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Date: May 27, 2005
Refer To: ER2005-0328

Mr. James Bearzi
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

SUBJECT: SUBMITTAL OF THE PUEBLO CANYON AGGREGATE AREA INVESTIGATION WORK PLAN

Dear Mr. Bearzi:

Enclosed are two hard copies with CDs containing electronic copies of the "Pueblo Canyon Aggregate Area Investigation Work Plan." This investigation work plan fulfills the requirement in Section V.H of the Consent Order to submit the Pueblo Canyon Aggregate Area Work Plan to the department for review and written approval. This work plan includes the investigation requirements for Solid Waste Management Unit (SWMU) 73-002 as required by Section VI. L. of the Consent Order. The work plan was prepared in accordance with the investigation work plan format stipulated in the Consent Order.

If you have any questions, please contact Terry Rust at (505) 665-8843 or trust@lanl.gov or Bob Enz at (505) 667-7640 or renz@doeal.gov.

Sincerely,

David McInroy, Deputy Program Director
Environmental Remediation & Surveillance
Los Alamos National Laboratory

Sincerely,

David Gregory, Federal Project Director
Department of Energy
Los Alamos Site Office

TR/acm

CERTIFICATION

CERTIFICATION BY THE ENVIRONMENTAL STEWARDSHIP– REMEDIATION SERVICES (ENV-ERS) PROJECT TECHNICAL REPRESENTATIVES

Document Title: **SUBMITTAL OF THE PUEBLO CANYON AGGREGATE AREA INVESTIGATION WORK PLAN, LA-UR-05-2366**

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

Name: _____ Date: 5/25/05

David McInroy, Deputy Project Director
Remediation Services
Los Alamos National Laboratory

or

_____ Date: _____

Ken Hargis, Division Leader
Environmental Stewardship Division
Los Alamos National Laboratory

_____ Date: 5/27/05

David Gregory, Federal Project Director
Environmental Restoration Program
Department of Energy/Los Alamos Site Office

or

_____ Date: _____

John Ordaz,
Assistant Area Manager of Environmental Projects
Department of Energy/Los Alamos Site Office

Enclosures: 1) Two hard copies – Pueblo Canyon Aggregate Area Investigation Work Plan (ER2005-0119)
2) Two electronic copies – one in each binder (CDs)

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LA-UR-05-2366
ER2005-0119

Pueblo Canyon Aggregate Area Investigation Work Plan

May 2005

Responsible project leader:

Printed Name	Signature	Title	Organization	Date
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Responsible UC representative:

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Responsible DOE representative:

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David Gregory		Federal Project Director	DOE-LASO	5/27/05

LA-UR-05-2366
May 2005
ER2005-0119

Pueblo Canyon Aggregate Area Investigation Work Plan

CD included with this document

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Prepared by
Environmental Stewardship Division–
Environmental Remediation and Surveillance Program

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LA-UR-05-2366
ER2005-0119

Pueblo Canyon Aggregate Area Investigation Work Plan

May 2005

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EXECUTIVE SUMMARY

This investigation work plan presents the proposed investigation activities required to complete the Resource Conservation and Recovery Act facility investigation (RFI) for solid waste management units (SWMUs) and areas of concern (AOCs) (also referred to as sites) located within Pueblo Canyon aggregate area at Los Alamos National Laboratory (the Laboratory). The Pueblo Canyon aggregate area is located in the Los Alamos townsite and within the Pueblo Canyon watershed. The 45 SWMUs and AOCs (also called "sites") in the Pueblo Canyon watershed are collectively referred to as the Pueblo Canyon aggregate area.

The Pueblo Canyon aggregate area includes wastewater treatment plants, septic systems, landfills, and underground storage tanks. These sites are located on former Laboratory property that is now part of the Los Alamos townsite or that is located within Pueblo Canyon. Property transfer of these sites occurred historically either to Los Alamos County or to private landholders.

The objectives of the proposed investigations are to determine whether a release of hazardous chemicals and/or radionuclides has occurred and, if so, to establish the nature and extent of the release(s) to the environment. Historical information generated during previous RFIs was evaluated in accordance with these objectives. Eleven SWMUs and AOCs in the Pueblo Canyon aggregate area are not proposed for additional data collection under this work plan because they are currently being investigated and/or remediated by the Department of Energy Los Alamos Site Office. Ten SWMUs and AOCs are excluded from additional data collection because of their regulatory status of either being administratively complete or requiring no further action. Four SWMUs and AOCs are currently being remediated under a separate work plan.

Additional data are needed to define the extent of potential contamination for the 20 sites proposed for investigation in this work plan.

The primary goals of the proposed investigations are to

- supplement historical data defining the nature and extent of chemicals of potential concern (COPCs) on the mesa top and their potential migration into soil and subsurface bedrock in the vicinity of each site, and
- characterize the nature and extent of COPC migration from mesa-top outfalls to the toe of the hillslope colluvium in Pueblo Canyon or its tributaries.

The primary activities associated with these investigations are (1) geodetic and geophysical surveys to locate SWMUs/AOCs and associated subsurface structures, historical sampling locations, and new sampling locations; (2) radiological surveying of surface radiation (beta/gamma); (3) surface and near-surface soil sampling; (4) drilling boreholes and sampling soil/tuff; and (5) confirmation sampling of soil/tuff following the possible removal of two septic tank structures and associated lines [AOCs 00-030(eN) and 00-030(f)] and the excavation of contaminated materials (as necessary). Removing structures at these AOCs is contingent upon the approval of respective property owners and the conditions-of-access agreement between the Department of Energy, the University of California, and the property owners. Proposed sampling locations at the outfalls and on the hillslopes downgradient of the outfalls may be relocated pending the results of both the geodetic and radiological surveys. Additional samples will be collected in any areas with elevated radiological activity. Based upon the conceptual site model developed after existing data were reviewed, no activities are proposed for installing vapor or groundwater monitoring wells at this time. However, if the proposed additional data collection reveals the need for vapor and/or groundwater monitoring wells, a supplement to this work plan will be developed.

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1.0 INTRODUCTION

Los Alamos National Laboratory (LANL or the Laboratory) is a multidisciplinary research facility owned by the U.S. Department of Energy (DOE) and managed by the University of California. The Laboratory is located in north-central New Mexico, approximately 60 mi northeast of Albuquerque and 30 mi northwest of Santa Fe. The Laboratory covers 40 mi^2 of the Pajarito Plateau, which consists of a series of finger-like mesas separated by deep canyons containing perennial and intermittent streams running from west to east. Mesa tops range in elevation between 6200 and 7800 ft above mean sea level (msl).

The Laboratory's Environmental Stewardship Division–Environmental Remediation and Surveillance (ENV-ERS) Program is participating in a national effort by DOE to clean up sites and facilities formerly involved in weapons research and development. The goal of the ENV-ERS Program is to ensure that past operations under DOE do not threaten human or environmental health and safety in and around Los Alamos County, New Mexico. To achieve this goal, the ENV-ERS Program is currently investigating sites potentially contaminated by past Laboratory operations. The sites under investigation are designated as either solid waste management units (SWMUs) or areas of concern (AOCs).

The SWMUs and AOCs addressed in this investigation work plan are potentially contaminated with both hazardous and radioactive components. The New Mexico Environment Department (NMED) has authority under the New Mexico Hazardous Waste Act (NMHWA) over cleanup of hazardous wastes and hazardous constituents. DOE has authority over cleanup of radioactive contamination. Radionuclides are regulated under DOE Order 5400.5, "Radiation Protection of the Public and the Environment," and DOE Order 435.1, "Radioactive Waste Management."

Corrective actions at the Laboratory are subject to the Compliance Order on Consent (hereafter, the Consent Order) entered into on March 1, 2005, by NMED, DOE, the Regents of the University of California, and the State of New Mexico Attorney General (NMED 2005, 88027). The Consent Order was issued pursuant to the New Mexico Hazardous Waste Act (HWA), New Mexico Statutes Annotated (NMSA) 1978, § 74-4-10, and the New Mexico Solid Waste Act (SWA), NMSA 1978, § 74-9-36(D). This work plan describes proposed work activities to be completed in accordance with the Consent Order (NMED 2005, 88027).

1.1 General Site Information

The Pueblo Canyon aggregate area (LANL 2005, 88027 consists of 45 SWMUs and AOCs (also referred to as "sites") that are located within the Pueblo Canyon watershed or that discharged directly to the Pueblo Canyon watershed from the mesa top (Figures 1.1-1 and 1.1-2 and Table 1.1-1). The sites include wastewater treatment plants (WWTPs), septic systems, landfills, and underground storage tanks (USTs). These sites are located on former Laboratory property that is now part of the Los Alamos townsite or in Pueblo Canyon (Figures 1.1-3 through 1.1-24). Property transfer of these sites occurred historically either to Los Alamos County or to private landholders.

This work plan proposes investigating 20 SWMUS/AOCs for data that are needed to define the extent of potential contamination at the townsite and/or Pueblo Canyon. Site descriptions and historical information on each of these sites are provided in Section 2 and Appendix B of this work plan (Table 1.1-2).

Ten SWMUs and one AOC, listed in Table 1.1-3, are also described in Section 2 and Appendix B but are not proposed for additional investigation in this work plan. Future investigations of these 11 SWMUs/AOCs, located at the Los Alamos County Airport, will be conducted by DOE and reported on separately.

Fourteen of the 45 SWMUs/AOCs in the Pueblo Canyon aggregate area are not included in this work plan (shaded cells in Table 1.1-1).The current regulatory status of these sites is as follows:

- Two SWMUs [00-028(a) and 00-028(b)] were removed from the Laboratory's Hazardous Waste Facility Permit, and no further action (NFA) has been approved by the NMED (NMED 2003, 79282).
- Four AOCs [00-030(c), 00-030(q), 00-040, and C-31-001] have NFA approval by the U.S. Environmental Protection Agency (EPA) (EPA 2005, 88464).
- Two AOCs [00-030(k) and 00-034(a)] have NFA approval by DOE (DOE 1998, 59694)
- Two SWMUs [00-019 (NMED 2002, 73204) and 00-030(g) (NMED 2003, 76018)] have pending NMED approval of the NFAs; the approvals are contingent upon NMED approval of the Los Alamos and Pueblo Canyons' investigation report (LANL 2004, 87390). NMED previously approved the voluntary corrective action (VCA) completion report for SWMU 00-019 and the Resource Conservation and Recovery Act (RCRA) field investigation (RFI) report for SWMU 00-030(g).
- Three SWMUs (19-001, 19-002, and 19-003) and one AOC (C-19-001) are included in the Technical Area 19 (TA-19)/Eastgate Laboratory accelerated corrective action work Plan (LANL 2004, 85521), which was approved with modifications by NMED (NMED 2004, 87285).

1.2 Investigation Objectives

The objectives of this investigation are (1) to determine the nature and extent of contamination at the sites included in this work plan, (2) to provide general site characterization information for evaluating remedial alternatives, and (3) to conduct confirmatory sampling after selected septic tank structures are removed.

To help achieve these objectives, this investigation work plan

- Identifies additional characterization data requirements based upon a review of SWMU/AOC historical data
- Establishes the rationale for site characterization, data collection, and data analysis
- Identifies appropriate methods and protocols for collecting and analyzing samples to finalize the characterization of each SWMU/AOC
- Describes protocols for removing SWMU/AOC septic tank structures and lines during the investigation and subsequent confirmatory sampling

Because of several reorganizations within the ENV-ERS Program, numerous procedures have not been revised to reflect the current name of the program or the group, ENV-Environmental Characterization and Remediation (ENV-ECR). Therefore, all standard operating procedures (SOPs) and quality procedures (QPs) referred to in this work plan are identified as "ENV-ECR-SOP" or "ENV-ECR-QP." Appendix A includes a list of acronyms, a glossary, and metric conversion and data qualifier definition tables. Appendix B contains site descriptions, operational histories, and a summary of historical investigations of the 11 SWMUs/AOCs. A complete historical analytical data compilation is provided on CD in Appendix C. Appendix D contains the historical published data tables for Consolidated Units 73-001(a)-99 and 73-001(b)-99. A preliminary screening risk assessment for SWMU 73-002 is provided in Appendix E. The investigation-derived waste (IDW) management plan is provided in Appendix F.

2.0 BACKGROUND

This section presents a brief site description and operational history for each SWMU/AOC within the Pueblo Canyon aggregate area requiring additional investigation. This background section also describes the conceptual site model (CSM) and interprets historical data for each site, including the nature and extent of potential contamination. The interpretation of historical data for each site is provided below and includes tables and figures of all inorganic chemicals detected above background values (BVs), radionuclides detected above BV or fallout values (FV), and organic chemicals detected. BV comparisons for inorganic chemicals are based on Laboratory BVs (LANL 1998, 59730). BV or FV comparisons for radionuclides are also based on Laboratory BVs/FVs (LANL 1998, 59730). The summary tables also contain screening-level value comparisons for informational only.

The soil screening-level (SSL) comparisons are based primarily on the NMED SSLs (NMED 2004, 85615) for a residential scenario. If an NMED SSL is not available, then an EPA Region 6 SSL is used for a particular chemical (EPA 2004, 87478). For a few chemicals, an EPA Region 9 SSL is used when there is no corresponding Region 6 SSL (EPA 2004, 87478). Screening action levels (SAL) comparisons for radionuclides are based on RESRAD, Version 6.21 (LANL 2002, 73705).

Appendix C provides all of the analytical results for samples presented in the remainder of Section 2. The analytical results presented in Section C-1.0 are from samples that were sent to an off-site analytical laboratory. The analytical results of Section C-2.0 are from samples that were analyzed by either an on-site analytical laboratory or a mobile laboratory. These samples are considered screening-level data.

2.1 SWMU 00-018(a), Pueblo Canyon Wastewater Treatment Plant

2.1.1 Site Description and Operational History

SWMU 00-018(a) is the decommissioned Pueblo Canyon WWTP, located at the end of Olive Street in Pueblo Canyon (Figures 1.1-2 and 1.1-3) on Los Alamos County property (LANL 1997, 56614, p. 28). The plant, which was built between 1946 and 1948, began operating in 1951, primarily receiving waste from residential and business properties, including the Los Alamos Medical Center (LANL 1997, 56614, p. 28). This WWTP also received laboratory-scale (e.g., less than 10 L per month) waste from the Health Research Laboratory (HRL) at TA-43 from 1953 to 1983, the only known laboratory contributor to the waste stream at the plant (LANL 1997, 56614, p. 29). From 1983 to 1991, the plant received only sanitary waste from Los Alamos businesses and residences (LANL 1997, 56614, p. 29; LANL 1992, 07667, p. 5-61). Originally, the Zia Company operated the plant for the Atomic Energy Commission (LANL 1997, 56614, p. 28). In the early 1960s, Los Alamos County assumed control of the plant (LANL 1997, 56614, p. 28). Los Alamos County decommissioned the Pueblo Canyon WWTP during 1991 and 1992 (LANL 1997, 56614, p. 29). After decontamination and decommissioning (D&D), sludge was transferred from the plant's digester to the sludge beds that were sampled during the 1996 RFI (LANL 1997, 56614, p. 29). The plant structures still exist and remain connected to the main county sewer system, although wastewater bypasses the plant structures and pipelines.

2.1.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for SWMU 00-018(a) includes both surface and subsurface sources of potential exposure.

2.1.2.1 Source of Contamination

Contamination at SWMU 00-018(a) resulting from historical Laboratory operations would have originated from the oldest sludge drying beds at the site as water-soluble components infiltrated the underlying filter media or when dried sludge for fill material was used at the site. The 1996 RFI focused on the oldest sludge beds and the sludge fill area to the east-southeast of the sludge beds, because these areas may have been contaminated when the plant was still receiving Laboratory wastes; more recent sludges generated between 1983 and 1991 were subject to permit restrictions and analysis and are not expected to have contributed to contamination at SWMU 00-018(a) (LANL 1992, 07667, p. 5-65). The typical depth of the fill was 6 in. to 12 in., although it was observed to be as deep as 2 ft in some places (LANL 1997, 56614, p. 31). No accidental spills or releases have been documented for SWMU 00-018(a) (LANL 1992, 07667, p. 5-54).

2.1.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soil
- Continued dissolution and advective/dispersive transport of chemicals in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.1.2.3 Potential Receptors and Exposure Pathways

Discounting current site conditions, the following human receptors could reasonably be expected to be present (current and potential future exposure scenarios) at SWMU 00-018(a):

- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at SWMU 00-018(a). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to a chemical of potential concern (COPC) in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at SWMU 00-018(a) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 900 ft below ground surface (bgs) (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at SWMU 00-018(a) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.1.3 Historical Data Quality Interpretation

2.1.3.1 Data Quality

A total of 26 surface and subsurface samples from the oldest sludge beds and sludge fill area were collected during the SWMU 00-018(a) RFI (conducted from September 1996 through March 1997) and were submitted to an off-site analytical laboratory for analysis. These samples were analyzed for at least one of the following analytical suites: metals, gamma spectroscopy analytes, tritium, isotopic uranium, strontium-90, polychlorinated biphenyls (PCBs), pesticides, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs) (Table 2.1-1).

Although hard-copy data packages are not readily available, the data validation performed for these samples is presented in Section 4.1 and Table B-1 of the RFI report for Potential Release Sites (PRSs) 0-018(a,b) (LANL 1997, 56614). One sample, 0100-97-0211, did not have data validation information in the RFI report; this sample was analyzed for gamma spectroscopy, isotopic strontium, and isotopic uranium.

The historical RFI data presented in this section were evaluated using current guidance and available electronic data from the Environmental Restoration Database (ERDB). The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

Several inorganic chemicals were qualified as estimated (J), because the results were between the estimated quantitation limit (EQL) and the method detection limit (MDL). Three results of manganese were estimated and potentially biased low (J-), and three results of antimony were reported as not detected with an estimated detection limit and potentially biased low (UJ), because the recovery of the associated spike sample was between 30% and the lower acceptance level.

Radionuclide Results

All radionuclide analytical results that were qualified as not detected (U) were because either the associated sample activity was less than the minimum detectable activity (MDA) or less than three times the total propagated uncertainty.

Organic Chemical Results

Organic chemical analytical suites included PCBs (as Aroclors), pesticides, SVOCs, and VOCs. Some of the VOC results for three samples were estimated (J) by the analytical laboratory. Four samples had some VOCs reported as not detected with an estimated detection limit (UJ) because internal standards associated with the sample failed. Two samples had VOC results that were estimated and potentially biased high (J+) because the associated internal standard counts were greater than 200% of the previous continuing calibration standard.

No analytical results for SWMU 0-018(a) were rejected.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.1.3.2 Nature and Extent of Contamination

Some time during the operational history of the Pueblo Canyon WWTP, dried sludge from the older sludge beds was used as fill material in an area to the east/southeast of the sludge drying beds. Samples of this fill material were collected down to, but excluding, the underlying tuff during the 1996 RFI (Figure 2.1-1). When the Pueblo Canyon WWTP was decommissioned in 1991 and 1992, sludge remaining in the digestion tank was transferred to the eastern sludge drying bed (LANL 1997, 56614, p. 29). During RFI activities in 1996, Los Alamos County personnel removed the sludge material in the eastern sludge bed down to the level of the filter material (LANL 1997, 56614, p. 29); the sludge was taken to the Los Alamos County landfill where it was mixed with wood chips and used as mulch. Samples were collected from the sand filter material and underlying tuff in the eastern sludge beds, the oldest beds at the site and the only beds that may have been impacted by historical laboratory operations.

Analytical samples collected from the sludge fill area and the filter beds are summarized in Table 2.1-1 and shown in Figure 2.1-1, including the samples removed from the sludge bed. Analytical results of samples from the removed sludge material are summarized in the RFI report (LANL 1997, 56614). The analytical results of the detected chemicals are presented in Tables 2.1-2, 2.1-3, and 2.1-4 for metals, radionuclides, and organic chemicals, respectively. Soil data were used in the comparison of the sludge samples' data to BVs.

Sludge Fill Area

Nine samples at six locations within the sludge fill area were collected during the 1996 RFI at depth intervals ranging from 0.5 ft to 2 ft (Table 2.1-1).

The following metals were detected above BVs: barium, cadmium, chromium (total), copper, lead, mercury, selenium, silver, thorium, and zinc (Table 2.1-2, Figure 2.1-2). Five of the six locations (except 00-04975) had detections of one or more metals above BVs. Of the samples at these five locations, surface samples from three locations (at locations 00-04976, 00-04977, and 00-04979) had metals detected above BVs, and subsurface samples from two locations (00-04980 and 00-04978) had metals detected above BVs.

In the sludge fill samples, no radionuclides were detected above their respective BVs or FVs (for samples collected at depths less than 6 in.), and no radionuclides were detected where BVs or FVs did not apply (Table 2.1-3 and Figure 2.1-3).

One or more organic chemicals (Aroclor-1254, Aroclor-1260, benz(a)pyrene, benzo(b)fluoranthrene, bis(2-ethylhexylphthalate), alpha-chlordane, gamma-chlordane, 4-chloroanaline, chrysene, 4,4'-dichlorodiphenyldichloroethylene (4,4'-DDE), dieldrin, endosulfan sulfate, endrin aldehyde, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene) were detected in samples from three locations (00-04976, 00-04977, and 00-04980) (Table 2.1-4 and Figure 2.1-4). Of the samples at these three locations, two were surface samples with detected organic chemicals (locations 00-04976 and 00-04977) and one had organic chemicals detected in the subsurface (location 00-04980).

Sludge Beds

Four samples from two locations at depths ranging from 0.5 ft to 11 ft were collected from the sand filter material left in the older sludge drying beds (Table 2.1-1).

The following metals were detected above BVs in one or more samples: cadmium, copper, lead, mercury, silver, thallium, and zinc (Table 2.1-2 and Figure 2.1-2).

No radionuclides were detected in any of the four samples from the sand filter material (Table 2.1-3 and Figure 2.1-3).

Four organic chemicals were detected in one sample from the sand filter material: Aroclor-1254, 4-chloroaniline, chrysene, and 4,4'-DDE (Table 2.1-5 and Figure 2.1-4).

Three samples from two locations were also collected from the tuff below the sand filter material in the older sludge drying beds (Table 2.1-1). Two metals were detected above BVs in these samples: copper and mercury (Table 2.1-2 and Figure 2.1-2). Two metals, antimony and silver, had reporting limits above BVs. One radionuclide, tritium, was detected in the deepest tuff sample (5.5 ft to 6.5 ft bgs) at location 00-04971 (Table 2.1-3 and Figure 2.1-3). No organic chemicals were detected in any of the samples from the tuff below the sand filter material (Table 2.1-4 and Figure 2.1-4). Within the sludge beds, a clear trend of decreasing concentrations with depth is evident. However, extent has not been defined at other locations within the SWMU and beyond the SWMU boundaries; Section 4 provides details of the sampling proposed to address this data need.

2.2 AOC 00-018(b), Bayo Canyon Wastewater Treatment Plant (Active)

2.2.1 Site Description and Operational History

AOC 00-018(b), the active Bayo Canyon WWTP, located at the intersection of Pueblo and Bayo Canyons, owned and operated by Los Alamos County (Figures 1.1-2 and 1.1-4). It began operating in 1963 and was upgraded in 1966 to handle wastes from the decommissioned Central WWTP, SWMU 00-019, which treated sanitary waste from TA-01 (LANL 1997, 56614, p. 5); the Bayo Canyon WWTP probably did not receive wastes from TA-01 because TA-01 was decommissioned at approximately the same time that operations began at the Bayo Canyon WWTP (LANL 1997, 56614, p. 5). The Bayo Canyon WWTP received sanitary wastes from eastern Los Alamos businesses and residences until 1991, and in 1992 it began to receive sanitary waste from northern and western Los Alamos residential areas after the Pueblo Canyon WWTP was decommissioned (LANL 1997, 56614, p. 5). This plant has been the primary supplier of effluent for seasonal irrigation at the Los Alamos golf course and recreational ball fields since 1992 (LANL 1997, 56614, p. 51). The plant operates under National Pollutant Discharge Elimination System permit number NM0020141 (LANL 1997, 56614, p. 51).

2.2.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-018(b) includes both surface and subsurface sources of potential exposure.

2.2.2.1 Source of Contamination

Contamination at AOC 00-018(b) resulting from historical Laboratory operations would have originated from the oldest sludge drying beds at the site as water-soluble components infiltrated the underlying filter media. The 1996 RFI focused on the older sludge beds, because the sludge beds may have received Laboratory wastes; recent sludges have been subject to permit restrictions and analysis and are not expected to have contributed to contamination at AOC 00-018(b) (LANL 1992, 07667, p. 5-65). No sludge-fill area exists outside of the sludge drying beds at AOC 00-018(b) (LANL 1997, 56614, p. 52). Effluent from the WWTP is also a potentially affected media, although the RFI determined that surface water runoff and channel sediment pathways do not exist at AOC 00-018(b) (LANL 1997, 56614, p. 52). No accidental spills or releases have been documented for AOC 00-018(b) (LANL 1992, 07667, p. 5-54).

2.2.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soil
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.2.2.3 Potential Receptors

The following human receptors could reasonably be expected to be present (current and future) at AOC 00-018(b):

- Industrial workers (current exposure scenario)
- Occasional site visitors (current and potential future exposure scenarios)
- Recreational (current and potential future exposure scenarios)

Potentially complete exposure pathways by which current or future human receptors could be exposed to chemicals and/or radionuclides from AOC 00-018(b) include

- Ingestion, dermal, and inhalation exposure to chemicals and/or radionuclides in surface soil transported off-site (current/future)
- Ingestion, dermal, and inhalation exposure to chemicals and/or radionuclides in subsurface soil that has been excavated and deposited on the surface (future)
- Ingestion, dermal, and inhalation exposure to chemicals and/or radionuclides in surface water affected by plant effluent

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-018(b). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because of the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-018(b) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 700 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-018(b) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.2.3 Historical Data Quality Interpretation

2.2.3.1 Data Quality

Five samples were collected from beneath the oldest sludge beds in October 1996 for the AOC 00-018(b) RFI and submitted to an off-site analytical laboratory. All samples were analyzed for metals, gamma spectroscopy analytes, tritium, PCBs (as Aroclors), pesticides, SVOCs, and VOCs.

Although hard-copy data packages are not readily available, electronic versions of the data packages are available as well as the data validation performed for these samples (LANL 1997, 56614, Section 4.1 and Table B-1).

The RFI data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals. Five results for manganese were estimated and potentially biased low (J-), and five antimony results were estimated and not detected (UJ) because the analyte was recovered below the lower acceptance level but greater than 30% in the associated spike sample.

Radionuclide Results

All samples were analyzed for radionuclides, and the results for all but one radionuclide in one sample were qualified as not detected (U) because either the associated sample activity was less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

All samples were analyzed for PCBs, pesticides, SVOCs, and VOCs. Some of the pesticide and PCB results were reported as not detected with an estimated detection limit (UJ) because the associated surrogate was below the lower acceptance level but greater than ten percent of the recovery.

No analytical results for AOC 00-018(b) were rejected.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.2.3.2 Nature and Extent of Contamination

The RFI at AOC 00-018(b) focused on the oldest sludge beds at the site, because these locations were most likely to have contamination from historical operations at the Laboratory. Because it was determined that no sludge-fill areas existed at the site, areas outside the oldest sludge beds were not investigated. Angled boreholes at two locations (Figure 2.2-1) were used to investigate material within and beneath the old sludge drying beds to avoid damaging liners of newer overlying beds (LANL 1997, 56614, p. 53). The first borehole, Bayo-1 (location 00-04973), was located approximately 11.5 ft southwest of the southwest corner of sludge bed 1 and was drilled at an approximate N22E azimuth at an angle of 45 degrees from vertical (LANL 1997, 56614, p. 53). The second borehole, Bayo-2 (location 00-04974), was located 20 ft west of sludge bed 2 at an approximate N55E azimuth at an angle of 30 degrees from vertical (LANL 1997, 56614, p. 55). The borehole profiles are summarized in Table 2.2-1. The approximate vertical depths of the borehole samples (originally recorded as linear feet from the borehole initiation points) are presented in Table 2.2-1. The samples collected from each of these boreholes are summarized in
Table 2.2-2.

No metals were detected above BVs in the two samples collected from the Bayo-1 borehole and the three samples collected from the Bayo-2 borehole. However, the reporting limits (RLs) for antimony, cadmium, mercury, and silver were above BV in all samples (Table 2.2-3). One radionuclide, europium-152, was detected in the shallow sample (approximately 33 ft to 35 ft bgs, as shown in Table 2.2-1) from Bayo-1 (Table 2.2-4 and Figure 2.2-2), but no radionuclides were detected in any of the samples collected from Bayo-2. A single organic chemical, acetone, was detected in three of the five samples from the two boreholes (Table 2.2-5 and Figure 2.2-3).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.3 AOC 00-030(d), Septic Tank

2.3.1 Site Description and Operational History

AOC 00-030(d) is a septic tank system (sometimes referred to as structure 2) located on Los Alamos County property at the Pine Street cul-de-sac (Figures 1.1-2 and 1.1-5). It was installed in 1943 or 1944 and served the McKee houses, apartments, and dormitories west of Canyon Road. Structure 2 may have served only residences (LANL 1996, 53799, p.1) and remained in use until the central WWTP was completed in 1947 (LANL 1992, 07667, p. 5-94; LANL 1996, 53799, p. 1). During the VCA in 1996, 170 ft of 8-in.-diameter steel outfall pipe associated with the septic tank system were excavated and removed (LANL 1997, 62542, p. 28). The tank itself, or remnants of it, is still in place.

2.3.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(d) includes both surface and subsurface sources of potential contamination.

2.3.2.1 Source of Contamination

Contamination at AOC 00-030(d) may have resulted from any waste passing through the septic tank system and may be present in any remaining residual materials because of leaks in the tank or associated piping or because of effluent discharging into Graduation Canyon.

2.3.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.3.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(d):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(d). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(d) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(d) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.3.3 Historical Data Quality Interpretation

2.3.3.1 Data Quality

A total of 11 surface and subsurface samples in and around the septic tank system were collected and submitted to an off-site analytical laboratory. These samples were analyzed for metals (including uranium), gamma spectroscopy analytes, isotopic plutonium, PCBs, pesticides, SVOCs, and VOCs.

Although hard-copy data packages are not readily available, electronic versions of the data packages are available as well as the data validation performed for these samples, in Appendix A of the VCA report for PRSs 00-030(d,k) and C-00-043 (LANL 1997, 62542).

Although a VCA was performed at AOC 0-030(d), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB is presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals. Eight results for arsenic and selenium were estimated and potentially biased low (J-) because the analyte was recovered below the lower acceptance level but greater than 30% in the associated spike sample. Several inorganic chemical results were estimated (J) because the results were between the EQLs and the MDLs.

All samples were analyzed for uranium. The data packages for request numbers 2745 and 2767 indicate that all samples were analyzed for uranium by inductively coupled plasma mass spectrometry (ICPMS) after a partial digestion.

Radionuclide Results

All radionuclide analytical results were qualified as not detected (U), because either the associated sample activities were less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

Samples were analyzed for PCBs, pesticides, SVOCs and VOCs. Some of the VOC results were reported as not detected with an estimated detection limit (UJ) because the associated internal standard area counts were less than 50% but greater than 10% recovery when compared to area counts in the applicable continuing calibration standard. Several results for SVOCs, VOCs, PCBs, and pesticides were reported as estimated (J) by the analytical laboratory.

No results for AOC 00-030(d) were rejected.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.3.3.2 Nature and Extent of Contamination

During the VCA, samples were collected from three areas (Figure 2.3.-1) associated with this septic tank system: (1) the outfall (2 samples), (2) the junction between vitrified clay pipe (VCP) and steel outfall pipe (1 sample), and (3) inside the septic tank (8 samples). A summary of samples collected is presented in Table 2.3-1.

Outfall

Metals detected above BVs in the two outfall samples include lead, uranium, and zinc (Table 2.3-2 and Figure 2.3-2). Two metals, antimony and thallium, were not detected in either sample, but as shown in Table 2.3-2, the analytical detection limits were greater than BVs. As shown in Table 2.3-3 and Figure 2.3-3, the only radionuclide detected above FV was plutonium-239. Detected organic chemicals in the two outfall samples include pesticides and one VOC. The sample collected immediately below the outfall (at location 00-04885) contained alpha and gamma-chlordane, and toluene (Table 2.3-4 and Figure 2.3-4). Outfall sample number two (location 00-04886), collected about 15 ft downgradient of the outfall pipe, had detected concentrations of 4,4'-dichlorodiphenyldichloroethane (4,4'-DDD), 4,4'-DDE, and toluene. Both outfall samples were collected at a depth of 0.42 ft bgs and are assumed to be from alluvial sediments.

Pipe Junction

Four metals were detected above BVs in the sample collected (location 00-04887, Table 2.3-1 and Figure 2.3-1) at the junction of the VCP and steel outfall pipe: antimony, iron, uranium, and selenium (Table 2.3-2 and Figure 2.3-2). The iron concentration above BV may be the result of the localized presence of rust from the steel pipe. Plutonium-239 was the only radionuclide detected in the sample above FVs (Table 2.3-3 and Figure 2.3-3). Toluene was the only organic chemical detected in this sample (Table 2.3-4 and Figure 2.3-4).

Inside Septic Tank

Eight samples, two from each of four locations within the identified boundaries of the septic tank, were collected (Figure 2.3-1 and Table 2.3-1). The VCA report describes the septic tank contents as "moist, brown, clay-rich soil with tuff cobbles, wood, rebar, and concrete pieces" (LANL 1997, 62542. p. 13). Four samples were collected at depths between 2.5 and 4.5 ft bgs, and four samples were collected between 6.5 ft and 8.0 ft bgs. Seven metals were detected above BVs (Table 2.3-2 and Figure 2.3-2) in these eight samples: calcium (2 detects above BVs of 8 samples collected), copper (1 of 8), lead (1 of 8), mercury (5 of 8), silver (1 of 8), uranium (8 of 8), and zinc (4 of 8). The only radionuclide detected above BVs/FVs was plutonium-239 (Table 2.3-3 and Figure 2.3-3). Plutonium-239 was present above FVs only in the four deepest soil samples (at locations 00-04888, 00-04889, 00-04890, 00-04891) from the septic tank. The primary organic chemicals detected inside the boundaries of the septic tank were polyaromatic hydrocarbons (PAHs) and pesticides (Table 2.3-4 and Figure 2.3-4). The VCA report concluded that the PAHs were probably the result of runoff from the adjacent asphalt cul-de-sac and, therefore, were not related to the subject septic tank. The pesticides detected included aldrin (detected in 2 of 8 samples), carbazole (1 of 8), 4,4'-dichlorodiphenyltrichloroethane (4,4'-DDT) (7 of 8), dieldrin (2 of 8), endosulfan

sulfate (2 of 8), and endrin ketone (1 of 8). In addition, two daughter products of DDT decomposition were also detected: 4,4'-DDD (5 of 8) and 4,4'-DDE (8 of 8).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.4 AOC 00-030(eN), Septic Tank

2.4.1 Site Description and Operational History

AOC 00-030(eN), referred to as septic tank No. 4, consists of two parallel septic tanks set 5 ft apart. Each septic tank is 25 ft long x 10 ft wide x 8 ft deep. The tanks are located on private property north of Canyon Road at the former Boy Scout Lodge (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1) (Figures 1.1-2 and 1.1-6), The septic tanks probably received waste from the apartments, dormitories, and some original Ranch School buildings now located on private property and from the outfall from septic tank AOC-00-030(q) (Francis and Sullivan 1995, 56099.105). The ground surface at AOC 00-030(eN) is approximately 7276 ft above sea level (asl). With the septic tank inlet buried approximately 5 ft bgs (elevation of 7271 ft asl), it is not likely that the septic tank received waste from a gravity-feed system originating in TA-01 (mean elevation of 7263 ft asl) downgradient of AOC 00-030(eN). The tanks ceased operating when the central WWTP became operational in 1947 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). The tanks and associated drainlines are still in place (Francis and Sullivan 1995, 56099.105).

2.4.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(eN) includes both surface and subsurface sources of potential contamination.

2.4.2.1 Source of Contamination

Contamination at AOC 00-030(eN) may have resulted from any waste passing through the septic tank and may be present in any remaining materials or from any tank effluent emptying into Acid Canyon. Because the outfall for this tank was not located, the outfall as a contamination source cannot be verified.

2.4.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.4.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(eN):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(eN). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(eN) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(eN) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.4.3 Historical Data Quality Interpretation

2.4.3.1 Data Quality

Four investigative samples were collected from AOC 00-030(eN) and submitted to off-site analytical laboratories. Two of the samples (AAB0181 and AAB0182) were collected from the southern end (inlet side) of the easternmost tank. Sample AAB0184 was collected from the southern end of the western tank. A fourth sample, AAA8459, was collected from between the two tanks (LANL 1996, 56432, pp. 25–28). These samples were analyzed for uranium, isotopic plutonium, PCBs, pesticides, SVOCs, and VOCs. Of these four samples, three were also analyzed for the gamma spectroscopy analytes americium-241 and cesium-137; the fourth sample was also analyzed for americium-241, isotopic uranium, and metals. Three of the samples (AAB0181, AAB0182, and AAB0184) were sent to an on-site analytical laboratory for metals analysis; the results are screening-level data.

Although an RFI report has been written for AOC 0-030(eN), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

Samples were analyzed for inorganic chemicals. One inorganic chemical result for uranium was estimated (J) by the analytical laboratory. According to the RFI report (LANL 1996, 56432, p. 19, 34), all of the samples analyzed for uranium were run as total uranium by kinetic phosphorescence analysis (KPA). This analytical method was also reported in the data package by the laboratory. The uranium samples were run by KPA after a total digestion.

Radionuclide Results

Samples AAB0181, AAB0182, and AAB0184 were analyzed for isotopic plutonium, americium-241, and cesium-137 (gamma spectrometry analytical suite). Sample AAA8459 was analyzed for americium-241, isotopic plutonium, and isotopic uranium. Four results for plutonium-238 and plutonium-239 were qualified as not detected (U) because the associated sample activities were less than three times the total propagated uncertainty.

Three results each for americium-241 and cesium-137 for AOC 00-030(eN) were rejected (R) because the MDA documentation is missing, and validation could not be completed.

Organic Chemical Results

Samples were analyzed for PCBs, pesticides, SVOCs, and VOCs. Two results for 4,4'-DDT were reported as estimated (J) values by the analytical laboratory.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment. The data for samples analyzed by an on-site laboratory may be used as screening-level data.

2.4.3.2 Nature and Extent of Contamination

Septic Tank Area

Seven shallow hand-augered boreholes were made in the fill overlying the septic tank. Six of the seven boreholes encountered auger refusal at depths of 2.5 ft to 3 ft, which was interpreted in the RFI report as concrete or tuff (LANL 1996, 56432, p. 27). The RFI report interpreted the concrete was to be the "bottom" of the septic tanks and assumed the tanks had been partially removed (LANL 1996, 56432, p. 28). Another information source indicates that the tanks are still in place (Francis and Sullivan 1995, 56099.105). It is very probable that during sampling, the RFI characterized only the fill above the septic tanks. The one borehole augered to approximately 5 ft bgs encountered tuff but probably augered between the two tanks.

Samples were collected from all of the boreholes and four were submitted for analysis as summarized in Table 2.4-1. The four borehole samples submitted are shown on Figure 2.4-1. The outfall for this tank could not be located; therefore, only samples from the area of the septic tank itself were collected (LANL 1996, 56432, p. 4).

Mercury was detected above the BV in the only sample submitted for metals analysis at an off-site analytical laboratory (Table 2.4-2 and Figure 2.4-2). The mercury concentration in the three samples analyzed on-site was less than the BV. Thallium was not detected in the one sample (from location 00-03826) submitted to an off-site analytical laboratory, but the analytical detection limit was greater than the BV. Americium-241 was detected above FV in sample AAA8459 (Table 2.4-3 and Figure 2.4-3). The

pesticide 4,4'-DDT and its metabolites (4,4'-DDD, and 4,4'-DDE) were detected in three of four samples (at locations 00-01518, 00-01519, and 00-01521; Table 2.4-4 and Figure 2.4-4). Endosulfan I was detected in one of four samples (at location 00-03826).

Acid Canyon

Although the outfall pipe was not located, the engineering drawings indicate that it would have discharged into Acid Canyon. The nature and extent of contamination from the AOC 00-030(eN) outfall is not known. Additional information on the nature and extent of contamination in Acid Canyon is provided in Section 2.15 (Consolidated Unit 45-001-00) of this work plan.

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.5 AOC 00-030(eS), Septic Tank

2.5.1 Site Description and Operational History

AOC 00-030(eS), a septic tank (structure 4A), located on private property south of Canyon Road (Figures 1.1-2 and 1.1-7) at the Chapel Apartments, was installed sometime between 1943 and 1947 (LANL 1996, 56432, p. 4–5). Structure 4A served residences and may have been connected to TA-01 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(eS) is approximately 7279 ft asl. With the septic tank inlet buried approximately 5 ft bgs (elevation of 7274 ft asl), it is not likely that the septic tank received waste from a gravity-feed system originating in TA-01 downgradient of AOC 00-030(eS). The tank ceased operating when the central WWTP became operational in 1947 (LANL 1996, 56432, p. 1). The tank was removed when the Chapel Apartments were built in 1949 (LANL 1996, 56432, p. 28, 32). The site is currently a paved parking lot. The outlet pipe was located in Pueblo Canyon and is still in place

2.5.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(eS) includes both surface and subsurface sources of potential contamination.

2.5.2.1 Source of Contamination

Contamination at AOC 00-030(eS) would have originated from effluent discharged at the outfall from the septic tank. The tank may have been removed when the Chapel Apartments were built (LANL 1996, 56432, p. 28). Samples were not collected from the likely former tank location. It is not known whether potential residual contamination from the tank itself represents a contamination source.

2.5.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill

- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.5.2.3 Potential Receptors and Exposure Pathways

The following human receptors could be reasonably expected to be present (current and potential future) at AOC 00-030(eS):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(eS). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. This exposure is unlikely because the site is currently under pavement. Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(eS) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(eS) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.5.3 Historical Data Quality Interpretation

2.5.3.1 Data Quality

Four surface samples were collected in the vicinity of the outfall and submitted to off-site analytical laboratories for analysis of metals. Two of these samples were analyzed for uranium, isotopic plutonium, gamma spectroscopy analytes, PCBs, pesticides, SVOCs, and VOCs, and one was analyzed for cyanide.

The four samples associated with AOC 0-030(eS) do not have hard-copy data packages readily available. However, electronic versions of the data packages are available as well as the data validation performed for these samples in Section 4 and Appendix B of the RFI report for PRSs 0-030(eN, eS, f) (LANL 1996, 56432). Data validation for samples AAA8447 and AAB8453 are not included in the RFI report.

Although an RFI report has been written for AOC 0-030(eS), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result

is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers and assigned as part of the data evaluation process.

Inorganic Chemical Results

Four samples were analyzed for inorganic chemicals. Three of these samples were analyzed for uranium, and one sample was analyzed for cyanide. According to the data package for the inorganic analyses, all of the samples analyzed for uranium were run as total uranium by KPA after a total digestion. This analytical method was also reported by the laboratory in the data package. The analytical results were either detected concentrations with no qualifiers or nondetected concentrations (U) that were qualified by the analytical laboratory.

Sample AAA8447 had an original result for lead reported at 1010 mg/kg. A memorandum from the analytical laboratory, dated May 25, 1995 (RUST Geotech 1995, 88469) indicates that the sample duplicate and spike sample for this analysis were quite variable. The analytical laboratory crushed and blended this sample, and analyzed it a second time for lead. The result of the second analysis was 210 mg/kg of lead and was reported by the laboratory as the more representative result for this sample. The result from the reanalyzed sample is reported in Table 2.5-2 of this work plan.

Radionuclide Results

Two samples were analyzed for isotopic plutonium and gamma spectroscopy analytes (americium-241 and cesium-137). The results for the plutonium-238 analyses were qualified as not detected (U), because the associated sample activities were less than three times the total propagated uncertainty.

The two results for americium-241 and for cesium-137 for AOC 0-030(eS) were rejected (R) because the MDA documentation is missing and the validation could not be completed.

Organic Chemical Results

Samples were analyzed for PCBs, pesticides, SVOCs, and VOCs. Four pesticide results were reported as estimated (J) by the analytical laboratory. The other analytical results were nondetected concentrations, as qualified by the analytical laboratory.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.5.3.2 Nature and Extent of Contamination

A review of historical documents, in conjunction with information collected from hand-augered and drilled boreholes in the vicinity of the AOC 00-030(eS) septic tank location during the RFI, confirmed that the tank had been removed during construction of the Chapel Apartments (LANL 1996, 56432, p. 30–32). No samples were collected from the area of the former tank location. The outfall was located in Acid Canyon near the confluence with Pueblo Canyon, and four surface samples were collected from the outfall area (Table 2.5-1 and Figure 2.5-1).

Five metals were detected above the BVs in the four surface soil samples from the outfall area (Table 2.5-2 and Figure 2.5-2): cadmium, copper, lead, mercury, and zinc. Lead was reported above the BV in all four samples. One of the four samples was collected in a sediment trap approximately 33 ft

downstream of the outfall (location 00-03740). Another sample (location 00-03741) was collected approximately 33 ft downstream of this first sample. The lead concentration reported for this second sample was 615 mg/kg. It was noted in the RFI (LANL 1996, 56432, p. 30) that pieces of tin cans were present in the vicinity of the sample collection location. Because of the high lead concentration found at location 00-03741, the other two surface soil samples were collected 6 in. upstream (location 00-03824) and 6 in. downstream (location 00-03825) of location 00-03741. No radionuclides above BVs/FVs were detected in these four samples. As shown in Table 2.5-3 and Figure 2.5-3, the pesticides alpha-chlordane, gamma-chlordane, 4,4'-DDT, and dieldrin were detected in the sample collected from the sediment trap (location 00-03740) but not in the sample collected downstream of this first sample, adjacent to the stream channel (location 00-03741).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.6 AOC 00-030(f), Septic Tank

2.6.1 Site Description and Operational History

AOC 00-030(f) is a septic tank (structure 5) consisting of two septic tanks located on private property south of Canyon Road and north of Rose Street (Figures 1.1-2 and 1.1-8), slightly northeast of the United Church school building (LANL 1992, 07667, p. 5-94). A 1943 engineering drawing labels the tanks "Septic Tank No. 2" (LANL 1996, 56432, p. 43–44). The tanks connected with sewer lines in the "Apartment Area" and handled sanitary waste from a school, a post exchange, and some of the original Ranch School buildings, but it did not receive waste from TA-01 operations (LANL 1996, 56432, p. 5). The tank ceased operating when the central WWTP became operational in 1947 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). The tanks are still in place and located beneath existing sidewalks in a heavily developed area.

2.6.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(f) includes both surface and subsurface sources of potential contamination.

2.6.2.1 Source of Contamination

Potential contamination at AOC 00-030(f) would have originated from effluent at the outfall from the septic tank. The RFI report does not discuss the outfall or the attempts made to locate it, although the RFI work plan indicates that the outfall would have drained to Acid Canyon reach ACS (LANL 1992, 07667, Figure 5-43). Therefore, it cannot be determined if potential contamination in the effluent represents a contamination source. Samples were collected from the septic tank location based upon the 1943 drawings, and they may be considered representative of possible potential contamination.

2.6.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.6.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(f):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(f). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. Exposure is not likely because the site is under pavement. Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(f) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(f) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.6.3 Historical Data Quality Interpretation

2.6.3.1 Data Quality

Seven subsurface samples were collected in and around the septic tank system from five locations and submitted to off-site analytical laboratories. These seven samples were analyzed for uranium, isotopic plutonium, PCBs, and pesticides. Five of these samples were analyzed for gamma spectroscopy

analytes; two of these samples were analyzed for metals, americium-241, SVOCs, and VOCs; one sample was analyzed for isotopic uranium.

The seven samples associated with AOC 00-030(f) were analyzed by off-site analytical laboratories. Although hard-copy data packages are not readily available, electronic versions of the data packages are available as well as the data validation performed for these samples in Section 4 and Appendix B of the RFI report for PRSs 0-030(eN, eS, f) (LANL 1996, 56432).

An additional five samples were collected and analyzed by an on-site analytical laboratory. These five samples were analyzed for metals, PCBs, and SVOCs. Four of the samples were also analyzed for VOCs. The results of these five samples are screening-level data.

Although an RFI report has been written for AOC 00-030(f), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

Two samples were analyzed for inorganic chemicals and seven samples were analyzed for uranium. No inorganic chemical results or uranium results were qualified. According to the RFI report (LANL 1996, 56432, p. 19, 51), all the samples analyzed for uranium were run as total uranium by KPA after a total digestion. This analytical method was also reported by the laboratory in the data package.

Radionuclide Results

Several samples were analyzed for radionuclides, and the results were qualified as not detected (U) because the associated sample activities were less than three times the total propagated uncertainty for both the off-site analytical data and the screening data.

The five results (from the off-site analytical data) for americium-241 for AOC 0-030(f) were rejected (R) because the MDA documentation was missing; therefore, validation could not be completed.

Organic Chemical Results

Samples were analyzed for PCBs, pesticides, SVOCs and VOCs. One 4,4'-DDD result from the off-site analytical data, and four results (three acetone and one 1,1,2-tricholor-1,2,2-trifluoroethane result) from the screening data were reported as estimated (J) values by the analytical laboratory.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.6.3.2 Nature and Extent of Contamination

This septic tank system, which comprises AOC 00-030(f), consisted of two parallel tanks of unequal size (Figure 2.6-1). The tanks were located next to a church school, under a concrete sidewalk. Consequently, excavation was not possible, and the tank investigation was conducted by a combination of mechanical borehole drilling and hand-augering. No details about the outlet pipe or outfall for this system are presented in the RFI report (LANL 1996, 56432).

Five samples from three boreholes inside the approximate tank boundaries were evaluated (samples AAB0272, AAB0270, AAB0263, and AAB0262 from boreholes 00-01485 and 00-01488 in the western tank, and one sample, AAB0271, from borehole location 00-01486 in the eastern tank). Two samples were also collected from soil in areas immediately outside the approximate tank locations (locations 00-03827 and 00-03828). Borehole and sampling locations are shown in Figure 2.6-1, and the samples collected are summarized in Table 2.6-1.

Inside Septic Tank

All the metals analyses for the inside tank samples of the fill were performed by on-site analytical laboratory. Cadmium was detected above the BV in all four samples collected from the western tank (Tables 2.6-2a and 2.6-2b and Figure 2.6-2). Lead was detected above the BV in one of the four samples collected from inside the western tank. No metals were detected above the BVs in the sample collected from the eastern tank. No radionuclides were detected above FVs in any of the five samples collected from inside the tank boundaries (Figure 2.6-3). The pesticide 4,4'-DDT and its metabolites were detected in the deepest of the five samples (western tank, location 00-01485), collected from inside the tank boundaries (Table 2.6-4b and Figure 2.6-4). Analysis of VOCs and SVOCs was performed by an on-site analytical laboratory. Acetone was detected in the four samples collected from inside the boundaries of the western tank, but it was not detected in the sample collected from the eastern tank (Table 2.6-4a). Another organic chemical, CFC-113, which was used as a solvent, was detected in one sample from the western tank.

