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Historical Investigation Report for Material Disposal Area U, Solid Waste Management Unit 21-017(a)-99, at Technical Area 21

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Prepared by
Environmental Stewardship Division–Remediation Services

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EXECUTIVE SUMMARY

This historical investigation report (HIR) provides an operational history and a summary of the field investigations and associated environmental data collected to date for Material Disposal Area (MDA) U, designated as Solid Waste Management Unit 21-017(a)-99, located at Technical Area 21. This HIR also provides supporting information for the proposed sampling design necessary to complete the investigation of MDA U as presented in the investigation work plan for MDA U.

MDA U received effluent from Buildings 21-152, 21-153, and 21-155 from 1945 until 1976. In 1985, the absorption beds and associated structures were partially removed. The excavated zone was backfilled with uncontaminated tuff, covered with 6 in. of topsoil, graded for drainage, and revegetated.

The earliest investigation conducted at MDA U was in 1946 and the most recent in 2001. This HIR summarizes both Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) and pre-RFI (i.e., those conducted prior to 1992) activities. The primary pre-RFI activities at MDA U included effluent sampling in 1946; an investigation of surface soil and water in 1976; an investigation of soil, vegetation, and tar in 1980; a subsurface investigation in 1983; and an investigation of soil and vegetation in 1984.

RFI activities were conducted at MDA U in 1992, 1994, 1998, and 2001. During each of these sampling campaigns, surface samples (soil and/or sediment) were collected. Results of inorganic chemical analyses indicated concentrations above background values for chromium, lead, mercury, total uranium, and zinc. Organic chemicals were detected infrequently and at generally low concentrations. The radionuclide results showed concentrations of americium-241, plutonium-238, plutonium-239, and tritium exceeding background values.

Fill material from the absorption beds was sampled in 1998 and 2001. The 2001 sampling confirmed the presence of tritium and uranium-234 above background values. In addition, actinium-227 progeny (thorium-227, radon-219, and radium-223) were detected in the eastern absorption bed.

Subsurface tuff samples were collected at MDA U in 1998, and several inorganic chemicals, including aluminum, arsenic, barium, beryllium, chromium, copper, lead, manganese, and mercury, were detected slightly above background values. No inorganic chemicals were detected above background values at depths greater than 60 ft below ground surface (bgs). Di-n-butylphthalate was detected at only one borehole, and all results were less than 0.5 mg/kg. Uranium-234 and uranium-235 were detected at concentrations above background values at depth in two boreholes on the western side of MDA U. Actinium-227 progeny were detected in one borehole within the eastern absorption bed in a fractured interval at 54–55 ft bgs. Tritium was detected in all eight boreholes, although all results were less than 1 pCi/g. At two locations, tritium was detected at 75 ft bgs, the total depth of the boreholes. Subsurface pore-gas samples had numerous low-level detections of organic chemicals. One borehole had elevated toluene concentrations at multiple depths (86 parts per billion by volume [ppbv] at 25 ft; 480 ppbv at 55 ft; and 220 ppbv at 75 ft, which was the total depth of the borehole).

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1.0 INTRODUCTION

This historical investigation report (HIR) provides an operational history and a summary of the field investigations and associated environmental data collected to date for Material Disposal Area (MDA) U, designated Solid Waste Management Unit (SWMU) 21-017(a)-99, at Technical Area (TA-) 21. This HIR provides information to support future MDA U investigations. MDA U is inactive and currently undergoing corrective action.

2.0 DESCRIPTION AND OPERATIONAL HISTORY

2.1 Site Description

MDA U is located at the northeastern section of Delta Prime (DP) Mesa within Los Alamos National Laboratory (LANL or the Laboratory) TA-21 (Figure 2.1-1). From 1945 to 1978, TA-21 was used primarily for plutonium research, metal production, and related activities. Since 1978, various administrative and chemical research activities have been conducted at TA-21.

MDA U consists of four SWMUs, shown in Figure 2.1-2, that were consolidated into SWMU 21-017(a)-99 in 1999 according to their related operational history. These SWMUs include

- SWMU 21-017(a), an absorption bed on the west side of the MDA;
- SWMU 21-017(b), an absorption bed on the east side of the MDA;
- SWMU 21-017(c), a distribution box, formerly located between the two absorption beds, that was removed in 1985; and
- SWMU 21-022(f), a sump (21-173) that received effluent from Building 21-152 and was connected to the distribution box; located outside the fence surrounding MDA U adjacent to Building 21-370.

2.2 Operational History

The DP East area began operation in 1945 at Buildings 21-152, 21-153, and 21-155 (Figure 2.1-2). These facilities were used to process polonium and actinium and to produce weapon components. Process waste from the various research and production activities consisted of both solids and liquids. In the late 1940s, it was determined that the natural soils and clays at TA-21 were effective in separating radioactive contaminants from waste liquids (Merrill 1990, 11721). Therefore, absorption beds were constructed and effluent was discharged into trenches filled with cobbles, gravel, and fine sand (LASL 1945, 01093). MDA U is one of the areas where absorption beds were used for disposing of liquid wastes.

Operations at MDA U ceased in 1976. In 1985, site stabilization of the absorption beds began. A trench measuring 20 ft wide, 100 ft long, and 4 to 13 ft deep was excavated, and soil contaminated with actinium-227 was removed from MDA U and taken to MDA G at TA-54 for disposal (Merrill 1990, 11721, p. 11). The distribution box and iron pipes within the absorption beds and a portion of the line from the cooling tower were excavated and also were taken to MDA G (LANL 1991, 07529, p. 16-199) (Figure 2.2-1). Material above the iron pipes was stockpiled and later used to backfill the trench. The absorption beds were not completely excavated. A piece of plastic sheeting was placed on the bottom and sides of the excavated zone to mark the extent of the removal. The excavated zone was backfilled, covered with 6 in. of topsoil, graded for drainage, and revegetated.

In 1987, additional site-stabilization activities were completed. A ditch was constructed on the south side to divert surface water runoff from upslope. Within the MDA U fence, more topsoil was added, and the area was reseeded. Four brass markers were placed to mark the corners of the MDA. In 1990, additional controls were emplaced to prevent runoff from the surrounding area from flowing across MDA U. Site photographs from 1946 to the present are provided in Appendix B.

2.3 Disposals, Discharges, and Releases

The TA-21 work plan (LANL 1991, 07529) refers to a 1945 memorandum (Veltman 1945, 01305) describing the presumed design requirements for the MDA U absorption beds. The memorandum states the requirements as follows:

> A pit will be dug on the north side of the mesa approximately 6-ft deep and 10 x 50 ft in area for Building 52. A graded gravel absorption bed will fill this pit with relatively large stones in the bottom and ordinary soil on top. This arrangement will allow satisfactory draining of process sewage.[1]

The engineering drawing for MDA U indicates each bed was approximately 80 ft long, 20 ft wide, and 6 ft deep (LASL 1945, 00109, and Appendix C). Each bed had an estimated surface area of approximately 1800 ft^2 (Merrill 1990, 11721, p. 11) and an estimated volume of 9600 ft^3. The absorption beds were filled with a 24-in. layer of 5-in.- to 10-in.-diameter cobbles, overlain by a 6-in. layer of gravel and a 6-in. layer of fine sand (Figure 2.3-1). These materials were covered with 12 in. of soil. Effluent was discharged to the absorption beds through a distribution box, located between the two beds. Liquid waste received by MDA U included

- effluent from Building 21-152 that flowed from sump 21-173 into the distribution box via a 6-in.-diameter vitrified clay pipe (Francis 1998, 76205);
- effluent from Building 21-153 that drained directly into the eastern absorption bed, and
- effluent from Building 21-155 that drained directly into the western absorption bed or to MDA U through the distribution box.

Historical records for MDA U state that polonium-210, actinium-227, plutonium, and tritium were the primary radionuclides released to the absorption beds. Between 1945 and 1968, it was estimated that MDA U received a total waste volume of 18,000 ft^3 (135,000 gal.) of effluent (Walker 1981, 06277). The primary contaminant released to MDA U was polonium-210 (Christenson 1973, 00940), but no records exist on the amounts discharged. Polonium-210 has a half-life of 138.4 days, decays to stable lead, and has decayed to undetectable levels (Christenson 1973, 00940). A 1946 memorandum (Tribby 1946, 01540) indicates that plutonium, as well as polonium, was measured in effluent from sewers 22 and 23 that may have discharged to the absorption beds; the exact locations of these sewers is not known. However, Francis (2001, 76211) indicates that acid waste sump 21-223 and acid waste manhole 21-222 were part of the TA-21 east acid waste system, and it is possible these were the sewers, subsequently renumbered, referenced in the 1946 memorandum. Records also indicated that about 2.5 Ci of actinium-227 (21.8 year half-life) were discharged into the MDA U absorption beds in 1953 (Christenson 1973, 00940). The actinium came primarily from Building 21-153, a filter building (decommissioned in 1978) where actinium-227 was scrubbed out of the air from several process buildings at TA-21 (DOE 1979, 08610). A drain line from the cooling tower associated with Building 21-155 terminated in the

[1] Buildings 52 and 53 were renumbered to 152 and 153. This quote refers to what is now Building 21-152.

western absorption bed [SWMU 21-017(a)] (Mayfield 1985, 01172). Purtymun (1976, 01107) stated, "on December 19, 1975, water from a cooling process was being released into the west pit from a nearby building." Building 21-153 was not used after March 1970 (LASL 1974, 01308, p. 1). It was dismantled and demolished in 1978, and the debris was placed in MDA G at TA-54 (Garde 1977, 06452, p. 1).

In addition, oil from precipitrons was disposed of at MDA U (Drager 1946, 01562). The precipitrons were air filters installed in the filter building (Building 21-153) through which air exhausted from Building 21-152 passed (Francis 1996, 76137). No information is available on the composition of the oil used in the filtering process, but the process resulted in the contamination of the oil, and the contaminated oil "got to the seepage pit MDA U through the floor drains [at Building 21-152]" (Francis 1996, 76137). Drager (1946, 01562) reported, "these pits are not functioning properly and the oil washing down from the precipitrons is lying on top of the ground. This is very definitely contaminated to a high degree."

MDA U received effluent from 1945 until 1976. In 1968, the disposal of effluent at MDA U from Buildings 21-152 and 21-153 ceased (Hakonson 1987, 07422). MDA U continued to receive cooling water from the cooling tower to the western absorption bed until 1976 (Purtymun 1976, 01107).

SWMU 21-022(f) (sump 21-173) is approximately 5.5 ft in diameter by 6 ft deep. Effluent from Building 21-152 and several other unspecified process buildings at TA-21 was carried from the sump to MDA U through a 6-in.-diameter cast-iron pipe. The amounts and types of waste discharged to the absorption beds through sump 21-173 are not known, and no specific information (constituents or volumes) has been located on nonradionuclide waste generated at these facilities.

3.0 PREVIOUS INVESTIGATION ACTIVITIES AND RESULTS

The earliest investigation conducted at MDA U was in 1946 and the most recent in 2001. This HIR summarizes both Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) and pre-RFI (i.e., those prior to 1992) activities.

3.1 Pre-RFI Activities (Prior to 1992)

The primary pre-RFI activities at MDA U included effluent sampling in 1946; investigation of surface soil and water in 1976; investigation of soil, vegetation, and tar in 1980; investigation of the subsurface in 1983; and investigation of soil and vegetation in 1984.

Pre-RFI activities are described in the TA-21 operable unit RFI work plan (LANL 1991, 07529). The RFI work plan frequently compared historical investigation data to radionuclide background concentrations available at the time the work plan was written. The sources for background values used included Purtymun (1987, 06687, pp. 1–16) and the Laboratory's Environmental Surveillance Group (1980, 05961). The qualitative comparisons of site data to background values in the work plan are presented in the following sections. Current-day RFI data are compared to one standardized and accepted Laboratory background data set (LANL 1998, 59730).

The following subsections summarize the pre-RFI activities. Data quality is not addressed in this section because the pre-RFI data cannot be validated and are presented for informational purposes only.

3.1.1 1946 Effluent Sampling

A 1946 memorandum (Tribby 1946, 01540) reported the results of plutonium (isotope not specified) and polonium-210 analyses in effluent discharged to chemical sewer numbers 22 (drain from Building 21-153)

and 23 (drain from Building 21-152). Assuming the units of disintegrations per minute per liter (dpm/L) imply the measurements were calibrated properly, the values may be converted to pCi/L. These values ranged from 35 to 645 pCi/L of plutonium in the effluent. Concentrations of polonium-210 ranged from 109 to 21,200 pCi/L. The effluent may or may not have been discharged into the absorption beds.

3.1.2 1976 Soil and Water Sampling

During 1976, the Laboratory's Environmental Studies and Waste Management Group (H-8) collected soil samples outside and within the absorption beds, which were still uncovered at the time. These samples showed elevated gross alpha activity levels both inside and outside the fence (Purtymun 1976, 01107). One water sample was taken in the western absorption bed. Purtymun referred to this water as "permanent in the west pit" (1976, 01107). The locations of the samples are shown in Figure 3.1-1. Results of the gross alpha values are provided in Table 3.1-1. Cooling tower water from Building 21-155 was the only known influent to the absorption beds in 1976.

3.1.3 1980 Soil, Vegetation, and Tar Sampling

Soil and vegetation samples were collected in 1980 (Mayfield 1985, 01172) and analyzed for radionuclides. The analytical results are presented in Tables 3.1-2 and 3.1-3. Three sampling locations were noted: U-1 at the west end of the western absorption bed, U-2 at the east end of the eastern absorption bed, and U-3 at the northeast corner immediately outside of the fenced area (Figure 3.1-1).

The soil data show plutonium-239/240 in surface soil from western and eastern absorption beds (17.5 pCi/g and 2.4 pCi/g, respectively) and actinium-227 daughters in the eastern absorption bed. Tritium was detected at concentrations of up to 37,200 pCi/L of soil moisture in surface soil from the eastern absorption bed but was not elevated in samples from the western absorption bed. Total uranium concentrations were highest in surface soil from the western absorption bed (maximum of 26.1 µg/g) but were only slightly elevated above background levels in samples from the eastern absorption bed. The sample collected from outside the fence (U-3) contained tritium and uranium at levels slightly higher than background levels, and plutonium-239/240 that was two orders of magnitude above background.

Tritium in vegetation (willow, ponderosa pine, and downy chess) from absorption beds, at concentrations of up to 7200 pCi/L of tissue moisture, was lower than in absorption bed soils. Plutonium-239/240 ranged from 0.8 to 1.1 pCi/g in ash from the same vegetation types from locations U-1 and U-2. (Table 3.1-3) (Mayfield 1985, 01172). Location U-3 yielded one vegetation sample containing elevated levels of tritium (snakeweed, 3300 pCi/L) and one containing elevated levels of plutonium-239/240 (downy chess, 2.3 pCi/g).

Tar samples were also collected during the 1980 sampling event. Only qualitative information on these sample results was reported. The highest measurements of external penetrating radiation were located "over a tar puddle in the east absorption bed," and actinium-227 daughters were identified in tar samples, also from the eastern absorption bed (Mayfield 1985, 01172). The tar is assumed to have originated from oil from the precipitrons (Drager 1946, 01562). The contaminated oil probably made its way from Building 21-153 to MDA U through the floor drains at Building 21-152, where the precipitrons were located (Francis 1996, 76137).

3.1.4 1983 Subsurface Sampling Data

In 1983, subsurface samples were collected from two boreholes outside the MDA U fence: one north of the eastern absorption bed (U-E) and one northwest of the western absorption bed (U-W). At each

location, samples were collected at depths ranging from 0 to 58 ft and analyzed for tritium, uranium, and cesium-137. The data for this study are reported in Table 3.1-4. Tritium values in both boreholes at all depths were elevated when compared to background levels (Purtymun 1987, 06687). In the east borehole (U-E), beginning at a depth of 33 ft, tritium levels increased consistently with depth, ranging from 18,100 pCi/L to 78,000 pCi/L (Figure 3.1-2). In the west borehole (U-W), tritium levels were highest at 8 ft below ground surface (bgs) and generally decreased with depth. All cesium-137 values were below the maximum background level. Total uranium results in both boreholes slightly exceeded the background level.

3.1.5 1984 Soil and Vegetation Sampling

In 1984, soil samples were collected at 12 locations around MDA U, one of which was within the fenced area. Samples were collected at three depths (0–1 cm, 1–10 cm, and 10–30 cm) and analyzed for tritium, uranium, and plutonium-239/240. The results are presented in Figures 3.1-3, 3.1-4, and 3.1-5. Not all locations and depths were analyzed for each radionuclide; the most complete data are for the 0–1 cm interval. Ten vegetation samples were collected, only three of which were within the boundaries of MDA U.

Figures 3.1-6, 3.1-7, and 3.1-8 show the concentration contours for each of the radionuclides based on kriging concentration levels above the maximum background levels. With only 12 data points, the uncertainty is great; however, the contour plots show tritium to be highest in the eastern absorption bed and total uranium to be highest in the western absorption bed. The highest value of plutonium-239/240 (5.10 pCi/g) occurs north of MDA U in the 0 to 1 cm interval (Figure 3.1-5).

Tritium concentrations in vegetation (Figure 3.1-9 ranged from 3100 pCi/L to 10,000 pCi/L vegetation moisture, above the background level of 800 pCi/L reported by the Laboratory's Environmental Surveillance Group (1987, 00667).

3.2 RFI Activities (1992 to Present)

The plans for RFI investigations at MDA U are presented in the 1991 work plan for TA-21 (LANL 1991, 07529) and subsequent sampling and analysis plans. The following investigations were completed to support the RFI:

- 1992—DP Mesa-wide soil sampling
- 1994—surface soil and sediment sampling
- 1998—surface soil, subsurface tuff, subsurface pore-gas, and absorption bed sampling
- 2001—surface soil and absorption bed sampling

No environmental investigations of sump 21-173 have been conducted.

Analytical data for the RFIs associated with MDA U reside in the Environmental Restoration Database (ERDB). A complete record of the analytical data associated with RFI sampling is provided on compact disc in Appendix D. Table 3.2-1 lists collected RFI samples and associated analytical suites. A summary of data quality and usability for the RFI data appears in section 3.3, and the results of RFI sampling are summarized in section 3.4.

3.2.1 1992 TA-21 Site-Wide Background and Stack Emission Investigation

In 1992, surface sampling was conducted at TA-21 to establish site-wide baseline concentrations for a comprehensive suite of analytes and to identify contaminant trends across TA-21 resulting from airborne stack emissions. Samples were collected at the nodes of a 131- by 131-ft grid covering DP Mesa, Los Alamos Canyon, and DP Canyon (LANL 1994, 26073; LANL 1995, 52350, p. 2-1). During this event, seven samples were collected on DP Mesa East and downslope of MDA U from two different depths at each location (0–1 in. and 0–6 in.) (Figure 3.2-1). The samples were analyzed for inorganic chemicals, organic chemicals, and radionuclides (americium, tritium, isotopic plutonium, isotopic thorium, and strontium-90).

3.2.2 1994 Surface Soil and Sediment Sampling

The goals of the 1994 RFI at MDA U were to (1) identify areas of surface soil contamination within the MDA U boundary and between MDA U and the edge of DP Canyon to the north and (2) determine if contaminants were migrating into the DP Canyon drainage (LANL 1997, 58979). The locations of samples collected during the 1994 investigation are shown in Figure 3.2-2. Surface soil samples were collected from a grid covering the entire MDA and extending to the edge of DP Mesa. A total of 54 samples were collected from the grid, and 7 additional samples were collected from points off of the grid nodes. Nine channel sediment samples (three locations sampled at three depth intervals [0–0.25, 0.25–0.5, and 0.5–1 ft]) were collected in the small drainage leading into DP Canyon. Soil and sediment samples were sent to off-site analytical laboratories for analysis of radionuclides (tritium, total uranium, isotopic plutonium, strontium-90, and gamma-emitting radionuclides by gamma spectroscopy); semivolatile organic compounds (SVOCs); and inorganic chemicals.

3.2.3 1998 Sampling

3.2.3.1 1998 Surface Soil Sampling

In 1998, surface soil samples were collected on the mesa top in the area north of MDA U, between the SWMU and the mesa edge, and in the DP Canyon drainage north of MDA U at some of the same locations sampled in 1994. Figure 3.2-3 shows sample locations for 1998 surface samples. The 1998 samples were collected to address data quality issues identified during a review of the 1994 analytical data (LANL 1999, 87295). Eighteen samples from mesa-top locations were analyzed for polychlorinated biphenyls (PCBs) and radionuclides (isotopic uranium and gamma-emitting radionuclides by gamma spectroscopy), and two samples from the DP Canyon drainage locations were analyzed for isotopic uranium.

3.2.3.2 1998 Borehole Investigation

Eight vertical boreholes were drilled within and around the two absorption beds in 1998 to define the vertical extent of contamination (Figure 3.2-3) (LANL 1998, 62549). Two boreholes were located within the western absorption bed, and two were located within the eastern absorption bed. The remaining four boreholes were located outside of the absorption beds, but within the MDA U fence. As indicated in the borehole logs (Appendix E), samples were collected at depths of 5, 15, 25, 35, 45, 65, and 75 ft bgs. Borehole samples were analyzed for inorganic chemicals, SVOCs, PCBs (5- and 15-ft intervals only), and radionuclides (americium-241, isotopic plutonium and uranium, tritium, strontium-90, and gamma-emitting radionuclides by gamma spectroscopy).

Three samples of pore gas were collected for volatile organic compound (VOC) analysis from each of the eight boreholes. The samples were collected in evacuated SUMMA canisters at intervals of 25, 55, and 75 ft bgs during drilling by running an extraction tube to the bottom of the hole and sealing it off with an inflatable borehole packer. The pore-gas samples were sent to an off-site laboratory for VOC analysis by Environmental Protection Agency (EPA) Method TO-14.

3.2.3.3 1998 Absorption Bed Sampling

In 1998, two samples of fill material were collected from each absorption bed below the plastic liner to estimate the remaining inventory of contamination (LANL 1998, 87294). The samples were collected from the center line of the absorption beds, the area where the distribution line had been located and the highest contaminant concentrations were expected. The samples consisted of the fine material collected from between the cobbles. Sampling locations 21-10864, 21-10865, 21-10866, and 21-10867 are shown in Figure 3.2-3. The samples were analyzed for americium-241, isotopic plutonium, isotopic uranium, strontium-90, tritium, and gamma-emitting radionuclides by gamma spectroscopy.

3.2.4 2001 Surface Soil and Absorption Bed Sampling

3.2.4.1 2001 Surface Soil Sampling

In 2001, the 1994 grid was resampled (Figure 3.2-4), and 54 surface soil samples were collected for analysis of mercury at a depth of 0 to 0.5 ft (LANL 2001, 70230). Five surface soil samples (locations 21-02101, 21-02083, 21-02099, 21-22447, and 21-22448) were collected and analyzed for tritium. These were the only analyses conducted on these soil samples.

3.2.4.2 2001 Absorption Bed Sampling

In 2001, absorption bed samples were collected to evaluate whether residual contamination was present along the edges and beneath the absorption beds, assuming the 1985 excavations had removed the center portion of each absorption bed (LANL 2001, 70230). One trench was excavated (approximately 15 ft long and 5- to 7-ft deep) in each absorption bed. The trenches were used to find the plastic liner placed over the excavated areas when the drain line and absorption bed material were removed in 1985. The trenches were extended to find the north and south extent of the liner and previous excavation locations. A total of eight samples were collected, four samples from each trench (Figure 3.2-4). The samples were analyzed for tritium, isotopic uranium, and radionuclides by gamma spectroscopy.

In the western absorption bed, black plastic was found at a depth of 3.5 to 4 ft. Cobbles up to 20 in. were observed under the liner. Samples were collected from two locations below the liner on the south end (locations 21-11404 and 21-11406) and two locations on the north end (locations 21-11407 and 21-11408) of the trench. The field summary report did not record whether the northern samples were collected below the liner.

Two plastic liners were found in the eastern absorption bed. A clear liner was found at approximately 3 ft bgs, and a black liner at 7 ft bgs was found immediately above a cobble layer. Sample 21-11409 was located beneath the north edge of the black liner in a sandy/gravely material; sample 21-11411 was located nearby at the same depth in a fine-grain horizon. Samples 21-11412 and 21-11413 were located on the south end of the trench, beneath the edge of the black liner in fine-grained material.

3.3 RFI Data Quality Evaluation

The quality and usability of data for inorganic chemicals, organic chemicals, and radionuclides from MDA U RFI datasets are discussed below. The data are deemed usable as qualified and provide an acceptable basis for planning future investigations or corrective actions at this site.

A total of 246 RFI samples were collected and analyzed as follows:

- 202 analyses for inorganic chemicals
- 161 analyses for organic chemicals
- 24 analyses for VOCs in pore gas
- 186 analyses for radionuclides

In addition, field duplicates were collected for quality control purposes.

These analytical numbers reflect only data that have not been rejected for quality reasons and can be used to evaluate contamination at MDA U. The following subsections summarize data quality, including the rejected data.

3.3.1 Inorganic Chemical Data Quality

Soil, sediment, and tuff samples were analyzed for inorganic chemicals. Several inorganic chemical results were qualified as estimated (J) because the results were less than the practical quantitation limit (PQL), but greater than the method detection limit (MDL).

- Results for lead, manganese, mercury, and antimony were detected but estimated (J), or not detected with estimated detection limits (UJ), because the analytes were recovered below the lower acceptance level (LAL of 75%) but at levels greater than 30% in the associated matrix spike sample.
- Some results were rejected (R) for the following reasons:
    - Antimony (23 rejected results), copper (5 rejected results), lead (1 rejected result), and manganese (1 rejected result) data were rejected because the associated matrix spike sample recovery was less than 30%.
    - Fifteen mercury results were rejected because the samples were analyzed after twice the appropriate holding time.

3.3.2 Organic Chemical Data Quality

Soil, sediment, and tuff samples were analyzed for VOCs, SVOCs and PCBs. Some results for SVOC analytes (phenanthrene and pyrene) were qualified as estimated (J) because the results were less than the PQL but greater than the MDL.

- Reporting limits for many SVOC analytes were qualified as UJ because surrogate recoveries were less than the LAL but greater than 10% recovery.
- Reporting limits for PCBs were qualified UJ because surrogate recoveries were less than the LAL but greater than 10% recovery.

Pore-gas samples were analyzed for VOCs. The pore-gas results had no data quality issues.

3.3.3 Radionuclide Data Quality

Radionuclide analytes in soil, sediment, and tuff included americium-241, radionuclides by gamma spectroscopy, tritium, isotopic plutonium, isotopic uranium, and strontium-90. Some radiological results were rejected (R) because spectral interference prevented positive identification of the analytes. Results rejected for this reason include americium-241 (26 samples rejected) and plutonium-238 and plutonium-239 (one sample rejected for each isotope).

3.4 RFI Results

The following sections summarize the results of RFI sampling at MDA U. Results of individual sampling events are also summarized in the figures and tables showing inorganic chemicals above current Laboratory background values (LANL 1998, 59730, p. 44), radionuclides above background or fallout values (LANL 1998, 59730, p. 45), and detected organic chemicals.

3.4.1 Surface Soil Results

Surface soil sampling was conducted as part of RFI activities in 1992, 1994, 1998, and 2001. A total of 140 surface soil samples were collected, although no one sample was analyzed for every analyte.

3.4.1.1 Inorganic Chemicals

The concentrations of inorganic chemicals in surface soil samples were compared with Laboratory background values (LANL 1998, 59730, p. 44). Surface soils were analyzed for inorganic chemicals in 1992 and 1994. Table 3.4-1 presents the frequency with which inorganic chemicals were reported above background values in surface soil, and Table 3.4-2 presents the sample data for inorganic chemicals above background values. Figures 3.4-1 and 3.4-2 show by location the inorganic chemical results above background values for 1992 and 1994 sampling events, respectively.

Several inorganic chemicals were detected above Laboratory background values, most notably lead, mercury, total uranium, and zinc. Other inorganic chemicals detected above background values in fewer than ten surface soil samples include aluminum, barium, beryllium, chromium, cobalt, copper, manganese, nickel, silver, and vanadium. Lithium and strontium, which do not have background values, were also detected in surface soil samples at MDA U.

3.4.1.2 Organic Chemicals

No organic chemical was detected in more than three of 70 surface soil samples (Table 3.4-3). Organic chemicals (primarily polycyclic aromatic hydrocarbons [PAHs]) were detected in five surface soil locations from the 1994 sampling event, as shown in Figure 3.4-3. The three sample locations shown far to the north and downslope from MDA U in Figure 3.4-3 are 1994 sediment samples, which are discussed in section 3.4.2. Analysis for PCBs in 1998 soil samples resulted in no detections. Table 3.4-4 provides the data for detected organic chemicals.

3.4.1.3 Radionuclides

The concentrations of radionuclides in surface soil samples were compared with Laboratory soil background values or fallout values (LANL 1998, 59730, p. 45), depending on whether the radionuclide is naturally occurring or a fallout radionuclide. Fallout radionuclides (americium-241, cesium-137, cobalt-60, tritium, plutonium-238, plutonium-239, and strontium-90) were compared with fallout values only if the

samples were taken within 0.5 ft of the ground surface. Isotopes of uranium and thorium, which are naturally occurring radionuclides, were compared with surface soil background values regardless of sample depth. Table 3.4-5 presents the frequency with which radionuclides were detected above background/fallout values in surface soil and Table 3.4-6 presents the sample data for radionuclides above background/fallout values. Figures 3.4-4, 3.4-5, 3.4-6, and 3.4-7 show results above background for the 1992, 1994, 1998, and 2001 surface soil sample campaigns, respectively.

Plutonium-239 was reported above the fallout value in 61 of 76 samples. The highest plutonium-239 concentration occurred to the north and west of MDA U, but was either not detected or detected at low levels within MDA U. Values increase on the benches farther to the north where surface soil eroding from the slopes is expected to accumulate. Tritium was detected in 90 of 90 samples. The tritium data generally show low values across, and north of, MDA U, with higher values along the southern edge of MDA U. Uranium-235 was reported above background value in 11 of 58 samples.

Other radionuclides detected above background/fallout values at lower frequencies (i.e., fewer than 10 samples) include americium-241, cesium-137, plutonium-238, strontium-90, uranium-234. radium-223, radon-219, and thorium-227 have no background values but were detected at low levels (approximately 4 pCi/g).

3.4.2 Sediment Sample Results

In 1994, nine sediment samples (three locations sampled at three depths) were collected downslope of MDA U but above the floodplain in DP Canyon. At each sample location, samples were collected from 0-0.25 ft, 0.25–0.5 ft, and 0.5–1 ft depths.

3.4.2.1 Inorganic Chemicals

The concentrations of inorganic chemicals in channel sediment samples were compared with Laboratory-wide canyon sediment background values (LANL 1998, 59730, p. 44). All mercury data were rejected because the holding time had been exceeded. Table 3.4-1 presents the frequency with which inorganic chemicals were detected above background values in channel sediment samples and Table 3.4-2 presents the sample data for inorganic chemicals above background levels, and Figure 3.4-2 shows these results by location.

Chromium was detected above the sediment background value of 10.5 mg/kg in 8 out of 9 samples. Lead, total uranium, and zinc were detected in only 1 or 2 of the 9 sediment samples. All other detected inorganic chemicals were below background values. Detection limits exceeded background values for cadmium, cobalt, selenium, and silver.

3.4.2.2 Organic Chemicals

Table 3.4-3 summarizes the frequency of detected SVOCs in channel sediments at MDA U, and Table 3.4-4 provides the sample data for detected organic chemicals. Six SVOCs, primarily PAHs, were detected at concentrations of 1.5 mg/kg or less (Figure 3.4-3).

3.4.2.3 Radionuclides

Detected concentrations of radionuclides were compared with either the sediment background or fallout values (LANL 1998, 59730, p. 45). Table 3.4-5 presents the frequency with which radionuclides were detected above background/fallout values in sediment and Table 3.4-6 presents the sample data for

radionuclides above background/fallout values. Figure 3.4-5 shows the results above background/fallout values by location.

Plutonium-239 was detected above its fallout value (0.068 pCi/g) in 7 of 9 samples. The highest detected concentration of plutonium-239 (4.14 pCi/g) was at location 21-01865 in the DP Canyon sediments downgradient of MDA U. Plutonium-238 was detected above its fallout value (0.0006 pCi/g) in 2 of 9 samples and tritium was detected above its fallout value (0.093 pCi/g) in 5 of 9 samples. All other detected radionuclides were below background or fallout values.

3.4.3 Subsurface Tuff Results

Sixty-six tuff (Qbt3) samples were collected from ten locations within and around MDA U.

