.000E-03	1.000E-03	---	VWT
R014	Well pump intake depth (m below water table)	1.000E+01	1.000E+01	---	DWIBWT
R014	Model: Nondispersion (ND) or Mass-Balance (MB)	ND	ND	---	MODEL
R014	Well pumping rate (m**3/yr)	2.500E+02	2.500E+02	---	UW
R015	Number of unsaturated zone strata	1	1	---	NS

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Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R015	Unsat. zone 1, thickness (m)	4.000E+00	4.000E+00	---	H(1)
R015	Unsat. zone 1, soil density (g/cm**3)	1.500E+00	1.500E+00	---	DENSUZ(1)
R015	Unsat. zone 1, total porosity	4.000E-01	4.000E-01	---	TPUZ(1)
R015	Unsat. zone 1, effective porosity	2.000E-01	2.000E-01	---	EPUZ(1)
R015	Unsat. zone 1, field capacity	2.000E-01	2.000E-01	---	FCUZ(1)
R015	Unsat. zone 1, soil-specific b parameter	5.300E+00	5.300E+00	---	BUZ(1)
R015	Unsat. zone 1, hydraulic conductivity (m/yr)	1.000E+01	1.000E+01	---	HCUZ(1)
R016	Distribution coefficients for Am-241				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(2)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(2,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(2)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.913E-06	ALEACH(2)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(2)
R016	Distribution coefficients for Co-60				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(3)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(3,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(3)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.190E-07	ALEACH(3)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(3)
R016	Distribution coefficients for Cs-134				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(4)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(4,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(4)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.190E-07	ALEACH(4)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(4)
R016	Distribution coefficients for Cs-137				
R016	Contaminated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCC(5)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCU(5,1)
R016	Saturated zone (cm**3/g)	1.000E+03	1.000E+03	---	DCNUCS(5)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.190E-07	ALEACH(5)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(5)
R016	Distribution coefficients for Eu-152				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(6)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(6,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(6)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(6)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(6)
R016	Distribution coefficients for Eu-154				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(8)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(8,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(8)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(8)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(8)

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R016	Distribution coefficients for Eu-155				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(9)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(9,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(9)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(9)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(9)
R016	Distribution coefficients for H-3				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(11)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(11,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(11)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.520E-04	ALEACH(11)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(11)
R016	Distribution coefficients for I-129				
R016	Contaminated zone (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCC(12)
R016	Unsaturated zone 1 (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCU(12,1)
R016	Saturated zone (cm**3/g)	1.000E-01	1.000E-01	---	DCNUCS(12)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.289E-04	ALEACH(12)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(12)
R016	Distribution coefficients for K-40				
R016	Contaminated zone (cm**3/g)	5.500E+00	5.500E+00	---	DCNUCC(13)
R016	Unsaturated zone 1 (cm**3/g)	5.500E+00	5.500E+00	---	DCNUCU(13,1)
R016	Saturated zone (cm**3/g)	5.500E+00	5.500E+00	---	DCNUCS(13)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.116E-05	ALEACH(13)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(13)
R016	Distribution coefficients for Na-22				
R016	Contaminated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCC(14)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCU(14,1)
R016	Saturated zone (cm**3/g)	1.000E+01	1.000E+01	---	DCNUCS(14)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.175E-05	ALEACH(14)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(14)
R016	Distribution coefficients for Np-237				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCC(15)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCU(15,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	2.574E+02	DCNUCS(15)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	4.620E-07	ALEACH(15)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(15)
R016	Distribution coefficients for Pu-238				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(18)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(18,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(18)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.950E-08	ALEACH(18)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(18)

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R016	Distribution coefficients for Pu-239				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(19)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(19,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(19)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.950E-08	ALEACH(19)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(19)
R016	Distribution coefficients for Pu-240				
R016	Contaminated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCC(20)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCU(20,1)
R016	Saturated zone (cm**3/g)	2.000E+03	2.000E+03	---	DCNUCS(20)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.950E-08	ALEACH(20)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(20)
R016	Distribution coefficients for Ra-226				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(21)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(21,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(21)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.697E-06	ALEACH(21)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(21)
R016	Distribution coefficients for Ra-228				
R016	Contaminated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCC(22)
R016	Unsaturated zone 1 (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCU(22,1)
R016	Saturated zone (cm**3/g)	7.000E+01	7.000E+01	---	DCNUCS(22)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.697E-06	ALEACH(22)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(22)
R016	Distribution coefficients for Ru-106				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(23)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(23,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(23)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.520E-04	ALEACH(23)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(23)
R016	Distribution coefficients for Sr-90				
R016	Contaminated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCC(24)
R016	Unsaturated zone 1 (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCU(24,1)
R016	Saturated zone (cm**3/g)	3.000E+01	3.000E+01	---	DCNUCS(24)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	3.950E-06	ALEACH(24)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(24)
R016	Distribution coefficients for Tc-99				
R016	Contaminated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCC(25)
R016	Unsaturated zone 1 (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCU(25,1)
R016	Saturated zone (cm**3/g)	0.000E+00	0.000E+00	---	DCNUCS(25)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	9.520E-04	ALEACH(25)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(25)

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R016	Distribution coefficients for Th-228				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(26)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(26,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(26)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(26)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(26)
R016	Distribution coefficients for Th-230				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(28)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(28,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(28)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(28)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(28)
R016	Distribution coefficients for Th-232				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(29)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(29,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(29)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(29)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(29)
R016	Distribution coefficients for U-234				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(31)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(31,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(31)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(31)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(31)
R016	Distribution coefficients for U-235				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(32)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(32,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(32)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(32)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(32)
R016	Distribution coefficients for U-238				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(34)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(34,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(34)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(34)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(34)
R016	Distribution coefficients for daughter Ac-227				
R016	Contaminated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCC(1)
R016	Unsaturated zone 1 (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCU(1,1)
R016	Saturated zone (cm**3/g)	2.000E+01	2.000E+01	---	DCNUCS(1)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	5.913E-06	ALEACH(1)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(1)

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R016	Distribution coefficients for daughter Gd-152				
R016	Contaminated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCC(10)
R016	Unsaturated zone 1 (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCU(10,1)
R016	Saturated zone (cm**3/g)	-1.000E+00	-1.000E+00	8.249E+02	DCNUCS(10)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.442E-07	ALEACH(10)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(10)
R016	Distribution coefficients for daughter Pa-231				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(16)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(16,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(16)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(16)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(16)
R016	Distribution coefficients for daughter Pb-210				
R016	Contaminated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCC(17)
R016	Unsaturated zone 1 (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCU(17,1)
R016	Saturated zone (cm**3/g)	1.000E+02	1.000E+02	---	DCNUCS(17)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.188E-06	ALEACH(17)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(17)
R016	Distribution coefficients for daughter Th-229				
R016	Contaminated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCC(27)
R016	Unsaturated zone 1 (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCU(27,1)
R016	Saturated zone (cm**3/g)	6.000E+04	6.000E+04	---	DCNUCS(27)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	1.983E-09	ALEACH(27)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(27)
R016	Distribution coefficients for daughter U-233				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(30)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(30,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(30)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(30)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(30)
R016	Distribution coefficients for daughter U-236				
R016	Contaminated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCC(33)
R016	Unsaturated zone 1 (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCU(33,1)
R016	Saturated zone (cm**3/g)	5.000E+01	5.000E+01	---	DCNUCS(33)
R016	Leach rate (/yr)	0.000E+00	0.000E+00	2.374E-06	ALEACH(33)
R016	Solubility constant	0.000E+00	0.000E+00	not used	SOLUBK(33)
R017	Inhalation rate (m**3/yr)	7.300E+03	8.400E+03	---	INHALR
R017	Mass loading for inhalation (g/m**3)	2.000E-05	1.000E-04	---	MLINH
R017	Exposure duration	3.000E+01	3.000E+01	---	ED
R017	Shielding factor, inhalation	1.000E+00	4.000E-01	---	SHF3
R017	Shielding factor, external gamma	8.000E-01	7.000E-01	---	SHF1
R017	Fraction of time spent indoors	7.190E-01	5.000E-01	---	FIND
R017	Fraction of time spent outdoors (on site)	2.400E-01	2.500E-01	---	FOTD
R017	Shape factor flag, external gamma	1.000E+00	1.000E+00	>0 shows circular AREA.	FS

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R017	Radii of shape factor array (used if FS = -1):				
R017	Outer annular radius (m), ring 1:	not used	5.000E+01	---	RAD_SHAPE(1)
R017	Outer annular radius (m), ring 2:	not used	7.071E+01	---	RAD_SHAPE(2)
R017	Outer annular radius (m), ring 3:	not used	0.000E+00	---	RAD_SHAPE(3)
R017	Outer annular radius (m), ring 4:	not used	0.000E+00	---	RAD_SHAPE(4)
R017	Outer annular radius (m), ring 5:	not used	0.000E+00	---	RAD_SHAPE(5)
R017	Outer annular radius (m), ring 6:	not used	0.000E+00	---	RAD_SHAPE(6)
R017	Outer annular radius (m), ring 7:	not used	0.000E+00	---	RAD_SHAPE(7)
R017	Outer annular radius (m), ring 8:	not used	0.000E+00	---	RAD_SHAPE(8)
R017	Outer annular radius (m), ring 9:	not used	0.000E+00	---	RAD_SHAPE(9)
R017	Outer annular radius (m), ring 10:	not used	0.000E+00	---	RAD_SHAPE(10)
R017	Outer annular radius (m), ring 11:	not used	0.000E+00	---	RAD_SHAPE(11)
R017	Outer annular radius (m), ring 12:	not used	0.000E+00	---	RAD_SHAPE(12)
R017	Fractions of annular areas within AREA:				
R017	Ring 1	not used	1.000E+00	---	FRACA(1)
R017	Ring 2	not used	2.732E-01	---	FRACA(2)
R017	Ring 3	not used	0.000E+00	---	FRACA(3)
R017	Ring 4	not used	0.000E+00	---	FRACA(4)
R017	Ring 5	not used	0.000E+00	---	FRACA(5)
R017	Ring 6	not used	0.000E+00	---	FRACA(6)
R017	Ring 7	not used	0.000E+00	---	FRACA(7)
R017	Ring 8	not used	0.000E+00	---	FRACA(8)
R017	Ring 9	not used	0.000E+00	---	FRACA(9)
R017	Ring 10	not used	0.000E+00	---	FRACA(10)
R017	Ring 11	not used	0.000E+00	---	FRACA(11)
R017	Ring 12	not used	0.000E+00	---	FRACA(12)
R018	Fruits, vegetables and grain consumption (kg/yr)	5.700E+01	1.600E+02	---	DIET(1)
R018	Leafy vegetable consumption (kg/yr)	0.000E+00	1.400E+01	---	DIET(2)
R018	Milk consumption (L/yr)	not used	9.200E+01	---	DIET(3)
R018	Meat and poultry consumption (kg/yr)	not used	6.300E+01	---	DIET(4)
R018	Fish consumption (kg/yr)	not used	5.400E+00	---	DIET(5)
R018	Other seafood consumption (kg/yr)	not used	9.000E-01	---	DIET(6)
R018	Soil ingestion rate (g/yr)	3.650E+01	3.650E+01	---	SOIL
R018	Drinking water intake (L/yr)	not used	5.100E+02	---	DWI
R018	Contamination fraction of drinking water	not used	1.000E+00	---	FDW
R018	Contamination fraction of household water	1.000E+00	1.000E+00	---	FHHW
R018	Contamination fraction of livestock water	not used	1.000E+00	---	FLW
R018	Contamination fraction of irrigation water	0.000E+00	1.000E+00	---	FIRW
R018	Contamination fraction of aquatic food	not used	5.000E-01	---	FR9
R018	Contamination fraction of plant food	1.000E+00	-1	---	FPLANT
R018	Contamination fraction of meat	not used	-1	---	FMEAT
R018	Contamination fraction of milk	not used	-1	---	FMILK
R019	Livestock fodder intake for meat (kg/day)	not used	6.800E+01	---	LFI5
R019	Livestock fodder intake for milk (kg/day)	not used	5.500E+01	---	LFI6
R019	Livestock water intake for meat (L/day)	not used	5.000E+01	---	LWI5
R019	Livestock water intake for milk (L/day)	not used	1.600E+02	---	LWI6
R019	Livestock soil intake (kg/day)	not used	5.000E-01	---	LSI

Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R019	Mass loading for foliar deposition (g/m**3)	1.000E-04	1.000E-04	---	MLFD
R019	Depth of soil mixing layer (m)	1.500E-01	1.500E-01	---	DM
R019	Depth of roots (m)	9.000E-01	9.000E-01	---	DROOT
R019	Drinking water fraction from ground water	not used	1.000E+00	---	FGWDW
R019	Household water fraction from ground water	1.000E+00	1.000E+00	---	FGWHH
R019	Livestock water fraction from ground water	not used	1.000E+00	---	FGWLW
R019	Irrigation fraction from ground water	1.000E+00	1.000E+00	---	FGWIR
R19B	Wet weight crop yield for Non-Leafy (kg/m**2)	7.000E-01	7.000E-01	---	YV(1)
R19B	Wet weight crop yield for Leafy (kg/m**2)	1.500E+00	1.500E+00	---	YV(2)
R19B	Wet weight crop yield for Fodder (kg/m**2)	not used	1.100E+00	---	YV(3)
R19B	Growing Season for Non-Leafy (years)	1.700E-01	1.700E-01	---	TE(1)
R19B	Growing Season for Leafy (years)	2.500E-01	2.500E-01	---	TE(2)
R19B	Growing Season for Fodder (years)	not used	8.000E-02	---	TE(3)
R19B	Translocation Factor for Non-Leafy	1.000E-01	1.000E-01	---	TIV(1)
R19B	Translocation Factor for Leafy	1.000E+00	1.000E+00	---	TIV(2)
R19B	Translocation Factor for Fodder	not used	1.000E+00	---	TIV(3)
R19B	Dry Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RDRY(1)
R19B	Dry Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RDRY(2)
R19B	Dry Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RDRY(3)
R19B	Wet Foliar Interception Fraction for Non-Leafy	2.500E-01	2.500E-01	---	RWET(1)
R19B	Wet Foliar Interception Fraction for Leafy	2.500E-01	2.500E-01	---	RWET(2)
R19B	Wet Foliar Interception Fraction for Fodder	not used	2.500E-01	---	RWET(3)
R19B	Weathering Removal Constant for Vegetation	2.000E+01	2.000E+01	---	WLAM
C14	C-12 concentration in water (g/cm**3)	not used	2.000E-05	---	C12WTR
C14	C-12 concentration in contaminated soil (g/g)	not used	3.000E-02	---	C12CZ
C14	Fraction of vegetation carbon from soil	not used	2.000E-02	---	CSOIL
C14	Fraction of vegetation carbon from air	not used	9.800E-01	---	CAIR
C14	C-14 evasion layer thickness in soil (m)	not used	3.000E-01	---	DMC
C14	C-14 evasion flux rate from soil (1/sec)	not used	7.000E-07	---	EVSN
C14	C-12 evasion flux rate from soil (1/sec)	not used	1.000E-10	---	REVSN
C14	Fraction of grain in beef cattle feed	not used	8.000E-01	---	AVFG4
C14	Fraction of grain in milk cow feed	not used	2.000E-01	---	AVFG5
C14	DCF correction factor for gaseous forms of C14	not used	8.894E+01	---	CO2F
STOR	Storage times of contaminated foodstuffs (days):				
STOR	Fruits, non-leafy vegetables, and grain	1.000E+00	1.400E+01	---	STOR_T(1)
STOR	Leafy vegetables	1.000E+00	1.000E+00	---	STOR_T(2)
STOR	Milk	1.000E+00	1.000E+00	---	STOR_T(3)
STOR	Meat and poultry	2.000E+01	2.000E+01	---	STOR_T(4)
STOR	Fish	7.000E+00	7.000E+00	---	STOR_T(5)
STOR	Crustacea and mollusks	7.000E+00	7.000E+00	---	STOR_T(6)
STOR	Well water	1.000E+00	1.000E+00	---	STOR_T(7)
STOR	Surface water	1.000E+00	1.000E+00	---	STOR_T(8)
STOR	Livestock fodder	4.500E+01	4.500E+01	---	STOR_T(9)
R021	Thickness of building foundation (m)	1.500E-01	1.500E-01	---	FLOOR1
R021	Bulk density of building foundation (g/cm**3)	2.400E+00	2.400E+00	---	DENSFL
R021	Total porosity of the cover material	not used	4.000E-01	---	TPCV

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Site-Specific Parameter Summary (continued)

Menu	Parameter	User Input	Default	Used by RESRAD (If different from user input)	Parameter Name
R021	Total porosity of the building foundation	1.000E-01	1.000E-01	---	TPFL
R021	Volumetric water content of the cover material	not used	5.000E-02	---	PH2OCV
R021	Volumetric water content of the foundation	3.000E-02	3.000E-02	---	PH2OFL
R021	Diffusion coefficient for radon gas (m/sec):				
R021	in cover material	not used	2.000E-06	---	DIFCV
R021	in foundation material	3.000E-07	3.000E-07	---	DIFFL
R021	in contaminated zone soil	2.000E-06	2.000E-06	---	DIFCZ
R021	Radon vertical dimension of mixing (m)	2.000E+00	2.000E+00	---	HMIX
R021	Average building air exchange rate (1/hr)	5.000E-01	5.000E-01	---	REXG
R021	Height of the building (room) (m)	2.500E+00	2.500E+00	---	HRM
R021	Building interior area factor	0.000E+00	0.000E+00	code computed (time dependent)	FAI
R021	Building depth below ground surface (m)	0.000E+00	-1.000E+00	---	DMFL
R021	Emanating power of Rn-222 gas	2.500E-01	2.500E-01	---	EMANA(1)
R021	Emanating power of Rn-220 gas	1.500E-01	1.500E-01	---	EMANA(2)
TITL	Number of graphical time points	32	---	---	NPTS
TITL	Maximum number of integration points for dose	17	---	---	LYMAX
TITL	Maximum number of integration points for risk	5	---	---	KYMAX

Summary of Pathway Selections

Pathway	User Selection
1 -- external gamma	active
2 -- inhalation (w/o radon)	active
3 -- plant ingestion	active
4 -- meat ingestion	suppressed
5 -- milk ingestion	suppressed
6 -- aquatic foods	suppressed
7 -- drinking water	suppressed
8 -- soil ingestion	active
9 -- radon	active
Find peak pathway doses	active

Contaminated Zone Dimensions	
Area:	405000.00 square meters
Thickness:	2.00 meters
Cover Depth:	0.00 meters

Initial Soil Concentrations, pCi/g	
Am-241	1.000E+01
Co-60	1.000E+01
Cs-134	1.000E+01
Cs-137	1.000E+01
Eu-152	1.000E+01
Eu-154	1.000E+01
Eu-155	1.000E+01
H-3	1.000E+01
I-129	1.000E+01
K-40	1.000E+01
Na-22	1.000E+01
Np-237	1.000E+01
Pu-238	1.000E+01
Pu-239	1.000E+01
Pu-240	1.000E+01
Ra-226	1.000E+01
Ra-228	1.000E+01
Ru-106	1.000E+01
Sr-90	1.000E+01
Tc-99	1.000E+01
Th-228	1.000E+01
Th-230	1.000E+01
Th-232	1.000E+01
U-234	1.000E+01
U-235	1.000E+01
U-238	1.000E+01

0

Total Dose TDOSE(t), mrem/yr
Basic Radiation Dose Limit = 1.500E+01 mrem/yr

Total Mixture Sum M(t) = Fraction of Basic Dose Limit Received at Time (t)

t (years):	0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
TDOSE(t):	1.783E+03	1.715E+03	1.389E+03	1.362E+03	1.351E+03
M(t):	1.189E+02	1.143E+02	9.262E+01	9.077E+01	9.005E+01

0Maximum TDOSE(t): 1.783E+03 mrem/yr at t = 0.000E+00 years

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years
0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.558E-01	0.0002	1.326E-01	0.0001	0.000E+00	0.0000	2.076E+00	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	1.273E+00	0.0007
Co-60	1.223E+02	0.0686	6.134E-05	0.0000	0.000E+00	0.0000	1.149E+00	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	8.823E-03	0.0000
Cs-134	6.483E+01	0.0364	1.175E-05	0.0000	0.000E+00	0.0000	1.419E+00	0.0008	0.000E+00	0.0000	0.000E+00	0.0000	2.179E-02	0.0000
Cs-137	2.717E+01	0.0152	9.425E-06	0.0000	0.000E+00	0.0000	1.127E+00	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	1.730E-02	0.0000
Eu-152	5.510E+01	0.0309	6.437E-05	0.0000	0.000E+00	0.0000	9.002E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.210E-03	0.0000
Eu-154	5.952E+01	0.0334	8.220E-05	0.0000	0.000E+00	0.0000	1.309E-02	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.215E-03	0.0000
Eu-155	1.383E+00	0.0008	1.155E-05	0.0000	0.000E+00	0.0000	2.036E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.998E-04	0.0000
H-3	0.000E+00	0.0000	2.165E-02	0.0000	0.000E+00	0.0000	1.471E-01	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	1.410E-05	0.0000
I-129	1.051E-01	0.0001	5.199E-05	0.0000	0.000E+00	0.0000	3.147E+00	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	9.658E-02	0.0001
K-40	8.379E+00	0.0047	3.706E-06	0.0000	0.000E+00	0.0000	3.181E+00	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	6.511E-03	0.0000
Na-22	9.695E+01	0.0544	2.010E-06	0.0000	0.000E+00	0.0000	2.877E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	3.534E-03	0.0000
Np-237	8.908E+00	0.0050	1.614E-01	0.0001	0.000E+00	0.0000	5.062E+01	0.0284	0.000E+00	0.0000	0.000E+00	0.0000	1.554E+00	0.0009
Pu-238	1.226E-03	0.0000	1.167E-01	0.0001	4.216E-13	0.0000	1.819E+00	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	1.116E+00	0.0006
Pu-239	2.394E-03	0.0000	1.282E-01	0.0001	0.000E+00	0.0000	2.020E+00	0.0011	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.0007
Pu-240	1.198E-03	0.0000	1.282E-01	0.0001	3.861E-21	0.0000	2.020E+00	0.0011	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.0007
Ra-226	9.025E+01	0.0506	2.677E-03	0.0000	9.165E+02	0.5141	3.096E+01	0.0174	0.000E+00	0.0000	0.000E+00	0.0000	5.046E-01	0.0003
Ra-228	5.812E+01	0.0326	1.738E-02	0.0000	1.216E+00	0.0007	3.102E+01	0.0174	0.000E+00	0.0000	0.000E+00	0.0000	5.186E-01	0.0003
Ru-106	7.529E+00	0.0042	1.031E-04	0.0000	0.000E+00	0.0000	3.387E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	6.933E-03	0.0000
Sr-90	1.961E-01	0.0001	3.869E-04	0.0000	0.000E+00	0.0000	2.585E+01	0.0145	0.000E+00	0.0000	0.000E+00	0.0000	5.292E-02	0.0000
Tc-99	1.023E-03	0.0000	2.489E-06	0.0000	0.000E+00	0.0000	4.159E+00	0.0023	0.000E+00	0.0000	0.000E+00	0.0000	5.108E-04	0.0000
Th-228	6.889E+01	0.0386	8.650E-02	0.0000	6.596E+00	0.0037	3.868E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	2.373E-01	0.0001
Th-230	2.939E-02	0.0000	9.744E-02	0.0001	1.985E-01	0.0001	3.194E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.919E-01	0.0001
Th-232	3.328E+00	0.0019	4.909E-01	0.0003	5.084E-02	0.0000	3.455E+00	0.0019	0.000E+00	0.0000	0.000E+00	0.0000	9.866E-01	0.0006
U-234	3.274E-03	0.0000	3.945E-02	0.0000	5.958E-07	0.0000	4.035E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	9.906E-02	0.0001
U-235	6.138E+00	0.0034	3.677E-02	0.0000	0.000E+00	0.0000	3.813E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	9.350E-02	0.0001
U-238	1.228E+00	0.0007	3.527E-02	0.0000	4.223E-13	0.0000	3.835E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	9.416E-02	0.0001
Total	6.807E+02	0.3818	1.496E+00	0.0008	9.246E+02	0.5186	1.667E+02	0.0935	0.000E+00	0.0000	0.000E+00	0.0000	9.368E+00	0.0053

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

	Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.837E+00	0.0022
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.235E+02	0.0693
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.627E+01	0.0372
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.832E+01	0.0159
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.511E+01	0.0309
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.954E+01	0.0334
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.386E+00	0.0008
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.688E-01	0.0001
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.349E+00	0.0019
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.157E+01	0.0065
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.724E+01	0.0545
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.124E+01	0.0344
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.053E+00	0.0017
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.390E+00	0.0019
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.389E+00	0.0019
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.038E+03	0.5823
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.089E+01	0.0510
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.874E+00	0.0044
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.610E+01	0.0146
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.161E+00	0.0023
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.620E+01	0.0427
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.367E-01	0.0005
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.311E+00	0.0047
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.453E-01	0.0003
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.650E+00	0.0037
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.741E+00	0.0010
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.783E+03	1.0000

*Sum of all water independent and dependent pathways.