Outside Septic Tank

All the analyses of the two samples collected from soil outside the tank boundaries were performed by an off-site analytical laboratory. Mercury was the only metal detected in either of the two samples collected outside the estimated tank boundaries (Table 2.6-2a and Figure 2.6-2). Only one radionuclide, americium-241, was detected in one sample (location 00-03827) at 14.5 ft to14.5 ft bgs (Table 2.6-3 and Figure 2.6-3). Pesticides were detected in both samples collected outside the septic tanks. The DDT metabolite 4,4'-DDE was detected in the sample (location 00-03827) collected between the tanks (Table 2.6-4b). Five pesticides or pesticide metabolites were detected in the sample collected immediately outside the northwest corner (Figure 2.6-4) of the western tank: 4,4'-DDT; 4,4'-DDD; 4,4'-DDE; dieldrin; and endosulfan II. No other organic chemicals were detected in these two samples.

Acid Canyon

Although the outfall was not located for AOC 00-030(f), it would have discharged into the vicinity of Acid Canyon reach ACS. Additional information on the nature and extent of contamination in Acid Canyon is provided in Section 2.15 (Consolidated Unit 45-001-00) of this work plan.

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.7 AOC 00-030(h), Septic Tank

2.7.1 Site Description and Operational History

AOC 00-030(h) is a septic tank (structure 7), located on private property north of Canyon Road (Figures 1.1-2 and 1.1-9), beneath the asphalt-paved west parking lot at the new Catholic Church, 3600 Canyon Road (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 1). Constructed of reinforced

concrete, structure 7 was 30 ft long x 20 ft wide and 12 ft deep (LANL 1996, 53799, p. 7). It consisted of two chambers, a concrete baffle between the chambers, and a 6-ft x 2-ft splash box at the inlet line (LANL 1996, 53799, p. 7). Structure 7, which was bounded on the west by the Los Alamos High School sports field and parking lot access road, probably served the areas between Canyon Road and Trinity Drive (LANL 1996, 53799, p. 1; LANL 1996, 62416, p. 1). The outlet pipe and outfall for the tank were not located during the RFI (LANL 1996, 62416, p. 14). Based upon the location and orientation of the tank, the outlet probably discharged to Acid Canyon (LANL 1996, 62416, Figure 2.2.3-1). Buildings within this area were associated with the special engineering detachment, which included the Fort Leonard Wood housing units, dormitories, military barracks, west mess hall, supply room, gymnasium, post office, and recreational buildings (LANL 1996, 53799, p. 1). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(h) is approximately 7268 ft asl. A topographic rise occurs between TA-01 and AOC-00-030(h). With the septic tank inlet buried approximately 5 ft bgs (elevation of 7263 ft asl), the septic tank probably did not receive waste from a gravity-feed system originating in TA-01, downgradient of AOC 00-030(h). The tank was used from 1945 to 1947, when the central WWTP became operational (LANL 1996, 53799, p. 1). The tank was removed in 1996 during VCA activities (LANL 1996, 62416, p. 13–14).

2.7.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(h) includes both surface and subsurface sources of potential exposure.

2.7.2.1 Source of Contamination

Contamination at AOC 00-030(h) would have originated from effluent discharged at the outfall from the septic tank. Samples were collected from the septic tank location and "probable" outfall locations, which are representative of possible potential contamination.

2.7.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.7.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(h):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(h). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. Exposure is not likely because the site is under pavement. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering expected is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(h) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1000 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(h) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.7.3 Historical Data Quality Interpretation

2.7.3.1 Data Quality

Eighteen surface and subsurface samples in and around the septic tank system and presumed outfall location were collected and submitted to off-site analytical laboratories. These samples were analyzed for metals, including uranium, gamma spectroscopy analytes, isotopic plutonium, PCBs, pesticides, SVOCs, and VOCs. Although hard-copy data packages are not readily available, electronic versions of the data packages are available as well as the data validation performed for these samples in Appendix A, Section 1, of the VCA completion report for PRSs 0-030(h,i,n,o,p) (LANL 1996, 62416). Four samples (0100-96-0421, 0100-0424, 0100-0425, 0100-0426) were not discussed in the data validation section of the VCA report; however, data validation was performed for these samples based on the available data packages, and final qualifiers were assigned to the results as part of the data-evaluation process.

Although a VCA report has been written for AOC 00-030(h), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB sre presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals. Several results for inorganic chemicals were estimated (J), because the results were between the EQL and the MDL. Other results for inorganic chemicals were estimated and potentially biased low (J- or UJ) because the analyte was recovered below the lower acceptance level but greater than 30% in the associated spike sample. Some barium and silver results were estimated and potentially biased high (J+) because either the associated spike sample recovery was above 150% or above the upper acceptance limit.

According to the VCA report (LANL 1996, 62416, p. 17 and Appendix A), all of the samples analyzed for uranium were run as total uranium. The data packages for request numbers 2234, 2239, and 2512 indicate that analysis of the uranium samples was run by ICPMS after a total digestion.

Two results for antimony and thallium for AOC 0-030(h) were rejected (R), because the recovery of the associated spike sample was less than 30%.

Radionuclide Results

Several samples were analyzed for radionuclides, and the results were reported as nondetected concentrations (U) because either the associated sample activities were less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

Samples were analyzed for PCBs, pesticides, SVOCs, and VOCs. One sample had seven VOC results reported as estimated (J) because the associated internal standard area counts are less than 50% or greater than 200% of the previous continuing calibration standard. One result was reported as estimated (J) because the associated internal standard area count was less than 50% but greater than 10% of the previous continuing calibration standard. Several results for SVOCs, VOCs, PCBs, and pesticides were reported as estimated (J) by the analytical laboratory. Some of the VOC results were reported as not detected with an estimated detection limit (UJ) because either the associated internal standard area counts were less than 50%, but greater than 10%, of the previous continuing calibration standard, or the associated sample surrogate recovery was less than the lower acceptance limit but greater than or equal to 10%. Some VOCs were estimated and potentially biased high (J+) because sample surrogate recoveries were greater than the upper acceptance levels. Two sample results for acetone and methylene chloride were estimated and potentially biased low (J-) because the surrogate sample recoveries were less than the lower acceptance levels and greater than 10%.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.7.3.2 Nature and Extent of Contamination

During the VCA, the tank, associated inlet, and outfall locations were located. The tank was divided into two compartments, east and west, which were separated by a concrete baffle. An inlet was connected to a small splash box that, in turn, connected to the east and west compartments of the septic tank (LANL 1996, 62416, p. 6–7). The tank was found to have had its top removed and had been backfilled (LANL 1996, 62416, p. 6–7). Investigation of the west chamber revealed the presence of two distinct soil horizons: the upper 0 ft to11 ft consisted of moist backfill material (silty/sandy/clayish soil and tuff boulders) and the bottom 11 ft to 12 ft was a saturated, black sludge. The east chamber consisted of

backfill material (silty/sandy/clayish soil and tuff boulders) from 0 ft to12 ft (LANL 1996, 62416, p. 7). The tank dimensions were 30 ft long x 20 ft wide x 12 ft deep.

Soil samples were collected during VCA post-excavation: four samples from various locations outside the tank boundary; eight samples of fill from the inside of the eastern half of the septic tank (subsequently reused as fill); four confirmation samples from the bottom of the excavated tank area (00-04813, 00-04814, 00-04815, and 00-04816), after the floor of the septic tank was removed but before it was backfilled; and two surface samples from the outfall area. These samples are listed in Table 2.7-1 and shown on Figure 2.7-1.

West Septic Tank Chamber

During the VCA, samples of fill material from the west chamber revealed concentrations of plutonium-238 above screening action levels (SALs) (LANL 1996, 62416, p. 13). The fill material from the west chamber was removed and disposed of at TA-54, Area G (approximately 225 yd^3). Fill material from the east chamber was stockpiled on-site and used as fill after the septic tank was removed. The north, south, and east walls, as well as the bottom of the septic tank, were broken up and disposed of at the Los Alamos County landfill. The west wall of the tank was left in place to prevent disturbing the overlying high school access road. After the tank was removed, the east chamber material and an additional 250 yd^3.of new clean fill were used to backfill the excavation. Because all contaminated material was removed during the VCA, no contaminated material is currently present in the west chamber, and the sampling results from the VCA are not applicable to current site conditions.

East Septic Tank Chamber

As summarized in Table 2.7-2 and shown in Figure 2.7-2, eight metals were detected above BVs in the eight samples collected from the east septic tank chamber. Metals and the number of detections above BVs are as follows: beryllium (1 detection), calcium (2 detections), cobalt (1 detection), copper (1 detection), lead (4 detections), manganese (1 detection), mercury (6 detections), and zinc (5 detections). For antimony, all sample results were nondetect; however, all detection limits exceeded the BV. For cadmium, all sample results were nondetect; however, two sample detection limits exceeded the BV.

Two radionuclides (Table 2.7-3 and Figure 2.7-3) were detected above FVs in the eight east-chamber soil samples: plutonium-238 (1 detect) and plutonium-239 (8 detects).

Sixteen PAHs were detected in the eight samples (Table 2.7-4 and Figure 2.7-4). The pesticide 4,4'-DDT and its metabolites were reported in all eight samples. Detected VOCs consist of chlorobenzene (2 detections); cis-1,2-dichloroethene (1 detection); ethylbenzene (1 detection); toluene (3 detections); trichloroethene (TCE) (7 detections); trichlorofluoromethane (2 detections), 1,2,4-trimethylbenzene (1 detection), and total xylene (4 detections).

Outside Septic Tank

Five metals were detected above BVs in the four samples (00-04800, 00-04801, 00-04802, and 00-04803) collected outside the septic tank (Table 2.7-2 and Figure 2.7-2). Cobalt, lead, and manganese were detected above BVs in the sample from beneath the inlet pipe (location 00-04800). Cobalt, manganese, and zinc were detected above BVs in the sample (at location 00-04801) collected north of the east chamber wall (Figure 2.7-2). No metals were detected above BVs in the sample (location 00-04802) collected just outside the tank wall by the outlet pipe (Figure 2.7-2). Calcium and zinc were the

only metals detected above BVs in the sample collected just north of the west chamber (location 00-04803).

Plutonium-239 was detected above FV in eight samples from four sample locations collected from outside the septic tank. (Table 2.7-3 and Figure 2.7-3).

PAHs, pesticides, and VOCs were detected in the four samples collected outside the septic tank (Table 2.7-4 and Figure 2.7-4). PAHs were primarily present in the two samples (locations 00-04802 and 00-04803) collected closest to the high school access road at a depth of 7 ft to 8 ft bgs. Concentrations of PAHs in the sample closest to the road (00-04803) were generally higher than the sample collected further away (00-04802). PAHs were sporadically detected in the other two samples (locations 00-04800 and 00-04801).

Pesticides detected in the samples collected outside the tank boundaries were 4,4'-DDT and its metabolites. Both 4,4'-DDT and 4,4'-DDE were detected in all four samples, but 4,4'-DDD was detected only in the one sample with the highest 4,4'-DDT and 4,4'-DDE concentrations.

Detected VOCs consisted of dichloroethene, TCE, toluene, and total xylene. TCE was detected at very low concentrations in all four locations. Toluene and total xylene were detected in the samples (00-04801, 00-04802, 00-04803) collected from the three locations closest to the road. No VOCs were detected in the sample by the outlet pipe (00-04800)

Outfall

The following 11 metals were detected above BVs in the 2 surface samples (at locations 00-04811 and 00-04812) collected from the "probable" outfall area at a depth of less than 1 ft bgs (Table 2.7-2 and Figure 2.7-2): arsenic, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, and zinc. Only mercury and zinc were detected above BVs in both samples. The other metals were detected above BVs only in the sample closest to the outlet pipe (location 00-04811). Concentrations of mercury and zinc were higher in the sample collected closer to the outlet pipe.

Cesium-137 and plutonium-239 were detected in both outfall samples (Table 2.7-3 and Figure 2.7-3); however, only plutonium-239 was above the FV. As with the metals, the sample collected closest to the outlet pipe had the higher concentrations.

Organic chemicals (PAHs, pesticides, and VOCs) were detected in the two outfall surface samples (Table 2.7-4 and Figure 2.7-4). Generally, the sample collected closest to the high school access road had higher PAH concentrations. The pesticides 4,4'-DDT and its metabolites, and alpha- and gamma-chlordane were detected in the sample closest to the outlet pipe (at location 00-04811). The pesticide 4,4'-DDT and its metabolite 4,4'-DDD were detected in the second outfall sample (at location 00-04812). Seven VOCs were detected in these samples: ethylbenzene (sample 00-04812); toluene (00-04811 and 00-04812); TCE (00-04811 and 00-04812); 1,2,4-trimethylbenzene (00-04812); 1,3,5-trimethylbenzene (00-04812); and total xylene (00-04812).

Post-Removal Confirmation Sampling

After the tank was removed as part of the VCA, four confirmation samples (locations 00-04813, 00-04814, 00-04815, and 00-04816), one from each quadrant (northeast, northwest, southeast, and southwest), were collected from soil beneath the former tank location at a depth of 13.5 ft bgs. Five metals were detected above BVs in these four samples (Table 2.7-2 and Figure 2.7-2): calcium (2 detections), lead

(2 detections), mercury (1 detection), thallium (2 detections), and zinc (2 detections). No more than two metals were present above BVs in any one quadrant.

Plutonium-239 was detected in three (00-04813, 00-04814, and 00-04816) of the four samples (Table 2.7-3 and Figure 2.7-3).

Three PAH compounds (Table 2.7-4 and Figure 2.7-4) were detected at two sample locations (00-04815 and 00-04816) along the north wall of the septic tank. The pesticide 4,4'-DDT and its metabolite 4,4'-DDE were detected in all four samples (Table 2.7-4 and Figure 2.7-4). This area is adjacent to, and receives runoff from, the Los Alamos High School practice sports field. The field is treated with pesticides and herbicides and is heavily watered. Because the outfall area receives runoff from the field, it is likely that the elevated levels of pesticides in this area are the result of this runoff (LANL, 1996, 62416, p. 31). For VOCs, acetone was detected in four locations, and methylene chloride was detected in two locations (00-04813 and 00-04814).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.8 AOC 00-030(j), Septic Tank

2.8.1 Site Description and Operational History

Based upon Zia Company's drawings from 1947, AOC 00-030(j) is a septic tank located approximately 600 ft north of East Road, east of the eastern segment of Manhattan Loop (Figures 1.1-2 and 1.1-10) (LANL 1996, 53799, p. 2, Figure 5) next to the Sombrillo nursing center. The tank is reported to have served the Fort Leonard Wood housing units. Information on the tank dimensions is not available (LANL 1992, 07667, p. 5-96). A geophysical investigation conducted in 1996 failed to locate either the tanks or outfall pipe (Geophex 1996, 88036).

2.8.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(j) includes both surface and subsurface sources of potential contamination.

2.8.2.1 Source of Contamination

Contamination at AOC 00-030(j) would have originated from sludge in the septic tank (from chemicals present in the sewage flow to the septic tank) and the effluent in outfall from the septic tank.

2.8.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill

- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.8.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(j):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(j). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(j) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(j) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.8.3 Historical Data Quality Interpretation

2.8.3.1 Data Quality

No RFI intrusive sampling has been conducted at AOC 00-030(j) because the property owner refused permission to use more intrusive investigative techniques.

2.8.3.2 Nature and Extent of Contamination

A geophysical investigation conducted in 1996 failed to find evidence of a septic tank at the surveyed location (Geophex 1996, 88036). Figure 2.8-1 shows the area of the electromagnetic survey conducted in 1996 for the purpose of locating the septic tank. No further investigations have been conducted because the property owner had refused permission to use more intrusive investigative techniques.

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.9 AOC 00-030(n), Septic Tank

2.9.1 Site Description and Operational History

AOC 00-030(n) was a septic tank (LANL 1992, 07667, p. 5-96; LANL 1996, 62416, p. 2) located on Los Alamos County property west of 15th Street between Canyon Road and Pueblo Canyon (Figures 1.1-2 and 1.1-11). The septic tank was 6.5 ft long x 5.5 ft wide x 4.7 ft deep. The inlet drainline was a 6-in.-diameter VCP that entered the center of the south end of the tank. The outlet drainline was a 6-in.-diameter steel pipe that exited the center of the north end of the tank. Because of its small size and location, the septic tank could have only served residences (LANL 1996, 62416, p. 3). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(n) is approximately 7288 ft asl. With the septic tank inlet buried approximately 5 ft bgs (elevation of 7283 ft asl), it is unlikely that the septic tank received waste from a gravity-feed system originating in TA-01 downgradient of AOC 00-030(n). The tank was used until 1947, when the Central WWTP began operating (LANL 1992, 07667, p. 5-95; LANL 1996, 53799, p. 1). Both the tank and the outlet pipe were removed during the VCA (LANL 1996, 62416, p. 64).

2.9.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(n) includes both surface and subsurface sources of potential contamination.

2.9.2.1 Source of Contamination

Contamination at AOC 00-030(n) may have originated from sludge in the septic tank (from chemicals present in the sewage flow to the septic tank) and the effluent discharged at the outfall from the septic tank. Samples were collected from the septic tank and outfall locations and are representative of potential contamination.

2.9.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.9.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(n):

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(n). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(n) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(n) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.9.3 Historical Data Quality Interpretation

2.9.3.1 Data Quality

Ten surface and subsurface samples in and around the former septic tank and outfall were collected from eight locations at AOC 00-030(n) and submitted to off-site analytical laboratories (Table 2.9-1 and Figure 2.9-1). All ten samples were analyzed for PCBs, pesticides, and SVOCs. Eight of the samples were analyzed for metals and five of the samples were analyzed for total uranium, gamma spectroscopy analytes, VOCs, and isotopic plutonium. Although hard-copy data packages are not readily available, electronic versions of the data packages are available as well as the data validation performed for these samples in Appendix A (Section 1) of the VCA completion report for PRSs 0-030 (h,i,n,o,p) (LANL 1996, 62416).

Although a VCA report has been written for AOC 00-030(n), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB is presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

Eight samples were analyzed for inorganic chemicals. Four results for mercury were qualified as undetected (U) because the results were less than five times the amount in the preparation blank. Several inorganic chemical results were estimated (J) because the results were between the EQL and the MDL. Four results for lead were estimated and potentially biased low (J-) because the recovery of the associated spike sample was between 30% and the lower acceptance level.

According to the VCA report (LANL 1996, 62416, pp. 65, 80, A-11), the five samples analyzed for uranium were run as total uranium. The data packages for request numbers 1951, 1952, and 2547 verify that the samples were analyzed by ICPMS after a total digestion.

Radionuclide Results

Several samples were analyzed for radionuclides, and the results were qualified as not detected (U) because either the associated sample activities were less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

Samples were analyzed for PCBs, pesticides, SVOCs, and VOCs. Several results for SVOCs and two results for VOCs were reported as estimated (J) by the analytical laboratory. SVOCs from three samples were estimated (J). Four SVOCs from one sample were estimated and not detected (UJ), because the associated internal standard area counts showed less than 50% recovery or greater than 200% recovery when compared to area counts in the applicable continuing calibration standard. One result for benzo(b)fluoranthene was estimated (J), and several SVOCs were estimated and not detected (UJ), because the associated internal standard area counts were less than 50% but greater than 10% recovery when compared to area counts in the applicable continuing calibration standard.

No results for AOC 00-030(n) were rejected.

The data for samples that were submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.9.3.2 Nature and Extent of Contamination

AOC 00-030(n) was a septic tank located at the end of 15th Street, between Canyon Road and Pueblo Canyon, approximately 25 ft from the edge of the canyon (Figures 1.1-2 and 1.1-11). The septic tank was 6.5 ft long, 5.5 ft wide, and 4.7 ft deep (LANL 1992, 07667, p. 5-96; LANL 1996, 62416, p. 2), giving it an approximate volume of 1250 gal. Based upon this capacity, the tank would have been capable of serving two or three residences having a total occupancy of six to ten people. It is not likely that such a small tank would be connected to TA-01 or other laboratory facilities. A 6-in.-diameter VCP inlet pipe served the tank, and a 6-in.-diameter steel outlet pipe ran approximately 25 ft north to the edge of Pueblo Canyon (LANL 1996, 62416, p. 2).

During the VCA, the tank was uncovered. It was found to have had the top removed and had been backfilled. The tank contents consisted of two distinct horizons. The top 0 in. to 34 in. was moist, medium-to-coarse grained sandy silt and the bottom 34 in. to 56 in. (to tank bottom) was moist-to-saturated silty clay with traces of sand (LANL 1996, 62416, p. 62). Both the tank and the outlet pipe were removed during the VCA activities (LANL 1996, 62416, p. 64).

Ten soil samples were collected during the VCA: two samples of tank contents from each horizon at two interior locations (adjacent to inlet and outlet pipes), two exterior locations (outside the tank beneath inlet and outlet pipes), two outfall locations, and two confirmation samples collected from beneath the north and south halves of the excavation after the tank had been removed (Figure 2.9-1), but before backfilling. Samples collected from interior tank locations are included because the content of the tank was used to backfill the excavation after it had been removed. These samples are listed in Table 2.9-1.

Tank Contents

No metals were detected above BVs in any of the four samples collected from inside the tank (Table 2.9-2 and Figure 2.9-2). Plutonium-239 was the only radionuclide detected above the FV (location 00-04774, adjacent to outlet drainline) (Table 2.9-3 and Figure 2.9-3). Eight PAH compounds were detected in the four samples collected. The following pesticides were also detected (Table 2.9-4 and Figure 2.9-4): aldrin; dieldrin (both a distinct pesticide and a metabolite of aldrin); delta-BHC; chlordane (alpha and gamma); 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE); endosulfan sulfate (a metabolite of endosulfan I and II); heptachlor epoxide; and pentachlorophenol (a wood preservative).

Exterior Inlet and Outlet Pipes

The following samples were collected: one sample from beneath the inlet pipe to the septic tank (location 00-04782) at 1.25 ft to1.67 ft and one sample beneath the outlet from the septic tank (location 00-04775) at 2.83 ft to 3.08 ft. For the inlet sample, three metals (lead, sodium, and zinc) were detected above BVs (Table 2.9-2 and Figure 2.9-2). Antimony was not detected in the inlet sample; however, its detection limit exceeds the BV. Lead and zinc were detected above the BVs in the outlet sample. Antimony and cadmium were not detected in this sample, but the analytical detection limits were greater than BVs.

Americium-241 was detected in the sample collected from the inlet (Table 2.9-3 and Figure 2.9-3). No radionuclides were detected in the outlet sample.

Five PAHs were detected in the outlet sample. Pesticides were detected in both inlet and outlet pipe samples (Table 2.9-4 and Figure 2.9-4), including aldrin (but not the metabolite dieldrin); chlordane (alpha and gamma); and 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE). Benzoic acid was detected in the outlet sample, and methylene chloride was detected in the inlet sample.

Outfall Area

Two surface samples were collected in the outfall area of the outlet pipe: one sample at location 00-04776 was collected directly below the outlet pipe and one sample at location 00-04777 was collected approximately 10 ft downstream of location 00-04776 (Figure 2.9-1). Three metals (copper, iron, and lead) were detected above BVs (Table 2.9-2 and Figure 2.9-2) in the sample directly below the outlet pipe; two metals (lead and zinc) were detected above BVs in the second sample. Two metals (antimony and cadmium) were not detected in either sample; however, the analytical detection limits were above BVs for both samples.

No radionuclides were detected above FVs in either of the two outfall surface samples (Table 2.9-3 and Figure 2.9-3).

Both PAHs and pesticides were detected in the outfall samples. Five PAHs were detected in the sample collected immediately beneath the outlet pipe. One PAH was detected in the downstream sample (Table 2.9-4 and Figure 2.9-4). The pesticides aldrin; dieldrin; chlordane (alpha and gamma); 4,4'-DDT

and its metabolites (4,4'-DDD and 4,4'-DDE); and heptachlor epoxide were detected in both outfall samples. The second sample contained endosulfan sulfate. Concentrations of 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE) were higher in the outfall samples than those collected from inside the septic tank.

Confirmation Samples

Two confirmation samples (from the northern area, location 00-04783, and southern portions, location 00-04784, of the former tank location) were collected from soil beneath the tank at depths of 0 in. to 3 in. after its removal. No metals were present above BVs (Table 2.9-2). Thallium was not detected above the BV, but the detection limit was above the BV.

No radionuclides were detected in either confirmation sample (Table 2.9-3).

The pesticide 4,4'-DDT and its metabolite (4,4'-DDE) were the only organic chemicals detected in the two confirmation samples (Table 2.9-4).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.10 AOC 00-030(o), Septic Tank

2.10.1 Site Description and Operational History

AOC 00-030(o) is an inactive septic tank located partially beneath a private residence between Canyon Road and Pueblo Canyon (Figures 1.1-2 and 1.1-12) (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). The estimated dimensions are 30 ft x 12 ft x 8 ft (LANL 1996, 62416, p. 85). This septic tank serviced the Sundt Apartments, McKee Housing, a dormitory, a laundry located in the area that is now Sage Loop, Oakwood Loop, and the area east of 15th Street. The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(o) is approximately 7282 ft asl. With the septic tank inlet buried approximately 5 ft bgs (elevation of 7277 ft asl), it is unlikely that the septic tank received waste from a gravity-feed system originating in former TA-01, downgradient of AOC 00-030(o). The tank was used until 1947, when the central WWTP became operational (LANL 1992, 07667, p. 5-95; LANL 1996, 53799, p. 1). The septic tank was not removed; the southern portion of the tank is beneath the house foundation and is inaccessible, and the homeowner did not want to risk property damage during tank removal (LANL 1996, 62416, p. 97). The tank outlet outfall could not be located.

2.10.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(o) includes both surface and subsurface sources of potential contamination.

2.10.2.1 Source of Contamination

Contamination at AOC 00-030(o) may have originated from sludge in the septic tank if it leaked or discharged (from chemicals present in the sewage flow to the septic tank) and the effluent discharged at

the outfall from the septic tank. Samples collected from the septic tank and outfall locations are representative of potential contamination.

2.10.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soil
- Continued dissolution and advective/dispersive transport of chemicals in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.10.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(o):

- Residents

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(o). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(o) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(o) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.10.3 Historical Data Quality Interpretation

2.10.3.1 Data Quality

Thirteen surface and subsurface samples in and around the septic tank and outfall were collected from eight locations at AOC 00-030(o) and submitted to off-site analytical laboratories. All 13 samples were

analyzed for metals, total uranium, gamma spectroscopy analytes, isotopic plutonium, PCBs, pesticides, SVOCs, and VOCs. Although hard-copy data packages are not readily available, electronic versions of the data packages are available. Data validation performed for these samples may be found in Appendix A (Section 1) of the VCA completion report for PRSs 0-030(h,i,n,o,p) (LANL 1996, 62416).

Although a VCA report has been written for AOC 00-030(o), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals. Several inorganic chemical results were estimated (J) because the result was between the EQL and the MDL. Four manganese results were estimated and potentially biased high (J+) because the analyte was recovered above the upper acceptance level but less than 150% of the associated sample spike. Four antimony results were estimated and not detected (UJ) because the recovery of the associated spike sample was between 30% and the lower acceptance level.

According to the VCA report (LANL 1996, 62416, p. 89 and Table A-4), the thirteen samples analyzed for uranium were run as total uranium. The data packages for request numbers 2192 and 2330 verify that the samples were analyzed by ICPMS after a total digestion.

Radionuclide Results

Several samples were analyzed for radionuclides, and the results were qualified as not detected (U) because either the associated sample activity was less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

All samples were analyzed for PCBs, pesticides, SVOCs and VOCs. Three pesticide and three acetone results were reported as estimated (J) by the analytical laboratory. One result for bromobenzene was estimated (J), and several VOCs for two samples were estimated and not detected (UJ) because the associated internal standard area counts were less than 50% but greater than 10% recovery when compared to area counts in the applicable continuing calibration standard. Three VOC results were estimated with a potential positive bias (J+) because the sample surrogate recovery was greater than the upper acceptance level. Thirteen SVOCs from one sample were estimated and not detected (UJ) because the associated internal standard area counts were less than 50% but greater than 10% recovery when compared to area counts in the applicable continuing calibration standard.

No results for AOC 00-030(o) were rejected.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.10.3.2 Nature and Extent of Contamination

This septic tank was located during VCA activities in 1996. A portion of the tank was found to be partially beneath a house. Further investigation indicated that the top of the tank had been removed, and the tank appears to have been backfilled with soil. The eastern and western walls, near the house, could not be located under the foundation of the house (LANL 1996, 53799, p. 84–85). Based upon geophysical and subsurface investigation, the dimensions of the tank were estimated to be 30 ft long x and 12 ft wide x 8 ft deep (approximately 21,500 gal.). During the survey, the outlet pipe was located, but the inlet pipe was not because it was probably beneath the house. The size of the tank is consistent with service to the Sundt Apartments, McKee Housing, a dormitory, a laundry, and the area east of 15th Street (LANL 1996, 62416, p. 3). Remedial activities were not performed at this location because the southern third of the septic tank lies under a house.

Thirteen samples were collected in three areas. Ten soil samples were collected from inside the tank. One sample was collected beneath the outlet pipe, outside of the tank, and two samples were collected in the suspected area of the former outfall. Sampling locations are shown in Figure 2.10-1.

Tank Interior

Boreholes inside the tank indicate that its contents were fairly uniform from top to bottom. The tank contents consisted of fine-grained, dry, silty soil from top to bottom with a hardpack zone at 12 in. to 18 in. bgs and a cobble zone at approximately 7 ft bgs. The tank bottom is at 8 ft bgs. The samples inside the tank were collected at two depths (approximately 4.5 ft to 5.5 ft and 6.5 ft to 8 ft) from five boreholes. Table 2.10-1 summarizes the samples collected.

As shown in Table 2.10-2 and in Figure 2.10-2, six metals (cadmium, calcium, chromium, mercury, thallium, and zinc) were detected above BVs. Antimony was not detected in any sample, but the analytical detection limit was above the BV in six of the ten samples.

Plutonium-239 was detected in the four deepest samples (Table 2.10-3 and Figure 2.10-3) collected from locations 00-04825, 00-04826, 00-04828, and 00-04829 at depths between 7 and 8 ft.

Detected organic chemicals (Table 2.10-4 and Figure 2.10-4) consist of pesticides and VOCs. The pesticide 4,4'-DDT and its metabolites (4,4'-DDE and 4,4'-DDD) were detected in the majority of samples. Six VOCs (acetone, bromobenzene, isopropyl toluene, methylene chloride, toluene, and total xylene) were also detected.

Tank Exterior at Outlet Pipe

One sample was collected from soil beneath the outlet pipe (at location 00-04830). No metals or radionuclides were detected above BVs or FVs, respectively; however, the analytical detection limit for antimony was above the BV (Table 2.10-2). Two organic chemicals were detected in this sample: 4,4'-DDT and its metabolite (4,4'-DDE) (Table 2.10-4 and Figure 2.10-4).

Suspected Outfall

Two samples were collected from the suspected outfall area (locations 00-04831 and 00-04832). The sample at location 00-04832 was collected from the subsurface soil (1.5 ft to 2 ft bgs), approximately 30 ft from the suspected outfall. The second sample at location 00-04831 was collected from the near-surface soil (3 in. to 5 in. bgs), approximately 15 ft from the suspected outfall (Figure 2.10-1).

No metals were detected in the subsurface sample (Table 2.10-2 and Figure 2.10-2). Lead and zinc were detected above BVs in the near-surface sample. Antimony was not detected in either sample, but the analytical detection limit was elevated above the BVs in both samples.

Plutonium-239 was detected above the FV in the near-surface sample but not the subsurface sample (Table 2.10-3 and Figure 2.10-3).

Detected organic chemicals include pesticides and one SVOC. The pesticide 4,4'-DDT was detected in both the near-surface and subsurface samples (Table 2.10-4 and Figure 2.10-4) In addition, 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE) were detected in the near-surface soil sample but not in the subsurface sample. One SVOC was detected in the near-surface sample, bis(2-ethylhexylphthalate).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.11 AOC 00-030(p), Septic Tank

2.11.1 Site Description and Operational History

AOC 00-030(p) was a septic tank located on private property at the eastern end of the Rim Road cul-de-sac, behind a private residence (Figures 1.1-2 and 1.1-13) (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2) Evidence indicates that the tank serviced only residential connections (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). The tank was put into service in 1946 and removed from service sometime during 1947 and 1948, when the Central WWTP became operational (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). The septic tank could not be located, but the outfall pipe was found (LANL 1996, 62416, p. 98). Based on discussions with Los Alamos County utility personnel, it was concluded that the septic tank had been removed when the gas main was put into use in 1950 (LANL 1996, 62416, p. 101).

2.11.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC 00-030(p) includes both surface and subsurface sources of potential contamination.

2.11.2.1 Source of Contamination

Contamination at AOC 00-030(p) may have originated from sludge in the septic tank if it leaked or discharged (from chemicals present in the sewage flow to the septic tank) and the effluent discharged at the outfall from the septic tank. Samples were collected from the septic tank and outfall locations, and these are representative of potential contamination.

2.11.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soil
- Continued dissolution and advective/dispersive transport of chemicals in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.11.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-030(p):

- Residents

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at AOC 00-030(p). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at AOC 00-030(p) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site of approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at AOC 00-030(p) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.11.3 Historical Data Quality Interpretation

2.11.3.1 Data Quality

Six surface and subsurface samples at the former tank location and outfall were collected at AOC 00-030(p) and submitted to off-site analytical laboratories. All six samples were analyzed for metals, total uranium, gamma spectroscopy analytes, isotopic plutonium, PCBs, pesticides, SVOCs, and VOCs. Although hard-copy data packages are not readily available, electronic versions of the data packages are

available. Data validation performed for these samples may be found in Appendix A (Section 1) of the VCA completion report for PRSs 0-030(h,i,n,o,p) (LANL 1996, 62416).

Although a VCA report has been written for AOC 00-030(p), the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals. Five inorganic chemicals had results that were estimated (J) because the results were between the EQL and the MDL.

According to the VCA report (LANL 1996, 62416, p. 104, A-17, and Table A-5), all six samples analyzed for uranium were run as total uranium. The data package for request number 2400 verifies that the samples were analyzed by ICPMS after a total digestion.

Radionuclide Results

Several samples were analyzed for radionuclides, and the results were qualified as not detected (U) because either the associated sample activities were less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

All samples were analyzed for PCBs, pesticides, SVOCs, and VOCs. Two results for acetone and 4-isopropyltoluene were estimated with a potential positive bias (J+) because the sample surrogate recovery was greater than the upper acceptance level. SVOC results were estimated and not detected (UJ) in two samples because the associated internal standard area counts were less than 50% but greater than 10% recovery when compared to area counts in the applicable continuing calibration standard. Several SVOC results were not detected (U) by the analytical laboratory.

No results for AOC 00-030(p) were rejected.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.11.3.2 Nature and Extent of Contamination

This tank, located on private property on the eastern end of Rim Road, appears to have been removed when a new gas main was installed; however, a 6-in.-diameter steel outlet pipe extending approximately 30 ft from the former tank location to the canyon rim was located (LANL 1996, 62416, p. 98). Consequently, during VCA activities, two trenches were dug in an effort to locate the former septic tank. These trenches encountered a backfilled excavation in tuff that was probably the location of the former septic tank. A total of six samples were collected: two from the bottom of the excavation inside the suspected tank boundaries, two from beneath an outlet pipe where it probably connected to the former septic tank, and two from the pipe outlet outfall area (Table 2.11-1 and Figure 2.11-1). A 30-ft-long 6-in.-diameter steel outlet drainline was located and removed.

Suspected Tank Location

Two samples were collected from fill in the bottom of the suspected tank location (10 ft to10.5 ft bgs): one sample was collected from the northwest corner at location 00-04865, and one sample was collected from the northeast corner at location 00-04866 (Figure 2.11-1). Two metals were detected above the BVs in these two samples: calcium in the sample from the northeast corner and manganese from the northwest corner sample (Table 2.11-2 and Figure 2.11-2). Antimony and cadmium were not detected in either sample, but the analytical detection limit for these metals were above BVs. No radionuclides were detected in either sample (Table 2.11-3 and Figure 2.11-3). Detected organic chemicals consisted of six PAH compounds in the sample collected from the northwest corner (Table 2.11-4 and Figure 2.11-4).

Outlet Pipe/Tank Connection

Two samples were collected at the site where the outlet pipe appeared to have been connected to the septic tank (Table 2.11-1 and Figure 2.11-1). One sample at location 00-04867 was collected at 3 ft to 3.5 ft bgs, directly beneath the connection; and one sample at location 00-04868 was collected at the bottom of the suspected tank location (10 ft to 10.5 ft bgs), directly beneath the outlet pipe connection. No metals were detected in either sample above BVs; however, antimony and cadmium had analytical detection limits above BVs (Table 2.11-2). One radionuclide, plutonium-239, was detected in the shallower of the two samples (sample 0100-96-1403, location 00-04867) (Table 2.11-3 and Figure 2.11-3). No organic chemicals were detected in either sample (Table 2.11-4 and Figure 2.11-4).

Outfall

Two surface samples were collected from soil in the outfall area (Table 2.11-1 and Figure 2.11-1): one sample at location 00-04869 was collected from the surface (0 ft to 0.42 ft bgs) immediately below the outlet pipe, and one sample at location 00-04870 was collected approximately 10 ft downslope at 0.25 ft to 0.75 ft bgs. The only metal detected above BVs in either sample was lead, collected from immediately below the outlet pipe (Table 2.11-2 and Figure 2.11-2). Antimony and cadmium were not detected above BVs in either sample, but the analytical detection limit for these metals were above their applicable BVs in both samples. Cesium-137 was detected above FV in the surface sample collected from immediately below the outlet pipe (Table 2.11-3 and Figure 2.11-3). Both cesium-137 and plutonium-239 were detected in the downslope sample. Acetone and 4-isopropyltoluene were the only organic chemicals detected in these two outfall samples (Table 2.11-4 and Figure 2.11-4). They were detected in the sample collected from immediately below the outlet pipe but not the downslope sample.

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.12 SWMU 00-039, Underground Tanks

2.12.1 Site Description and Operational History

SWMU 00-039, the site of two former 700-gal. USTs and their connecting pipes, was used for dry cleaning businesses in the area known locally as the Community Center (Figures 1.1-2 and 1.1-14). The tanks were used to store a hydrocarbon-based dry-cleaning solvent known as Stoddard™ solvent (LANL 1994, 42791, p. 1; LANL 1996, 52932, p. 1). The site is on private property (bounded by 15th Street, 19th Street, Myrtle Street, and Central Avenue) in the Los Alamos townsite but was federally owned from 1945 until 1968 (LANL 1996, 52932, p. 1). The USTs were installed sometime before 1958. Documentation of the early history of the dry-cleaning operations at the site is incomplete, but a summary

of existing information is provided in Appendix B. The dry-cleaner business discontinued using the USTs sometime before 1969, at which time the tanks were emptied and left in place. Both USTs were removed in 1993. All the pipelines were left in place, and some were filled with concrete during the 1993 tank removal activities. In addition, three USTs at the Community Center containing petroleum hydrocarbons were also removed in 1993 and were subsequently approved for closure by the NMED UST Bureau (LANL 1994, 42791, p. 1). Tetrachloroethylene (PCE) was used in coin-operated machines in the 1980s.

2.12.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for SWMU 00-039 includes both surface and subsurface sources of potential contamination.

2.12.2.1 Source of Contamination

Contamination at SWMU 00-039 would have originated from the leaks in the USTs and associated pipelines as well as incidental spills.

2.12.2.2 Transport Mechanisms

The site is currently a shopping center and is completely covered by buildings and concrete sidewalks as well as an asphalt parking lot. The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Continued dissolution and advective/dispersive transport of chemicals in subsurface soil
- Subsurface transport of VOC vapors

2.12.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at SWMU 00-039:

- Commercial workers, e.g., retailers in businesses near SWMU 00-039
- Occasional site visitors, e.g., patrons of businesses near SWMU 00-039

The primary contaminant exposure pathway at the site is inhalation of VOCs through transport from subsurface soil into subsurface utility corridors and subsequently buildings. Other pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface (dermal contact, inhalation of fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are not expected to be exposed to contaminants at SWMU 00-039 because the site is developed (paved or covered with buildings), and contamination is limited to subsurface soil (generally deeper than 5 ft bgs).

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at SWMU 00-039 is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs (see Section 3.2.3). No perennial surface water bodies exist at the site. Although precipitation events may result in the short-term intermittent presence of surface water, under present site conditions no contact occurs between the surface water and the subsurface soil. Therefore, the surface water exposure pathway is incomplete for human or ecological receptors.

2.12.3 Historical Data Quality Interpretation

2.12.3.1 Data Quality

Ninety-three surface and subsurface soil and tuff samples were collected from 9 boreholes, and 80 surface and subsurface soil and tuff samples were collected from 19 hand auger borings at SWMU 00-039 (Table 2.12-1 and Figure 2.12-1). The depth of the borehole samples ranged from 0.5 ft to 60 ft bgs, and the depth of the hand-auger samples ranged from 1.0 ft to 25 ft bgs. All the samples were field-screened using headspace analyses and submitted to the Laboratory's mobile chemical analytical laboratory (MCAL). The borehole samples were collected to investigate potential releases from the USTs; the samples were analyzed for total petroleum hydrocarbons (TPH) and VOCs (both primary constituents of Stoddard™ solvent). The hand-auger sampling was conducted to investigate potential releases from the adjoining pipelines; samples collected from the hand-auger borings were analyzed for TPH, VOCs, 1-methylnaphthalene, and 2-methylnaphthalene. All samples were analyzed using modified EPA SW-846 Method or the equivalent (LANL 1996, 52932, p. 9). The results for all 173 samples are considered screening data.

These data are not currently available in the ERDB, nor are any data packages from MCAL readily available. The data validation performed for these samples is detailed in the RFI report (LANL 1996, 52932, pp.13-22).

Organic Chemical Results

Samples were analyzed for TPH, VOCs, 1-methylnaphthalene, and 2-methylnaphthalene. All qualified results were reported by MCAL (LANL 52932, 1996, p. 13). The results presented in this document reflect the qualification by MCAL, and the results may be used as screening-level data.

2.12.3.2 Nature and Extent of Contamination

All samples were analyzed for TPH and VOCs by MCAL. The samples collected from the hand-augered holes were also analyzed for 1- and 2-methylnaphthalene (Table 2.12-1). Sample locations and depths are presented in Figure 2.12-1,, and the detections of organic chemicals are presented in Table 2.12-2 and shown in Figure 2.12-2.

The following aromatic hydrocarbons were detected:

- 1,2,4-trimethylbenzene: one borehole sample (14.5 ft to 15.0 ft bgs), six hand-auger samples from three locations (1.7 ft to 15.0 ft bgs); at all locations, 1,2,4-trimethylbenzene was not detected in deeper samples.
- 1,3,5-trimethylbenzene: three hand-auger samples from two locations (1.7 ft to 9.0 ft bgs); at all locations, 1,3,5-trimethylbenzene was not detected in deeper samples.

- Ethylbenzene: one borehole sample (14.5 ft to 15.0 ft bgs); ethylbenzene was not detected in the deeper samples collected at this location.
- p-Isopropylbenzene: one hand-auger sample (6.7 ft to 7.0 ft bgs); p-isopropylbenzene was not detected in the deeper samples collected at this location.
- p-Isopropyltoluene: two hand-auger samples from one location (3.7 ft to 6.0 ft bgs); p-isopropyltoluene was not detected in the deeper samples collected at this location
- Tertbutylbenzene: three hand-auger samples from two locations (1.7 ft to 7.0 ft bgs); tertbutylbenzene was not detected in the deeper samples collected at this location.
- Total xylene: one borehole sample (14.5 to 15.0 ft bgs); total xylene were not detected in the deeper samples collected at this location.

TPHs were detected in four borehole samples from one location at concentrations from 2 to 767 mg/kg at depths between 14.5 ft and 15.0 ft bgs; TPHs were not detected in deeper samples collected at this location. TPHs were also detected in twelve hand-auger samples from five locations at concentrations from 2 to 6062 mg/kg collected at depths between 1.7 ft and 14.0 ft bgs; TPHs were not detected in deeper samples collected at all locations.

Two halogenated hydrocarbons were detected. TCE was detected in one borehole sample collected at a depth interval of 4.5 ft to 5.0 ft bgs; TCE was not detected in the deeper samples collected at this location. PCE was detected in 12 borehole samples from eight locations and 55 hand-auger samples from 14 locations. The borehole samples with PCE detections had concentrations from 0.01 to 0.11 mg/kg at depths between 4.5 and 50 ft bgs; at all borehole locations with PCE detections, PCE was not detected in the deeper samples. The hand-auger samples where PCE was detected had concentrations from 0.01 to 190 mg/kg at depths between 0.7 ft and 25 ft bgs; at 11 of the 14 hand-auger locations where PCE was detected, only the deepest sample had a detection of PCE. The 11 locations are clustered in the area between the eastern portions of the two buildings at the site. PCE in this area was detected in samples collected from depths ranging between 4 ft to 25 ft bgs.

The extent of the PCE plume has not been defined at this SWMU; Section 4 provides details of the sampling proposed to address this data need.

2.13 AOC C-00-043, Manhole (Removed)

2.13.1 Site Description and Operational History

AOC C-00-043 was an inactive brick-and-mortar manhole located approximately 50 ft south of the Immaculate Heart of Mary Catholic Church in a landscaped part of the church's parking lot (LANL 1997, 55103, p. 1) (Figures 1.1-2 and 1.1-15). The manhole was bell-shaped, 2 ft in diameter at the surface, 5 ft to 6 ft in diameter at the base, and 5 ft to 5.5 ft deep (LANL 1997, 62542, p. 42, Figure 4.2-2). The base of the manhole consisted of 8-ft-diameter x 6- to-8-in.-thick concrete (LANL 1997, 62542, p. 42, Figure 4.2-2). The manhole was removed in 1996 during field activities (LANL 1997, 62542, p. 40). The manhole may have been connected to sanitary sewer lines serving residential areas for the former Central WWTP (LANL 1997, 62542, p. 40–42). The plant operated from the mid-1940s until it was decommissioned in the early 1960s (LANL 1997, 62542, p. 40).

2.13.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for AOC C-00-043 includes both surface and subsurface sources of potential contamination.

2.13.2.1 Source of Contamination

Contamination at AOC 00-043 may have originated from sewage flowing through the manhole if it leaked, ruptured, or overflowed. Samples collected from the sediment at the bottom of the manhole before it was removed and confirmation samples taken after are representative of possible potential contamination.

2.13.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and advective/dispersive transport of residual chemicals in subsurface soil

2.13.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at AOC 00-043:

- Residents

The potential pathways for human exposure to surface soil and tuff are dermal contact and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact and incidental soil ingestion).

2.13.3 Historical Data Quality Interpretation

2.13.3.1 Data Quality

Four investigative samples were collected at AOC 00-043 and submitted to off-site analytical laboratories (Figure 2.13-1). These samples were analyzed for metals (including uranium), gamma spectroscopy analytes, isotopic plutonium, PCBs, pesticides, SVOCs, and VOCs. Although hard-copy data packages are not readily available, electronic versions of the data packages are available. Data validation performed for these samples may be found in Appendix A of the VCA report for PRSs 00-030(d,k) and C-0-043 (LANL 1997, 62542).

Although a VCA report has been written for AOC 00-043, the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals. Six inorganic chemicals had estimated (J) because the results were between the EQL and the MDL. Five results for antimony, manganese, and lead were estimated and potentially biased low (J-); one result of antimony was estimated and not detected (UJ) because the analyte was recovered below the lower acceptance level but greater than 30% in the associated spike sample.

Four samples were analyzed for uranium. The data packages for request numbers 2550 and 2851 indicate that all samples were analyzed for uranium by ICPMS after a partial digestion.

Radionuclide Results

Four samples were analyzed for radionuclides, and several results were qualified as not detected (U) because either the associated sample activities were less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

All samples were analyzed for PCBs, pesticides, SVOCs and VOCs. One sample had results for 4,4'-DDE and 4,4'-DDT reported as estimated and potentially biased high (J+) because the associated surrogate was recovered above the upper acceptance level. One sample had results for 4,4'-DDE and 4,4'-DDT reported as estimated and potentially biased low (J-); several pesticides and PCBs were reported as estimated, and not detected (UJ) because the associated surrogate was recovered below the lower acceptance level but greater than or equal to 10% of the recovery. Several results for SVOCs and VOCs were reported as estimated (J) by the analytical laboratory.

No results for AOC 00-043 were rejected.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.13.3.2 Nature and Extent of Contamination

This AOC was an inactive brick-and-mortar manhole that may have been connected to sanitary sewer lines serving residential areas for the former central WWTP (LANL 1997, 62542, p. 40–42). The structure was removed during VCA activities in 1996. The brick, mortar, and concrete (approximately 10 yd^3) were disposed of as construction debris at the Los Alamos County landfill. The 20 ft^3 of sediment material discovered in the bottom of the manhole may have been reused to backfill the excavation after removal activities were complete, but the VCA report does not explicitly account for this sediment material. Excavated soil and additional clean fill material was needed to backfill the final excavation.

Two samples at location 00-04905 and 00-04906 were collected from the sediment at the bottom of the manhole before it was removed (Table 2.13-1 and Figure 2.13-1). Two confirmation samples at locations 00-05901 and 00-05902 were collected from soil at the bottom of the excavation site after the manhole was removed (Table 2.13-1 and Figure 2.13-1).

Manhole Sediment Material

Nine metals were detected above the BVs in at least one of the two sludge samples (Table 2.13-2 and Figure 2.13-2): antimony, calcium, cobalt, copper, lead, manganese, thallium, uranium, and zinc.

Both samples contained cesium-137 and plutonium-239 (Table 2.13-3 and Figure 2.13-3). The following organic chemicals were detected in at least one of the two samples (Table 2.13-4 and Figure 2.13-4): acetone; bis (2-ethylhexyl) phthalate; 2-butanone; chloroform; 4,4'-DDT and its metabolites (4,4'-DD and 4,4'-DDE); 2-hexanone; 4-methyl-2-pentanone; phenanthrene; pyrene; and 1,3-xylene.

Confirmation Samples

Uranium was the only metal detected above the BVs in the two confirmation samples (Table 2.13-2 and Figure 2.13-2). The metals antimony and cadmium were not detected in either sample, but the analytical detection limit for both metals in both samples was elevated above the applicable BVs. Plutonium-239 was detected in only one of the two samples (Table 2.13-3 and Figure 2.13-3). TCE (locations 00-05901 and 00-05902) and 4,4'-DDT (location 00-05901) were the only organic chemicals detected in the confirmation samples (Table 2.13-4 and Figure 2.13-4).

Extent has not been defined at this AOC; Section 4 provides details of the sampling proposed to address this data need.