3.4.3.1 Inorganic Chemicals

Analytical results for subsurface tuff samples were compared with background values for Qbt3 (LANL 1998, 59730, p. 44). Table 3.4-1 presents the frequency with which inorganic chemicals were detected above background values in subsurface tuff, and Table 3.4-2 presents the sample data for inorganic chemicals above background values. Figure 3.4-8 shows the results above background values by location.

Several inorganic chemicals were detected above Qbt3 background values but in no more than 7 of the 62 subsurface samples. These include aluminum, arsenic, barium, beryllium, chromium, lead, manganese, mercury, and zinc. No inorganic chemicals were detected above background values at depths greater than 60 ft bgs. Detection limits for antimony, mercury selenium, silver, and thallium exceeded background values in a large number of subsurface samples.

3.4.3.2 Organic Chemicals

The subsurface tuff samples were analyzed for SVOCs. Table 3.4-3 summarizes the frequency with which SVOCs were detected in subsurface tuff at MDA U, and Table 3.4-4 provides the sample data for detected organic chemicals. Di-n-butylphthalate was detected in 3 of 62 samples, all from location 21-10842 (Figure 3.4-9), and all detections were less than 0.5 mg/kg. No other SVOCs were detected in tuff, nor were PCBs detected.

3.4.3.3 Radionuclides

Naturally occurring uranium isotopes were compared to Laboratory-wide background values from the appropriate tuff unit (LANL 1998, 59730, p. 45). Fallout radionuclides (americium-241, cesium-137, plutonium-238, plutonium-239, and tritium) were evaluated on the basis of detection status. Table 3.4-5 lists the frequency with which radionuclides were detected or detected above background values in subsurface tuff, and Table 3.4-6 presents the sample data for radionuclides detected or detected above background values. Figure 3.4-6 shows these data by location.

Tritium was detected in most (63 out of 66) of the subsurface tuff samples collected at MDA U, although all detected values were less than 2.4 pCi/g. At two locations, tritium was detected at the total depth of the borehole (75 ft bgs). Americium-241 and plutonium-239 were detected in 6 and 7 of 66 subsurface tuff samples, respectively. Radium-223 and thorium-227 (actinium-227 progeny) were detected in one subsurface sample, collected from a fractured interval at 54–55 ft bgs beneath the eastern absorption bed (Figure 3.4-6). Uranium-234 and –235, naturally occurring radionuclides, were detected above Qbt3

background values in 13 and 15, respectively, of 66 tuff samples. Elevated uranium-234 and uranium-235 were detected at depth in two boreholes at depths from 54 to 75 ft on the western part of MDA U (Figure 3.4-6). No uranium-234 or uranium-235 was detected in subsurface tuff from the eastern part of MDA U.

3.4.3.4 Moisture Analyses

Moisture measurements were made on the core samples submitted for tritium analyses in 1998 (LANL 1999, 87295). The moisture results are shown in Figure 3.4-10 and reported in Table 3.4-7. These results show a uniformly low moisture content (3% to 16% by weight) and do not indicate saturated conditions exist beneath MDA U. Results from samples associated with clay-rich fractures or interbeds are boldfaced in the table. No strong correlation between moisture content and tritium concentration was found.

3.4.4 Pore-Gas Results

The frequency with which VOCs were detected in pore-gas samples is listed in Table 3.4-8, and the data are presented in Table 3.4-9. Borehole location 21-10845 had the highest toluene concentrations at multiple depths, including the bottom of the borehole (86 parts per billion by volume [ppbv] at 25 ft; 480 ppbv at 55 ft; and 220 ppbv at 75 ft) (Figure 3.4-11). The boreholes closest to location 21-10845 (21-10839 and 21-10840) did not have elevated concentrations of toluene. VOC concentrations in pore gas from other boreholes were low (less than 60 ppbv).

3.4.5 Absorption Bed Results

The absorption beds were sampled in 1998 and 2001. Figure 3.4-6 shows the results of the 1998 absorption bed samples, and Figure 3.4-7 shows the 2001 sample locations.

In 1998, uranium-234 and uranium-235 were detected above background values in the western absorption bed (Figure 3.4-6). Low plutonium-239 (<0.25 pCi/g) and tritium (<1 pCi/g) concentrations were detected in both absorption beds (Figure 3.4-6). The 2001 sampling confirmed the presence of low tritium concentrations and uranium-234 above background value (Figure 3.4-7). In addition, actinium-227 progeny (thorium-227, radon-219, and radium-223) were detected, primarily in the eastern absorption bed (Figure 3.4-7). Cesium-137 was detected at very low (<0.7 pCi/g) concentrations in both absorption beds.

4.0 REFERENCES

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author, publication date, and the ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Stewardship Division–Remediation Services (ENV-RS) Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the ENV-RS project reference set entitled "Reference Set for Material Disposal Areas, Technical Area 21."

Copies of the reference sets are maintained at the New Mexico Environment Department (NMED) Hazardous Waste Bureau; the Department of Energy (DOE) Los Alamos Site Office; the EPA Region 6; and the ENV-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.

Christenson, C. W., November 8, 1973. "Nuclide Inventory Data," Los Alamos National Laboratory memorandum (H7-CWC-437) to H. Jordan (H-DO) from C. W. Christenson (H-7), Los Alamos, New Mexico. (Christenson 1973, 00940)

DOE (U.S. Department of Energy), December 1, 1979. "Final Environmental Impact Statement Los Alamos Scientific Laboratory Site, Los Alamos, New Mexico," DOE/EIS-0018, Washington, D.C. (DOE 1979, 08610)

Drager, H. W., June 11, 1946. "Preliminary Survey of Sewer System," Los Alamos National Laboratory memorandum to E. R. Jette from H. W. Drager, Los Alamos, New Mexico. (Drager 1946, 01562)

Environmental Surveillance Group, April 1, 1980. "Environmental Surveillance at Los Alamos During 1979," Los Alamos National Laboratory report LA-8200-ENV, Los Alamos, New Mexico. (Environmental Surveillance Group 1980, 05961)

Environmental Surveillance Group, April 1, 1987. "Environmental Surveillance at Los Alamos During 1986," Los Alamos National Laboratory report LA-10992-ENV, Los Alamos, New Mexico. (Environmental Surveillance Group 1987, 06678)

Francis, W. C., November 27, 1996. "Material Disposal Area (MDA) U Research on Oil from the Precipitrons to the Pits," Los Alamos National Laboratory memorandum (ER-WCF-96-17) to C. Newton (EES-1) from W. Francis (CST-18), Los Alamos, New Mexico. (Francis 1996, 76137)

Francis, W. C., March 16, 1998. "Approximate Depth of Abandoned 6" VCP Influent Line to Abandoned Septic Tank TA-21-181 from Building TA-21-152," Los Alamos National Laboratory memorandum (EM/ER-WCF-98-1) to M. McMath (EM/ER) from W. Francis (CST-18), Los Alamos, New Mexico. (Francis 1998, 76205)

Francis, W. C., August 21, 2001. "TA-21 East Acid Waste System," Los Alamos National Laboratory memorandum (E/ER, MS M992) to J. Hopkins (E/ER) from W. C. Francis, Los Alamos, New Mexico (Francis 2001, 76211)

Garde, R. H., December 14, 1997. "Briefing on the Demolition of TA-42 and TA-21-153, H-Division Conference Room, December 21, 1977, 1:15 pm," Los Alamos National Laboratory memorandum (H-1T-241-77) from R. H. Garde (H), Los Alamos, New Mexico. (Garde 1977, 06452)

Hakonson, T. E., 1987. "Environmental Surveillance of Low-Level Radioactive Waste Management Areas at Los Alamos During 1985," Los Alamos National Laboratory document LA-UR-87-139, Los Alamos, New Mexico. (Hakonson 1987, 07422)

LANL (Los Alamos National Laboratory), May 1991. "TA-21 Operable Unit RFI for Environmental Restoration," Los Alamos National Laboratory document LA-UR-91-962, Vol. II, Los Alamos, New Mexico. (LANL 1991, 07529)

LANL (Los Alamos National Laboratory), January 28, 1994. "TA-21 Operable Unit RCRA Facility Investigation: Operable Unit-Wide Surface Soil, Deposition Layer and Filter Building Investigation," Los Alamos National Laboratory document LA-UR-93-4390, Los Alamos, New Mexico. (LANL 1994, 26073)

LANL (Los Alamos National Laboratory), 1995. "Phase Report Addendum 1B and 1C Operable Unit 1106 RCRA Facility Investigation," Los Alamos National Laboratory document LA-UR-94-4360, Los Alamos, New Mexico. (LANL 1995, 52350)

LANL (Los Alamos National Laboratory), September 1997. "1994 Site Investigation Activities at Field Unit 1, TA-21, Material Disposal Area (MDA) U, PRS 21-017(a–c)," field summary report prepared by ERM Program Management Company, Golder Federal Services, Los Alamos, New Mexico. (LANL 1997, 58979)

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

LANL (Los Alamos National Laboratory), September 1, 1998. "Sampling and Analysis Plan for Potential Release Sites 21-017(a,b, and c)," Los Alamos National Laboratory document LA-UR-98-3856, Los Alamos, New Mexico. (LANL 1998, 62549)

LANL (Los Alamos National Laboratory), December 1998. "MDA U PRS 21-017(a,b,c) RCRA Facility Investigation Field Summary Report," Los Alamos National Laboratory document, Los Alamos, New Mexico. (LANL 1998, 87294)

LANL (Los Alamos National Laboratory), September 1999. "Draft Sampling and Analysis Plan for PRS 21-017(a–c)n," Los Alamos National Laboratory document, Los Alamos, New Mexico. (LANL 1999, 87295)

LANL (Los Alamos National Laboratory), November 1, 2001. "Addendum to the Material Disposal Area U, Potential Release Sites 21-017(a,b,c), Sampling and Analysis Plan," Los Alamos National Laboratory document LA-UR-01-6461, Los Alamos, New Mexico. (LANL 2001, 70230)

LASL (Los Alamos Scientific Laboratory), June 6, 1945. "Waste Disposal Facilities- Bldgs. 52 & 53 'DP' Site Construction Plan," Los Alamos Scientific Laboratory engineering drawing, ENG-C 2216. Los Alamos, New Mexico. (LASL 1945, 01093)

LASL (Los Alamos Scientific Laboratory), July 10, 1974. "TA-21-153 Decommissioning Environmental Assessment TA-21-153 Dismantling, LASL (Draft)," report prepared by L. G. Chelius, Los Alamos, New Mexico. (LASL 1974, 01308)

Mayfield, D. L., March 27, 1985. "Environmental Sampling Results for Area U," Los Alamos National Laboratory memorandum (HSE85-271) to M. Salazar (HSE-7) from D. L. Mayfield (HSE-8), Los Alamos, New Mexico. (Mayfield 1985, 01172)

Merrill, E. S., March 1990. "A History of Waste Disposal at Technical Area 21, 1943–1978," Los Alamos National Laboratory document, Los Alamos, New Mexico. (Merrill 1990, 11721)

Purtymun, W. D., January 7, 1976. "Seepage Pits DP East (TA-21-DPE-164)," Los Alamos National Laboratory memorandum (H8-6-76) to L. Johnson (H-8) from W. D. Purtymun (H-8), Los Alamos, New Mexico. (Purtymun 1976, 01107)

Purtymun, W. D., November 1, 1987. "Background Concentrations of Radionuclides in Soils and River Sediments in Northern New Mexico, 1974–1986," Los Alamos National Laboratory report LA-11134-MS, Los Alamos, New Mexico. (Purtymun 1987, 06687)

Tribby, J. F., July 25, 1946. "Results of Preliminary Survey of Contamination in the Drain Exits of All Sanitary and Acid Sewer Lines," Los Alamos National Laboratory memorandum to E. R. Jette from J. F. Tribby, Los Alamos, New Mexico. (Tribby 1946, 01540)

Veltman, P. L., May 30, 1945. "Minutes of Meeting May 28, 1945 on S Site DP Site," Los Alamos Scientific Laboratory Plant Planning Committee memorandum, Los Alamos, New Mexico. (Veltman 1945, 01305)

Walker, L. J., September 1981. "Alternative Transuranic Waste Management Strategies at Los Alamos National Laboratory," Los Alamos National Laboratory report LA-8982-MS, Los Alamos, New Mexico. (Walker 1981, 06277)

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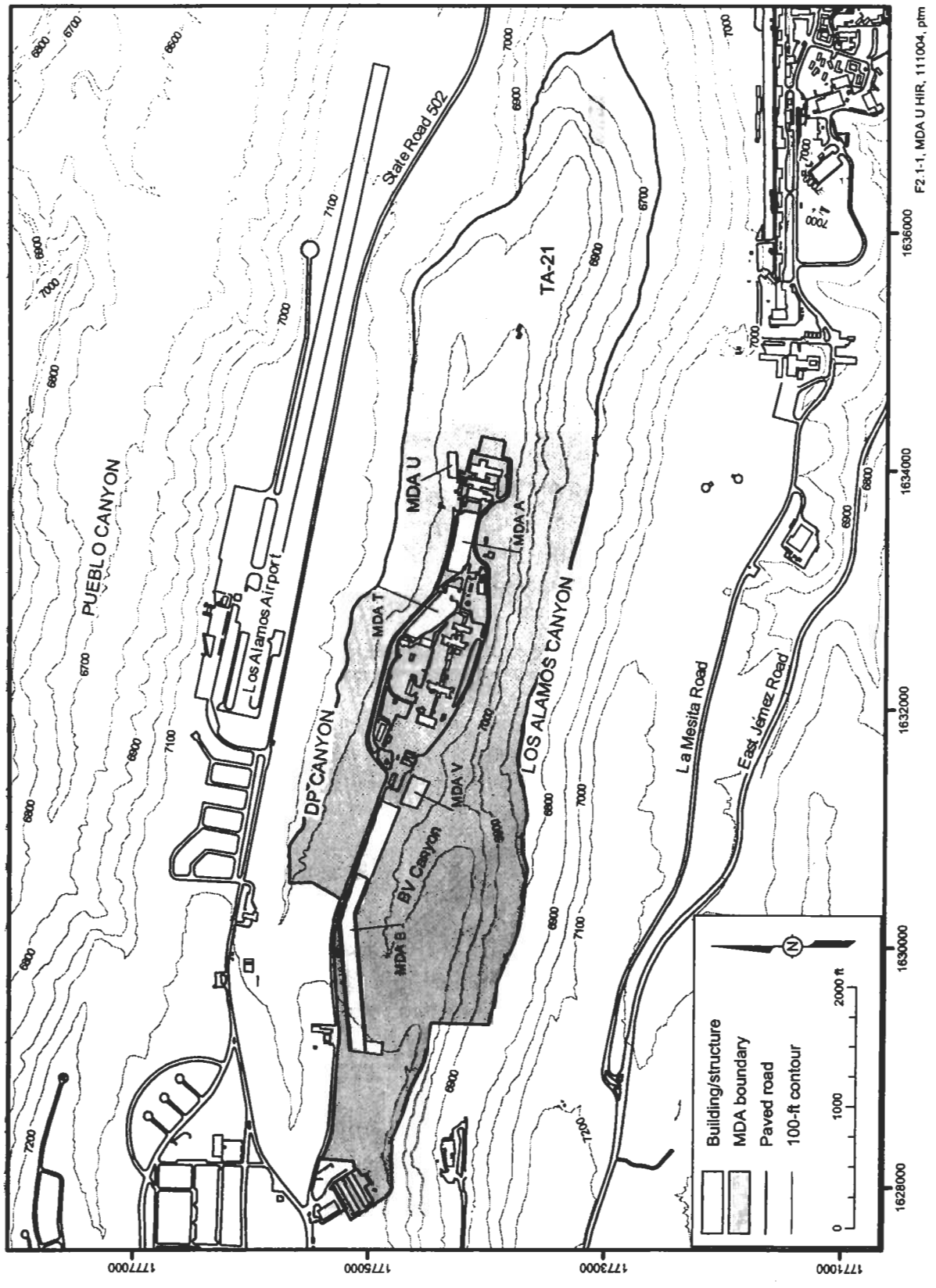


Figure 2.1-1. Material disposal areas in TA-21

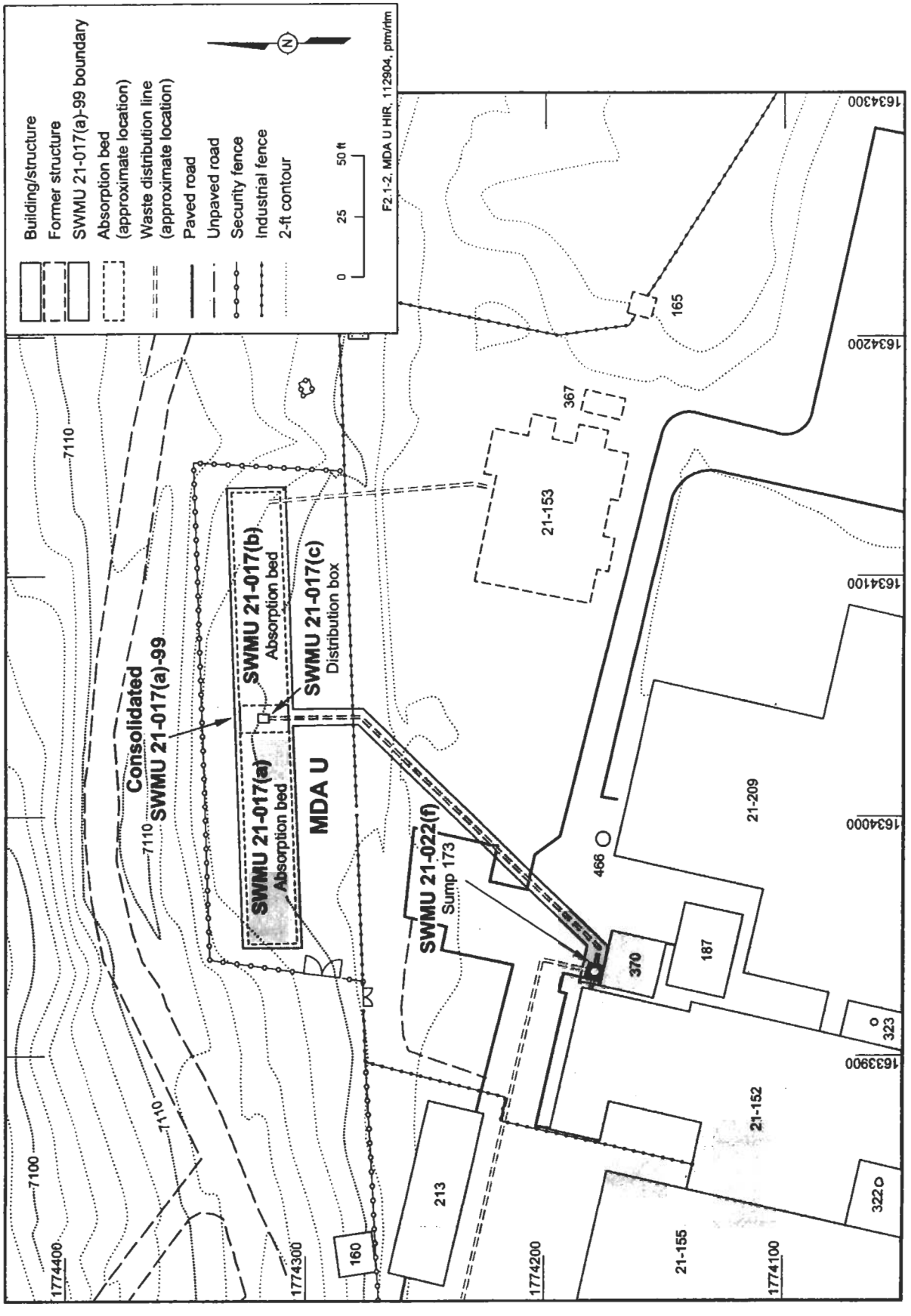


Figure 2.1-2. Consolidated SWMU 21-017(a)-99

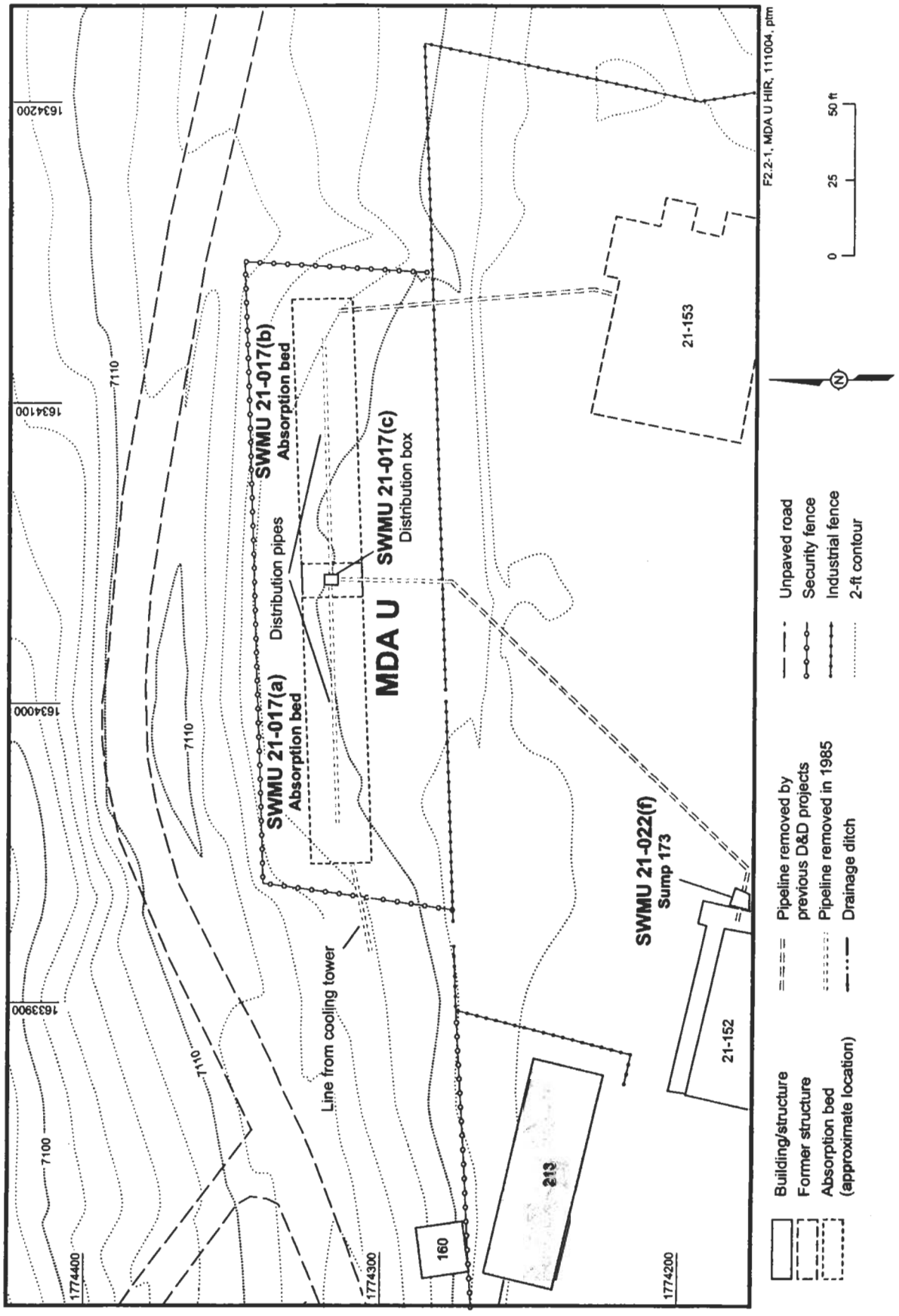


Figure 2.2-1. 1985 stabilization activities at MDA U

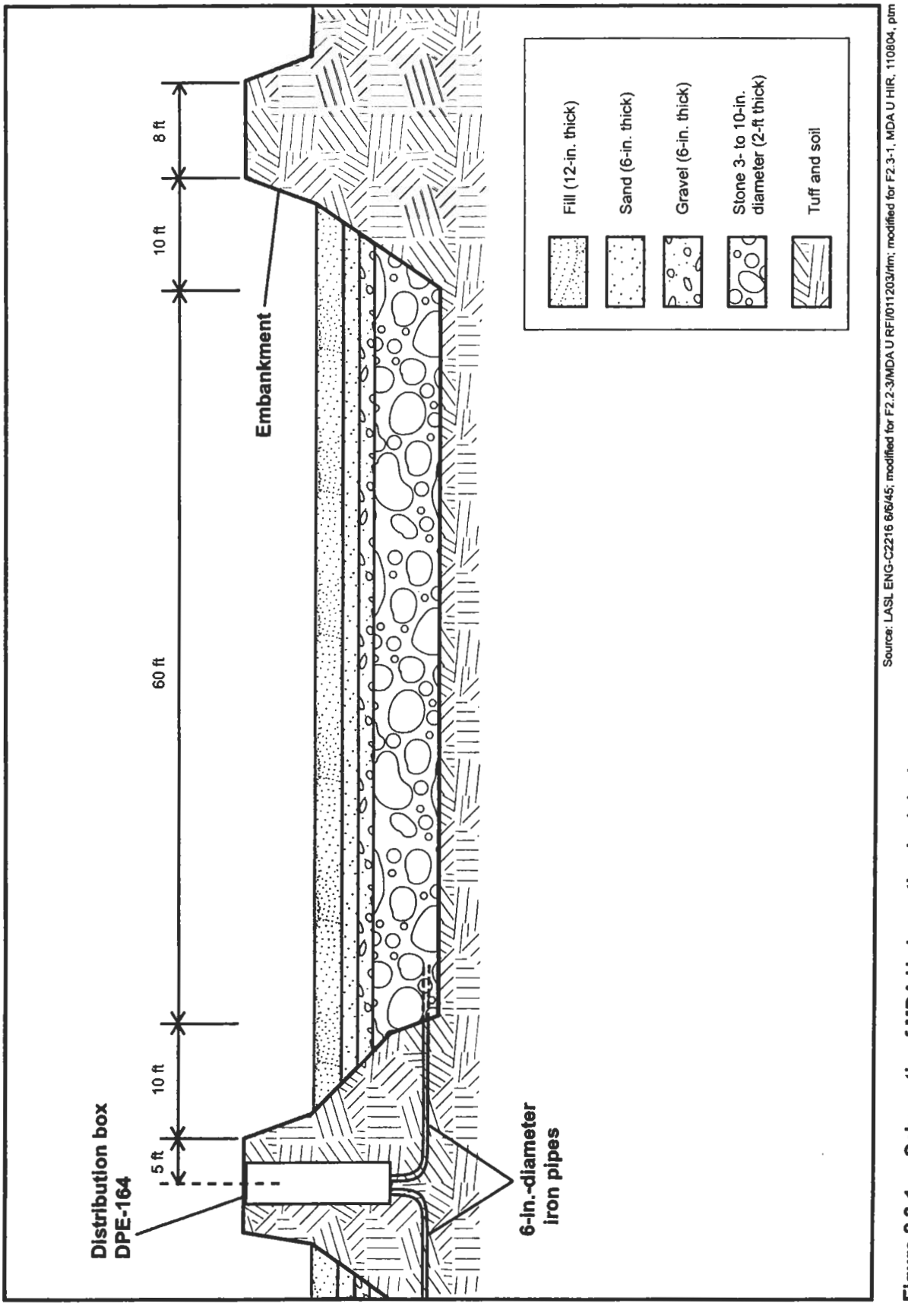
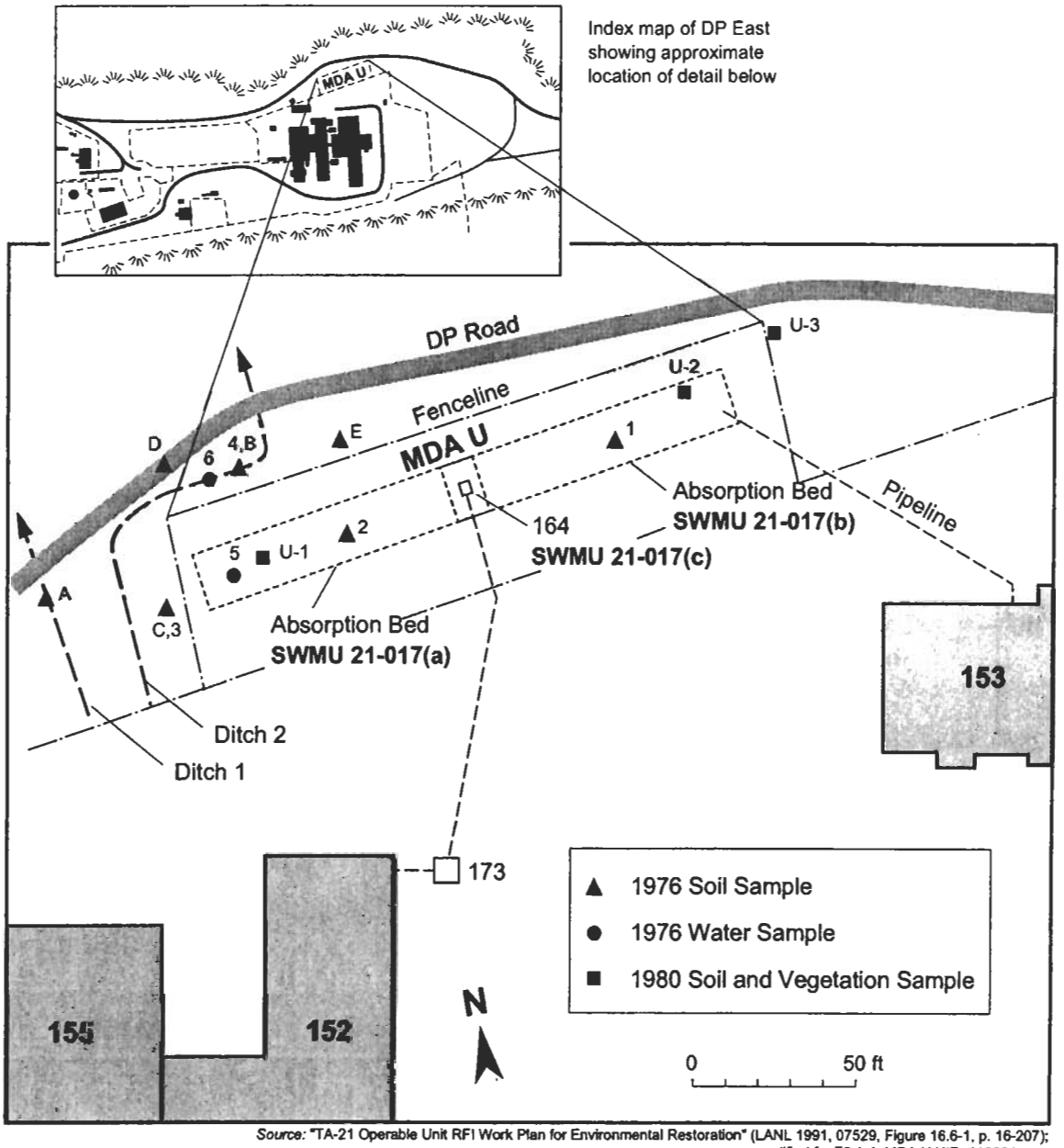
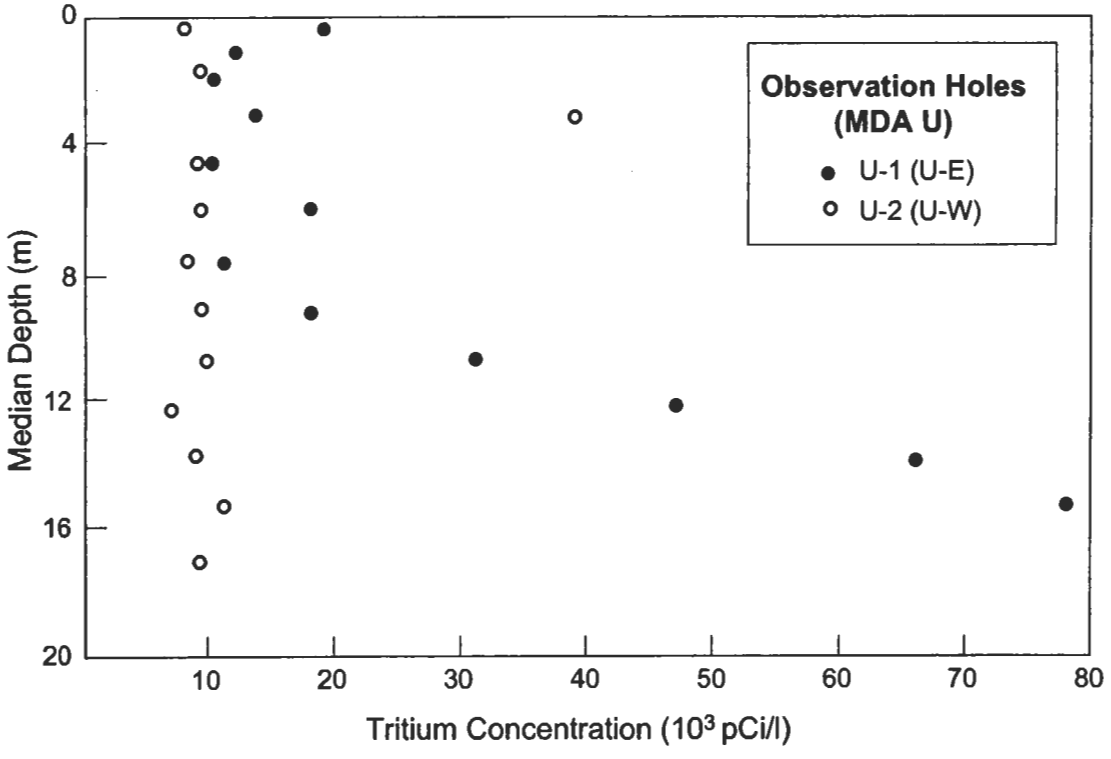