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Summary : Radionuclide SALs residential 10-23-00
File : 2002_SALs_Cs134.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years
0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.552E-01	0.0002	1.324E-01	0.0001	0.000E+00	0.0000	2.072E+00	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	1.271E+00	0.0007
Co-60	1.072E+02	0.0625	5.378E-05	0.0000	0.000E+00	0.0000	1.008E+00	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	7.736E-03	0.0000
Cs-134	4.632E+01	0.0270	8.397E-06	0.0000	0.000E+00	0.0000	1.014E+00	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	1.557E-02	0.0000
Cs-137	2.655E+01	0.0155	9.210E-06	0.0000	0.000E+00	0.0000	1.101E+00	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	1.691E-02	0.0000
Eu-152	5.231E+01	0.0305	6.110E-05	0.0000	0.000E+00	0.0000	8.546E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.098E-03	0.0000
Eu-154	5.501E+01	0.0321	7.598E-05	0.0000	0.000E+00	0.0000	1.210E-02	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.971E-03	0.0000
Eu-155	1.203E+00	0.0007	1.004E-05	0.0000	0.000E+00	0.0000	1.770E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.346E-04	0.0000
H-3	0.000E+00	0.0000	7.886E-03	0.0000	0.000E+00	0.0000	5.364E-02	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.138E-06	0.0000
I-129	1.051E-01	0.0001	5.197E-05	0.0000	0.000E+00	0.0000	3.146E+00	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	9.653E-02	0.0001
K-40	8.379E+00	0.0049	3.706E-06	0.0000	0.000E+00	0.0000	3.181E+00	0.0019	0.000E+00	0.0000	0.000E+00	0.0000	6.510E-03	0.0000
Na-22	7.428E+01	0.0433	1.540E-06	0.0000	0.000E+00	0.0000	2.204E-01	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	2.707E-03	0.0000
Np-237	8.908E+00	0.0052	1.614E-01	0.0001	0.000E+00	0.0000	5.062E+01	0.0295	0.000E+00	0.0000	0.000E+00	0.0000	1.554E+00	0.0009
Pu-238	1.216E-03	0.0000	1.158E-01	0.0001	6.313E-12	0.0000	1.805E+00	0.0011	0.000E+00	0.0000	0.000E+00	0.0000	1.107E+00	0.0006
Pu-239	2.394E-03	0.0000	1.282E-01	0.0001	0.000E+00	0.0000	2.020E+00	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.0007
Pu-240	1.198E-03	0.0000	1.282E-01	0.0001	1.106E-19	0.0000	2.020E+00	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	1.239E+00	0.0007
Ra-226	9.021E+01	0.0526	2.884E-03	0.0000	9.161E+02	0.5343	3.220E+01	0.0188	0.000E+00	0.0000	0.000E+00	0.0000	5.810E-01	0.0003
Ra-228	7.117E+01	0.0415	4.008E-02	0.0000	2.960E+00	0.0017	2.761E+01	0.0161	0.000E+00	0.0000	0.000E+00	0.0000	5.274E-01	0.0003
Ru-106	3.782E+00	0.0022	5.177E-05	0.0000	0.000E+00	0.0000	1.701E-01	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	3.482E-03	0.0000
Sr-90	1.915E-01	0.0001	3.778E-04	0.0000	0.000E+00	0.0000	2.525E+01	0.0147	0.000E+00	0.0000	0.000E+00	0.0000	5.168E-02	0.0000
Tc-99	1.022E-03	0.0000	2.486E-06	0.0000	0.000E+00	0.0000	4.155E+00	0.0024	0.000E+00	0.0000	0.000E+00	0.0000	5.103E-04	0.0000
Th-228	4.795E+01	0.0280	6.021E-02	0.0000	4.592E+00	0.0027	2.692E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.651E-01	0.0001
Th-230	6.848E-02	0.0000	9.744E-02	0.0001	5.955E-01	0.0003	3.330E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	1.922E-01	0.0001
Th-232	1.121E+01	0.0065	4.945E-01	0.0003	3.119E-01	0.0002	6.983E+00	0.0041	0.000E+00	0.0000	0.000E+00	0.0000	1.050E+00	0.0006
U-234	3.275E-03	0.0000	3.945E-02	0.0000	4.170E-06	0.0000	4.035E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	9.906E-02	0.0001
U-235	6.138E+00	0.0036	3.678E-02	0.0000	0.000E+00	0.0000	3.826E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	9.358E-02	0.0001
U-238	1.228E+00	0.0007	3.527E-02	0.0000	6.333E-12	0.0000	3.835E-01	0.0002	0.000E+00	0.0000	0.000E+00	0.0000	9.416E-02	0.0001
Total	6.126E+02	0.3573	1.481E+00	0.0009	9.246E+02	0.5393	1.664E+02	0.0971	0.000E+00	0.0000	0.000E+00	0.0000	9.420E+00	0.0055

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Summary : Radionuclide SALs residential 10-23-00
File : 2002_SALs_Cs134.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

	Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.831E+00	0.0022
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.083E+02	0.0631
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.735E+01	0.0276
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.767E+01	0.0161
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.232E+01	0.0305
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.503E+01	0.0321
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.205E+00	0.0007
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.153E-02	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.347E+00	0.0020
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.157E+01	0.0067
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.450E+01	0.0435
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.124E+01	0.0357
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.029E+00	0.0018
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.390E+00	0.0020
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.388E+00	0.0020
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.039E+03	0.6061
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.023E+02	0.0597
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.955E+00	0.0023
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.549E+01	0.0149
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.157E+00	0.0024
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.304E+01	0.0309
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.287E+00	0.0008
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.005E+01	0.0117
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.453E-01	0.0003
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.651E+00	0.0039
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.741E+00	0.0010
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.715E+03	1.0000

*Sum of all water independent and dependent pathways.

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Summary : Radionuclide SALs residential 10-23-00
File : 2002_SALs_Cs134.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years
0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.391E-01	0.0002	1.264E-01	0.0001	0.000E+00	0.0000	1.978E+00	0.0014	0.000E+00	0.0000	0.000E+00	0.0000	1.213E+00	0.0009
Co-60	2.367E+00	0.0017	1.187E-06	0.0000	0.000E+00	0.0000	2.224E-02	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.707E-04	0.0000
Cs-134	2.705E-03	0.0000	4.903E-10	0.0000	0.000E+00	0.0000	5.921E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.090E-07	0.0000
Cs-137	1.359E+01	0.0098	4.713E-06	0.0000	0.000E+00	0.0000	5.635E-01	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	8.651E-03	0.0000
Eu-152	1.158E+01	0.0083	1.353E-05	0.0000	0.000E+00	0.0000	1.892E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.645E-04	0.0000
Eu-154	5.603E+00	0.0040	7.738E-06	0.0000	0.000E+00	0.0000	1.233E-03	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.026E-04	0.0000
Eu-155	2.090E-02	0.0000	1.745E-07	0.0000	0.000E+00	0.0000	3.076E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.552E-06	0.0000
H-3	0.000E+00	0.0000	1.511E-15	0.0000	0.000E+00	0.0000	1.028E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.847E-19	0.0000
I-129	1.035E-01	0.0001	5.117E-05	0.0000	0.000E+00	0.0000	3.098E+00	0.0022	0.000E+00	0.0000	0.000E+00	0.0000	9.506E-02	0.0001
K-40	8.374E+00	0.0060	3.704E-06	0.0000	0.000E+00	0.0000	3.179E+00	0.0023	0.000E+00	0.0000	0.000E+00	0.0000	6.506E-03	0.0000
Na-22	3.278E-02	0.0000	6.796E-10	0.0000	0.000E+00	0.0000	9.729E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E-06	0.0000
Np-237	8.908E+00	0.0064	1.614E-01	0.0001	0.000E+00	0.0000	5.062E+01	0.0364	0.000E+00	0.0000	0.000E+00	0.0000	1.554E+00	0.0011
Pu-238	9.675E-04	0.0000	9.208E-02	0.0001	4.503E-08	0.0000	1.435E+00	0.0010	0.000E+00	0.0000	0.000E+00	0.0000	8.803E-01	0.0006
Pu-239	2.393E-03	0.0000	1.281E-01	0.0001	0.000E+00	0.0000	2.018E+00	0.0015	0.000E+00	0.0000	0.000E+00	0.0000	1.238E+00	0.0009
Pu-240	1.194E-03	0.0000	1.278E-01	0.0001	2.578E-15	0.0000	2.014E+00	0.0014	0.000E+00	0.0000	0.000E+00	0.0000	1.235E+00	0.0009
Ra-226	8.911E+01	0.0641	6.751E-03	0.0000	9.046E+02	0.6512	5.513E+01	0.0397	0.000E+00	0.0000	0.000E+00	0.0000	2.006E+00	0.0014
Ra-228	4.335E+00	0.0031	3.949E-03	0.0000	2.982E-01	0.0002	8.493E-01	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	2.349E-02	0.0000
Ru-106	8.053E-09	0.0000	1.102E-13	0.0000	0.000E+00	0.0000	3.623E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.416E-12	0.0000
Sr-90	9.600E-02	0.0001	1.894E-04	0.0000	0.000E+00	0.0000	1.266E+01	0.0091	0.000E+00	0.0000	0.000E+00	0.0000	2.591E-02	0.0000
Tc-99	9.945E-04	0.0000	2.418E-06	0.0000	0.000E+00	0.0000	4.042E+00	0.0029	0.000E+00	0.0000	0.000E+00	0.0000	4.964E-04	0.0000
Th-228	1.311E-03	0.0000	1.646E-06	0.0000	1.255E-04	0.0000	7.361E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.515E-06	0.0000
Th-230	1.195E+00	0.0009	9.748E-02	0.0001	1.203E+01	0.0087	9.036E-01	0.0007	0.000E+00	0.0000	0.000E+00	0.0000	2.097E-01	0.0002
Th-232	1.260E+02	0.0907	5.909E-01	0.0004	7.565E+00	0.0054	3.401E+01	0.0245	0.000E+00	0.0000	0.000E+00	0.0000	1.719E+00	0.0012
U-234	3.439E-03	0.0000	3.947E-02	0.0000	1.655E-03	0.0000	4.036E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	9.910E-02	0.0001
U-235	6.143E+00	0.0044	3.747E-02	0.0000	0.000E+00	0.0000	4.245E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	9.705E-02	0.0001
U-238	1.228E+00	0.0009	3.527E-02	0.0000	4.777E-08	0.0000	3.835E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	9.416E-02	0.0001
Total	2.790E+02	0.2009	1.447E+00	0.0010	9.245E+02	0.6655	1.737E+02	0.1251	0.000E+00	0.0000	0.000E+00	0.0000	1.051E+01	0.0076

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

	Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.657E+00	0.0026
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.389E+00	0.0017
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.765E-03	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.416E+01	0.0102
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.158E+01	0.0083
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.605E+00	0.0040
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.094E-02	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.179E-14	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.296E+00	0.0024
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.156E+01	0.0083
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.288E-02	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.124E+01	0.0441
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.408E+00	0.0017
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.387E+00	0.0024
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.378E+00	0.0024
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.051E+03	0.7564
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.510E+00	0.0040
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.423E-09	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.278E+01	0.0092
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.043E+00	0.0029
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.450E-03	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.444E+01	0.0104
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.699E+02	0.1223
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.472E-01	0.0004
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.702E+00	0.0048
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.741E+00	0.0013
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.389E+03	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years
0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	3.031E-01	0.0002	1.129E-01	0.0001	0.000E+00	0.0000	1.768E+00	0.0013	0.000E+00	0.0000	0.000E+00	0.0000	1.084E+00	0.0008
Co-60	2.379E-04	0.0000	1.193E-10	0.0000	0.000E+00	0.0000	2.236E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.716E-08	0.0000
Cs-134	1.632E-13	0.0000	2.959E-20	0.0000	0.000E+00	0.0000	3.574E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.487E-17	0.0000
Cs-137	2.696E+00	0.0020	9.351E-07	0.0000	0.000E+00	0.0000	1.118E-01	0.0001	0.000E+00	0.0000	0.000E+00	0.0000	1.716E-03	0.0000
Eu-152	3.040E-01	0.0002	3.551E-07	0.0000	0.000E+00	0.0000	4.967E-05	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.219E-05	0.0000
Eu-154	2.259E-02	0.0000	3.119E-08	0.0000	0.000E+00	0.0000	4.969E-06	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.220E-06	0.0000
Eu-155	1.180E-06	0.0000	9.848E-12	0.0000	0.000E+00	0.0000	1.736E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.262E-10	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	9.972E-02	0.0001	4.931E-05	0.0000	0.000E+00	0.0000	2.985E+00	0.0022	0.000E+00	0.0000	0.000E+00	0.0000	9.161E-02	0.0001
K-40	8.362E+00	0.0061	3.698E-06	0.0000	0.000E+00	0.0000	3.174E+00	0.0023	0.000E+00	0.0000	0.000E+00	0.0000	6.497E-03	0.0000
Na-22	2.611E-10	0.0000	5.414E-18	0.0000	0.000E+00	0.0000	7.750E-13	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	9.518E-15	0.0000
Np-237	8.907E+00	0.0065	1.614E-01	0.0001	0.000E+00	0.0000	5.062E+01	0.0372	0.000E+00	0.0000	0.000E+00	0.0000	1.554E+00	0.0011
Pu-238	5.571E-04	0.0000	5.297E-02	0.0000	1.405E-06	0.0000	8.256E-01	0.0006	0.000E+00	0.0000	0.000E+00	0.0000	5.064E-01	0.0004
Pu-239	2.388E-03	0.0000	1.279E-01	0.0001	0.000E+00	0.0000	2.014E+00	0.0015	0.000E+00	0.0000	0.000E+00	0.0000	1.236E+00	0.0009
Pu-240	1.185E-03	0.0000	1.269E-01	0.0001	4.622E-14	0.0000	1.999E+00	0.0015	0.000E+00	0.0000	0.000E+00	0.0000	1.226E+00	0.0009
Ra-226	8.646E+01	0.0635	8.883E-03	0.0000	8.775E+02	0.6445	6.742E+01	0.0495	0.000E+00	0.0000	0.000E+00	0.0000	2.803E+00	0.0021
Ra-228	9.385E-04	0.0000	8.550E-07	0.0000	6.457E-05	0.0000	1.838E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.084E-06	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	1.814E-02	0.0000	3.578E-05	0.0000	0.000E+00	0.0000	2.391E+00	0.0018	0.000E+00	0.0000	0.000E+00	0.0000	4.895E-03	0.0000
Tc-99	9.302E-04	0.0000	2.262E-06	0.0000	0.000E+00	0.0000	3.780E+00	0.0028	0.000E+00	0.0000	0.000E+00	0.0000	4.643E-04	0.0000
Th-228	1.268E-14	0.0000	1.592E-17	0.0000	1.214E-15	0.0000	7.117E-17	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.365E-17	0.0000
Th-230	3.855E+00	0.0028	9.766E-02	0.0001	3.903E+01	0.0287	2.834E+00	0.0021	0.000E+00	0.0000	0.000E+00	0.0000	2.870E-01	0.0002
Th-232	1.303E+02	0.0957	5.948E-01	0.0004	7.863E+00	0.0058	3.486E+01	0.0256	0.000E+00	0.0000	0.000E+00	0.0000	1.742E+00	0.0013
U-234	5.033E-03	0.0000	3.952E-02	0.0000	1.779E-02	0.0000	4.046E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	9.922E-02	0.0001
U-235	6.164E+00	0.0045	4.055E-02	0.0000	0.000E+00	0.0000	5.403E-01	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	1.090E-01	0.0001
U-238	1.228E+00	0.0009	3.527E-02	0.0000	1.695E-06	0.0000	3.835E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	9.417E-02	0.0001
Total	2.488E+02	0.1827	1.399E+00	0.0010	9.244E+02	0.6790	1.761E+02	0.1293	0.000E+00	0.0000	0.000E+00	0.0000	1.085E+01	0.0080

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

	Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.268E+00	0.0024
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.401E-04	0.0000
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.669E-13	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.809E+00	0.0021
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.041E-01	0.0002
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.259E-02	0.0000
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.182E-06	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.177E+00	0.0023
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.154E+01	0.0085
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.619E-10	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.124E+01	0.0450
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.385E+00	0.0010
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.380E+00	0.0025
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.353E+00	0.0025
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.034E+03	0.7596
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.193E-03	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.414E+00	0.0018
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.782E+00	0.0028
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.402E-14	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.611E+01	0.0339
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.754E+02	0.1288
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	5.661E-01	0.0004
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.854E+00	0.0050
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.741E+00	0.0013
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.362E+03	1.0000

*Sum of all water independent and dependent pathways.