2.14 SWMU 31-001, Septic System

2.14.1 Site Description and Operational History

SWMU 31-001 is a former septic system located at TA-31. This system consisted of a septic tank (structure 00-7), two sanitary sewer manholes (structures 00-41 and 00-42), associated waste lines, and an outfall (LANL 1992, 07668, p. 3-46). TA-31 served as the receiving area for all truck shipments to the Laboratory from 1945 until 1954 (LANL 1995, 58085, p. 1; LANL 1996, 54320, p. 32), and SWMU 31-001 served former Building 31-7. The septic tank (structure 00-7), constructed of reinforced concrete, measured 4 ft x 3 ft, was several feet high (LANL 1992, 07668, p. 3-48). This septic tank was located aboveground on a small bench above the rim of Pueblo Canyon, north of Building 31-7 (LANL 1992, 07668, p. 3-48). TA-31 was located in what is now the eastern residential area of Los Alamos, immediately west of the Los Alamos County Airport (LANL 1995, 58085, p. 1; LANL 1996, 54320, p. 32) (Figures 1.1-2 and 1.1-16). The septic tank was constructed in 1949, operated until 1954, and was removed in 1988 (LANL 1992, 07668, p. 3-47). The waste line was not encountered when the septic tank was removed in 1988 (LANL 1995, 58085, p. 4). The outfall discharged to Pueblo Canyon, approximately 0.9 km upstream of Pueblo Canyon investigative reach P-2W and 1.6 km below Pueblo Canyon investigative reach P-1E. The contents of the septic tank were sampled when the tank was removed and found to contain no hazardous materials (LANL 1995, 58085, p. 4).

2.14.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for SWMU 31-001 includes both surface and subsurface sources of potential contamination.

2.14.2.1 Source of Contamination

Contamination at SWMU 31-001 would have originated from sludge in the septic tank if it leaked or discharged (from chemicals present in the sewage flow to the septic tank) and the effluent discharged at

the outfall from the septic tank. Samples were collected from the former septic tank location and outfall locations, and these are representative of potential contamination.

2.14.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soil
- Continued dissolution and advective/dispersive transport of chemicals in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.14.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at SWMU 31-001:

- Residents
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at SWMU 31-001. For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at SWMU 31-001 is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at SWMU 31-001 is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.14.3 Historical Data Quality Interpretation

2.14.3.1 Data Quality

Thirteen surface and subsurface samples from the septic tank system, including the drainline and outfall, were collected from SWMU 31-001 and submitted to an on-site analytical laboratory (Table 2.14-1). Thirteen of the samples were analyzed for metals. Eight were also analyzed for PCBs, and six were analyzed for SVOCs. Two additional samples (referred to as confirmation samples) were collected and shipped directly from the field to an off-site analytical laboratory for analyses of metals and PCBs. The results for all fifteen of these samples are considered screening-level data because they were either analyzed on-site or were part of the pilot project to ship samples directly from the field.

Hard-copy data packages are not readily available for these data. A summary of quality assurance (QA)/quality control (QC) for the samples collected during the RFI may be found in the RFI report for SWMU 31-001 (LANL 1995, 58085, p. 8). A QA/QC summary is not available for the confirmation samples shipped directly from the field.

Although RFI (LANL 1995, 58085) and VCA reports (LANL 1996, 54320) have been written for SWMU 31-001, the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

All samples were analyzed for inorganic chemicals, and no results were qualified.

Radionuclide Results

The samples were not analyzed for radionuclides.

Organic Chemical Results

Ten samples were analyzed for PCBs, and six samples were analyzed for SVOCs. All results were reported as not detected (U) by the analytical laboratory.

No results from SWMU 31-001 were rejected.

The data for samples analyzed by an on-site laboratory or shipped to an off-site laboratory directly from the field may be used as screening-level data.

2.14.3.2 Nature and Extent of Contamination

The septic tank for this system was removed in 1988 (LANL 1992, 07668, p. 3-47), but the outlet pipe was not located at that time. In 1995, RFI samples were collected from the septic tank area (Figure 2.14-1). The location was based on survey information from the 1988 removal. During this investigation, the outfall pipe was located (LANL 1995, 58085, p. 23) Three samples were collected from the septic tank area (Table 2.14-1): location 31-01001 (0.5 ft to 0.75 ft bgs); location 31-01002 (1.0 ft to 1.25 ft bgs); and location 31-01003 (0.75 ft to 1.0 ft bgs).

In an effort to locate the inlet pipe, two trenches were dug during the RFI (Figure 2.14-1).

Trench 1 was excavated approximately 60 ft upslope from the septic tank in a southeast to northwest direction. It was 31 ft long x 4 ft deep (LANL 1995, 58085, p. 5). Three samples were collected from this trench (Table 2.14-1): one sample at location 31-01004 was collected at 3.8 ft bgs from the northwest end; one sample at location 31-01005 was collected at 4.0 ft bgs from the center of the trench, at the approximate location of the outlet pipe; and one sample at location 31-01006 was collected at 3.4 ft bgs from the southeast end of the trench (Figure 2.14-1).

Trench 2 was dug approximately 50 ft upslope of trench 1 and approximately 110 ft upslope of the former septic tank location in a southeast to northwest direction. This trench was approximately 25 ft long and had a maximum depth of 8.5 ft bgs (LANL 1995, 58085, p. 5, 23). Three samples were also collected from this trench (Table 2.14-1): one sample at location 31-01007 was collected at 6.5 ft bgs from the southeast end; one sample at location 31-01008 was collected at 6.6 ft bgs from the center of the trench, at the approximate location of the inlet pipe; and one sample at location 31-01009 was collected at 6.8 ft bgs from the northwest end of the trench (Figure 2.14-1).

Five samples were collected from the top 6 in. of soil in the outfall area (Figure 2.14-1). However, one sample (at location 31-01010) was collected from the volume of soil removed during the VCA activities and therefore is not included in the current discussion because the results for this sample are not representative of current site conditions. The remaining four samples at locations 31-01011, 31-01012, 31-01013, and 31-01014 were collected from areas not affected by the VCA removal activities; therefore, those results are representative of current site conditions (Table 2.14-1).

During the VCA, approximately 10 to18 ft^3 of topsoil were removed to expose the underlying tuff in an area extending from 2 ft above to 4 ft below the outlet pipe, and 2 ft around it (LANL 1995, 51499, p. 12; LANL 1996, 54320, Figure 7). Two confirmation samples (VCXX-95-005 and VCXX-95-0056) were collected from the top 6 in. of the underlying tuff, exposed after the topsoil was removed (Table 2.14-1, Figure 2.14-1).

Septic Tank

The only metals detected above the BVs in the three septic tank soil samples (Table 2.14-2) were lead (locations 31-01002 and 31-01003) and mercury (location 31-01003). Antimony and thallium were not detected in these three samples, but the analytical detection limits for these two metals were elevated above their applicable BVs. No organic chemicals were detected in any of the three samples from the septic tank area.

Trench 1

Metals were detected above BVs in the sample collected from the southeast and central portions of the trench but not in the sample collected from the northwest portion (Table 2.14-2 and Figure 2.14-2). Cadmium, calcium, lead, and zinc were detected at location 31-01006, and lead was detected at location 31-01005. Analytical detection limits for antimony and thallium were elevated above BVs for all three samples. No organic chemicals were detected in these three samples.

Trench 2

Two metals were detected above BVs in the three samples collected from trench 2 (Table 2.14-2 and Figure 2.14-2). Cadmium was detected in the sample from the southeast end of the trench (at location 31-01007), and lead was detected in the sample from the center of the trench (at location 31-01008). No metals were detected above BVs in the sample collected from the northwest end

of trench 2. Both antimony and thallium were not detected in any of these samples, but the analytical detection limits were elevated above BVs in all three samples collected from trench 2. No organic chemicals were detected in the three samples collected at trench 2.

Outfall

As shown in Table 2.14-2 and Figure 2.14-2, the following metals were detected above BVs in one or more of the four samples collected from surface soil in the outfall area: cadmium (two locations), calcium (one location), lead (three locations), and zinc (two locations). Antimony and thallium were not detected in any of these samples, but the analytical detection limits for both metals in all four samples were elevated above their respective BVs. The PAHs benzo(b)fluoranthene, fluoranthene, and pyrene were detected in the sample collected closest to the end of the outlet pipe at location 31-01011 (Table 2.14-3 and Figure 2.14-3).

Confirmation Samples

Strontium was the only metal detected in the two confirmation samples (Table 2.14-2 and Figure 2.14-2). Analytical detection limits for antimony, cadmium, silver, and thallium were elevated above BVs in both samples. No organic chemicals were detected in either sample.

Extent has not been defined at this SWMU; Section 4 provides details of the sampling proposed to address this data need.

2.15 Consolidated Unit 45-001-00, Wastewater Treatment Plant - TA-45

2.15.1 Site Description and Operational History

This unit, which consists of Consolidated Unit 01-002(b)-00, SWMUs 45-001, 45-002, 45-003, and 45-004, and AOC C-45-001, is located adjacent to Acid Canyon (Figures 1.1-2 and 1.1-17) These SWMUs and AOC were associated with past wastewater treatment and disposal activities at TA-45, which was used as an industrial waste discharge area and later served as the Laboratory's first radioactive liquid waste (RLW) treatment facility (LANL 1992, 07668, p. 3-69; LANL 1995, 48856, p. 1). D&D of TA-45 began in October 1966 and included excavating and removing industrial waste and contaminated soil and tuff and removing all buildings and structures in the area, with the exception of the sewage lift station. The site was released without restriction to Los Alamos County on July 1, 1967 (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1).

As investigation of TA-45 was conducted in the late 1970s under DOE's Formerly Utilized Sites Remedial Action Program (FUSRAP) to determine the nature and extent of radioactive contamination at the site. The FUSRAP study consisted of sampling soil and sediment, analyzing airborne radioactivity through the Laboratory's Environmental Surveillance Program, and measuring and analyzing external penetrating radiation (LANL 1992, 07668, p. 3-80).

2.15.1.1 Consolidated Unit 01-002(b)-00

Consolidated Unit 01-002(b)-00 consists of a former TA-01 industrial waste line outfall and its drainage area into Acid Canyon. The outfall was located within the boundaries of TA-45, at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon (Figures 1.1-2 , 1.1-17, and 2.15-1). This outfall was used to discharge untreated RLW generated in laboratories and research facilities in TA-01 during 1943 and 1944 through 1951 (LANL 1992, 07668, p. 3-80; LANL 1995, 48856, p. 39). The D&D of

TA-45 included removing the outlet pipe, an associated weir box, and tuff around the outfall and on the canyon wall below the outfall (LANL 1992, 07668, pp. 3-70–3-71).

An interim action (IA) was conducted in the South Fork of Acid Canyon in 2001, downstream of the Consolidated Unit 01-002(b)-00 outfall, for the purpose of reducing potential radiation doses to recreational users of the south fork of Acid Canyon. Approximately 483 yd^3 of sediment were removed during the IA to meet the cleanup goal of 280 pCi/g of plutonium-239,-240 (LANL 2002, 73660, p. 17).

2.15.1.2 SWMU 45-001

SWMU 45-001 consists of a former RLW treatment plant and associated outfalls (Figures 1.1-2 and 1.1-17). The treatment plant began operating in 1951 and operated until 1964. The plant initially received RLW only from TA-01. As Laboratory operations expanded, RLW from TA-03, -43, and -48 was also sent to SWMU 45-001 (LANL 1992, 07668, p. 3-86). D&D of SWMU 45-001 included the demolition and removal of treatment-plant equipment, facilities, and waste lines and the excavation of contaminated soil (LANL 1992, 07668, p. 3-71–3-73; LANL 1995, 48856, p. 46). Portions of the walls of Acid Canyon below the outfalls were also decontaminated (LANL 1992, 07668, pp. 3-72–3-73).

2.15.1.3 SWMU 45-002

SWMU 45-002 consists of a former vehicle decontamination facility (former Building 45-1) that was used to decontaminate vehicles and large equipment, including filters from the Sigma Building, trash dumpsters, and wing tanks from airplanes (Figures 1.1-2 and 1.1-17) (LANL 1992, 07668, p. 3-90; LANL 1995, 48856, p. 53). SWMU 45-002 was located approximately 40 ft south of the TA-45 RLW treatment plant, former SWMU 45-001 (LANL 1992, 07668, Figure 3.4-3.10). The decontamination facility began operation in 1952. Vehicles and other equipment were decontaminated by steam-cleaning (LANL 1992, 07668, p. 3-90). This facility operated infrequently, approximately once per month (LANL 1992, 07668, p. 3-90; LANL 1995, 48856, p. 53). SWMU 45-002 was decommissioned in 1966, along with the other facilities in former TA-45.

2.15.1.4 SWMU 45-003

SWMU 45-003 consists of the former buried industrial waste line and associated manhole (structure 45-8), located within the boundaries of TA-45 (Figures 1.1-2 and 1.1-17). This waste line was used to convey RLW to the TA-45 treatment plant, SWMU 45-001 (LANL 1992, 07668, pp. 3-85–3-87; LANL 1995, 48856, p. 60).

2.15.1.5 SWMU 45-004

SWMU 45-004 consists of a sanitary sewer outfall (Figures 1.1-2 and 1.1-17). This outfall was associated with the sanitary sewer system constructed in 1947 to serve the Los Alamos townsite (LANL 1995, 48856, p. 68). This sewer system included a sanitary sewer lift station (structure 45-3) and sanitary sewer manholes (structures 45-5 and 45-6).

2.15.1.6 AOC C-45-001

AOC C-45-001 is the site of an accidental release of plutonium-contaminated sludge that occurred in the parking lot south of Building 45-2 (SWMU 45-001) in January 1957 (LANL 1995, 48856, p. 46) (Figures 1.1-2 and 1.1-17). The parking lot was removed as part of the TA-45 D&D activities (LANL 1995, 48856, p. 46).

2.15.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for Consolidated Unit 45-001-00 includes both surface and subsurface sources of potential contamination.

2.15.2.1 Source of Contamination

RLW was treated at the TA-45 site. No known wastes remain after D&D activities in 1966. Potential residual contamination may include metals, radionuclides, and organic chemicals in surface or subsurface soil or tuff.

2.15.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soil
- Continued dissolution and advective/dispersive transport of chemicals in surface/subsurface soil or tuff
- Biotic perturbation and translocation of contaminants in subsurface soil

2.15.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present at Consolidated Unit 45-001-00:

- Residents (potential future exposure scenario)
- Recreational users (current and potential future exposure scenario)

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at Consolidated Unit 45-001-00. For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at Consolidated Unit 45-001-00 is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1100 ft bgs for the mesa-top portion of the site (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at Consolidated Unit 45-001-00 is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.15.3 Historical Data Quality Interpretation

2.15.3.1 Data Quality

Sixty-nine surface and subsurface samples were collected from SWMU 01-002(b)-99 following the IA (reaches ACS and AC-3) and were analyzed by off-site analytical laboratories (Table 2.15-1a). Samples collected as part of the IA were analyzed for one or more of the following: gamma spectroscopy, tritium, uranium, amercium-241, strontium-90, isotopic plutonium, isotopic thorium, isotopic uranium, metals, cyanide, methyl mercury, PCBs, pesticides, SVOCs, and VOCs. Analytical data packages are available for these samples.

Eighty-eight surface and subsurface samples from the remaining SWMUs/AOC comprising Consolidated Unit 45-001-00 were collected and submitted to off-site analytical laboratories (Table 2.15-1b). These samples were analyzed for one or more of the following: metals, phosphorus, americium-241, gamma spectroscopy analytes, tritium, isotopic plutonium, isotopic uranium, strontium-90, SVOCs, and VOCs. The eight samples from SWMU 45-002 were also analyzed for high explosives (HE) by an off-site analytical laboratory. Hard-copy data packages are not readily available. Data validation performed for these samples is presented in Section 4.1 of the RFI report for PRSs 1-002, 45-001, 45-002, 45-003, 45-004, and C-45-001 in TA-45 (LANL 1995, 48856).

An additional 56 surface and subsurface samples collected from SWMUs 45-001 and 45-002 were analyzed by an on-site analytical laboratory (Table 2.15-1c) for metals, cyanide, SVOCs, and VOCs and are screening-level data. These data from the on-site analytical laboratory are summarized in the data tables and shown inn the data figures but are not discussed in detail in this section because the data were not used to determine the nature and extent of contamination at the site.

Because of the remedial activities conducted at TA-45, samples from three locations (locations 45-01009, 45-01010, and 45-01011), collected as part of the RFI of SWMU 01-002, and samples from location 45-1043, collected as part of the RFI of SWMU 45-001, have been excluded from the current data set. The soil at these sample locations was removed during the IA of the South Fork of Acid Canyon (LANL 2002, 73660); therefore, the IA soil confirmation data collected after the soil removal represent current site conditions in Acid Canyon and Pueblo Canyon (Table 2.15-1a). Although an RFI report has been written for the SWMUs in Consolidated Unit 45-001-00, the data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB is presented with the final qualifiers, assigned as part of the data-evaluation process. The data for the samples collected for Consolidated Unit 01-002(b)-00 in reaches ACS and AC-3 are presented in the "Los Alamos and Pueblo Canyons Investigation Report" (LAPCIR) (LANL 2004, 87390). The data set is described in Section 6 of the LAPCIR (LANL 2004, 87390, p. 6-1 to 6-4), and the qualified data are presented in Appendix C (LANL 2004, 87390, pp. C-1 to C-2 and Tables C-1.0-1, C-1.0-2, and C-1.0-3).

Inorganic Chemical Results

Samples from Consolidated Unit 45-001-00 were analyzed for inorganic chemicals and phosphorus at off-site analytical laboratories. The samples were analyzed for metals and cyanide at on-site analytical laboratories for Consolidated Unit 45-001-00. No inorganic chemical results were qualified. All results were reported as nondetected (U) by the analytical laboratory.

Radionuclide Results

Samples were analyzed for radionuclides at off-site laboratories for Consolidated Unit 45-001-00. Some results were qualified as not detected (U) because the associated sample activities were less than three times the total propagated uncertainty.

Several results for cesium-137 (several samples), tritium (2 samples), plutonium-238 (7 samples), strontium-90 (8 samples), and uranium-235 (5 samples) were rejected (R) because the MDA documentation is missing and validation could not be completed.

Organic Chemical Results

Samples were analyzed for SVOCs and VOCs at both off-site and on-site analytical laboratories for Consolidated Unit 45-001-00. Eight samples were also analyzed for HE at an off-site analytical laboratory. No organic chemical results were qualified. All results reported as nondetected (U) were reported by the analytical laboratory.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment. The data for samples analyzed by an on-site laboratory may be used as screening-level data.

2.15.3.2 Nature and Extent of Contamination

The discussion of the nature and extent of contamination in Consolidated Unit 45-001-00 has been broken down into SWMUs 45-001, 45-002, 45-003, 45-004, AOC C-45-001, and Consolidated Unit 01-002(b)-00. In the following discussions, only results from off-site analytical laboratories are considered.

Consolidated Unit 01-002(b)-00

The samples reviewed for this section were subdivided into Acid Canyon reaches ACS and AC-3. Reach ACS is upstream of AC-3 and nearest to TA-45 (see Appendix B, Figure B-2, and Figure 2.15-1). Although some results were part of the SWMU 01-002(b) investigation, most of these results were presented in the LAPCIR (LANL 2004, 87390, pp. 7-13 to 7-14; 7-17 to 7-18). The nature and extent of contamination based on these combined results is presented below.

Reach ACS

Forty-seven sediment samples were collected from 37 locations within this reach (Table 2.15-1a and Figure 2.15-1; Appendix B, Figure B-2). Eighteen of these samples were analyzed for metals. Cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, and zinc were detected above BVs in at least one sample (Table 2.15-2a and Figure 2.15-2). The analytical detection limit for selenium was above BVs in two of these samples. No trends in the concentration distribution of these metals could be

discerned from the data, except for lead, which appears to show an increase in concentration from the upper to the lower end of reach ACS (Table 2.15-2a).

Nine radionuclides were detected above BVs/FVs in the sediment samples collected from this reach (Table 2.15-3a and Figure 2.15-3). Plutonium-238 and plutonium-239 were the most widely distributed radionuclides in the canyon sediment (Figure 2.15-3). Americium-241, cesium-137, and uranium-234 were also widely distributed in the canyon sediments, although they were detected above the BVs/FVs less frequently. Strontum-90, tritium, uranium-235, and uranium-238 were detected above the BVs/FVs in three, one, five, and four samples, respectively.

Organic chemicals detected in canyon sediments included PAHs, PCBs, Pesticides, VOCs, and SVOCs (Table 2.15-4a and Figure 2.15-4).

Reach AC-3

Twenty-two sediment samples were collected from 14 locations in reach AC-3 (Table 2.15-1a). Metals detected above BVs included cadmium, calcium, chromium, cobalt, copper, lead, manganese, mercury, nickel, selenium, silver, titanium, uranium, and zinc (Table 2.15-2a and Figure 2.15-2). Analytical detection limits for selenium were elevated above BVs in two samples.

Plutonium-238 and plutonium-239 were the most widely distributed radionuclides in the canyon sediment (Table 2.15-3a and Figure 2.15-3). Americium-241, cesium-137, and strontium-90 were detected above FVs less frequently. Tritium and uranium-234 were detected above FVs in one location. Uranium-235 was also detected above BVs in one location.

Organic chemicals detected in canyon sediments included PAHs, PCBs, pesticides, and SVOCs (Table 2.15-4a and Figure 2.15-4).

SWMU 45-001 and AOC C-45-001

AOC C-45-001 is the site of a plutonium sludge spill that occurred in the parking lot south of Building 45-2 in 1957. This AOC was investigated during the RFI in conjunction with the investigation of SWMU 45-001. Consequently, the nature and extent of contamination for this SWMU and AOC are discussed below.

South Waste Line

Four samples were collected from each of five boreholes (locations 45-01024, 45-01025, 45-01026, 45-01027, and 45-10028) along the South Waste Line at depths ranging from 2 ft to 38 ft bgs (Figure 2.15-5). Table 2.15-1b (off-site laboratory) and Table 2.15-1c (on-site laboratory) summarize the samples collected.

The results of the metals analyses are presented in Table 2.15-2b (off-site laboratory) and Table 2.15-2c (on-site laboratory) and are shown in Figure 2.15-6. No metals were analyzed by an off-site laboratory.

The results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory); no radiochemical analyses were performed by the on-site laboratory. Americium-241 and plutonium-239 were detected above FVs at all five locations (Figure 2.15-7). No other radionuclides were detected in samples collected along the South Waste Line. The deepest samples collected at each location did not report any detected radionuclides above BVs, nor were any detections of radionuclides associated with fallout in the deepest samples.

The results of the organic chemical analyses are presented in Tables 2.15-4b (off-site laboratory) and 2.15-4c (on-site laboratory) and are shown in Figure 2.15-8. No organic chemicals were analyzed by an off-site laboratory.

South Waste Line Outfall

Twelve surface samples were collected from seven locations (45-01036, 45-01037, 45-01038, 45-01039, 45-01040, 45-01041, and 45-01042) in the South Waste Line Outfall at a distance between 25 ft and 55 ft from the end of the former outlet pipe and at depths ranging from 0 ft to 0.5 ft bgs (Figure 2.15-5). Tables 2.15-1b (off-site laboratory) and 2.15-1c (on-site laboratory) summarize the samples collected.

The results of the metals analyses are summarized in Tables 2.15-2b (off-site laboratory) and 2.15-2c (on-site laboratory) and shown in Figure 2.15-6. The following metals were detected above BVs at one location within the South Waste Line Outfall: barium, cadmium, cobalt, iron, mercury, and vanadium. Additionally, strontium and total phosphorus were detected in all seven locations, and molybdenum was detected in four locations. Analytical detection limits were above BVs for the following metals: antimony (all locations), cadmium (six locations), mercury (two locations), selenium (all locations), and silver (all locations).

The results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory) and shown in Figure 2.15-7; no radiochemical analyses were performed by the on-site laboratory. Cesium-137 (two locations), plutonium-239 (three locations), strontium-90 (two locations), and tritium (five locations) were detected above FVs.

No organic chemicals were analyzed in samples from the South Waste Line Outfall by either the on-site or off-site laboratory.

North Waste Line and Outfall

One location (45-01034 at a depth of 35 ft bgs) near the former Northern Waste Line and four locations (45-01035, 45-01044, 45-01045, and 45-01046) at depths from 0.5 ft to 30 ft bgs within the North Waste Line Outfall were sampled (Figure 2.15-5). Table 2.15-1b (off-site laboratory) and Table 2.15-1c (on-site laboratory) summarize the samples collected.

The results of the metals analyses are presented in Table 2.15-2b (off-site laboratory) and Table 2.15-2c (on-site laboratory). Metals (including total phosphorus) were analyzed for by an off-site laboratory at three locations (Figure 2.15-6); no samples were analyzed by the on-site laboratory for metals. Barium, cobalt, iron, lead, mercury, selenium, silver, and zinc were detected above BVs in one or more of the samples. Also, strontium and total phosphorus were detected in all three samples. Finally, analytical detection limits were above BVs for cadmium, selenium, and silver in one or more of the samples.

The results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory) and shown in Figure 2.15-7; no radiochemical analyses were performed by the on-site laboratory. Americium-241 (two locations), plutonium-239,-240 (two locations), and tritium (two locations) were detected. The deepest samples within this area did not have detections of radionuclides above BVs, nor were any detection of radionuclides associated with fallout in the deepest samples.

The results of the organic chemical analyses are presented in Tables 2.15-4b (off-site laboratory) and 2.15-4c (on-site laboratory) and shown in Figure 2.15-8. No organic chemicals were analyzed by an off-site laboratory.

Parking Lot

Five locations (45-01029, 45-01030, 45-01031, 45-01032, and 45-01033) were sampled in the parking lot area of Building 45-2 at four depths each ranging from 5 ft to 23 ft bgs (Figure 2.15-5). Tables 2.15-1b (off-site laboratory) and 2.15-1c (on-site laboratory) summarize the samples collected. Sampling within the parking lot was designed to characterize potential contamination from historical operations at Building 45-2 (SWMU 45-001) and the 1957 plutonium sludge spill (AOC C-45-001).

The results of the metals analyses are presented in Tables 2.15-2b (off-site laboratory) and 2.15-2c (on-site laboratory) and shown in Figure 2.15-6. No metals were analyzed by an off-site laboratory.

The results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory) and shown in Figure 2.15-7; no radiochemical analyses were performed by the on-site laboratory. Americium-241 (one location), plutonium-238 (one location), and plutonium-239 (two locations) were detected above BVs/FVs only in surface samples (0 ft to 5 ft bgs); the deepest samples in this area did not have detections of radionuclides above BVs, nor were any detection of radionuclides associated with fallout in the deepest samples.

The results of the organic chemical analyses are presented in Tables 2.15-4b (off-site laboratory) and 2.15-4c (on-site laboratory) and shown in Figure 2.15-8. No organic chemicals were analyzed by an off-site laboratory.

SWMU 45-002, Vehicle Decontamination Facility

Eight samples were collected from six locations (45-01052, 45-01053, 45-01054, 45-01055, 45-01056, and 45-01072) at depths ranging from 0.5 ft to 17 ft bgs (Figure 2.15-5). Tables 2.15-1b (off-site laboratory) and 2.15-1c (on-site laboratory) summarize the samples collected.

The results of the metals analyses are presented in Tables 2.15-2b (off-site laboratory) and 2.15-2c (on-site laboratory). Metals were analyzed by an off-site laboratory in one surface sample (location 45-01072), and strontium and total phosphorus were detected in this sample (Figure 2.15-6). Additionally, analytical detection limits were above BVs for antimony, cadmium, selenium, and silver.

The results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory) and shown in Figure 2.15-7; no radiochemical analyses were performed by the on-site laboratory. Americium-241 (one location), plutonium-238 (two locations), plutonium-239 (four locations), strontium-90 (one location), uranium-234 (one location), uranium-235 (one location), and uranium-238 (two locations) were detected above BVs/FVs. The deepest sampling intervals at 45-01053, 45-01054, and 45-01055 have detections of radionuclides above BVs or detections of fallout radionuclides.

The results of the organic chemical analyses are presented in Table 2.15-4b (off-site laboratory) and Table 2.15-4c (on-site laboratory) and shown in Figure 2.15-8. No organic chemical analyses were performed by the on-site laboratory. Six organic chemicals were detected in three locations (45-01055, 45-01056, and 45-01072). The chemical bis(2-ethylhexylphthalate) was detected at location 45-01055. Fluoranthene, phenanthrene pyrene, and acetone were detected at location 45-01056. Methylene chloride was detected at location 45-01072. The detections of organic chemicals are limited to the three western-most locations within the vehicle decontamination facility (45-01055, 45-01056, and 45-01072). Moreover, the vertical extent appears to be defined by borehole 45-01056, where PAHs were detected in the 0 ft to 12 ft bgs sampling interval, but only acetone was detected in the deepest interval. At location 45-01055, bis(2-ethylhexylphthalate) was detected in the only interval sampled. At surface sample location 45-01072, methylene chloride was detected at a trace concentration of 0.007 mg/kg.

SWMU 45-003, Untreated Waste Line

Six samples from four locations (45-01059, 45-01060, 45-01061, and 45-01062) were collected at depths ranging from 2.4 ft to 4.4 ft bgs (Figure 2.15-5). Table 2.15-1b summarizes the samples collected and analyzed by an off-site laboratory; no samples were analyzed by the on-site laboratory.

The results of the metals analyses are presented in Table 2.15-2b and shown in Figure 2.15-6. Lead (one location), mercury (two locations), and zinc (one location) were detected above BVs. Molybdenum (three locations) and strontium (all locations) were detected in samples from this SWMU. Additionally, analytical detection limits for antimony, cadmium, selenium, and silver were above BVs in all samples from the untreated waste line.

The results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory) and shown in Figure 2.15-7. Tritium was detected in all samples, and plutonium-239 was detected at two locations (2 ft to 2.5 ft bgs) closest to the parking lot and Building 45-2.

The results of the organic chemical analyses are presented in Table 2.15-4b (off-site laboratory) and shown in Figure 2.15-8. PAHs were the only organic chemicals detected at the untreated waste line (the number of locations where detections were measured is given in parentheses): anthracene (1); benz(a)anthracene (3); benzo(a)pyrene (4); benzo(b)fluoranthene (4); benzo(k)fluoranthene (1); chrysene (3); fluoranthene (4); indeno(1,2,3-cd)pyrene (1); phenanthrene (4); and pyrene (4).

SWMU 45-004, Sanitary Sewer Emergency Bypass

Four samples at four locations (45-01064, 45-01065, 45-01066, and 45-01068) were collected from the outfall area of the sanitary sewer emergency bypass line at surface depths ranging from 0.5 ft to 1.5 ft bgs (Figure 2.15-5). Table 2.15-1b (off-site laboratory) summarizes the samples collected and analyzed by an off-site laboratory; no samples were analyzed by the on-site laboratory.

The results of the metals analyses are presented in Table 2.15-2b and shown in Figure 2.15-6. Lead (two locations), mercury (two locations), silver (two locations), and zinc (two locations) were detected above BVs; strontium (two locations) and total phosphorus (three locations) were detected in the samples closest to the outfall. The sample farthest from the outlet pipe contained no metals detected above BVs. Additionally, analytical detection limits were above BVs for cadmium, selenium, and silver in most samples. No metals were detected at location 45-01068, downslope from the other three locations (see Figure 2.15-6).

Results of radiochemical analyses are presented in Table 2.15-3b (off-site laboratory) and shown in Figure 2.15-7. Tritium was detected above the FV at the two locations closest to the outfall (45-01064 and 45-01065) but not at the two other downslope locations.

The results of the organic chemical analyses are presented in Table 2.15-4b (off-site laboratory) and shown in Figure 2.15-8. A number of PAHs and one VOC (acetone) were detected at location 45-01066. Only acetone was detected at location 45-01068, the sample located farthest downslope in this area. Organic chemicals were not detected at the other two sampling locations, locations 45-01064 and 45-01065 (Figure 2.15-7).

The extent of contamination has not been defined at this consolidated unit; Section 4 provides details of the sampling proposed to address this data need.

2.16 Consolidated Unit 73-001(a)-99, Former Landfill

2.16.1 Site Description and Operational History

Consolidated Unit 73-001(a)-99 (Figures 1.1-2, 1.1-18, and 1.1-19) consists of SWMUs 73-001(a) and 73-004(d). The SWMUs are associated with disposal activities near the TA-73 airport landfill. SWMU 73-004(d) (Figure 1.1-18) was physically incorporated into, and is indistinguishable from, SWMU 73-001(a) and is not discussed separately in ENV-ERS Program documents after the two areas were consolidated into one unit: 73-001(a)-99. The area encompassing Consolidated Unit 73-001(a)-99 is currently part of the Los Alamos County Airport (LANL 1992, 07667, p. 5-170).

2.16.1.1 SWMU 73-001(a)

SWMU 73-001(a), the inactive main landfill (LANL 1998, 63070, p. 2-5) situated north of the airport runway, has a surface area of about 12 acres (Figure 1.1-19). Laboratory and townsite use of the area as a landfill probably began in 1943. The Laboratory deposited sanitary wastes in the landfill. A hot-mix asphalt batch plant operated in this area from about the mid-1940s until 1954 (LANL 1992, 07667, p. 5-173). The plant was located east of the airport terminal building along the canyon rim in an area that subsequently was assimilated into the main landfill (LANL 1992, 07667, Figure 5-78). Los Alamos County operated the landfill from 1965 until its closure in 1973 (LANL 1998, 63070, p. 2-16). From 1984 to 1986, the western portion of the landfill was excavated and moved to the debris disposal pit [SWMU 73-001(d), now part of Consolidated Unit 73-001(b)-99] to allow the construction of existing hangars and tie-down areas (LANL 2002, 74007, p. 6). Clean fill was used to replace the excavated area.

2.16.1.2 SWMU 73-004(d)

SWMU 73-004(d) is a former septic system that served the landfill office (LANL 1992, 07667, p. 5-173) (Figure 1.1-19). It was located east of the present airport terminal building and within the footprint of SWMU 73-001(a). The building and septic tank were removed during D&D in the early 1970s (LANL 1997, 59367, p. 17).

2.16.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for Consolidated Unit 73-001(a)-99 includes both surface and subsurface sources of potential contamination. The CSM, as described in the following sections, is summarized from the RFI report (LANL, 1998, 63070, Figure 2.3.3-1).

2.16.2.1 Source of Contamination

Contamination at Consolidated Unit 73-001(a)-99 may have originated from municipal solid wastes disposed of at the landfill and any effluent from the septic system.

2.16.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Water entrainment of landfill contaminants and transport to the underlying soil and tuff, as well as in runoff to channel sediments
- Leaching and dispersion to underlying soil and tuff, as well as in runoff to channel sediments
- Volatilization of landfill contaminants to the atmosphere
- Air entrainment of landfill contaminants, as well as air entrainment of exposed contaminated soil and tuff

2.16.2.3 Potential Receptors and Exposure Pathways

The following human receptors could be reasonably expected to be present (current and potential future) at Consolidated Unit 73-001(a)-99:

- Off-site residents
- Site visitors
- On-site workers

The potential pathways for human exposure to surface soil, tuff, and channel sediments are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at Consolidated Unit 73-001(a)-99. For ecological receptors, the potential pathways are surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). The pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Exposure to groundwater at Consolidated Unit 73-001(a)-99 is an incomplete pathway for both human and ecological receptors because the depth to regional groundwater at the site is approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at Consolidated Unit 73-001(a)-99 is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.16.3 Historical Data Quality Interpretation

2.16.3.1 Data Quality

The data presented in this work plan are provided in the previously published RFI (LANL 1998, 63070) and interim measure (IM) (DOE 2004, 87078) reports; therefore, the data quality of samples analyzed for this SWMU is not presented in this work plan.

2.16.3.2 Nature and Extent of Contamination

Consolidated Unit 73-001(a)-99 consists of the former Los Alamos landfill [SWMU 73-001(a)] and a septic system that served the old landfill office [SWMU 73-004(d)]. As the landfill expanded, SWMU 73-004(d) was physically incorporated into the mass of the landfill. Discussion of samples results, and the nature and extent of the contamination addresses the Consolidated Unit 73-001(a)-99 as a whole rather than as individual SWMUs.

During the RFI conducted between 1994 and 1997 (LANL 1998, 63070), surface, subsurface, pore water, and soil gas samples were collected within the boundaries of the landfill on the mesa top. Surface samples were collected from landfill drainages into Pueblo Canyon during the RFI and again as part of the IM activities in 2003 (DOE 2004, 87078). The following subsections summarize the data from the previously published RFI (LANL 1998, 63070) and IM (DOE 2004, 87078) reports. The data tables from these reports are presented in Appendix D.

Landfill – Surface

Twenty-five samples were collected and analyzed for inorganic chemicals (Appendix D, Table 2.3.4.2-2). Metals were detected above BVs in the surface samples collected from the landfill: cadmium, chromium, copper, iron, lead, mercury, nickel, silver, sodium, and zinc (Plates 2.16-1 and 2.16-2; Appendix D, Table 2.3.4.3-2). No radionuclides were detected in any of the surface samples (Figure 2.16-3). The following groups of organic chemicals were detected in the surface samples collected: PAHs, PCBs, pesticides, VOCs, and SVOCs (Figure 2.16-4; Appendix D, Table 2.3.4.3-17); PAHs (anthracene, benz(a)anthracene, benz(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-cd)pyrene, and pyrene); two PCBs (Aroclor-1254 and Aroclor-1260); and one pesticide (4,4'-DDT). Other organic chemicals detected included bis(2-ethylhexyl)phthalate; 1,1-dichloroethane; tetrachloroethene; toluene; trichloroethene; and methoxychlor.

Landfill – Subsurface

One-hundred and seven samples were collected from the landfill subsurface (Appendix D, Table 2.3.4.2-5). The following metals were detected above BVs in subsurface samples collected between 5 ft and 157.5 ft bgs: aluminum, arsenic, barium, beryllium, calcium, chromium, copper, iron, lead, magnesium, mercury, nickel, potassium, sodium, vanadium, and zinc (Figure 2.16-5; Appendix D, Table 2.3.4.3-5). One radionuclide, strontium-90, was detected in three subsurface samples (Figure 2.16-6; Appendix D, Tables 2.3.4.3-11 and 2.3.4.3-14). The following organic chemicals were detected in the subsurface samples: benz(a)anthracene; benz(a)pyrene; benzo(b)fluoranthene; chrysene; phenanthrene; pyrene; acetone; 2-butanone; 1,4-dichlorobenzene; cis-dichloroethene; ethylbenzene; 4-methyl-2-pentanone; benzene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; total xylene; trichloroethene; methylene chloride; bis(2-ethylehexyl)phthalate; alpha-chlordane; and gamma-chlordane (Figure 2.16-7; Appendix D, Table 2.3.4.3-20).

Landfill – Pore Water

Twenty-two pore water samples, collected from lysimeters at the landfill during sampling periods in 1995, 1996, and 1997, were analyzed for inorganic and organic chemicals (Appendix D, Table 2.3.4.3-6). Twenty-one inorganic chemicals were detected (Figure 2.16-8 and Appendix D, Table 2.3.4.3-8). The following organic chemicals were detected: acetone; carbon disulfide; toluene; benzene; ethylbenzene; total xylene; isopropyl toluene; tertiary-butylbenzene; 1,2,4-trimethylbenzene; cis-dichloroethene; iodomethane; 1,2-dichloroethane; chloromethane; tetrachloroethene; 1,3-dichlorobenzene;

1,4-dichlorobenzene; 2-hexanone; 2-butanone; and 4-methyl-2-pentanone (Figure 2.16-9 and Appendix D, Table 2.3.4.3-23).

Landfill – Soil Gas

The detailed soil gas results (Figure 2.16-10) are provided in the RFI report (LANL 1998, 63070, Table 2.3.4.3-26) and are too numerous to summarize here. However, based upon comparisons to soil gas sample results from landfills in California, the soil gas sample results for Consolidated Unit 73-001(a)-99 appear to be consistent with other landfills (LANL 1998, 63070, p. 2-179).

Drainages

During the RFI, surface samples were collected from drainages D1, D2, D3, and D4 (LANL 1998, 63070, Figure 2.3.4.2-7). The following metals were detected above BVs (drainage in which metal was detected given in parentheses): beryllium (D3), cadmium (D4), lead (D4), uranium (D4), and zinc (D2, D3, D4) (LANL 1998, 63070, Figure 2.3.4.3-1). Two radionuclides, plutonium-239,240 and cesium-137, were detected in these four drainages. Plutonium-239,-240 was detected in drainages D1, D2, and D4 (LANL 1998, 63070, Figure 2.3.4.3-6). Cesium-137 was detected in drainages D2 and D4 (LANL 1998, 63070, Figure 2.3.4.3-6). The following groups of organic chemicals are detected in the drainage surface samples: PAH pesticides, PCBs, and SVOCs (LANL 1998, 63070, Figure 2.3.4.3-8). Organic chemicals were primarily detected in drainages D2 and D4. Detected PAHs included (drainage given in parentheses) acenaphthene (D2, D4); anthracene (D2, D4); benz(a)anthracene D2, D4); benzo(a)fluoranthene (D4); benzo(a)pyrene (D2, D4); benzo(a)fluoranthene (D4); benzo(b)fluoranthene (D2, D4); benzo(g,h,i)perylene (D2, D4); benzo(k)fluoranthene (D2, D4); chrysene (D2, D4); dibenz(a,h)anthracene (D2, D4); fluoranthene (D2, D4); indeno(1,2,3-cd); pyrene (D2, D4); methylnaphthalene (D4), naphthalene (D4); phenanthrene (D2, D4); and pyrene (D2, D4). The detected pesticides were alpha-chlordane (D4); gamma-chlordane (D4); and 4,4'-DDT (D2, D4) and its metabolite 4,4'-DDE (D4). Two PCBs, Aroclor-1254 (D4) and Aroclor-1260 (D1, D4), were also detected. Two plasticizers (SVOCs), bis(2-ethylhexyl)phthalate (D3, D4) and di-n-butylphthalate (D4), were detected in the drainage surface samples.

As part of the IM in 2003, surface samples were collected from drainages A, B, C, and D2 (Plate 2.16-1; Appendix D, Tables 6 and 7). The following metals were detected above BVs (drainage in which metal was detected given in parentheses) (Plate 2.16-2): antimony (A, D2), arsenic (A), cadmium (A, B, D2), calcium (A), cobalt (A), copper (A, D2), iron (A, B), lead (A, B, C, D2), mercury (A, D2), nickel (A), selenium (A, B, C, D2), vanadium (B, D2), and zinc (A, B, C, D2) (DOE 2004, 87078, Table 15). Two radionuclides, plutonium-239,-240 and cesium-137, were detected in these four drainages (DOE 2004, 87078, Table 16). Plutonium-239,-240 was detected in drainages A, B, C, and D2. Cesium-137 was detected in drainages A, B, and C. The following groups of organic chemicals were detected (DOE 2004, 87078, Table 18) in the drainage surface samples (Plate 2.16-2): PAHs pesticides, PCBs, petroleum hydrocarbons, and SVOCs (Appendix D, Table 12). Detected PAHs included acenaphthene (D2); anthracene (A, D2); benz(a)anthracene (B, D2); benzo(a)pyrene (B, D2); benzo(b)fluoranthene (B, D2); benzo(g,h,i)perylene (D2); benzo(k)fluoranthene (B, D2); chrysene (B, C, D2); dibenz(a,h)anthracene (D2); fluorene (D2); indeno(1,2,3-cd)pyrene (B, D2); methylnaphthalene (D2); naphthalene (D2), phenanthrene (B, C, D2), and pyrene (A, B, C, D2). Two PCBs, Aroclor-1254 (A, D2) and Aroclor-1260 (B, D2), were detected. The detected pesticides were alpha-chlordane (D2); gamma-chlordane (D2); 4,4'-DDT (B, C, D2) and its metabolites 4,4'-DDD (D2) and 4,4'-DDE (A, B, C, D2); dieldrin (B); and endrin ketone (A, C, D2). Two plasticizers (SVOCs), butyl-benzylphthalate (C, D2) and di-n-butylphthalate (C), were detected in the drainage surface samples. TPHs as diesel (A, B, C) and as motor oil (A, B, C, D2) were detected in the IM

surface samples. Dibenzofuran (D2), Carbazole (D2), and phenol (C) were also detected in the drainage surface samples collected as part of the IM.

2.17 Consolidated Unit 73-001(b)-99, Former Landfill

2.17.1 Site Description and Operational History

Consolidated Unit 73-001(b)-99 (Figures 1.1-2, 1.1-18, and 1.1-19) consists of SWMUs 73-001(b), 73-001(c), and 73-001(d) (Figure 1.1-18), former structures at the Los Alamos County airport. SWMUs 73-001(b) and 73-001(c) were destroyed by trench excavation for SWMU 73-001(d) and lie within the boundaries of SWMU 73-001(d) (LANL 1998, 63070, pp. 2-16–2-18).

2.17.1.1 SWMU 73-001(b)

SWMU 73-001(b) was a pit to dispose of waste oil (LANL 1998, 63070, p. 2-18) (Figure 1.1-19). Operation dates for the pit are estimated to be from 1947 to 1974 (LANL 1992, 07667, p. 5-170; LANL 1998, 63070, p. 2-18). Clean sand was reportedly placed in the pit by the Zia Company to solidify its contents (LANL 1992, 07667, p. 5-170). At the time of the RFI work plan, there was no visible indication of the waste oil pit at the estimated location (LANL 1998, 63070, p. 2-18).

2.17.1.2 SWMU 73-001(c)

SWMU 73-001(c) consists of four former bunkers used to store HE (LANL 1998, 63070, p. 2-18) (Figure 1.1-19). Built in 1947, the concrete bunkers measured 46 ft 8 in.^{2}, were built on four pads, and were covered with earth. The Zia Company acquired three of the bunkers in 1948, and the Laboratory's protective force used one of them from 1948 to 1964, at which time it was transferred back to the Zia Company (LANL 1998, 63070, p. 2-18). In 1974, the bunkers were demolished. RFI results indicated that the disposal pits adjacent to the bunker sites were incorporated into SWMU 73-001(d) when the disposal trenches were excavated (LANL 1998, 63070.1, p. 2-18).

2.17.1.3 SWMU 73-001(d)

SWMU 73-001(d) is a former landfill debris disposal area that operated from 1984 to 1986 (LANL 1998, 63070, p. 2-16) (Figure 1.1-19). The disposal area consisted of two roughly parallel unlined trenches, dug to a depth of 35 ft. The site was used in 1984 to bury debris excavated from the western portion of SWMU 73-001(a) [now part of Consolidated Unit 73-001(a)-99] and from SWMUs 73-001(b) and 73-001(c) (LANL 1992, 07667, p. 5-170). The trenches are estimated to contain 126,000 yd^3 of debris (LANL 1998, 63070, p. 2-5; LANL 2001, 71258, p. 3). The debris disposal area was covered with soil in 1986 and reseeded (LANL 1992, 07667, p. 5-170; LANL 1998, 63070, p. 2-16). SWMU 73-001(d) was investigated as part of the airport landfill areas RFI (LANL 1998, 63070).

2.17.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for Consolidated unit 73-001(b)-99 includes both surface and subsurface sources of potential contamination. The CSM described in the following sections is summarized from the CSM presented in the RFI (LANL, 1998, 63070, Figure 2.3.3-1).

2.17.2.1 Source of Contamination

Contamination at Consolidated Unit 73-001(b)-99 would have originated from municipal solid wastes, waste oils, and HE disposed of at the landfill.

2.17.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Water entrainment of landfill contaminants and transport to the underlying soil and tuff as well as in runoff to channel sediments
- Leaching and dispersion to underlying soil and tuff as well as in runoff to channel sediments
- Volatilization of landfill contaminants to the atmosphere
- Air entrainment of landfill contaminants as well as air entrainment of exposed contaminated soil and tuff

2.17.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at Consolidated Unit 73-001(b)-99:

- Off-site residents
- Site visitors
- On-site workers

The potential pathways for human exposure to surface soil, tuff, and channel sediments are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at Consolidated Unit 73-001(b)-99. For ecological receptors, the potential pathways are surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). The pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Exposure to groundwater at Consolidated Unit 73-001(b)-99 is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at Consolidated Unit 73-001(b)-99 is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.17.3 Historical Data Quality Interpretation

2.17.3.1 Data Quality

The data presented in this work plan are provided in the previously published RFI report (LANL 1998, 63070) report. Because future work at this site will be performed by the DOE and reported separately, this work plan does not discuss the data quality of samples analyzed for this SWMU.

2.17.3.2 Nature and Extent of Contamination

During the RFI conducted between 1994 and 1997 (LANL 1998, 63070), surface (Figure 2.17-1; Appendix D, Tables 2.3.4.2-2), subsurface (Appendix D, Table 2.3.4.2-5), and soil gas samples (LANL 1998, 63070, p. 2-232) were collected within the boundaries of the landfill debris area on the mesa top.

Landfill – Surface

Samples collected from the surface were analyzed only for metals. Only calcium was detected above BVs (Figure 2.17-2; Appendix D, Table 2.3.4.3-2).

Landfill – Subsurface

The following metals were detected above BVs in subsurface samples collected between 3 ft and 55.5 ft bgs: aluminum, barium, calcium, chromium, copper, iron, lead, magnesium, nickel, potassium, selenium, thallium, vanadium, and zinc (Figure 2.17-3; Appendix D, Table 2.3.4.3-5). Subsurface samples collected from Consolidated Unit 73-001(b)-99 were not analyzed for radionuclides. The following organic chemicals were detected in the subsurface samples: acetone; 2-butanone; n-butylbenzene; carbon disulfide; isopropyltoluene; 1,2,4-trimethylbenzene; chloromethane; methylene chloride; 4-methyl-2-pentanone; and bis(2-ethylhexyl)phthalate (Figure 2.17-4; Appendix D, Table 2.3.4.3-20).

Landfill – Soil Gas

The soil gas sampling locations are shown in Figure 2.17-5. The summarized results are provided in the RFI report (LANL 1998, 63070, Table 2.3.4.3-26) and are too numerous to summarize here. However, based upon comparisons to soil gas sample results from landfills in California, the soil gas sample results for Consolidated Unit 73-001(b)-99 appear to be consistent with other landfills (LANL 1998, 63070, p. 2-179).

2.18 Consolidated Unit 73-002-99, Miscellaneous Airport Structures

2.18.1 Site Description and Operational History

Consolidated Unit 73-002-99 (Figures 1.1-2 and 1.1-20) consists of SWMU 73-002 (Figure 1.1-21), AOC 73-003 (Figure 1.1-22), SWMU 73-004(a) (Figure 1.1-23), SWMU 73-004(b) (Figure 1.1-20), and SWMU 73-006 (Figure 1.1-20). The SWMUs and AOC are associated with former structures and activities for the airport landfill [Consolidated Unit 73-001(a)-99] (LANL 1992, 07667).

2.18.1.1 SWMU 73-002

SWMU 73-002 is an incinerator/surface disposal area located slightly west and north of the Los Alamos Airport terminal (Figure 1.1-21). The incinerator began operations in 1947 but operations ceased in 1948 (LANL 1992, 07667, p. 5-189; LANL 1996, 59374, p. 1). From 1947 to 1948, the incinerator was used to destroy classified laboratory documents, after which it was used to burn municipal trash (LANL 1992, 07667, p. 5-189; LANL 1996, 54916, p. 1). The incinerator equipment and stack were removed; no information on the removal operation is available (LANL 1996, 54916, p. 1). Associated with the incinerator is an ash-disposal area located north of the building, immediately below the south rim of Pueblo Canyon (LANL 1996, 54916, p. 1). A sizeable deposit of noncombustible materials, primarily composed of rusted tin cans, is located on a ledge below the top of the canyon. From this ledge, the ash deposit extends approximately 140 ft to the top of the canyon at a slope of approximately 40 degrees. The width of the ash deposit is narrowest at the top (approximately 65 ft) and fans out, becoming widest at the ledge (approximately 160 ft). Below the ledge, accumulations of ash and other noncombustible materials continue downslope in an irregular manner for some distance but terminate at least 700 ft from the bottom of the canyon (LANL 1996, 54916, p. 1).