Figure 2.3-1. Schematic of MDA U absorption bed design



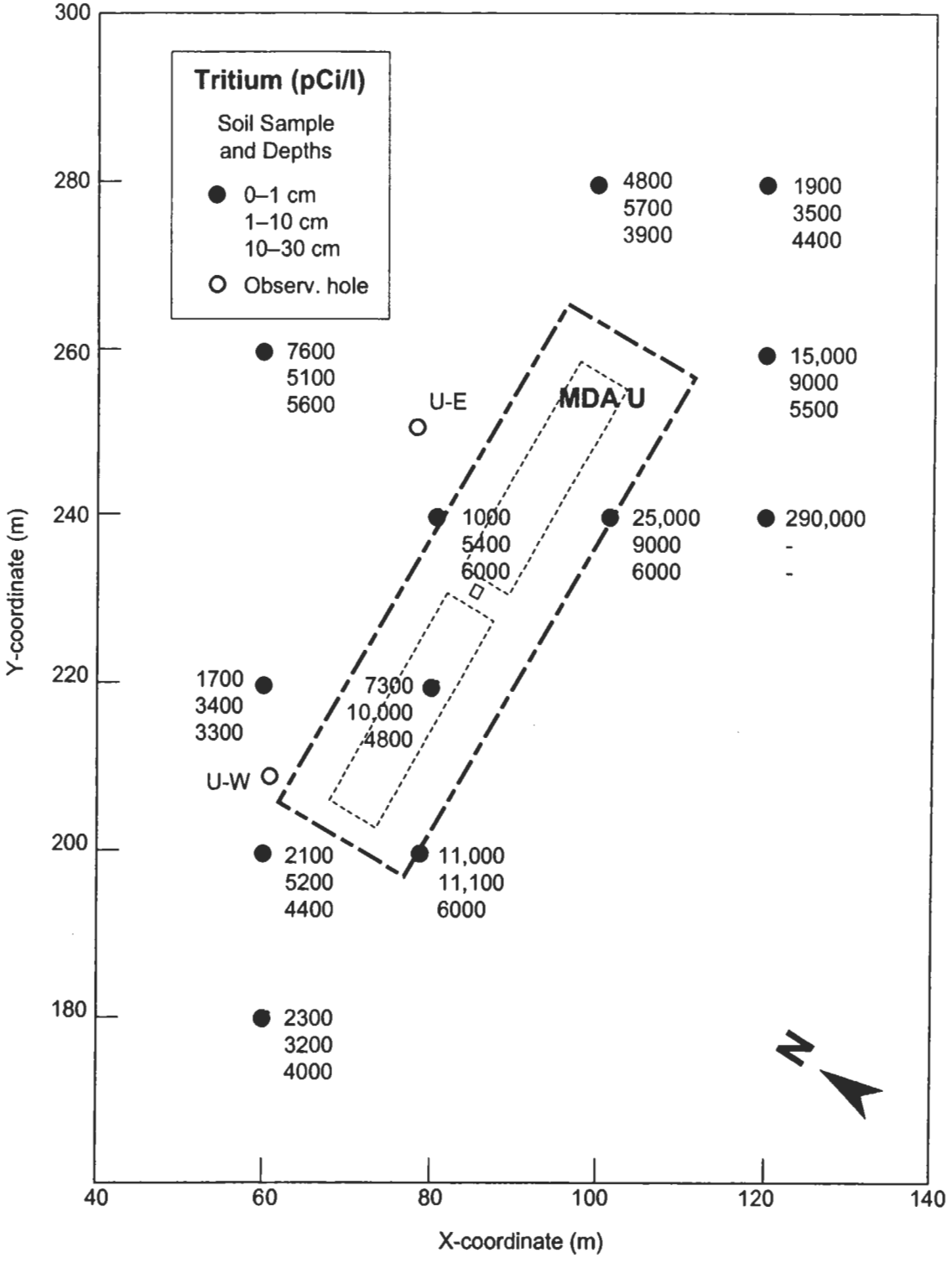
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-1, p. 16-207); modified for F3.1-1, MDA U HIR, 112804, ptm

Figure 3.1-1. Soil, water, and vegetation samples taken at MDA U in 1976 and 1980



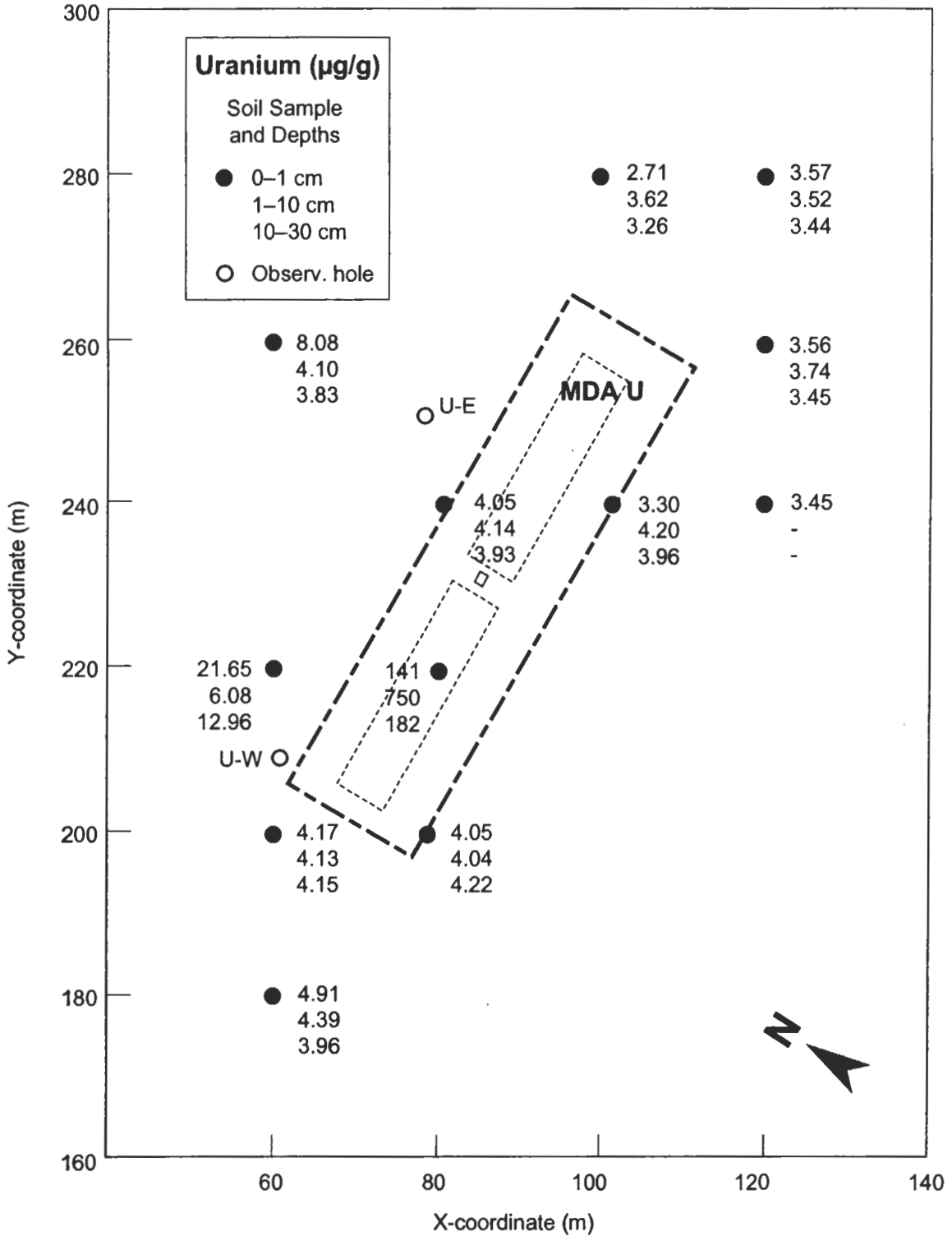
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-9, p. 16-215)
F3.1-2, MDA U HIR, 112804, ptm/rlm

Figure 3.1-2. 1983 borehole investigation tritium results



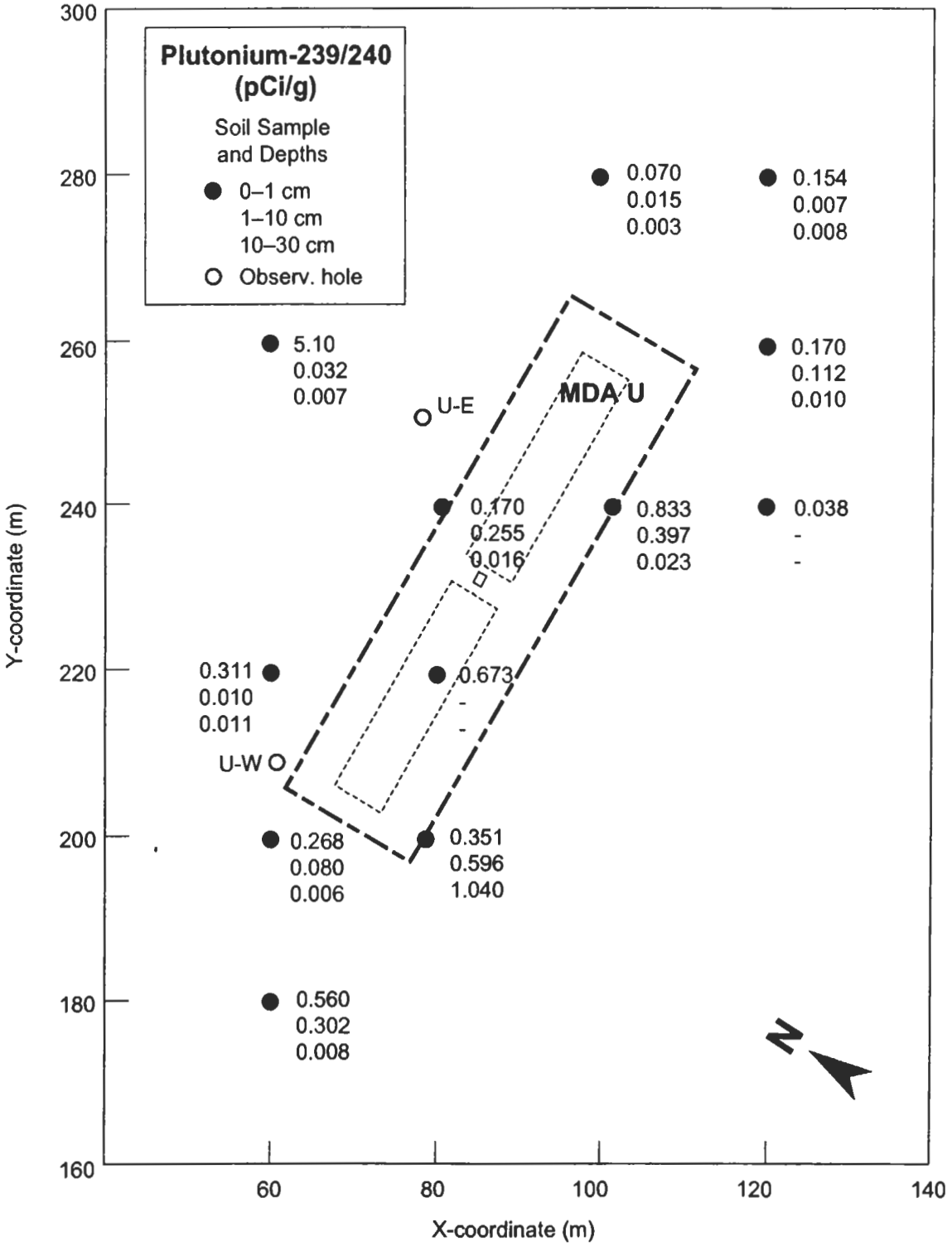
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-2, p. 16-208) modified for F3.1-3, MDA U HIR, 112804, ptm/rlm

Figure 3.1-3. 1984 MDA U tritium data for soils



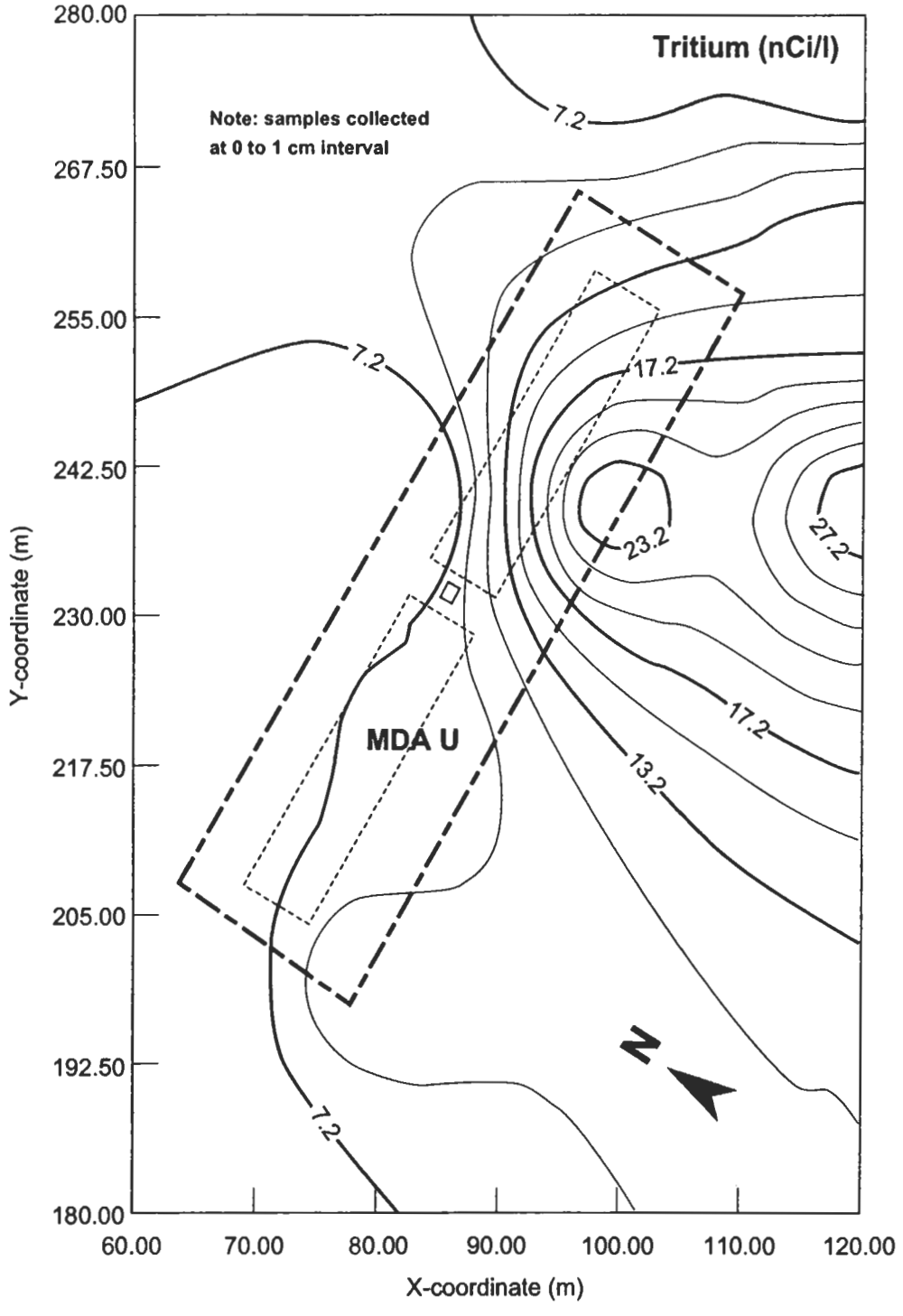
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-3, p. 16-209) modified for F3.1-4, MDA U HIR, 112804, ptm/rlm

Figure 3.1-4. 1984 MDA U uranium data for soils



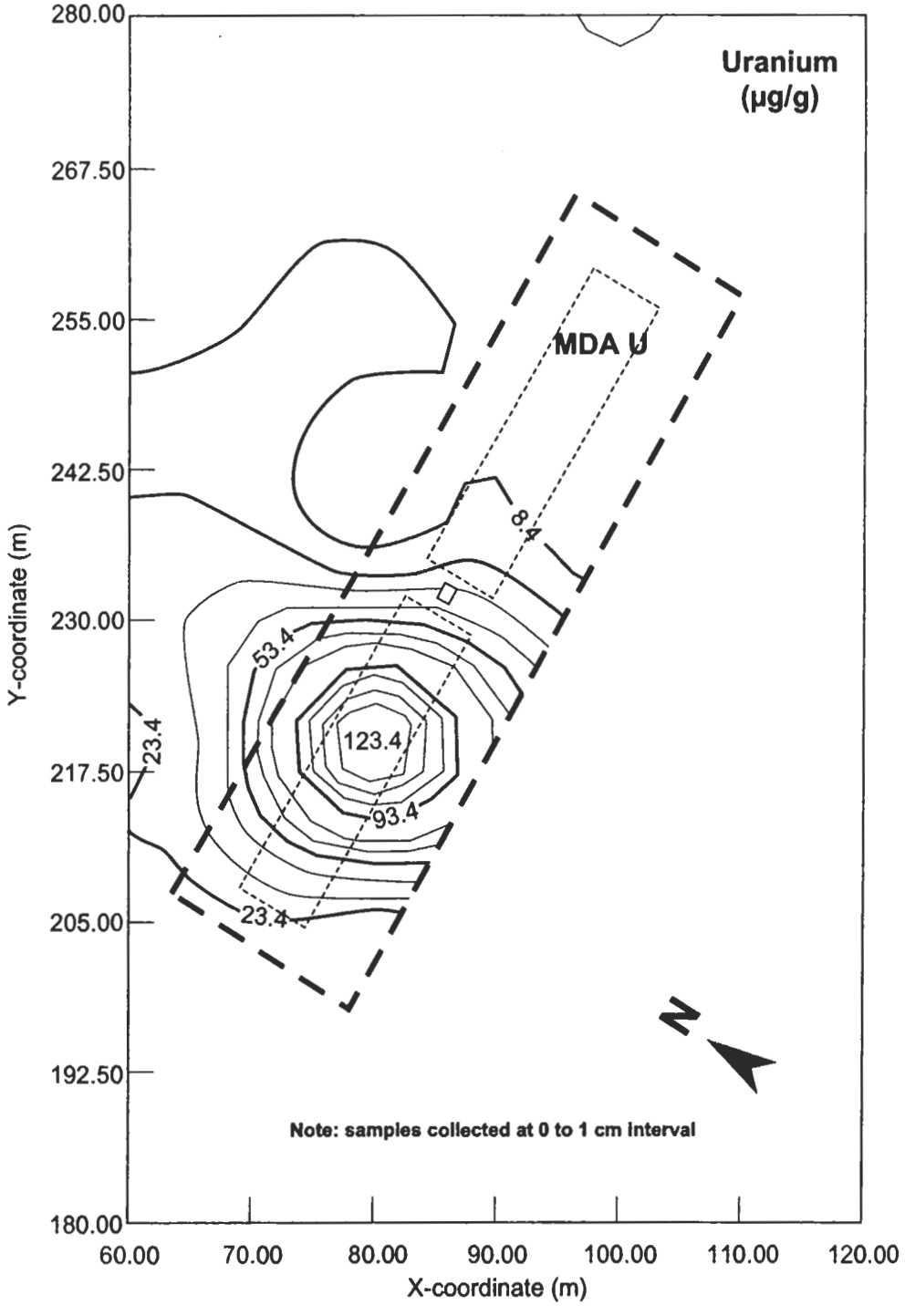
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-4, p. 16-210) modified for F3.1-5, MDA U HIR, 112804, ptm/rlm

Figure 3.1-5. 1984 MDA U plutonium-239/240 data for soils



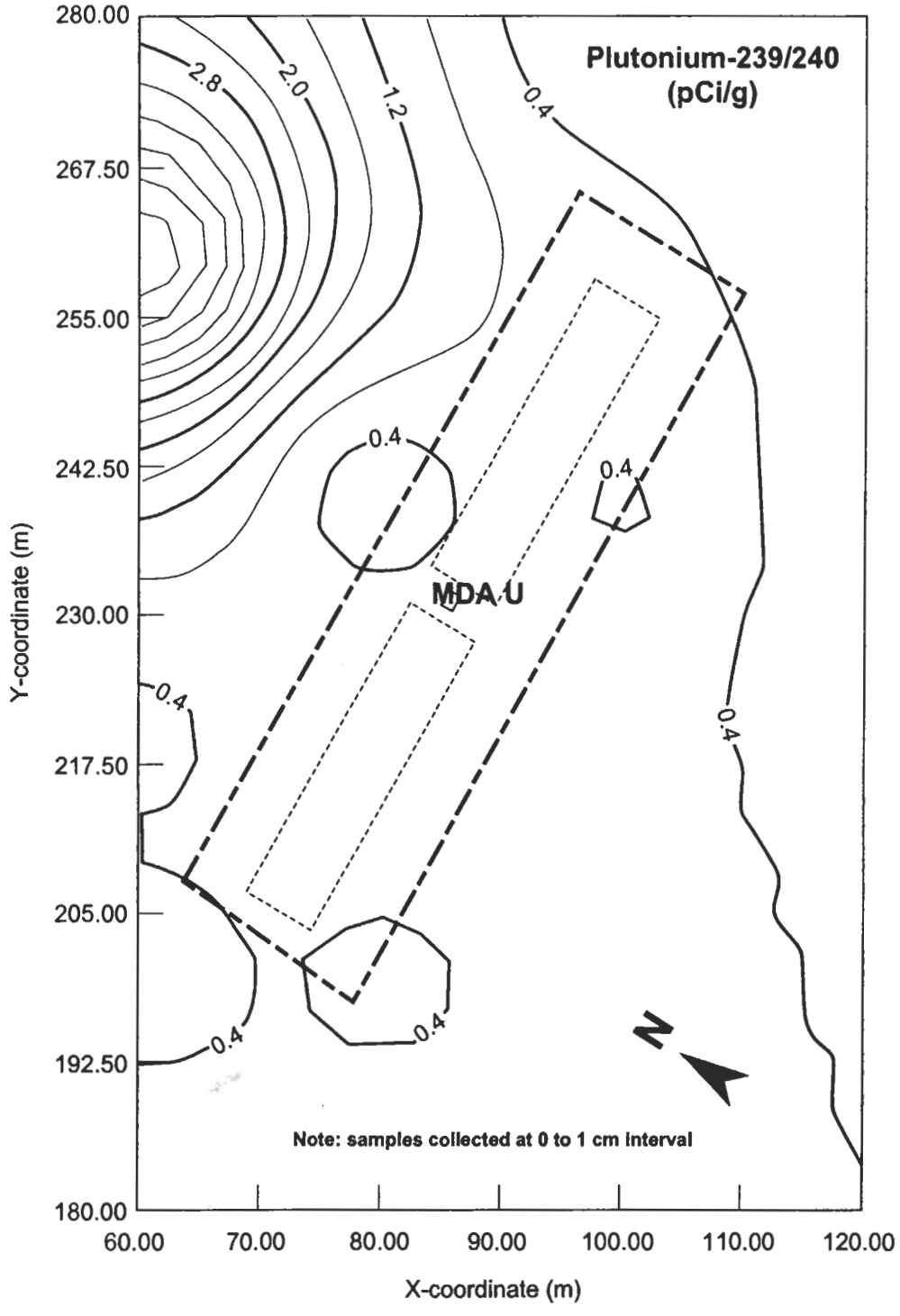
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-5, p. 16-211) modified for F3.1-6, MDA U HIR, 111004, ptm

Figure 3.1-6. Concentration contours for tritium from the 1984 surface soil samples at MDA U



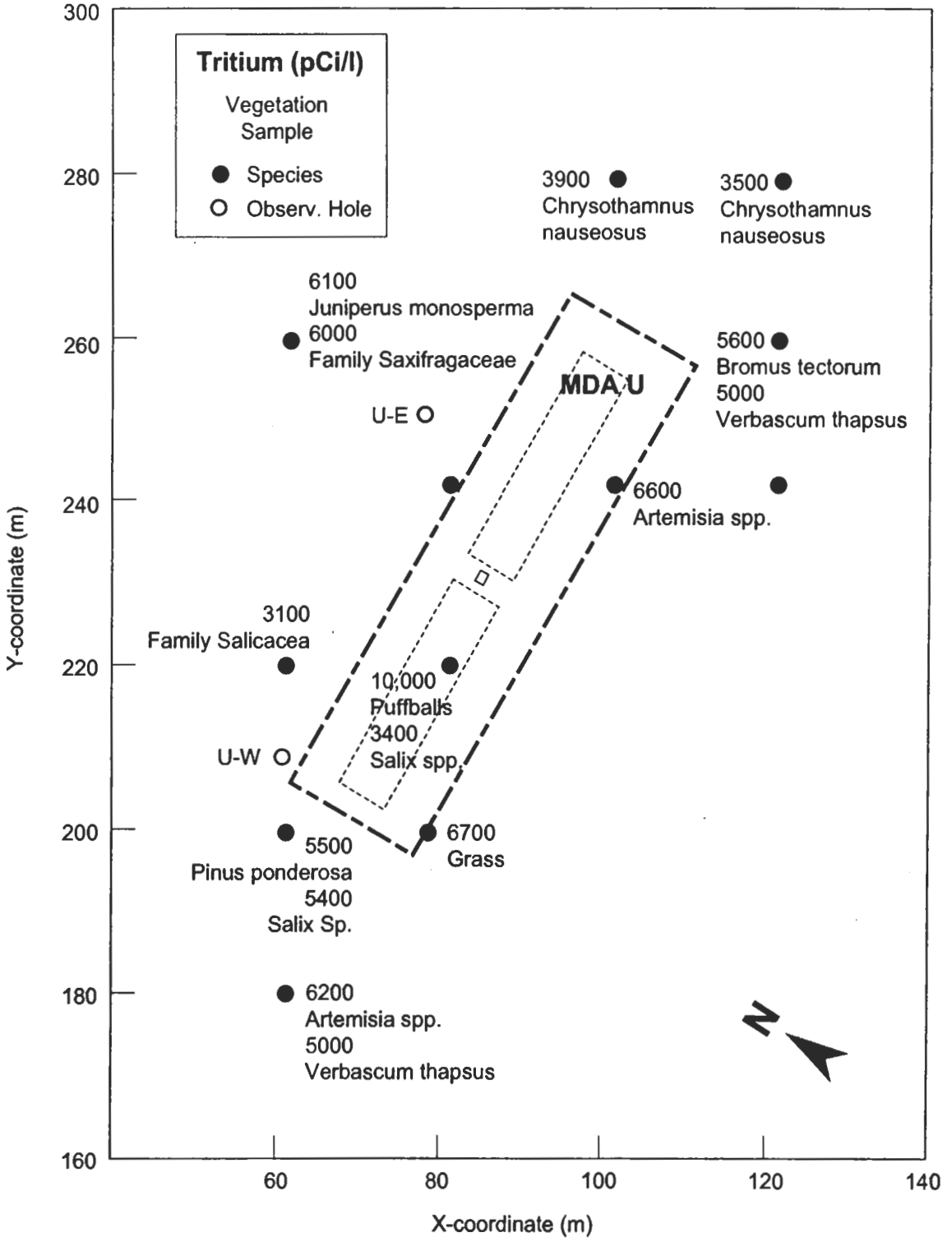
Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-6, p. 16-212) modified for F3.1-7, MDA U HIR, 112804, ptm/rlm

Figure 3.1-7. Concentration contours for uranium from the 1984 surface soil samples at MDA U



Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-7, p. 16-213) modified for F3.1-8, MDA U HIR, 112804, ptm/rlm

Figure 3.1-8. Concentration contours for plutonium-239/240 from the 1984 surface soil samples at MDA U



Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Figure 16.6-8, p. 16-214) modified for F3.1-9, MDA U HIR, 112804, ptm/rlm