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years
0 Water Independent Pathways (Inhalation excludes radon)

0	Ground		Inhalation		Radon		Plant		Meat		Milk		Soil	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	7.257E-02	0.0001	2.654E-02	0.0000	0.000E+00	0.0000	4.232E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	2.548E-01	0.0002
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	2.510E-09	0.0000	8.708E-16	0.0000	0.000E+00	0.0000	1.041E-10	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.598E-12	0.0000
Eu-152	1.439E-21	0.0000	2.502E-15	0.0000	0.000E+00	0.0000	7.909E-15	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.942E-15	0.0000
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	6.195E-02	0.0000	3.064E-05	0.0000	0.000E+00	0.0000	1.855E+00	0.0014	0.000E+00	0.0000	0.000E+00	0.0000	5.691E-02	0.0000
K-40	8.204E+00	0.0061	3.629E-06	0.0000	0.000E+00	0.0000	3.114E+00	0.0023	0.000E+00	0.0000	0.000E+00	0.0000	6.374E-03	0.0000
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	8.904E+00	0.0066	1.616E-01	0.0001	0.000E+00	0.0000	5.058E+01	0.0374	0.000E+00	0.0000	0.000E+00	0.0000	1.554E+00	0.0012
Pu-238	4.487E-05	0.0000	5.763E-05	0.0000	4.387E-04	0.0000	8.523E-04	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	4.509E-04	0.0000
Pu-239	2.332E-03	0.0000	1.246E-01	0.0001	0.000E+00	0.0000	1.963E+00	0.0015	0.000E+00	0.0000	0.000E+00	0.0000	1.204E+00	0.0009
Pu-240	1.078E-03	0.0000	1.153E-01	0.0001	5.426E-12	0.0000	1.817E+00	0.0013	0.000E+00	0.0000	0.000E+00	0.0000	1.114E+00	0.0008
Ra-226	5.845E+01	0.0433	6.215E-03	0.0000	5.933E+02	0.4392	4.683E+01	0.0347	0.000E+00	0.0000	0.000E+00	0.0000	1.972E+00	0.0015
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	8.978E-12	0.0000	1.771E-14	0.0000	0.000E+00	0.0000	1.184E-09	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.423E-12	0.0000
Tc-99	3.937E-04	0.0000	9.574E-07	0.0000	0.000E+00	0.0000	1.600E+00	0.0012	0.000E+00	0.0000	0.000E+00	0.0000	1.965E-04	0.0000
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	3.160E+01	0.0234	9.983E-02	0.0001	3.206E+02	0.2374	2.504E+01	0.0185	0.000E+00	0.0000	0.000E+00	0.0000	1.220E+00	0.0009
Th-232	1.303E+02	0.0965	5.948E-01	0.0004	7.863E+00	0.0058	3.486E+01	0.0258	0.000E+00	0.0000	0.000E+00	0.0000	1.742E+00	0.0013
U-234	1.559E-01	0.0001	4.013E-02	0.0000	1.548E+00	0.0011	5.213E-01	0.0004	0.000E+00	0.0000	0.000E+00	0.0000	1.051E-01	0.0001
U-235	6.486E+00	0.0048	8.533E-02	0.0001	0.000E+00	0.0000	2.070E+00	0.0015	0.000E+00	0.0000	0.000E+00	0.0000	2.757E-01	0.0002
U-238	1.225E+00	0.0009	3.530E-02	0.0000	1.516E-03	0.0000	3.839E-01	0.0003	0.000E+00	0.0000	0.000E+00	0.0000	9.422E-02	0.0001
Total	2.455E+02	0.1818	1.290E+00	0.0010	9.233E+02	0.6835	1.711E+02	0.1266	0.000E+00	0.0000	0.000E+00	0.0000	9.599E+00	0.0071

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Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

	Water Dependent Pathways													
	Water		Fish		Radon		Plant		Meat		Milk		All Pathways*	
Radio-Nuclide	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.	mrem/yr	fract.
Am-241	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.771E-01	0.0006
Co-60	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-134	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Cs-137	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.616E-09	0.0000
Eu-152	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.235E-14	0.0000
Eu-154	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Eu-155	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
H-3	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
I-129	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.973E+00	0.0015
K-40	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.132E+01	0.0084
Na-22	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Np-237	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	6.120E+01	0.0453
Pu-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.844E-03	0.0000
Pu-239	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.293E+00	0.0024
Pu-240	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.047E+00	0.0023
Ra-226	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	7.005E+02	0.5186
Ra-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ru-106	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Sr-90	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.195E-09	0.0000
Tc-99	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.601E+00	0.0012
Th-228	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Th-230	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	3.786E+02	0.2803
Th-232	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.754E+02	0.1298
U-234	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	2.370E+00	0.0018
U-235	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	8.916E+00	0.0066
U-238	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.740E+00	0.0013
Total	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	1.351E+03	1.0000

*Sum of all water independent and dependent pathways.

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0Parent (i)	Product (j)	Branch Fraction*	t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
			DSR(j,t)	(mrem/yr)/(pCi/g)			
Am-241	Am-241	1.000E+00		3.837E-01	3.831E-01	3.656E-01	3.267E-01	7.672E-02
Am-241	Np-237	1.000E+00		9.877E-07	2.967E-06	5.904E-05	1.841E-04	9.856E-04
Am-241	U-233	1.000E+00		1.388E-14	9.494E-14	3.665E-11	3.832E-10	2.495E-08
Am-241	Th-229	1.000E+00		9.661E-18	1.447E-16	1.081E-12	3.752E-11	2.627E-08
Am-241	äDSR(j)			3.837E-01	3.831E-01	3.657E-01	3.268E-01	7.771E-02
0Co-60	Co-60	1.000E+00		1.235E+01	1.083E+01	2.389E-01	2.401E-05	0.000E+00
0Cs-134	Cs-134	1.000E+00		6.627E+00	4.735E+00	2.765E-04	1.669E-14	0.000E+00
0Cs-137	Cs-137	1.000E+00		2.832E+00	2.767E+00	1.416E+00	2.809E-01	2.616E-10
0Eu-152	Eu-152	7.208E-01		3.972E+00	3.771E+00	8.348E-01	2.192E-02	1.038E-22
0Eu-152	Eu-152	2.792E-01		1.539E+00	1.461E+00	3.233E-01	8.489E-03	4.020E-23
Eu-152	Gd-152	2.792E-01		3.157E-17	9.257E-17	9.825E-16	1.229E-15	1.235E-15
Eu-152	äDSR(j)			1.539E+00	1.461E+00	3.233E-01	8.489E-03	1.235E-15
0Eu-154	Eu-154	1.000E+00		5.954E+00	5.503E+00	5.605E-01	2.259E-03	3.688E-34
0Eu-155	Eu-155	1.000E+00		1.386E-01	1.205E-01	2.094E-03	1.182E-07	0.000E+00
0H-3	H-3	1.000E+00		1.688E-02	6.153E-03	1.179E-15	0.000E+00	0.000E+00
0I-129	I-129	1.000E+00		3.349E-01	3.347E-01	3.296E-01	3.177E-01	1.973E-01
0K-40	K-40	1.000E+00		1.157E+00	1.157E+00	1.156E+00	1.154E+00	1.132E+00
0Na-22	Na-22	1.000E+00		9.724E+00	7.450E+00	3.288E-03	2.619E-11	0.000E+00
0Np-237	Np-237	1.000E+00		6.124E+00	6.124E+00	6.124E+00	6.124E+00	6.119E+00
Np-237	U-233	1.000E+00		1.265E-07	3.740E-07	7.537E-06	2.482E-05	2.462E-04
Np-237	Th-229	1.000E+00		1.193E-10	8.341E-10	3.320E-07	3.596E-06	3.457E-04
Np-237	äDSR(j)			6.124E+00	6.124E+00	6.124E+00	6.124E+00	6.120E+00
0Pu-238	Pu-238	1.000E+00		3.053E-01	3.029E-01	2.408E-01	1.385E-01	1.132E-04
Pu-238	U-234	1.000E+00		7.693E-08	2.303E-07	4.189E-06	1.072E-05	1.947E-05
Pu-238	Th-230	1.000E+00		2.613E-13	1.819E-12	6.713E-10	6.152E-09	1.716E-07
Pu-238	Ra-226	1.000E+00		4.771E-14	7.145E-13	5.097E-09	1.591E-07	4.966E-05
Pu-238	Pb-210	1.000E+00		1.302E-17	3.932E-16	4.344E-11	3.234E-09	1.970E-06
Pu-238	äDSR(j)			3.053E-01	3.029E-01	2.408E-01	1.385E-01	1.844E-04
0Pu-239	Pu-239	1.000E+00		3.390E-01	3.390E-01	3.387E-01	3.380E-01	3.293E-01
Pu-239	U-235	1.000E+00		3.274E-10	9.822E-10	1.996E-08	6.571E-08	6.450E-07
Pu-239	Pa-231	1.000E+00		2.282E-14	1.602E-13	6.400E-11	6.940E-10	6.766E-08
Pu-239	Ac-227	1.000E+00		1.243E-16	1.837E-15	1.115E-11	2.633E-10	4.288E-08
Pu-239	äDSR(j)			3.390E-01	3.390E-01	3.387E-01	3.380E-01	3.293E-01

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0Parent (i)	Product (j)	Branch Fraction*	t= 0.000E+00	DSR(j,t) 1.000E+00	(mrem/yr)/(pCi/g) 3.000E+01	1.000E+02	1.000E+03
Pu-240	Pu-240	1.000E+00	3.389E-01	3.388E-01	3.378E-01	3.353E-01	3.047E-01
Pu-240	U-236	1.000E+00	7.633E-10	2.293E-09	4.658E-08	1.529E-07	1.450E-06
Pu-240	Th-232	1.000E+00	7.368E-20	5.139E-19	2.041E-16	2.211E-15	2.121E-13
Pu-240	Ra-228	1.000E+00	5.816E-20	8.526E-19	3.322E-15	5.086E-14	5.657E-12
Pu-240	Th-228	1.000E+00	4.473E-21	1.279E-19	2.979E-15	5.341E-14	6.269E-12
Pu-240	äDSR(j)		3.389E-01	3.388E-01	3.378E-01	3.353E-01	3.047E-01
0Ra-226	Ra-226	1.000E+00	1.038E+02	1.037E+02	1.024E+02	9.934E+01	6.716E+01
Ra-226	Pb-210	1.000E+00	6.864E-02	2.015E-01	2.678E+00	4.080E+00	2.892E+00
Ra-226	äDSR(j)		1.038E+02	1.039E+02	1.051E+02	1.034E+02	7.005E+01
0Ra-228	Ra-228	1.000E+00	7.683E+00	6.810E+00	2.065E-01	4.468E-05	0.000E+00
Ra-228	Th-228	1.000E+00	1.406E+00	3.421E+00	3.445E-01	7.459E-05	0.000E+00
Ra-228	äDSR(j)		9.089E+00	1.023E+01	5.510E-01	1.193E-04	0.000E+00
0Ru-106	Ru-106	1.000E+00	7.874E-01	3.955E-01	8.423E-10	9.857E-31	0.000E+00
0Sr-90	Sr-90	1.000E+00	2.610E+00	2.549E+00	1.278E+00	2.414E-01	1.195E-10
0Tc-99	Tc-99	1.000E+00	4.161E-01	4.157E-01	4.043E-01	3.782E-01	1.601E-01
0Th-228	Th-228	1.000E+00	7.620E+00	5.304E+00	1.450E-04	1.402E-15	0.000E+00
0Th-230	Th-230	1.000E+00	6.118E-02	6.118E-02	6.117E-02	6.113E-02	6.063E-02
Th-230	Ra-226	1.000E+00	2.247E-02	6.741E-02	1.362E+00	4.419E+00	3.630E+01
Th-230	Pb-210	1.000E+00	1.003E-05	6.873E-05	2.051E-02	1.308E-01	1.501E+00
Th-230	äDSR(j)		8.367E-02	1.287E-01	1.444E+00	4.611E+00	3.786E+01
0Th-232	Th-232	1.000E+00	3.008E-01	3.008E-01	3.008E-01	3.008E-01	3.008E-01
Th-232	Ra-228	1.000E+00	4.715E-01	1.344E+00	7.947E+00	8.154E+00	8.154E+00
Th-232	Th-228	1.000E+00	5.883E-02	3.606E-01	8.740E+00	9.085E+00	9.085E+00
Th-232	äDSR(j)		8.311E-01	2.005E+00	1.699E+01	1.754E+01	1.754E+01
0U-234	U-234	1.000E+00	5.452E-02	5.452E-02	5.452E-02	5.450E-02	5.424E-02
U-234	Th-230	1.000E+00	2.764E-07	8.273E-07	1.680E-05	5.531E-05	5.471E-04
U-234	Ra-226	1.000E+00	6.743E-08	4.720E-07	1.874E-04	2.013E-03	1.753E-01
U-234	Pb-210	1.000E+00	2.280E-11	3.342E-10	2.019E-06	4.762E-05	7.006E-03
U-234	äDSR(j)		5.453E-02	5.453E-02	5.472E-02	5.661E-02	2.370E-01
0U-235	U-235	1.000E+00	6.649E-01	6.649E-01	6.649E-01	6.648E-01	6.633E-01
U-235	Pa-231	1.000E+00	6.967E-05	2.094E-04	4.262E-03	1.403E-02	1.381E-01
U-235	Ac-227	1.000E+00	5.021E-07	3.461E-06	1.036E-03	6.629E-03	9.023E-02
U-235	äDSR(j)		6.650E-01	6.651E-01	6.702E-01	6.854E-01	8.916E-01