2.18.1.2 AOC 73-003

AOC 73-003 was a steam-cleaning facility for garbage trucks, cans, and dumpsters used to collect municipal waste from the Los Alamos townsite (Figure 1.1-22). The facility was made of concrete block on a concrete slab and had overall dimensions of 50 ft x 30 ft. It consisted of a drive-through bay for cleaning garbage trucks, a fully enclosed and automated system for cleaning garbage cans, a patio area for unloading garbage cans to be cleaned, a heater room, and an office (LANL 1998, 62522, p. 7, Figure 2.2.3-1). Wash water entered one of three 14-in.-diameter floor drains that connected to the septic tank, SWMU 73-004(b), and was discharged through a 6-in.-diameter VCP to Pueblo Canyon (LANL 1996, 54916, p. 1; LANL 1998, 62522, p. 7). The facility was used from 1949 to 1970 and was demolished in 1971. The site is now overlain by the asphalt parking lot for the Los Alamos County Airport (LANL 1992, 07667, p. 5-191).

2.18.1.3 SWMU 73-004(a)

SWMU 73-004(a) was a concrete septic tank that received sanitary waste from toilets and showers in the adjacent incinerator building (Building 73-2) (Figure 1.1-23). The tank was located about 90-ft northwest of the steam-cleaning facility (AOC 73-003), but it was removed in August 1996 during a VCA (LANL 1996, 59374, p. 9).

2.18.1.4 SWMU 73-004(b)

SWMU 73-004(b) was a concrete septic tank located approximately 90 ft northwest of the steam-cleaning facility (AOC 73-003) and received wash water from the steam-cleaning plant (LANL 1998, 62522, p. 7) (Figure 1.1-20). During RFI activities in July and August 1996, the septic tank was exposed and found to be intact (LANL 1998, 62522, p. 7). The tank was subsequently removed during VCA activities in August 1996 (LANL 1996, 59374, p. 27).

2.18.1.5 SWMU 73-006

SWMU 73-006 consists of the two drainlines that discharged to Pueblo Canyon from the incinerator building (Building 73-2) (Figure 1.1-21). The west drain line, constructed of 5-in. diameter cast iron pipe, originates at two floor drains, now plugged with concrete, one on the west side of the charging floor and

the other on the west side of the stoking floor (LANL 1998, 62522, p. 27). The east drain line, also constructed of 5-in.-diameter cast iron pipe, originates at similar concrete-plugged drains located on the east side of the charging and stoking floors. The drains are presumed to have handled wash water and to have operated concurrently with the incinerator (LANL 1998, 62522, p. 27).

2.18.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for Consolidated Unit 73-002-99 includes both surface and subsurface sources of potential contamination.

2.18.2.1 Source of Contamination

Contamination at Consolidated Unit 73-002-99 may have originated from sewage flow from the various septic systems [SWMUs 73-004(a) and 73-004(b)], the ash pile downslope of the incinerator building (SWMU 73-002), and water from the drains in the wash area (AOC 73-003) and incinerator building (SWMU 73-006).

2.18.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events
- Airborne transport of contaminated surface soils and/or ash pile
- Continued dissolution and advective/dispersive transport of chemicals in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.18.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at Consolidated Unit 73-002-99:

- Off-site residents
- On-site workers
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at Consolidated Unit 73-002-99. For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential

pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at Consolidated Unit 73-002-99 is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at Consolidated Unit 73-002-99 is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.18.3 Historical Data Quality and Interpretation

2.18.3.1 Data Quality

One hundred and seven surface and subsurface samples from Consolidated Unit 73-002-99 were collected and submitted to off-site analytical laboratories (Table 2.18-1; Figures 2.18-1 through 2.18-4 These samples were analyzed for at least one of the following suites: metals, dioxins and furans, gamma spectroscopy analytes, tritium, isotopic plutonium, isotopic uranium, pesticides, PCBs, SVOCs, and VOCs. Hard-copy data packages are not readily available, but electronic versions of the data packages are available. Data validation performed for these samples, and the assigned qualifiers are presented in the data tables and discussed below.

A 1998 sampling and analysis plan (SAP) (LANL 1998, 62522) was written for the SWMUs in the Consolidated Unit 73-002-99, and the existing data were presented in the SAP. Data from samples collected in 1999 were unpublished but have been incorporated into the data presented in this work plan. The data presented in this section were evaluated using current guidance and available electronic data from the ERDB. The original sample result is always used, even when a field duplicate was collected. In addition, the electronic data currently available in the ERDB are presented with the final qualifiers, assigned as part of the data evaluation process.

Inorganic Chemical Results

Samples were analyzed for inorganic chemicals at off-site analytical laboratories. Multiple results were estimated (J) because the results were between the EQL and the MDL. Some inorganic results were considered estimated and potentially biased low (J-) because the analyte was recovered below the lower acceptance level but greater than 30% in the associated sample spike. Two results for iron were estimated and biased high (J+) because the associated laboratory control sample was recovered above the upper warning limit. Other inorganic chemical results were estimated and potentially biased high (J+) because the analytes were recovered above the upper acceptance levels but greater than 30% in the associated sample spikes. Results for copper for seven samples were qualified as undetected (U) because the results were less than five times the amount in the preparation blank. Other inorganic results not detected (U) were reported by the analytical laboratory.

The results for lead (1 sample), antimony (15 samples), and manganese (6 samples) were rejected (R) because the associated sample spikes had recoveries of less than 30%.

Radionuclide Results

Several samples were analyzed for radionuclides at off-site laboratories. Some results were qualified as not detected (U) because the associated sample activities were either less than the MDA or less than three times the total propagated uncertainty.

Organic Chemical Results

Samples were analyzed at off-site analytical laboratories for at least one of the following suites: pesticides, PCBs, dioxins, furans, SVOCs, and VOCs. Several VOC sample results were estimated (J) because the associated internal standard area counts were less than 50% but greater than 10% of the previous continuing calibration standard. One result of acetone was considered estimated and potentially biased low (J-) because the sample surrogate recovery was less than 10%. Several samples were estimated and potentially biased low (J-) because the associated surrogate was between the lower acceptance limit and 10% recovery. One result for 4,4'-DDT was also estimated and potentially biased low (J-) because the surrogate recovery was below 10%. Two VOC results in one sample and five pesticide results in another sample were estimated and potentially biased high (J+) because the associated surrogate recovery was greater than the upper acceptance limit. Several results were nondetected (U) either by the analytical laboratory or because the sample concentrations were less than five times the amount in the method blank.

One Qbt3 sample had several pesticide results rejected (R) because the associated surrogate had less than 10% recovery. One sample had results for nine VOCs rejected (R) because the sample surrogate recovery was less than 10%.

The data for samples submitted to off-site analytical laboratories are of good quality and sufficient to use in a data assessment.

2.18.3.2 Nature and Extent of Contamination

SWMU 73-002, Ash Pile

Eleven samples from eight locations were collected from depths of 0 ft to 4.5 ft from the ash pile downslope of the incinerator building and analyzed for inorganic chemicals, radionuclides, and organic chemicals. An additional 24 surface samples were collected and analyzed only for radionuclides (Table 2.18-1 and Plate 2.18-1). The following metals were detected but have no BVs for comparison because the samples were collected from ash: aluminum, arsenic, antimony, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, sodium, vanadium, and zinc (Table 2.18-2 and Plate 2.18-2). The radionuclides plutonium 239,-240, uranium-234, uranium-235, and uranium-238 were detected in the surface soil samples (Table 2.18-3 and Plate 2.18-3). Numerous organic chemicals were detected in the ash samples (Table 2.18-4), including pesticides, PAHs, PCBs, phthalates, aromatic hydrocarbons, and chlorinated dioxins and furans. The chlorinated dioxins and furans were detected only in subsurface samples collected from the ash pile (Table 2.18-4 and Plate 2.18-4).

SWMU 73-002, Debris Field – Debris

The following metals were detected in the five samples collected from the debris field below the ash pile at depths of 0 ft to 7.5 ft: arsenic, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, silver and zinc (Table 2.18-2 and Plate 2.18-2). As summarized in

Table 2.18-3 and shown in Plate 2.18-3, the radionuclides uranium-234, uranium-235, and uranium-238 were detected in one sample at location 73-02468. Detected organic chemicals included PCBs, pesticides, halogenated hydrocarbons, and chlorinated dioxins/furans (Table 2.18-4 and Plate 2.18-4). Aroclor-1254 was detected in one surface sample (location 73-02270). The pesticide 4,4'-DDT and its metabolite (4,4'-DDE) were also detected in the same sample. Chlorinated dioxins and furans (Table 2.18-4) were detected in the two subsurface debris samples (locations 73-02464 and 73-02465), but not in the three surface samples (locations 73-02262, 73-02270, and 73-02468). PCE was detected in two of the three surface debris samples (locations 73-02262 and 73-02270).

SWMU 73-002, Debris Field – Soil

Four surface soil samples were collected beneath the debris (Table 2.18-1, Plate 2.18-1, and Figure 2.18-1). Four metals were detected in these samples (Table 2.18-2 and Plate 2.18-2): cadmium (location 73-02454), cobalt (location 73-02457), lead (locations 73-02454 and 73-02457), and manganese (location 73-02457). No radionuclides were detected in any of the surface soil samples collected beneath the debris. Benzoic acid was detected in sample 0173-97-0321 of the debris field soil samples (Table 2.18-4 and Plate 2.18-4). Chlorinated dioxins and furans (see Table 2.18-4) were detected in one of the soil samples collected (location 73-02457).

SWMU 73-002, Drainage Areas

Fourteen samples were collected from nine locations at depths of 0 ft or 4.8 ft in the drainage areas below the ash pile (Table 2.18-1, Plate 2.18-1, and Figure 2.18-1). Eleven of these samples were collected from soil and three from the underlying tuff (Table 2.18-1). Thallium was the only metal detected above BV in the two soil samples at location 73-02452 (Table 2.18-2 and Plate 2.18-2). The detection limit for antimony was elevated above the BV in one of the tuff samples (location 73-02463). As summarized in Table 2.18-3 and shown in Plate 2.18-3, the only radionuclide detected above FVs in soil was tritium (73-02255). No organic chemicals were detected in any of the tuff samples, but organic chemicals were detected in the soil samples. A complete list of the organic chemicals detected is provided in Table 2.18-4 and shown in Plate 2.18-4 and included pesticides, halogenated hydrocarbons, aromatic hydrocarbons, and chlorinated dioxins and furans.

SWMU 73-002, Adjacent to Ash Pile

As shown in Plate 2.18-1 and Figure 2.18-1, two surface samples each were collected to the east and west of the ash pile (Table 2.18-1). Metals detected above BVs included barium, cadmium, copper, lead, mercury, silver, and thallium (Table 2.18-2 and Plate 2.18-2). No radionuclides were detected above BVs/FVs in any of the samples. Detected organic chemicals included PAHs, benzoic acid, phthalates, naphthalene, and chlorinated dioxins and furans (Table 2.18-4 and Plate 2.18-4). The chlorinated dioxins and furans were detected only in one sample on each side of the ash pile.

AOC 73-003, Steam-Cleaning Area

Eight samples from four locations from 2.8 ft to 8.5 ft bgs were collected in the vicinity of the former steam-cleaning area (Table 2.18-1 and Plate 2.18-1). The six shallowest samples were collected from soil or fill (locations 73-10104, 73-10105, 73-10106, and 73-10107), and the two deepest samples were collected from the underlying tuff (locations 73-10106 and 73-10107). The metals cobalt, lead, and zinc were detected above BVs in the fill and soil samples. The following metals were detected above background levels in one of the two tuff samples (RE73-99-0103): aluminum, arsenic, barium, calcium,

chromium, copper, iron, magnesium, nickel, selenium, and vanadium (Table 2.18-2 and Plate 2.18-2). No radionuclides were detected in any of the samples collected. Detected organic chemicals included 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE) and PAHs (Table 2.18-4 and Plate 2.18-4). The PAHs, fluoranthene and pyrene, were detected in one soil sample (RE73-99-0100). The pesticide 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE) were detected in two fill samples (RE73-99-0102 and RE73-99-0104); 4,4'-DDT was also detected in one of the tuff samples (RE73-99-0105).

SWMU 73-004(a), Septic System

Seven samples from four locations were collected at depths between 3 ft and 10 ft bgs (Table 2.18-1 and Figure 2.18-2). Three of these samples were from soil (at locations 73-02207, 73-10095, and 73-10121), one from fill (location 73-02328), and three from tuff (locations 73-02207, 73-10095, and 73-10121). Metals detected above BVs (Table 2.18-2 and Plate 2.18-2) in these samples included arsenic (tuff only), barium (tuff and soil), calcium (tuff only), copper (soil only), lead (soil only), silver (soil only), zinc (soil only). In addition, analytical detection limits were elevated above background levels for antimony, cadmium, mercury, silver, and thallium (Table 2.18-2). No radionuclides were detected above FVs/BVs in any of the samples collected. Organic chemicals were detected in the soil and tuff but not the fill samples (Table 2.18-4 and Plate 2.18-4). The pesticides alpha and gamma chlordane (sample RE73-99-0134), and 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE) were detected in the soil samples (at location 73-02207, samples 0173-96-0231 and RE73-99-0094, and location 73-10095). In addition, 2-methylnapthalene, naphthalene, phenanthrene, and trichlorofluoromethane (CFC-12) were also detected in one soil sample (location 73-02207). Only 4,4'-DDT and toluene were detected in any of the tuff samples (location 73-02207).

The outfall from this septic system was in the area of the ash pile (SWMU 73-002). Consequently, it is not possible to evaluate impacts of the septic system outfall separately from the ash pile.

SWMU 73-004(b), Septic System

Twenty samples were collected from 13 locations in tuff, soil, fill and at the end of the outlet pipe (Table 2.18-1 and Figure 2.18-3). Two of these samples (73-02326 and 73-02327) were collected from soil at the bottom of the excavated tank location at a depth of 14 ft to 15 ft bgs (LANL, 1996, 59374, Table 3.3.2-1). Depth of the tuff, soil, and fill samples ranged from 0.25 ft to 15 ft bgs. The following metals were detected above BVs in the tuff samples: aluminum, antimony, arsenic, barium, calcium, chromium, cobalt, copper, iron, lead, magnesium, mercury, nickel, thallium, vanadium, and zinc (Table 2.18-2 and Plate 2.18-2). The following metals had analytical detection limits above the BVs in the soil samples: antimony, arsenic, cadmium, chromium, copper, lead, manganese, mercury, silver, and zinc (Table 2.18-2). The following metals were detected above background levels in the samples collected from fill: aluminum, beryllium, calcium, chromium, iron, magnesium, mercury, and zinc (Table 2.18-2 and Plate 2.18-2). Metals detected above background levels in the outlet pipe included antimony, arsenic, cadmium, chromium, lead, mercury, vanadium, and zinc (Table 2.18-2 and Plate 2.18-2). In addition, the following metals had analytical detection limits above BVs in at least one sample: antimony, cadmium, mercury, silver, and thallium (Table 2-18-2). The radionuclide tritium was detected in one tuff sample (location 73-02211) and one soil sample above BV (location 73-02213) (Table 2.18-3 and Plate 2.18-3). Organic chemicals were detected in these samples (Table 2.18-4 and Plate 2.18-4). The PCB, Aroclor-1254, was detected in five soil samples but not in the fill, tuff, or outlet pipe samples. The pesticides 4,4'-DDT and its metabolites (4,4'-DDD and 4,4'-DDE), alpha and/or gamma chlordane were detected in soil, fill, and outlet pipe samples. Table 2.18-4 summarizes the remaining organic chemicals detected in these samples. The detections are shown in Plate 2.18-4.

SWMU 73-006, Drainlines

Ten samples from five locations were collected between 2.8 ft and 8 ft bgs from the fill and tuff (Table 2.18-1 and Figure 2.18-4). Metals detected above BVs in the fill samples included antimony, cadmium, calcium, cobalt, copper, lead, mercury, nickel, silver, and zinc (Table 2.18-2 and Plate 2.18-2). The following metals were detected above BVs in the tuff samples: barium, calcium, copper, lead, mercury, and selenium. In one tuff sample (location 73-02442), the analytical detection limit for mercury was elevated above the BV. The radionuclide plutonium-239,-240 was detected in one tuff sample (location 73-02443) (Table 2.18-3 and Plate 2.18-3). Numerous organic chemicals, including pesticides and PAHs, were detected in these tuff samples at these five locations (Table 2.18-4 and Plate 2.18-4).

2.19 SWMU 73-004(c), Septic Tank

2.19.1 Site Description and Operational History

SWMU 73-004(c) is a septic system that served the old Los Alamos County Airport terminal building (LANL 1992, 07667, p. 5-193, Figure 5-90; LANL 1997, 59367, p. 14) (Figures 1.1-2 and 1.1-23). In 1964, the terminal building was connected to a gravity-flow sewer main leading to the Bayo Canyon WWTP [SWMU 00-018(b)], and the septic system was left in place but no longer used (LANL 1997, 59367, p. 14). The tank and associated outlet pipe were not located during RFI activities in 1996 (LANL 1997, 59367, p. 16). The tank was probably removed during construction activities at the old terminal building (LANL 1997, 59367, p. 16).

2.19.2 Conceptual Site Model

The CSM is based on the existing knowledge about the site and describes potential contaminants, environmental media to which potential human or ecological receptors may be exposed, media through which chemicals may be transported to potential receptors, and any relevant off-site transport mechanisms. The CSM for SWMU 73-004(c) includes both surface and subsurface sources of potential contamination.

2.19.2.1 Source of Contamination

Contamination at SWMU 73-004(c) would have originated from sludge in the septic tank if it leaked or discharged (from chemicals present in the sewage flow to the septic tank) and the effluent in outfall from the septic tank.

2.19.2.2 Transport Mechanisms

The following transport mechanisms may lead to the exposure of human and/or ecological receptors:

- Dissolution and/or particulate transport of surface contaminants during rainfall and snow melt runoff events before the placement of clean fill
- Airborne transport of contaminated surface soil before the placement of clean fill
- Continued dissolution and advective/dispersive transport of chemical and radiological contaminants contained in surface/subsurface soil
- Biotic perturbation and translocation of contaminants in subsurface soil

2.19.2.3 Potential Receptors and Exposure Pathways

The following human receptors could reasonably be expected to be present (current and potential future) at SWMU 73-004(c):

- Off-site residents
- On-site workers
- Recreational users

The potential pathways for human exposure to surface soil and tuff are dermal contact, inhalation of vapors and particulates, and incidental soil ingestion. Pathways from subsurface contamination to potential human receptors would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, and incidental soil ingestion).

Terrestrial ecological receptors are expected to be present at SWMU 73-004(c). For ecological receptors, pathways from subsurface contamination to potential surface-dwelling animals would be complete only if contaminated soil or tuff were excavated and brought to the surface. The potential pathways would then be similar to those of a surface soil release (i.e., dermal contact, inhalation of vapors or fugitive dust, incidental ingestion of soil, uptake by plants, and food web transport). Pathways from subsurface releases may be complete for plants and burrowing animals, including the uptake of contaminants by plant roots and the exposure of burrowing animals through dermal contact, inhalation of vapors or dust, incidental ingestion of soil, and food web transport.

Weathering of tuff is the only viable natural process that may result in the exposure of receptors to COPCs in tuff. Because the rate of weathering is slow, exposure to COPCs in tuff is negligible.

Exposure to groundwater at SWMU 73-004(c) is an incomplete pathway for both human and ecological receptors because the depth to groundwater at the site is approximately 1200 ft bgs (see Section 3.2.3). Although precipitation events may result in the short-term intermittent presence of surface water, exposure to surface water at SWMU 73-004(c) is an incomplete pathway for both human and ecological receptors because no perennial surface water bodies exist at the site.

2.19.3 Historical Data Quality Interpretation

2.19.3.1 Data Quality

No RFI sampling has been previously conducted at SWMU 73-004(c) because the septic system has not been located.

2.19.3.2 Nature and Extent of Contamination

The tank was not located during the 1995 RFI. It was probably removed between 1970 and 1984, during one of many construction projects at the old terminal building and the landfill (LANL, 1997, 59367, p. 16). No further information is available.

3.0 SITE CONDITIONS

This section describes the current surface features and the existing subsurface geologic characteristics of the Pueblo Canyon aggregate area. Most of the SWMUs/AOCs are located on mesa-top settings, and the

known surface and subsurface characteristics of this kind of setting and their potential effects on the occurrence and concentration of contaminants include

- a semiarid climate with low precipitation and a high evapotranspiration rate that limits the extent of subsurface moisture percolation and, therefore, limits the amount of moisture available to leach radionuclides or hazardous waste constituents; and
- generally, a thick, relatively dry unsaturated (vadose) zone that greatly restricts or prevents downward migration of contaminants in the liquid phase through the vadose zone to the regional aquifer.

These and other elements of the environmental setting in the Pueblo Canyon aggregate area are considered when evaluating the mesa-top site investigation data with respect to the fate and transport of contamination from historical site activities.

3.1 Surface Conditions

The elevations of SWMUs/AOCs in the Pueblo Canyon aggregate area range from about 6520 ft to 7300 ft above msl. The canyon bottom ranges in elevation from about 6400 ft above msl in the bottom of Pueblo Canyon to about 7200 ft above msl in Acid Canyon.

The surface conditions of the SWMUs/AOCs in the Pueblo Canyon aggregate area vary, but these sites are generally vegetated. Some of the SWMUs/AOCs exist partially or fully under pavement or structures. Most of these SWMUs/AOCs have an outfall leading to the hillside colluvium. A component of Consolidated Unit 45-001-00 leads directly into canyon sediments (canyon investigation reaches ACS and AC-3). Surface slopes vary from gradients of less than 5% to nearly vertical relief. Most of the SWMUs/AOCs in the Pueblo Canyon aggregate area are located in the Bandelier Tuff, which breaks into a series of benches and steep slopes that grade into Acid and Pueblo Canyons. Two sites [SWMU 00-018(a) and AOC 00-018(b)] are located in the bottom of Pueblo Canyon on alluvial material.

3.1.1 Surface Water

Mesas of the Pajarito Plateau are generally dry, both on the surface and within the bedrock forming the mesa. Canyons range from wet to relatively dry; the wettest portions of Pueblo Canyon contain persistent alluvial groundwater saturation with persistent, but discontinuous, surface water. The Pueblo Canyon aggregate area includes Acid Canyon that drains into Pueblo Canyon, which subsequently drains into Los Alamos Canyon.

The surface water and alluvial groundwater hydrology of the Pueblo Canyon watershed is related to several primary factors, including the location and discharge volume of natural and anthropogenic water sources, seasonal events (e.g., snowmelt runoff and storm-water runoff), and general regional climatic conditions (LANL 2004, 87390, p. 7-19). Surface water flow in Acid and upper Pueblo Canyons, upstream from the Bayo Canyon WWTP [AOC 00-018(b)], is generally ephemeral and occurs primarily as short-duration storm water runoff (LANL 2004, 87390, p. 7-21). Locally persistent surface water flow has been observed in bedrock pools or where alluvial groundwater discharges. Intermittent flow also occurs during snowmelt runoff or alluvial groundwater discharges (LANL 2004, 87390, p. 7-21).

One of the sites included in the Pueblo Canyon aggregate area is SWMU 45-001-00, which includes the ephemeral stream channel and associated inactive channel and floodplain areas in Acid Canyon. The specific parts of Acid Canyon that overlap with Consolidated Unit 45-001-00 include two canyon investigation reaches: ACS and AC-3. None of the other SWMUs/AOCs are directly associated with

stream channels. Generally, surface water flow is associated with storm water and snowmelt runoff from mesa-top sites.

Surface water site assessments have been conducted for Pueblo Canyon aggregate area SWMUs/AOCs in accordance with ENV-ECR-SOP 02.01, "Surface Water Site Assessments." The results of the assessments are presented in Table 3.1-1. The matrix scores for Pueblo Canyon aggregate area SWMUs/AOCs range form 3.6 to 93.5 (out of a maximum possible score of 100), with a higher score indicating a greater potential for erosion/sediment transport at the site (LANL 2005, 88428).

3.1.2 Soil

For most of the SWMUs/AOCs in the Pueblo Canyon aggregate area, the natural or undisturbed surface soil cover is limited because of activities such as building and road construction. Thus, the surface material at most sites is fill, which may be crushed tuff, disturbed soil, or other kinds of imported material. Where undisturbed, soil on the mesa surface is generally thin. Soils tend to be sandy in texture near the surface and more clay-like at depth. Soil profiles tend to be more poorly developed on the cliff-forming south-facing slopes than on the north-facing slopes that generally have a higher organic content. A discussion of soil in the Los Alamos area can be found in the former Environmental Restoration (ER) Project's installation work plan (LANL 1998, 62060, Section 2.2.1.3, p. 2–21) and in Nyhan et al. (1978, 05702, pp. 24–25).

Surface material at SWMUs/AOCs in the Pueblo Canyon aggregate area also includes sediment and alluvial material. Sediment refers to young alluvium occurring within or near stream channels, which would be generally classified as A or C genetic horizons in soil nomenclature (McDonald et al. 2003, 76084, p. 1).

3.2 Subsurface Conditions

3.2.1 Stratigraphy

The generalized stratigraphy underlying the SWMUs/AOCs in the Pueblo Canyon aggregate area is shown in Figure 3.2-1. The mesa top settings consist of Bandelier Tuff (Qbt) overlain by a thin layer of alluvium and soil. The Bandelier Tuff unit is subdivided into two members, the Otowi and the Tshirege (in ascending order). The Tshirege Member is a compound cooling unit divided into four distinct cooling units: 4, 3, 2, and 1v/1g (Broxton et al. 1995, 50121, pp. 33–63). The bedrock directly underlying most of the SWMUs/AOCs is cooling unit 3 (Qbt 3) or unit 4 (Qbt4) of the Upper Tshirege, a cliff-forming nonwelded to partially welded tuff. Under the mesa-top sites, the Otowi and Tshirege Members are separated at about 340 ft bgs by the Cerro Toledo interval (Qct), a 10- to 40-ft-thick sequence of volcaniclastic sediments and primary fallout deposits. The basal Guaje Pumice Bed of the Otowi Member separates the Bandelier Tuff from the underlying clastic fanglomerate sediments of the Puye Formation (Tp). This feature may be locally absent beneath portions of the Pueblo Canyon aggregate area (LANL 2004, 87291, p.13).

3.2.2 Cliff Retreat and Fractures

No specific studies of cliff retreat and fractures for the Pueblo Canyon watershed are available. Thus, a study completed for TA-21 is used to describe cliff retreat and fractures (Wohletz 1995, 58845, pp. 19-31). The article "Geomorphic Studies at DP Mesa and Vicinity" (Reneau 1995, 50143, pp. 65–92) provides information on the relative importance of cliff retreat for various site settings. SWMUs/AOCs located in close proximity to the canyon have a greater potential for being impacted by cliff retreat.

Fracture characteristics of unit 2 of the Tshirege Member, which was the focus of the study, are very similar to previous fracture studies of unit 3, allowing for extrapolation of results to the rocks below the mesa top SWMUs/AOCs in the Pueblo Canyon aggregate area.

3.2.3 Hydrogeology

3.2.3.1 Infiltration

Surface and near-surface conditions (topography, precipitation, surface runoff) control water infiltration to the subsurface and the transport of contaminants into the shallow subsurface. In this respect, the climate behavior of mesas and canyons forming the plateau differ from one another (LANL 1998, 59599).

Relatively small volumes of water move beneath mesa tops under natural conditions because of low rainfall, runoff into canyons, high evaporation, and efficient water use by vegetation. Liquid water generally infiltrates the mesa, and water vapor generally moves upward, undergoing evaporation and transpiration (or "evapotranspiration") along the top and sides of the mesa. Air circulates through the mesa-top units because of the relatively dry pore spaces and the topographic relief. Air circulation may be driven by temperature variations, barometric pumping, or surface winds. This process promotes atmospheric evaporation, which may extend deep within the mesa and further inhibit the downward liquid-water flow.

The hydrogeologic conceptual model for the Pajarito Plateau (Figure 3.2-2) (LANL 1998, 59599, p. 5), including SWMUs/AOCs in the Pueblo Canyon aggregate area, predicts water infiltration into the subsurface and the subsequent transport of water, vapor, and solutes through the upper regions of the vadose zone. This process is heavily influenced by surface conditions such as topography, surface water flow, and precipitation. The natural source of moisture in the vadose zone is precipitation, most of which is removed as runoff, evaporation, and transpiration (LANL 1997, 63131, pp. 2–27). The subsurface movement of the remaining moisture (often referred to as recharge) is predominantly vertical in direction and is influenced by properties and conditions of the vadose zone.

Differences in degree of surface disturbance and the geologic properties of the tuff lead to differences in recharge rates. Mesa-top recharge can be locally significant when vegetation is removed, soil and near-surface bedrock are disturbed, or water is artificially added to the local hydrologic system by activities such as effluent disposal. Because all the mesa-top sites in the Pueblo Canyon aggregate area are inactive, in most cases for decades, no continuing hydrologic driver has promoted infiltration.

Two geologic properties of the Bandelier Tuff that significantly influence recharge rates are the degree of welding and the devitrification, both effects of the prolonged presence of residual gases and high temperatures following deposition. Because different tuff units were deposited at different temperatures, and because individual units were laid out in variable thicknesses over different landscapes, cooling was not uniform. Consequently, welding varies spatially, both between and within separate depositional layers. Welded tuffs tend to be more fractured than nonwelded tuffs. Fractures within the tuff do not enhance the movement of dissolved contaminants unless saturated conditions exist. Under unsaturated conditions, most of the open fractures beneath the site are expected to be completely dry, and the water will exist in the tuff matrix only. Only in situations when substantial infiltration occurs from the ground surface will the fractures become wet and conduct water. However, modeling studies predict when fractures disappear at contacts between stratigraphic subunits, when fracture fills are encountered, or when fracture coatings are interrupted and fracture moisture is absorbed into the tuff matrix (Soll and Birdsell 1998, 70011, pp. 193–202).

Thus, infiltration from mesa-top sites into groundwater is limited. Assessments of the impacts of Pueblo Canyon aggregate area SWMUs/AOCs have previously been reported (LANL 2004, 87390, pp. 7-1 to 7-40), and the scope of the investigations for this work plan do not generally overlap with the assessments of the affected media in the canyons. The only location of overlap is for the Consolidated Unit 45-001-00, which overlaps with canyon investigation reaches ACS and AC-3. The assessment of potential impacts of SWMUs/AOCs on affected media in the canyons is also ongoing through monitoring of intermediate and regional groundwater (e.g., LANL 2003, 82612). Lastly, the impacts of infiltration on the depth distribution of contaminants from SWMUs/AOCs in the Pueblo Canyon aggregate area are determined through the analysis of samples collected at these sites at various depths and distances from the possible contaminant source areas.

3.2.3.2 Perched Groundwater

Perched groundwater includes alluvial and intermediate groundwater. Observations of perched intermediate groundwater in Laboratory wells are rare on the Pajarito Plateau. Perched waters are thought to form mainly at horizons where medium properties change dramatically, such as at paleosol horizons with clay or caliche found in basalt and volcanic sediment sequences. The Cerro Toledo interval, Guaje Pumice Bed, and Puye Formation are local examples.

Figure 3.2-3 shows a hydrogeologic cross section in Pueblo Canyon. Test well four (TW-4) is located at the west end of the cross section (Figure 3.2-4) and has encountered Tshirege and Otowi Members of the Bandelier Tuff, Puye Formation deposits, and dacitic lavas of the Tschicoma Formation. No intermediate groundwater was observed in TW-4. Regional aquifer well R-2 is located in Pueblo Canyon (Figure 3.2-4), and the preliminary stratigraphy for R-2 indicates alluvium, the Otowi Member of the Bandelier Tuff, the Puye Formation, and pumacious deposits (Figure 3.2-3). No intermediate groundwater was observed in well R-2. Test well TW-2 is located to the east of well R-2, and it encountered alluvium, the Ototwi Member of the Bandelier Tuff, the Puye Formation, and pumacious deposits (Figure 3.2-3). Groundwater was observed at a depth of 121 ft bgs in Puye Formation fanglomerates. Regional aquifer well R-4 is located at the eastern end of Pueblo Canyon (Figure 3.2-4) and encounters alluvium, the Ototwi Member of the Bandelier Tuff, the Puye Formation, and pumacious deposits (Figure 3.2-3). Wet zones were noted between 100 and 230 ft bgs in Puye Formation fanglomerates.

The assessments of the nature of intermediate groundwater in Pueblo Canyon and the possible impacts of SWMUs/AOCs on affected media in the canyons are also ongoing through the monitoring of intermediate and regional groundwater (e.g., LANL 2003, 82612).

3.2.3.3 Regional Aquifer

The regional aquifer in the Los Alamos area slopes eastward towards the Rio Grande within the Santa Fe Group into the Puye Formation beneath the central and western portion of the Pajarito Plateau. The depth of the regional aquifer decreases from about 1200 ft bgs along the western margin of the plateau to about 600 ft bgs along the eastern margin. The regional aquifer was encountered in deep wells in Pueblo Canyon at approximately 6070 ft above msl (TW-4), 5870 ft above msl (R-2), 5880 ft above msl (TW-2), and 5830 ft above msl (well R-4) (Figures 3.2-3 and 3.2-4), resulting in an approximate depth to regional groundwater for the SWMUs/AOCs in the Pueblo Canyon aggregate area of greater than 1000 ft bgs. The groundwater in the regional aquifer is separated from alluvial and perched groundwater by 350 to 620 ft of tuff and volcanic sediments (Purtymun 1995, 45344, p. 29).

The assessments of the nature of regional groundwater in Pueblo Canyon and the possible impacts of SWMUs/AOCs on affected media in the canyons is also ongoing through the monitoring of intermediate and regional groundwater (e.g., LANL 2003, 82612).

4.0 SCOPE OF ACTIVITIES

This section describes the specific activities to be performed during the field investigation of SWMUs/AOCs in the Pueblo Canyon aggregate area. The primary goals of these investigations are to

- supplement the historical RFI data defining the nature and extent of COPC migration into soil and subsurface bedrock at, and in the vicinity of, each site, and
- characterize the nature and extent of COPC migration from mesa top outfalls to the toe of the hillslope colluvium in Pueblo Canyon or its tributaries

The main activities associated with this investigation are (1) conducting geodetic surveys to locate subsurface SWMUs/AOCs, historical sampling locations, and new sampling locations; (2) performing radiological surveying of surface radiation (beta/gamma); (3) completing surface and near-surface soil sampling; and (4) drilling boreholes and sampling soil/tuff. Historical sampling locations proposed for resampling for additional analytes and/or sampling depths are identified by the assigned "Location ID." New locations that have never been sampled historically are identified as "New #1," "New #2," etc., with associated sample depth intervals. Proposed sample locations at the outfalls and on the hillslopes downgradient of the outfalls may be relocated, pending the results of both the geodetic and radiological surveys. Additional samples will be collected in any areas with elevated surface radiological activity. At this time, no activities are being proposed for installing vapor or groundwater monitoring wells. Concurrently with the Pueblo Canyon aggregate area sampling and drilling activities, activities such as the collection of field-screening data for VOCs, collection of survey data, and management of IDW (Appendix F) will also be conducted.

4.1 Sampling and Analysis for SWMU 00-018(a), Pueblo Canyon Wastewater Treatment Plant

Additional sampling is proposed for SWMU 00-018(a) to delineate further the extent of contamination from historical operations at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.1.3 for a description of the data).

- A conclusive delineation of potential contamination at depth could not be determined from the historical data at some locations, although the general trend is of decreasing concentrations with depth across the site. Specifically, trends of decreasing concentration or activities could not be determined for inorganic chemicals, organic chemicals, or radionuclides. Additional sampling at depth is being proposed to address these data needs.
- Potential off-site transport could not be determined from the historical data. Downgradient sampling on the hillslope adjacent to Pueblo Canyon and in the unnamed drainage channel tributary to Pueblo Canyon is being proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional sampling.

The proposed sample locations at SWMU 00-018(a) are shown in Figure 4.1-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.1-1.

In summary, the sampling at SWMU 00-018(a) will include the following:

- *Sampling of sludge bed at historical sample locations to define the vertical extent of contamination.* Two tuff samples at each of the historical sample locations within the eastern sludge bed will be collected below the deepest historical sample collection points. Samples from depths at 8 ft to 8.5 ft bgs and 10.5 ft to 11 ft bgs at location 00-04971 will be analyzed for tritium. Samples at depths of 12.5 ft to 13 ft bgs and 15 ft to 15.5 ft bgs at location 00-04972 will be analyzed for target analyte list (TAL) metals. All samples will be analyzed for pH, nitrates, cyanide, and perchlorate. Samples will be collected using a manual or power hand auger, as necessary.
- *Sampling of sludge-fill area at historical sample locations to define the vertical extent of contamination.* Subsurface soil and tuff sampling will be conducted at four of the historical sample locations for which trends of decreasing concentrations with depth could not be determined for inorganic or organic chemicals (locations 00-04976, 00-04977, 00-04979, 00-04980). Samples will be collected at three depths from locations 00-04976, 00-04977, and 00-04979: 1 ft to 1.5 ft bgs (soil), 1.5 ft to 2 ft into the tuff, and 4 ft to 4.5 ft into the tuff. Samples will be collected at two depths from location 00-04980 (1.5 ft to 2 ft into the tuff and 4 ft to 4.5 ft into the tuff), because the 1 ft to 1.5 ft depth was sampled during the 1996 RFI. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. Laboratory analyses of samples at each location will be limited to those suites (TAL metals, VOCs, PCBs, or pesticides) for which the depth of contamination was undefined in the historical RFI. All samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected from boreholes using a manual or power hand auger.
- *Definition of the lateral extent of contamination.* Two locations within the SWMU boundaries (one each to the north and south of the sludge bed, New #1 and New #2) and three locations downgradient of the SWMU within the unnamed drainage channel tributary to Pueblo Canyon (New #3 through New #5) will be sampled to determine whether lateral migration has occurred from the SWMU. The downgradient samples include one from a location near the top of the drainage (New #3), one from a midslope location (New #4), and one from a location approximately 10 ft to 20 ft above the confluence of the drainage with Pueblo Canyon (New #5). Four locations on the hillslope, but outside of the unnamed drainage channel tributary to Pueblo Canyon, will also be sampled to determine whether lateral migration has occurred downgradient from the SWMU:
    - Two locations approximately 20 ft from the terrace on which the SWMU is located (one toward the northern extent [New #6] and one towards the southern extent [New #7])
    - Two additional locations downgradient of the SWMU at the toe of the hillslope (New #8 and New #9)

  The drainage and hillslope will be visually inspected before sampling to identify locations of preferential sediment accumulation for sampling. Samples at all drainage and hillslope locations will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into the tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. Samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.2 Sampling and Analysis for AOC 00-018(b), Bayo Canyon Wastewater Treatment Plant (Active)

Additional sampling is proposed for AOC 00-018(b) to delineate further the extent of contamination from historical operations at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.2.3 for a detailed description of the data).

- Potential off-site transport cannot be determined from the historical data. Downgradient sampling towards Pueblo Canyon is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed for historical samples. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-018(b) are shown in Figure 4.2-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.2-1.

In summary, the sampling at AOC 00-018(b) will include

- *Definition of the lateral extent of contamination.* Three locations downgradient of the AOC will be sampled to determine whether lateral migration has occurred into Pueblo Canyon: one at the edge of the AOC boundary within the drainage feature that runs beneath the oldest sludge beds at the site (New #1); one within the drainage feature approximately 120 ft downgradient of the AOC boundary (New #2); and one downgradient of the AOC, approximately halfway between the AOC boundary and Pueblo Canyon (New #3). The downgradient areas will be visually inspected before the locations are selected for preferential sediment accumulation for sampling. Samples at each location will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into the tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, and radionuclides using gamma spectroscopy. Additionally, samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.3 Sampling and Analysis for AOC 00-030(d), Septic System

Additional sampling is proposed for AOC 00-030(d) to delineate further the extent of contamination at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.3.3 for a detailed description of the data).

- The vertical extent of contamination has not been determined under the former septic tank and lines. Trends of decreasing concentrations or activities with depth could not be determined for inorganic chemicals, organic chemicals, and radionuclides. Additional sampling at depth is proposed to address these data needs.
- Potential off-site transport could not be determined from the historical data. Downgradient sampling in Graduation Canyon (a tributary to Pueblo Canyon) is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(d) are shown in Figure 4.3-1. The purpose of each of the proposed samples, the planned sample locations, sample depths, and laboratory analyses for each sample are summarized in Table 4.3-1.

In summary, sampling at AOC 00-030(d) will include

- *Sampling at historical locations to define the vertical extent of contamination.* Subsurface sampling will be conducted at locations beneath the septic tank, drainline, and outfall because trends of decreasing concentrations or activities could not be determined for inorganic chemicals, organic chemicals, or radionuclides. Two samples will be collected beneath the concrete septic tanks (New #1, 10 ft to 10.5 vertical ft bgs and 15 ft to 15.5 vertical ft bgs). Three samples will be collected from a vertical hole paired with the angled holes to be drilled on the eastern side of the tank (New #2, 10 ft to 10.5 ft bgs, 15 ft to 15.5 ft bgs, and 20 ft to 20.5 ft bgs). Two subsurface samples will be collected at the joint between the VCP and the former steel outfall pipe (location 00-04887, 4 ft to 4.5 ft bgs and 6.5 ft to 7 ft bgs). Three samples each (1 ft to 1.5 ft bgs [soil], 1.5 ft to 2 ft bgs [soil], and 4 ft to 4.5 ft into tuff) will be collected at the location of the outfall at the end of the steel pipe (location 00-04886) and 15 ft downgradient of the outfall (location 00-04885). Samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, isotopic plutonium, and other radionuclides using gamma spectroscopy. In addition, samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Definition of the lateral extent of contamination.* Two locations on the hillslope downgradient of the mesa-top AOC will be sampled to determine whether lateral migration from the AOC has occurred: one in Graduation Canyon, approximately 20 ft downgradient of location 00-04885 (New #3) and one in Graduation Canyon, approximately 20 ft upgradient of location 00-04885 (New #4). Samples at each location will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into tuff. The samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, isotopic plutonium, and other radionuclides using gamma spectroscopy. In addition, samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.4 Sampling and Analysis for AOC 00-030(eN), Septic System

Additional sampling is proposed for AOC 00-030(eN) to further delineate the extent of contamination from historical operations at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.4.3 for a description of the data).

- No historical data are available from beneath the septic tanks. Additionally, the drainlines and the outfall into Acid Canyon (tributary to Pueblo Canyon) were not identified during the historical RFI. Additional sampling locations are proposed to address these data needs.
- The septic tanks, drainlines, and contaminated soil will be excavated and removed to facilitate subsurface sampling and characterization. Removal of the structures, however, is contingent upon the approval of respective property owners, the conditions of the access agreements, and an evaluation of any overlying structures that could be negatively impacted by excavation.
- Contaminated soil will be excavated after the septic tanks and drainlines are removed. Any areas of visible staining or elevated radiological or organic vapor field screening will be excavated. Based on visual inspection or field screening, if contamination is suspected on the sidewalls of the excavations, step-out samples will be collected at 5-ft intervals laterally until the extent of contamination is defined. If step-out sampling is conducted, the vertical extent of contamination at those locations will also be defined.

- Potential off-site transport from the septic tank outfall could not be determined from the historical data. Downgradient sampling on the hillslope adjacent to Acid Canyon is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed in historical RFI sampling. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(eN) are shown in Figure 4.4-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.4-1.

In summary, the sampling at AOC 00-030(eN) will include

- *Sampling at the former septic tank locations following excavation and removal of the two septic tanks.* Boreholes at locations beneath the center location of each former septic tank (New #1 and New #2) will be sampled at three depths: 10 ft to 10.5 ft bgs, 12 ft to 12.5 ft bgs, and 14 ft to 14.5 ft bgs. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling beneath the former drainlines.* Samples will be collected from beneath the former drainline locations connecting the two septic tanks (New #3) and below the lines at 8 ft to 8.5 ft bgs, 10 ft to 10.5 ft bgs, and 12 ft to12.5 ft bgs. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Definition of the lateral extent of contamination.* Four locations in Acid Canyon, downgradient of the former outfall, will be sampled to determine whether lateral migration has occurred from the outfall (New #4 through New #7). Sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Samples at all drainage and hillslope locations will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into the tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.5 Sampling and Analysis for AOC 00-030(eS), Septic System

Additional sampling is proposed for AOC 00-030(eS) to delineate further the extent of contamination from historical operations at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.5.3 for a description of the data).

- No historical data are available from beneath the septic tank location or from beneath the septic tank drainlines. Additional sampling locations are proposed to address these data needs.
- The delineation of potential off-site transport of contamination from the septic tank outfall is not complete. Downgradient sampling on the hillslope adjacent to an unnamed tributary to Pueblo Canyon is being proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(eS) are shown in Figure 4.5-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.5-1.

In summary, the sampling at AOC 00-030(eS) will include

- *Confirmatory sampling at the former septic tank location.* A borehole at one location from beneath the center of the septic tank (New #1) will be sampled at the following depths: 4 ft to 4.5 ft bgs, 8 ft to 8.5 ft bgs, and 12 ft to12.5 ft bgs. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling beneath the drainlines.* Two drainline junctions (New #2 and New #3) will be sampled beneath the drainlines at depths of 0 ft to 0.5 ft below the lines, 1 ft to 1.5 ft below the lines, and 1.5 ft to 2 ft into the tuff. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Definition of the lateral extent of contamination.* Three locations (one historical, location 00-03741, and two new locations, New #2 and New #3) in the unnamed tributary to Pueblo Canyon, downgradient of the former outfall will be sampled at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into the tuff to determine whether lateral migration has occurred from the outfall. The sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.6 Sampling and Analysis for AOC 00-030(f), Septic System

Additional sampling is proposed for AOC 00-030(f) to delineate further the extent of contamination from historical operations at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.6.3 for a description of the data).

- Only the backfill on top of the septic tanks has been characterized. No historical data are available from beneath the septic tanks. Additionally, the drainlines and the outfall into Acid Canyon (a tributary to Pueblo Canyon) were not located during the historical RFI. Additional sampling locations are proposed to address these data needs.
- The septic tanks, drainlines, and contaminated soil will be excavated and removed to facilitate subsurface sampling and characterization. Removing the structures, however, is contingent upon the approval of respective property owners, the conditions of the access agreements, and an evaluation of any overlying structures that could be negatively impacted by excavation.
- Contaminated soil will be excavated after the septic tanks and drainlines are removed. Any areas of visible staining or elevated radiological or organic vapor field screening will be excavated. Based on visual inspection or field-screening, if contamination is suspected on the sidewalls of the excavations, step-out samples will be collected at 5-ft intervals laterally until the extent of contamination is defined. If step-out sampling is conducted, the vertical extent of contamination at those locations will also be defined.

- The delineation of potential off-site transport from the septic tanks' outfall is not available. Downgradient sampling on the hillslope adjacent to Acid Canyon is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed in historical RFI sampling. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(f) are shown in Figure 4.6-1. The purpose of each of the proposed samples, the planned sample locations, sample depths, and laboratory analyses for each sample are summarized in Table 4.6-1.

In summary, sampling at AOC 00-030(f) will include

- *Sampling at the septic tank locations following excavation and removal.* Boreholes at locations beneath the centers of each former septic tank (New #1 and New #2) will be sampled at three depths: 12 ft to 12.5 ft bgs, 15 ft to 15.5 ft bgs, and 17 ft to 17.5 ft bgs. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling beneath the drainlines.* The location beneath the former drainline connecting the two septic tanks (New #3) will be sampled following their removal. Samples will be collected at depths of 0 ft to 0.5 ft, 1 ft to 1.5 ft, and 1.5 ft to 2 ft into the tuff below the former drainline locations and analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Definition of the lateral extent of contamination.* Two locations, one at the former outfall (New #4) and one 100 ft downgradient of the former outfall (New #5), will be sampled at three depths (0 ft to 0.5 ft bgs [soil], 1 ft to1.5 ft bgs [soil], and 1.5 ft to 2 ft into the tuff) to determine whether lateral migration has occurred from the outfall. Sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.7 Sampling and Analysis for AOC 00-030(h), Septic System

Additional sampling is proposed for AOC 00-030(h) to delineate further the extent of contamination at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.7.3 for a description of the data).

- The vertical extent of contamination in the tuff beneath the former septic tank location and drainlines has not been determined for metals, radionuclides, VOCs, and pesticides. Additional sampling of the former tank location is proposed to address these data needs.
- Potential off-site transport could not be determined from the historical data. Sampling at three downgradient locations on the hillslope adjacent to the former outfall in Acid Canyon is proposed to address this data need.

- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(h) are shown in Figure 4.7-1. The purpose of each of the proposed samples, planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.7-1.

In summary, the sampling at AOC 00-030(h) will include

- *Sampling at historical locations beneath a former septic tank location to define the vertical extent of contamination.* A borehole at historical location 00-04816 will be drilled to a depth of 5 ft below the tuff/backfill contact (to a total depth of approximately 18.5 ft bgs). Samples will be collected at 9 ft to 9.5 ft bgs (soil), 16 ft to 16.5 ft bgs (tuff), and 18 ft to 18.5 ft bgs (tuff) and analyzed for TAL metals, VOCs, SVOCs, pesticides, cesium-137, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling beneath the drainline.* Two trenches will be excavated across the anticipated drainline location. One location in each trench (New #1 and New #2) will be sampled at depths of 0 ft to 0.5 ft below the line, 1 ft to 1.5 ft below the line, and 1.5 ft to 2 ft into the tuff. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, cesium-137, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Definition of the lateral extent of contamination.* Two historical sample locations at the estimated outfall (location 00-04811 and 00-04812) will be sampled at two depths (1 ft to 1.5 ft and 4 ft to 4.5 ft into the tuff) and three locations in Acid Canyon, downgradient of the outfall (New #3 through New #5), will be sampled at three depths (0 ft to 0.5 ft bgs [soil], 1 ft to 1.5 ft bgs [soil], and 1.5 ft to 2 ft into the tuff) to determine whether lateral migration has occurred from the outfall. New sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, cesium-137, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.8 Sampling and Analysis for AOC 00-030(j), Septic System

Sampling is proposed for AOC 00-030(j) to determine whether any residual contamination exists at the former location of the septic tank, first shown in a 1947 Zia Company drawing (see Section 2.8 for details). No historical sampling has been conducted at the site.

The proposed sampling at AOC 00-030(j) is shown in Figure 4.8-1. The purpose of the proposed samples, including sample locations, depths, and laboratory analyses, are summarized in Table 4.8-1.

In summary, the sampling at AOC 00-030(j) will include

- *Sampling to define the nature and extent of contamination.* Sampling in the center of the assumed septic tank location (New #1) is proposed. Samples will be collected at four depths: 0 ft to 0.5 ft bgs (soil), 3 ft to 3.5 ft bgs (soil), 5 ft to 5.5 ft bgs (soil), and 1.5 ft to 2 into tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than

5.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.9 Sampling and Analysis for AOC 00-030(n), Septic System

Additional sampling is proposed for AOC 00-030(n) to delineate further the extent of contamination at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.9.3.2 for a description of the data).