Figure 3.1-9. 1984 MDA U tritium data for vegetation

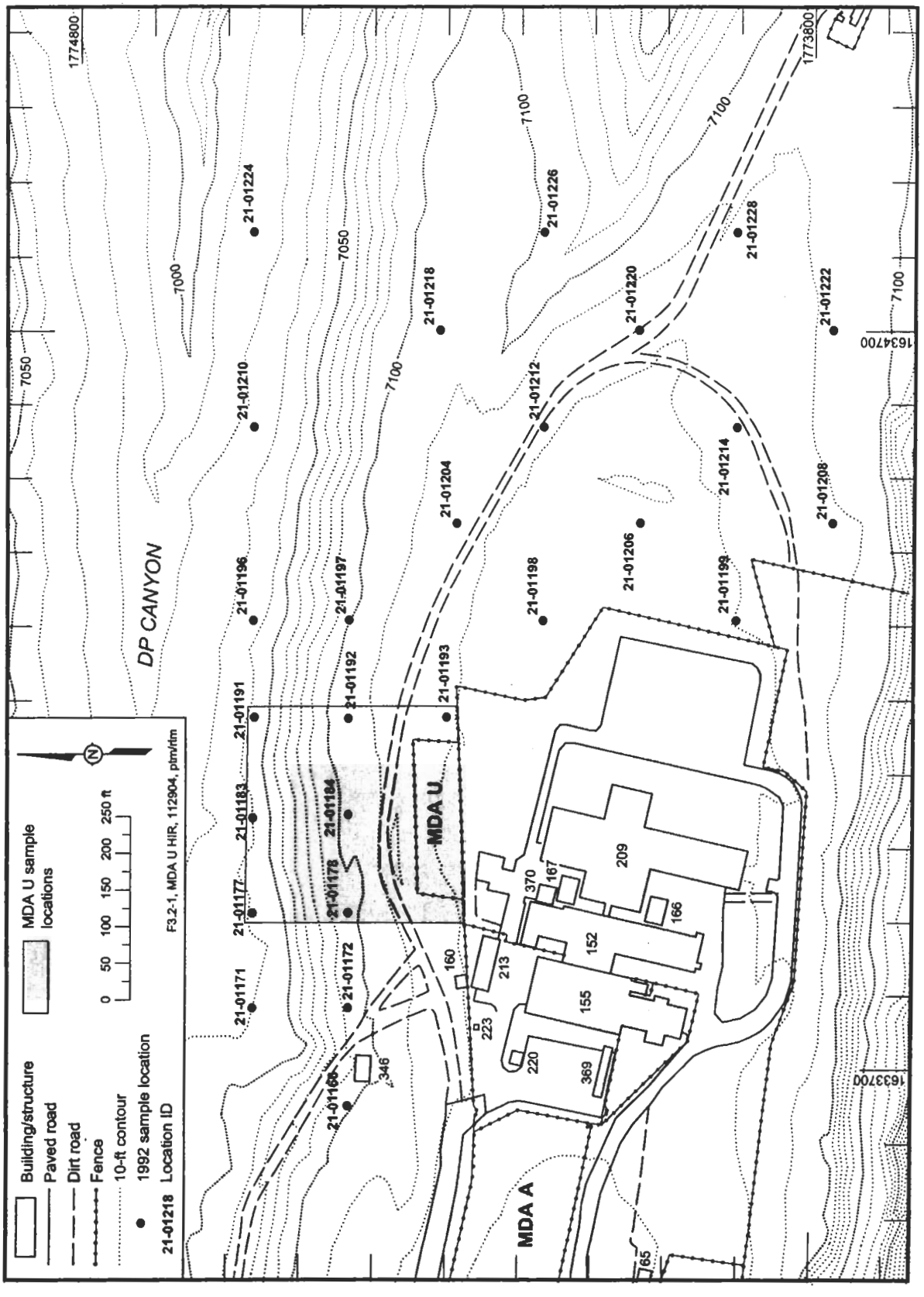


Figure 3.2-1. Locations for 1992 surface samples on the east end of DP Mesa

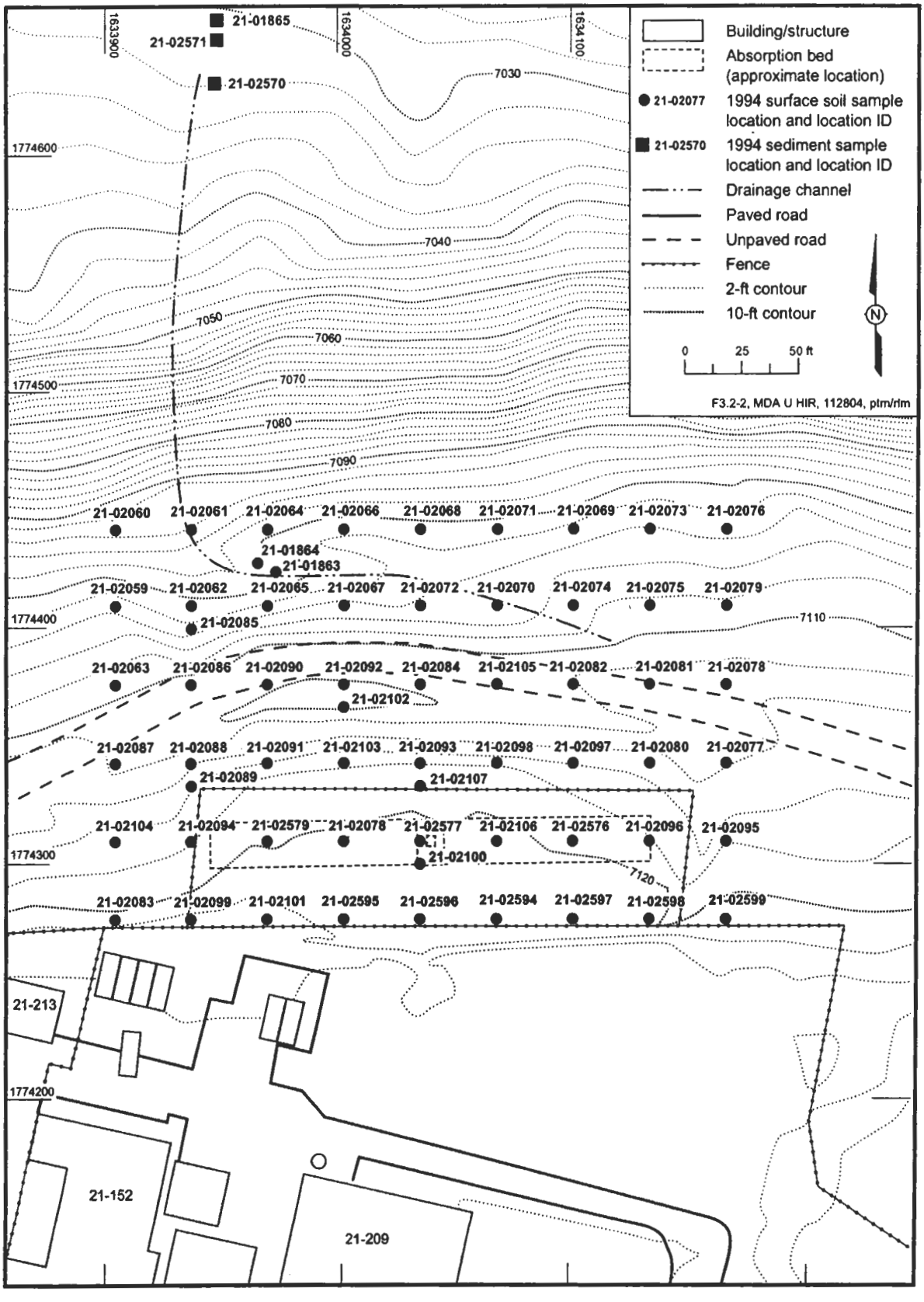


Figure 3.2-2. Locations for 1994 surface soil and sediment samples

Figure 3.2-3. Locations for 1998 absorption bed, surface, and subsurface sampling

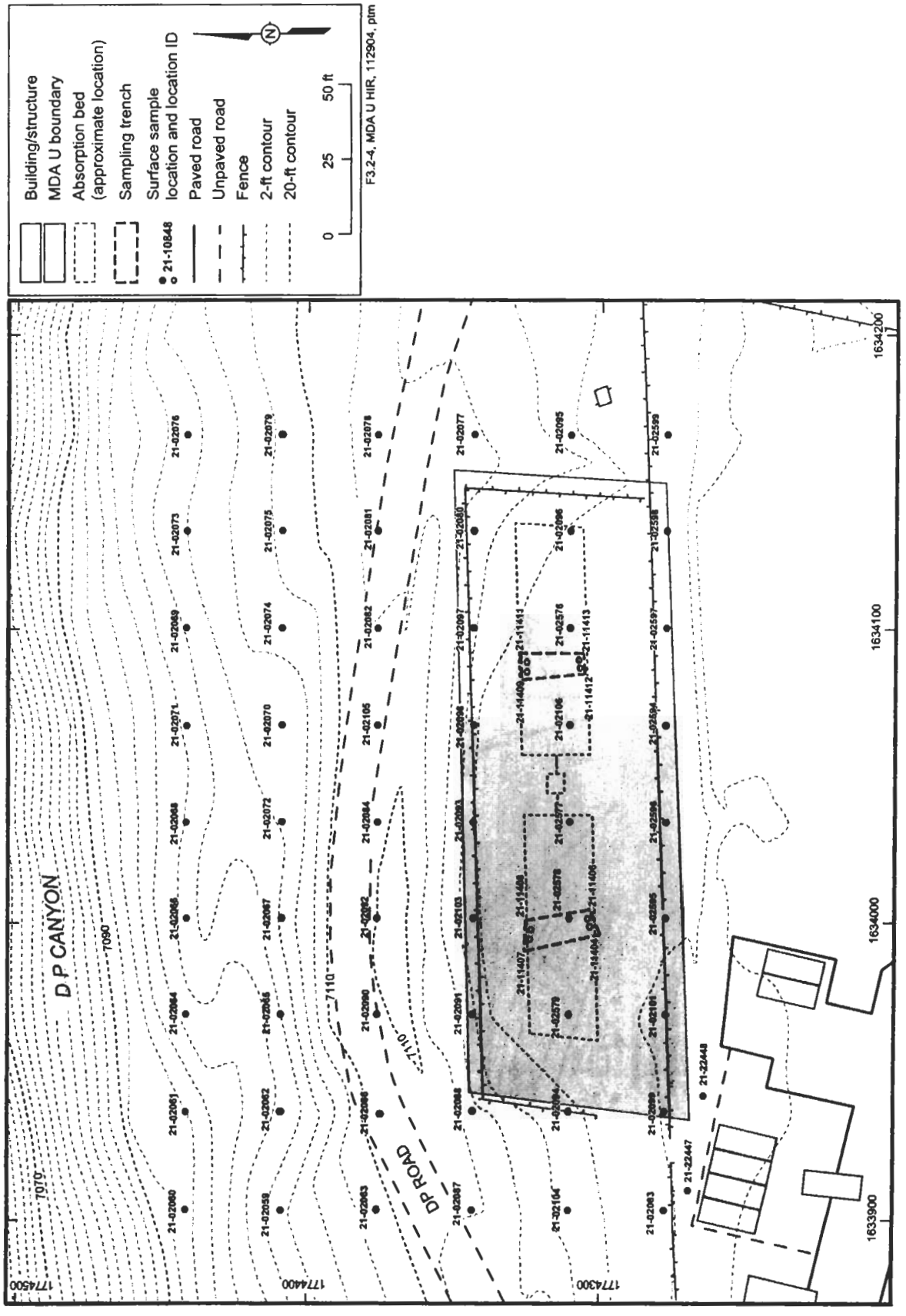


Figure 3.2-4. Locations for 2001 absorption bed and surface soil sampling

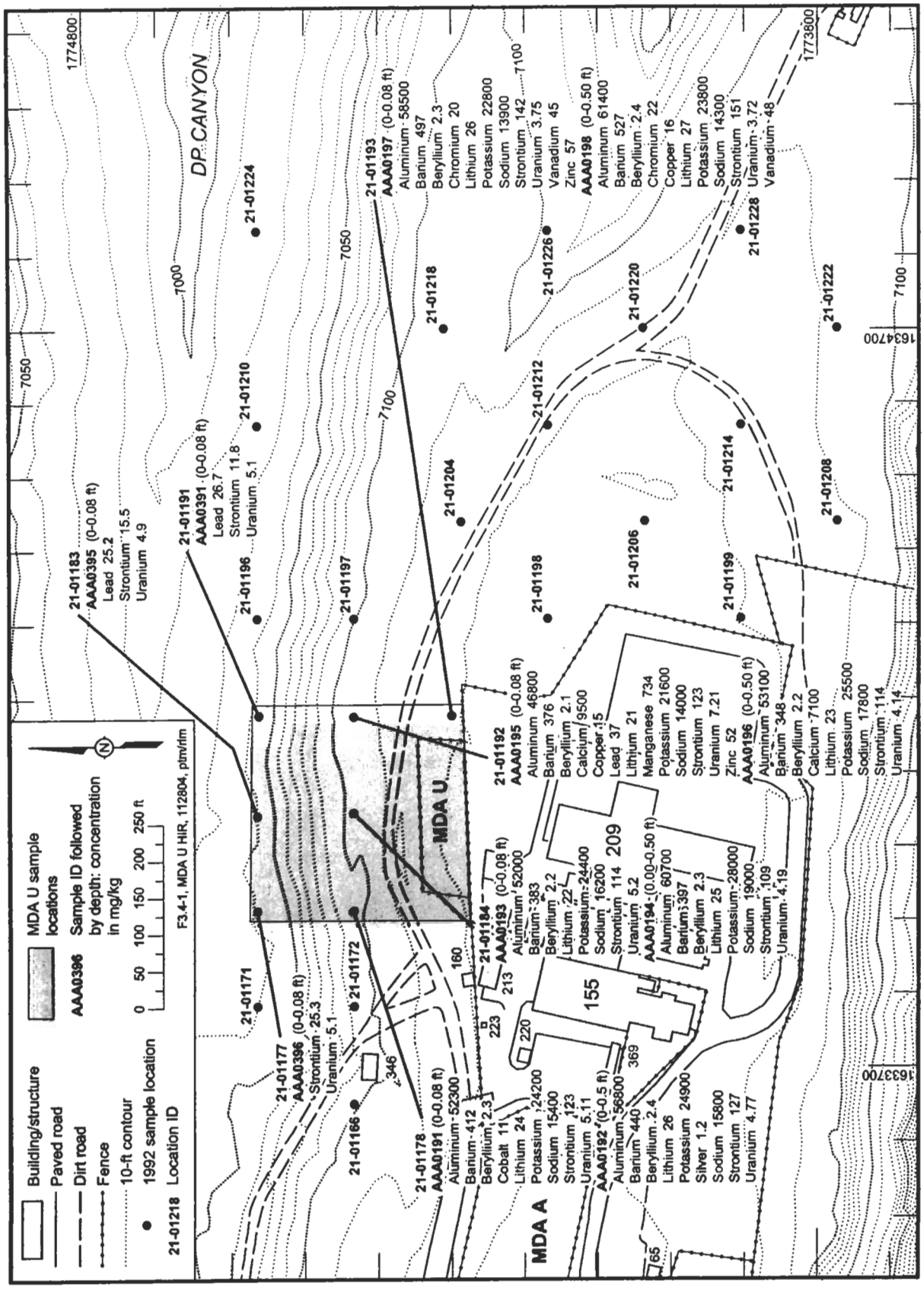


Figure 3.4-1. Inorganic chemicals above background values in 1992 surface samples

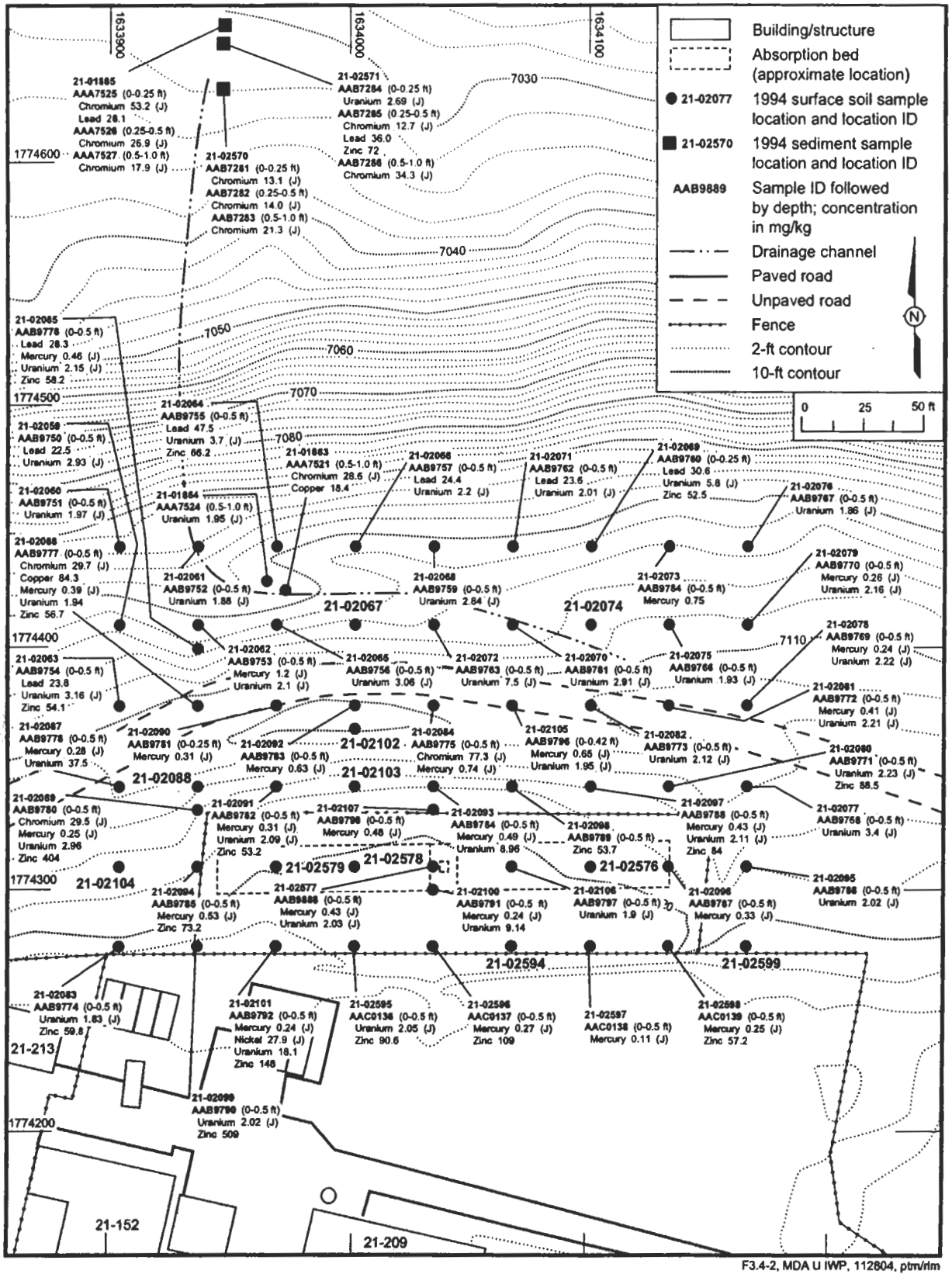
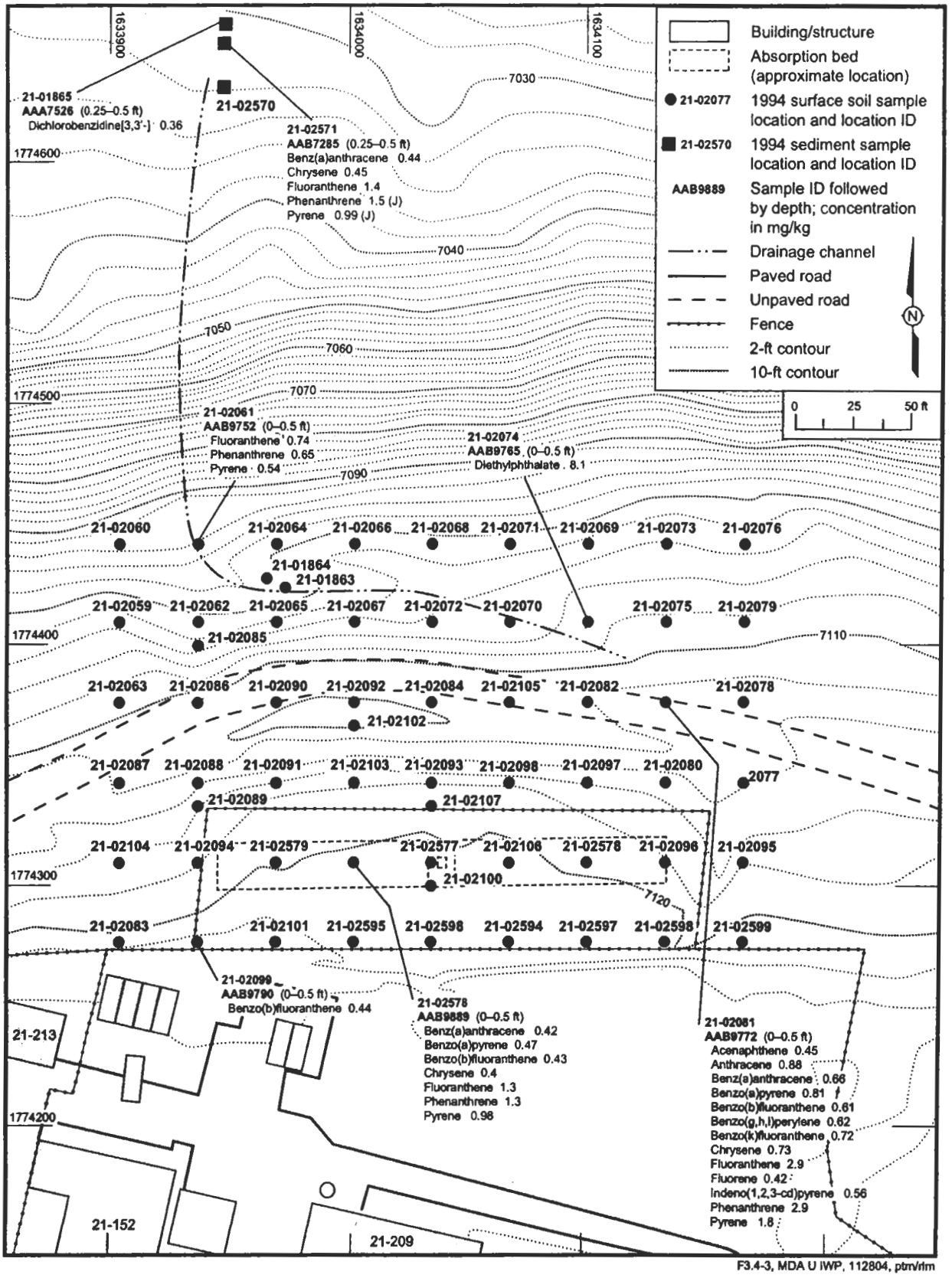


Figure 3.4-2. Inorganic chemicals above background values in 1994 surface soil and sediment samples



F3.4-3, MDA U IWP, 112804, ptm/rlm

Figure 3.4-3. Organic chemicals detected in 1994 surface soil and sediment samples

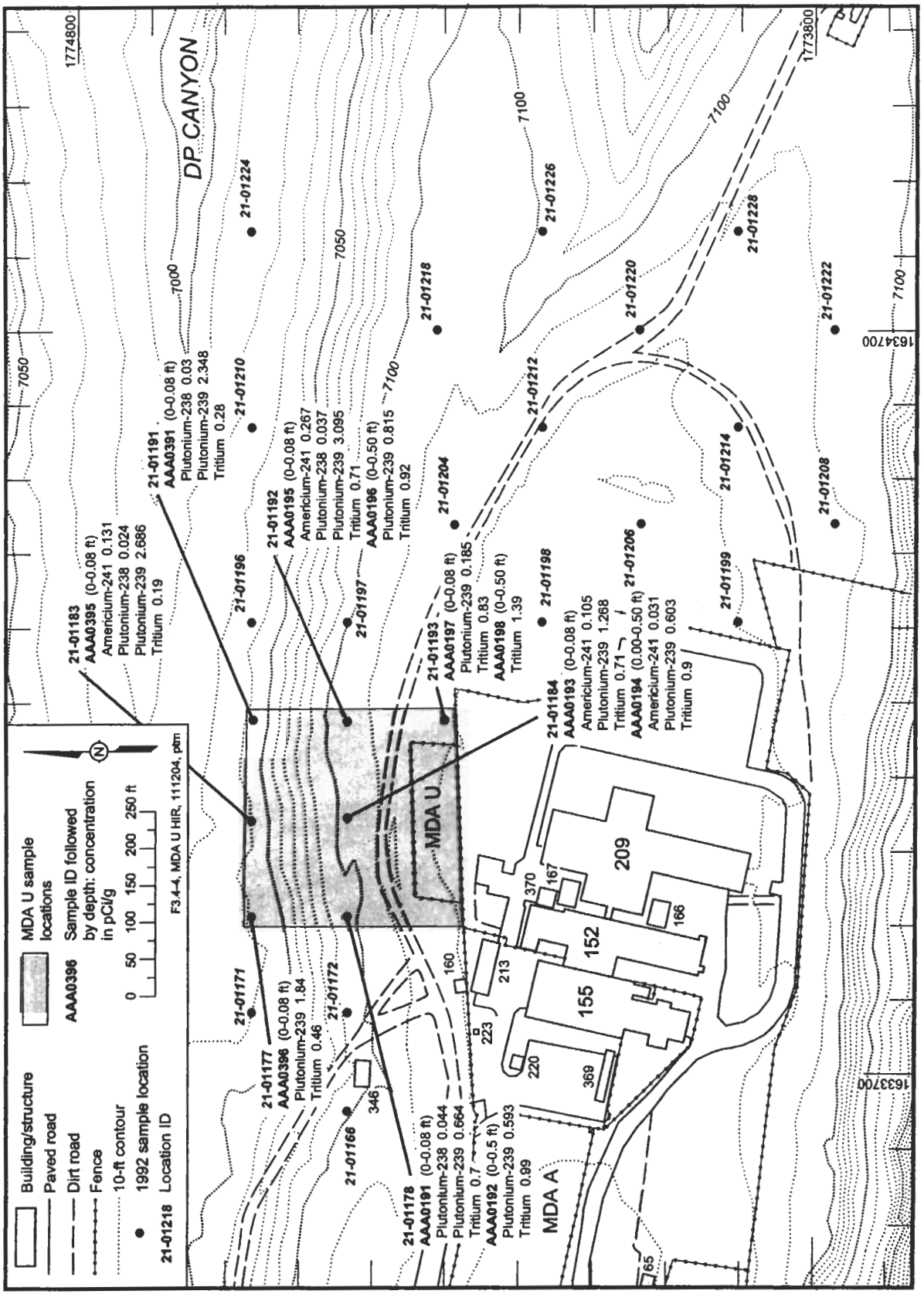


Figure 3.4-4. Radionuclides above background values in 1992 surface samples

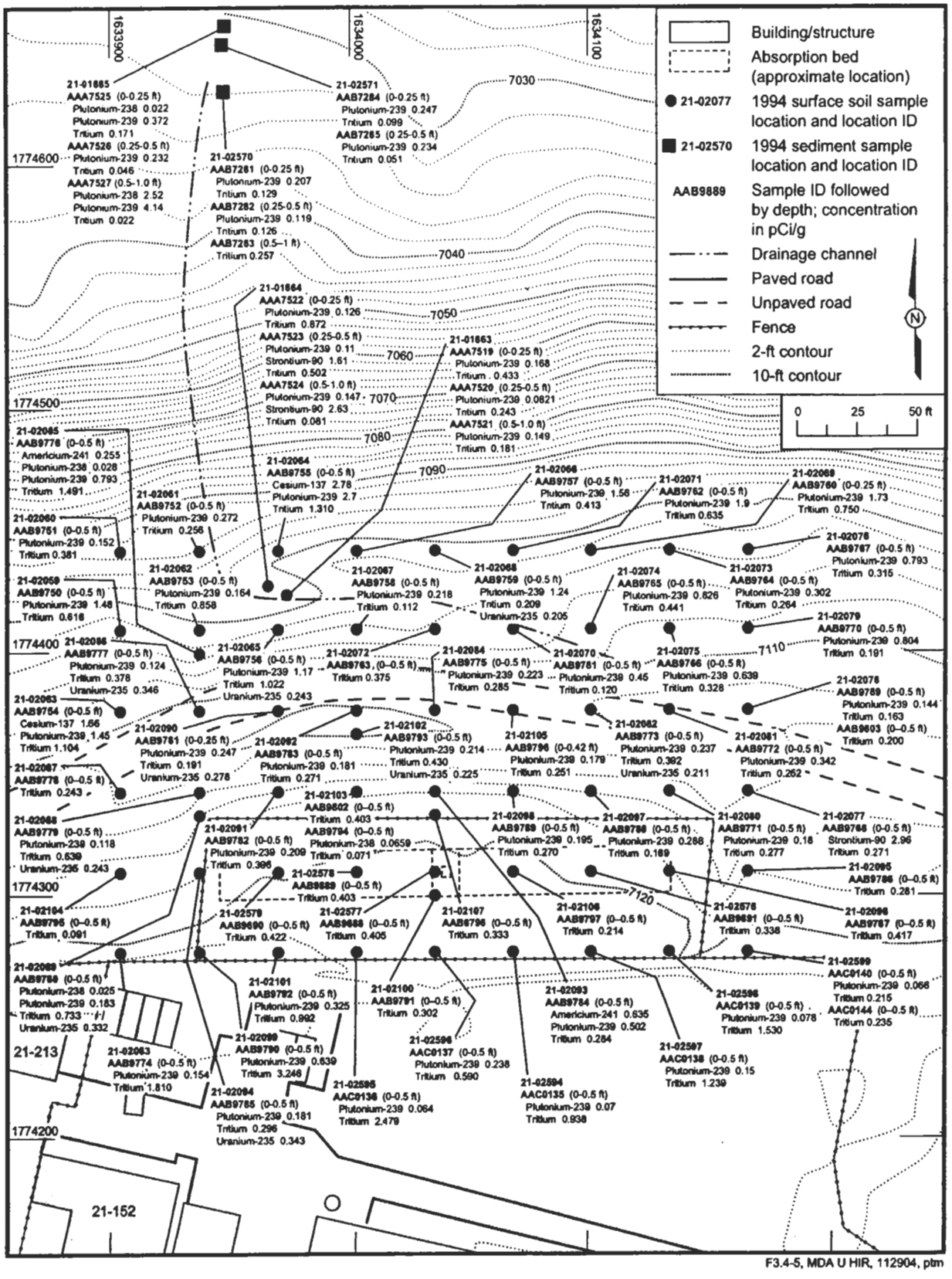


Figure 3.4-5. Radionuclides detected above background values/fallout values in 1994 surface soil and sediment samples

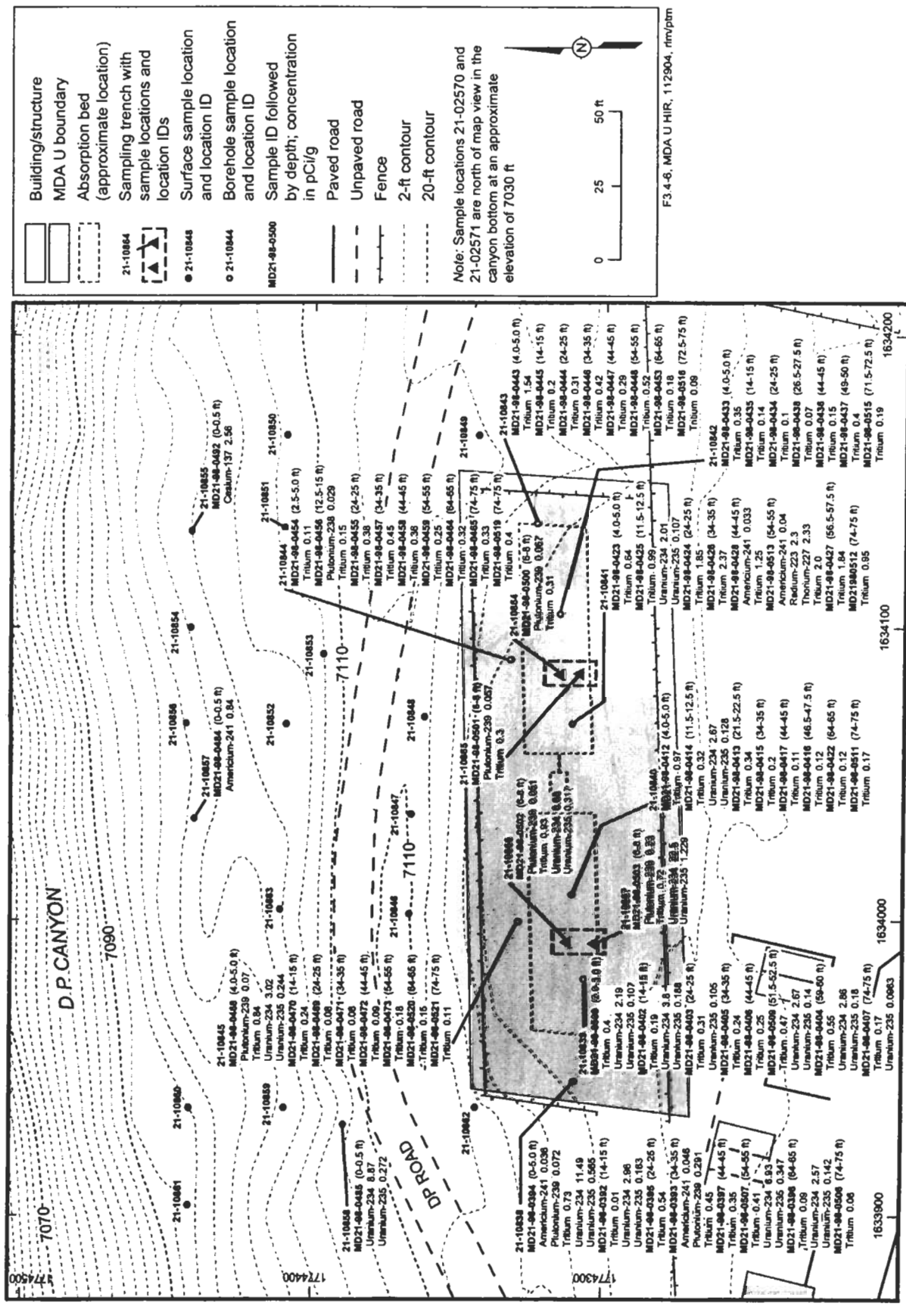


Figure 3.4-6. Radionuclides detected above background values/fallout values in 1998 surface and subsurface samples