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Dose/Source Ratios Summed Over All Pathways
Parent and Progeny Principal Radionuclide Contributions Indicated

0Parent (i)	Product (j)	Branch Fraction*	t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
U-238	U-238	1.000E+00	1.741E-01	1.741E-01	1.741E-01	1.740E-01	1.737E-01
U-238	U-234	1.000E+00	7.729E-08	2.319E-07	4.714E-06	1.553E-05	1.541E-04
U-238	Th-230	1.000E+00	2.619E-13	1.827E-12	7.263E-10	7.881E-09	7.772E-07
U-238	Ra-226	1.000E+00	4.779E-14	7.169E-13	5.408E-09	1.919E-07	1.716E-04
U-238	Pb-210	1.000E+00	1.304E-17	3.942E-16	4.561E-11	3.806E-09	6.648E-06
U-238	äDSR(j)		1.741E-01	1.741E-01	1.741E-01	1.741E-01	1.740E-01

*Branch Fraction is the cumulative factor for the j't principal radionuclide daughter: CUMBRF(j) = BRF(1)*BRF(2)* ... BRF(j).
The DSR includes contributions from associated (half-life ó 0.5 yr) daughters.
0

Single Radionuclide Soil Guidelines G(i,t) in pCi/g
Basic Radiation Dose Limit = 1.500E+01 mrem/yr

0Nuclide (i)	t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Am-241	3.909E+01	3.916E+01	4.102E+01	4.589E+01	1.930E+02
Co-60	1.215E+00	1.386E+00	6.279E+01	6.246E+05	*1.131E+15
Cs-134	2.263E+00	3.168E+00	5.425E+04	8.989E+14	*1.294E+15
Cs-137	5.297E+00	5.421E+00	1.059E+01	5.339E+01	5.734E+10
Eu-152	2.722E+00	2.867E+00	1.295E+01	4.933E+02	*1.765E+14
Eu-154	2.519E+00	2.726E+00	2.676E+01	6.639E+03	*2.639E+14
Eu-155	1.082E+02	1.245E+02	7.164E+03	1.269E+08	*4.651E+14
H-3	8.886E+02	2.438E+03	*9.594E+15	*9.594E+15	*9.594E+15
I-129	4.479E+01	4.481E+01	4.550E+01	4.722E+01	7.601E+01
K-40	1.297E+01	1.297E+01	1.298E+01	1.300E+01	1.325E+01
Na-22	1.543E+00	2.013E+00	4.562E+03	5.727E+11	*6.244E+15
Np-237	2.449E+00	2.449E+00	2.449E+00	2.449E+00	2.451E+00
Pu-238	4.914E+01	4.953E+01	6.228E+01	1.083E+02	8.133E+04
Pu-239	4.425E+01	4.425E+01	4.429E+01	4.438E+01	4.555E+01
Pu-240	4.427E+01	4.427E+01	4.441E+01	4.474E+01	4.922E+01
Ra-226	1.445E-01	1.444E-01	1.427E-01	1.450E-01	2.141E-01
Ra-228	1.650E+00	1.466E+00	2.722E+01	1.258E+05	*2.726E+14
Ru-106	1.905E+01	3.792E+01	1.781E+10	*3.347E+15	*3.347E+15
Sr-90	5.746E+00	5.885E+00	1.174E+01	6.213E+01	1.255E+11
Tc-99	3.605E+01	3.609E+01	3.710E+01	3.967E+01	9.371E+01
Th-228	1.969E+00	2.828E+00	1.034E+05	*8.192E+14	*8.192E+14
Th-230	1.793E+02	1.166E+02	1.039E+01	3.253E+00	3.962E-01
Th-232	1.805E+01	7.481E+00	8.829E-01	8.552E-01	8.552E-01
U-234	2.751E+02	2.751E+02	2.741E+02	2.650E+02	6.328E+01
U-235	2.256E+01	2.255E+01	2.238E+01	2.188E+01	1.682E+01
U-238	8.616E+01	8.616E+01	8.617E+01	8.618E+01	8.620E+01

*At specific activity limit

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Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g
at tmin = time of minimum single radionuclide soil guideline
and at tmax = time of maximum total dose = 0.000E+00 years

0Nuclide (i)	Initial (pCi/g)	tmin (years)	DSR(i,tmin)	G(i,tmin) (pCi/g)	DSR(i,tmax)	G(i,tmax) (pCi/g)
Am-241	1.000E+01	0.000E+00	3.837E-01	3.909E+01	3.837E-01	3.909E+01
Co-60	1.000E+01	0.000E+00	1.235E+01	1.215E+00	1.235E+01	1.215E+00
Cs-134	1.000E+01	0.000E+00	6.627E+00	2.263E+00	6.627E+00	2.263E+00
Cs-137	1.000E+01	0.000E+00	2.832E+00	5.297E+00	2.832E+00	5.297E+00
Eu-152	1.000E+01	0.000E+00	5.511E+00	2.722E+00	5.511E+00	2.722E+00
Eu-154	1.000E+01	0.000E+00	5.954E+00	2.519E+00	5.954E+00	2.519E+00
Eu-155	1.000E+01	0.000E+00	1.386E-01	1.082E+02	1.386E-01	1.082E+02
H-3	1.000E+01	0.000E+00	1.688E-02	8.886E+02	1.688E-02	8.886E+02
I-129	1.000E+01	0.000E+00	3.349E-01	4.479E+01	3.349E-01	4.479E+01
K-40	1.000E+01	0.000E+00	1.157E+00	1.297E+01	1.157E+00	1.297E+01
Na-22	1.000E+01	0.000E+00	9.724E+00	1.543E+00	9.724E+00	1.543E+00
Np-237	1.000E+01	0.000E+00	6.124E+00	2.449E+00	6.124E+00	2.449E+00
Pu-238	1.000E+01	0.000E+00	3.053E-01	4.914E+01	3.053E-01	4.914E+01
Pu-239	1.000E+01	0.000E+00	3.390E-01	4.425E+01	3.390E-01	4.425E+01
Pu-240	1.000E+01	0.000E+00	3.389E-01	4.427E+01	3.389E-01	4.427E+01
Ra-226	1.000E+01	34.81 ñ 0.07	1.051E+02	1.427E-01	1.038E+02	1.445E-01
Ra-228	1.000E+01	2.128 ñ 0.004	1.059E+01	1.417E+00	9.089E+00	1.650E+00
Ru-106	1.000E+01	0.000E+00	7.874E-01	1.905E+01	7.874E-01	1.905E+01
Sr-90	1.000E+01	0.000E+00	2.610E+00	5.746E+00	2.610E+00	5.746E+00
Tc-99	1.000E+01	0.000E+00	4.161E-01	3.605E+01	4.161E-01	3.605E+01
Th-228	1.000E+01	0.000E+00	7.620E+00	1.969E+00	7.620E+00	1.969E+00
Th-230	1.000E+01	1.000E+03	3.786E+01	3.962E-01	8.367E-02	1.793E+02
Th-232	1.000E+01	148.9 ñ 0.3	1.754E+01	8.552E-01	8.311E-01	1.805E+01
U-234	1.000E+01	1.000E+03	2.370E-01	6.328E+01	5.453E-02	2.751E+02
U-235	1.000E+01	1.000E+03	8.916E-01	1.682E+01	6.650E-01	2.256E+01
U-238	1.000E+01	0.000E+00	1.741E-01	8.616E+01	1.741E-01	8.616E+01

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Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	3.837E+00	3.831E+00	3.656E+00	3.267E+00	7.672E-01
0Np-237	Am-241	1.000E+00	9.877E-06	2.967E-05	5.904E-04	1.841E-03	9.856E-03
Np-237	Np-237	1.000E+00	6.124E+01	6.124E+01	6.124E+01	6.124E+01	6.119E+01
Np-237	äDOSE(j)		6.124E+01	6.124E+01	6.124E+01	6.124E+01	6.120E+01
0U-233	Am-241	1.000E+00	1.388E-13	9.494E-13	3.665E-10	3.832E-09	2.495E-07
U-233	Np-237	1.000E+00	1.265E-06	3.740E-06	7.537E-05	2.482E-04	2.462E-03
U-233	äDOSE(j)		1.265E-06	3.740E-06	7.537E-05	2.482E-04	2.463E-03
0Th-229	Am-241	1.000E+00	9.661E-17	1.447E-15	1.081E-11	3.752E-10	2.627E-07
Th-229	Np-237	1.000E+00	1.193E-09	8.341E-09	3.320E-06	3.596E-05	3.457E-03
Th-229	äDOSE(j)		1.193E-09	8.341E-09	3.320E-06	3.596E-05	3.457E-03
0Co-60	Co-60	1.000E+00	1.235E+02	1.083E+02	2.389E+00	2.401E-04	0.000E+00
0Cs-134	Cs-134	1.000E+00	6.627E+01	4.735E+01	2.765E-03	1.669E-13	0.000E+00
0Cs-137	Cs-137	1.000E+00	2.832E+01	2.767E+01	1.416E+01	2.809E+00	2.616E-09
0Eu-152	Eu-152	7.208E-01	3.972E+01	3.771E+01	8.348E+00	2.192E-01	1.038E-21
Eu-152	Eu-152	2.792E-01	1.539E+01	1.461E+01	3.233E+00	8.489E-02	4.020E-22
Eu-152	äDOSE(j)		5.511E+01	5.232E+01	1.158E+01	3.041E-01	1.440E-21
0Gd-152	Eu-152	2.792E-01	3.157E-16	9.257E-16	9.825E-15	1.229E-14	1.235E-14
0Eu-154	Eu-154	1.000E+00	5.954E+01	5.503E+01	5.605E+00	2.259E-02	0.000E+00
0Eu-155	Eu-155	1.000E+00	1.386E+00	1.205E+00	2.094E-02	1.182E-06	0.000E+00
0H-3	H-3	1.000E+00	1.688E-01	6.153E-02	1.179E-14	0.000E+00	0.000E+00
0I-129	I-129	1.000E+00	3.349E+00	3.347E+00	3.296E+00	3.177E+00	1.973E+00
0K-40	K-40	1.000E+00	1.157E+01	1.157E+01	1.156E+01	1.154E+01	1.132E+01
0Na-22	Na-22	1.000E+00	9.724E+01	7.450E+01	3.288E-02	2.619E-10	0.000E+00
0Pu-238	Pu-238	1.000E+00	3.053E+00	3.029E+00	2.408E+00	1.385E+00	1.132E-03
0U-234	Pu-238	1.000E+00	7.693E-07	2.303E-06	4.189E-05	1.072E-04	1.947E-04
U-234	U-234	1.000E+00	5.452E-01	5.452E-01	5.452E-01	5.450E-01	5.424E-01
U-234	U-238	1.000E+00	7.729E-07	2.319E-06	4.714E-05	1.553E-04	1.541E-03
U-234	äDOSE(j)		5.453E-01	5.453E-01	5.453E-01	5.452E-01	5.442E-01
0Th-230	Pu-238	1.000E+00	2.613E-12	1.819E-11	6.713E-09	6.152E-08	1.716E-06
Th-230	Th-230	1.000E+00	6.118E-01	6.118E-01	6.117E-01	6.113E-01	6.063E-01
Th-230	U-234	1.000E+00	2.764E-06	8.273E-06	1.680E-04	5.531E-04	5.471E-03
Th-230	U-238	1.000E+00	2.619E-12	1.827E-11	7.263E-09	7.881E-08	7.772E-06
Th-230	äDOSE(j)		6.118E-01	6.118E-01	6.118E-01	6.118E-01	6.118E-01