- The vertical extent of contamination beneath the former septic tank has not been defined for pesticides, nitrates, PCBs, or radionuclides. Additional sampling at this location is proposed to address this data need.
- The vertical extent of contamination has not been determined in the vicinity of the outfall (locations 00-04776 and 00-04777) for inorganic chemicals, SVOCs, VOCs, pesticides, americium-241, isotopic plutonium, or other radionuclides.
- Potential off-site transport could not be determined from the historical data. Downgradient sampling is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(n) are shown in Figure 4.9-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.9-1.

In summary, the sampling at AOC 00-030(n) will include

- *Sampling at the historical location at the former septic tank location to complete characterization of backfill and to define the vertical extent of contamination beneath the former tank location.* A borehole at historical location 00-04784 will be sampled at three depths: 3.5 ft to 4 ft bgs (backfill), 6 ft to 6.5 ft bgs (tuff) and 9 ft to 9.5 ft bgs (tuff). The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling in the vicinity of the outfall to define the vertical extent of contamination.* Historical locations 00-04776 and 00-04777 will be sampled at depths of 1 ft to 1.5 ft bgs (soil) and 1.5 ft to 2 ft into the tuff. One new location (New #1) will be sampled at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into the tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Definition of the lateral extent of contamination.* Four locations in Pueblo Canyon, downgradient of the former outfall (New #2 through New #5) will be sampled at three depths (0 ft to 0.5 ft bgs [soil], 1 ft to 1.5 ft bgs [soil], and 1.5 ft to 2 ft into the tuff) to determine whether lateral migration has occurred from the outfall. Sample locations will be visually inspected before sampling to

identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. Analysis will include TAL metals, VOCs, SVOCs, pesticides, PCBs, americium-241, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.10 Sampling and Analysis for AOC 00-030(o), Septic System

Additional sampling is proposed for AOC 00-030(o) to delineate further the extent of contamination at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.10.3.2 for a description of the data).

- The vertical extent of contamination beneath the septic tank has not been determined. The floor of the septic tank consists of highly reinforced concrete, precluding normal drilling and sampling methods; therefore, an angled borehole and a companion vertical borehole are proposed to collect samples from beneath the septic tank floor.
- Potential off-site transport could not be determined from the historical data. Downgradient sampling and sampling on the hillslope adjacent to the former outfall in Pueblo Canyon are proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(o) are shown in Figure 4.10-1. The purpose of each of the proposed samples, the planned sample locations, depths, and the proposed laboratory analyses for each sample are summarized in Table 4.10-1.

In summary, the sampling at AOC 00-030(o) will include

- *Sampling at the historical location beneath the former septic tank using an angled borehole to define the vertical extent of contamination.* The angled borehole (New #2) will be positioned to allow sampling beneath the septic tank floor at historical location 00-04825 to a target depth of 13.5 ft bgs. Samples will be collected at 10 ft to 10.5 ft and 13 ft to 13.5 ft bgs (2 and 5 ft below the septic tank floor, respectively). A companion vertical borehole (New #1) will also be installed and sampled at three depths (10 ft to 10.5 ft, 13 ft to 13.5 ft, and 20 ft to 20.5 ft). The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Definition of lateral extent of contamination.* Two historical locations in the vicinity of the former outfall (locations 00-04831 and 00-04832) will be sampled at two depths: 1.5 ft to 2 ft into tuff and 4 ft to 4.5 ft into tuff. Three locations in Pueblo Canyon, downgradient of the former outfall (New #3 through New #5), will be sampled at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs [soil, and 1.5 ft to 2 ft into the tuff) to determine whether lateral migration has occurred from the outfall. The sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, isotopic plutonium, and other radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. Samples will be collected using a manual or power hand auger.

4.11 Sampling and Analysis for AOC 00-030(p), Septic System

Additional sampling is proposed for AOC 00-030(p) to delineate further the extent of contamination at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.11.3 for a description of the data).

- The vertical extent of contamination beneath the former septic tank location has not been determined. Additional sampling beneath the former septic tank location is proposed to address this data need.
- Potential off-site transport of contamination could not be determined from the historical data. Downgradient sampling is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed during the historical RFI. These analytical suites will be included for all additional samples.

The proposed sample locations at AOC 00-030(p) are shown in Figure 4.11-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are provided in Table 4.11-1.

In summary, the sampling at AOC 00-030(p) will include

- *Sampling at the historical location beneath the former septic tank to define the vertical extent of contamination.* A borehole at historical location 00-04868 will be sampled at three depths: 11.5 ft to 12 ft bgs, 13 ft to 13.5 ft bgs, and 15.5 ft to 16 ft bgs (corresponding to 2 ft, 5 ft, and 8 ft below the former septic tank floor). The samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, cesium-137, isotopic plutonium, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Definition of the lateral extent of contamination.* One historical location (location 00-04869) will be sampled in the vicinity of the former outfall, and three new locations in Pueblo Canyon, downgradient of the former outfall (New #1 through New #3) will be sampled at three depths (0 ft to 0.5 ft bgs [soil], 1 ft to 1.5 ft bgs [soil], and 1.5 ft to 2 ft into the tuff) to determine whether lateral migration has occurred from the outfall. Sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, cesium-137, isotopic plutonium, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.12 Sampling and Analysis for SWMU 00-039, Underground Tanks

Additional sampling is proposed for SWMU 00-039 to delineate further the vertical extent of PCE contamination at the site (Figure 4.12-1). In summary, the following data need has been identified from the historical data for the site (see Section 2.12.3 for a description of the data).

- The depth of PCE contamination at the central portion of the plume (beneath location 00-04097) could not be determined conclusively from the historical data, although the general trend is decreasing PCE concentrations with depth across the site. Additional sampling at depth is proposed to address this data need.

The proposed sampling location at SWMU 00-039 is shown in Figure 4.12-1. A summary of the purpose of the proposed samples, including sample locations, depths, and laboratory analyses, is provided in Table 4.12-1.

In summary, the sampling at SWMU 00-039 will include

- *Sampling to define the vertical extent of PCE contamination.* The proposed sampling will delineate the vertical extent of PCE contamination at SWMU 00-039. An angled borehole will be drilled from a location adjacent to former borehole B7 (location 00-04061). The borehole will be advanced westward towards the central portion of the PCE plume with a target depth of 50 ft bgs beneath location 00-04097, which corresponds to a depth that is 25 ft beyond the deepest historical sample within the center of the PCE plume (25 ft deep at location 00-04097). A paired vertical borehole will not be required because the depth of PCE contamination in the eastern portion of the site was adequately defined by the historical data. Samples will be collected at 10-ft intervals and analyzed for PCE and VOCs.

4.13 Sampling and Analysis for AOC C-00-043, Manhole (Removed)

Additional sampling is proposed for AOC C-00-043 to delineate further the extent of contamination at the site. In summary, the following data needs have been identified from the historical data for the site (see Section 2.12.3 for a description of the data).

- The lateral and vertical extent of contamination in the soil and underlying tuff surrounding the former manhole has not been determined for inorganic chemicals, VOCs, SVOCs, pesticides, cesium-137, or other radionuclides. Additional sampling is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed in historical RFI sampling. These analytical suites will be included in all additional sampling.

The proposed sample locations at AOC C-00-043 are shown in Figure 4.13-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.13-1.

In summary, the sampling at AOC C-00-043 will include:

- *Sampling of soil and tuff adjacent to and surrounding the former manhole to define the lateral and vertical extent of contamination.* Four boreholes will be located adjacent to, and surrounding, the former manhole. Soil and tuff samples will be collected at 8 ft to 8.5 ft bgs, 11 ft to 11.5 ft bgs, and 13 ft to 13.5 ft bgs. Samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, cesium-137, isotopic plutonium, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.

4.14 Sampling and Analysis for SWMU 31-001, Septic System

Additional sampling is proposed for SWMU 31-001 to further delineate the nature and extent of contamination at the site. In summary, the following data needs have been identified in the historical data from the site (see Section 2.14.3. for a description of the data).

- The vertical extent of contamination beneath the former septic tank location and former drainline location has not been determined for inorganic chemicals, SVOCs, pesticides, or radionuclides.

Additional sampling beneath the former septic tank location is proposed to address this data need.

- Potential off-site transport could not be determined from the historical data. Downgradient sampling is proposed to address this data need.
- Analyses for pH, nitrates, cyanide, and perchlorate were not performed in historical RFI sampling. These analytical suites will be included in all additional sampling.

The proposed sample locations at SWMU 31-001 are shown in Figure 4.14-1. The purpose of each of the proposed samples, the planned sample locations, depths, and proposed laboratory analyses for each sample are summarized in Table 4.14-1.

In summary, the sampling at SWMU 31-001 will include the following:

- *Sampling at the historical location beneath the former septic tank location to define the vertical extent of contamination.* A borehole at historical location 31-01003 will be sampled at three depths: 0.5 ft to 1 ft bgs (soil), 11.5 ft to 12 ft bgs (tuff), and 13 ft to 13.5 ft bgs (tuff). The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling at the historical location beneath Trench 1 to define the vertical extent of contamination.* A borehole at historical location 31-01006 will be sampled at three depths: 3 ft to 3.5 ft bgs, 6.5 ft to 7 ft bgs, and 10 ft to 10.5 ft bgs. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Sampling at the historical location beneath Trench 2 to define the vertical extent of contamination.* A borehole at historical location 31-01008 will be sampled at three depths (6.5 ft to 7 ft, 10 ft to 10.5 ft, and 13.5 ft to 14 ft bgs). The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.
- *Definition of the lateral extent of contamination.* Three locations in Pueblo Canyon, downslope of the former outfall (New #1 through New #3), will be sampled at three depths (0 ft to 0.5 ft [soil], 1 ft to 1.5 ft [soil], and 1.5 ft to 2 ft into the tuff) to determine whether lateral migration has occurred from the outfall. Sample locations will be visually inspected before sampling to identify locations with preferential sediment accumulation. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a manual or power hand auger.

4.15 Sampling and Analysis for Consolidated Unit 45-001-00, Wastewater Treatment Plant - TA-45

Additional sampling is proposed for Consolidated Unit 45-001-00 to delineate further the lateral and vertical extent of contamination at the site (Figure 4.15-1). In summary, the following data needs have been identified from the historical data for the site (see Section 2.15.3.2 for a detailed description of the data).

- *South Waste Line Outfall (SWMU 45-001).* The vertical and horizontal extent of inorganic chemicals, organic chemicals, or radionuclides was not delineated by the historical samples from

the South Waste Line Outfall. Sampling at two historical locations (locations 45-01028 and 45-01039) and at two new sample locations, each upgradient and downgradient of the center of the South Waste Line area (New #1 and New #2) is proposed for the South Waste Line Outfall. Samples at location 45-0128 will be collected at six depths (surface soil: 0 ft to 0.5 ft bgs, 1 ft to 1.5 ft bgs; into the tuff: 1.5 ft to 2 ft, 9.5 ft to 10 ft, 19.5 ft to 20 ft, and 29.5 ft to 30 ft bgs). Samples at the other three locations will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft bgs into tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. The samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, and radionuclides using gamma spectroscopy (all but location 45-01028, for which the depth of contamination was defined for radionuclides). Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate. The samples will be collected using a hollow-stem auger drilling rig.

- *North Waste Line and Outfall (SWMU 45-001).* The vertical and horizontal extent of organic chemicals was not delineated by the historical samples from the North Waste Line and Outfall. The historical analytical results were sufficient to define the vertical and horizontal extent of inorganic chemical and radionuclide contamination at the North Waste Line and Outfall. Additional sampling is proposed at two downgradient locations (New #3 and New #4) for defining both lateral and vertical extent of organic chemicals. Samples will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. All samples will be analyzed for VOCs, SVOCs, PCBs, and pesticides. Additionally, all samples will be analyzed for pH, cyanide, nitrates, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Parking Lot (SWMU 45-001).* The vertical and horizontal extent of inorganic chemicals or organic chemicals was not delineated by the historical samples from the parking lot. The historical analytical results were sufficient to define the lateral extent and depth of radionuclide contamination at the parking lot. These data needs will be addressed by sampling at two historical locations in the northern- and southernmost extent of the parking lot (locations 45-01033 and 45-01029, respectively). Samples will be collected at three depths (0 ft to 0.5 ft bgs [soil], 1 ft to 1.5 ft bgs [soil], and 1.5 ft to 2 ft into tuff). Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. All samples will be analyzed for TAL metals, VOCs, SVOCs, PCBs, and pesticides. Additionally, all samples will be analyzed for pH, cyanide, nitrates, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Vehicle Decontamination Facility (SWMU 45-002).* The vertical and horizontal extent of inorganic chemicals or radionuclides was not delineated by the historical samples from the vehicle decontamination facility. Additional sampling is proposed at the historical location that is the farthest downgradient (location 45-01072) to define both the lateral and vertical extent of potential contamination of metals and radionuclides within this SWMU. Samples will be collected at three depths: 0 ft to 0.5 ft bgs (soil), 1 ft to 1.5 ft bgs (soil), and 1.5 ft to 2 ft into tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. All samples will be analyzed for TAL metals and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for PCBs, pH, cyanide, nitrates, and perchlorate. The samples will be collected using a manual or power hand auger.
- *Untreated Waste Line (SWMU 45-003).* The vertical and horizontal extent of inorganic chemicals, radionuclides, or organic chemicals (specifically PAHs) was not delineated by the historical samples from the untreated waste line. The historical analytical results indicate that potential contamination may extend below 4.4 ft bgs. These data needs will be addressed by sampling

from a single borehole (New #5) at the following depths: 0 ft to 0.5 ft bgs [soil], 1 ft to 1.5 ft bgs [soil], and 1.5 ft to 2 ft into tuff, 4.5 ft to 5 ft into tuff, and 9.5 ft to 10 ft into tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. All samples will be analyzed for TAL metals, PAHs, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for PCBs, pH, cyanide, nitrates, and perchlorate. The samples will be collected using a manual power hand auger in conjunction with a hollow-stem auger drilling rig for samples greater than 6 ft bgs.

- *Sanitary Sewer Emergency Bypass (SWMU 45-004)*. The vertical and horizontal extent of inorganic chemicals, radionuclides, or organic chemicals was not delineated by the historical samples from the sanitary sewer emergency bypass. Sampling at historical location 45-01068 at three depths (0 ft to 0.5 ft bgs [soil], 1 ft to 1.5 ft bgs [soil], and 1.5 ft to 2 ft into tuff) is proposed to address this data need. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 1.5 ft. All samples will be analyzed for TAL metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, cyanide, nitrates, and perchlorate. The samples will be collected using a manual or power hand auger.

4.16 Sampling and Analysis of Consolidated Unit 73-001(a)-99, Former Landfill

No additional investigation activities are proposed in this work plan for this consolidated unit. All future investigations at the site will be conducted directly by DOE and reported separately.

4.17 Sampling and Analysis of Consolidated Unit 73-001(b)-99, Former Landfill

No additional investigation activities are proposed in this work plan for this consolidated unit. All future investigations at the site will be conducted directly by DOE and reported separately.

4.18 Sampling and Analysis of Consolidated Unit 73-002-99, Miscellaneous Airport Structures

No additional investigation activities are proposed in this work plan for this consolidated unit. All future investigations at the site will be conducted directly by DOE and reported separately.

4.19 Sampling and Analysis of SWMU 73-004(c), Septic Tank

No additional investigation activities are proposed in this work plan for this SWMU. All future investigations at the site will be conducted directly by DOE and reported separately.

5.0 INVESTIGATION METHODS

The current versions of the ENV-ECR-SOPs, QPs, and the ENV-ERS Quality Management Plan, which are available at http://erproject.lanl.gov/documents/ procedures.html, are applicable to the proposed work activities described in this work plan and are summarized in Table 5.0-1. Additional procedures may be added as necessary to describe and document quality-affecting activities.

5.1 Site Surveys

5.1.1 Site Reconnaissance

Reconnaissance will be performed at each site with the property owners and will consist of evaluations of available engineering drawings and site maps and a preliminary site walkover, during which the surface

conditions and access restrictions will be evaluated, including restrictions specified in the access agreements. The site walkover will also be used to identify visible portions of structures (e.g., outfall pipes, manholes, etc.) to maximize the effectiveness of the subsequent radiological and geophysical surveys.

5.1.2 Radiological Survey

Surface radiological surveys will be conducted at each site in conjunction with the investigation activities to confirm worker safety according to the health and safety requirements.

5.1.3 Geophysical Survey

Geophysical surveys will be performed at selected sites to verify the location of structures planned for removal (see Section 4). The surveys will verify locations determined from engineering drawings, site reconnaissance and geodetic surveys and will refine assessments of the structures to be removed. Electromagnetic geophysical methods will be used to detect the septic tank structures. Historically, electromagnetic surveys have successfully detected the steel reinforcing bar inside the concrete structures. No historical geophysical surveys have been performed at AOC 00-030(eN). Previous geophysical surveys at AOC 00-030(f) did not locate the drainline (LANL 1996, 56432). Magnetic line tracing of both drainlines will also be performed to confirm the configuration of the drainline and the location of the outfall. Line tracing will be performed after trenching has been done at the septic tank locations and after the drainlines are exposed.

5.2 Exploratory Trenching

If the geophysical surveys do not locate structures planned for removal, exploratory trenching will be conducted to identify the location, if permitted by the access agreement. Trenching will be conducted with a backhoe and will progress from the surface to approximately 5 ft below grade. The trenches will be visually logged for evidence of nonnative materials, disturbed bedding horizons, and areas of visible staining, or elevated radiological or organic vapor field screening results (see Section 5.5.1). Trenching will continue in the historically identified area until the structure is located, and the boundary of the structure has been determined, or until the absence of a structure at that location has been verified. Once the septic tanks are located, the inlet and outlet drainlines will be exposed.

5.3 Structure Excavation and Removal

The septic tanks will be carefully unearthed and inspected, to the extent possible, for structural flaws or evidence of releases (e.g., stained soil, cracks in the tank, and elevated field-screening results from the floor and sidewalls of the excavation, etc.). Areas with structural flaws will be noted for confirmation sampling once the structure is removed. The inlet lines and drainlines from the septic tanks will be removed contingent on property-owner approval and access-agreement conditions. In cases where the lines may not be removed, steel sections of the line will be pressure-grouted with concrete (depending on successful penetration of the lines in the geophysical line tracing) and abandoned in place. Section of lines consisting of VCP will be left in place without grouting. If COPCs are detected along the lines during the investigation activities associated with these sites, the data will be evaluated to determine whether additional corrective action is required.

During removal, all excavated material will be field-screened for radiological and organic vapor contamination (see Section 5.5.1). These results will be used to segregate the material into potential waste streams. Final waste disposition will be dependent on thorough release surveys, waste

characterizarion sampling, and waste-acceptance crtieria for the disposal facility. The plan for managing the IDW is described in Appendix F of this work plan.

5.4 Drilling Methods for Boreholes

All boreholes greater than 6 ft deep will be drilled using the hollow-stem auger method because it allows for collecting undisturbed samples of core and subsurface vapors within the Tshirege Member of the Bandelier Tuff. In some cases, hand-held power-augering and/or manual hand-augering tools will be used to collect shallow subsurface soil samples (less than 6 ft). Boreholes greater than 25 ft deep will be logged with caliper, camera, and neutron and natural gamma tools, according to the current version of ENV-ECR-SOP-04.04, "Contract Geophysical Logging" (see Table 5.01).

Boreholes greater than 6 ft deep will be drilled using a hollow-stem drilling rig with 10-in.-diameter auger flights with a split-core barrel sampler to total depth (TD). A hollow-stem auger consists of a hollow steel shaft with a continuous spiraled steel flight welded onto the exterior site of the stem. The stem is connected to an auger bit, and it transports cuttings to the surface when it is rotated. The hollow stem of the auger allows drill rods, split-spoon core barrels, Shelby tubes, and other samplers to be inserted through the center of the auger to allow the samples to be retrieved during drilling. The hollow stem also acts to encase the borehole temporarily so that the casing (riser) may be inserted through the center of the augers once the desired depth is reached, thus minimizing the risk of possible borehole collapse. A bottom plug or pilot bit may be fastened to the bottom of the augers to keep out most of the soil and/or water that may clog the bottom of the augers during drilling. Drilling without a center plug is acceptable, provided that the soil plug formed in the bottom of the auger is removed before sampling or installing well casings. The soil plug may be removed by washing out the plug using a side-discharge rotary bit or by augering out the plug with a solid-stem auger bit sized to fit inside the hollow-stem auger.

In cases where waste units (i.e., septic tanks) are still in place and cannot be removed, angled boreholes will be used to sample beneath the structures. For each angled borehole, a vertical companion borehole will be drilled to determine the vertical extent of contamination.

Samples will be collected at the target depths specified in Tables 4.1-1 through 4.1-15. Additional depths may be sampled depending upon field-screening results. In addition, the samples will be visually inspected and geologically logged. All drilling activities will be performed in accordance with appropriate ENV-ERS Program procedures to ensure that health and safety requirements are reviewed and addressed during field operations.

The exact location of each borehole will be determined using global positioning system (GPS) field surveys of the waste unit locations, utility locations identified as part of the excavation permitting process, and other access-restrictive surface conditions following the current version of ENV-ECR-SOP-03.11, "Coordinating and Evaluating Geodetic Surveys" (see Table 5.01). A line location survey will also be conducted to further define potentially dangerous utility lines in the work area. Each location will be thoroughly examined to identify potential hazards for subsurface drilling. All boreholes will be field-verified, surveyed in advance relative to disposal features, and recorded in field notebooks.

Because all SWMUs/AOCs included in this work plan are located on private property or on Los Alamos County property, the property owners must agree upon all borehole locations in an access agreement.

5.5 Collection of Tuff Samples

All boreholes will be cored continuously to the TD. The cores will be geologically logged to TD following the current version of ENV-ECR-SOP-12.01, "Field Logging, Handling, and Documentation of Borehole

Materials." Subsurface tuff samples will be collected from core retained in a split-spoon core barrel and placed into sealed sleeves or core-protect bags to preserve core moisture in accordance with the current version of ENV-ECR-SOP-06.26, "Core-Barrel Sampling for Subsurface Earth Materials."

The primary field-screening methods to be used include (1) visual examination, (2) radiological screening, and (3) vapor screening for VOCs. X-ray fluorescence (XRF) field screening will not be performed because of the low metals concentrations at most sites. Radiological screening will target gross alpha, beta, and gamma radiation. Field screening for alpha, beta, and gamma radiation will be conducted within 6 in. from the core material. Vapor screening of subsurface core for VOCs will be conducted using a photoionization detector (PID) equipped with an 11.7 electron volt lamp. The maximum value and the ambient air temperature will be recorded on the field borehole or test-pit log for each sample. The PID will be calibrated each day to the manufacturer's standard for instrument operation, and all daily calibration results will be documented in the field logbooks. Field-screening for VOCs will be accomplished using headspace analysis on 5-ft intervals in each borehole in accordance with the current version of SOP-06.33, "Headspace Vapor Screening with a Photoionization Detector." All instrument background checks, background ranges, and calibration procedures will be documented daily in the field logbooks in accordance with QP-5.7, "Notebook Documentation for Environmental Restoration Technical Activities."

Tables 4.1-1 through 4.1.15 provide the target depths for each borehole. Based on historical RFI data, most sites have low (or no) detectable concentrations of VOCs. However, if VOC screening is positive, the boreholes will be advanced a minimum of 10 ft beyond the last positive detection. If a positive field-screening result is detected within 10 ft of the target depth, the borehole will be advanced in 5-ft intervals until no positive field-screening result is detected over a 10-ft interval.

Based on this field screening, additional samples with the highest field-screening results and with the deepest detected field-screening results will be submitted for laboratory analysis. Samples collected at specified target depths (e.g., immediately below the base of each waste unit, fracture zones [if encountered], TD, etc.) will also be submitted for laboratory analysis, regardless of screening results. All samples submitted to the laboratory will be analyzed for the constituents listed in Tables 4.1-1 through 4.1-15.

QA/QC samples will include (1) field duplicate samples to evaluate the reproducibility of the sampling technique and (2) rinsate blanks to evaluate decontamination procedures. These samples will be collected in accordance with the current version of ENV-ECR-SOP-01.05, "Field Quality Control Samples," and will comply with a field-duplicate collection frequency of 10% of the total samples collected.

Field documentation of samples collected from fractures will be completed in accordance with the current version of ENV-ECR-SOP-12.01 and will include a detailed physical description of the fracture-fill material and rock-matrix sampled. The volumes of fracture-fill and rock-matrix material included in the sample will be estimated from field measurements. An additional sample will be collected from the rock-matrix adjacent to the fracture sample material, thus allowing for comparison.

Field documentation will also include detailed borehole logs for each borehole drilled. The borehole logs will document the matrix material in detail and will include the results of all field-screening. Fracture and matrix samples will be assigned unique identifiers. Field documentation will be completed in accordance with the current version of ENV-ECR-QP-5.7.

5.5.1 Field-Screening

Section IX.B.2.d of the Consent Order (NMED 2005, 88027) specifies that all core samples be screened by (1) visual examination, (2) headspace vapor screening for VOCs, and (3) metals screening using XRF. Additional screening for release-specific characteristics, such as HE, will be conducted where appropriate.

The Laboratory's proposed field-screening approach will be to (1) visually examine all samples for evidence of contamination, (2) continuously screen for organic vapors, and (3) continuously screen for radiological contamination. This approach differs from that specified in the Consent Order because the field-screening methods for metals are not used to identify the samples for laboratory analysis.

To provide a detailed justification for the Laboratory's proposed approach, the limitations of field-screening methods for various classes of analytes are discussed below.

VOCs

VOCs will be continuously screened in all boreholes. Screening will be accomplished through headspace analysis and using a PID capable of measuring quantities as low as 1 part per million. VOC screening will be used to guide drilling beyond the target depth. Boreholes will be advanced a minimum of 10 ft beyond the last field-screening detection.

Metals

Because the concentrations of metals detected in the historical samples at most sites are low (near or below background), the XRF instrument is not a useful guide to planned sample-collection activities because of the high XRF detection limits for target metals. Therefore, the XRF instrument will not be used to field screen surface and subsurface soil/rock samples.

Radioactivity

Radiation screening of all samples will be used for health and safety purposes and for identifying samples for laboratory analysis. All samples will be continuously field-screened for gross alpha and for gross beta/gamma radiation. There is no real-time field-screening method for tritium.

5.5.2 Field Analytical Screening

No field analytical screening is proposed for the Pueblo Canyon aggregate area investigation. Because of the limited number of samples and the analytical suites proposed for each site, all selected samples will be sent for analyses at off-site analytical laboratories.

5.6 Collection of Soil and Sediment Samples

Although surface samples may be collected during drilling activities (collected from the 0- to 0.5-ft interval of the core barrel), the most common method for collecting surface, near-surface soil, and sediment samples is the spade-and-scoop method, as described in the current version of ENV-ECR-SOP-06.09, "Spade and Scoop Method for the Collection of Soil Samples" (see Table 5.01). All soil and sediment samples will be collected from two sample depths, 0 ft to 0.5 ft and 1.0 ft to 1.5 ft. Stainless-steel shovels, spades, scoops, and bowls will be used for ease of decontamination. Disposable tools made of polystyrene or Teflon will also be used, if necessary.

In some cases, hand-held power augering and/or manual hand-augering tools will be used to collect shallow subsurface soil samples (less than 6 ft), if geologic material conditions permit. The hand-held power auger is a conventional gas-powered, 1 HP chainsaw engine, with a friction clutch, Kelly-type rotary drive to rotate a 12-in.-long by 2-in.-diameter core barrel equipped with diamond cutting teeth. The power auger is equipped with three 2-ft extension rods to enable drilling to about 6 ft bgs. A core extraction tool and 6-ft wand can be used to recover the core samples in competent rock.

The spade and scoop tools, and the manual hand auger are described in the current version of ENV-ECR-SOP-06.10, "Hand Auger and Thin-Wall Tube Sampler" (see Table 5.0-1). If the surface location is at bedrock, an axe or hammer and chisel will be used to collect samples.

Soil and sediment samples will be field-screened for health and safety purposes for gross alpha and gross beta/gamma before collection, then placed in zippered bags and/or sample jars as grabs derived from augers, scoops, or chiseling devices, in accordance with the sampling guidance document and appropriate ENV-ECR-SOPs (the SOP-01.01 through SOP-01.08 series, Table 5.0-1).

Because all SWMUs/AOCs included in this work plan are located on private property or on Los Alamos County property, the Laboratory will seek agreement from the property owners for property access and field activities.

5.7 Collection of Geotechnical Data

All boreholes will be cored continuously to TD and will be geologically logged in accordance with American Society for Testing and Materials (ASTM) D2487, "Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)," and ASTM D2488, "Standard Practice for Description and Identification of Soils (Visual-Manual Procedure)," which include the lithology, apparent moisture, structural features, and core recovery compared to interval drilled, and according to the current version of ENV-ECR-SOP-12.01. No additional geotechnical testing is proposed in this work plan.

5.8 Collection of Pore-Gas Samples for VOC Analyses

Based on historical RFI data for the Pueblo Canyon aggregate area, the installation of vapor-monitoring wells is not proposed in this work plan.

However, if field-screening data indicate the presence of a subsurface vapor phase at any site, subsurface vapor samples will be collected from all boreholes in accordance with the current version of ENV-ECR-SOP-06.31, "Sampling of Sub-Atmospheric Air" (see Table 5.01) after allowing for equilibration of pore gases at the completion of drilling activities. In each borehole, one sample will be collected at the depth the vapor phase is first encountered; the second sample will be collected at TD. Pore-gas samples will be collected using a straddle packer to isolate discrete depths within the borehole. Each interval will be purged before sampling until the measurements of carbon dioxide and oxygen are stable and are representative of subsurface conditions. In brief, a purge pump is used to withdraw borehole and formation vapors through the borehole or constructed sampling port. Concentrations of purge indicator gases (carbon dioxide and oxygen) are monitored continuously during this presampling cycle. Once the indicator gas concentrations are stable, proper purge is achieved and formation vapor sampling can proceed. Subsurface pore-gas samples will be collected in SUMMA canisters and submitted for VOC analysis using EPA Method TO-15.

QA/QC samples for VOCs in pore gas will consist of an equipment blank and field duplicate. After sampling and purge decontamination, the equipment blank will be collected by pulling zero gas (99.9% ultrahigh purity nitrogen) through the packer sampling apparatus. This sample will be used to evaluate

decontamination procedures. The field duplicate sample will be used to evaluate the reproducibility of the sampling technique. QA/QC samples will be collected according to the current version of ENV-ECR-SOP-01.05, "Field Quality Control Samples" (see Table 5.01).

5.9 Collection of Perched Water Samples

The maximum total depth of boreholes proposed in this work plan is 60 ft. It is not anticipated that any zones of elevated moisture content, localized saturation, and groundwater will be encountered.

However, if saturation is encountered as a borehole advances, drilling will be stopped to determine whether sufficient water volume is available for analyzing the water quality. Generally, the total water volume required is approximately 0.5 to 1.0 L. If this minimum volume of groundwater cannot be collected, the borehole will be advanced to the targeted depth or until saturation is encountered again and the process is repeated or until the required TD is achieved. A porous cup lysimeter or absorbent membrane will be installed at the depth of saturation to monitor the zone if the borehole is completed for pore-gas monitoring. Insufficient water sample volumes from discrete depths will not be composited to make up the required volume for screening analysis.

If a sufficient volume exists, a groundwater sample will be collected and analyzed for metals, anions, perchlorate, alkalinity, total organic carbon, total inorganic carbon, and total dissolved solids, on a rapid-turnaround basis at a Laboratory-certified geochemistry laboratory. Typically, results of groundwater screening samples are available within 48 hours. During this time, the borehole may be advanced to the targeted depth, and the perched zone (and any subsequent perched zones encountered during drilling) will be isolated to prevent downhole migration.

Geophysical logging of the borehole will determine the thickness of the zone of saturation and the characteristics of the perching horizon. A monitoring well will be designed and submitted to NMED for approval. Following approval of the design, the well will be installed and a groundwater monitoring plan will be included in the Pueblo Canyon aggregate area investigation report.

5.10 Borehole Abandonment

All boreholes will be abandoned by filling the borehole with a bentonite/concrete mixture. The boreholes will be pressure grouted from the bottom of the borehole to the surface in accordance with the Section X.D of the Consent Order (NMED 2005, 88027). All cuttings will be managed as IDW as described in Appendix F of this work plan. All borehole abandonment information will be provided in the Pueblo Canyon aggregate area investigation report.

5.11 Equipment Decontamination

Following drilling and sampling activities, project personnel will decontaminate all equipment involved in drilling and sampling activities. Residual material adhering to equipment will be removed using dry decontamination methods such as the use of wire brushes and scrapers (ENV-ECR-SOP-01.08, "Field Decontamination of Drilling and Sampling Equipment"). If equipment cannot be decontaminated using dry decontamination methods, wet decontamination methods will be used. Pressure-washing of equipment will be performed on a temporary decontamination pad with a high-density polyethylene liner. Cleaning solutions and wash water will be collected and contained for proper disposal. Decontamination solutions will be sampled and analyzed to determine the final disposition of the wastewater and the effectiveness of the decontamination procedures. All parts of the drilling equipment, including the undercarriage, wheels, tracks, chassis, and cab, will be thoroughly cleaned.

6.0 ONGOING MONITORING AND SAMPLING PROGRAM

Currently, there is no ongoing groundwater monitoring at any of the SWMUs and AOCs in the Pueblo Canyon aggregate area. Existing wells in Pueblo Canyon will be sampled quarterly as part of the interim site-wide monitoring program. If groundwater is encountered and monitoring wells are installed, a formal groundwater monitoring program will be developed and submitted to NMED for approval. No vapor-monitoring wells are proposed in this work plan. The results of the investigations will determine if a vapor monitoring at any SWMU/AOC is warranted; if so, a vapor-monitoring plan will be developed and submitted to NMED for approval.

7.0 SCHEDULE

The date for submitting the Pueblo Canyon aggregate area investigation work plan to NMED is May 31, 2005. The notice schedule for NMED comment or approval of the work plan is September 28, 2005. Administrative activities, including private property access, will begin after the work plan has been submitted. Field activity preparation will begin after receipt of NMED approval of the work plan. Implementation of the fieldwork, following the acquisition of private property access, is anticipated to require approximately 160 days through demobilization from all sites. Sample submittals to the Sample Management Office should be completed by that time. Receipt of investigation results from analytical laboratories is anticipated 45 days after final site demobilization. The Pueblo Canyon aggregate area investigation report will be submitted 30 months after approval of the work plan by NMED.

8.0 REFERENCES

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Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; U.S. EPA, Region 6; and the ENV-ERS Program. The sets were developed to ensure that the administrative authority (AA) has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the AA are not included.

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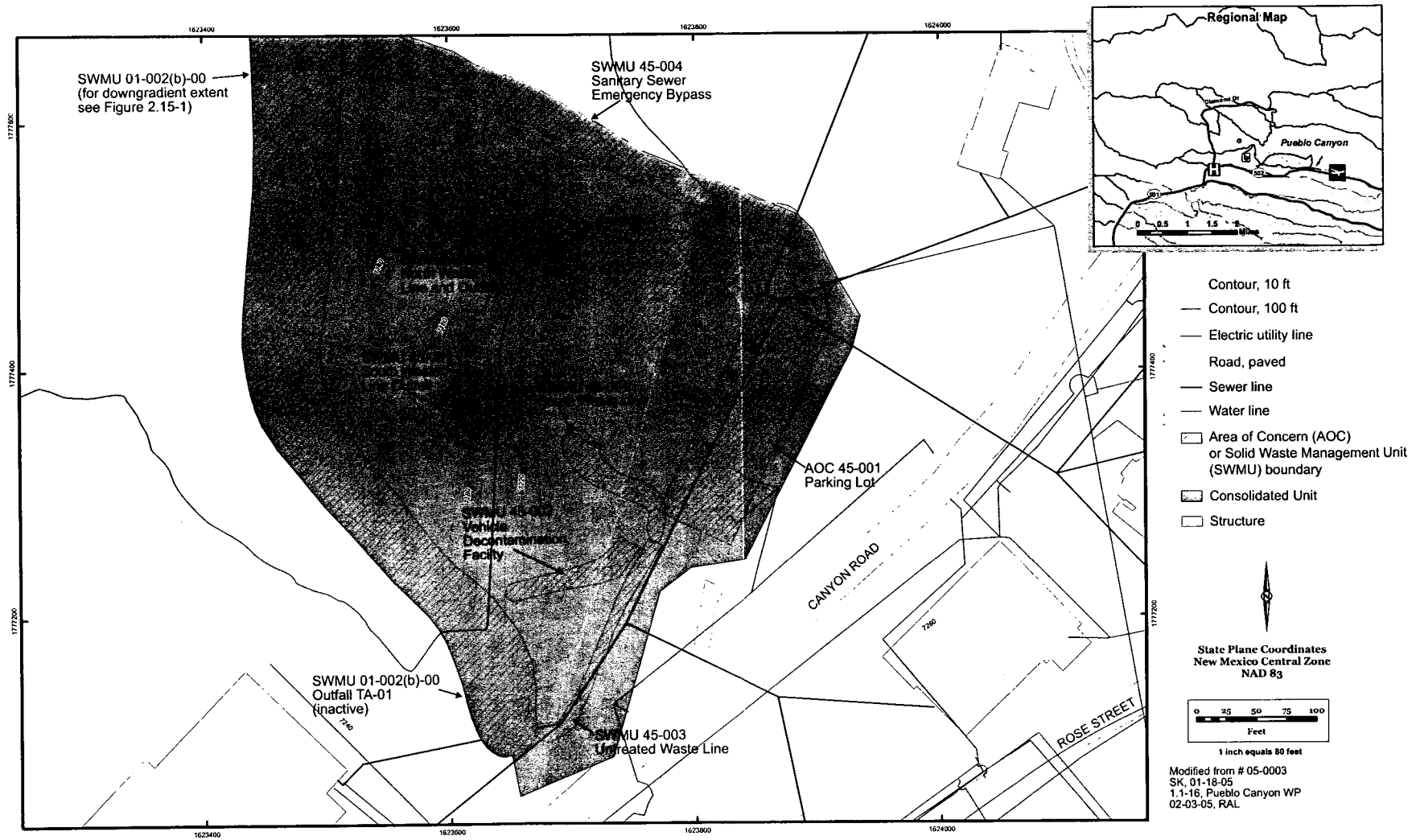
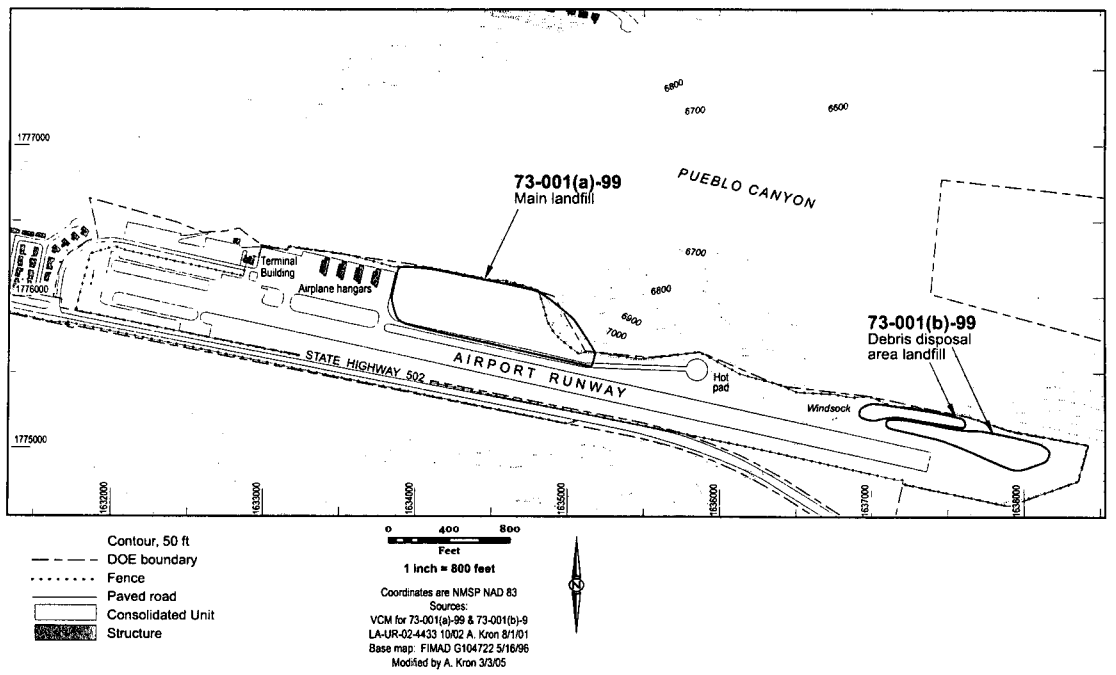


Figure 1.1-17. Location of Consolidated Unit 45-001-00, Wastewater Treatment Plant, TA-45



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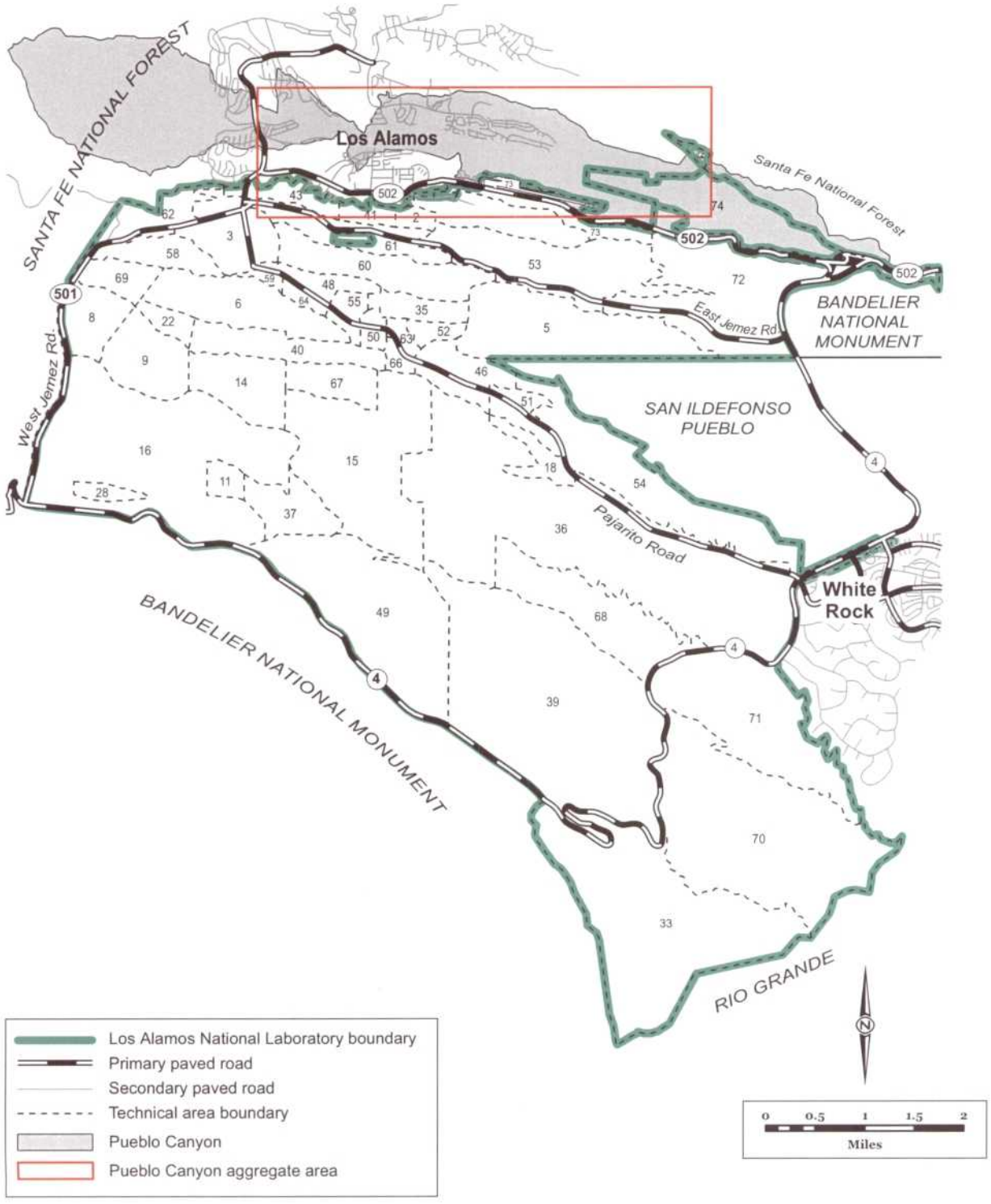

Figure 1.1-1. Location of Pueblo Canyon aggregate area with respect to Laboratory technical areas and surrounding land holdings

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11x17, print pages 109 and 110 from pdf

Figure 1.1-2 Locations of Pueblo Canyon aggregate area SWMUs and AOCs

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Figure 1.1-3 Location of SWMU 00-018(a), Pueblo Canyon Wastewater Treatment Plant

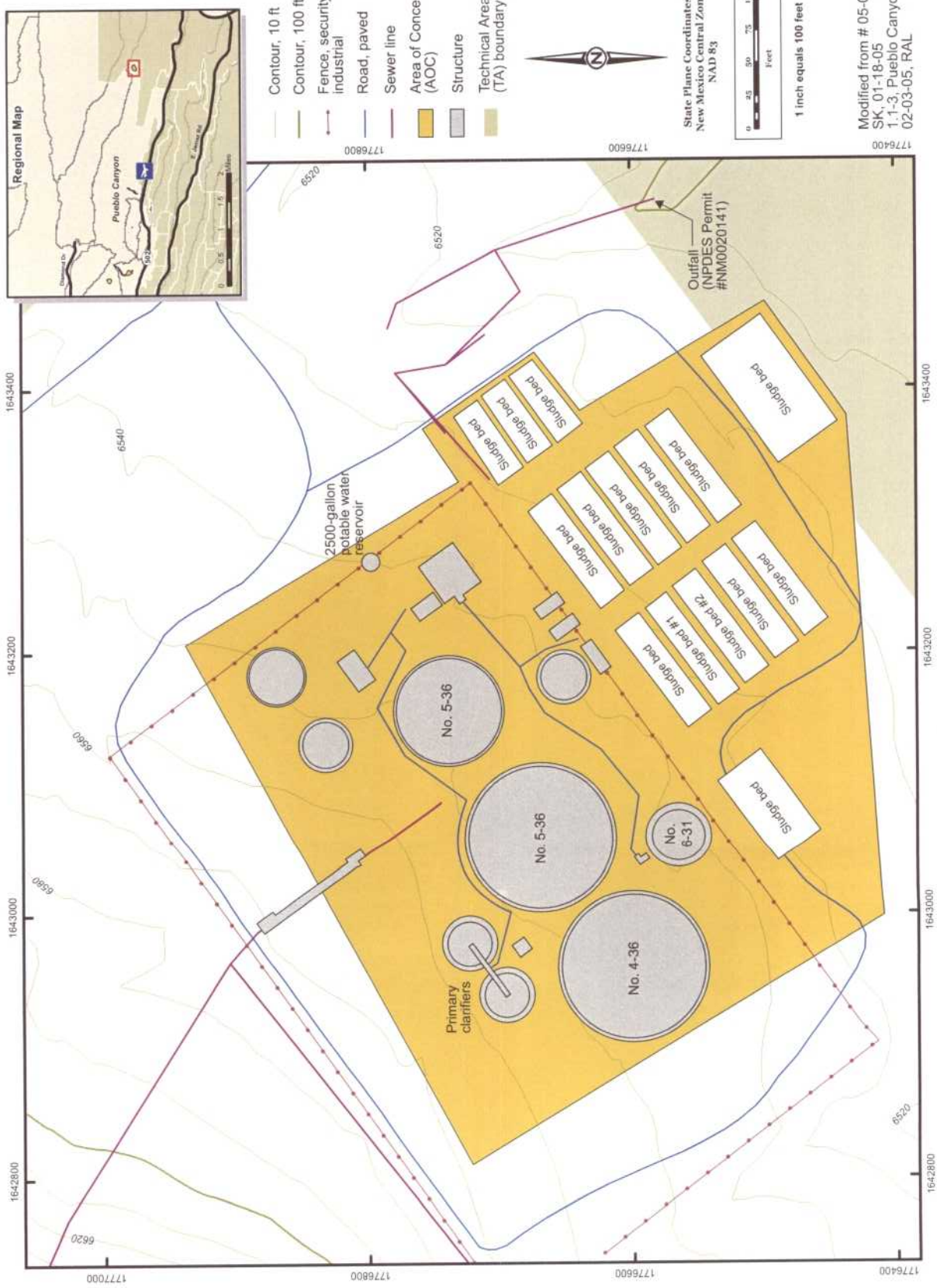

Figure 1.1-4. Location of AOC 00-018(b), Bayo Canyon Wastewater Treatment Plant (active)