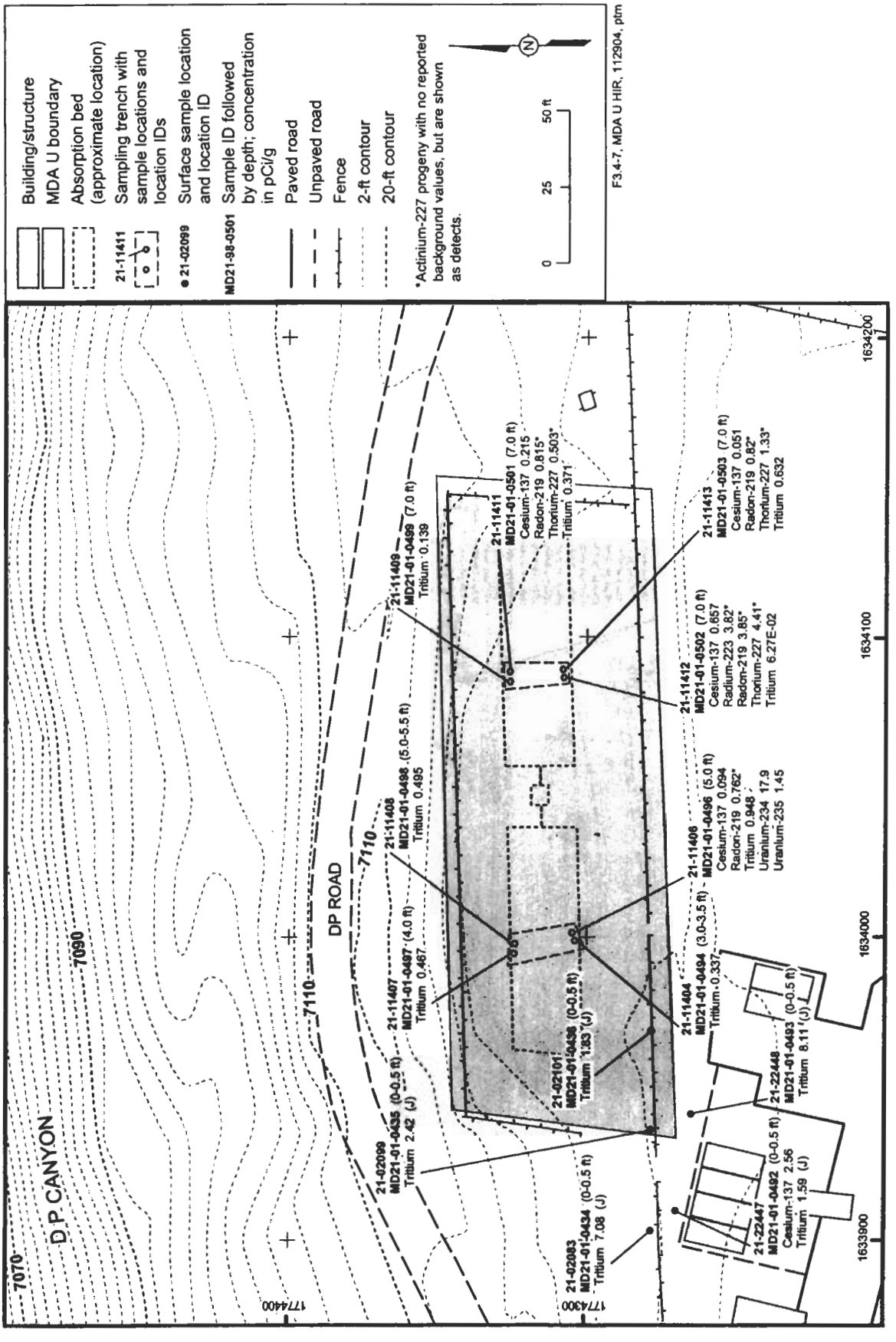
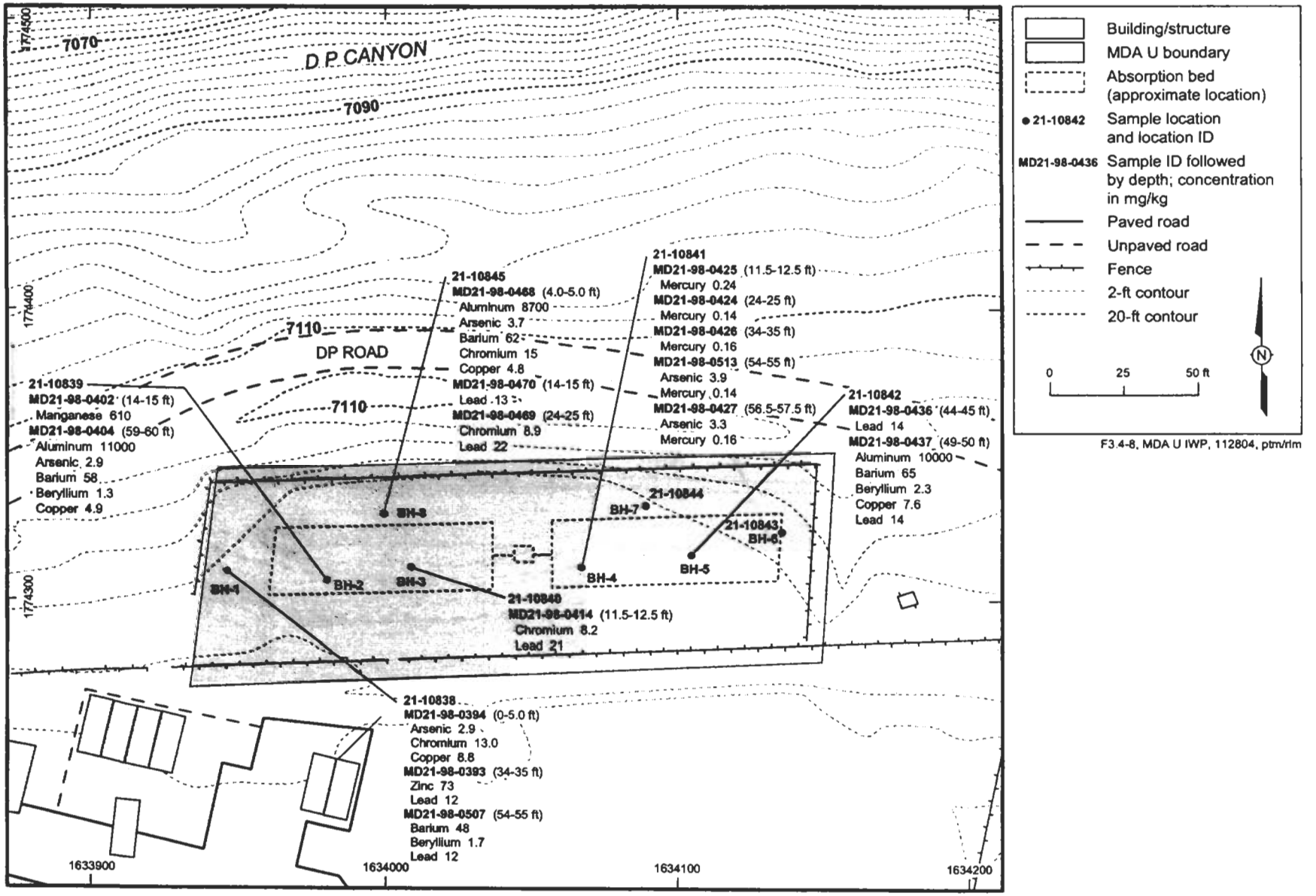


Figure 3.4-7. Radionuclides detected above background values/fallout values in 2001 surface soil and absorption bed sampling



F3.4-8, MDA U IWP, 112804, ptm/rlm

Figure 3.4-8. Inorganic chemicals above background values in 1998 borehole samples

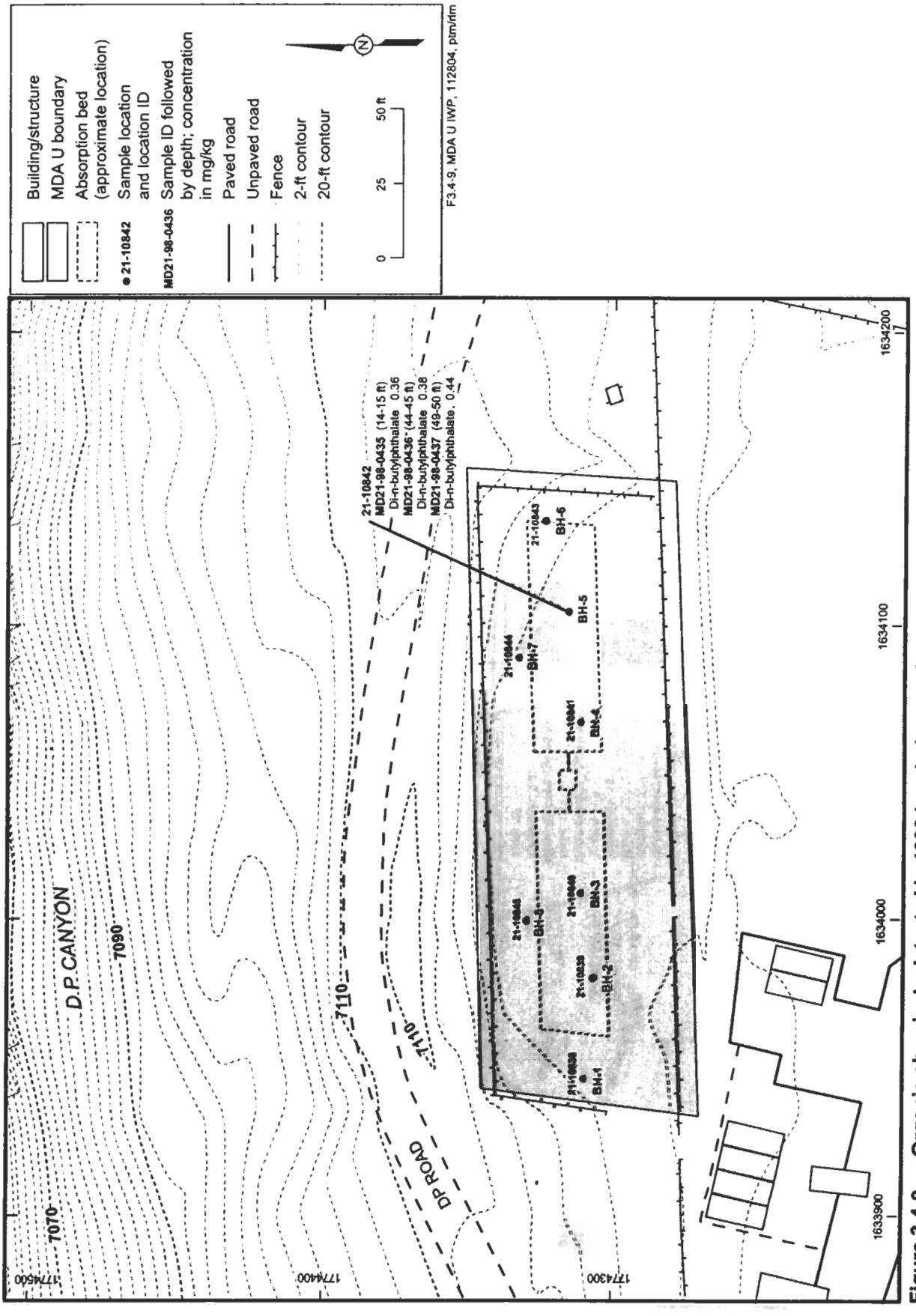


Figure 3.4-9. Organic chemicals detected in 1998 borehole samples

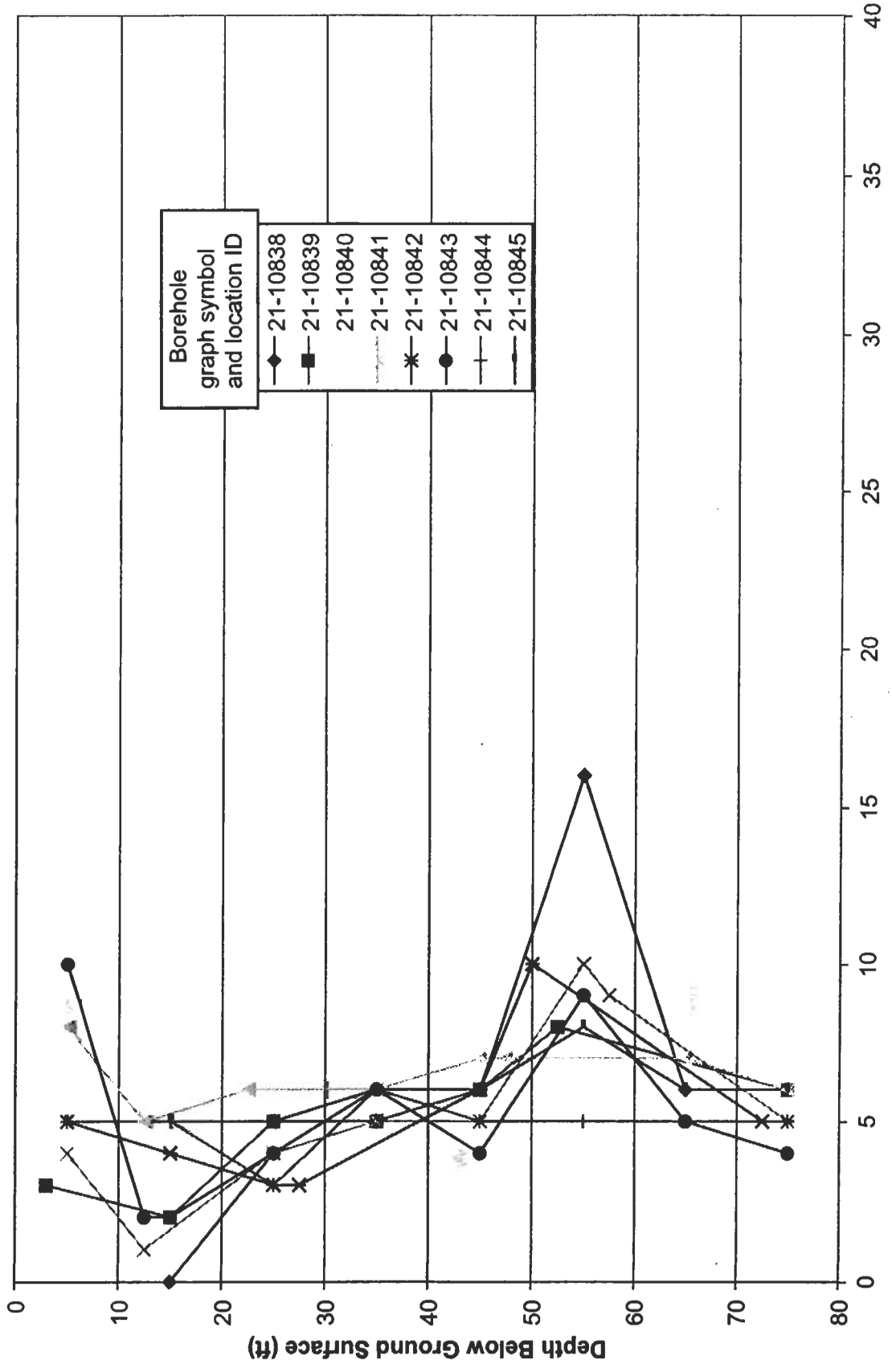


Figure 3.4-10. MDA U moisture profiles from 1998 borehole investigations

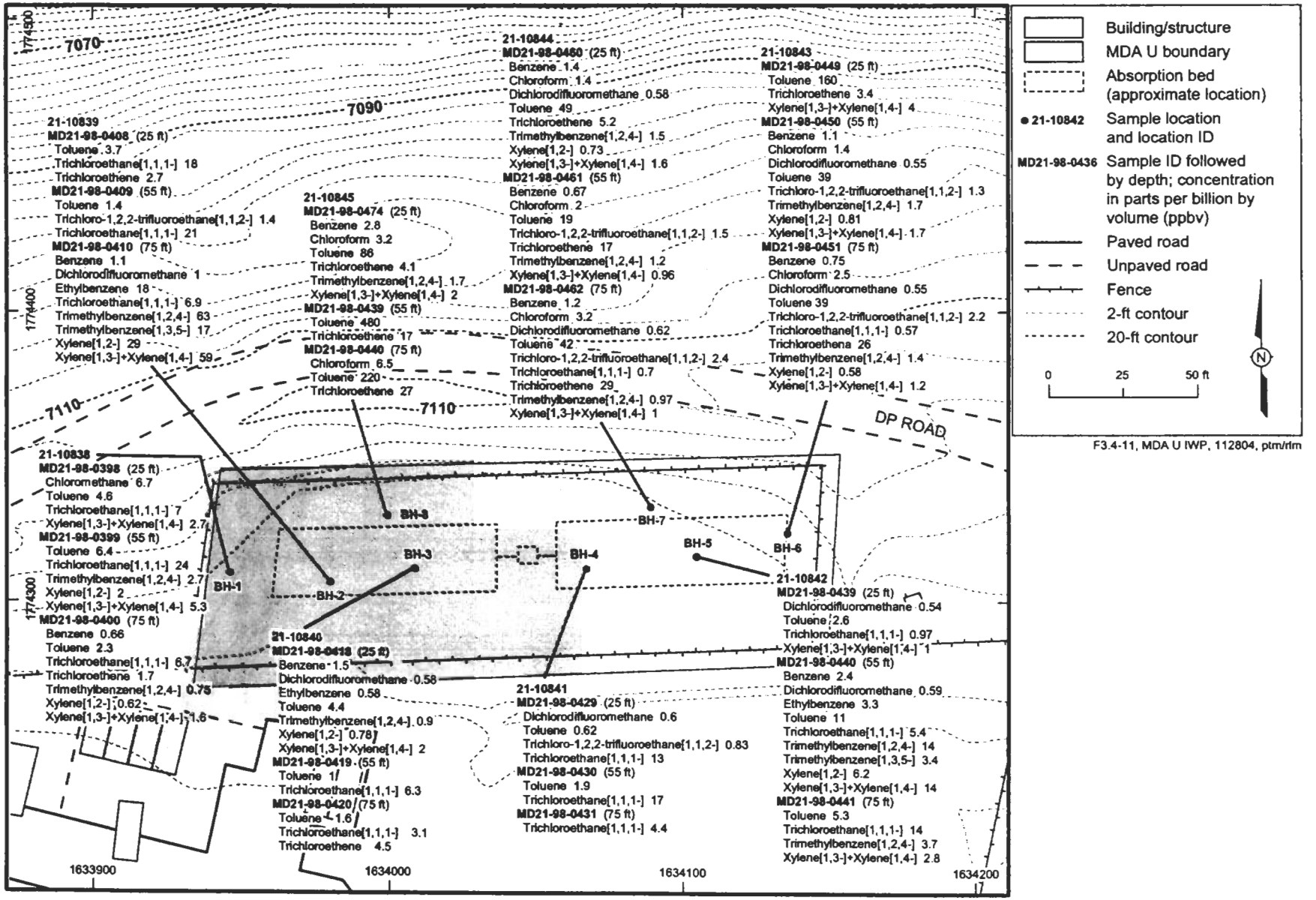


Figure 3.4-11. Detected pore-gas results in 1998 borehole samples

Table 3.1-1
1976 Analytical Results for Gross Alpha at MDA U

Location	Description	Gross Alpha[a] (d/m/g[b])	Gross Alpha[c] (pCi/g)
Group H-7 Analysis (12/12/75)			
1	Soil 0–2 in. (East Pit)	7360	3345
1	Soil 2–4 in. (East Pit)	730	331
2	Muck surface (West Pit)	1990	904
3	Soil surface (outside fence)	12.5	6
4	Soil surface (Drain 2)	7.4	3
5	Water (West Pit)	40	18
6	Water (Drain 2)	148	67
Group H-8 Soil Analyses (12/22/75)			
Location	**Description**	**Gross Alpha[d] (d/m/g)**	**Gross Alpha[c] (pCi/g)**
A	Surface (Drain 1)	<44	<20
B	Surface (same as H-7 Loc. 4)	120	55
C	Surface (same as H-7 Loc. 3)	<44	<20
D	Surface (composite road)	<44	<20
E	Surface (slope)	<44	<20

Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Table 16.6-II, p. 16-219).

[a] Acid leach.

[b] d/m/g = Disintegrations per minute per gram.

[c] Assumes original measurements were properly calibrated to d/m/g.

[d] Direct soil counting with a zinc sulfide gross alpha detection system.

Table 3.1-2
Selected Radionuclide Analyses for 1980 Soil Samples

Location	Depth (cm)	Tritium (pCi/L[a])	Total Uranium (µg/g[b])	Plutonium-239/240 (pCi/g)	Gamma Spectra
Background[c]		7200	3.4	0.023	
U-1	0–1	2700±400	26.1±2.6	tracer swamped	Total U is high enriched with ^{235}U
	1–10	3900±400	25.6±2.6	17.5±0.3	
	10–30	3800±400	10.9±1.1	2.2±0.0	
U-2	0–1	37200±800	7.0±0.7	2.4±0.1	^{227}Ac daughters in great abundance
	1–10	11800±500	6.3±0.6	2.2±0.1	
	10–30	27300±700	4.3±0.5	0.1±0.0	
U-3	0–1	10600±500	4.7±0.5	1.6±0.0	Normal
	1–10	6500±500	4.4±0.5	2.5±0.1	Normal
	10–30	5400±500	4.5±0.5	2.0±0.1	Normal

Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Table 16.6-III, p. 16-220).

[a] pCi/L = picoCuries per liter of soil moisture.

[b] µg/g = microgram per gram of soil.

[c] Upper limit background levels from Purtymun (1987, 06687).

Table 3.1-3
Selected Radionuclide Analyses for 1980 Vegetation Samples

Location	Species	Tritium (pCi/L[a])	Plutonium-239/240 (pCi/g[b])
Background[c]		800	0.00023
U-1	Salix sp. (willow)	7200±400	0.8±0.1
U-2	Pinus pon. (ponderosa)	5800±300	0.6±0.0
	Bromus tec. (downy chess)	-9800±1300	1.1±0.1
U-3	Guttierezia s. (snakeweed)	3300±300	0.2±0.0
	Bromus tec. (downy chess)	-800±300	2.3±0.1
	Artemesia car. (wormwood)	300±300	1.8±0.0

Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Table 16.6-III, p. 16-220).

[a] pCi/L = picoCuries per liter of tissue moisture.

[b] pCi/g = picoCuries per gram of ash.

[c] Upper limit background levels from The Environmental Surveillance Group (1987, 06678).

Table 3.1-4
1983 Vertical Distribution of Selected Radionuclides in Test Holes North of MDA U

Test Hole U-E				Test Hole U-W			
Depth (m)	Tritium (pCi/L)	Total Uranium (µg/g)	Cesium-137 (pCi/g)	Depth (m)/(ft)	Tritium (pCi/L)	Total Uranium (µg/g)	Cesium-137 (pCi/g)
Background*	7200	3.40	1.09	Background*	7200	3.40	1.09
0–0.9	19000±2000	3.79±0.18	0.18±0.07	0–0.9 / 0–2.9	7800±800	4.75±0.18	0.16±0.07
0.9–1.5	11700±1200	3.76±0.18	0.10±0.04	0.9–2.4 / 2.9–7.9	9200±±1000	3.88±0.18	0.01±0.04
1.5–2.4	10100±1000	3.46±0.18	0.09±0.04	2.4–4.0 / 7.9–13	39000±4000	3.70±0.18	0.02±0.07
2.4–4.0	13500±1400	3.75±0.18	0.03±0.03	4.0–5.5 / 13–18	9000±900	3.80±0.18	0.07±0.03
4.0–5.5	10200±1000	3.49±0.18	0.08±0.04	5.5–7.0 / 18–23	9300±1000	3.63±0.18	0.06±0.05
5.5–7.0	17700±1800	3.65±0.18	0.06±0.05	7.0–8.5 / 23–28	8300±900	3.27±0.18	0.10±0.05
7.0–8.5	11100±1100	3.19±0.18	0.04±0.07	8.5–10.1 / 28–33	9600±1000	3.70±0.18	0.02±0.04
8.5–10.1	18100±1800	3.09±0.18	0.02±0.03	10.1–11.6 / 33–38	9300±1000	3.52±0.18	0.06±0.03
10.1–11.6	31000±3000	3.75±0.18	0.06±0.03	11.6–13.1 / 38–43	7100±700	3.51±0.18	0.08±0.04
11.6–13.1	47000±5000	3.41±0.18	0.06±0.03	13.1–14.6 / 43–48	8900±900	3.55±0.18	0.16±0.06
13.1–14.6	66000±7000	3.67±0.18	0.08±0.04	14.6–16.2 / 48–53	11400±1200	3.51±0.18	0.04±0.03
14.6–16.2	78000±8000	3.48±0.18	0.09±0.05	16.2–17.6 / 53–57.8	8900±900	3.11±0.18	0.04±0.03

Source: "TA-21 Operable Unit RFI Work Plan for Environmental Restoration" (LANL 1991, 07529, Table 16.6-IV, p. 16-221).
*Upper limit background levels from Purtymun (1987, 06687).

Table 3.2-1
Summary of RFI Samples Taken at MDA U

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
AAA0191	21-01178	0–0.08	Soil	X[a]	—[b]	—	—	—	—	—	X	X	—	—	X
AAA0192	21-01178	0–0.5	Soil	X	—	—	—	X	—	—	X	X	—	—	X
AAA0193	21-01184	0–0.08	Soil	X	—	—	—	—	X	—	X	X	—	—	X
AAA0194	21-01184	0–0.5	Soil	X	—	—	—	X	X	—	X	X	—	—	X
AAA0195	21-01192	0–0.08	Soil	X	—	—	—	—	X	—	X	X	—	—	X
AAA0196	21-01192	0–0.5	Soil	X	—	—	—	X	—	—	X	X	—	—	X
AAA0197	21-01193	0–0.08	Soil	X	—	—	—	—	X	—	X	X	—	—	X
AAA0198	21-01193	0–0.5	Soil	X	—	—	—	X	—	—	X	X	X	X	X
AAA0199	21-01193	0–0.08	Soil	X	—	—	—	—	X	—	X	X	—	—	X
AAA0391	21-01191	0–0.08	Soil	X	—	—	—	—	—	—	X	X	—	—	X
AAA0395	21-01183	0–0.08	Soil	X	—	—	—	—	X	—	X	X	—	—	X
AAA0396	21-01177	0–0.08	Soil	X	—	—	—	—	—	—	X	X	—	—	X
AAA7519	21-01863	0–0.25	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAA7520	21-01863	0.25–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAA7521	21-01863	0.5–1	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAA7522	21-01864	0–0.25	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAA7523	21-01864	0.25–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAA7524	21-01864	0.5–1	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAA7525	21-01865	0–0.25	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAA7526	21-01865	0.25–0.5	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAA7527	21-01865	0.5–1	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAB7281	21-02570	0–0.25	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAB7282	21-02570	0.25–0.5	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAB7283	21-02570	0.5–1	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAB7284	21-02571	0–0.25	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAB7285	21-02571	0.25–0.5	Sediment	X	—	—	—	X	—	X	X	X	—	—	—
AAB7286	21-02571	0.5–1	Sediment	X	X	—	—	X	—	X	X	X	—	—	—
AAB9750	21-02059	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9751	21-02060	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9752	21-02061	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9753	21-02062	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9754	21-02063	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9755	21-02064	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9756	21-02065	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
AAB9757	21-02066	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9758	21-02067	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9759	21-02068	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9760	21-02069	0–0.25	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9761	21-02070	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9762	21-02071	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9763	21-02072	0–0.5	Soil	X	X	—	—	X	—	X	X	—	—	X	—
AAB9764	21-02073	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9765	21-02074	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9766	21-02075	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9767	21-02076	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9768	21-02077	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9769	21-02078	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9770	21-02079	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9771	21-02080	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9772	21-02081	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9773	21-02082	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9774	21-02083	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9775	21-02084	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9776	21-02085	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9777	21-02086	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9778	21-02087	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9779	21-02088	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9780	21-02089	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9781	21-02090	0–0.25	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9782	21-02091	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9783	21-02092	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9784	21-02093	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9785	21-02094	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9786	21-02095	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9787	21-02096	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9788	21-02097	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9789	21-02098	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9790	21-02099	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9791	21-02100	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
AAB9792	21-02101	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9793	21-02102	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9794	21-02103	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9795	21-02104	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9796	21-02105	0–0.42	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9797	21-02106	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9798	21-02107	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9802	21-02103	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9803	21-02078	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAB9888	21-02577	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9889	21-02578	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9890	21-02579	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAB9891	21-02576	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	X	—
AAC0135	21-02594	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAC0136	21-02595	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAC0137	21-02596	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAC0138	21-02597	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAC0139	21-02598	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAC0140	21-02599	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
AAC0144	21-02599	0–0.5	Soil	X	X	—	—	X	—	X	X	X	—	—	—
MD21-98-0392	21-10838	14–15	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0393	21-10838	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0394	21-10838	0–5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0395	21-10838	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0396	21-10838	64–65	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0397	21-10838	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0398	21-10838	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0399	21-10838	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0400	21-10838	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0402	21-10839	14–15	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0403	21-10839	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0404	21-10839	59–60	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0405	21-10839	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0406	21-10839	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0407	21-10839	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
MD21-98-0408	21-10839	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0409	21-10839	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0410	21-10839	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0412	21-10840	4–5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0413	21-10840	21.5–22.5	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0414	21-10840	11.5–12.5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0415	21-10840	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0416	21-10840	46.5–47.5	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0417	21-10840	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0418	21-10840	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0419	21-10840	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0420	21-10840	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0422	21-10840	64–65	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0423	21-10841	4–5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0424	21-10841	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0425	21-10841	11.5–12.5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0426	21-10841	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0427	21-10841	56.5–57.5	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0428	21-10841	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0429	21-10841	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0430	21-10841	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0431	21-10841	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0433	21-10842	4–5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0434	21-10842	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0435	21-10842	14–15	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0436	21-10842	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0437	21-10842	49–50	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0438	21-10842	26.5–27.5	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0439	21-10842	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0440	21-10842	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0441	21-10842	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0443	21-10843	4–5	Soil	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0444	21-10843	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0445	21-10843	14–15	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0446	21-10843	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
MD21-98-0447	21-10843	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0448	21-10843	54–55	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0449	21-10843	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0450	21-10843	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0451	21-10843	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0453	21-10843	64–65	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0454	21-10844	2.5–5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0455	21-10844	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0456	21-10844	12.5–15	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0457	21-10844	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0458	21-10844	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0459	21-10844	54–55	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0460	21-10844	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0461	21-10844	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0462	21-10844	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0464	21-10844	64–65	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0465	21-10844	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0468	21-10845	4–5	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0469	21-10845	24–25	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0470	21-10845	14–15	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0471	21-10845	34–35	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0472	21-10845	44–45	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0473	21-10845	54–55	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0474	21-10845	25-25	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0475	21-10845	55-55	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0476	21-10845	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0477	21-10845	75-75	Pore Gas	—	—	—	X	—	—	—	—	—	—	—	—
MD21-98-0478	21-10849	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0479	21-10848	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0480	21-10850	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0481	21-10847	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0482	21-10846	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0483	21-10854	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0484	21-10857	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0485	21-10858	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
MD21-98-0486	21-10851	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0487	21-10852	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0488	21-10856	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0489	21-10853	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0490	21-10861	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0491	21-10859	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0492	21-10855	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0493	21-10860	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0494	21-10863	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0495	21-10862	0–0.5	Soil	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0496	21-02571	0–0.5	Sediment	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0497	21-02570	0–0.5	Sediment	—	—	X	—	—	—	X	—	—	—	X	—
MD21-98-0500	21-10864	6–8	Qbt3	—	—	—	—	—	X	X	X	X	—	X	X
MD21-98-0501	21-10865	6–8	Qbt3	—	—	—	—	—	X	X	X	X	—	X	X
MD21-98-0502	21-10866	5–8	Qbt3	—	—	—	—	—	X	X	X	X	—	X	X
MD21-98-0503	21-10867	5–8	Qbt3	—	—	—	—	—	X	X	X	X	—	X	X
MD21-98-0506	21-10838	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0507	21-10838	54–55	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0508	21-10839	2–3	Qbt3	X	—	X	—	X	X	X	X	X	—	X	X
MD21-98-0509	21-10839	51.5–52.5	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0511	21-10840	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0512	21-10841	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0513	21-10841	54–55	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0515	21-10842	71.5–72.5	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0516	21-10843	72.5–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0517	21-10843	72.5–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0519	21-10844	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0520	21-10845	64–65	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-98-0521	21-10845	74–75	Qbt3	X	—	—	—	X	X	X	X	X	—	X	X
MD21-01-0434	21-02083	0–0.5	Soil	X	—	—	—	—	—	—	X	—	—	—	—
MD21-01-0435	21-02099	0–0.5	Soil	X	—	—	—	—	—	—	X	—	—	—	—
MD21-01-0436	21-02101	0–0.5	Soil	X	—	—	—	—	—	—	X	—	—	—	—
MD21-01-0437	21-02594	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0438	21-02595	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0439	21-02596	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
MD21-01-0440	21-02597	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0441	21-02598	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0442	21-02096	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0443	21-02576	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0444	21-02577	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0445	21-02106	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0446	21-02578	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0447	21-02579	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0448	21-02094	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0449	21-02104	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0450	21-02088	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0451	21-02087	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0452	21-02103	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0453	21-02091	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0454	21-02093	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0455	21-02098	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0456	21-02077	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0457	21-02080	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0458	21-02097	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0459	21-02082	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0460	21-02081	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0461	21-02078	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0462	21-02095	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0463	21-02090	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0464	21-02092	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0465	21-02084	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0466	21-02105	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0467	21-02086	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0468	21-02063	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0469	21-02059	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0470	21-02065	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0471	21-02062	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0472	21-02072	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0473	21-02067	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0474	21-02070	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—

Table 3.2-1 (continued)

Sample ID	Location ID	Depth (ft)	Media	Metals	Uranium	PCBs	VOCs	SVOCs	Americium-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Strontium-90
MD21-01-0475	21-02074	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0476	21-02076	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0477	21-02075	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0478	21-02079	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0479	21-02073	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0480	21-02071	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0481	21-02069	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0482	21-02068	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0483	21-02066	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0484	21-02061	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0485	21-02064	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0486	21-02060	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0487	21-02599	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0488	21-02599	0–0.5	Soil	X	—	—	—	—	—	—	—	—	—	—	—
MD21-01-0490	21-02083	0–0.5	Soil	X	—	—	—	—	—	—	X	—	—	—	—
MD21-01-0492	21-01001	0–0.5	Soil	—	—	—	—	—	—	—	X	—	—	—	—
MD21-01-0493	21-01001	0–0.5	Soil	—	—	—	—	—	—	—	X	—	—	—	—
MD21-01-0494	21-11404	3–3.5	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0495	21-11404	3–3.5	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0496	21-11406	5–5	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0497	21-11407	4–4	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0498	21-11408	5–5.5	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0499	21-11409	7–7	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0500	21-11409	7–7	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0501	21-11411	7–7	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0502	21-11412	7–7	Soil	—	—	—	—	—	—	X	X	—	—	X	—
MD21-01-0503	21-11413	7–7	Soil	—	—	—	—	—	—	X	X	—	—	X	—

[a] X = Analysis requested.