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Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Ra-226	Pu-238	1.000E+00	4.771E-13	7.145E-12	5.097E-08	1.591E-06	4.966E-04
Ra-226	Ra-226	1.000E+00	1.038E+03	1.037E+03	1.024E+03	9.934E+02	6.716E+02
Ra-226	Th-230	1.000E+00	2.247E-01	6.741E-01	1.362E+01	4.419E+01	3.630E+02
Ra-226	U-234	1.000E+00	6.743E-07	4.720E-06	1.874E-03	2.013E-02	1.753E+00
Ra-226	U-238	1.000E+00	4.779E-13	7.169E-12	5.408E-08	1.919E-06	1.716E-03
Ra-226	äDOSE(j)		1.038E+03	1.038E+03	1.038E+03	1.038E+03	1.036E+03
0Pb-210	Pu-238	1.000E+00	1.302E-16	3.932E-15	4.344E-10	3.234E-08	1.970E-05
Pb-210	Ra-226	1.000E+00	6.864E-01	2.015E+00	2.678E+01	4.080E+01	2.892E+01
Pb-210	Th-230	1.000E+00	1.003E-04	6.873E-04	2.051E-01	1.308E+00	1.501E+01
Pb-210	U-234	1.000E+00	2.280E-10	3.342E-09	2.019E-05	4.762E-04	7.006E-02
Pb-210	U-238	1.000E+00	1.304E-16	3.942E-15	4.561E-10	3.806E-08	6.648E-05
Pb-210	äDOSE(j)		6.865E-01	2.015E+00	2.699E+01	4.211E+01	4.400E+01
0Pu-239	Pu-239	1.000E+00	3.390E+00	3.390E+00	3.387E+00	3.380E+00	3.293E+00
0U-235	Pu-239	1.000E+00	3.274E-09	9.822E-09	1.996E-07	6.571E-07	6.450E-06
U-235	U-235	1.000E+00	6.649E+00	6.649E+00	6.649E+00	6.648E+00	6.633E+00
U-235	äDOSE(j)		6.649E+00	6.649E+00	6.649E+00	6.648E+00	6.633E+00
0Pa-231	Pu-239	1.000E+00	2.282E-13	1.602E-12	6.400E-10	6.940E-09	6.766E-07
Pa-231	U-235	1.000E+00	6.967E-04	2.094E-03	4.262E-02	1.403E-01	1.381E+00
Pa-231	äDOSE(j)		6.967E-04	2.094E-03	4.262E-02	1.403E-01	1.381E+00
0Ac-227	Pu-239	1.000E+00	1.243E-15	1.837E-14	1.115E-10	2.633E-09	4.288E-07
Ac-227	U-235	1.000E+00	5.021E-06	3.461E-05	1.036E-02	6.629E-02	9.023E-01
Ac-227	äDOSE(j)		5.021E-06	3.461E-05	1.036E-02	6.629E-02	9.023E-01
0Pu-240	Pu-240	1.000E+00	3.389E+00	3.388E+00	3.378E+00	3.353E+00	3.047E+00
0U-236	Pu-240	1.000E+00	7.633E-09	2.293E-08	4.658E-07	1.529E-06	1.450E-05
0Th-232	Pu-240	1.000E+00	7.368E-19	5.139E-18	2.041E-15	2.211E-14	2.121E-12
Th-232	Th-232	1.000E+00	3.008E+00	3.008E+00	3.008E+00	3.008E+00	3.008E+00
Th-232	äDOSE(j)		3.008E+00	3.008E+00	3.008E+00	3.008E+00	3.008E+00
0Ra-228	Pu-240	1.000E+00	5.816E-19	8.526E-18	3.322E-14	5.086E-13	5.657E-11
Ra-228	Ra-228	1.000E+00	7.683E+01	6.810E+01	2.065E+00	4.468E-04	0.000E+00
Ra-228	Th-232	1.000E+00	4.715E+00	1.344E+01	7.947E+01	8.154E+01	8.154E+01
Ra-228	äDOSE(j)		8.154E+01	8.154E+01	8.154E+01	8.154E+01	8.154E+01
0Th-228	Pu-240	1.000E+00	4.473E-20	1.279E-18	2.979E-14	5.341E-13	6.269E-11
Th-228	Ra-228	1.000E+00	1.406E+01	3.421E+01	3.445E+00	7.459E-04	0.000E+00
Th-228	Th-228	1.000E+00	7.620E+01	5.304E+01	1.450E-03	1.402E-14	0.000E+00
Th-228	Th-232	1.000E+00	5.883E-01	3.606E+00	8.740E+01	9.085E+01	9.085E+01
Th-228	äDOSE(j)		9.085E+01	9.085E+01	9.085E+01	9.085E+01	9.085E+01
0Ru-106	Ru-106	1.000E+00	7.874E+00	3.955E+00	8.423E-09	0.000E+00	0.000E+00

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Individual Nuclide Dose Summed Over All Pathways
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	BRF(i)	DOSE(j,t), mrem/yr t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Sr-90	Sr-90	1.000E+00	2.610E+01	2.549E+01	1.278E+01	2.414E+00	1.195E-09
Tc-99	Tc-99	1.000E+00	4.161E+00	4.157E+00	4.043E+00	3.782E+00	1.601E+00
U-238	U-238	1.000E+00	1.741E+00	1.741E+00	1.741E+00	1.740E+00	1.737E+00

BRF(i) is the branch fraction of the parent nuclide.

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Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Am-241	Am-241	1.000E+00	1.000E+01	9.984E+00	9.529E+00	8.513E+00	2.000E+00
0Np-237	Am-241	1.000E+00	0.000E+00	3.236E-06	9.486E-05	2.992E-04	1.609E-03
Np-237	Np-237	1.000E+00	1.000E+01	1.000E+01	1.000E+01	9.999E+00	9.992E+00
Np-237	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	9.994E+00
0U-233	Am-241	1.000E+00	0.000E+00	7.079E-12	6.272E-09	6.715E-08	4.414E-06
U-233	Np-237	1.000E+00	0.000E+00	4.373E-05	1.312E-03	4.372E-03	4.357E-02
U-233	äS(j):		0.000E+00	4.373E-05	1.312E-03	4.372E-03	4.357E-02
0Th-229	Am-241	1.000E+00	0.000E+00	2.228E-16	5.943E-12	2.137E-10	1.517E-07
Th-229	Np-237	1.000E+00	0.000E+00	2.065E-09	1.857E-06	2.058E-05	1.996E-03
Th-229	äS(j):		0.000E+00	2.065E-09	1.857E-06	2.058E-05	1.996E-03
0Co-60	Co-60	1.000E+00	1.000E+01	8.768E+00	1.935E-01	1.945E-05	0.000E+00
0Cs-134	Cs-134	1.000E+00	1.000E+01	7.145E+00	4.172E-04	2.518E-14	0.000E+00
0Cs-137	Cs-137	1.000E+00	1.000E+01	9.772E+00	5.000E+00	9.921E-01	9.239E-10
0Eu-152	Eu-152	7.208E-01	7.208E+00	6.843E+00	1.515E+00	3.977E-02	1.883E-22
Eu-152	Eu-152	2.792E-01	2.792E+00	2.651E+00	5.867E-01	1.540E-02	7.294E-23
Eu-152	äS(j):		1.000E+01	9.493E+00	2.101E+00	5.517E-02	2.612E-22
0Gd-152	Eu-152	2.792E-01	0.000E+00	1.746E-14	2.722E-13	3.427E-13	3.446E-13
0Eu-154	Eu-154	1.000E+00	1.000E+01	9.243E+00	9.414E-01	3.795E-03	6.194E-34
0Eu-155	Eu-155	1.000E+00	1.000E+01	8.696E+00	1.511E-01	8.528E-06	0.000E+00
0H-3	H-3	1.000E+00	1.000E+01	3.643E+00	6.982E-13	0.000E+00	0.000E+00
0I-129	I-129	1.000E+00	1.000E+01	9.995E+00	9.843E+00	9.485E+00	5.892E+00
0K-40	K-40	1.000E+00	1.000E+01	1.000E+01	9.994E+00	9.979E+00	9.791E+00
0Na-22	Na-22	1.000E+00	1.000E+01	7.661E+00	3.381E-03	2.693E-11	0.000E+00
0Pu-238	Pu-238	1.000E+00	1.000E+01	9.921E+00	7.890E+00	4.538E+00	3.707E-03
0U-234	Pu-238	1.000E+00	0.000E+00	2.824E-05	7.572E-04	1.959E-03	3.571E-03
U-234	U-234	1.000E+00	1.000E+01	1.000E+01	9.998E+00	9.995E+00	9.948E+00
U-234	U-238	1.000E+00	0.000E+00	2.835E-05	8.504E-04	2.834E-03	2.824E-02
U-234	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	9.980E+00
0Th-230	Pu-238	1.000E+00	0.000E+00	1.273E-10	1.063E-07	9.966E-07	2.804E-05
Th-230	Th-230	1.000E+00	1.000E+01	1.000E+01	9.997E+00	9.991E+00	9.910E+00
Th-230	U-234	1.000E+00	0.000E+00	9.002E-05	2.700E-03	8.996E-03	8.938E-02
Th-230	U-238	1.000E+00	0.000E+00	1.276E-10	1.148E-07	1.275E-06	1.269E-04
Th-230	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01

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Summary : Radionuclide SALs residential 10-23-00
File : 2002_SALs_Cs134.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

0Nuclide (j)	Parent (i)	BRF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Ra-226	Pu-238	1.000E+00	0.000E+00	1.839E-14	4.678E-10	1.512E-08	4.780E-06
Ra-226	Ra-226	1.000E+00	1.000E+01	9.996E+00	9.870E+00	9.574E+00	6.473E+00
Ra-226	Th-230	1.000E+00	0.000E+00	4.331E-03	1.291E-01	4.237E-01	3.496E+00
Ra-226	U-234	1.000E+00	0.000E+00	1.950E-08	1.747E-05	1.921E-04	1.687E-02
Ra-226	U-238	1.000E+00	0.000E+00	1.842E-14	4.958E-10	1.822E-08	1.652E-05
Ra-226	äS(j):		1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.986E+00
0Pb-210	Pu-238	1.000E+00	0.000E+00	1.421E-16	9.249E-11	7.216E-09	4.466E-06
Pb-210	Ra-226	1.000E+00	0.000E+00	3.060E-01	6.019E+00	9.257E+00	6.565E+00
Pb-210	Th-230	1.000E+00	0.000E+00	6.663E-05	4.523E-02	2.948E-01	3.405E+00
Pb-210	U-234	1.000E+00	0.000E+00	2.004E-10	4.372E-06	1.067E-04	1.589E-02
Pb-210	U-238	1.000E+00	0.000E+00	1.423E-16	9.704E-11	8.485E-09	1.507E-05
Pb-210	äS(j):		0.000E+00	3.060E-01	6.064E+00	9.552E+00	9.986E+00
0Pu-239	Pu-239	1.000E+00	1.000E+01	1.000E+01	9.991E+00	9.971E+00	9.715E+00
0U-235	Pu-239	1.000E+00	0.000E+00	9.848E-09	2.953E-07	9.833E-07	9.696E-06
U-235	U-235	1.000E+00	1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.976E+00
U-235	äS(j):		1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.976E+00
0Pa-231	Pu-239	1.000E+00	0.000E+00	1.042E-13	9.372E-11	1.040E-09	1.023E-07
Pa-231	U-235	1.000E+00	0.000E+00	2.116E-04	6.345E-03	2.113E-02	2.089E-01
Pa-231	äS(j):		0.000E+00	2.116E-04	6.345E-03	2.113E-02	2.089E-01
0Ac-227	Pu-239	1.000E+00	0.000E+00	1.097E-15	2.388E-11	5.835E-10	9.612E-08
Ac-227	U-235	1.000E+00	0.000E+00	3.332E-06	2.258E-03	1.477E-02	2.023E-01
Ac-227	äS(j):		0.000E+00	3.332E-06	2.258E-03	1.477E-02	2.023E-01
0Pu-240	Pu-240	1.000E+00	1.000E+01	9.999E+00	9.968E+00	9.894E+00	8.993E+00
0U-236	Pu-240	1.000E+00	0.000E+00	2.960E-07	8.866E-06	2.944E-05	2.805E-04
0Th-232	Pu-240	1.000E+00	0.000E+00	7.302E-18	6.565E-15	7.276E-14	7.045E-12
Th-232	Th-232	1.000E+00	1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
Th-232	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
0Ra-228	Pu-240	1.000E+00	0.000E+00	2.848E-19	3.912E-15	6.170E-14	6.931E-12
Ra-228	Ra-228	1.000E+00	1.000E+01	8.864E+00	2.688E-01	5.816E-05	0.000E+00
Ra-228	Th-232	1.000E+00	0.000E+00	1.136E+00	9.731E+00	1.000E+01	1.000E+01
Ra-228	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
0Th-228	Pu-240	1.000E+00	0.000E+00	2.417E-20	3.136E-15	5.814E-14	6.893E-12
Th-228	Ra-228	1.000E+00	0.000E+00	2.853E+00	4.025E-01	8.716E-05	0.000E+00
Th-228	Th-228	1.000E+00	1.000E+01	6.961E+00	1.903E-04	1.840E-15	0.000E+00
Th-228	Th-232	1.000E+00	0.000E+00	1.864E-01	9.597E+00	1.000E+01	1.000E+01
Th-228	äS(j):		1.000E+01	1.000E+01	1.000E+01	1.000E+01	1.000E+01
0Ru-106	Ru-106	1.000E+00	1.000E+01	5.023E+00	1.070E-08	1.252E-29	0.000E+00

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Summary : Radionuclide SALs residential 10-23-00
File : 2002_SALs_Cs134.RAD

Individual Nuclide Soil Concentration
Parent Nuclide and Branch Fraction Indicated

Nuclide (j)	Parent (i)	BRF(i)	S(j,t), pCi/g t= 0.000E+00	1.000E+00	3.000E+01	1.000E+02	1.000E+03
Sr-90	Sr-90	1.000E+00	1.000E+01	9.765E+00	4.896E+00	9.249E-01	4.578E-10
Tc-99	Tc-99	1.000E+00	1.000E+01	9.990E+00	9.717E+00	9.089E+00	3.847E+00
U-238	U-238	1.000E+00	1.000E+01	1.000E+01	9.999E+00	9.998E+00	9.976E+00