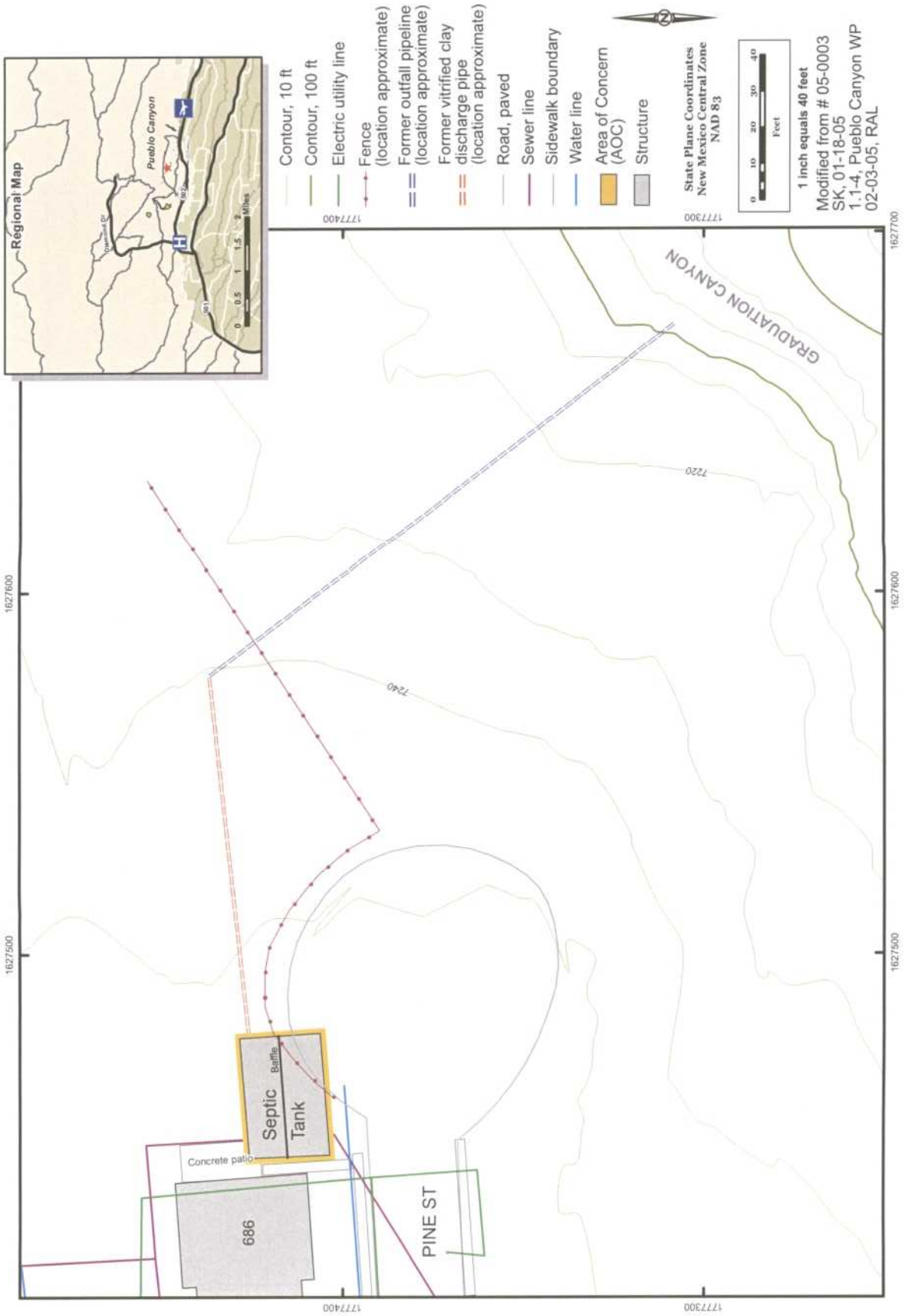

Figure 1.1-5. Location of AOC 00-030(d), septic system

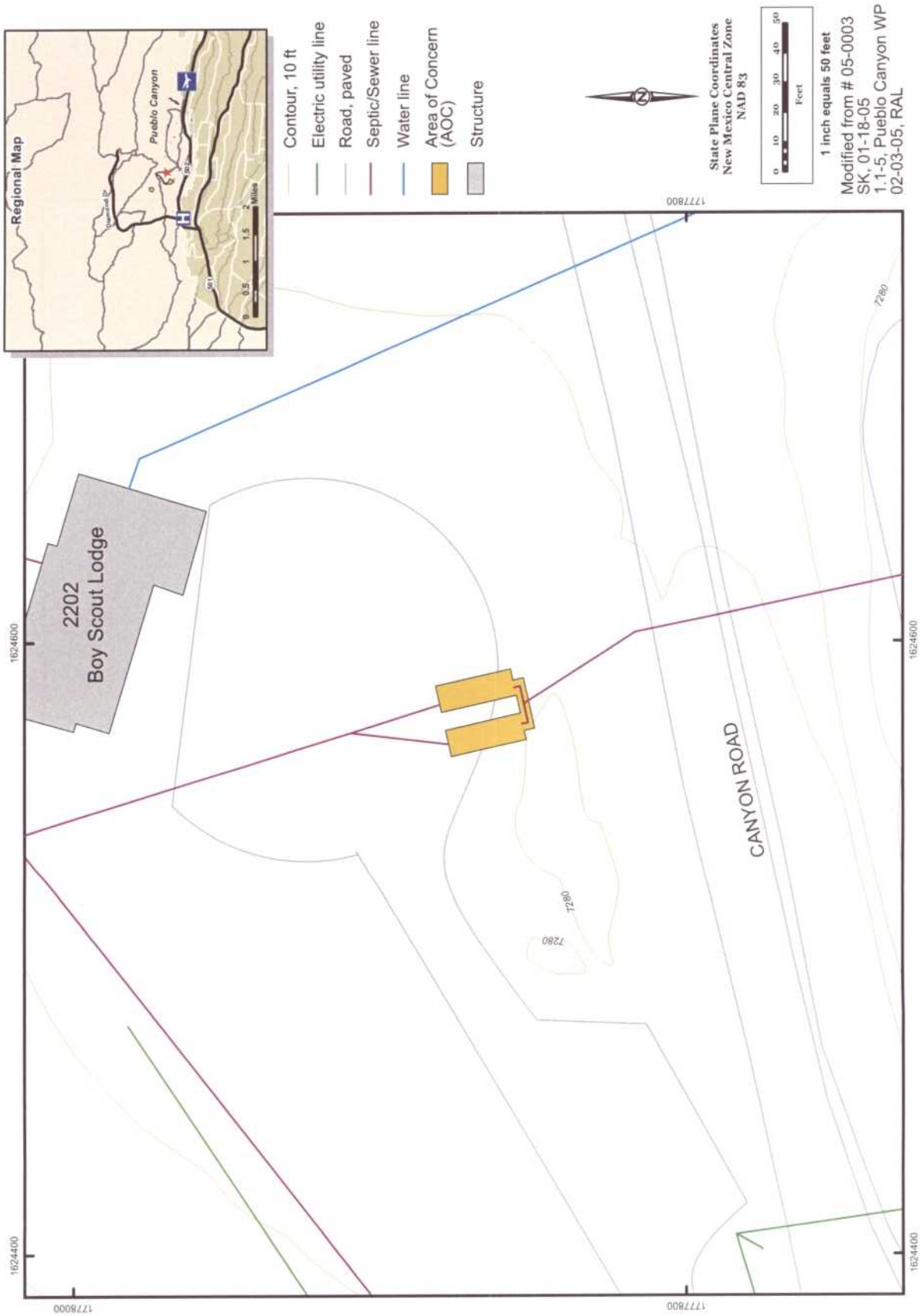

Figure 1.1-6. Location of AOC 00-030(eN), septic system

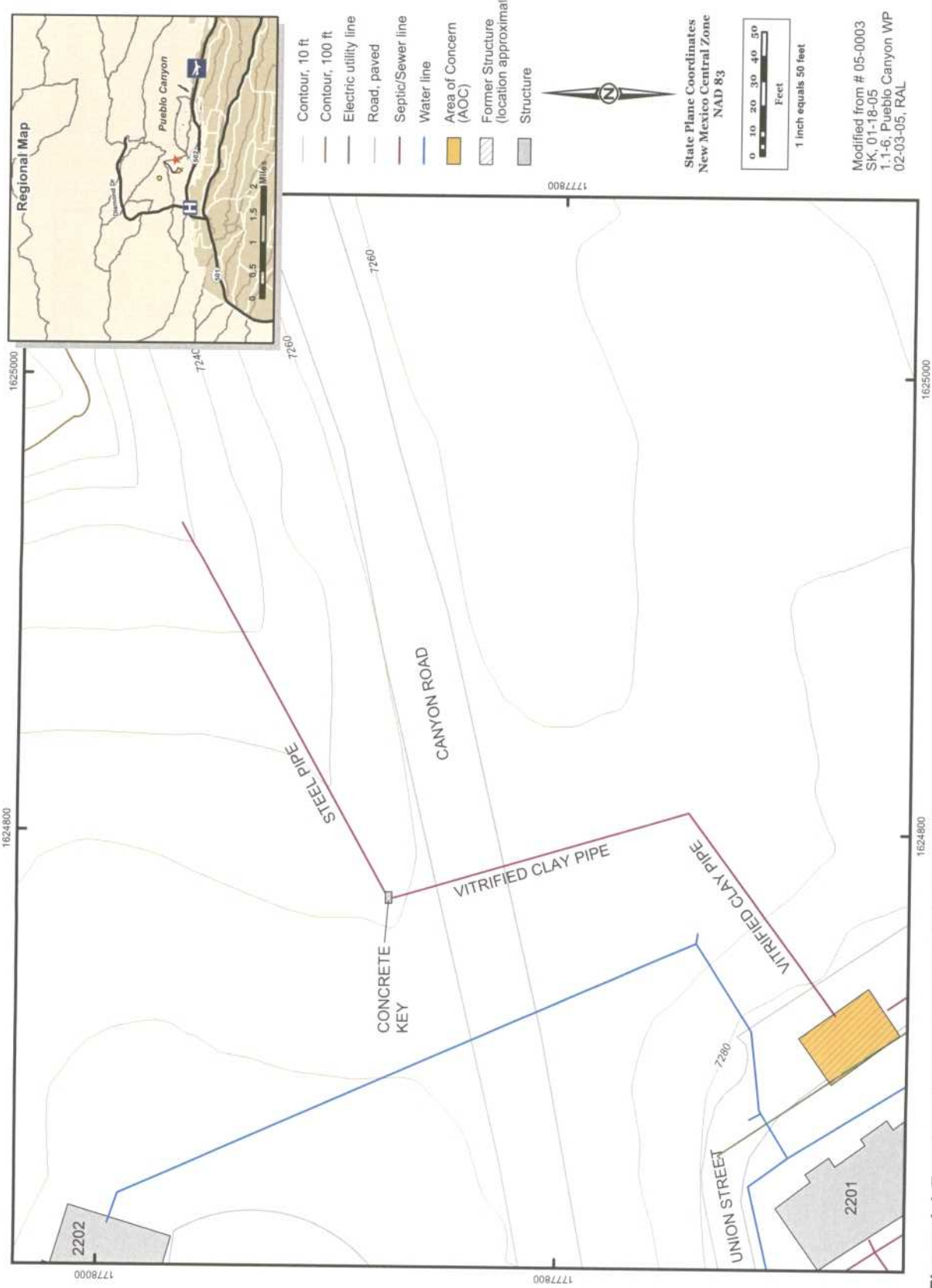

Figure 1.1-7. Location of AOC 00-030(eS), septic system

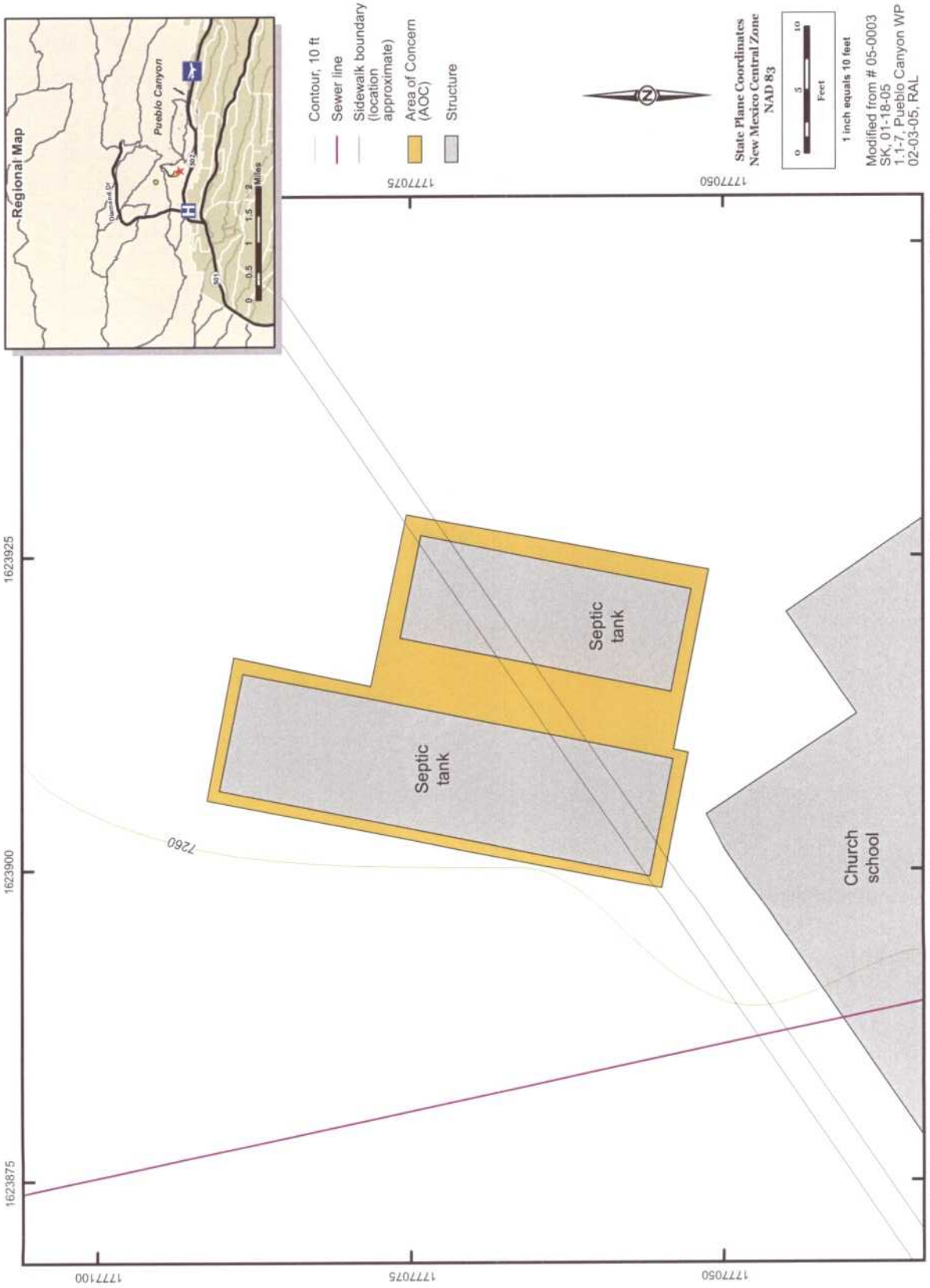

Figure 1.1-8. Location of AOC 00-030(f), septic system

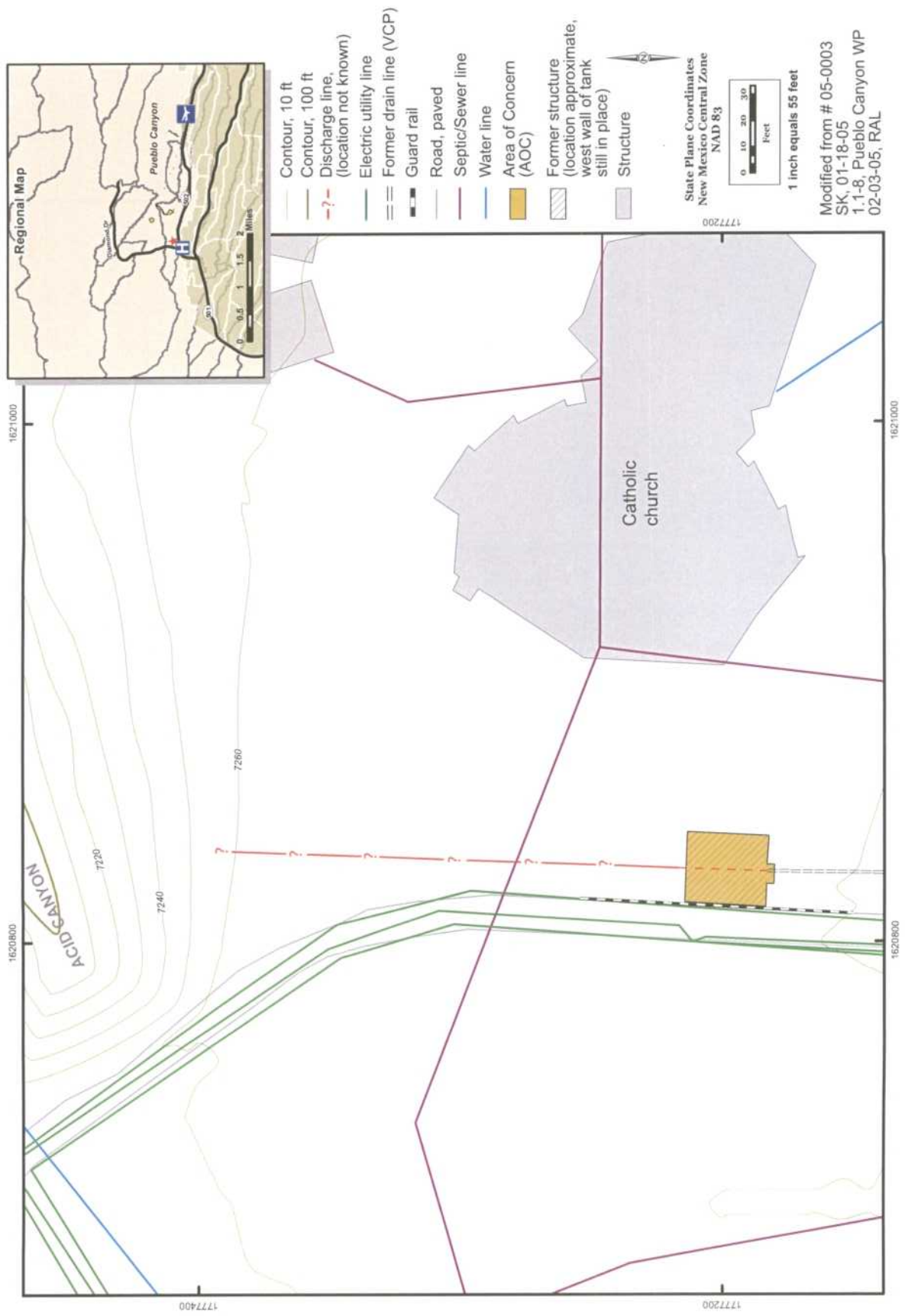

Figure 1.1-9. Location of AOC 00-030(h), septic system (near the new Catholic church)

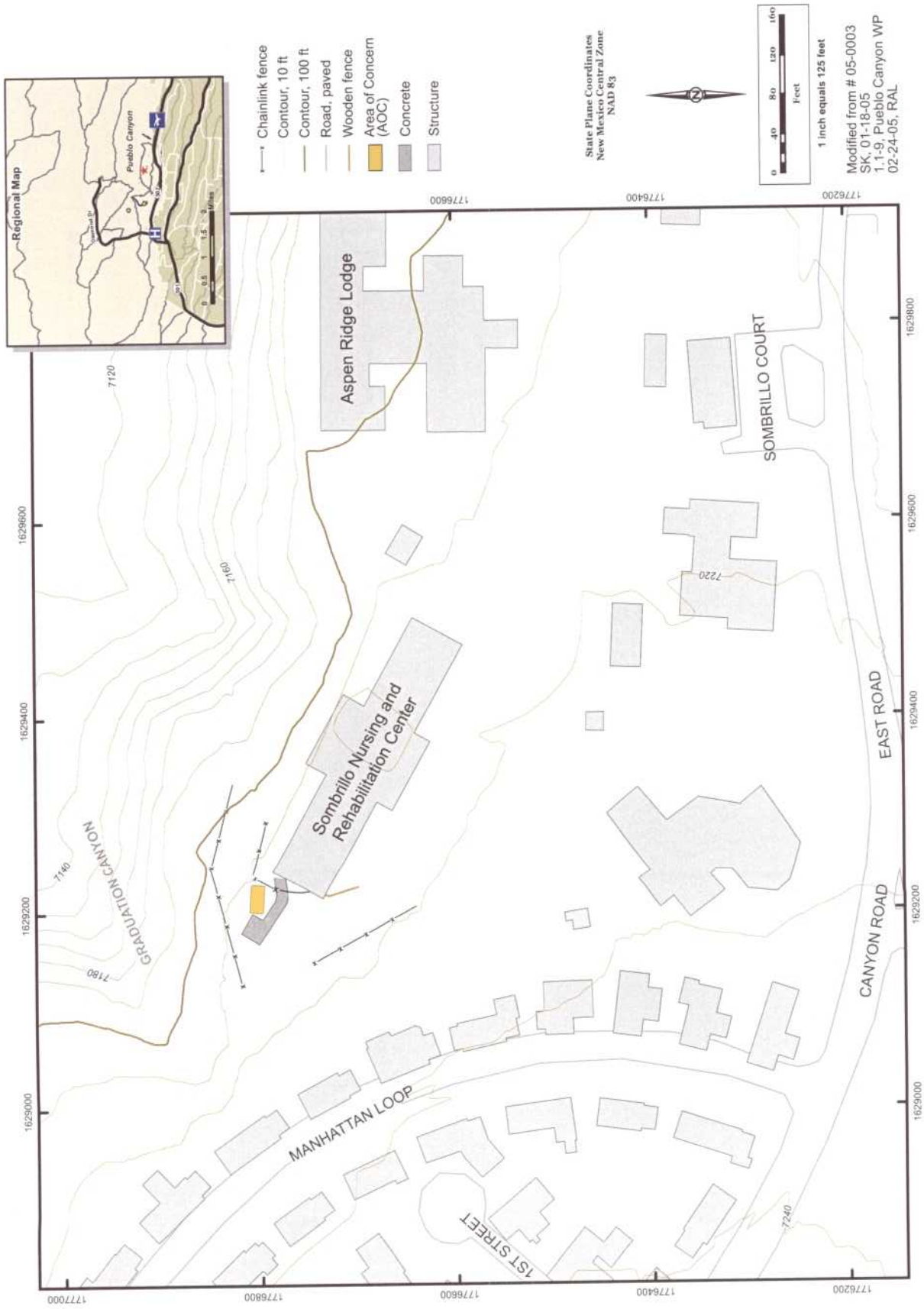

Figure 1.1-10. Location of AOC 00-030(j), septic system

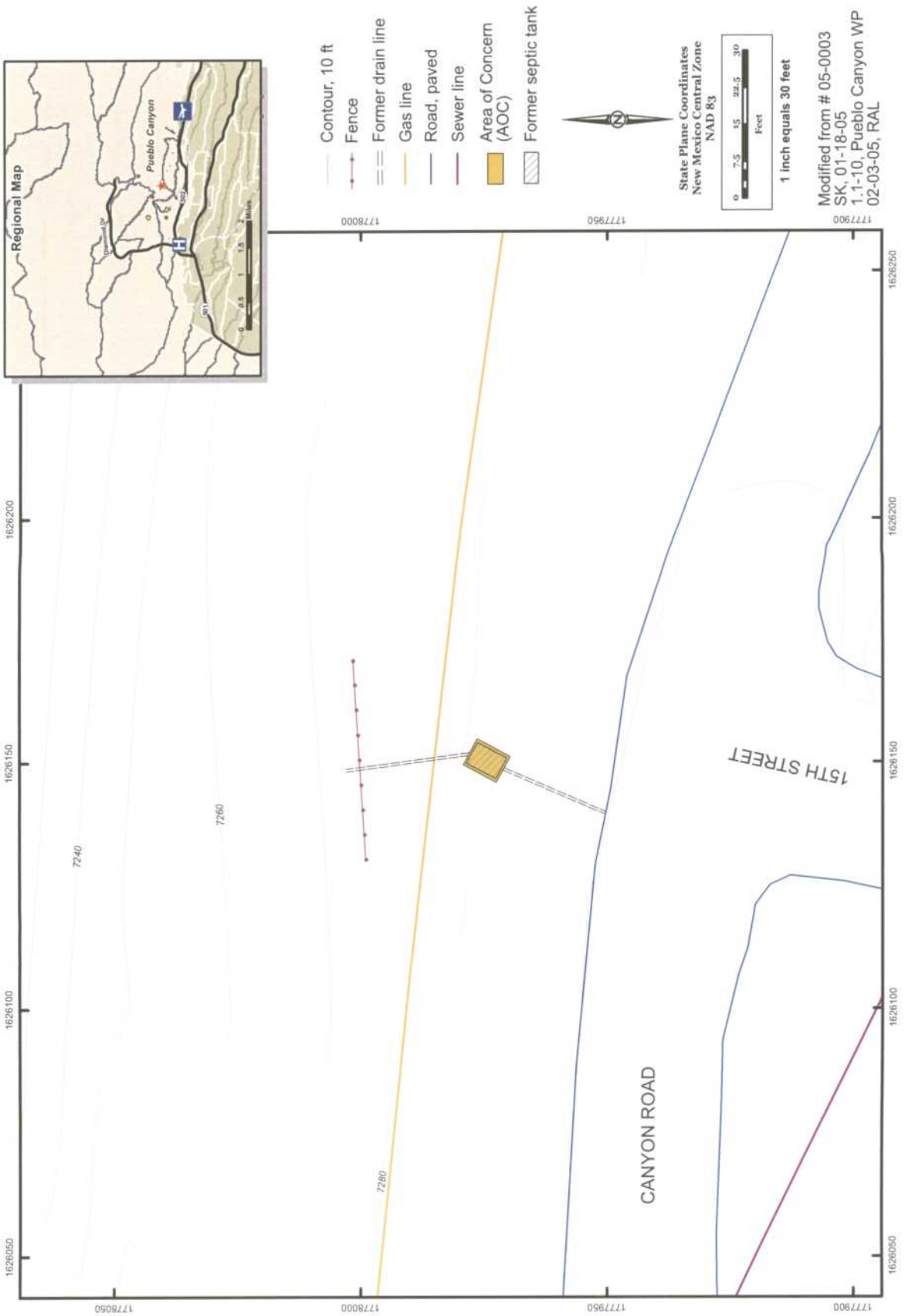

Figure 1.1-11. Location of AOC 00-030(n), septic system

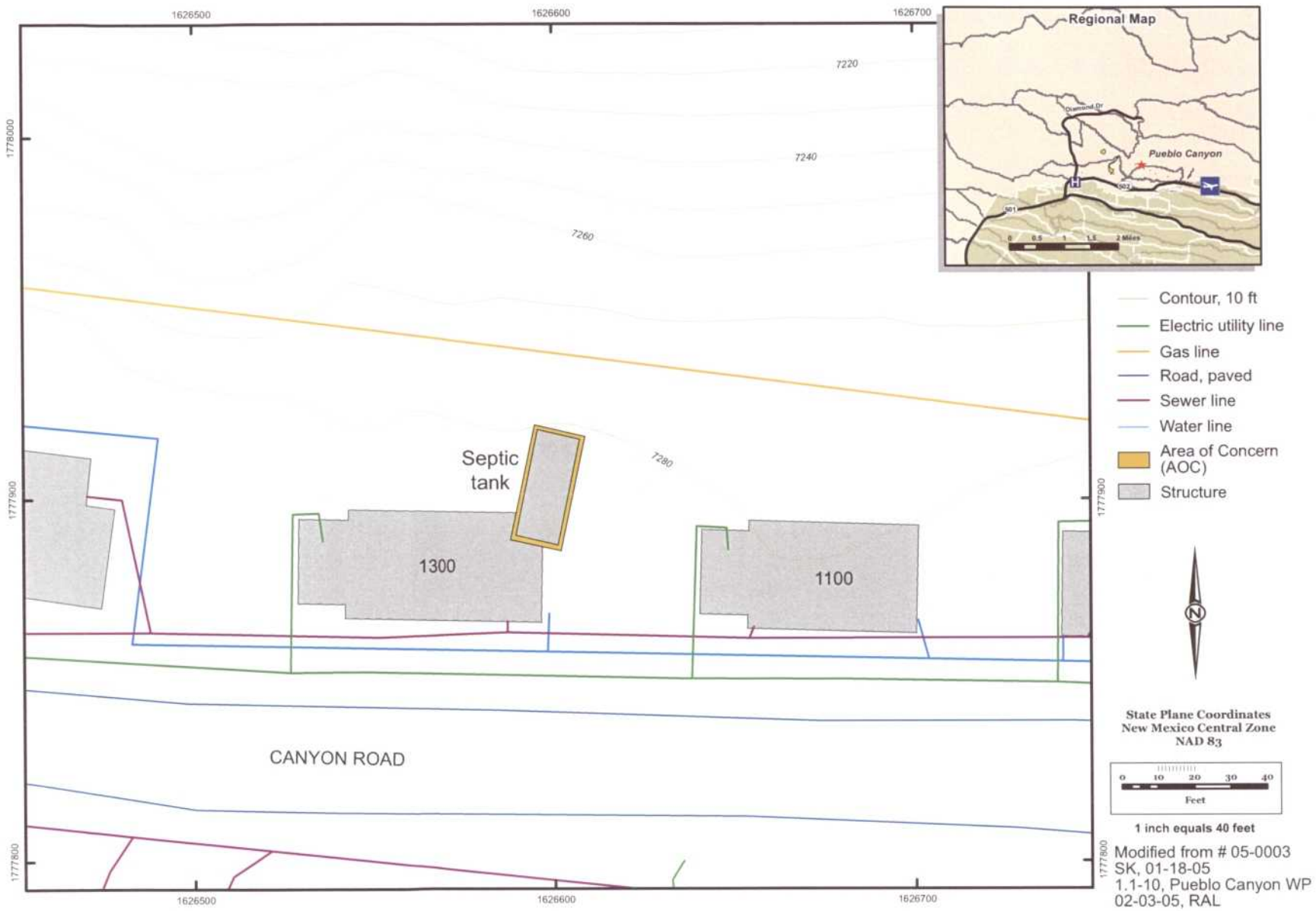

FIgure 1.1-12. Location of AOC 00-030(o), septic system

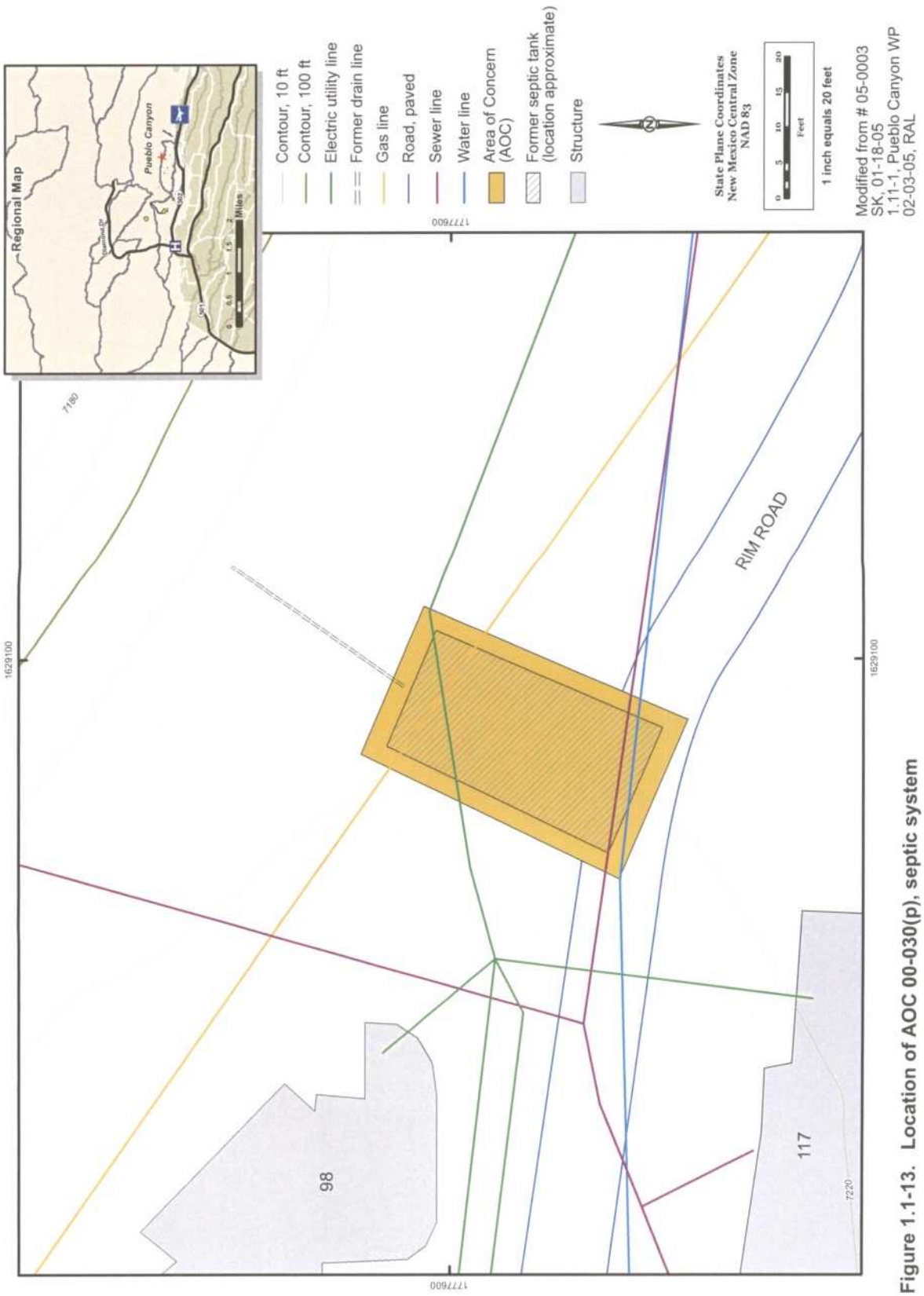

Figure 1.1-13. Location of AOC 00-030(p), septic system

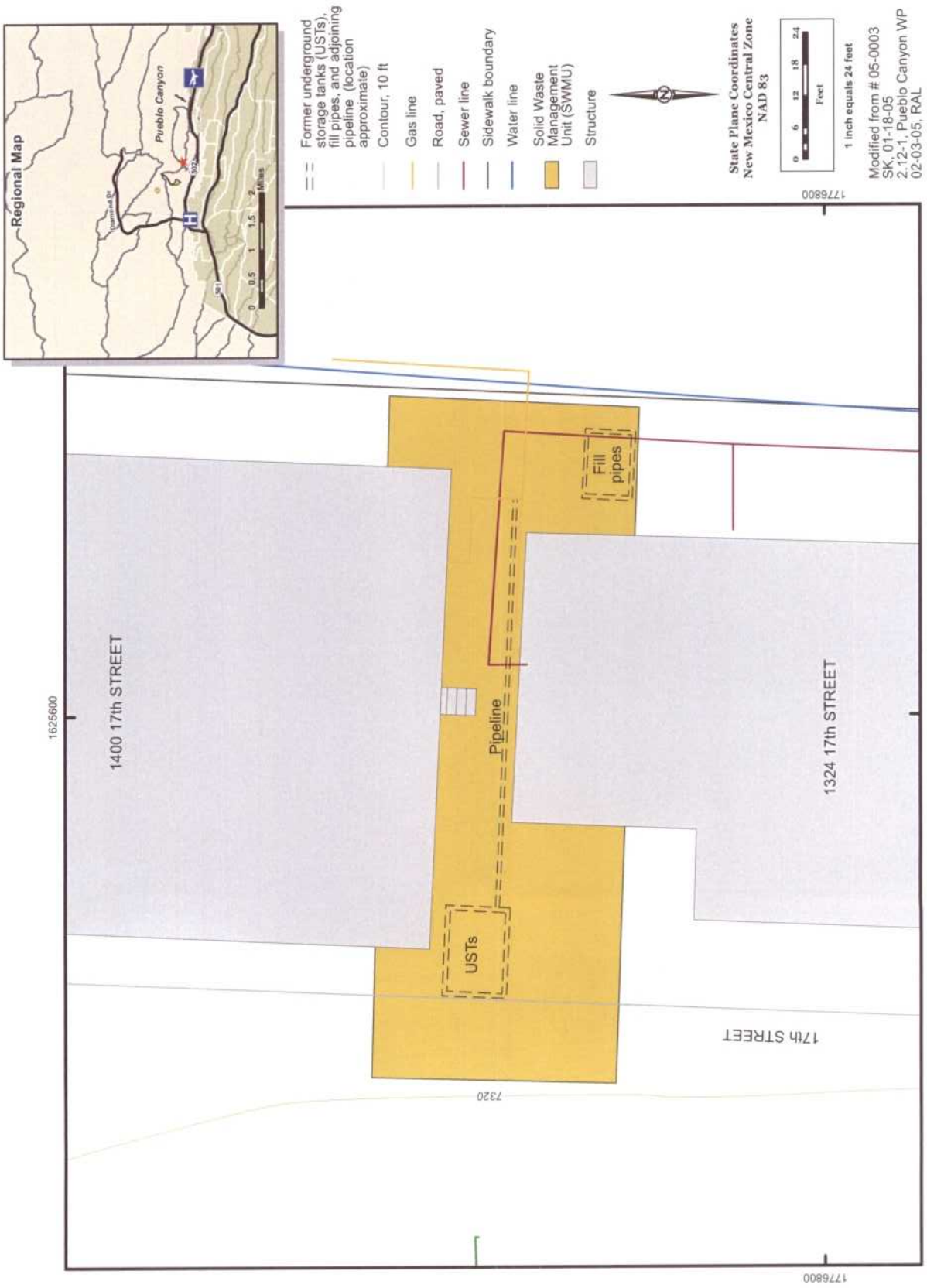

Figure 1.1-14. Location of SWMU 00-039, underground tanks

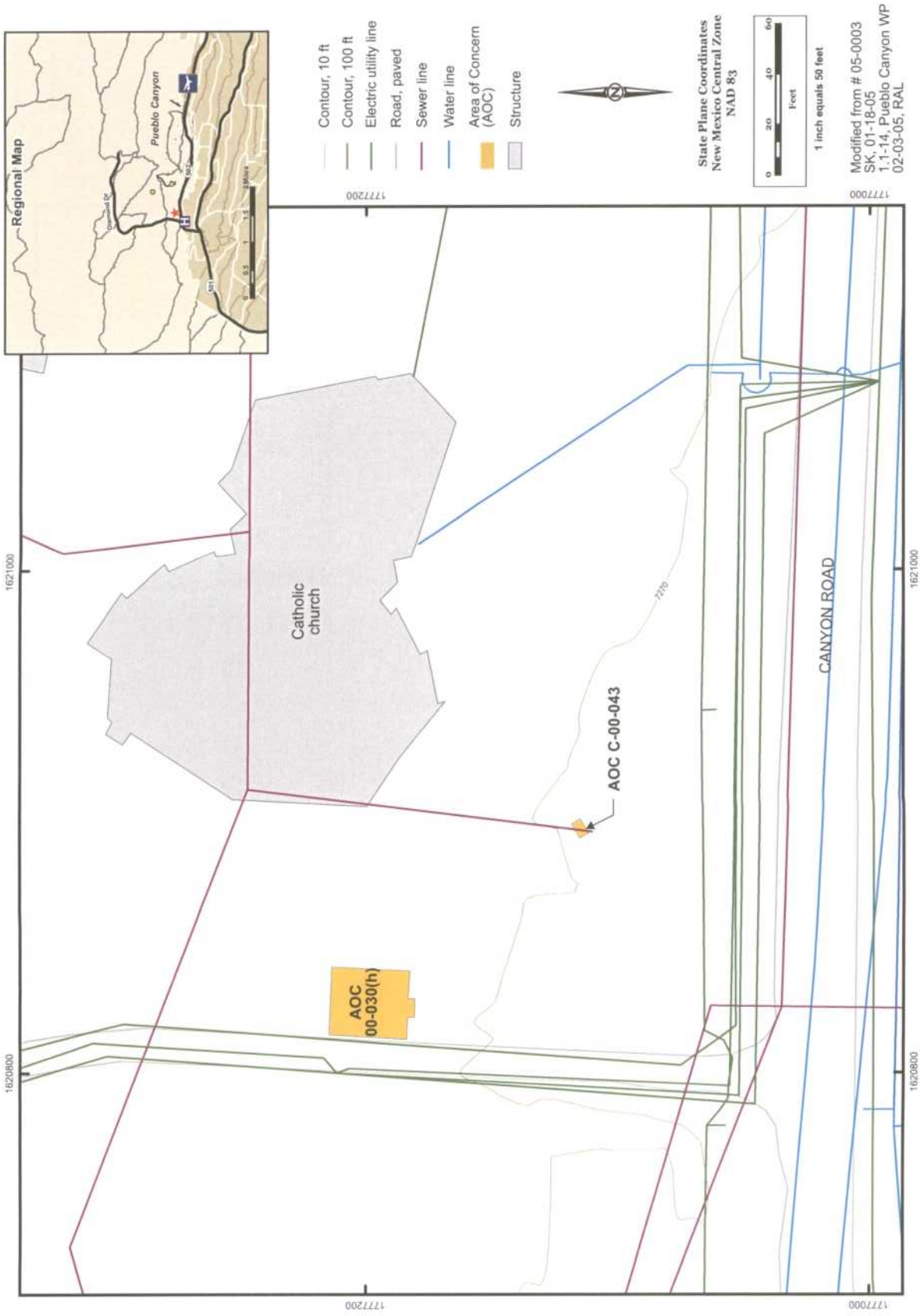

Figure 1.1-15. Location of AOC C-00-043, manhole (removed)

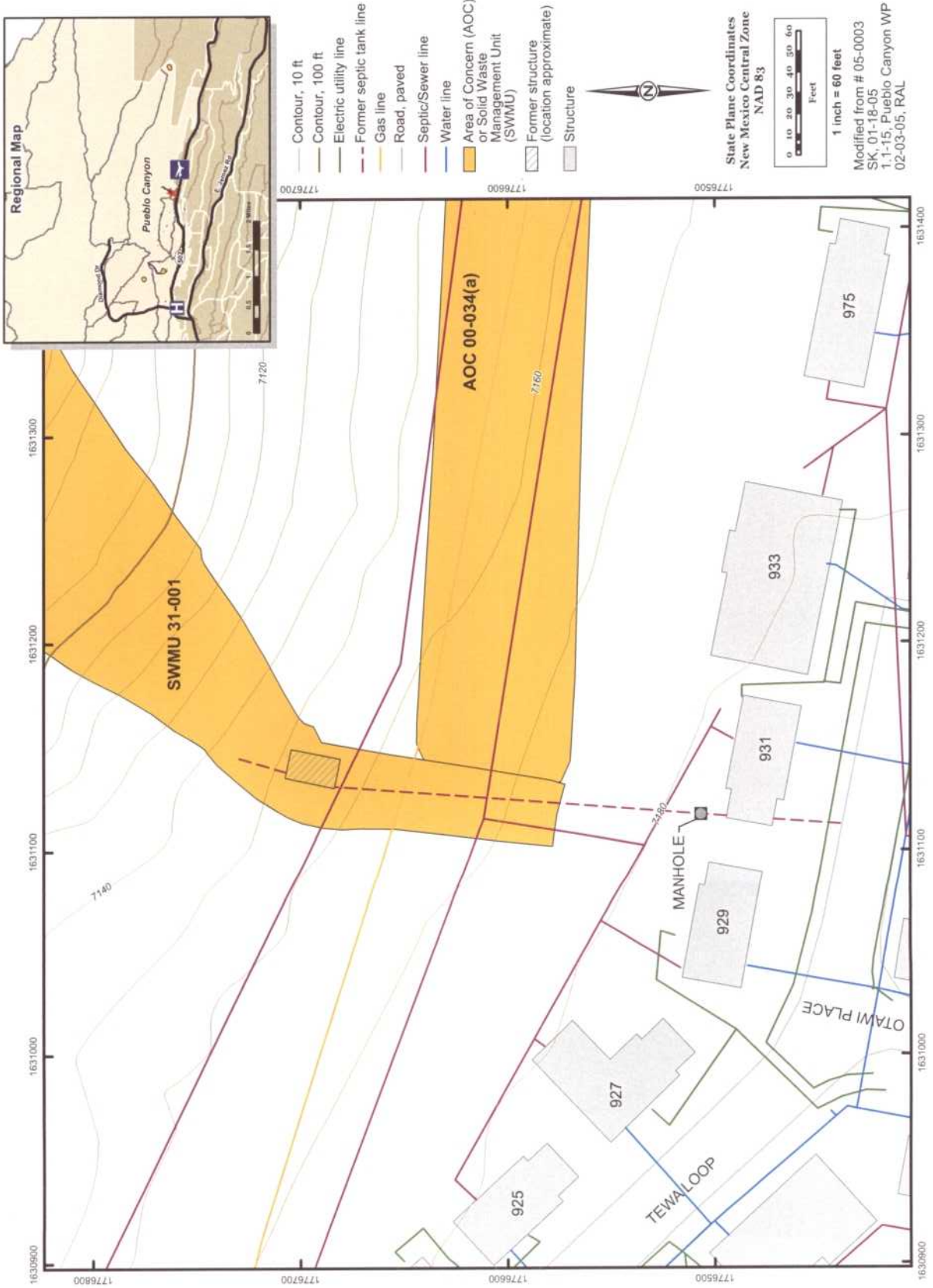

Figure 1.1-16. Location of SWMU 31-001, septic system

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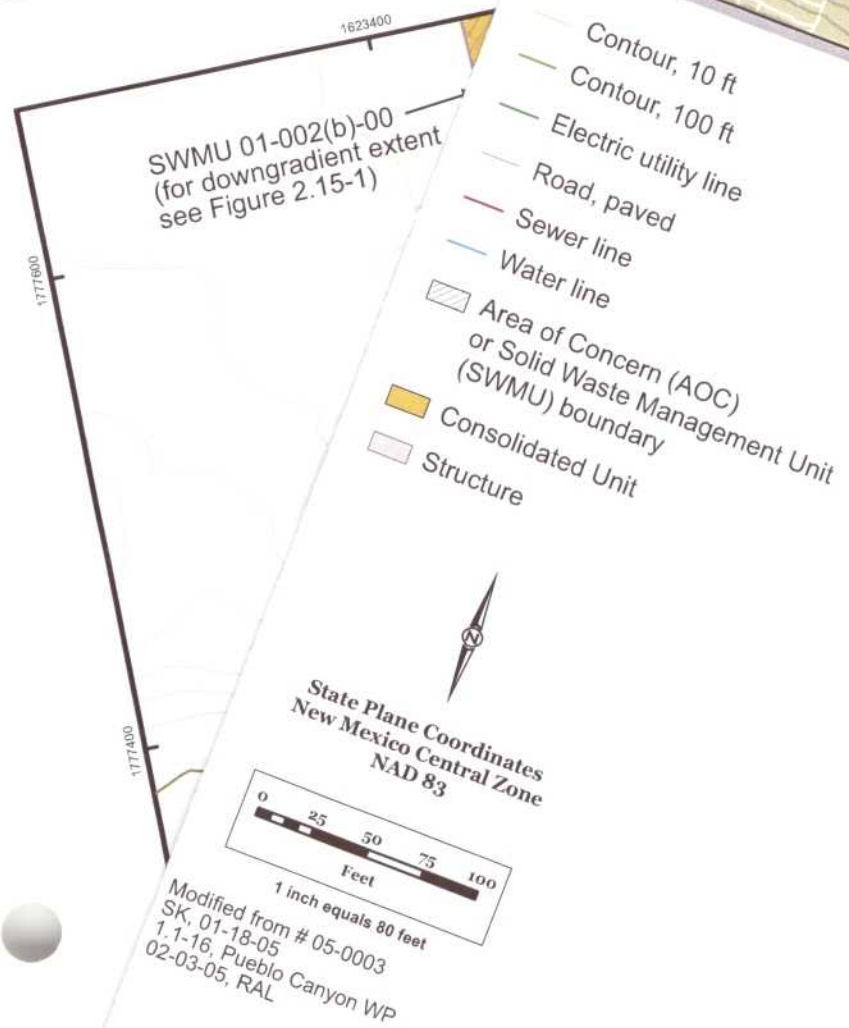

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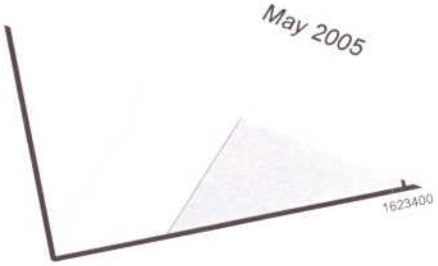


May 2005

Figure 1.1-17. Location of Consolidated Unit -

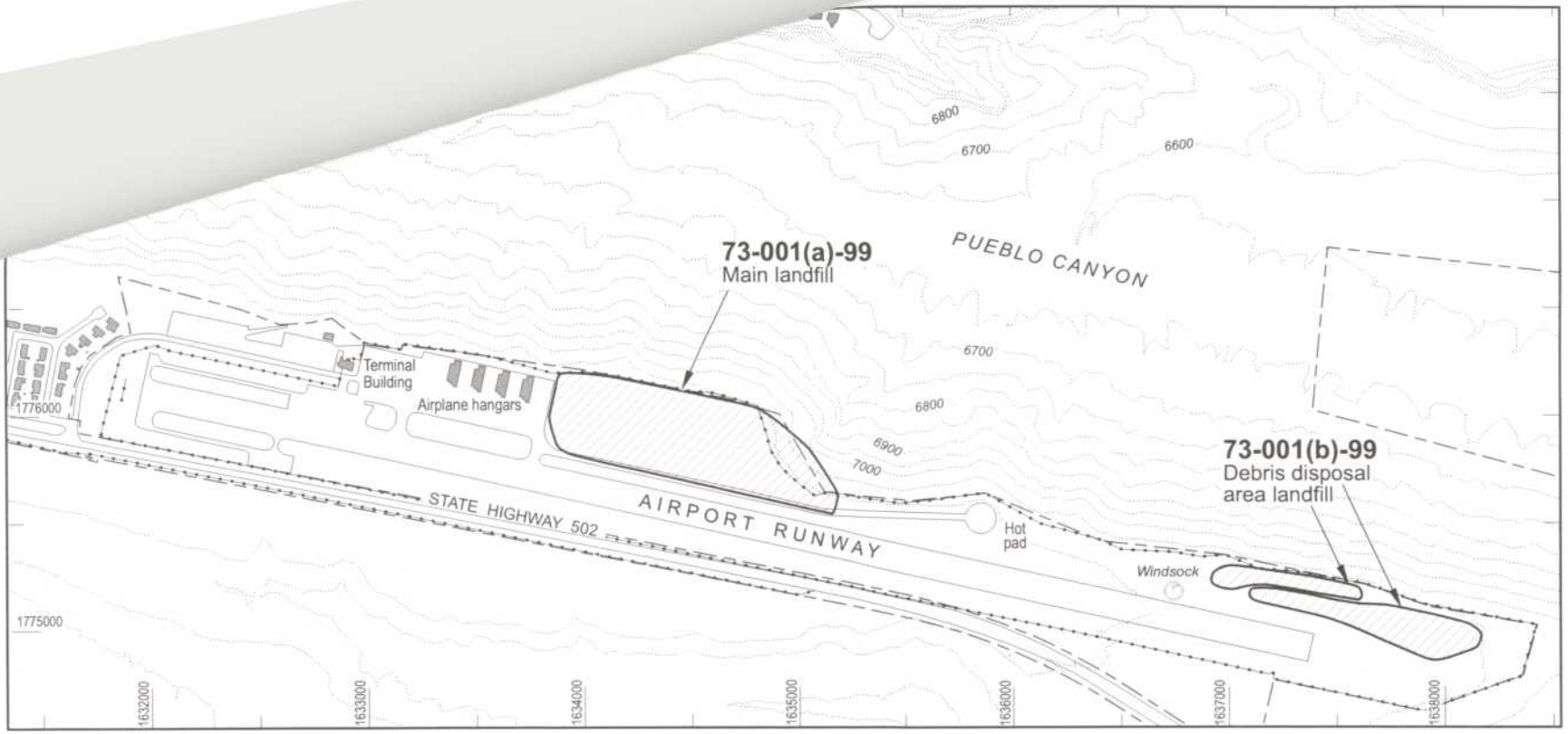


Figure 1.1-18. Locations of Consolidated Units 73-001(a)-99 and 73-001(b)-99, former landfills