[b] — = Analysis not requested.

Table 3.4-1
Frequency of Inorganic Chemicals Detected Above Background Values

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	77	77	3410 to 61400	29200	8/77	0/77
Aluminum	Sediment	9	9	2210 to 7250	15400	0/9	0/9
Aluminum	Qbt3	62	62	220 to 11000	7340	3/62	0/62
Antimony	Soil	76	0	[0.21 to 29.9]	0.83	0/76	12/76
Antimony	Sediment	9	0	[0.21 to 0.27]	0.83	0/9	0/9
Antimony	Qbt3	41	0	[10 to 11]	0.5	0/41	41/41
Arsenic	Soil	77	59	[0.2 to 74.8]	8.17	0/77	3/77
Arsenic	Sediment	9	1	[1.4] to 2.6	3.98	0/9	0/9
Arsenic	Qbt3	62	60	1.1 to 3.9	2.79	5/62	0/62
Barium	Soil	77	77	49 to 527	295	8/77	0/77
Barium	Sediment	9	8	[41.2] to 105	127	0/9	0/9
Barium	Qbt3	62	62	1.6 to 65	46	4/62	0/62
Beryllium	Soil	77	9	[0.11] to 2.4	1.83	8/77	0/77
Beryllium	Sediment	9	0	[0.28 to 0.63]	1.31	0/9	0/9
Beryllium	Qbt3	62	16	[0.5] to 2.3	1.21	3/62	0/62
Cadmium	Soil	77	0	[0.06 to 2]	0.4	0/77	19/77
Cadmium	Sediment	9	0	[0.41 to 0.98]	0.4	0/9	9/9
Cadmium	Qbt3	62	1	[0.5] to 1.2	1.63	0/62	0/62
Calcium	Soil	77	76	1150 to 9500	6120	4/77	0/77
Calcium	Sediment	9	7	[925] to 2000	4420	0/9	0/9
Calcium	Qbt3	62	62	200 to 1900	2200	0/62	0/62
Chromium	Soil	77	76	[3.2] to 77.3	19.3	6/77	0/77
Chromium	Sediment	9	9	4.8 to 53.2	10.5	8/9	0/9
Chromium	Qbt3	62	38	1 to 15	7.14	4/62	0/62
Cobalt	Soil	77	11	[1.6] to 11	8.64	1/77	0/77
Cobalt	Sediment	9	0	[2.2 to 6.7]	4.73	0/9	1/9
Cobalt	Qbt3	62	18	0.69 to 2.6	3.14	0/62	0/62
Copper	Soil	77	30	[1.7] to 84.3	14.7	4/77	0/77
Copper	Sediment	9	0	[1.8 to 5.5]	11.2	0/9	0/9
Copper	Qbt3	57	37	[1] to 8.8	4.66	4/57	0/57
Iron	Soil	77	77	1200 to 19500	21500	0/77	0/77
Iron	Sediment	9	9	3230 to 7900	13800	0/9	0/9
Iron	Qbt3	62	62	860 to 7900	14500	0/62	0/62
Lead	Soil	77	77	4.4 to 47.5	22.3	10/77	0/77
Lead	Sediment	9	9	7.2 to 36	19.7	2/9	0/9
Lead	Qbt3	61	61	2.1 to 22	11.2	7/61	0/61
Lithium	Soil	11	8	21 to [29.9]	N.A.[b]	8/11	n/a[c]

Table 3.4-1 (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
Magnesium	Soil	77	68	[690] to 4200	4610	0/77	0/77
Magnesium	Sediment	9	2	[526] to 1410	2370	0/9	0/9
Magnesium	Qbt3	62	62	64 to 1600	1690	0/62	0/62
Manganese	Soil	77	77	144 to 734	671	1/77	0/77
Manganese	Sediment	9	9	199 to 478	543	0/9	0/9
Manganese	Qbt3	61	61	71 to 610	482	1/61	0/61
Mercury	Soil	114	45	[0.017] to 1.2	0.1	25/114	16/114
Mercury	Qbt3	62	5	[0.1] to 0.24	0.1	5/62	41/62
Molybdenum	Soil	11	0	[4 to 7.5]	N.A.	0/11	n/a
Nickel	Soil	77	15	[2.8] to 27.9	15.4	1/77	0/77
Nickel	Sediment	9	0	[2.2 to 5.2]	9.38	0/9	0/9
Nickel	Qbt3	62	12	[2] to 6.3	6.58	0/62	0/62
Potassium	Soil	77	62	[574] to 28000	3460	8/77	0/77
Potassium	Sediment	9	0	[344 to 896]	2690	0/9	0/9
Potassium	Qbt3	62	62	64 to 1100	3500	0/62	0/62
Selenium	Soil	77	1	[0.2 to 74.8]	1.52	0/77	3/77
Selenium	Sediment	9	0	[0.62 to 0.76]	0.3	0/9	9/9
Selenium	Qbt3	62	0	[0.52 to 1.2]	0.3	0/62	62/62
Silver	Soil	77	1	[0.1 to 3]	1	1/77	10/77
Silver	Sediment	9	0	[2.1 to 2.5]	1	0/9	9/9
Silver	Qbt3	62	0	[2 to 2.4]	1	0/62	62/62
Sodium	Soil	77	17	[0.25] to 19000	915	14/77	0/77
Sodium	Sediment	9	0	[30.2 to 110]	1470	0/9	0/9
Sodium	Qbt3	62	62	61 to 280	2770	0/62	0/62
Strontium	Soil	11	11	11.8 to 151	N.A.	11/11	n/a
Thallium	Soil	77	0	[0.21 to 74.8]	0.73	0/77	26/77
Thallium	Sediment	9	0	[0.21 to 0.25]	0.73	0/9	0/9
Thallium	Qbt3	62	0	[0.25 to 2.2]	1.1	0/62	38/62
Uranium	Soil	76	76	0.957 to 37.5	1.82	50/76	0/76
Uranium	Sediment	8	8	1.11 to 2.69	2.22	1/8	0/8
Vanadium	Soil	77	69	[7.9] to 48	39.6	2/77	0/77
Vanadium	Sediment	9	1	[6.2] to 15.7	19.7	0/9	0/9
Vanadium	Qbt3	62	53	[0.52] to 10	17	0/62	0/62
Zinc	Soil	77	77	18.1 to 509	48.8	19/77	0/77
Zinc	Sediment	9	9	18.5 to 72	60.2	1/9	0/9
Zinc	Qbt3	62	62	9.4 to 73	63.5	1/62	0/62

[a] Brackets indicate detection limits for nondetected results.

[b] N.A. = Not available.

[c] n/a = Not applicable.

Table 3.4-2
Inorganic Chemicals Detected Above Background Values

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt
Soil Background Value[a]				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**
Qbt2,3,4 Background Value[a]				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**
Sediment Background Value[a]				**15400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**
Industrial Soil Screening Levels[b]				**1.0E+5**	**454**	**17.7**	**7.8E+4**	**2250**	**1128**[c]	**n/a**[d]	**450**	**2.03E+4**
AAA0396	21-01177	0–0.08	Soil	—[e]	29.9 (U)[f]	74.8 (U)	—	—	1.5 (U)	—	—	—
AAA0191	21-01178	0–0.08	Soil	52300	6 (U)	—	412	2.3	2 (U)	—	—	11
AAA0192	21-01178	0–0.5	Soil	56800	6 (U)	—	440	2.4	2 (U)	—	—	—
AAA0395	21-01183	0–0.08	Soil	—	25.3 (U)	63.3 (U)	—	—	1.3 (U)	—	—	—
AAA0193	21-01184	0–0.08	Soil	52000	6 (U)	—	383	2.2	2 (U)	—	—	—
AAA0194	21-01184	0–0.5	Soil	60700	6 (U)	—	397	2.3	2 (U)	—	—	—
AAA0391	21-01191	0–0.08	Soil	—	25.3 (U)	63.2 (U)	—	—	1.3 (U)	—	—	—
AAA0195	21-01192	0–0.08	Soil	46800	6 (U)	—	376	2.1	2 (U)	9500	—	—
AAA0196	21-01192	0–0.5	Soil	53100	6 (U)	—	348	2.2	2 (U)	7100	—	—
AAA0197	21-01193	0–0.08	Soil	58500	6 (U)	—	497	2.3	2 (U)	—	20	—
AAA0198	21-01193	0–0.5	Soil	61400	6 (U)	—	527	2.4	2 (U)	—	22	—
AAA0199	21-01193	0–0.08	Soil	57300	6 (U)	—	466	2.3	2 (U)	—	—	—
AAA7519	21-01863	0–0.25	Soil	—	—	—	—	—	0.75 (U)	—	—	—
AAA7520	21-01863	0.25–0.5	Soil	—	—	—	—	—	0.43 (U)	—	—	—
AAA7521	21-01863	0.5–1	Soil	—	—	—	—	—	0.5 (U)	—	28.6 (J)[g]	—
AAA7522	21-01864	0–0.25	Soil	—	—	—	—	—	0.79 (U)	—	—	—
AAA7523	21-01864	0.25–0.5	Soil	—	—	—	—	—	0.54 (U)	—	—	—
AAA7524	21-01864	0.5–1	Soil	—	—	—	—	—	0.52 (U)	—	—	—
AAA7525	21-01865	0–0.25	Sediment	—	—	—	—	—	0.46 (U)	—	53.2 (J)	—
AAA7526	21-01865	0.25–0.5	Sediment	—	—	—	—	—	0.52 (U)	—	26.9 (J)	—
AAA7527	21-01865	0.5–1	Sediment	—	—	—	—	—	0.41 (U)	—	17.9 (J)	—
AAB9750	21-02059	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9751	21-02060	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9752	21-02061	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9753	21-02062	0–0.5	Soil	—	—	—	—	—	—	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**
Qbt2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**
Industrial Soil Screening Level				**1.0E+5**	**454**	**17.7**	**7.8E+4**	**2250**	**1128[c]**	**n/a**	**450**	**2.0E+4**
AAB9754	21-02063	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9755	21-02064	0–0.5	Soil	—	—	—	—	—	—	6650	—	—
AAB9756	21-02065	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9757	21-02066	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9758	21-02067	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9759	21-02068	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9760	21-02069	0–0.25	Soil	—	—	—	—	—	—	—	—	—
AAB9761	21-02070	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9762	21-02071	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9763	21-02072	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9764	21-02073	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9765	21-02074	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9766	21-02075	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9767	21-02076	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9768	21-02077	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9769	21-02078	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9803[j]	21-02078	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9770	21-02079	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9771	21-02080	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9772	21-02081	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9773	21-02082	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9774	21-02083	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9775	21-02084	0–0.5	Soil	—	—	—	—	—	—	—	77.3 (J)	—
AAB9776	21-02085	0–0.5	Soil	—	0.87 (U)	—	—	—	—	—	—	—
AAB9777	21-02086	0–0.5	Soil	—	—	—	—	—	0.43 (U)	—	29.7 (J)	—
AAB9778	21-02087	0–0.5	Soil	—	—	—	—	—	—	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**
Qbt2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**
Industrial Soil Screening Level				**1.0E+5**	**454**	**17.7**	**7.8E+4**	**2250**	**1128[c]**	**n/a**	**450**	**2.0E+4**
AAB9779	21-02088	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9780	21-02089	0–0.5	Soil	—	—	—	—	—	—	—	29.5 (J)	—
AAB9781	21-02090	0–0.25	Soil	—	—	—	—	—	—	—	—	—
AAB9782	21-02091	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9783	21-02092	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9784	21-02093	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9785	21-02094	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9786	21-02095	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9787	21-02096	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9788	21-02097	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9789	21-02098	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9790	21-02099	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9791	21-02100	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9792	21-02101	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9794	21-02103	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9802[j]	21-02103	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9795	21-02104	0–0.5	Soil	—	—	—	—	—	—	7440	—	—
AAB9796	21-02105	0–0.42	Soil	—	—	—	—	—	—	—	—	—
AAB9797	21-02106	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB9798	21-02107	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAB7281	21-02570	0–0.25	Sediment	—	—	—	—	—	0.67 (U)	—	13.1 (J)	—
AAB7282	21-02570	0.25–0.5	Sediment	—	—	—	—	—	0.81 (U)	—	14 (J)	—
AAB7283	21-02570	0.5–1	Sediment	—	—	—	—	—	0.98 (U)	—	21.3 (J)	—
AAB7284	21-02571	0–0.25	Sediment	—	—	—	—	—	0.65 (U)	—	—	6.7 (U)
AAB7285	21-02571	0.25–0.5	Sediment	—	—	—	—	—	0.42 (U)	—	12.7 (J)	—
AAB7286	21-02571	0.5–1	Sediment	—	—	—	—	—	0.74 (U)	—	34.3 (J)	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**
Qbt2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**
Industrial Soil Screening Level				**1.0E+5**	**454**	**17.7**	**7.8E+4**	**2250**	**1128[c]**	**n/a**	**450**	**2.0E+4**
AAB9888	21-02577	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0135	21-02594	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0136	21-02595	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0137	21-02596	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0138	21-02597	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0139	21-02598	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0140	21-02599	0–0.5	Soil	—	—	—	—	—	—	—	—	—
AAC0144[j]	21-02599	0–0.5	Soil	—	—	—	—	—	—	—	—	—
MD21-98-0394	21-10838	0–5	Qbt3	—	—	2.9	—	—	—	—	13	—
MD21-98-0392	21-10838	14–15	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0395	21-10838	24–25	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0393	21-10838	34–35	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0397	21-10838	44–45	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0507	21-10838	54–55	Qbt3	—	—	—	48	1.7	—	—	—	—
MD21-98-0396	21-10838	64–65	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0506	21-10838	74–75	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0508	21-10839	2–3	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0402	21-10839	14–15	Qbt3	—	10 (U)	—	—	—	—	—	—	—
MD21-98-0403	21-10839	24–25	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0405	21-10839	34–35	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0406	21-10839	44–45	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0509	21-10839	51.5–52.5	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0404	21-10839	59–60	Qbt3	11000	11 (U)	2.9	58	1.3	—	—	—	—
MD21-98-0407	21-10839	74–75	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0412	21-10840	4–5	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0414	21-10840	11.5–12.5	Qbt3	—	11 (U)	—	—	—	—	—	8.2	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt
Soil Background Value				**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**
Qbt2,3,4 Background Value				**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**	**3.14**
Sediment Background Value				**15400**	**0.83**	**3.98**	**127**	**1.31**	**0.4**	**4420**	**10.5**	**4.73**
Industrial Soil Screening Level				**1.0E+5**	**454**	**17.7**	**7.8E+4**	**2250**	**1128[c]**	**n/a**	**450**	**2.0E+4**
MD21-98-0413	21-10840	21.5–22.5	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0415	21-10840	34–35	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0417	21-10840	44–45	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0416	21-10840	46.5–47.5	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0422	21-10840	64–65	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0511	21-10840	74–75	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0423	21-10841	4–5	Qbt3	—	10 (U)	—	—	—	—	—	—	—
MD21-98-0425	21-10841	11.5–12.5	Qbt3	—	10 (U)	—	—	—	—	—	—	—
MD21-98-0424	21-10841	24–25	Qbt3	—	10 (U)	—	—	—	—	—	—	—
MD21-98-0426	21-10841	34–35	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0428	21-10841	44–45	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0513	21-10841	54–55	Qbt3	—	11 (U)	3.9	—	—	—	—	—	—
MD21-98-0427	21-10841	56.5–57.5	Qbt3	—	11 (U)	3.3	—	—	—	—	—	—
MD21-98-0512	21-10841	74–75	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0433	21-10842	4–5	Qbt3	—	11 (UJ)[n]	—	—	—	—	—	—	—
MD21-98-0435	21-10842	14–15	Qbt3	—	10 (UJ)	—	—	—	—	—	—	—
MD21-98-0434	21-10842	24–25	Qbt3	—	10 (UJ)	—	—	—	—	—	—	—
MD21-98-0438	21-10842	26.5–27.5	Qbt3	—	10 (UJ)	—	—	—	—	—	—	—
MD21-98-0436	21-10842	44–45	Qbt3	—	11 (UJ)	—	—	—	—	—	—	—
MD21-98-0437	21-10842	49–50	Qbt3	10000	11 (UJ)	—	65	2.3	—	—	—	—
MD21-98-0515	21-10842	71.5–72.5	Qbt3	—	11 (UJ)	—	—	—	—	—	—	—
MD21-98-0443	21-10843	4–5	Soil	—	—	—	—	—	0.56 (U)	—	—	—
MD21-98-0445	21-10843	14–15	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0444	21-10843	24–25	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0446	21-10843	34–35	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0447	21-10843	44–45	Qbt3	—	—	—	—	—	—	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt
Soil Background Value				29200	0.83	8.17	295	1.83	0.4	6120	19.3	8.64
Qbt2,3,4 Background Value				7340	0.5	2.79	46	1.21	1.63	2200	7.14	3.14
Sediment Background Value				15400	0.83	3.98	127	1.31	0.4	4420	10.5	4.73
Industrial Soil Screening Level				1.0E+5	454	17.7	7.8E+4	2250	1128[c]	n/a	450	2.0E+4
MD21-98-0448	21-10843	54–55	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0453	21-10843	64–65	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0516	21-10843	72.5–75	Qbt3	—	10 (U)	—	—	—	—	—	—	—
MD21-98-0517[j]	21-10843	72.5–75	Qbt3	—	10 (U)	—	—	—	—	—	—	—
MD21-98-0454	21-10844	2.5–5	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0456	21-10844	12.5–15	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0455	21-10844	24–25	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0457	21-10844	34–35	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0458	21-10844	44–45	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0459	21-10844	54–55	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0464	21-10844	64–65	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0465[c]	21-10844	74–75	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0519	21-10844	74–75	Qbt3	—	—	—	—	—	—	—	—	—
MD21-98-0468	21-10845	4–5	Qbt3	8700	11 (U)	3.7	62	—	—	—	15	—
MD21-98-0470	21-10845	14–15	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0469	21-10845	24–25	Qbt3	—	11 (U)	—	—	—	—	—	8.9	—
MD21-98-0471	21-10845	34–35	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0472	21-10845	44–45	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0473	21-10845	54–55	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0520	21-10845	64–65	Qbt3	—	11 (U)	—	—	—	—	—	—	—
MD21-98-0521	21-10845	74–75	Qbt3	—	11 (U)	—	—	—	—	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Soil Background Value				**14.7**	**22.3**	**N.A.**	**671**	**0.1**	**N.A.**	**15.4**	**3460**
Qbt2,3,4 Background Value				**4.66**	**11.2**	**N.A.**	**482**	**0.1**	**N.A.**	**6.58**	**3500**
Sediment Background Value				**11.2**	**19.7**	**N.A.**	**543**	**0.1**	**N.A.**	**9.38**	**2690**
Industrial Soil Screening Level				**4.54E+4**	**750**	**2.30E+4**	**2.18E+4**	**341**	**5680**	**2.25E+4**	**n/a**
AAA0396	21-01177	0–0.08	Soil	—	—	29.9 (U)	—	—	7.5 (U)	—	—
AAA0191	21-01178	0–0.08	Soil	—	—	24	—	—	4 (U)	—	24200
AAA0192	21-01178	0–0.5	Soil	—	—	26	—	—	4 (U)	—	24900
AAA0395	21-01183	0–0.08	Soil	—	25.2	25.3 (U)	—	—	6.3 (U)	—	—
AAA0193	21-01184	0–0.08	Soil	—	—	22	—	—	4 (U)	—	24400
AAA0194	21-01184	0–0.5	Soil	—	—	25	—	—	4 (U)	—	28000
AAA0391	21-01191	0–0.08	Soil	—	26.7	25.3 (U)	—	—	6.3 (U)	—	—
AAA0195	21-01192	0–0.08	Soil	15	37	21	734	—	4 (U)	—	21600
AAA0196	21-01192	0–0.5	Soil	—	—	23	—	—	4 (U)	—	25500
AAA0197	21-01193	0–0.08	Soil	—	—	26	—	—	4 (U)	—	22800
AAA0198	21-01193	0–0.5	Soil	16	—	27	—	—	4 (U)	—	23800
AAA0199	21-01193	0–0.08	Soil	—	—	25	—	—	4 (U)	—	22800
AAA7519	21-01863	0–0.25	Soil	—	—	—	—	—	—	—	—
AAA7520	21-01863	0.25–0.5	Soil	—	—	—	—	—	—	—	—
AAA7521	21-01863	0.5–1	Soil	18.4	—	—	—	—	—	—	—
AAA7522	21-01864	0–0.25	Soil	—	—	—	—	—	—	—	—
AAA7523	21-01864	0.25–0.5	Soil	—	—	—	—	—	—	—	—
AAA7524	21-01864	0.5–1	Soil	—	—	—	—	—	—	—	—
AAA7525	21-01865	0–0.25	Sediment	—	28.1	—	—	—	—	—	—
AAA7526	21-01865	0.25–0.5	Sediment	—	—	—	—	—	—	—	—
AAA7527	21-01865	0.5–1	Sediment	—	—	—	—	—	—	—	—
AAB9750	21-02059	0–0.5	Soil	—	22.5	—	—	—	—	—	—
AAB9751	21-02060	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9752	21-02061	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9753	21-02062	0–0.5	Soil	—	—	—	—	1.2 (J)	—	—	—
AAB9754	21-02063	0–0.5	Soil	—	23.6	—	—	0.11 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Soil Background Value				**14.7**	**22.3**	**N.A.[1]**	**671**	**0.1**	**N.A.**	**15.4**	**3460**
Qbt2,3,4 Background Value				**4.66**	**11.2**	**N.A.**	**482**	**0.1**	**N.A.**	**6.58**	**3500**
Sediment Background Value				**11.2**	**19.7**	**N.A.**	**543**	**0.1**	**N.A.**	**9.38**	**2690**
Industrial Soil Screening Level				**4.54E+4**	**750**	**2.30E+4**	**2.18E+4**	**341**	**5680**	**2.25E+4**	**n/a**
AAB9755	21-02064	0–0.5	Soil	—	47.5	—	—	0.13 (U)	—	—	—
AAB9756	21-02065	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9757	21-02066	0–0.5	Soil	—	24.4	—	—	0.11 (U)	—	—	—
AAB9758	21-02067	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9759	21-02068	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9760	21-02069	0–0.25	Soil	—	30.6	—	—	0.12 (U)	—	—	—
AAB9761	21-02070	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9762	21-02071	0–0.5	Soil	—	23.6	—	—	0.11 (U)	—	—	—
AAB9763	21-02072	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9764	21-02073	0–0.5	Soil	—	—	—	—	0.75	—	—	—
AAB9765	21-02074	0–0.5	Soil	—	—	—	—	0.12 (U)	—	—	—
AAB9766	21-02075	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9767	21-02076	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9768	21-02077	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9769	21-02078	0–0.5	Soil	—	—	—	—	0.24 (J)	—	—	—
AAB9803[1]	21-02078	0–0.5	Soil	—	—	—	—	0.31 (J)	—	—	—
AAB9770	21-02079	0–0.5	Soil	—	—	—	—	0.26 (J)	—	—	—
AAB9771	21-02080	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9772	21-02081	0–0.5	Soil	—	—	—	—	0.41 (J)	—	—	—
AAB9773	21-02082	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9774	21-02083	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9775	21-02084	0–0.5	Soil	—	—	—	—	0.74 (J)	—	—	—
AAB9776	21-02085	0–0.5	Soil	—	28.3	—	—	0.46 (J)	—	—	—
AAB9777	21-02086	0–0.5	Soil	84.3	—	—	—	0.39 (J)	—	—	—
AAB9778	21-02087	0–0.5	Soil	—	—	—	—	0.28 (J)	—	—	—
AAB9779	21-02088	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Soil Background Value				**14.7**	**22.3**	**N.A.[1]**	**671**	**0.1**	**N.A.**	**15.4**	**3460**
Qbt2,3,4 Background Value				**4.66**	**11.2**	**N.A.**	**482**	**0.1**	**N.A.**	**6.58**	**3500**
Sediment Background Value				**11.2**	**19.7**	**N.A.**	**543**	**0.1**	**N.A.**	**9.38**	**2690**
Industrial Soil Screening Level				**4.54E+4**	**750**	**2.30E+4**	**2.18E+4**	**341**	**5680**	**2.25E+4**	**n/a**
AAB9780	21-02089	0–0.5	Soil	—	—	—	—	0.25 (J)	—	—	—
AAB9781	21-02090	0–0.25	Soil	—	—	—	—	0.31 (J)	—	—	—
AAB9782	21-02091	0–0.5	Soil	—	—	—	—	0.31 (J)	—	—	—
AAB9783	21-02092	0–0.5	Soil	—	—	—	—	0.63 (J)	—	—	—
AAB9784	21-02093	0–0.5	Soil	—	—	—	—	0.49 (J)	—	—	—
AAB9785	21-02094	0–0.5	Soil	—	—	—	—	0.53 (J)	—	—	—
AAB9786	21-02095	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9787	21-02096	0–0.5	Soil	—	—	—	—	0.33 (J)	—	—	—
AAB9788	21-02097	0–0.5	Soil	—	—	—	—	0.43 (J)	—	—	—
AAB9789	21-02098	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9790	21-02099	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9791	21-02100	0–0.5	Soil	—	—	—	—	0.24 (J)	—	—	—
AAB9792	21-02101	0–0.5	Soil	—	—	—	—	0.24 (J)	—	27.9 (J)	—
AAB9794	21-02103	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9802	21-02103	0–0.5	Soil	—	—	—	—	0.11 (U)	—	—	—
AAB9795	21-02104	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9796	21-02105	0–0.42	Soil	—	—	—	—	0.65 (J)	—	—	—
AAB9797	21-02106	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9798	21-02107	0–0.5	Soil	—	—	—	—	0.48 (J)	—	—	—
AAB7281	21-02570	0–0.25	Sediment	—	—	—	—	—	—	—	—
AAB7282	21-02570	0.25–0.5	Sediment	—	—	—	—	—	—	—	—
AAB7283	21-02570	0.5–1	Sediment	—	—	—	—	—	—	—	—
AAB7284	21-02571	0–0.25	Sediment	—	—	—	—	—	—	—	—
AAB7285	21-02571	0.25–0.5	Sediment	—	36	—	—	—	—	—	—
AAB7286	21-02571	0.5–1	Sediment	—	—	—	—	—	—	—	—
AAB9888	21-02577	0–0.5	Soil	—	—	—	—	0.43 (J)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Soil Background Value				**14.7**	**22.3**	**N.A.[1]**	**671**	**0.1**	**N.A.**	**15.4**	**3460**
Qbt2,3,4 Background Value				**4.66**	**11.2**	**N.A.**	**482**	**0.1**	**N.A.**	**6.58**	**3500**
Sediment Background Value				**11.2**	**19.7**	**N.A.**	**543**	**0.1**	**N.A.**	**9.38**	**2690**
Industrial Soil Screening Level				**4.54E+4**	**750**	**2.30E+4**	**2.18E+4**	**341**	**5680**	**2.25E+4**	**n/a**
AAC0135	21-02594	0–0.5	Soil	—	—	—	—	—	—	—	—
AAC0136	21-02595	0–0.5	Soil	—	—	—	—	—	—	—	—
AAC0137	21-02596	0–0.5	Soil	—	—	—	—	0.27 (J)	—	—	—
AAC0138	21-02597	0–0.5	Soil	—	—	—	—	0.11 (J)	—	—	—
AAC0139	21-02598	0–0.5	Soil	—	—	—	—	0.25 (J)	—	—	—
AAC0140	21-02599	0–0.5	Soil	—	—	—	—	—	—	—	—
AAC0144	21-02599	0–0.5	Soil	—	—	—	—	—	—	—	—
MD21-98-0394	21-10838	0–5	Qbt3	8.8	—	—	—	—	—	—	—
MD21-98-0392	21-10838	14–15	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0395	21-10838	24–25	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0393	21-10838	34–35	Qbt3	—	12	—	—	0.11 (U)	—	—	—
MD21-98-0397	21-10838	44–45	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0507	21-10838	54–55	Qbt3	—	12	—	—	0.12 (U)	—	—	—
MD21-98-0396	21-10838	64–65	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0506	21-10838	74–75	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0508	21-10839	2–3	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0402	21-10839	14–15	Qbt3	—	—	—	610	—	—	—	—
MD21-98-0403	21-10839	24–25	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0405	21-10839	34–35	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0406	21-10839	44–45	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0509	21-10839	51.5–52.5	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0404	21-10839	59–60	Qbt3	4.9	—	—	—	0.11 (U)	—	—	—
MD21-98-0407	21-10839	74–75	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0412	21-10840	4–5	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0414	21-10840	11.5–12.5	Qbt3	—	21	—	—	0.11 (U)	—	—	—
MD21-98-0413	21-10840	21.5–22.5	Qbt3	—	—	—	—	0.11 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Soil Background Value				**14.7**	**22.3**	**N.A.[1]**	**671**	**0.1**	**N.A.**	**15.4**	**3460**
Qbt2,3,4 Background Value				**4.66**	**11.2**	**N.A.**	**482**	**0.1**	**N.A.**	**6.58**	**3500**
Sediment Background Value				**11.2**	**19.7**	**N.A.**	**543**	**0.1**	**N.A.**	**9.38**	**2690**
Industrial Soil Screening Level				**4.54E+4**	**750**	**2.30E+4**	**2.18E+4**	**341**	**5680**	**2.25E+4**	**n/a**
MD21-98-0415	21-10840	34–35	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0417	21-10840	44–45	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0416	21-10840	46.5–47.5	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0422	21-10840	64–65	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0511	21-10840	74–75	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0423	21-10841	4–5	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0425	21-10841	11.5–12.5	Qbt3	—	—	—	—	0.24	—	—	—
MD21-98-0424	21-10841	24–25	Qbt3	—	—	—	—	0.14	—	—	—
MD21-98-0426	21-10841	34–35	Qbt3	—	—	—	—	0.16	—	—	—
MD21-98-0428	21-10841	44–45	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0513	21-10841	54–55	Qbt3	—	—	—	—	0.14	—	—	—
MD21-98-0427	21-10841	56.5–57.5	Qbt3	—	—	—	—	0.16	—	—	—
MD21-98-0512	21-10841	74–75	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0433	21-10842	4–5	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0435	21-10842	14–15	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0434	21-10842	24–25	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0438	21-10842	26.5–27.5	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0436	21-10842	44–45	Qbt3	—	14	—	—	0.11 (U)	—	—	—
MD21-98-0437	21-10842	49–50	Qbt3	7.6	14	—	—	0.11 (U)	—	—	—
MD21-98-0515	21-10842	71.5–72.5	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0443	21-10843	4–5	Soil	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0445	21-10843	14–15	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0444	21-10843	24–25	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0446	21-10843	34–35	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0447	21-10843	44–45	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0448	21-10843	54–55	Qbt3	—	—	—	—	0.11 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Copper	Lead	Lithium	Manganese	Mercury	Molybdenum	Nickel	Potassium
Soil Background Value				**14.7**	**22.3**	**N.A.**	**671**	**0.1**	**N.A.**	**15.4**	**3460**
Qbt2,3,4 Background Value				**4.66**	**11.2**	**N.A.**	**482**	**0.1**	**N.A.**	**6.58**	**3500**
Sediment Background Value				**11.2**	**19.7**	**N.A.**	**543**	**0.1**	**N.A.**	**9.38**	**2690**
Industrial Soil Screening Level				**4.54E+4**	**750**	**2.30E+4**	**2.18E+4**	**341**	**5680**	**2.25E+4**	**n/a**
MD21-98-0453	21-10843	64–65	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0516	21-10843	72.5–75	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0517[J]	21-10843	72.5–75	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0454	21-10844	2.5–5	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0456	21-10844	12.5–15	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0455	21-10844	24–25	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0457	21-10844	34–35	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0458	21-10844	44–45	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0459	21-10844	54–55	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0464	21-10844	64–65	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0465[J]	21-10844	74–75	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0519	21-10844	74–75	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0468	21-10845	4–5	Qbt3	4.8	—	—	—	0.11 (U)	—	—	—
MD21-98-0470	21-10845	14–15	Qbt3	—	13	—	—	0.11 (U)	—	—	—
MD21-98-0469	21-10845	24–25	Qbt3	—	22	—	—	0.11 (U)	—	—	—
MD21-98-0471	21-10845	34–35	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0472	21-10845	44–45	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0473	21-10845	54–55	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0520	21-10845	64–65	Qbt3	—	—	—	—	0.11 (U)	—	—	—
MD21-98-0521	21-10845	74–75	Qbt3	—	—	—	—	0.11 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
AAA0396	21-01177	0–0.08	Soil	74.8 (U)	3 (U)	—	25.3	74.8 (U)	5.1	—	—
AAA0191	21-01178	0–0.08	Soil	—	—	15400	123	20 (U)	5.11	—	—
AAA0192	21-01178	0–0.5	Soil	—	1.2	15800	127	20 (U)	4.77	—	—
AAA0395	21-01183	0–0.08	Soil	63.3 (U)	2.5 (U)	—	15.5	63.3 (U)	4.9	—	—
AAA0193	21-01184	0–0.08	Soil	—	—	16200	114	20 (U)	5.2	—	—
AAA0194	21-01184	0–0.5	Soil	—	—	19000	109	20 (U)	4.19	—	—
AAA0391	21-01191	0–0.08	Soil	63.2 (U)	2.5 (U)	—	11.8	63.2 (U)	5.1	—	—
AAA0195	21-01192	0–0.08	Soil	—	—	14000	123	20 (U)	7.21	—	52
AAA0196	21-01192	0–0.5	Soil	—	—	17800	114	20 (U)	4.14	—	—
AAA0197	21-01193	0–0.08	Soil	—	—	13900	142	20 (U)	3.75	45	57
AAA0198	21-01193	0–0.5	Soil	—	—	14300	151	20 (U)	3.72	48	—
AAA0199	21-01193	0–0.08	Soil	—	—	14200	134	20 (U)	3.65	42	58
AAA7519	21-01863	0–0.25	Soil	—	2.4 (U)	—	—	—	—	—	—
AAA7520	21-01863	0.25–0.5	Soil	—	2.2 (U)	—	—	—	—	—	—
AAA7521	21-01863	0.5–1	Soil	—	2.1 (U)	—	—	—	—	—	—
AAA7522	21-01864	0–0.25	Soil	—	2.4 (U)	—	—	—	—	—	—
AAA7523	21-01864	0.25–0.5	Soil	—	2.2 (U)	—	—	—	—	—	—
AAA7524	21-01864	0.5–1	Soil	—	2.1 (U)	—	—	—	1.95 (J)	—	—
AAA7525	21-01865	0–0.25	Sediment	0.69 (U)	2.3 (U)	—	—	—	—	—	—
AAA7526	21-01865	0.25–0.5	Sediment	0.67 (U)	2.2 (U)	—	—	—	—	—	—
AAA7527	21-01865	0.5–1	Sediment	0.62 (U)	2.1 (U)	—	—	—	—	—	—
AAB9750	21-02059	0–0.5	Soil	—	—	—	—	—	2.93 (J)	—	—
AAB9751	21-02060	0–0.5	Soil	—	—	—	—	—	1.97 (J)	—	—
AAB9752	21-02061	0–0.5	Soil	—	—	—	—	—	1.88 (J)	—	—
AAB9753	21-02062	0–0.5	Soil	—	—	—	—	—	2.1 (J)	—	—
AAB9754	21-02063	0–0.5	Soil	—	—	—	—	—	3.16 (J)	—	54.1