BRF(i) is the branch fraction of the parent nuclide.
RESCALC.EXE execution time = 6.39 seconds

Appendix H

Ecological Scoping Checklist and Surface Water Assessments

SWMU 53-002(a)-99

Part A—Scoping Meeting Documentation

Site ID	SWMU 53-002(a)-99
Form of site releases (solid, liquid, vapor). Describe all relevant known or suspected mechanisms of release (spills, dumping, material disposal, outfall, explosive testing, etc.) and describe potential areas of release. Reference locations on a map as appropriate.	The northern impoundments were part of the TA-53 radioactive liquid waste system and were used for the holding and decay of sanitary and radioactively contaminated wastewater from 1970 to 1992. The southern surface impoundment received excess sanitary wastewater from the northern impoundments through 1989 and radiological wastewater through 1998. Prior to building the southern impoundment, a drainage ditch was located south of the impoundments and terminated in the current rock-lined drainage area east of the impoundments. Prior to the removal of dried sludge, the impoundments may have released particulates via air suspension. In 2000 sludge and the liner from the southern impoundment were removed. In 2002 sludge and the liner from the northern impoundments were removed, and confirmatory samples were collected from the tuff below all of the impoundments. The SWMU is the footprint of the impoundments only, although the area impacted by the SWMU extends into the unnamed tributary to LA Canyon drainage.
List of Primary Impacted Media **(Indicate all that apply.)**	**Surface soil –**Impacted by contaminated materials. **Surface water/sediment** – Impacted by discharges at the drainage pipe, sediment in catchment basins and within drainage channel. **Subsurface** – Impacted by potential leakage from the impoundments. **Groundwater – NA**
FIMAD vegetation class based on ArcView vegetation coverage **(Indicate all that apply.)**	**Water** – None **Bare Ground/Unvegetated** –East of the SWMU boundary is a patch of bare ground. **Spruce/fir/aspen/mixed conifer** – None **Ponderosa pine –** The drainage area is listed as ponderosa pine. **Piñon juniper/juniper savannah –**The area outside the SWMU is predominantly piñon/juniper with a patch in the drainage. **Grassland/shrubland** – The drainage area has a minor area of grassland/shrubland. **Developed** – The FIMAD vegetation class for the SWMU is all developed.
Is T&E Habitat Present? **If applicable, list species known or suspected to use the site for breeding or foraging.**	The SWMU itself does not provide any habitat for nesting or foraging for T&E species since it is bare ground. But the SWMU is entirely within the T&E habitat (LANL 1998, 58188).
Provide list, of Neighboring/ Contiguous/ Upgradient sites, includes a brief summary of COPCs and the form of releases for relevant sites and reference a map as appropriate. **(Use this information to evaluate the need to aggregate sites for screening.)**	SWMU 53-002(a)-99 is the former surface impoundments, which are surrounded by a “bone yard” that is also listed as SWMU 53-008. A historically active drainage from the northern impoundments crosses the surface of the bone yard from the southeast side of SWMU 53-002(a)-99. There is a culvert that crosses under a road through the bone yard at the point of this historical drainage and spills into a depression/ditch that exits into a small hanging canyon on the east side of the area approximately 50 to 100 meters from the point of exiting SWMU 53-002(a)-99. COPCs include organic and inorganic chemicals and radionuclides.

Surface Water Erosion Potential Information **Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.**	The erosion matrix score for SWMU 53-002(a)-99 is 22.3, with a score of 0 for run-off (indicating no runoff under present conditions) and a score of 7 for run-on. These scores were determined using only the boundary of the impoundments as the SWMU boundary.
Other Scoping Meeting Notes	None

Part B—Site Visit Documentation

Site ID	SWMU 53-002(a)-99
Date of Site Visit	8/08/03
Site Visit Conducted by	Tracy McFarland, Kristen Lockhart, Randy Ryti

Receptor Information:

Estimate cover	**Relative vegetative cover (high, medium, low, none)** = low **Relative wetland cover (high, medium, low, none)** = none **Relative structures/asphalt, etc. cover (high, medium, low, none)** = none
Field notes on the FIMAD vegetation class to assist in ground-truthing the ArcView information	The FIMAD vegetation class lists the SWMU boundary as developed, but since the SWMU was remediated, the area is predominantly bare ground within the impoundments with plants growing on the berms.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	The exterior berms are well vegetated with evidence of bioturbation on the north impoundments, indicating the presence of small mammals as an exposure pathway for the Mexican Spotted Owl. Additionally, small mammals were reported in the area surrounding the impoundments prior to their remediation.
Are ecological receptors present at the site? **(yes/no/uncertain)** **Describe the general types of receptors present at the site (terrestrial and aquatic), and make notes on the quality of habitat present at the site.**	Yes. Plant invasion of the site is currently active, especially on the berms. There has been invasion by many weedy angiosperm species as well as mosses and possibly other plant types. There is evidence of fossorial mammals utilizing the embankments. Ant nests are seen throughout the site. A couple of cottonwood trees are located on the berms, although a cottonwood tree on the east berm of the south lagoon appears stressed. Very little vegetation is located within the impoundments.

Contaminant Transport Information:

Surface water transport **Field notes on the erosion potential, including a discussion of the terminal point of surface water transport (if applicable).**	The surface impoundments were maintained historically with an active drain that exited into a small hanging canyon outside the SWMU boundary on the east. This drain may have been active in carrying effluents from the surface impoundments into the canyon. Currently, any residues from these activities may be transported further into the canyon by surface water run-off from storm events.
Are there any off-site transport pathways (surface water, air, or groundwater)? **(yes/no/uncertain)**	No, the sludge from the impoundments has been removed. Contaminated soil and tuff were removed also. Within the drainage, surface water may move residual contamination farther down the canyon drainage.

Provide explanation	
Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	No. The contaminated sludge and soil has been removed.

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	The major physical disturbance to the area is the physical placement of the surface impoundments on this section of mesa-top. There is also a paved road outside the SWMU that turns into gravel road on the north, east, and south sides of the surface impoundments. A dirt road is located west of the SWMU. The berms from the impoundments remain on site.
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	Yes. There is evidence of potential ecological receptors at the SWMU. But the only visual evidence of possible ecological effects from historical contamination is a cottonwood on the eastern berm, which appears stressed. Outside the SWMU boundaries there are no obvious ecological effects.
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	No. The contaminated media was removed from the impoundments in 2000 and 2002.

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite receptors, the remainder of the checklist should not be completed. Stop here and provide additional explanation/justification for proposing an ecological No Further Action recommendation (if needed). At a minimum, the potential for future transport should include likelihood that future construction activities could make contamination more available for exposure or transport. This section is not applicable.

Adequacy of Site Characterization:

Do existing or proposed data provide information on the nature, rate and extent of contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if the maximum value was captured by existing sample data.)**	Yes, soil and tuff samples were collected within the SWMU that characterized the nature and extent. The ecological screening assessment indicated that contaminants pose no unacceptable risk to ecological receptors. In addition, soil and sediment samples were collected outside the boundaries of the SWMU on the mesa top, as well as within the drainage. These samples further defined the extent of contamination.
Do existing or proposed data for the site address potential transport pathways of site contamination? **(yes/no/uncertain)** **Provide explanation** **(Consider if other sites should aggregated to characterize potential ecological risk.)**	Yes, data were collected during the investigation and following remediation that address the major potential transport pathways.

Additional Field Notes:

Provide additional field notes on the site setting and potential ecological receptors. None.

Part C—Ecological Pathways Conceptual Exposure Model

Provide answers to Questions A to V to develop the Ecological Pathways Conceptual Exposure Model

Question A:

Could soil contaminants reach receptors via vapors?

- **Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant >10^{-5} atm-m^3/mol and molecular weight <200 g/mol).**

Answer (likely/unlikely/uncertain): Likely

Provide explanation: Tritium was detected within the soil and tuff samples within the impoundments and tritium may be transported via vapors.

Question B:

Could the soil contaminants reach receptors through fugitive dust carried in air?

- **Soil contamination would have to be on the actual surface of the soil to become available for dust.**
- **In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.**

Answer (likely/unlikely/uncertain): Likely

Provide explanation: Residual contamination remains on the surface and within the shallow subsurface soil and tuff at the site. In addition, there is evidence of wind-blown material on the berm, but it is not clear where this fine-grained material originated.

Question C:

Can contaminated soil be transported to aquatic ecological communities (use SOP 2.01 run-off score and terminal point of surface water runoff to help answer this question)?

- **If the SOP 2.01 run-off score* for each PRS included in the site is equal to zero, this suggests that erosion at the site is not a transport pathway. (* note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points).**
- **If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected by contamination from this site.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Although the run-off score for SWMU 53-002(a)-99 is zero, indicating that in its current condition, there is visible evidence of run-off east of the impoundments into the unnamed drainage leading to LA Canyon. Prior to the site's remediation, the run-off score was 35 with run-off from the culvert that extends under the road. There is no aquatic community immediately downstream of the SWMU, the drainage in the unnamed canyon is ephemeral.

Question D:

Is contaminated groundwater potentially available to biological receptors through seeps or springs or shallow groundwater?

Known or suspected presence of contaminants in groundwater.

- **The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.**
- **Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).**
- **Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Seeps and springs are not present at the SWMU or within the unnamed drainage to the east of the SWMU. The groundwater at the site is located approximated 300 meters below the surface.

Question E:

Is infiltration/percolation from contaminated subsurface material a viable transport and exposure pathway?

- **Suspected ability of contaminants to migrate to groundwater.**
- **The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.**
- **Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).**
- **Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: The depth to groundwater is approximately 300 meters (1000 ft)below the surface of the impoundments and does not discharge to the surface near this SWMU. The alluvial groundwater in LA Canyon is shallower than 300 meters.

Question F:

Might erosion or mass wasting events be a potential release mechanism for contaminants from subsurface materials or perched aquifers to the surface?

- **This question is only applicable to release sites located on or near the mesa edge.**
- **Consider the erodibility of surficial material and the geologic processes of canyon/mesa edges.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Although the SWMU is located near a mesa edge, there is no evidence of mass wasting within the canyon drainage. If mass wasting occurred it is more likely to bury the contamination in the drainage than to expose it.

Question G:

Could airborne contaminants interact with receptors through respiration of vapors?

- **Contaminants must be present as volatiles in the air.**
- **Consider the importance of inhalation of vapors for burrowing animals.**
- **Foliar uptake of organic vapors is typically not a significant exposure pathway**.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Tritium was detected within the soil and tuff, and will partition into tritiated water vapor. Other contaminants at the site are not likely to volatilize and would therefore not be available to interact with receptors via respiration. It is unlikely that animals would burrow into the tuff, but it is possible for plant roots to extend into the tuff.

Question H:

Could airborne contaminants interact with plants through deposition of particulates or with animals through inhalation of fugitive dust?

- **Contaminants must be present as particulates in the air or as dust for this exposure pathway to be complete.**
- **Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement**.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Currently residual contaminants are present in surface soil or sediments, so there is a potential for the contaminants to become airborne. EPA guidance document on Ecological soil screening levels (http:/www.epa.gov/ecotox/ecossl) shows that inhalation via dust is a very minor pathway (<0.001%) for the meadow vole.

Question I:

Could contaminants interact with plants through root uptake or rain splash from surficial soils?

- **Contaminants in bulk soil may partition into soil solution, making them available to roots.**
- **Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Provide explanation: It is possible for plants to take in tritium and other residual contaminants through their roots and for the contaminants in the surficial soil to affect plants by rain splash. Root uptake of

contaminants is a major pathway because of the shallowness of some of the contaminants and the depth that the roots extend to.

Question J:

Could contaminants interact with receptors through food web transport from surficial soils?

- **The chemicals may bioaccumulate in animals.**
- **Animals may ingest contaminated food items.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Although residual contamination remains in the surface soil, there are very few plants within the impoundments that receptors may eat. It is also unlikely that small mammals will be in the impoundments at the present time because there are bare tuff and soil, which is unattractive to wildlife. There are plants growing on the berms that receptors may eat, and their roots are likely to extend to areas that have residual contamination. Within the drainage reaches C, D, and E, there is more vegetation, but the contamination is this area is very low.

Question K:

Could contaminants interact with receptors via incidental ingestion of surficial soils?

- **Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil or while grooming themselves clean of soil.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Residual contamination remains in the surface soil that receptors may consume via incidental ingestion while grooming themselves. But there are very few plants growing within the impoundments, and it is mostly bare tuff and soil, and therefore unattractive to wildlife. Within the drainage reaches C, D, and E, there is more of a possibility of exposure to contaminants via ingestion, but the contamination is this area is very low .

Question L:

Could contaminants interact with receptors through dermal contact with surficial soils?

- **Significant exposure via dermal contact would generally be limited to organic contaminants that are lipophilic and can cross epidermal barriers.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 1

Provide explanation: There are very few lipophilic organic COPCs (for example, 4,4'-DDE, 4,4'-DDT, and the aroclors) at the site and in the drainage, and those that are there are at trace levels.

Question M:

Could contaminants interact with plants or animals through external irradiation?

- **External irradiation effects are most relevant for gamma emitting radionuclides.**
- **Burial of contamination attenuates radiological exposure.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Terrestrial Animals: 3

Provide explanation: Residual gamma emitting radionuclides remains within the impoundments and also exist in the drainage.

Question N:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- **Contaminants may be taken-up by terrestrial plants whose roots are in contact with surface waters.**
- **Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash) in an area that is only periodically inundated with water.**
- **Contaminants in sediment may partition into soil solution, making them available to roots.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Provide explanation: There is no surface water present at or near the site. Any water onsite would be the result of rainfall or snowmelt and would quickly evaporate or infiltrate into the subsurface. There is also no perennial water in the unnamed drainage into Los Alamos Canyon.