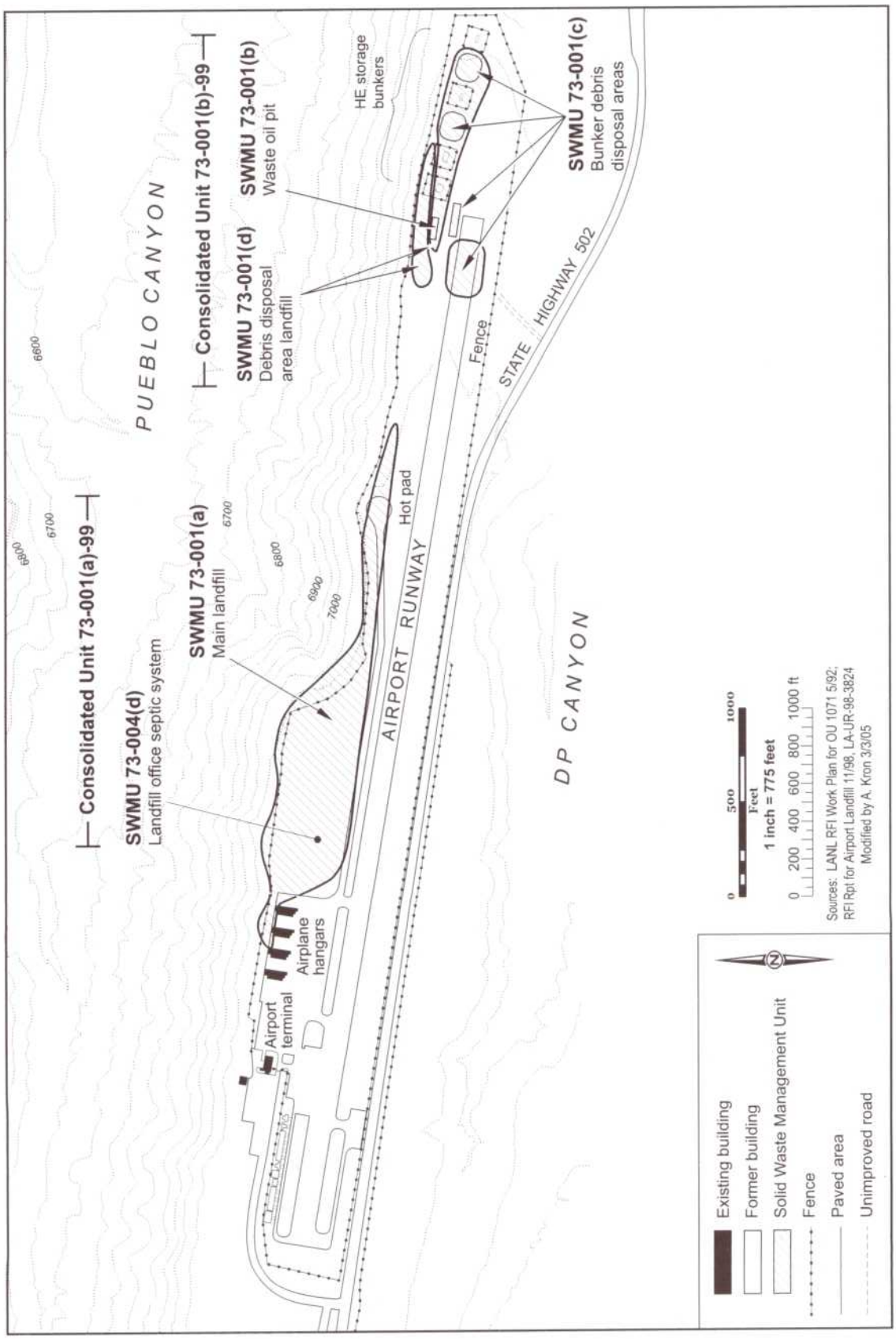


Figure 1.1-19. Detail of locations within Consolidated Units 73-001(a)-99 and 73-001(b)-99

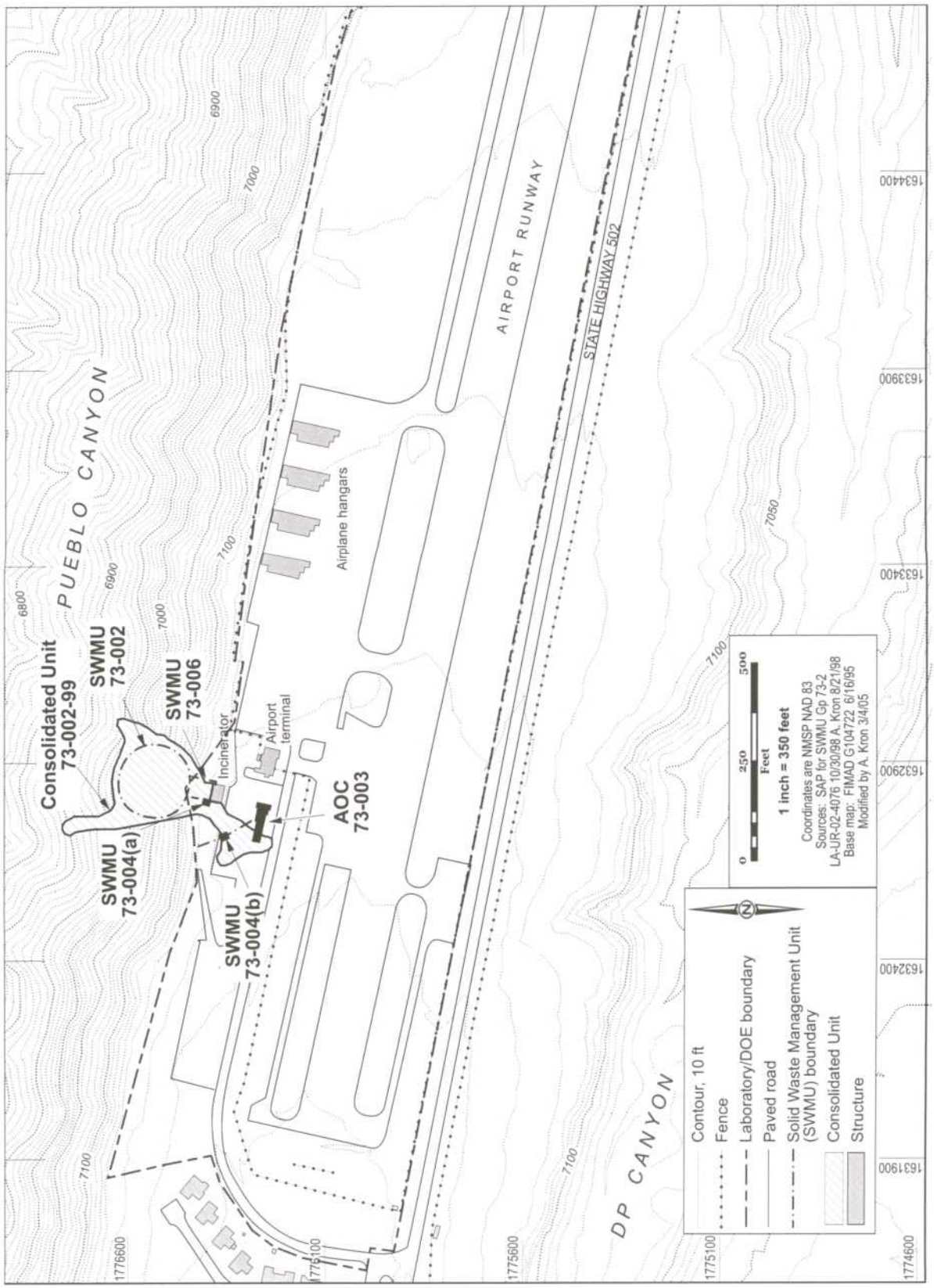


Figure 1.1-20. Location of Consolidated Unit 73-002-99, miscellaneous airport structures

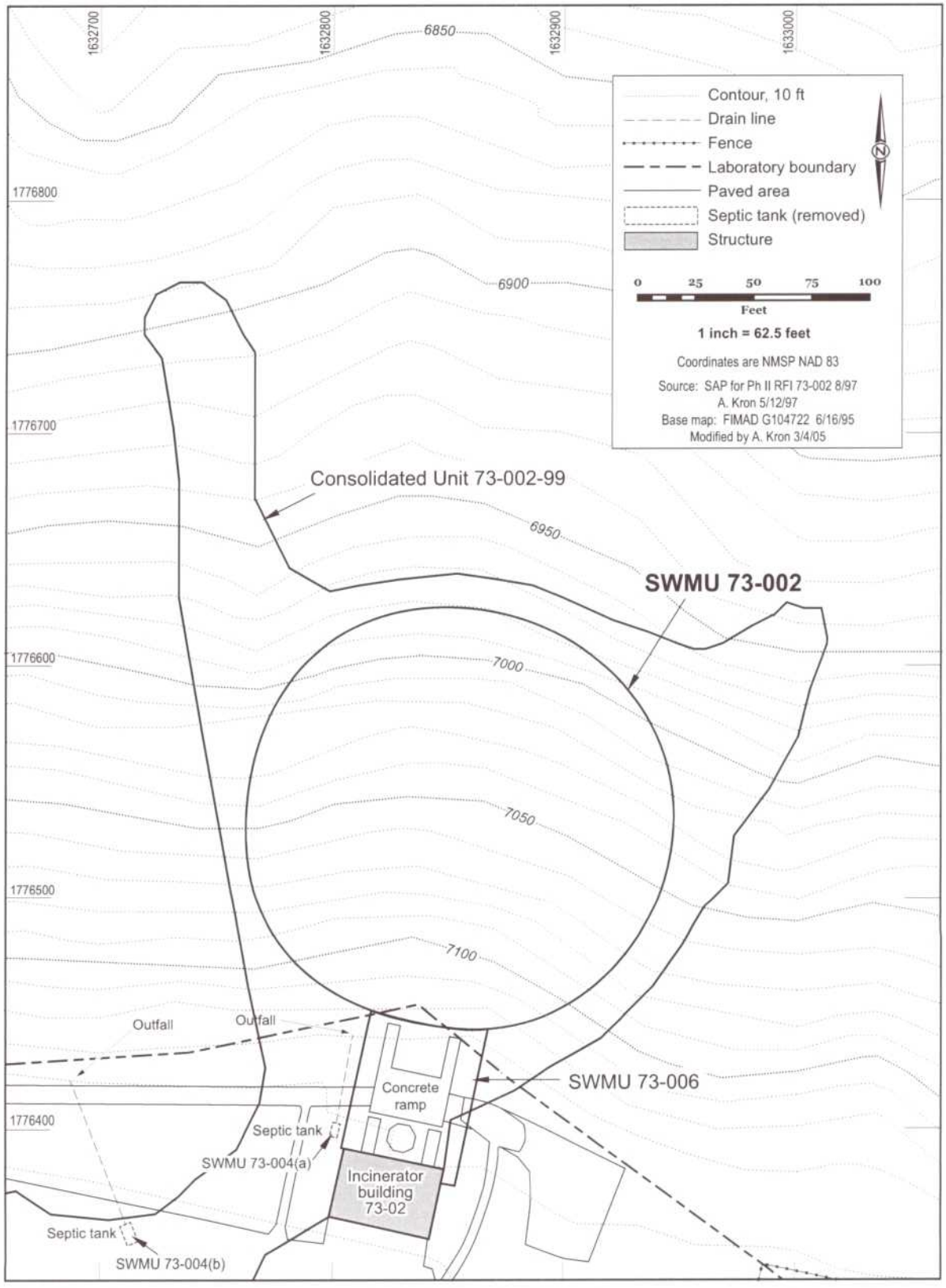


Figure 1.1-21. Location of SWMU 73-002, incinerator surface disposal

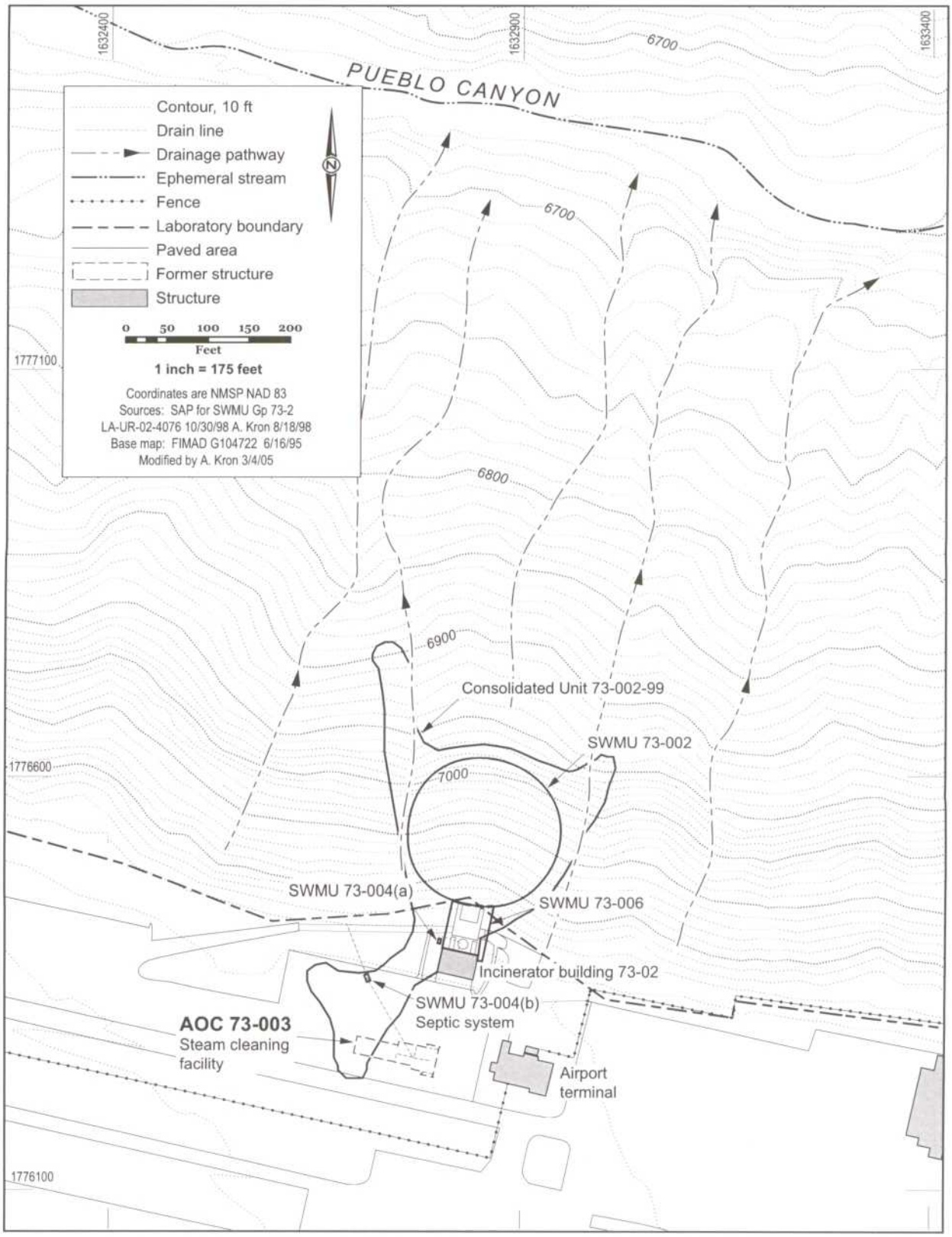


Figure 1.1-22. Location of AOC 73-003, steam-cleaning plant

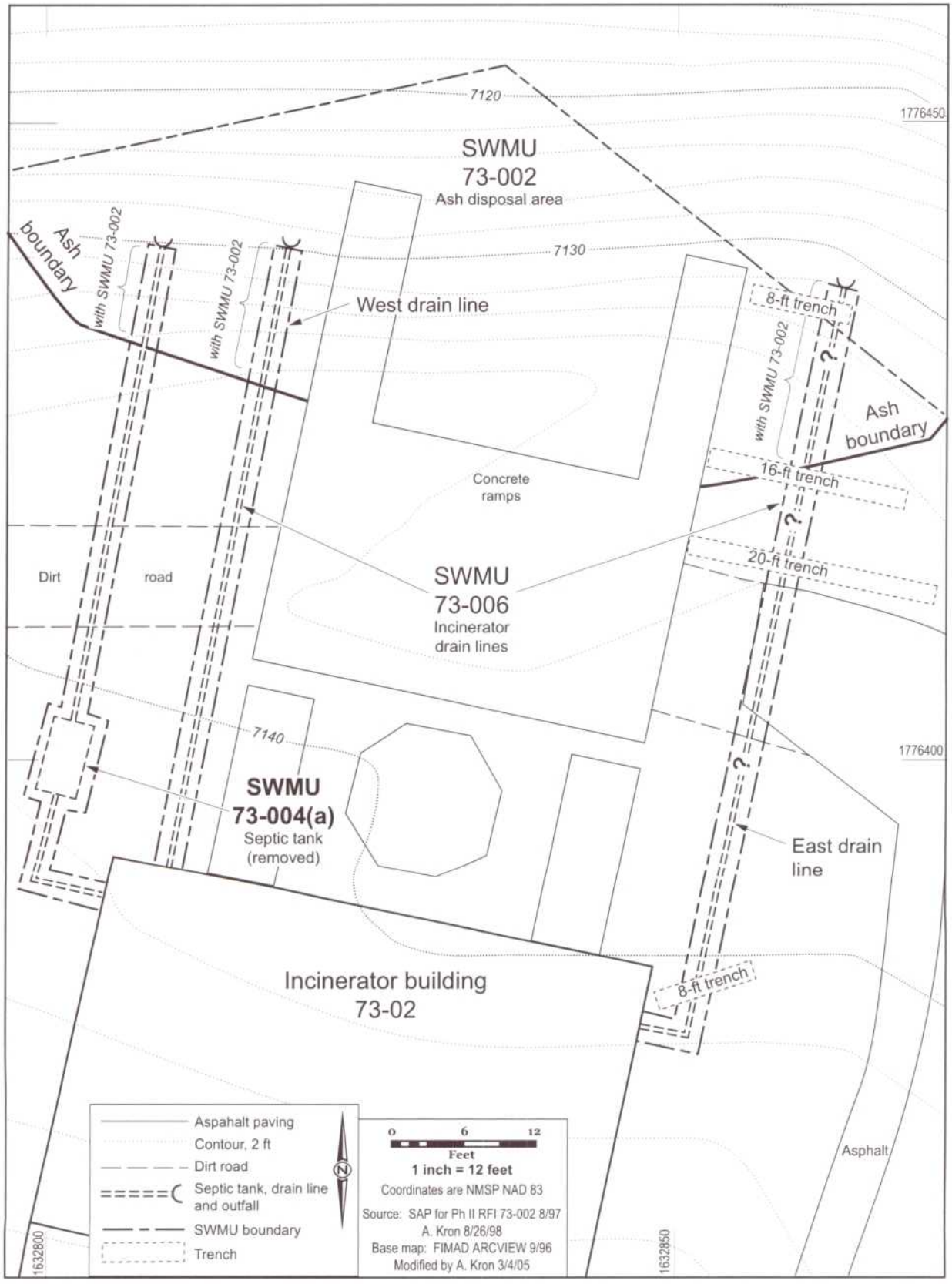


Figure 1.1-23. Location of SWMU 73-004(a), septic system

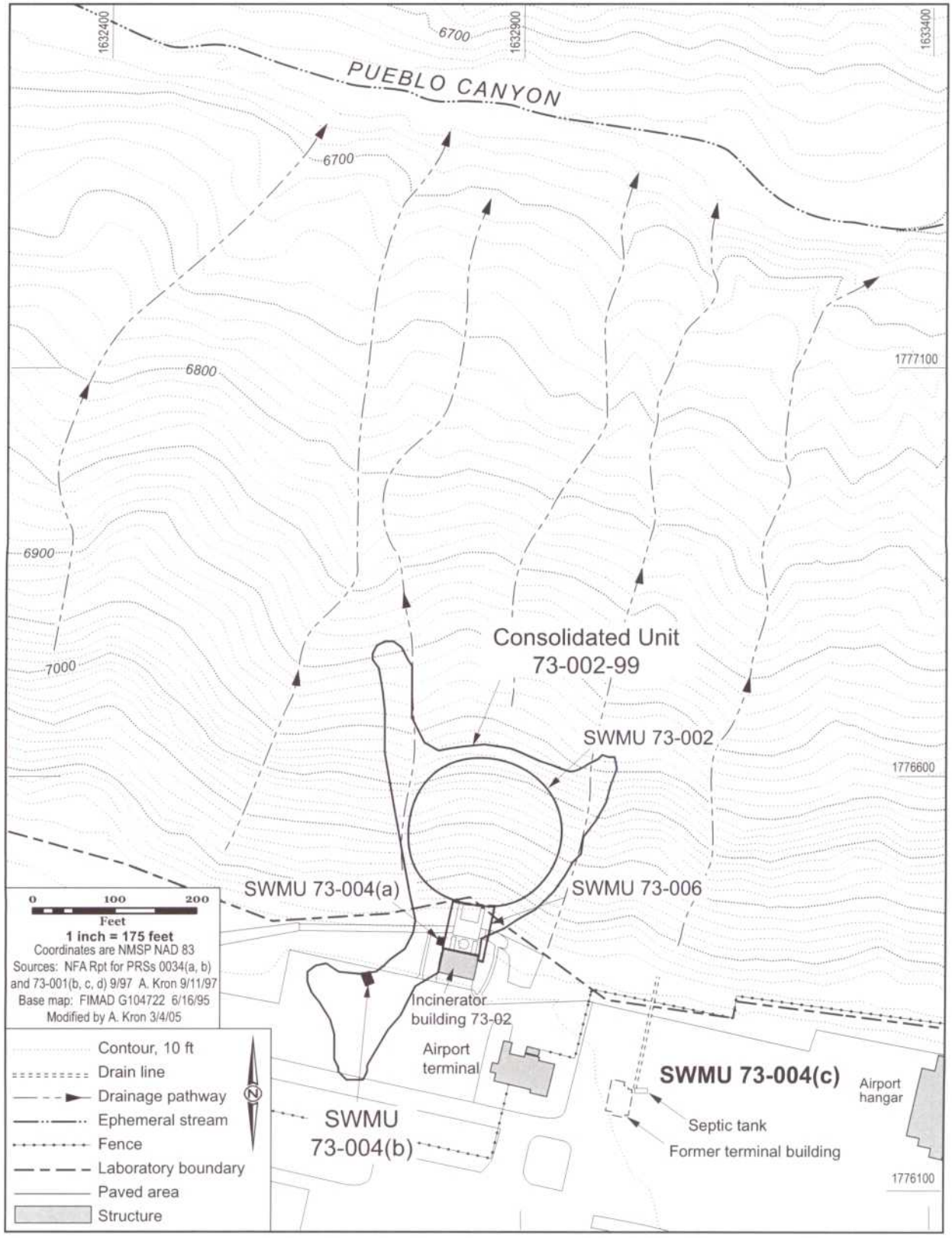


Figure 1.1-24. Location of SWMU 73-004(c), septic system

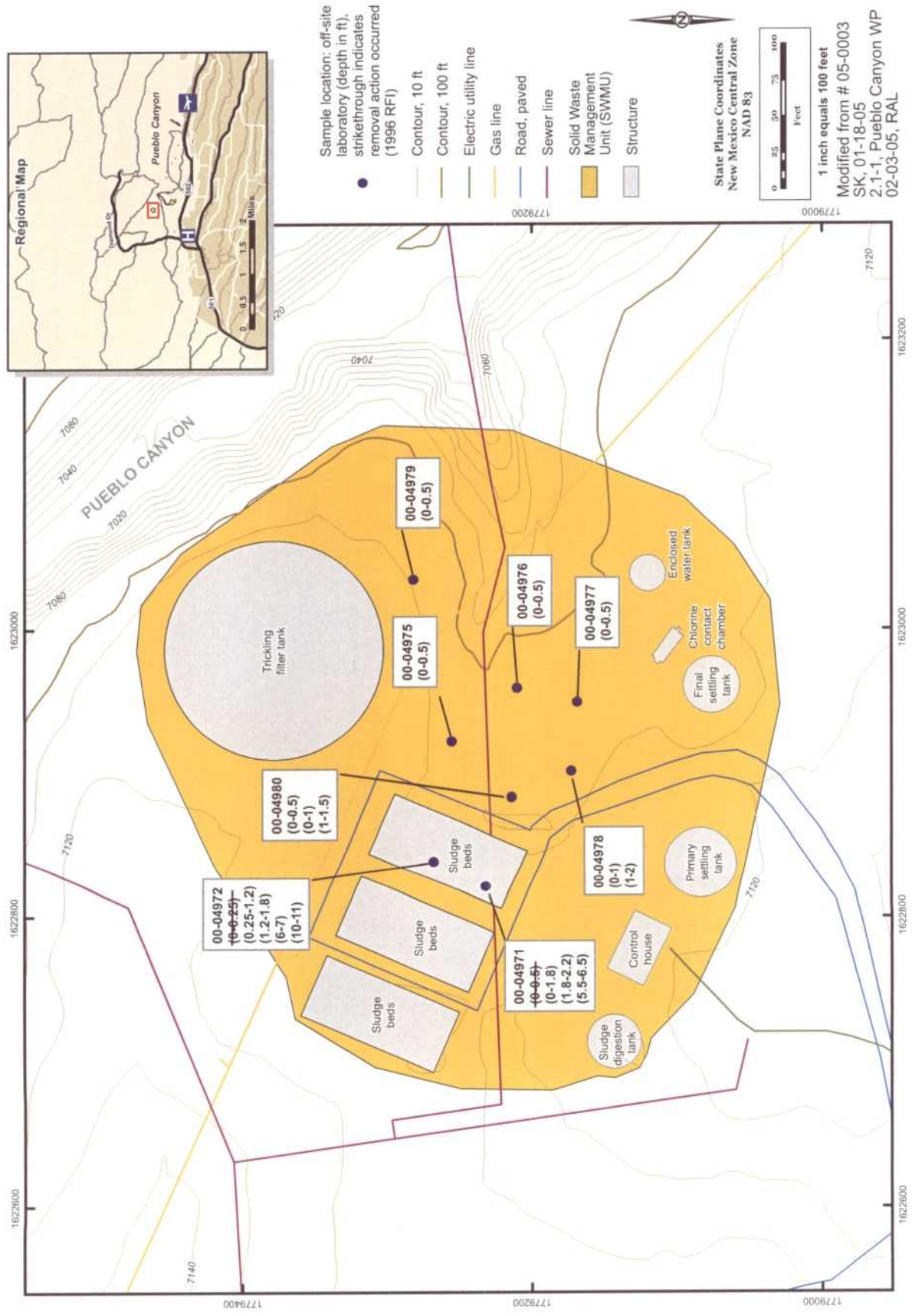


Figure 2.1-1. SWMU 00-018(a) historical sampling locations and depths

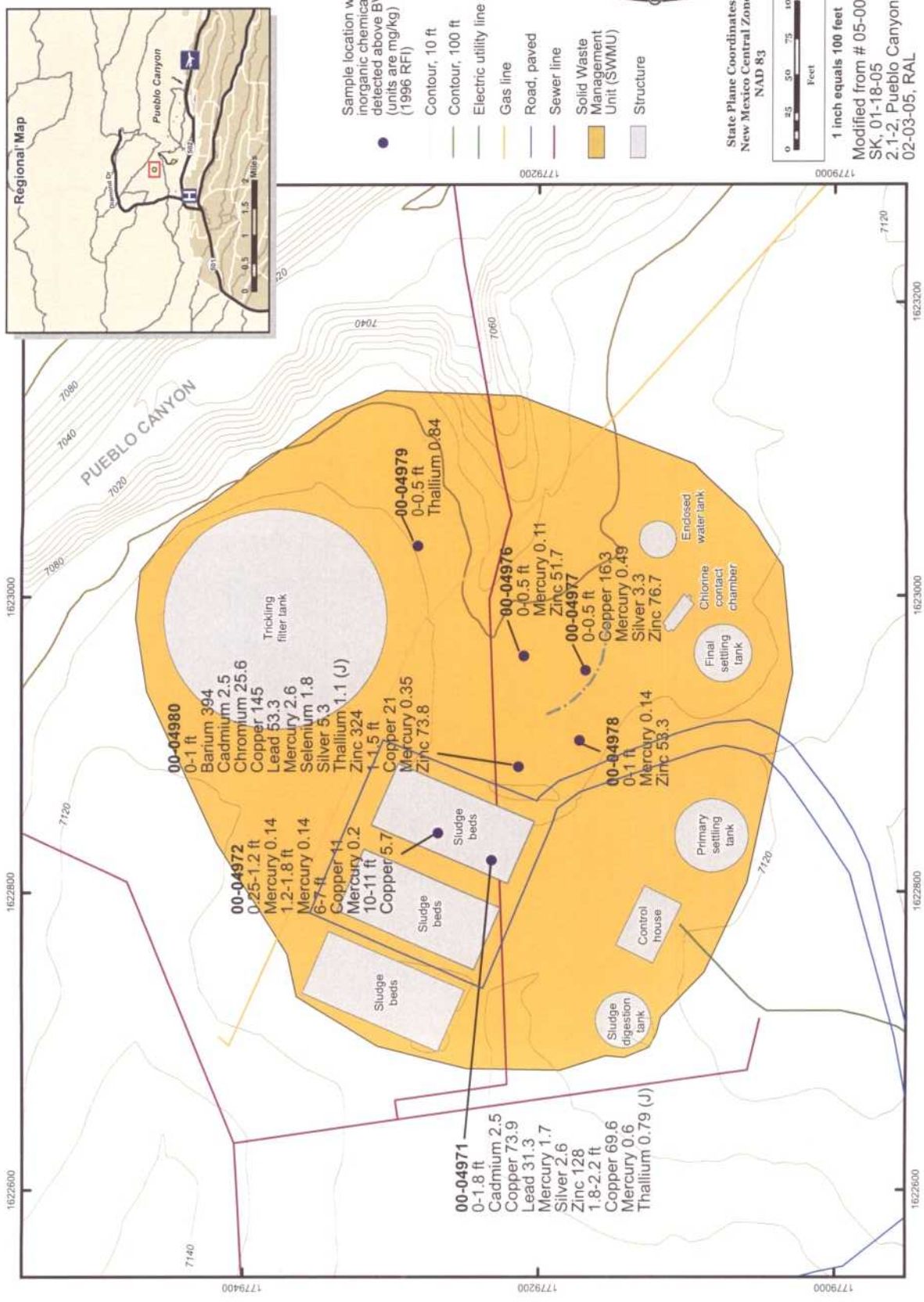


Figure 2.1-2. SWMU 00-018(a) historical sampling locations with inorganic chemicals detected above BVs

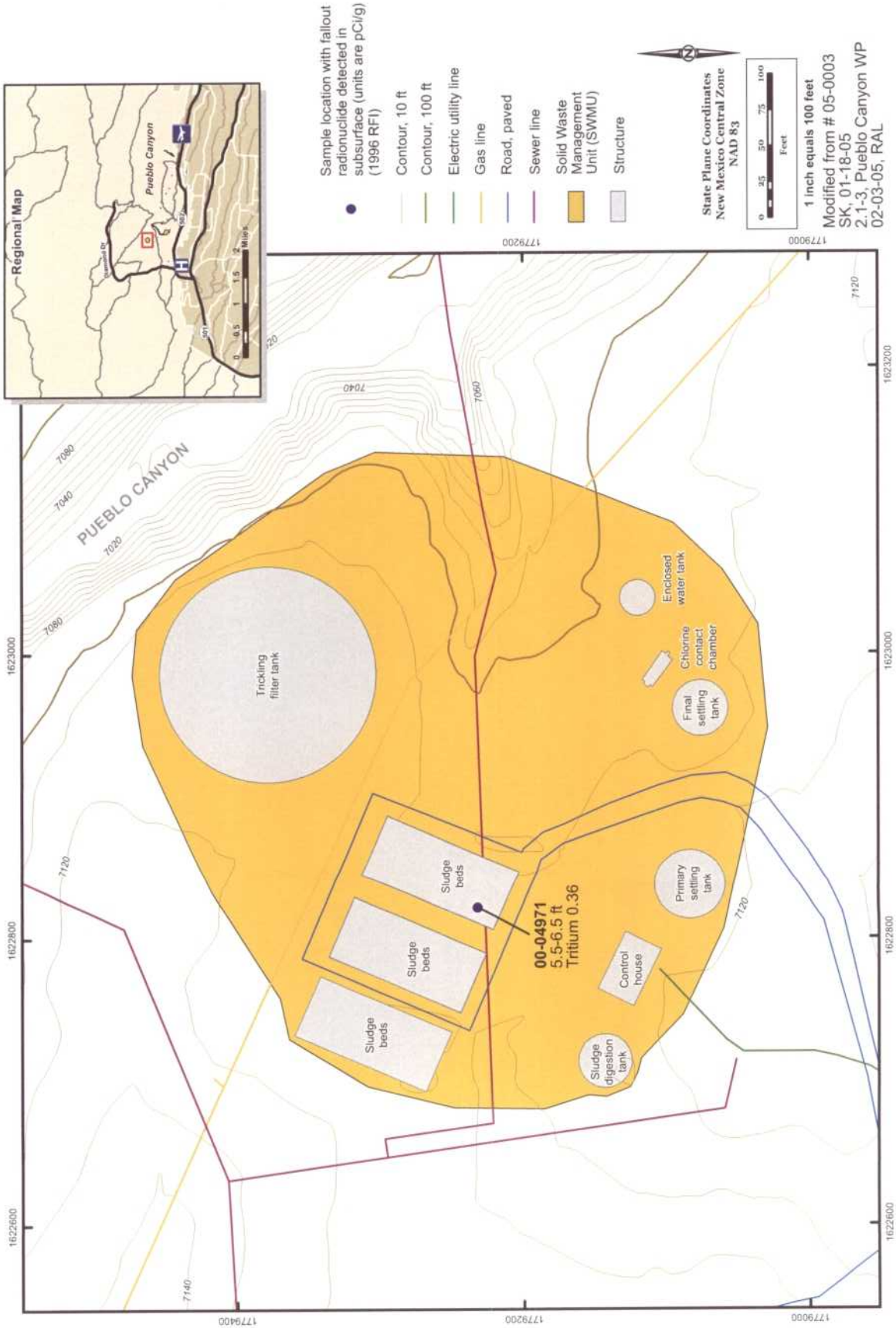


Figure 2.1-3. SWMU 00-018(a) historical sampling locations with detected radionuclides

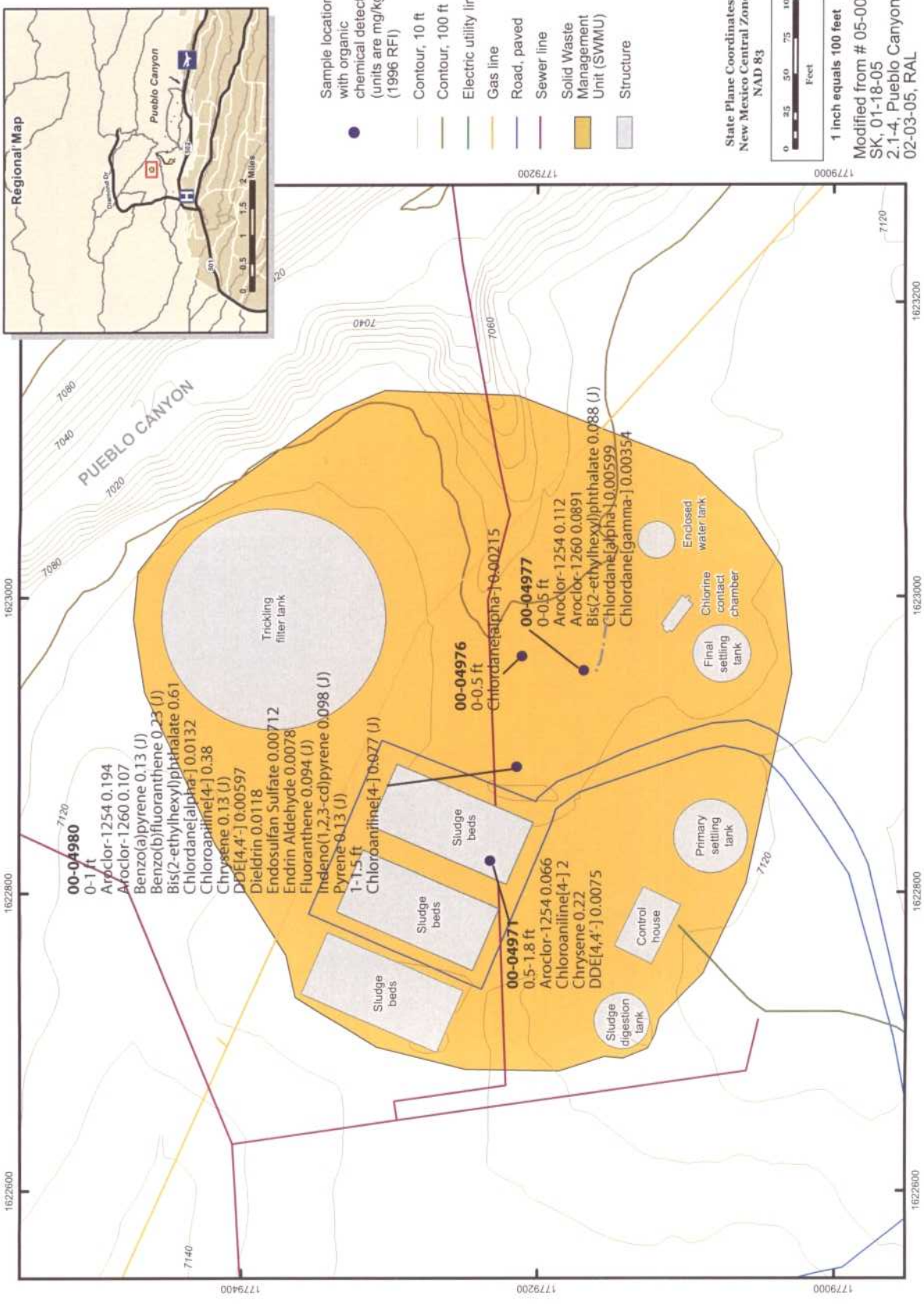


Figure 2.1-4. SWMU 00-018(a) historical sampling locations with organic chemicals detected

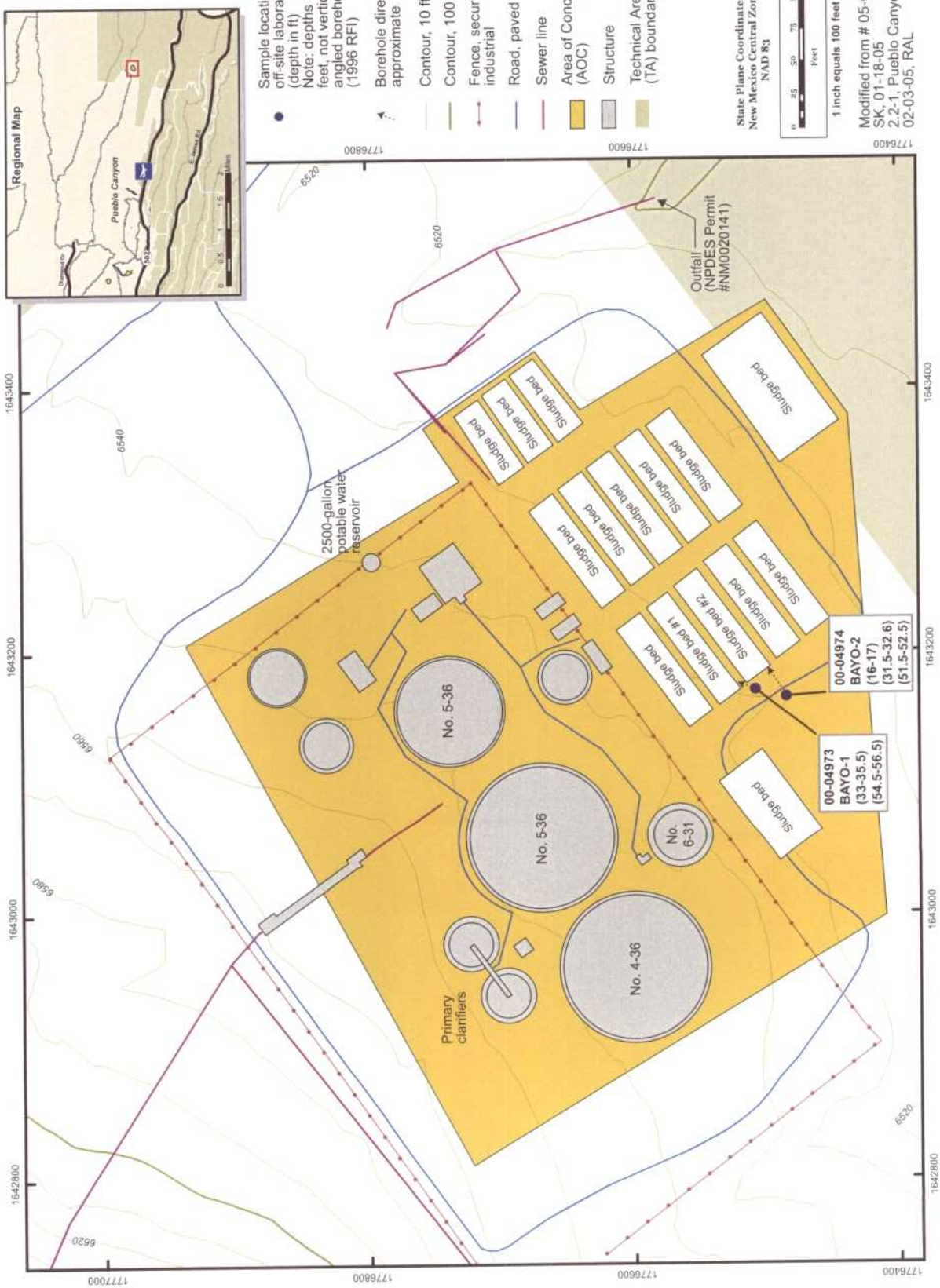


Figure 2.2-1. AOC 00-018(b) historical sampling locations and depths

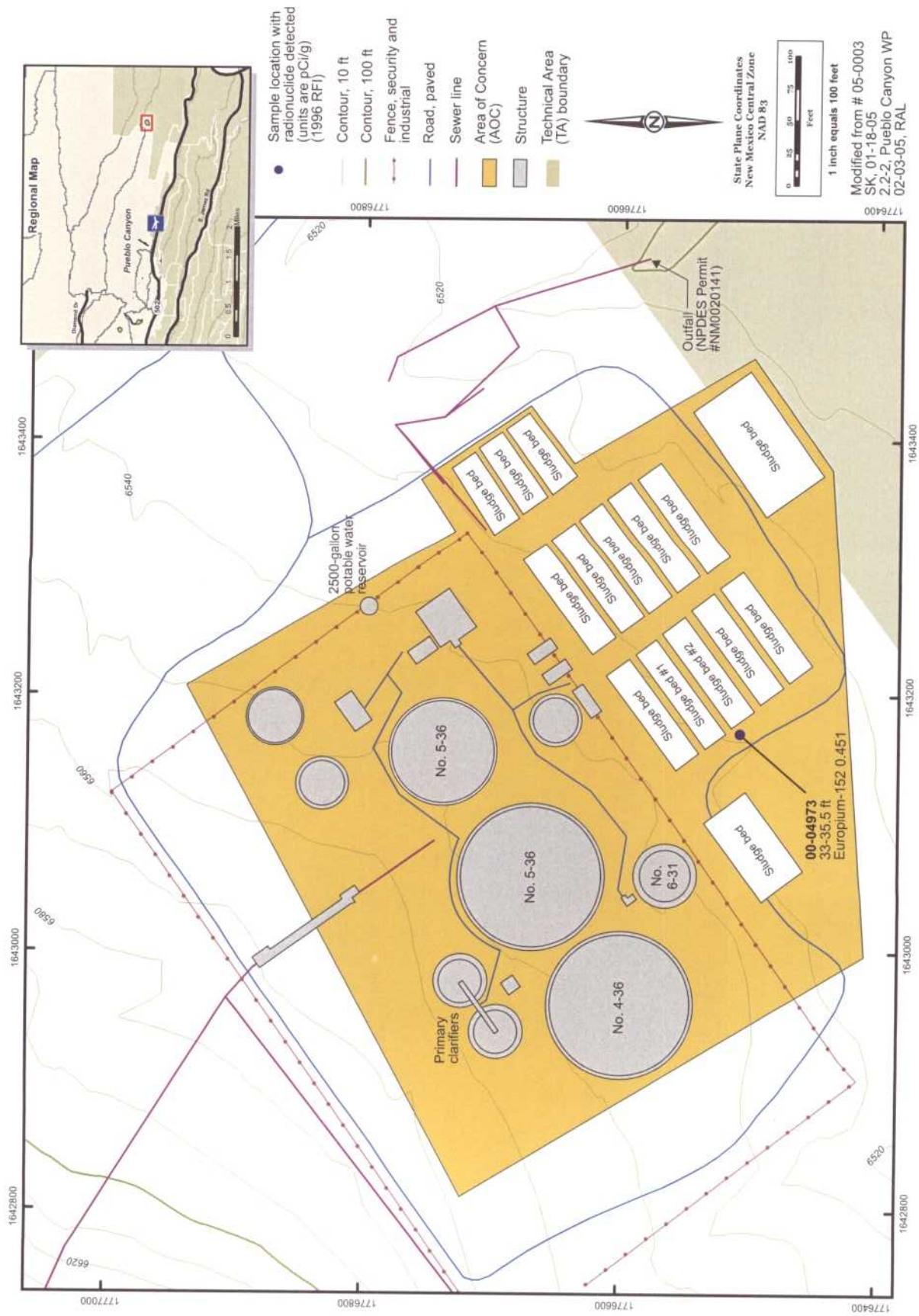


Figure 2.2-2. AOC 00-018(b) historical sampling locations with detected radionuclides

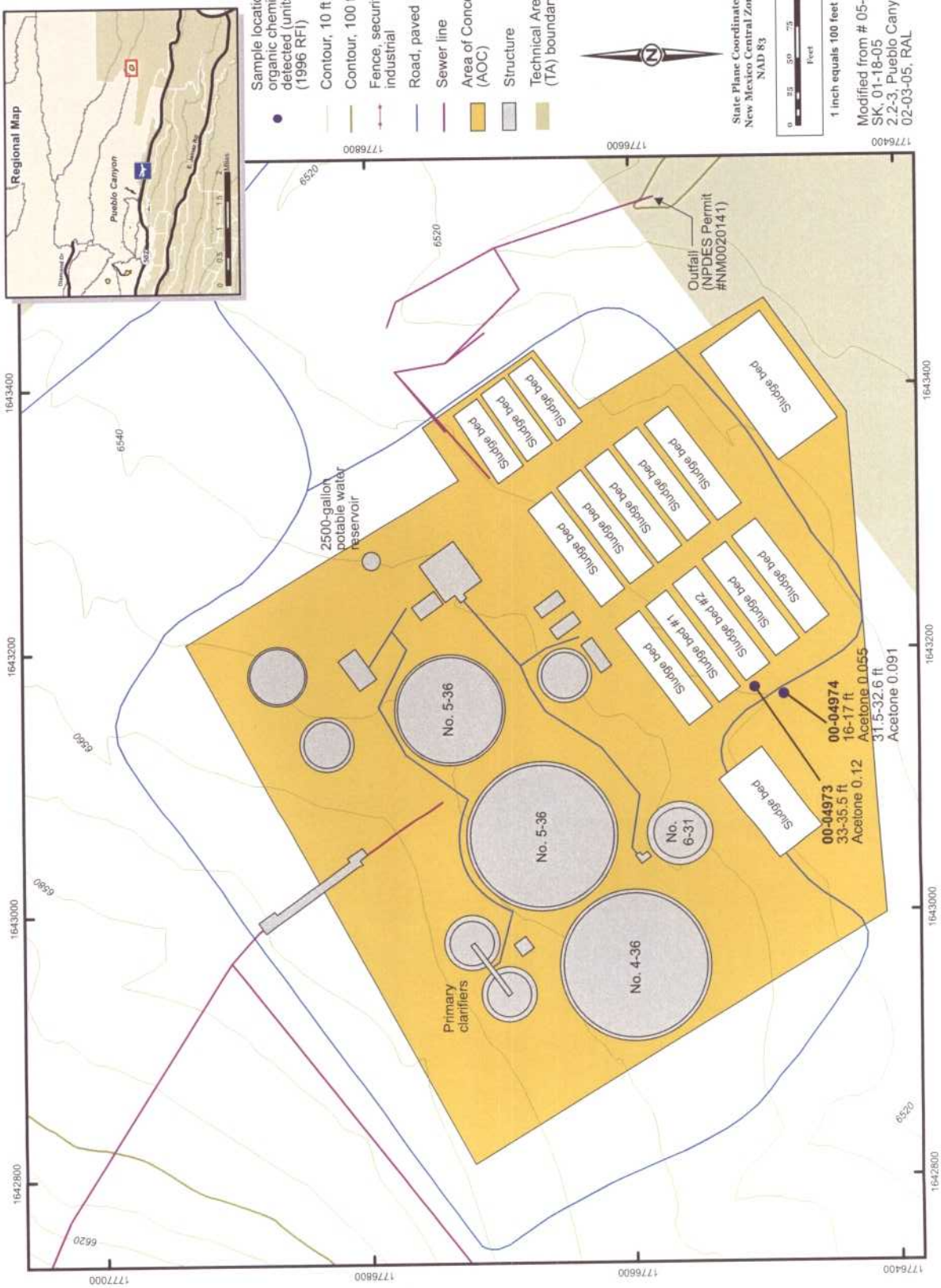


Figure 2.2-3. AOC 00-018(b) historical sampling locations with organic chemicals detected