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
AAB9755	21-02064	0–0.5	Soil	—	—	—	—	0.78 (U)	3.7 (J)	—	66.2
AAB9756	21-02065	0–0.5	Soil	—	—	—	—	—	3.06 (J)	—	—
AAB9757	21-02066	0–0.5	Soil	—	—	—	—	0.76 (U)	2.2 (J)	—	—
AAB9758	21-02067	0–0.5	Soil	—	—	—	—	0.77 (U)	—	—	—
AAB9759	21-02068	0–0.5	Soil	—	—	—	—	—	2.84 (J)	—	—
AAB9760	21-02069	0–0.25	Soil	—	—	—	—	0.86 (U)	5.8 (J)	—	52.5
AAB9761	21-02070	0–0.5	Soil	—	—	—	—	—	2.91 (J)	—	—
AAB9762	21-02071	0–0.5	Soil	—	—	—	—	—	2.01 (J)	—	—
AAB9763	21-02072	0–0.5	Soil	—	—	—	—	0.75 (U)	7.5 (J)	—	—
AAB9764	21-02073	0–0.5	Soil	—	—	—	—	1.1 (U)	—	—	—
AAB9765	21-02074	0–0.5	Soil	—	—	—	—	0.74 (U)	2.11 (J)	—	—
AAB9766	21-02075	0–0.5	Soil	—	—	—	—	—	1.93 (J)	—	—
AAB9767	21-02076	0–0.5	Soil	—	—	—	—	—	1.86 (J)	—	—
AAB9768	21-02077	0–0.5	Soil	—	—	—	—	—	3.4 (J)	—	—
AAB9769	21-02078	0–0.5	Soil	—	—	—	—	—	2.22 (J)	—	—
AAB9803	21-02078	0–0.5	Soil	—	—	—	—	—	2.37 (J)	—	—
AAB9770	21-02079	0–0.5	Soil	—	—	—	—	—	2.16 (J)	—	—
AAB9771	21-02080	0–0.5	Soil	—	—	—	—	—	2.23 (J)	—	68.5
AAB9772	21-02081	0–0.5	Soil	—	—	—	—	—	2.21 (J)	—	—
AAB9773	21-02082	0–0.5	Soil	—	—	—	—	—	2.12 (J)	—	—
AAB9774	21-02083	0–0.5	Soil	—	—	—	—	—	1.83 (J)	—	59.8
AAB9775	21-02084	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9776	21-02085	0–0.5	Soil	—	—	—	—	0.81 (U)	2.15 (J)	—	58.2
AAB9777	21-02086	0–0.5	Soil	—	—	—	—	—	1.94	—	56.7
AAB9778	21-02087	0–0.5	Soil	—	—	—	—	—	37.5	—	—
AAB9779	21-02088	0–0.5	Soil	—	—	—	—	—	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
AAB9780	21-02089	0–0.5	Soil	—	—	—	—	—	2.96	—	404
AAB9781	21-02090	0–0.25	Soil	—	—	—	—	—	—	—	—
AAB9782	21-02091	0–0.5	Soil	—	—	—	—	—	2.09 (J)	—	53.2
AAB9783	21-02092	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9784	21-02093	0–0.5	Soil	—	—	—	—	—	8.96	—	—
AAB9785	21-02094	0–0.5	Soil	—	—	—	—	—	—	—	73.2
AAB9786	21-02095	0–0.5	Soil	—	—	—	—	—	2.02 (J)	—	—
AAB9787	21-02096	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9788	21-02097	0–0.5	Soil	—	—	—	—	—	2.11 (J)	—	64
AAB9789	21-02098	0–0.5	Soil	—	—	—	—	—	—	—	53.7
AAB9790	21-02099	0–0.5	Soil	—	—	—	—	—	2.02 (J)	—	509
AAB9791	21-02100	0–0.5	Soil	—	—	—	—	—	9.14	—	—
AAB9792	21-02101	0–0.5	Soil	—	—	—	—	—	18.1	—	146
AAB9794	21-02103	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9802	21-02103	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9795	21-02104	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9796	21-02105	0–0.42	Soil	—	—	—	—	—	1.95 (J)	—	—
AAB9797	21-02106	0–0.5	Soil	—	—	—	—	—	1.9 (J)	—	—
AAB9798	21-02107	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB7281	21-02570	0–0.25	Sediment	0.7 (U)	2.3 (U)	—	—	—	—	—	—
AAB7282	21-02570	0.25–0.5	Sediment	0.67 (U)	2.2 (U)	—	—	—	—	—	—
AAB7283	21-02570	0.5–1	Sediment	0.65 (U)	2.2 (U)	—	—	—	—	—	—
AAB7284	21-02571	0–0.25	Sediment	0.67 (U)	2.2 (U)	—	—	—	2.69 (J)	—	—
AAB7285	21-02571	0.25–0.5	Sediment	0.63 (U)	2.1 (U)	—	—	—	—	—	72
AAB7286	21-02571	0.5–1	Sediment	0.76 (U)	2.5 (U)	—	—	—	—	—	—
AAB9888	21-02577	0–0.5	Soil	—	—	—	—	—	2.03 (J)	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
AAC0135	21-02594	0–0.5	Soil	—	—	1460 (J)	—	0.84 (U)	—	—	—
AAC0136	21-02595	0–0.5	Soil	—	—	1550 (J)	—	0.85 (U)	2.05 (J)	—	90.6
AAC0137	21-02596	0–0.5	Soil	—	—	1100 (J)	—	0.84 (U)	—	—	109
AAC0138	21-02597	0–0.5	Soil	—	—	1670 (J)	—	0.86 (U)	—	—	—
AAC0139	21-02598	0–0.5	Soil	—	—	1680 (J)	—	0.85 (U)	—	—	57.2
AAC0140	21-02599	0–0.5	Soil	—	—	1480 (J)	—	0.89 (U)	—	—	—
AAC0144[1]	21-02599	0–0.5	Soil	—	—	1370 (J)	—	0.86 (U)	—	—	—
MD21-98-0394	21-10838	0–5	Qbt3	0.52 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0392	21-10838	14–15	Qbt3	1 (U)	2 (U)	—	—	—	—	—	—
MD21-98-0395	21-10838	24–25	Qbt3	1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0393	21-10838	34–35	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	73
MD21-98-0397	21-10838	44–45	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0507	21-10838	54–55	Qbt3	1.2 (U)	2.4 (U)	—	—	—	—	—	—
MD21-98-0396	21-10838	64–65	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0506	21-10838	74–75	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0508	21-10839	2–3	Qbt3	1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0402	21-10839	14–15	Qbt3	1 (U)	2 (U)	—	—	—	—	—	—
MD21-98-0403	21-10839	24–25	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0405	21-10839	34–35	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0406	21-10839	44–45	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0509	21-10839	51.5–52.5	Qbt3	1.1 (U)	2.2 (U)	—	—	—	—	—	—
MD21-98-0404	21-10839	59–60	Qbt3	1.1 (U)	2.3 (U)	—	—	—	—	—	—
MD21-98-0407	21-10839	74–75	Qbt3	1.1 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0412	21-10840	4–5	Qbt3	1.1 (U)	2.2 (U)	—	—	—	—	—	—
MD21-98-0414	21-10840	11.5–12.5	Qbt3	0.53 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0413	21-10840	21.5–22.5	Qbt3	0.53 (U)	2.1 (U)	—	—	—	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
MD21-98-0415	21-10840	34–35	Qbt3	0.53 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0417	21-10840	44–45	Qbt3	0.54 (U)	2.2 (U)	—	—	—	—	—	—
MD21-98-0416	21-10840	46.5–47.5	Qbt3	0.54 (U)	2.2 (U)	—	—	—	—	—	—
MD21-98-0422	21-10840	64–65	Qbt3	0.54 (U)	2.2 (U)	—	—	—	—	—	—
MD21-98-0511	21-10840	74–75	Qbt3	0.53 (U)	2.1 (U)	—	—	—	—	—	—
MD21-98-0423	21-10841	4–5	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0425	21-10841	11.5–12.5	Qbt3	1 (U)	2 (U)	—	—	2 (U)	—	—	—
MD21-98-0424	21-10841	24–25	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0426	21-10841	34–35	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0428	21-10841	44–45	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0513	21-10841	54–55	Qbt3	1.1 (U)	2.2 (U)	—	—	2.2 (U)	—	—	—
MD21-98-0427	21-10841	56.5–57.5	Qbt3	1.1 (U)	2.2 (U)	—	—	2.2 (U)	—	—	—
MD21-98-0512	21-10841	74–75	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0433	21-10842	4–5	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0435	21-10842	14–15	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0434	21-10842	24–25	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0438	21-10842	26.5–27.5	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0436	21-10842	44–45	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0437	21-10842	49–50	Qbt3	1.1 (U)	2.2 (U)	—	—	2.2 (U)	—	—	—
MD21-98-0515	21-10842	71.5–72.5	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0443	21-10843	4–5	Soil	—	2.2 (U)	—	—	2.2 (U)	—	—	—
MD21-98-0445	21-10843	14–15	Qbt3	1 (U)	2 (U)	—	—	2 (U)	—	—	—
MD21-98-0444	21-10843	24–25	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0446	21-10843	34–35	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0447	21-10843	44–45	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0448	21-10843	54–55	Qbt3	1.1 (U)	2.2 (U)	—	—	2.2 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
MD21-98-0453	21-10843	64–65	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0516	21-10843	72.5–75	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0517	21-10843	72.5–75	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0454	21-10844	2.5–5	Qbt3	1 (U)	2 (U)	—	—	2 (U)	—	—	—
MD21-98-0456	21-10844	12.5–15	Qbt3	1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0455	21-10844	24–25	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0457	21-10844	34–35	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0458	21-10844	44–45	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0459	21-10844	54–55	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0464	21-10844	64–65	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0465	21-10844	74–75	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0519	21-10844	74–75	Qbt3	1 (U)	2 (U)	—	—	2 (U)	—	—	—
MD21-98-0468	21-10845	4–5	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0470	21-10845	14–15	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0469	21-10845	24–25	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0471	21-10845	34–35	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0472	21-10845	44–45	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0473	21-10845	54–55	Qbt3	1.1 (U)	2.2 (U)	—	—	2.2 (U)	—	—	—

Table 3.4-2 (continued)

Sample ID	Location ID	Depth (ft)	Media	Selenium	Silver	Sodium	Strontium	Thallium	Uranium	Vanadium	Zinc
Soil Background Value				**1.52**	**1**	**915**	**N.A.**	**0.73**	**1.82**	**39.6**	**48.8**
Qbt2,3,4 Background Value				**0.3**	**1**	**2770**	**N.A.**	**1.1**	**2.40**	**17**	**63.5**
Sediment Background Value				**0.3**	**1**	**1470**	**N.A.**	**0.73**	**2.22**	**19.7**	**60.2**
Industrial Soil Screening Level				**5680**	**5680**	**n/a**	**1.0E+5**	**74.9**	**200**	**7950**	**1.0E+5**
MD21-98-0520	21-10845	64–65	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—
MD21-98-0521	21-10845	74–75	Qbt3	1.1 (U)	2.1 (U)	—	—	2.1 (U)	—	—	—

Note: Values are in mg/kg.

[a] From "Inorganic and Radionuclide Background Data for Soil, Sediment and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 59730).

[b] From New Mexico Environment Department, "Technical Background Document for Development of Soil Screening Levels, Revision 2.0" (NMED 2004, 85615), unless otherwise noted.

[c] Calculated from New Mexico Environment Department, "Technical Background Document for Development of Soil Screening Levels, Revision 2.0" (NMED 2004, 85615) using inputs from Eq. 7 (p. 15) and Table C-1.

[d] n/a = Not applicable.

[e] — indicates result was not detected, does not exceed the background values, or was not analyzed.

[f] "U" indicates a nondetected result for which the detection limit is greater than background.

[g] "J" indicates a result with an estimated value.

[h] "UJ" indicates result is not detected; detection limit is estimated.

[i] N.A. = Not available.

[j] Field duplicate.

Table 3.4-3
Frequency of Organic Chemicals Detected

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range* (mg/kg)	Frequency of Detects
Acenaphthene	Soil	70	1	[0.33 to 0.46]	1/70
Anthracene	Soil	70	1	[0.33] to 0.88	1/70
Benz(a)anthracene	Soil	70	2	[0.33] to 0.66	2/70
Benzo(a)anthracene	Sediment	9	1	[0.34 to 0.46]	1/9
Benzo(a)pyrene	Soil	70	2	[0.33] to 0.81	2/70
Benzo(b)fluoranthene	Soil	70	3	[0.33] to 0.61	3/70
Benzo(g,h,i)perylene	Soil	70	1	[0.33] to 0.62	1/70
Benzo(k)fluoranthene	Soil	70	1	[0.33] to 0.72	1/70
Chrysene	Soil	70	2	[0.33] to 0.73	2/70
Chrysene	Sediment	9	1	[0.34 to 0.46]	1/9
3,3'-Dichlorobenzidine	Sediment	9	1	[0.34 to 0.46]	1/9
Diethylphthalate	Soil	70	1	[0.33] to 8.1	1/70
Di-n-butylphthalate	Qbt3	62	3	[0.33] to 0.44	3/62
Fluoranthene	Soil	70	3	[0.33] to 2.9	3/70
Fluoranthene	Sediment	9	1	[0.34] to 1.4	1/9
Fluorene	Soil	70	1	[0.33 to 0.46]	1/70
Indeno(1,2,3-cd)pyrene	Soil	70	1	[0.33] to 0.56	1/70
Phenanthrene	Soil	70	3	[0.33] to 2.9	3/70
Phenanthrene	Sediment	9	1	[0.34] to 1.5	1/9
Pyrene	Soil	70	3	[0.33] to 1.8	3/70
Pyrene	Sediment	9	1	[0.34] to 0.99	1/9

*Brackets indicate detection limits for nondetected results.

Table 3.4-4
Organic Chemicals Detected

Sample ID	Location ID	Depth (ft)	Media	Acenaphthene	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
Industrial Soil Screening Level[a]				3.48E+4	2.64E+5	23.4	2.34	23.4	3.13E+4[b]	234	2340
AAA7526	21-01865	0.25–0.5	Sediment	—[c]	—	—	—	—	—	—	—
AAB9752	21-02061	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9765	21-02074	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB9772	21-02081	0–0.5	Soil	0.45	0.88	0.66	0.81	0.61	0.62	0.72	0.73
AAB9790	21-02099	0–0.5	Soil	—	—	—	—	0.44	—	—	—
AAB7285	21-02571	0.25–0.5	Sediment	—	—	0.44	—	—	—	—	0.45
AAB9889	21-02578	0–0.5	Soil	—	—	0.42	0.47	0.43	—	—	0.4
MD21-98-0435	21-10842	14–15	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0436	21-10842	44–45	Qbt3	—	—	—	—	—	—	—	—
MD21-98-0437	21-10842	49–50	Qbt3	—	—	—	—	—	—	—	—

Table 3.4-4 (continued)

Sample ID	Location ID	Depth (ft)	Media	3,3'-Dichlorobenzidine	Diethylphthalate	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene
Industrial Soil Screening Level				42.6	1.0E+5	6.84E+4	2.44E+4	2.94E+4	23.4	2.05E+4	3.13E+4
AAA7526	21-01865	0.25–0.5	Sediment	0.36	—	—	—	—	—	—	—
AAB9752	21-02061	0–0.5	Soil	—	—	—	0.74	—	—	0.65	0.54
AAB9765	21-02074	0–0.5	Soil	—	8.1	—	—	—	—	—	—
AAB9772	21-02081	0–0.5	Soil	—	—	—	2.9	0.42	0.56	2.9	1.8
AAB9790	21-02099	0–0.5	Soil	—	—	—	—	—	—	—	—
AAB7285	21-02571	0.25–0.5	Sediment	—	—	—	1.4	—	—	1.5 (J)[d]	0.99 (J)
AAB9889	21-02578	0–0.5	Soil	—	—	—	1.3	—	—	1.3	0.98
MD21-98-0435	21-10842	14–15	Qbt3	—	—	0.36	—	—	—	—	—
MD21-98-0436	21-10842	44–45	Qbt3	—	—	0.38	—	—	—	—	—
MD21-98-0437	21-10842	49–50	Qbt3	—	—	0.44	—	—	—	—	—

Note: Values are in mg/kg.

[a] From New Mexico Environment Department, "Technical Background Document for Development of Soil Screening Levels, Revision 2.0" (NMED 2004, 85615), unless otherwise noted.

[b] Based on pyrene as a surrogate chemical.

[c] — = Result was not detected or was not analyzed.

[d] "J" indicates a result with an estimated value.

Table 3.4-5
Frequency of Radionuclides Detected Above Background/Fallout Values

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	Soil	80	7	[-0.4599] to 0.84	0.013	7/80
Americium-241	Sediment	2	0	[0.01 to 0.06]	0.04	0/2
Americium-241	Qbt3	66	6	[-0.0108] to 0.046	n/a[b]	6/66
Cesium-134	Soil	27	0	[-0.075 to 0.083]	N.A.[c]	0/27
Cesium-134	Sediment	2	0	[-0.004 to 0.044]	N.A.	0/2
Cesium-134	Qbt3	66	0	[-0.068 to 0.086]	n/a	0/66
Cesium-137	Soil	59	50	[-0.012] to 2.779	1.65	7/59
Cesium-137	Sediment	7	7	0.212 to 0.5228	0.9	0/7
Cesium-137	Qbt3	66	0	[-0.061 to 0.16]	n/a	0/66
Cobalt-60	Soil	27	0	[-0.136 to 0.074]	N.A.	0/27
Cobalt-60	Sediment	2	0	[-0.003 to 0.008]	N.A.	0/2
Cobalt-60	Qbt3	66	0	[-0.072 to 0.092]	n/a	0/66
Europium-152	Soil	27	0	[-0.27 to 0.11]	N.A.	0/27
Europium-152	Sediment	2	0	[-0.06 to –0.017]	N.A.	0/2
Europium-152	Qbt3	66	0	[-0.17 to 0.22]	n/a	0/66
Plutonium-238	Soil	76	30	[-0.001] to 0.066	0.023	7/76
Plutonium-238	Sediment	9	2	[-0.0004] to 2.516	0.006	2/9
Plutonium-238	Qbt3	66	1	[-0.0145] to 0.0291	n/a	1/66
Plutonium-239	Soil	76	67	[-0.0006] to 3.095	0.054	61/76
Plutonium-239	Sediment	9	9	0.0226 to 4.136	0.068	7/9
Plutonium-239	Qbt3	66	7	[-0.0065] to 0.291	n/a	7/66
Radium-223	Soil	1	1	3.82 to 3.82	N.A.	1/1
Radium-223	Qbt3	1	1	2.3 to 2.3	n/a	1/1
Radon-219	Soil	4	4	0.762 to 3.85	N.A.	4/4
Ruthenium-106	Soil	27	0	[-0.38 to 0.75]	N.A.	0/27
Ruthenium-106	Sediment	2	0	[-0.18 to 0.05]	N.A.	0/2
Ruthenium-106	Qbt3	66	0	[-0.77 to 0.45]	n/a	0/66
Sodium-22	Soil	27	0	[-0.086 to 0.089]	N.A.	0/27
Sodium-22	Sediment	2	0	[0.006 to 0.011]	N.A.	0/2
Sodium-22	Qbt3	66	0	[-0.118 to 0.072]	n/a	0/66
Strontium-90	Soil	77	14	[-0.3] to 2.96	1.31	3/77
Strontium-90	Sediment	9	4	[0.04] to 0.86	1.04	0/9
Strontium-90	Qbt3	66	0	[-0.27 to 0.47]	n/a	0/66
Thorium-227	Soil	3	3	0.503 to 4.41	N.A.	3/3
Thorium-227	Qbt3	1	1	2.33 to 2.33	n/a	1/1
Thorium-228	Soil	5	1	1.43 to [5.569]	2.28	0/5

Table 3.4-5 (continued)

Analyte	Media	Number of Analyses	Number of Detects	Concentration Range[a] (pCi/g)	Background Value (pCi/g)	Frequency of Detects Above Background Value
Thorium-230	Soil	1	1	1.3 to 1.3	2.29	0/1
Thorium-232	Soil	1	1	1.3 to 1.3	2.33	0/1
Tritium	Soil	90	90	0.063 to 8.11	n/a	90/90
Tritium	Sediment	9	8	[0.006] to 0.257	0.093	5/9
Tritium	Qbt3	66	63	[0.01] to 2.37	n/a	63/66
Uranium-234	Soil	28	28	0.549 to 17.9	2.59	2/28
Uranium-234	Sediment	2	2	0.978 to 1.249	2.59	0/2
Uranium-234	Qbt3	66	66	0.575 to 22.5	1.98	13/66
Uranium-235	Soil	58	39	[0.022] to 1.45	0.2	11/58
Uranium-235	Sediment	2	2	0.073 to 0.083	0.2	0/2
Uranium-235	Qbt3	66	66	0.0232 to 1.229	0.09	15/66
Uranium-238	Soil	28	28	0.433 to 1.7	2.29	0/28
Uranium-238	Sediment	2	2	0.799 to 0.802	2.29	0/2
Uranium-238	Qbt3	66	66	0.579 to 1.129	1.93	0/66

[a] Brackets indicate detection limits for nondetected results.

[b] n/a = Not applicable.

[c] N.A. = Not available.

Table 3.4-6
Radionuclides Detected Above Background/Fallout Values

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value[c]				**0.013**	**1.65**	**0.023**	**0.054**	**N.A.[d]**	**N.A.**	**1.31**	**N.A.**	**n/a[e]**	**2.59**	**0.2**
Qbt2,3,4 Background Value[c]				**n/a**	**n/a**	**n/a**	**n/a**	**N.A.**	**N.A.**	**n/a**	**N.A.**	**n/a**	**1.98**	**0.09**
Sediment Background Value[c]				**0.040**	**0.90**	**0.006**	**0.068**	**N.A.**	**N.A.**	**1.04**	**N.A.**	**0.093**	**2.59**	**0.2**
Industrial Screening Action Level[f]				**140**	**19.7**	**176**	**159**	**N.A.**	**N.A.**	**1615**	**N.A.**	**15140**	**1087**	**73.1**
MD21-01-0492	21-01001	0–0.5	Soil	—[g]	—	—	—	—	—	—	—	1.59	—	—
MD21-01-0493	21-01001	0–0.5	Soil	—	—	—	—	—	—	—	—	8.11	—	—
AAA0396	21-01177	0–0.08	Soil	—	—	—	1.84	—	—	—	—	0.456	—	—
AAA0191	21-01178	0–0.08	Soil	—	—	0.044	0.664	—	—	—	—	0.7	—	—
AAA0192	21-01178	0–0.5	Soil	—	—	—	0.593	—	—	—	—	0.989	—	—
AAA0395	21-01183	0–0.08	Soil	0.131	—	0.024	2.686	—	—	—	—	0.189	—	—
AAA0193	21-01184	0–0.08	Soil	0.105	—	—	1.268	—	—	—	—	0.711	—	—
AAA0194	21-01184	0–0.5	Soil	0.031	—	—	0.603	—	—	—	—	0.9	—	—
AAA0391	21-01191	0–0.08	Soil	—	—	0.03	2.348	—	—	—	—	0.278	—	—
AAA0195	21-01192	0–0.08	Soil	0.267	—	0.037	3.095	—	—	—	—	0.711	—	—
AAA0196	21-01192	0–0.5	Soil	—	—	—	0.815	—	—	—	—	0.922	—	—
AAA0197	21-01193	0–0.08	Soil	—	—	—	0.185	—	—	—	—	0.833	—	—
AAA0198	21-01193	0–0.5	Soil	—	—	—	—	—	—	—	—	1.389	—	—
AAA0199[h]	21-01193	0–0.08	Soil	—	—	—	0.069	—	—	—	—	0.856	—	—
AAA7519	21-01863	0–0.25	Soil	—	—	—	0.168	—	—	—	—	0.433	—	—
AAA7520	21-01863	0.25–0.5	Soil	—	—	—	0.082	—	—	—	—	0.243	—	—
AAA7521	21-01863	0.5–1	Soil	—	—	—	0.149	—	—	—	—	0.181	—	—
AAA7522	21-01864	0–0.25	Soil	—	—	—	0.126	—	—	—	—	0.672	—	—
AAA7523	21-01864	0.25–0.5	Soil	—	—	—	0.110	—	—	1.61	—	0.502	—	—
AAA7524	21-01864	0.5–1	Soil	—	—	—	0.147	—	—	2.63	—	0.081	—	—
AAA7525	21-01865	0–0.25	Sediment	—	—	0.022	0.371	—	—	—	—	0.171	—	—

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				0.013	1.65	0.023	0.054	N.A.	N.A.	1.31	N.A.	n/a	2.59	0.2
Qbt2,3,4 Background Value				n/a	n/a	n/a	n/a	N.A.	N.A.	n/a	N.A.	n/a	1.98	0.09
Sediment Background Value				0.040	0.90	0.006	0.068	N.A.	N.A.	1.04	N.A.	0.093	2.59	0.2
Industrial Soil Screening Level				140	19.7	176	159	N.A.	N.A.	1615	N.A.	15140	1087	73.1
AAA7526	21-01865	0.25–0.5	Sediment	—	—	—	0.232	—	—	—	—	—	—	—
AAA7527	21-01865	0.5–1	Sediment	—	—	2.516	4.136	—	—	—	—	—	—	—
AAB9750	21-02059	0–0.5	Soil	—	—	—	1.48	—	—	—	—	0.618	—	—
AAB9751	21-02060	0–0.5	Soil	—	—	—	0.152	—	—	—	—	0.381	—	—
AAB9752	21-02061	0–0.5	Soil	—	—	—	0.272	—	—	—	—	0.256	—	—
AAB9753	21-02062	0–0.5	Soil	—	—	—	0.164	—	—	—	—	0.858	—	—
AAB9754	21-02063	0–0.5	Soil	—	1.66	—	1.45	—	—	—	—	1.104	—	—
AAB9755	21-02064	0–0.5	Soil	—	2.779	—	2.696	—	—	—	—	1.310	—	—
AAB9756	21-02065	0–0.5	Soil	—	—	—	1.168	—	—	—	—	1.022	—	0.243
AAB9757	21-02066	0–0.5	Soil	—	—	—	1.557	—	—	—	—	0.413	—	—
AAB9758	21-02067	0–0.5	Soil	—	—	—	0.218	—	—	—	—	0.112	—	—
AAB9759	21-02068	0–0.5	Soil	—	—	—	1.244	—	—	—	—	0.209	—	0.204
AAB9760	21-02069	0–0.25	Soil	—	—	—	1.734	—	—	—	—	0.750	—	—
AAB9761	21-02070	0–0.5	Soil	—	—	—	0.449	—	—	—	—	0.120	—	—
AAB9762	21-02071	0–0.5	Soil	—	—	—	1.896	—	—	—	—	0.635	—	—
AAB9763	21-02072	0–0.5	Soil	—	—	—	—	—	—	—	—	0.375	—	—
AAB9764	21-02073	0–0.5	Soil	—	—	—	0.302	—	—	—	—	0.264	—	—
AAB9765	21-02074	0–0.5	Soil	—	—	—	0.826	—	—	—	—	0.441	—	—
AAB9766	21-02075	0–0.5	Soil	—	—	—	0.639	—	—	—	—	0.328	—	—
AAB9767	21-02076	0–0.5	Soil	—	—	—	0.793	—	—	—	—	0.315	—	—
AAB9768	21-02077	0–0.5	Soil	—	—	—	—	—	—	2.96	—	0.271	—	—