Question O:

Could contaminants interact with receptors through food web transport from water and sediment?

- **The chemicals may bioconcentrate in food items.**
- **Animals may ingest contaminated food items.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no surface water present at or near the site. Any water onsite would be the result of rainfall or snowmelt and would quickly evaporate or infiltrate. There is also no perennial water in the unnamed drainage into Los Alamos Canyon.

Question P:

Could contaminants interact with receptors via ingestion of water and suspended sediments?

- **If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.**
- **Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no surface water present at or near the site. Any water onsite would be the result of rainfall or snowmelt and would quickly evaporate or infiltrate. There is also no perennial water in the unnamed drainage into Los Alamos Canyon.

Question Q:

Could contaminants interact with receptors through dermal contact with water and sediment?

- **If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.**
- **Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 0

Provide explanation: There is no surface water present at or near the site. Any water onsite would be the result of rainfall or snowmelt and would quickly evaporate or infiltrate. There is also no perennial water in the unnamed drainage into Los Alamos Canyon.

Question R:

Could contaminants interact with plants or animals through external irradiation?

- **External irradiation effects are most relevant for gamma emitting radionuclides.**
- **Burial of contamination attenuates radiological exposure.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: Residual radioactive contamination remains within the impoundments. There is no surface water present at or near the site. Any water onsite would be the result of rainfall or snowmelt and would quickly evaporate or infiltrate. There is also no perennial water in the unnamed drainage into Los Alamos Canyon.

Question S:

Could contaminants bioconcentrate in free floating aquatic, attached aquatic plants, or emergent vegetation?

- **Aquatic plants are in direct contact with water.**
- **Contaminants in sediment may partition into pore water, making them available to submerged roots.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants/Emergent Vegetation: 0

Provide explanation: There are no aquatic communities present at the site or in the unnamed drainage into Los Alamos Canyon.

Question T:

Could contaminants bioconcentrate in sedimentary or water column organisms?

- **Aquatic receptors may actively or incidentally ingest sediment while foraging.**
- **Aquatic receptors may be directly exposed to contaminated sediments or may be exposed to contaminants through osmotic exchange, respiration, or ventilation of sediment pore waters.**
- **Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There are no aquatic communities present at or near the site or in the unnamed drainage into Los Alamos Canyon.

Question U:

Could contaminants bioaccumulate in sedimentary or water column organisms?

- **Lipophillic organic contaminants and some metals may concentrate in an organism's tissues**
- **Ingestion of contaminated food items may result in contaminant bioaccumulation through the food web.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There are no aquatic communities present at or near the site or in the unnamed drainage into Los Alamos Canyon.

Question V:

Could contaminants interact with aquatic plants or animals through external irradiation?

- **External irradiation effects are most relevant for gamma emitting radionuclides.**
- **The water column acts to absorb radiation, thus external irradiation is typically more important for sediment dwelling organisms.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There are no aquatic communities present at or near the site or in the unnamed drainage into Los Alamos Canyon.

Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Tracy L. McFarland

Name (signature): Tracy L McF

Organization: Neptune and Company, Inc.

Phone number: 662-0707, ext. 31

Date completed: 1/13/04

Verification by a member of ER Project Ecological Risk Task Team (provide name, organization and phone number):

Name (printed): Randall T. Ryti

Name (signature): Randall T Ryti

Organization: Neptune and Company, Inc.

Phone number: 662-0707, ext. 12

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Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
1646	53-002(a)	

Setting

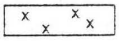
Topography

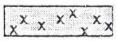
On Mesa Top: Yes On Bench in Canyon: No On Canyon Floor, Not Channel: No In Channel in Canyon Floor: No

Topography Explanation:

PRS consists of two lagoons and is loacted on mesa top south of structure 53-32.
Each lagoon has an excavated cut connecting with site 53-002(b).

Ground/Canopy Cover


Sparse (<25%): Yes


Medium (25-75%): No

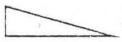

Thick (>75%): No

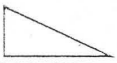
Ground/Canopy Cover Explanation:

Estimated ground coverage is 0-15% consisting of scattered shrubs and forbs.

Slope at Area Impacted

Flat (<10%): Yes


Gradual (10-30%): No


Steep (>30%): No

Slope Explanation:

Site is located on a slope of less than 10%.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

No

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Page 2 of 5

Surface Water Site Assessment

PRS ID: 53-002(a)

Run-off (Continued)

Is Run-off Channelized:	Channel Type:

Channelization Explanation:

Where Does Evidence of Runoff Terminate:

Terminus Explanation

Has Run-off Caused Visible Erosion:	Erosion Type:

Erosion Explanation:

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:
No

Structural Run-on Explanation:
N/A

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Page 3 of 5

Surface Water Site Assessment

PRS ID: 53-002(a)

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
Yes

Natural Run-on Explanation:
Minor run-on to site caused by cement berm.

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
N/A

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
No

Sign Off

Site Not Found:	Revision of Earlier Assessment:	
No	Yes	
Name of Assessment Author:		**Assessment Date:**
Heather C. Voss		11/14/2003

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Surface Water Site Assessment

PRS ID: 53-002(a)

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris In a Watercourse:
No	No

Trash and Debris Explanation:

General Notes

Assessment Comments:

Best Management Practice Notes

Are BMPs in Place:
Yes

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Surface Water Site Assessment

PRS ID: 53-002(a)

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	13.0
Slope at Area Impacted:	13	<10%	10-30%	>30%	1.3
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5, "No" = 0 here and for two scores below.			0.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	
Visible Erosion:	22	"No" = 0. If "Yes", score by Erosion Type.			
Erosion Type:		"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0, "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0, "Yes" = 7.			7.0
Current Operations Run-on:	4	"No" = 0, "Yes" = 4.			0.0
Maximum Possible Total Score:	100	* Actual Total Score:			22.3

Revision of Earlier Assessment: Yes

* BMPs are in place. Score could be higher without them.

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Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
1647	53-002(b)	

Setting

Topography

On Mesa Top: Yes On Bench in Canyon: No On Canyon Floor, Not Channel: No In Channel in Canyon Floor: No

Topography Explanation:

PRS is located on mesa top north of structure 53-621.

Ground/Canopy Cover

Sparse (<25%): Yes Medium (25-75%): No Thick (>75%): No

Ground/Canopy Cover Explanation:

Estimated ground coverage is 0-5% consisting of scattered shrubs and forbs.

Slope at Area Impacted

Flat (<10%): Yes Gradual (10-30%): No Steep (>30%): No

Slope Explanation:

Lagoons are located on a slope of less than 10%.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

No

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Surface Water Site Assessment

PRS ID: 53-002(b)

Run-off (Continued)

Is Run-off Channelized:	Channel Type:
Channelization Explanation:	

Where Does Evidence of Runoff Terminate:
Terminus Explanation

Has Run-off Caused Visible Erosion:	Erosion Type:
Erosion Explanation:	

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:
No
Structural Run-on Explanation:
N/A

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Surface Water Site Assessment

PRS ID: 53-002(b)

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
Yes

Natural Run-on Explanation:
Perimeter berm does create minor drainage patterns.

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
N/A

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
No

Sign Off

Site Not Found:	Revision of Earlier Assessment:	
No	Yes	
Name of Assessment Author:		**Assessment Date:**
Heather C. Voss		11/14/2003

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Surface Water Site Assessment

PRS ID: 53-002(b)

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris in a Watercourse:
Yes	No

Trash and Debris Explanation:
Plastic liner.

General Notes

Assessment Comments:
No BMPs, how ever earth berm exists and is in good condition.

Best Management Practice Notes

Are BMPs in Place:
Yes

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Surface Water Site Assessment

PRS ID: 53-002(b)

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	13.0
Slope at Area Impacted:	13	<10%	10-30%	>30%	1.3
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5, "No" = 0 here and for two scores below.			0.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	
Visible Erosion:	22	"No" = 0. If "Yes", score by Erosion Type.			
Erosion Type:		"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0, "Yes" = 7.			0.0
Natural Run-on:	7	"No" = 0, "Yes" = 7.			7.0
Current Operations Run-on:	4	"No" = 0, "Yes" = 4.			0.0
Maximum Possible Total Score:	100	* Actual Total Score:			22.3

Revision of Earlier Assessment: Yes

* BMPs are in place. Score could be higher without them.

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Surface Water Site Assessment

Site Information

Site ID:	PRS ID:	Nearest Struct:
1659	53-008	53-621

Setting

Topography

On Mesa Top: Yes On Bench in Canyon: No On Canyon Floor, Not Channel: No In Channel in Canyon Floor: No

Topography Explanation:

PRS is located on mesa top located on eastern and southern end of TA-53 lagoons.

Ground/Canopy Cover

Sparse (<25%): No Medium (25-75%): Yes Thick (>75%): No

Ground/Canopy Cover Explanation:

Estimated ground coverage is approximatly 50-55% consisting of shrubs, forbs, and straw mulch. Canopy coverage is approximatly 60-65% consisting of Juniper.

Slope at Area Impacted

Flat (<10%): Yes Gradual (10-30%): Yes Steep (>30%): No

Slope Explanation:

PRS is located on a slope of less than 10% sloping to the east w here slope drops into the canyon at greater than 30%.

Run-off

Is There Visible Evidence of Run-off Discharging from Site:

No

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Surface Water Site Assessment

PRS ID: 53-008

Run-off (Continued)

Is Run-off Channelized:	Channel Type:
Channelization Explanation:	

Where Does Evidence of Runoff Terminate:
Terminus Explanation

Has Run-off Caused Visible Erosion:	Erosion Type:
Erosion Explanation:	

Run-on

Structural Run On. Are Structures Creating Run-on to the Site:
Yes
Structural Run-on Explanation: Roadway will create minor run-on. Debris staged in area will also create run-on.

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Surface Water Site Assessment

PRS ID: 53-008

Run-on (Continued)

Natural Run-on. Is Natural Drainage Creating Run-on to the Site:
No

Natural Run-on Explanation:
N/A

Current Operations Run-on. Are Current Operations Creating Run-on to the Site:
No

Current Operations Run-on Explanation:
N/A

Assessment Finding

Based on the Above Criteria and the Assessment of this Site, Does Soil Erosion Potential Exist:
No

Sign Off

Site Not Found:	Revision of Earlier Assessment:	
No	Yes	
Name of Assessment Author:		**Assessment Date:**
Heather C. Voss		11/14/2003

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Surface Water Site Assessment

PRS ID: 53-008

Additional Information

Trash and Debris Notes

Is there Visible Trash and Debris on the Site:	Is there Visible Trash and Debris in a Watercourse:
No	No

Trash and Debris Explanation:

General Notes

Assessment Comments:
Straw bale barriers, straw w atties, geotextile mat, and mulch.

Best Management Practice Notes

Are BMPs in Place:
No

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Surface Water Site Assessment

PRS ID: 53-008

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	6.5
Slope at Area Impacted:	13	<10%	10-30%	>30%	6.5
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5, "No" = 0 here and for two scores below.			0.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	
Visible Erosion:	22	"No" = 0. If "Yes", score by Erosion Type.			
Erosion Type:		"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0, "Yes" = 7.			7.0
Natural Run-on:	7	"No" = 0, "Yes" = 7.			0.0
Current Operations Run-on:	4	"No" = 0, "Yes" = 4.			0.0
Maximum Possible Total Score:	100	* Actual Total Score:			21.0

Revision of Earlier Assessment: Yes

* No BMPs are in place. Score could be lower with them.

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Surface Water Site Assessment

PRS ID: 53-008

Erosion Matrix

Erosion/Sediment Transport Potential Scoring Criteria	Max Score Poss	Score Modifers for Transport Potential			Resulting Score
		Low (max * 0.1)	Med (max * 0.5)	High (max * 1.0)	
Setting Group (Max Total 43)					
Topography - On Mesa Top:	1	For these four criteria, use the single highest score from the criteria that received a "Yes" answer.			1.0
Topography - On Bench in Canyon:	4				
Topography - On Canyon Floor, Not in Channel:	13				
Topography - In Channel in Canyon Floor:	17				
Ground/Canopy Cover (Percent):	13	>75%	25-75%	<25%	6.5
Slope at Area Impacted:	13	<10%	10-30%	>30%	6.5
Run-off Group (Max Total 46)					
Visible Evidence of Run-off:	5	"Yes" = 5, "No" = 0 here and for two scores below.			0.0
Where Run-off Terminates:	19	"Other"	"Bench"	"Drainage/Canyon"	
Visible Erosion:	22	"No" = 0. If "Yes", score by Erosion Type.			
Erosion Type:		"Sheet"	"Rill"	"Gully"	
Run-on Group (Max Total 11)					
Structural Run-on:	7	"No" = 0, "Yes" = 7.			7.0
Natural Run-on:	7	"No" = 0, "Yes" = 7.			0.0
Current Operations Run-on:	4	"No" = 0, "Yes" = 4.			0.0
Maximum Possible Total Score:	100	*** Actual Total Score:**			21.0

Revision of Earlier Assessment: Yes

* No BMPs are in place. Score could be lower with them.

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TARGET PAGE

This target page represents media that was not scanned. The original media can be obtained through the Records Processing Facility.

ERID 091498

~~ER ID~~ # 2005-0540

RECORD TYPE: CD

DATE: 9-01-05

SYMBOL: LA-UR-05-6373

SUBJECT:

Target - CD - Investigation and Remediation Report for Consolidated SWMU 53-002(a)-99 Inactive Wastewater Impoundments, and AOC 53-008 Storage Area, at TA 53 Revision 1 except Appendix E