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				**0.013**	**1.65**	**0.023**	**0.054**	**N.A.**	**N.A.**	**1.31**	**N.A.**	**n/a**	**2.59**	**0.2**
Qbt2,3,4 Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**N.A.**	**N.A.**	**n/a**	**N.A.**	**n/a**	**1.98**	**0.09**
Sediment Background Value				**0.040**	**0.90**	**0.006**	**0.068**	**N.A.**	**N.A.**	**1.04**	**N.A.**	**0.093**	**2.59**	**0.2**
Industrial Soil Screening Level				**140**	**19.7**	**176**	**159**	**N.A.**	**N.A.**	**1615**	**N.A.**	**15140**	**1087**	**73.1**
AAB9769	21-02078	0–0.5	Soil	—	—	—	0.144	—	—	—	—	0.163	—	—
AAB9803[h]	21-02078	0–0.5	Soil	—	—	—	0.107	—	—	—	—	0.200	—	—
AAB9770	21-02079	0–0.5	Soil	—	—	—	0.804	—	—	—	—	0.191	—	—
AAB9771	21-02080	0–0.5	Soil	—	—	—	0.180	—	—	—	—	0.277	—	—
AAB9772	21-02081	0–0.5	Soil	—	—	—	0.342	—	—	—	—	0.252	—	—
AAB9773	21-02082	0–0.5	Soil	—	—	—	0.237	—	—	—	—	0.392	—	0.211
AAB9774	21-02083	0–0.5	Soil	—	—	—	0.154	—	—	—	—	1.810	—	—
MD21-01-0434	21-02083	0–0.5	Soil	—	—	—	—	—	—	—	—	7.08	—	—
MD21-01-0490[h]	21-02083	0–0.5	Soil	—	—	—	—	—	—	—	—	5.81	—	—
AAB9775	21-02084	0–0.5	Soil	—	—	—	0.223	—	—	—	—	0.285	—	—
AAB9776	21-02085	0–0.5	Soil	0.255	—	0.028	0.793	—	—	—	—	1.491	—	—
AAB9777	21-02086	0–0.5	Soil	—	—	—	0.124	—	—	—	—	0.376	—	0.346
AAB9778	21-02087	0–0.5	Soil	—	—	—	—	—	—	—	—	0.243	—	—
AAB9779	21-02088	0–0.5	Soil	—	—	—	0.118	—	—	—	—	0.639	—	0.243
AAB9780	21-02089	0–0.5	Soil	—	—	0.025	0.183	—	—	—	—	0.733	—	0.332
AAB9781	21-02090	0–0.25	Soil	—	—	—	0.247	—	—	—	—	0.191	—	0.278
AAB9782	21-02091	0–0.5	Soil	—	—	—	0.209	—	—	—	—	0.396	—	—
AAB9783	21-02092	0–0.5	Soil	—	—	—	0.181	—	—	—	—	0.271	—	—
AAB9784	21-02093	0–0.5	Soil	0.634	—	—	0.502	—	—	—	—	0.284	—	—
AAB9785	21-02094	0–0.5	Soil	—	—	—	0.181	—	—	—	—	0.296	—	0.343
AAB9786	21-02095	0–0.5	Soil	—	—	—	—	—	—	—	—	0.281	—	—
AAB9787	21-02096	0–0.5	Soil	—	—	—	—	—	—	—	—	0.417	—	—

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				**0.013**	**1.65**	**0.023**	**0.054**	**N.A.**	**N.A.**	**1.31**	**N.A.**	**n/a**	**2.59**	**0.2**
Qbt2,3,4 Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**N.A.**	**N.A.**	**n/a**	**N.A.**	**n/a**	**1.98**	**0.09**
Sediment Background Value				**0.040**	**0.90**	**0.006**	**0.068**	**N.A.**	**N.A.**	**1.04**	**N.A.**	**0.093**	**2.59**	**0.2**
Industrial Soil Screening Level				**140**	**19.7**	**176**	**159**	**N.A.**	**N.A.**	**1615**	**N.A.**	**15140**	**1087**	**73.1**
AAB9788	21-02097	0–0.5	Soil	—	—	—	0.288	—	—	—	—	0.189	—	—
AAB9789	21-02098	0–0.5	Soil	—	—	—	0.195	—	—	—	—	0.270	—	—
AAB9790	21-02099	0–0.5	Soil	—	—	—	0.639	—	—	—	—	3.246	—	—
MD21-01-0435	21-02099	0–0.5	Soil	—	—	—	—	—	—	—	—	2.42	—	—
AAB9791	21-02100	0–0.5	Soil	—	—	—	—	—	—	—	—	0.302	—	—
AAB9792	21-02101	0–0.5	Soil	—	—	—	0.325	—	—	—	—	0.992	—	—
MD21-01-0436	21-02101	0–0.5	Soil	—	—	—	—	—	—	—	—	1.83	—	—
AAB9793	21-02102	0–0.5	Soil	—	—	—	0.214	—	—	—	—	0.430	—	0.225
AAB9794	21-02103	0–0.5	Soil	—	—	0.066	—	—	—	—	—	0.071	—	—
AAB9802[h]	21-02103	0–0.5	Soil	—	—	—	—	—	—	—	—	0.403	—	—
AAB9795	21-02104	0–0.5	Soil	—	—	—	—	—	—	—	—	0.091	—	—
AAB9796	21-02105	0–0.42	Soil	—	—	—	0.179	—	—	—	—	0.251	—	—
AAB9797	21-02106	0–0.5	Soil	—	—	—	—	—	—	—	—	0.214	—	—
AAB9798	21-02107	0–0.5	Soil	—	—	—	—	—	—	—	—	0.333	—	—
AAB7281	21-02570	0–0.25	Sediment	—	—	—	0.207	—	—	—	—	0.129	—	—
AAB7282	21-02570	0.25–0.5	Sediment	—	—	—	0.119	—	—	—	—	0.126	—	—
AAB7283	21-02570	0.5–1	Sediment	—	—	—	—	—	—	—	—	0.257	—	—
AAB7284	21-02571	0–0.25	Sediment	—	—	—	0.247	—	—	—	—	0.099	—	—
AAB7285	21-02571	0.25–0.5	Sediment	—	—	—	0.234	—	—	—	—	—	—	—
AAB9891	21-02576	0–0.5	Soil	—	—	—	—	—	—	—	—	0.336	—	—
AAB9888	21-02577	0–0.5	Soil	—	—	—	—	—	—	—	—	0.405	—	—
AAB9889	21-02578	0–0.5	Soil	—	—	—	—	—	—	—	—	0.403	—	—

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				**0.013**	**1.65**	**0.023**	**0.054**	**N.A.**	**N.A.**	**1.31**	**N.A.**	**n/a**	**2.59**	**0.2**
Qbt2,3,4 Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**N.A.**	**N.A.**	**n/a**	**N.A.**	**n/a**	**1.98**	**0.09**
Sediment Background Value				**0.040**	**0.90**	**0.006**	**0.068**	**N.A.**	**N.A.**	**1.04**	**N.A.**	**0.093**	**2.59**	**0.2**
Industrial Soil Screening Level				**140**	**19.7**	**176**	**159**	**N.A.**	**N.A.**	**1615**	**N.A.**	**15140**	**1087**	**73.1**
AAB9890	21-02579	0–0.5	Soil	—	—	—	—	—	—	—	—	0.422	—	—
AAC0135	21-02594	0–0.5	Soil	—	—	—	0.070	—	—	—	—	0.938	—	—
AAC0136	21-02595	0–0.5	Soil	—	—	—	0.064	—	—	—	—	2.479	—	—
AAC0137	21-02596	0–0.5	Soil	—	—	—	0.238	—	—	—	—	0.590	—	—
AAC0138	21-02597	0–0.5	Soil	—	—	—	0.15	—	—	—	—	1.239	—	—
AAC0139	21-02598	0–0.5	Soil	—	—	—	0.078	—	—	—	—	1.530	—	—
AAC0140	21-02599	0–0.5	Soil	—	—	—	0.066	—	—	—	—	0.215	—	—
AAC0144[h]	21-02599	0–0.5	Soil	—	—	—	0.069	—	—	—	—	0.235	—	—
MD21-98-0394	21-10838	0–5	Qbt3	0.036	—	—	0.072	—	—	—	—	0.73	11.49	0.565
MD21-98-0392	21-10838	14–15	Qbt3	—	—	—	—	—	—	—	—	—	2.96	0.163
MD21-98-0395	21-10838	24–25	Qbt3	—	—	—	—	—	—	—	—	0.54	—	—
MD21-98-0393	21-10838	34–35	Qbt3	0.046	—	—	0.291	—	—	—	—	0.45	—	—
MD21-98-0397	21-10838	44–45	Qbt3	—	—	—	—	—	—	—	—	0.35	—	—
MD21-98-0507	21-10838	54–55	Qbt3	—	—	—	—	—	—	—	—	0.41	6.93	0.347
MD21-98-0396	21-10838	64–65	Qbt3	—	—	—	—	—	—	—	—	0.09	2.57	0.142
MD21-98-0506	21-10838	74–75	Qbt3	—	—	—	—	—	—	—	—	0.06	—	—
MD21-98-0508	21-10839	2–3	Qbt3	—	—	—	—	—	—	—	—	0.4	2.19	0.107
MD21-98-0402	21-10839	14–15	Qbt3	—	—	—	—	—	—	—	—	0.19	3.8	0.188
MD21-98-0403	21-10839	24–25	Qbt3	—	—	—	—	—	—	—	—	0.31	—	0.105
MD21-98-0405	21-10839	34–35	Qbt3	—	—	—	—	—	—	—	—	0.24	—	—
MD21-98-0406	21-10839	44–45	Qbt3	—	—	—	—	—	—	—	—	0.25	—	—
MD21-98-0509	21-10839	51.5–52.5	Qbt3	—	—	—	—	—	—	—	—	0.47	2.67	0.14

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				**0.013**	**1.65**	**0.023**	**0.054**	**N.A.**	**N.A.**	**1.31**	**N.A.**	**n/a**	**2.59**	**0.2**
Qbt2,3,4 Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**N.A.**	**N.A.**	**n/a**	**N.A.**	**n/a**	**1.98**	**0.09**
Sediment Background Value				**0.040**	**0.90**	**0.006**	**0.068**	**N.A.**	**N.A.**	**1.04**	**N.A.**	**0.093**	**2.59**	**0.2**
Industrial Soil Screening Level				**140**	**19.7**	**176**	**159**	**N.A.**	**N.A.**	**1615**	**N.A.**	**15140**	**1087**	**73.1**
MD21-98-0404	21-10839	59–60	Qbt3	—	—	—	—	—	—	—	—	0.55	2.86	0.183
MD21-98-0407	21-10839	74–75	Qbt3	—	—	—	—	—	—	—	—	0.17	—	0.096
MD21-98-0412	21-10840	4–5	Qbt3	—	—	—	—	—	—	—	—	0.97	—	—
MD21-98-0414	21-10840	11.5–12.5	Qbt3	—	—	—	—	—	—	—	—	0.32	2.67	0.128
MD21-98-0413	21-10840	21.5–22.5	Qbt3	—	—	—	—	—	—	—	—	0.34	—	—
MD21-98-0415	21-10840	34–35	Qbt3	—	—	—	—	—	—	—	—	0.2	—	—
MD21-98-0417	21-10840	44–45	Qbt3	—	—	—	—	—	—	—	—	0.11	—	—
MD21-98-0416	21-10840	46.5–47.5	Qbt3	—	—	—	—	—	—	—	—	0.12	—	—
MD21-98-0422	21-10840	64–65	Qbt3	—	—	—	—	—	—	—	—	0.12	—	—
MD21-98-0511	21-10840	74–75	Qbt3	—	—	—	—	—	—	—	—	0.17	—	—
MD21-98-0423	21-10841	4–5	Qbt3	—	—	—	—	—	—	—	—	0.64	—	—
MD21-98-0425	21-10841	11.5–12.5	Qbt3	—	—	—	—	—	—	—	—	0.99	2.01	0.107
MD21-98-0424	21-10841	24–25	Qbt3	—	—	—	—	—	—	—	—	1.85	—	—
MD21-98-0426	21-10841	34–35	Qbt3	—	—	—	—	—	—	—	—	2.37	—	—
MD21-98-0428	21-10841	44–45	Qbt3	0.033	—	—	—	—	—	—	—	1.25	—	—
MD21-98-0513	21-10841	54–55	Qbt3	0.04	—	—	—	2.3	—	—	2.33	2	—	—
MD21-98-0427	21-10841	56.5–57.5	Qbt3	—	—	—	—	—	—	—	—	1.84	—	—
MD21-98-0512	21-10841	74–75	Qbt3	—	—	—	—	—	—	—	—	0.95	—	—
MD21-98-0433	21-10842	4–5	Qbt3	—	—	—	—	—	—	—	—	0.35	—	—
MD21-98-0435	21-10842	14–15	Qbt3	—	—	—	—	—	—	—	—	0.14	—	—
MD21-98-0434	21-10842	24–25	Qbt3	0.029	—	—	—	—	—	—	—	0.1	—	—
MD21-98-0438	21-10842	26.5–27.5	Qbt3	0.029	—	—	—	—	—	—	—	0.07	—	—

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				0.013	1.65	0.023	0.054	N.A.	N.A.	1.31	N.A.	n/a	2.59	0.2
Qbt2,3,4 Background Value				n/a	n/a	n/a	n/a	N.A.	N.A.	n/a	N.A.	n/a	1.98	0.09
Sediment Background Value				0.040	0.90	0.006	0.068	N.A.	N.A.	1.04	N.A.	0.093	2.59	0.2
Industrial Soil Screening Level				140	19.7	176	159	N.A.	N.A.	1615	N.A.	15140	1087	73.1
MD21-98-0436	21-10842	44–45	Qbt3	—	—	—	—	—	—	—	—	0.15	—	—
MD21-98-0437	21-10842	49–50	Qbt3	—	—	—	—	—	—	—	—	0.4	—	—
MD21-98-0515	21-10842	71.5–72.5	Qbt3	—	—	—	—	—	—	—	—	0.19	—	—
MD21-98-0443	21-10843	4–5	Soil	—	—	—	—	—	—	—	—	1.54	—	—
MD21-98-0445	21-10843	14–15	Qbt3	—	—	—	—	—	—	—	—	0.2	—	—
MD21-98-0444	21-10843	24–25	Qbt3	—	—	—	—	—	—	—	—	0.31	—	—
MD21-98-0446	21-10843	34–35	Qbt3	—	—	—	—	—	—	—	—	0.42	—	—
MD21-98-0447	21-10843	44–45	Qbt3	—	—	—	—	—	—	—	—	0.29	—	—
MD21-98-0448	21-10843	54–55	Qbt3	—	—	—	—	—	—	—	—	0.52	—	—
MD21-98-0453	21-10843	64–65	Qbt3	—	—	—	—	—	—	—	—	0.18	—	—
MD21-98-0516	21-10843	72.5–75	Qbt3	—	—	—	—	—	—	—	—	0.09	—	—
MD21-98-0517[h]	21-10843	72.5–75	Qbt3	—	—	—	—	—	—	—	—	0.1	—	—
MD21-98-0454	21-10844	2.5–5	Qbt3	—	—	—	—	—	—	—	—	0.11	—	—
MD21-98-0456	21-10844	12.5–15	Qbt3	—	—	0.029	—	—	—	—	—	0.15	—	—
MD21-98-0455	21-10844	24–25	Qbt3	—	—	—	—	—	—	—	—	0.38	—	—
MD21-98-0457	21-10844	34–35	Qbt3	—	—	—	—	—	—	—	—	0.45	—	—
MD21-98-0458	21-10844	44–45	Qbt3	—	—	—	—	—	—	—	—	0.36	—	—
MD21-98-0459	21-10844	54–55	Qbt3	—	—	—	—	—	—	—	—	0.25	—	—
MD21-98-0464	21-10844	64–65	Qbt3	—	—	—	—	—	—	—	—	0.32	—	—
MD21-98-0465[h]	21-10844	74–75	Qbt3	—	—	—	—	—	—	—	—	0.33	—	—
MD21-98-0519	21-10844	74–75	Qbt3	—	—	—	—	—	—	—	—	0.4	—	—
MD21-98-0468	21-10845	4–5	Qbt3	—	—	—	0.07	—	—	—	—	0.84	3.02	0.244

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235[c]
Soil Background Value				0.013	1.65	0.023	0.054	N.A.	N.A.	1.31	N.A.	n/a	2.59	0.2
Qbt2,3,4 Background Value				n/a	n/a	n/a	n/a	N.A.	N.A.	n/a	N.A.	n/a	1.98	0.09
Sediment Background Value				0.040	0.90	0.006	0.068	N.A.	N.A.	1.04	N.A.	0.093	2.59	0.2
Industrial Soil Screening Level				140	19.7	176	159	N.A.	N.A.	1615	N.A.	15140	1087	73.1
MD21-98-0470	21-10845	14–15	Qbt3	—	—	—	—	—	—	—	—	0.24	—	—
MD21-98-0472	21-10845	44–45	Qbt3	—	—	—	—	—	—	—	—	0.09	—	—
MD21-98-0473	21-10845	54–55	Qbt3	—	—	—	—	—	—	—	—	0.16	—	—
MD21-98-0520	21-10845	64–65	Qbt3	—	—	—	—	—	—	—	—	0.15	—	—
MD21-98-0521	21-10845	74–75	Qbt3	—	—	—	—	—	—	—	—	0.11	—	—
MD21-98-0492	21-10855	0–0.5	Soil	—	2.56	—	—	—	—	—	—	—	—	—
MD21-98-0484	21-10857	0–0.5	Soil	0.84	—	—	—	—	—	—	—	—	—	—
MD21-98-0485	21-10858	0–0.5	Soil	—	—	—	—	—	—	—	—	—	6.87	0.272
MD21-98-0500	21-10864	6–8	Qbt3	—	—	—	0.067	—	—	—	—	0.31	—	—
MD21-98-0501	21-10865	6–8	Qbt3	—	—	—	0.057	—	—	—	—	0.3	—	—
MD21-98-0502	21-10866	5–8	Qbt3	—	—	—	0.051	—	—	—	—	0.93	6.68	0.317
MD21-98-0503	21-10867	5–8	Qbt3	—	—	—	0.23	—	—	—	—	0.72	22.5	1.229
MD21-01-0494	21-11404	3–3.5	Soil	—	—	—	—	—	—	—	—	0.337	—	—
MD21-01-0495[h]	21-11404	3–3.5	Soil	—	—	—	—	—	—	—	—	0.356	—	—
MD21-01-0496	21-11406	5–5	Soil	—	0.094	—	—	—	0.762	—	—	0.948	17.9	1.45
MD21-01-0497	21-11407	4–4	Soil	—	—	—	—	—	—	—	—	0.467	—	—
MD21-01-0498	21-11408	5–5.5	Soil	—	—	—	—	—	—	—	—	0.495	—	—
MD21-01-0499	21-11409	7–7	Soil	—	—	—	—	—	—	—	—	0.139	—	—
MD21-01-0500[h]	21-11409	7–7	Soil	—	—	—	—	—	—	—	—	0.141	—	—
MD21-01-0501	21-11411	7–7	Soil	—	0.215	—	—	—	0.815	—	0.503	0.371	—	—

Table 3.4-6 (continued)

Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Radium-223[a]	Radon-219[a]	Strontium-90	Thorium-227[a]	Tritium[b]	Uranium-234	Uranium-235
Soil Background Value				**0.013**	**1.65**	**0.023**	**0.054**	**N.A.**	**N.A.**	**1.31**	**N.A.**	**n/a**	**2.59**	**0.2**
Qbt2,3,4 Background Value				**n/a**	**n/a**	**n/a**	**n/a**	**N.A.**	**N.A.**	**n/a**	**N.A.**	**n/a**	**1.98**	**0.09**
Sediment Background Value				**0.040**	**0.90**	**0.006**	**0.068**	**N.A.**	**N.A.**	**1.04**	**N.A.**	**0.093**	**2.59**	**0.2**
Industrial Soil Screening Level				**140**	**19.7**	**176**	**159**	**N.A.**	**N.A.**	**1615**	**N.A.**	**15140**	**1087**	**73.1**
MD21-01-0502	21-11412	7–7	Soil	—	0.657	—	—	3.82	3.85	—	4.41	0.063	—	—
MD21-01-0503	21-11413	7–7	Soil	—	0.051	—	—	—	0.82	—	1.33	0.632	—	—

Note: Values are in pCi/g.

[a] Radium-223, radon-219, and thorium-227 are reported because they are progeny of actinium-227, a known contaminant released at the site.

[b] Although there is a soil background value for tritium (0.76 pCi/mL), it is not used for comparisons in this dataset. Not enough information is available to convert all of the earlier tritium results in soil to the correct units for background value comparisons. The sediment background value is in units of pCi/g and therefore comparison of detections in sediment to background value is performed.

[c] From "Inorganic and Radionuclide Background Data for Soil, Sediment and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 59730).

[d] N.A.= No available.

[e] n/a = Not applicable.

[f] Calculated using the dose-based computer model RESRAD 6.21 and a radiation dose limit of 15 mrem/yr.

[g] — Indicates result was not detected, does not exceed the background/fallout value, or was not analyzed.

[h] Field duplicate.

Table 3.4-7
Borehole Moisture Content Analyses

Depth (ft)	BH 1	BH 2	BH 3	BH 4	BH 5	BH 6	BH 7	BH 8	West Absorption Bed		East Absorption Bed	
	% Moisture	% Moisture	% Moisture	% Moisture	% Moisture	% Moisture	% Moisture	% Moisture	21-10864	21-10865	21-10866	21-10867
3	—[a]	3	—	—	—	—	—	—	—	—	—	—
5	—	—	8	4	5	10	5	5	—	—	—	—
8	—	—	—	—	—	—	—	—	4	4	6	6
12.5	—	—	5	1	—	2	—	—	—	—	—	—
15	0	2	—	—	4	2	5	5	—	—	—	—
22.5	—	—	6	—	—	—	—	—	—	—	—	—
25	4	5	—	4	3	4	3	5	—	—	—	—
27.5	—	—	—	—	3	—	—	—	—	—	—	—
35	5	5	6	5		6	6	6	—	—	—	—
45	6	6	7	5	6	4	5	6	—	—	—	—
47.5	—	—	7	—	—	—	—	—	—	—	—	—
50	—	—	—	—	10	—	—	—	—	—	—	—
52.5	—	8	—	—	—	—	—	—	—	—	—	—
55	**16**[b]	—	—	10	—	**9**[b]	5	8	—	—	—	—
57.5	—	—	—	**9**[b]	—	—	—	—	—	—	—	—
65	6	—	7	—	—	5	5	6	—	—	—	—
72.5	—	—	—	—	5	—	—	—	—	—	—	—
75	6	**6**[b]	6	5	—	4	5	6	—	—	—	—

[a] — = Not analyzed.

[b] Boldfaced values are associated with samples from clay-rich fractures or interbeds.

Table 3.4-8
Frequency of Organic Chemicals Detected in Pore-Gas Samples

Analyte	Number of Analyses	Number of Detects	Concentration Range* (ppbv)
Ethylbenzene	24	3	[0.5] to 18
Trimethylbenzene[1,3,5-]	24	2	[0.5] to 17
Toluene	24	22	0.62 to 480
Chloroform	24	7	[0.5] to 6.5
Benzene	24	10	[0.5 to 5.4]
Trichloroethane[1,1,1-]	24	16	[0.52] to 24
Chloromethane	24	1	[1.2 to 14]
Dichlorodifluoromethane	24	9	0.54 to [5.4]
Trichloro-1,2,2-trifluoroethane[1,1,2-]	24	6	[0.52 to 5.4]
Trichloroethene	24	11	[0.5] to 29
Xylene[1,2-]	24	8	[0.5] to 29
Trimethylbenzene[1,2,4-]	24	12	[0.5] to 63
Xylene[1,3-]+Xylene[1,4-]	24	15	[0.5] to 59

*Brackets indicate detection limits for nondetected results.

Table 3.4-9
Organic Chemicals Detected in Pore-Gas Samples

Sample ID	Location ID	Depth (ft)	Analyte	Sample Concentration (ppbv)
MD21-98-0398	21-10838	25–25	1,1,1-Trichloroethane	7
MD21-98-0398	21-10838	25–25	Chloromethane	6.7
MD21-98-0398	21-10838	25–25	Toluene	4.6
MD21-98-0398	21-10838	25–25	1,3-Xylene+1,4-Xylene	2.7
MD21-98-0399	21-10838	55–55	1,1,1-Trichloroethane	24
MD21-98-0399	21-10838	55–55	Toluene	6.4
MD21-98-0399	21-10838	55–55	1,2,4-Trimethylbenzene	2.7
MD21-98-0399	21-10838	55–55	1,2-Xylene	2
MD21-98-0399	21-10838	55–55	1,3-Xylene+1,4-Xylene	5.3
MD21-98-0400	21-10838	75–75	1,1,1-Trichloroethane	6.7
MD21-98-0400	21-10838	75–75	Trichloroethene	1.7
MD21-98-0400	21-10838	75–75	Benzene	0.66
MD21-98-0400	21-10838	75–75	Toluene	2.3
MD21-98-0400	21-10838	75–75	1,2,4-Trimethylbenzene	0.75
MD21-98-0400	21-10838	75–75	1,2-Xylene	0.62
MD21-98-0400	21-10838	75–75	1,3-Xylene+1,4-Xylene	1.6
MD21-98-0408	21-10839	25–25	1,1,1-Trichloroethane	18
MD21-98-0408	21-10839	25–25	Trichloroethene	2.7
MD21-98-0408	21-10839	25–25	Toluene	3.7
MD21-98-0409	21-10839	55–55	1,1,2-Trichloro-1,2,2-trifluoroethane	1.4
MD21-98-0409	21-10839	55–55	1,1,1-Trichloroethane	21
MD21-98-0409	21-10839	55–55	Toluene	1.4
MD21-98-0410	21-10839	75–75	1,1,1-Trichloroethane	6.9
MD21-98-0410	21-10839	75–75	Benzene	1.1
MD21-98-0410	21-10839	75–75	Dichlorodifluoromethane	1
MD21-98-0410	21-10839	75–75	Ethylbenzene	18
MD21-98-0410	21-10839	75–75	1,2,4-Trimethylbenzene	63
MD21-98-0410	21-10839	75–75	1,3,5-Trimethylbenzene	17
MD21-98-0410	21-10839	75–75	1,2-Xylene	29
MD21-98-0410	21-10839	75–75	1,3-Xylene+1,4-Xylene	59
MD21-98-0418	21-10840	25–25	Benzene	1.5
MD21-98-0418	21-10840	25–25	Dichlorodifluoromethane	0.58
MD21-98-0418	21-10840	25–25	Ethylbenzene	0.58
MD21-98-0418	21-10840	25–25	Toluene	4.4
MD21-98-0418	21-10840	25–25	1,2,4-Trimethylbenzene	0.9
MD21-98-0418	21-10840	25–25	1,2-Xylene	0.78

Table 3.4-9 (continued)

Sample ID	Location ID	Depth (ft)	Analyte	Sample Concentration (ppbv)
MD21-98-0418	21-10840	25–25	1,3-Xylene+1,4-Xylene	2
MD21-98-0419	21-10840	55–55	1,1,1-Trichloroethane	6.3
MD21-98-0419	21-10840	55–55	Toluene	1
MD21-98-0420	21-10840	75–75	1,1,1-Trichloroethane	3.1
MD21-98-0420	21-10840	75–75	Trichloroethene	4.5
MD21-98-0420	21-10840	75–75	Toluene	1.6
MD21-98-0429	21-10841	25–25	1,1,2-Trichloro-1,2,2-trifluoroethane	0.83
MD21-98-0429	21-10841	25–25	1,1,1-Trichloroethane	13
MD21-98-0429	21-10841	25–25	Dichlorodifluoromethane	0.6
MD21-98-0429	21-10841	25–25	Toluene	0.62
MD21-98-0430	21-10841	55–55	1,1,1-Trichloroethane	17
MD21-98-0430	21-10841	55–55	Toluene	1.9
MD21-98-0431	21-10841	75–75	1,1,1-Trichloroethane	4.4
MD21-98-0439	21-10842	25–25	1,1,1-Trichloroethane	0.97
MD21-98-0439	21-10842	25–25	Dichlorodifluoromethane	0.54
MD21-98-0439	21-10842	25–25	Toluene	2.6
MD21-98-0439	21-10842	25–25	1,3-Xylene+1,4-Xylene	1
MD21-98-0440	21-10842	55–55	1,1,1-Trichloroethane	5.4
MD21-98-0440	21-10842	55–55	Benzene	2.4
MD21-98-0440	21-10842	55–55	Dichlorodifluoromethane	0.59
MD21-98-0440	21-10842	55–55	Ethylbenzene	3.3
MD21-98-0440	21-10842	55–55	Toluene	11
MD21-98-0440	21-10842	55–55	1,2,4-Trimethylbenzene	14
MD21-98-0440	21-10842	55–55	1,3,5-Trimethylbenzene	3.4
MD21-98-0440	21-10842	55–55	1,2-Xylene	6.2
MD21-98-0440	21-10842	55–55	1,3-Xylene+1,4-Xylene	14
MD21-98-0441	21-10842	75–75	Toluene	5.3
MD21-98-0441	21-10842	75–75	1,1,1-Trichloroethane	14
MD21-98-0441	21-10842	75–75	1,2,4-Trimethylbenzene	3.7
MD21-98-0441	21-10842	75–75	1,3-Xylene+1,4-Xylene	2.8
MD21-98-0449	21-10843	25–25	Toluene	160
MD21-98-0449	21-10843	25–25	Trichloroethene	3.4
MD21-98-0449	21-10843	25–25	1,3-Xylene+1,4-Xylene	4
MD21-98-0450	21-10843	55–55	Toluene	39
MD21-98-0450	21-10843	55–55	1,1,2-Trichloro-1,2,2-trifluoroethane	1.3
MD21-98-0450	21-10843	55–55	Benzene	1.1
MD21-98-0450	21-10843	55–55	Chloroform	1.4
MD21-98-0450	21-10843	55–55	Dichlorodifluoromethane	0.55

Table 3.4-9 (continued)

Sample ID	Location ID	Depth (ft)	Analyte	Sample Concentration (ppbv)
MD21-98-0450	21-10843	55–55	1,2,4-Trimethylbenzene	1.7
MD21-98-0450	21-10843	55–55	1,2-Xylene	0.81
MD21-98-0450	21-10843	55–55	1,3-Xylene+1,4-Xylene	1.7
MD21-98-0451	21-10843	75–75	Toluene	39
MD21-98-0451	21-10843	75–75	1,1,2-Trichloro-1,2,2-trifluoroethane	2.2
MD21-98-0451	21-10843	75–75	1,1,1-Trichloroethane	0.57
MD21-98-0451	21-10843	75–75	Trichloroethene	26
MD21-98-0451	21-10843	75–75	Benzene	0.75
MD21-98-0451	21-10843	75–75	Chloroform	2.5
MD21-98-0451	21-10843	75–75	Dichlorodifluoromethane	0.55
MD21-98-0451	21-10843	75–75	1,2,4-Trimethylbenzene	1.4
MD21-98-0451	21-10843	75–75	1,2-Xylene	0.58
MD21-98-0451	21-10843	75–75	1,3-Xylene+1,4-Xylene	1.2
MD21-98-0460	21-10844	25–25	Toluene	49
MD21-98-0460	21-10844	25–25	Trichloroethene	5.2
MD21-98-0460	21-10844	25–25	Benzene	1.4
MD21-98-0460	21-10844	25–25	Chloroform	1.4
MD21-98-0460	21-10844	25–25	Dichlorodifluoromethane	0.58
MD21-98-0460	21-10844	25–25	1,2,4-Trimethylbenzene	1.5
MD21-98-0460	21-10844	25–25	1,2-Xylene	0.73
MD21-98-0460	21-10844	25–25	1,3-Xylene+1,4-Xylene	1.6
MD21-98-0461	21-10844	55–55	Toluene	19
MD21-98-0461	21-10844	55–55	1,1,2-Trichloro-1,2,2-trifluoroethane	1.5
MD21-98-0461	21-10844	55–55	Benzene	0.67
MD21-98-0461	21-10844	55–55	Chloroform	2
MD21-98-0461	21-10844	55–55	Trichloroethene	17
MD21-98-0461	21-10844	55–55	1,2,4-Trimethylbenzene	1.2
MD21-98-0461	21-10844	55–55	1,3-Xylene+1,4-Xylene	0.96
MD21-98-0462	21-10844	75–75	Toluene	42
MD21-98-0462	21-10844	75–75	1,1,2-Trichloro-1,2,2-trifluoroethane	2.4
MD21-98-0462	21-10844	75–75	1,1,1-Trichloroethane	0.7
MD21-98-0462	21-10844	75–75	Benzene	1.2
MD21-98-0462	21-10844	75–75	Chloroform	3.2
MD21-98-0462	21-10844	75–75	Dichlorodifluoromethane	0.62
MD21-98-0462	21-10844	75–75	Trichloroethene	29
MD21-98-0462	21-10844	75–75	1,2,4-Trimethylbenzene	0.97
MD21-98-0462	21-10844	75–75	1,3-Xylene+1,4-Xylene	1
MD21-98-0474	21-10845	25–25	Toluene	86

Table 3.4-9 (continued)

Sample ID	Location ID	Depth (ft)	Analyte	Sample Concentration (ppbv)
MD21-98-0474	21-10845	25–25	Benzene	2.8
MD21-98-0474	21-10845	25–25	Chloroform	3.2
MD21-98-0474	21-10845	25–25	Trichloroethene	4.1
MD21-98-0474	21-10845	25–25	1,2,4-Trimethylbenzene	1.7
MD21-98-0474	21-10845	25–25	1,3-Xylene+1,4-Xylene	2
MD21-98-0475	21-10845	55–55	Toluene	480
MD21-98-0475	21-10845	55–55	Trichloroethene	17
MD21-98-0476	21-10845	75–75	Toluene	220
MD21-98-0476	21-10845	75–75	Chloroform	6.5
MD21-98-0476	21-10845	75–75	Trichloroethene	27
MD21-98-0477*	21-10845	75–75	Toluene	240
MD21-98-0477*	21-10845	75–75	Chloroform	5.3
MD21-98-0477*	21-10845	75–75	Trichloroethene	23

*Field duplicate.