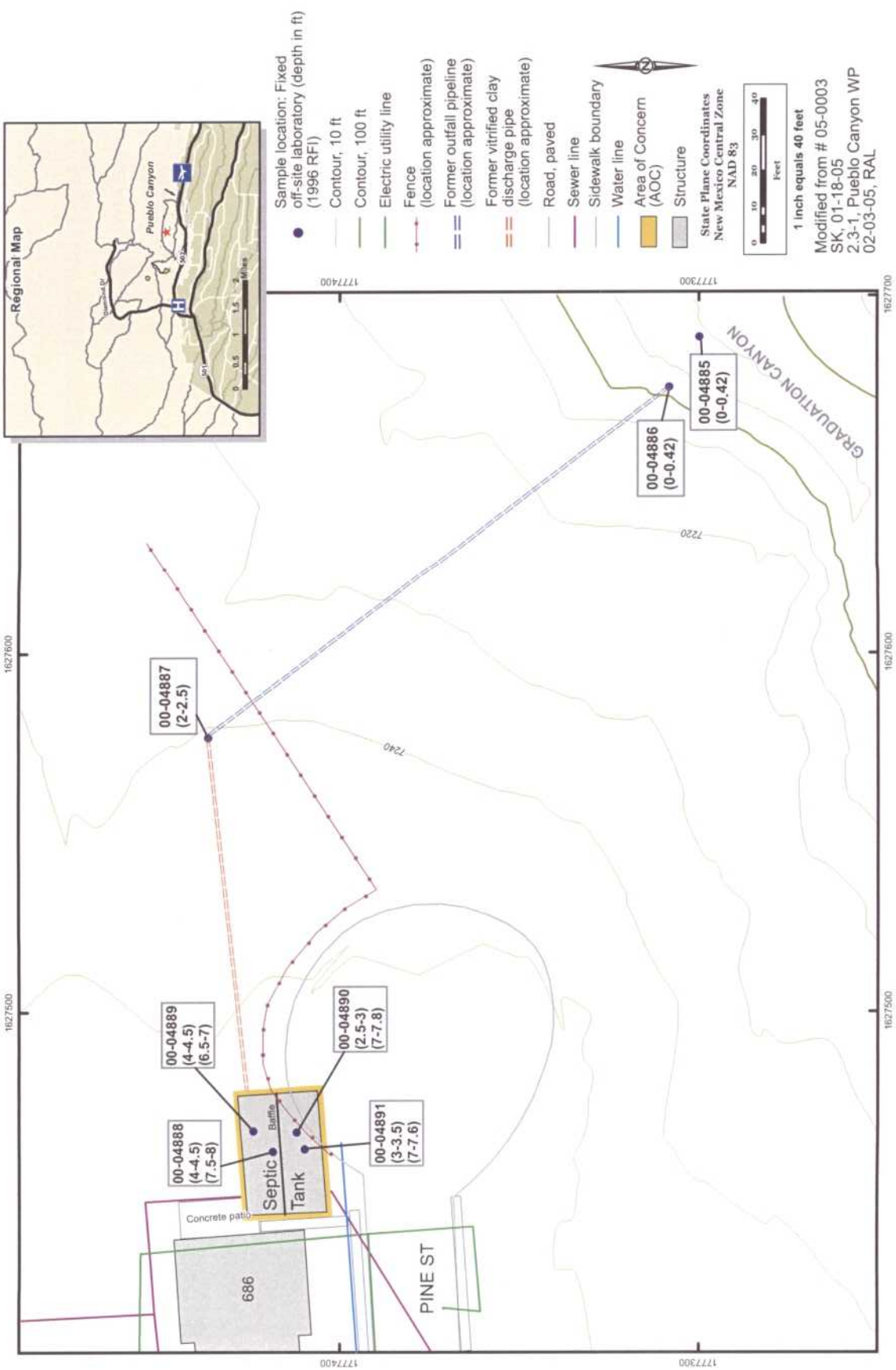


Figure 2.3-1. AOC 00-030(d) historical sampling locations and depths

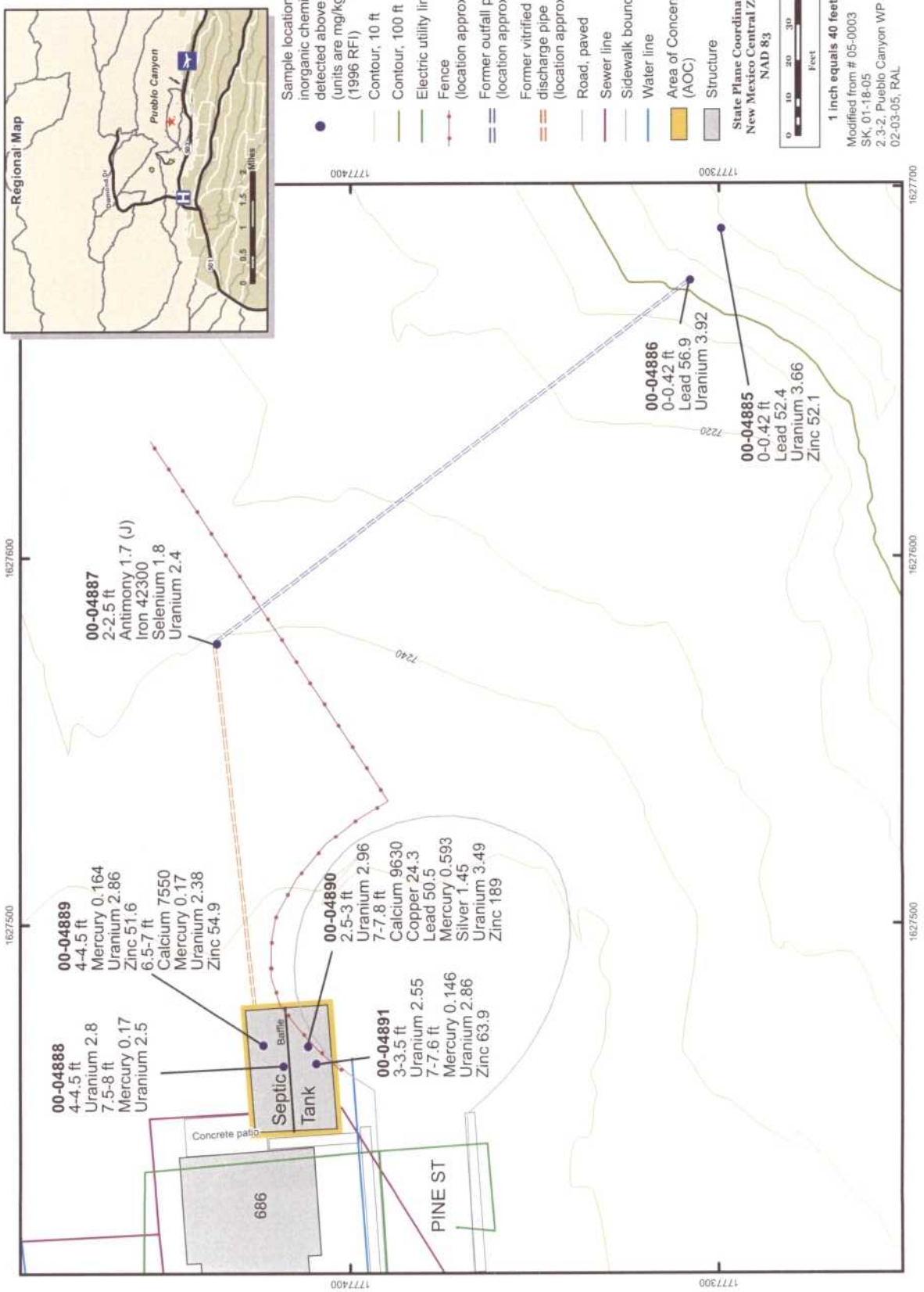


Figure 2.3-2. AOC 00-030(d) historical sampling locations with inorganic chemicals detected above BVs

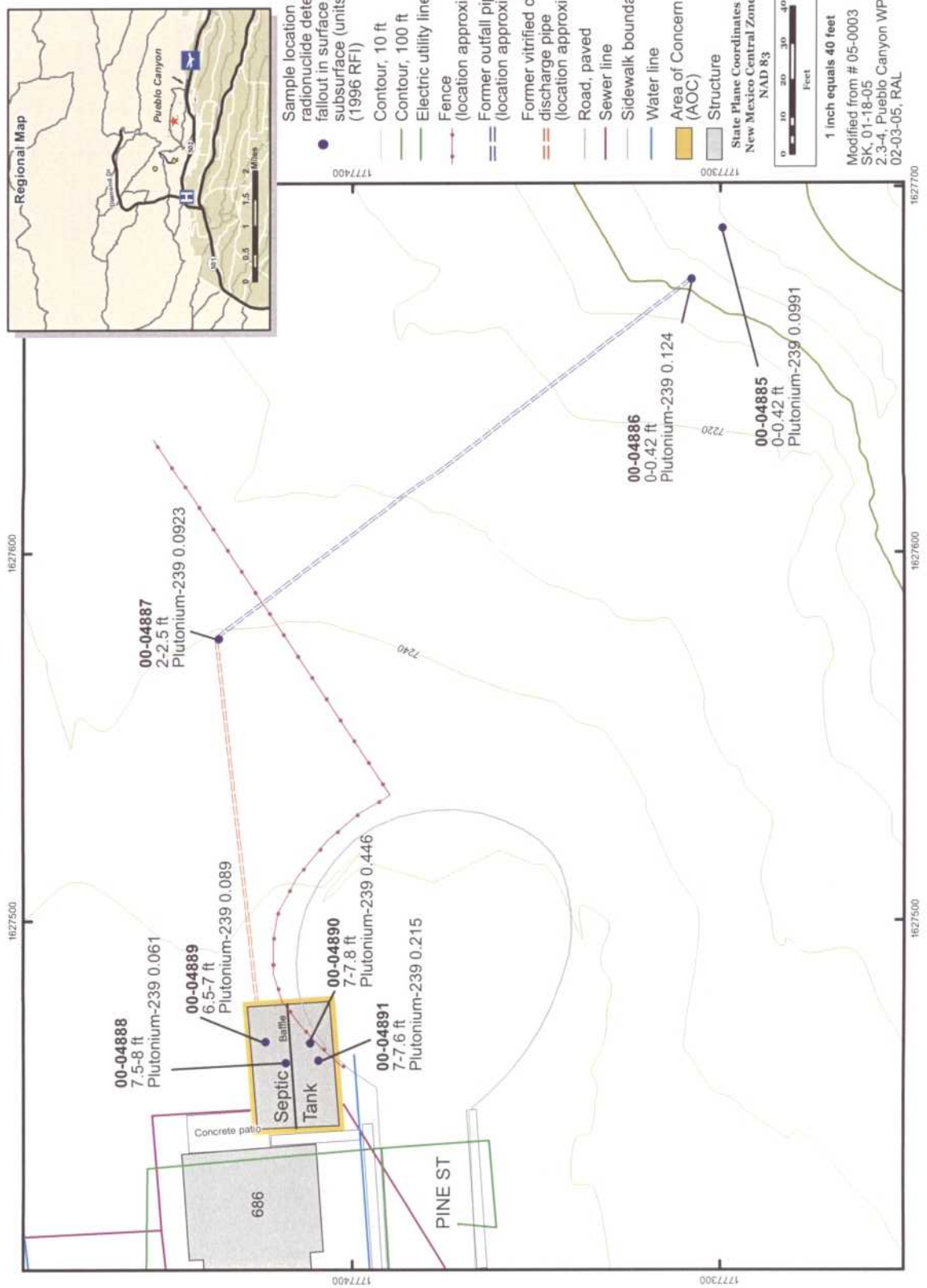


Figure 2.3-3. AOC 00-030(d) historical sampling locations with radionuclides detected above FVs

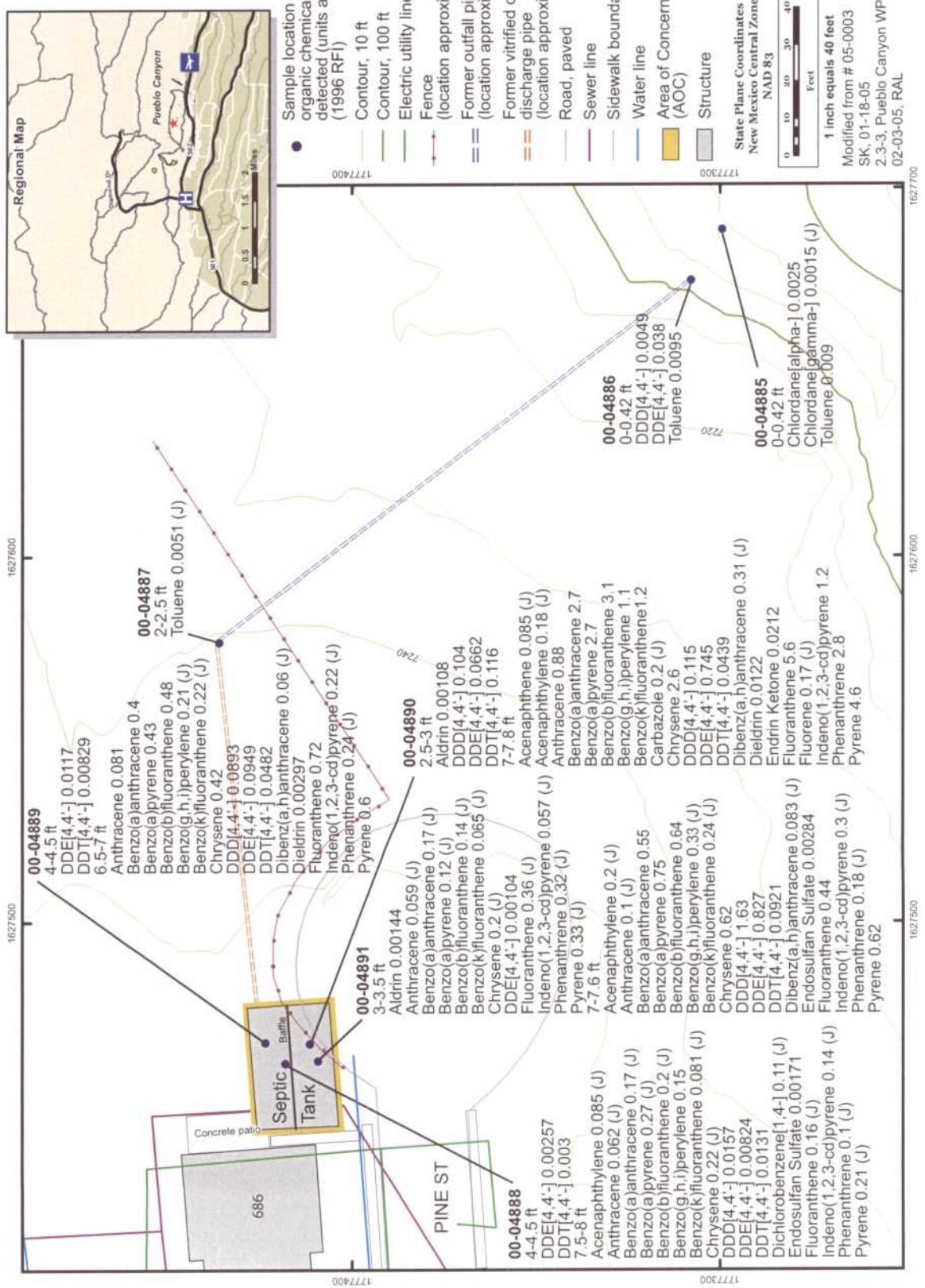


Figure 2.3-4. AOC 00-030(d) historical sampling locations with organic chemicals detected

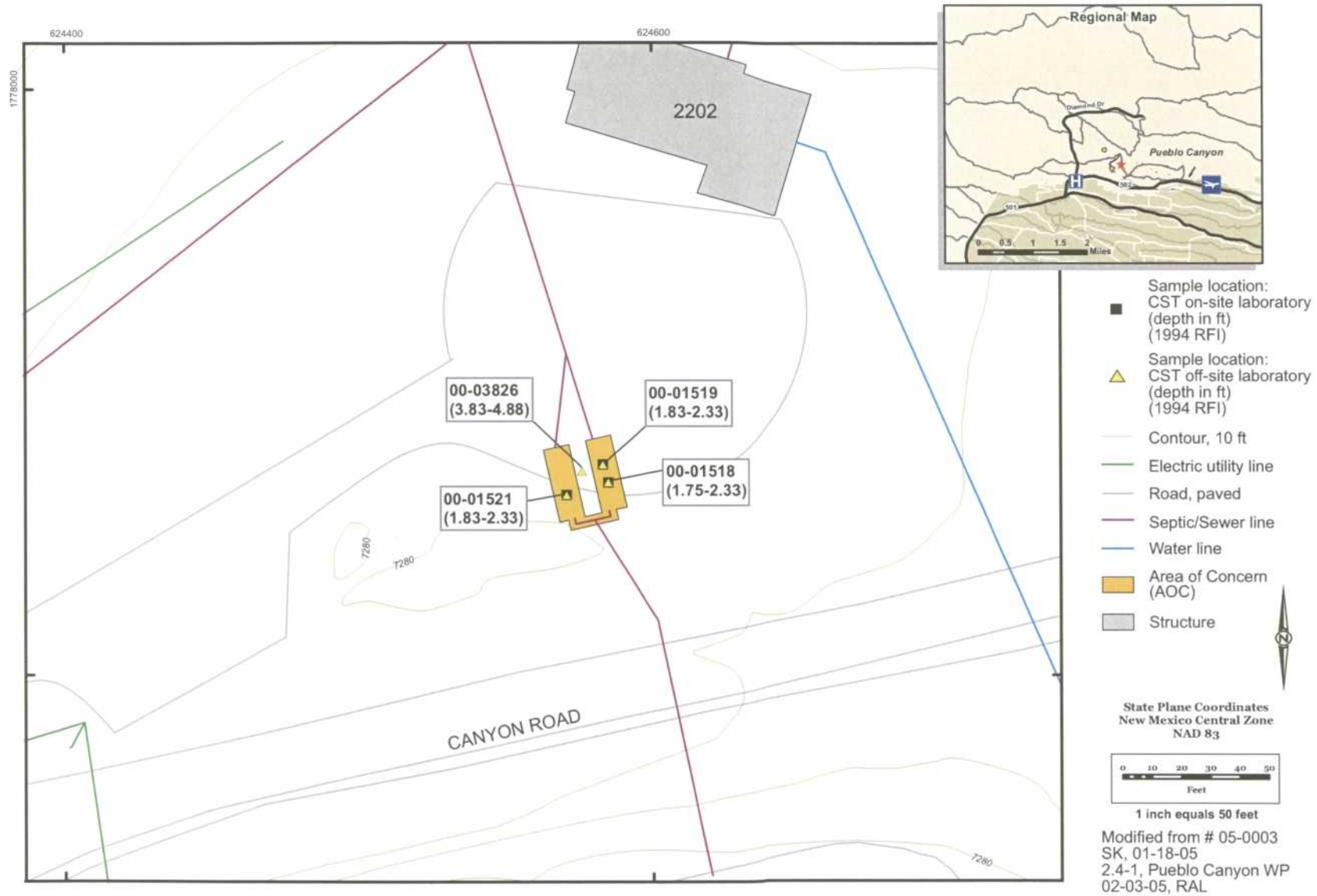


Figure 2.4-1. AOC 00-030(eN) historical sampling locations and depths

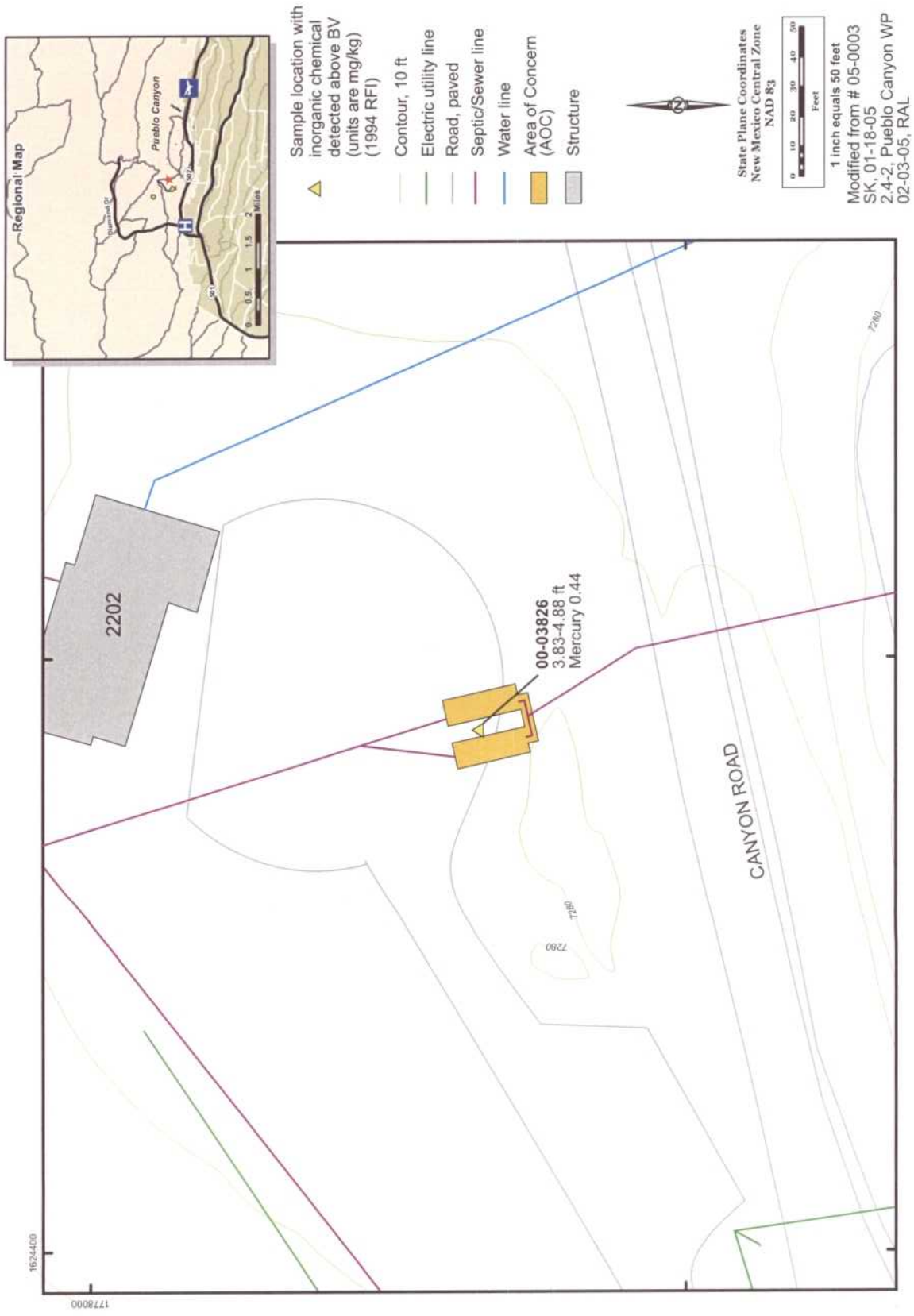


Figure 2.4-2. AOC 00-030(eN) historical sampling locations with inorganic chemicals detected above BVs

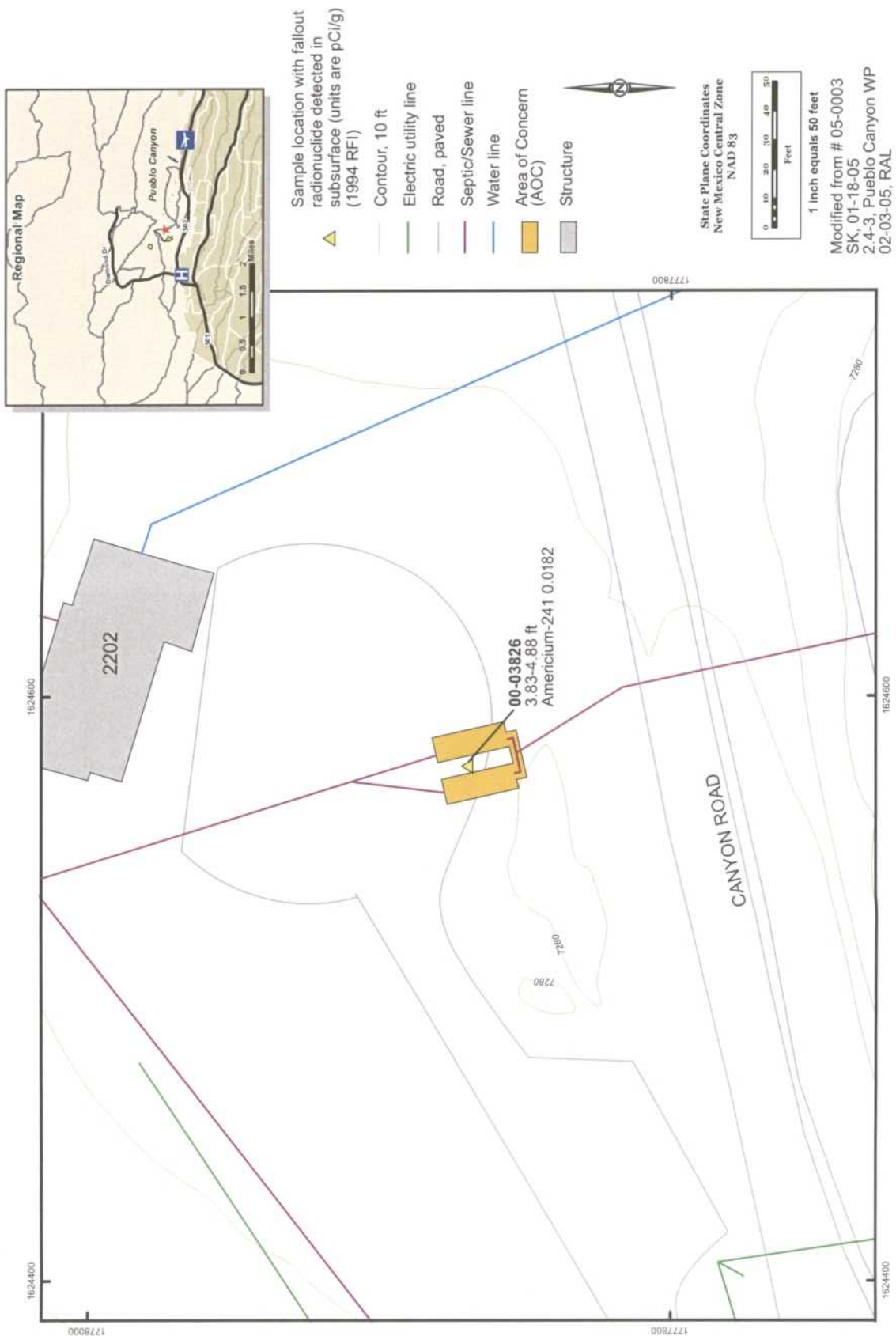


Figure 2.4-3. AOC 00-030(eN) historical sampling locations with detected radionuclides

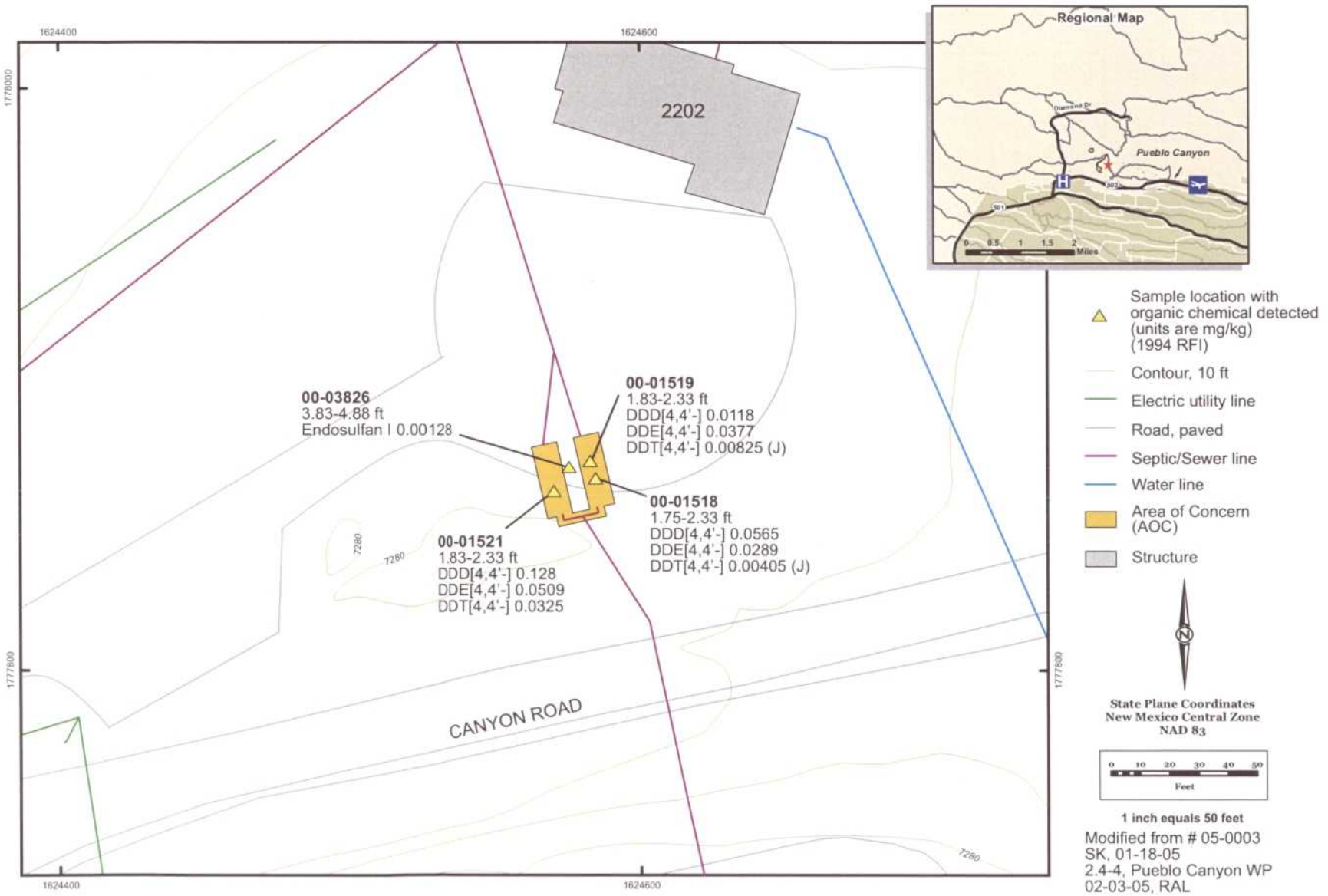


Figure 2.4-4. AOC 00-030(eN) historical sampling locations with organic chemicals detected

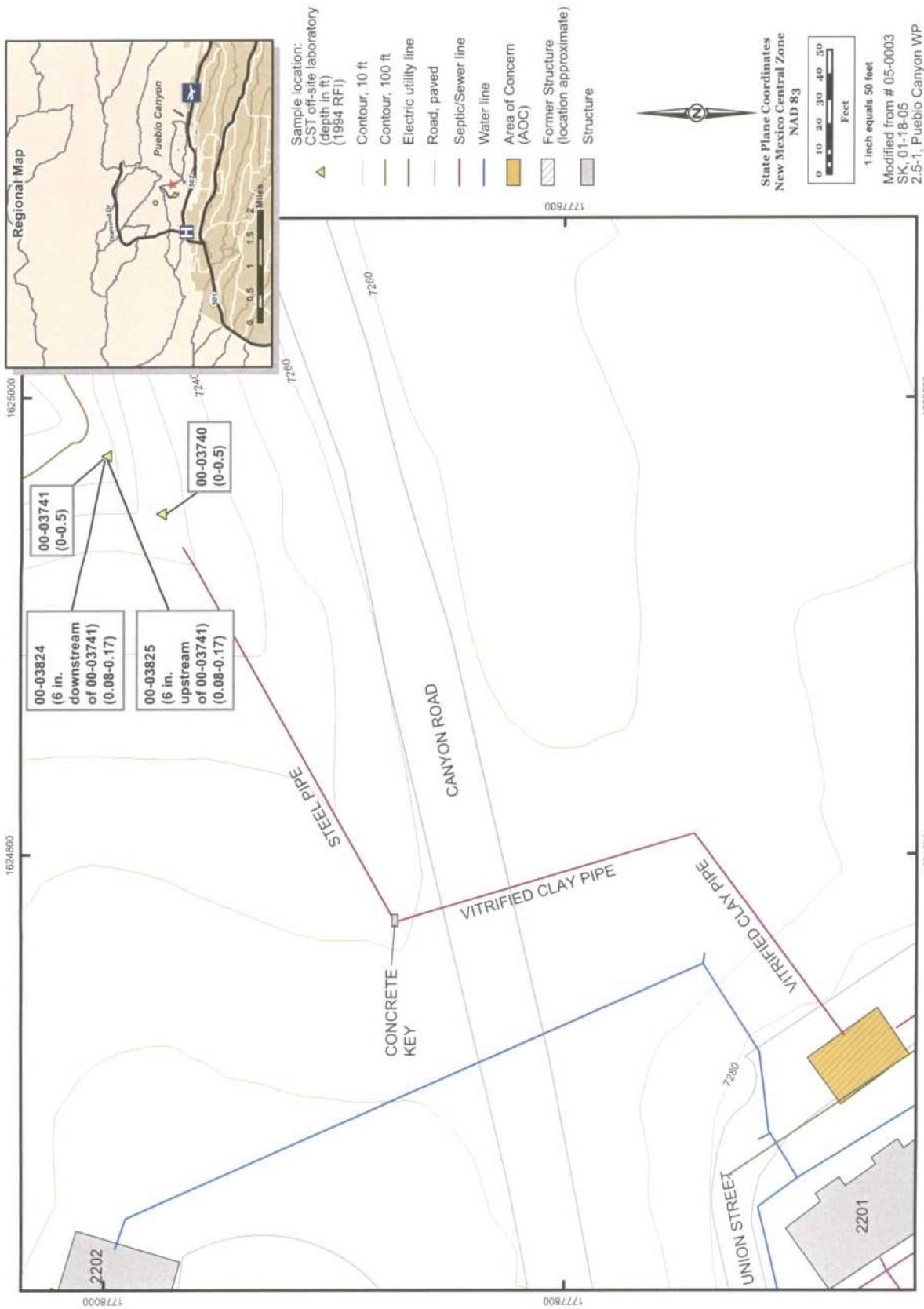


Figure 2.5-1. AOC 00-030(eS) historical sampling locations and depths

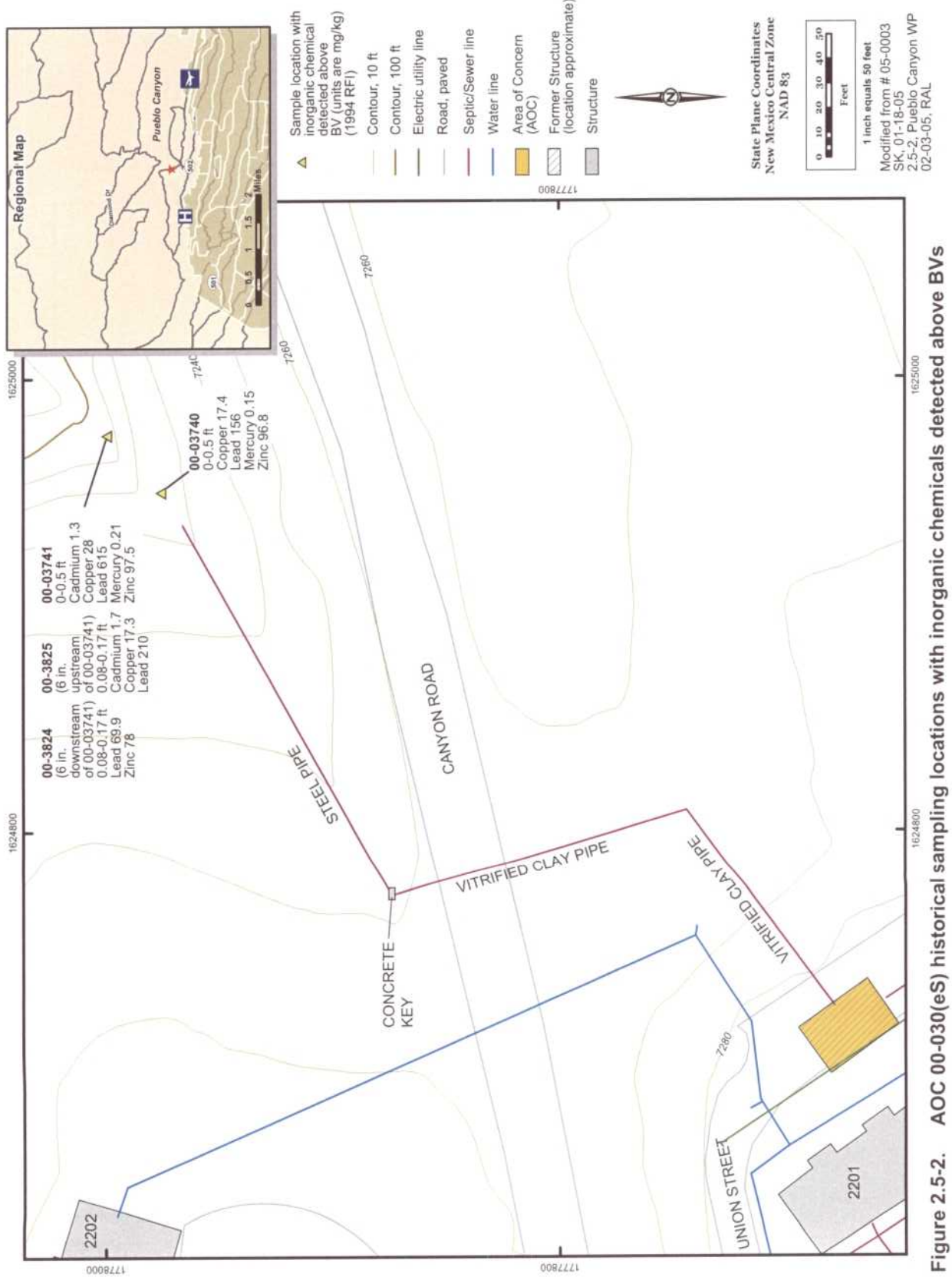


Figure 2.5-2. AOC 00-030(eS) historical sampling locations with inorganic chemicals detected above BVs

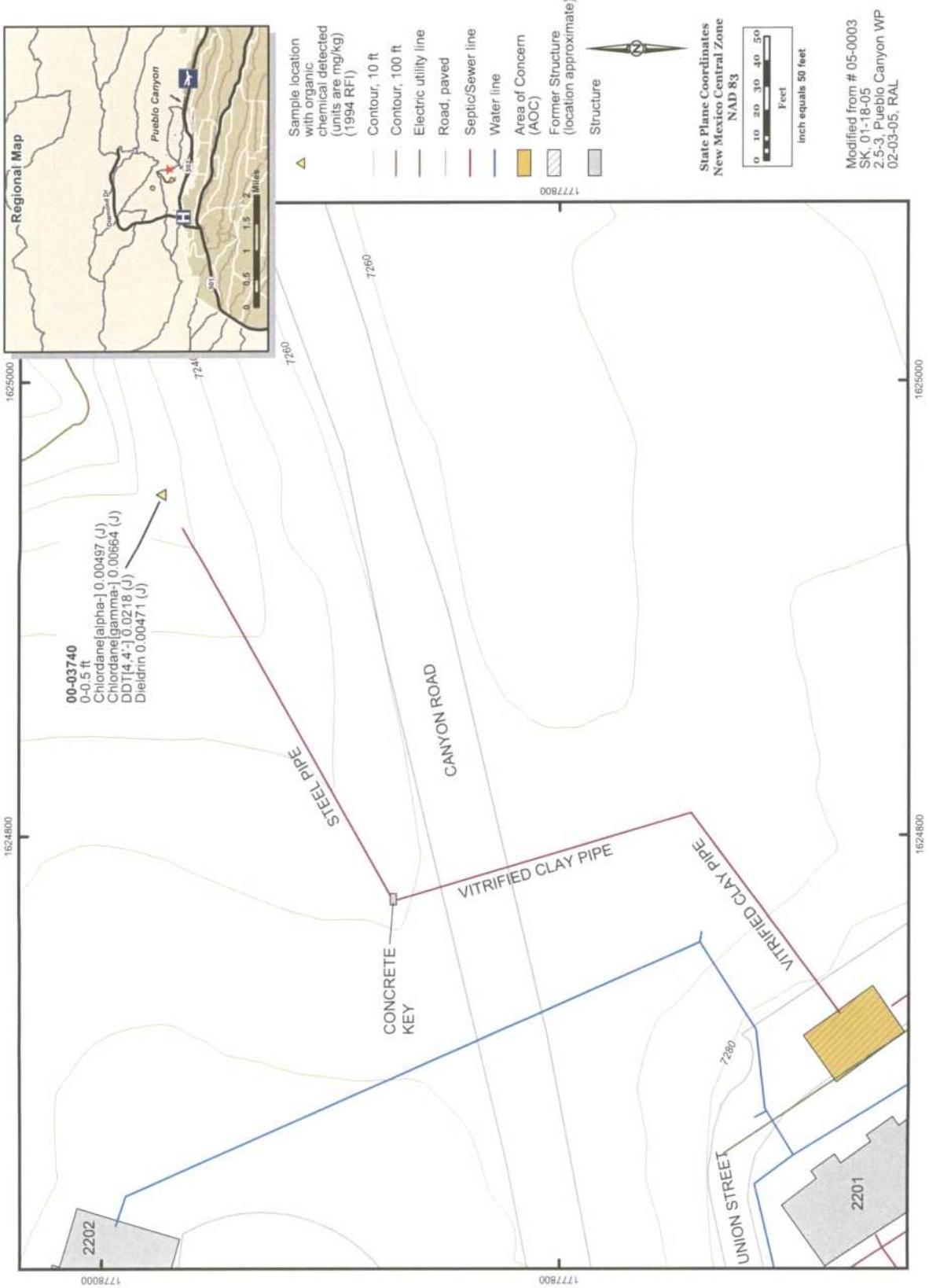


Figure 2.5-3. AOC 00-030(eS) historical sampling locations with organic chemicals detected

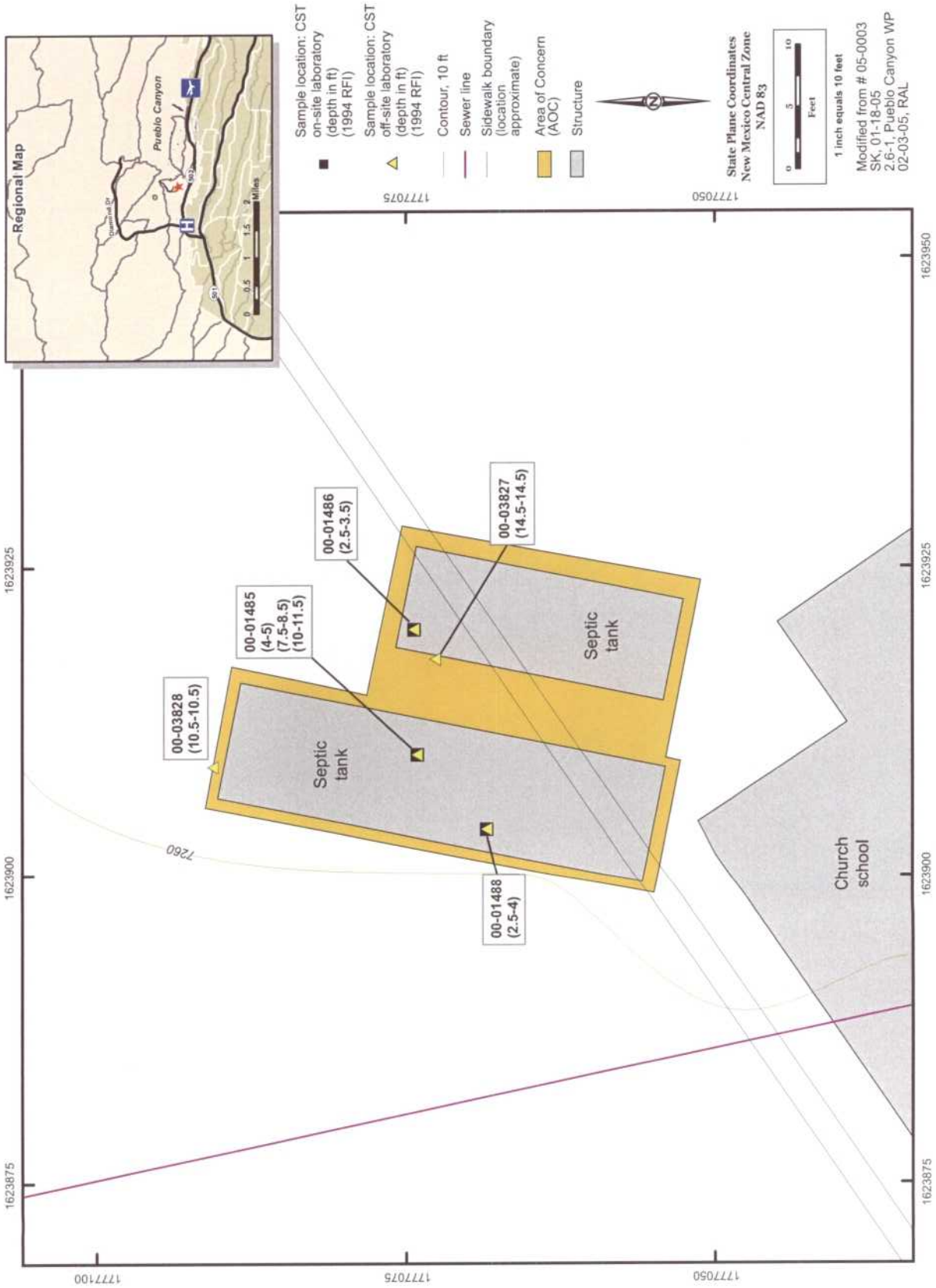


Figure 2.6-1. AOC 00-030(f) historical sampling locations and depths

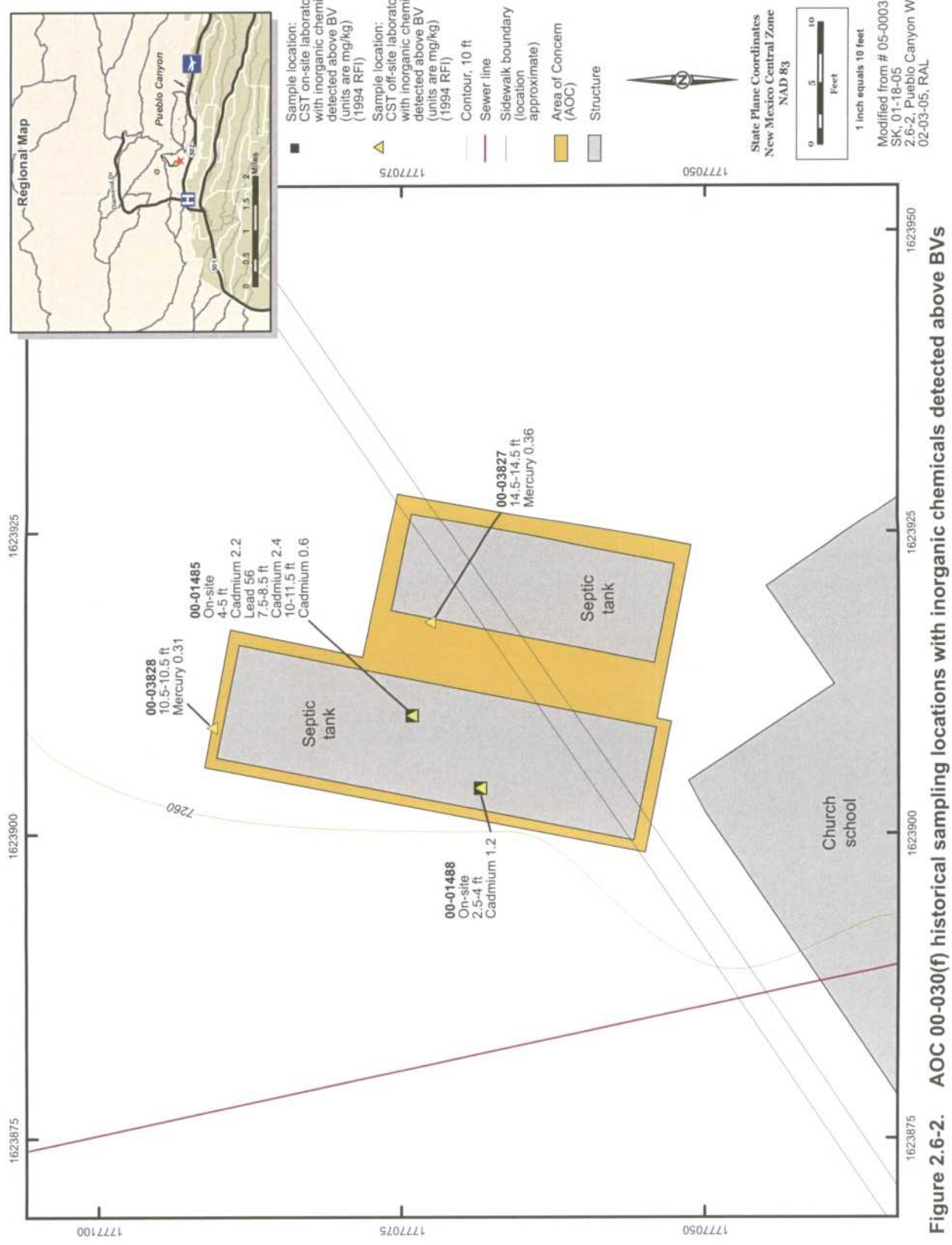


Figure 2.6-2. AOC 00-030(f) historical sampling locations with inorganic chemicals detected above BVs

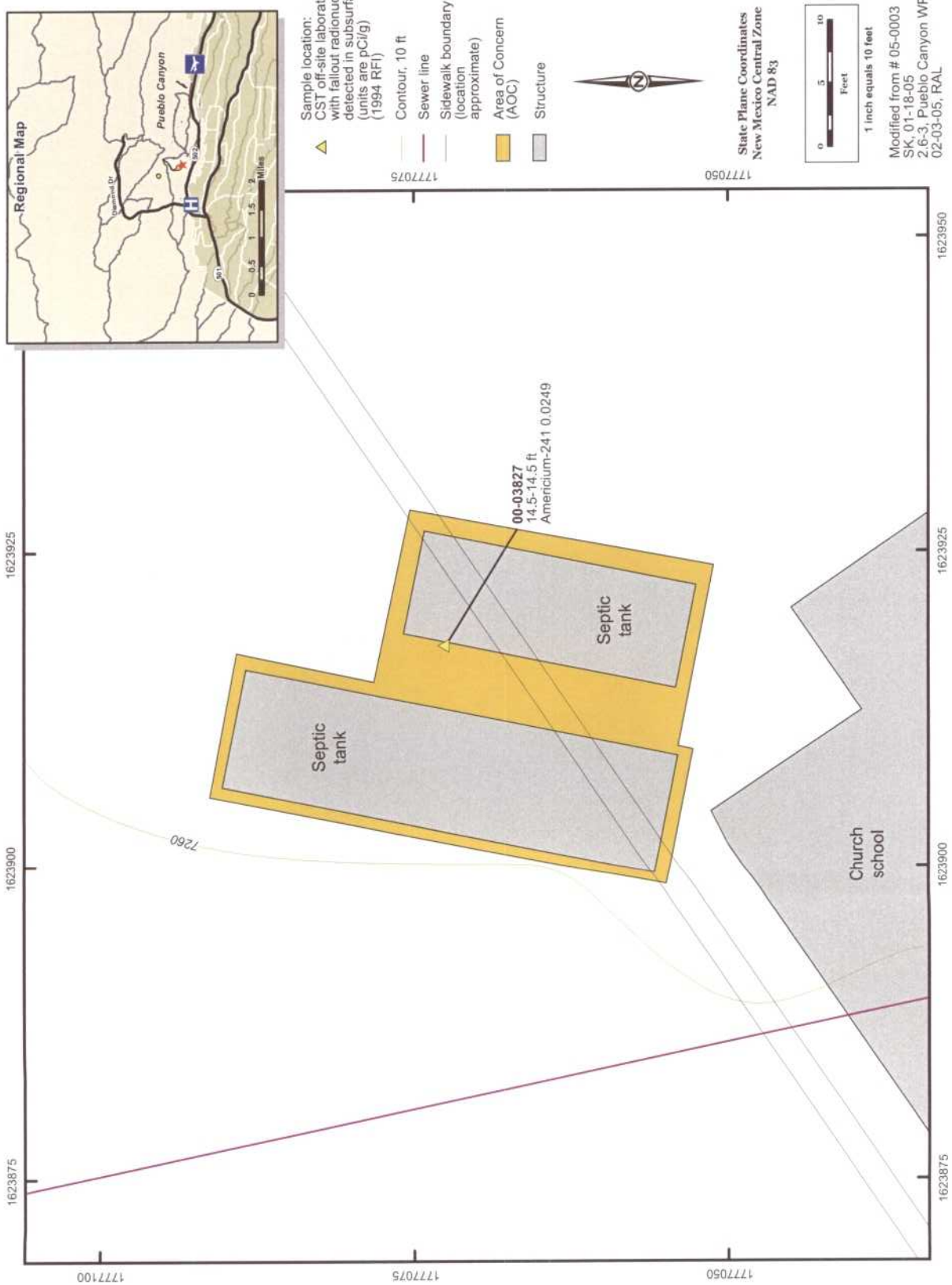


Figure 2.6-3. AOC 00-030(f) historical sampling locations with detected radionuclides

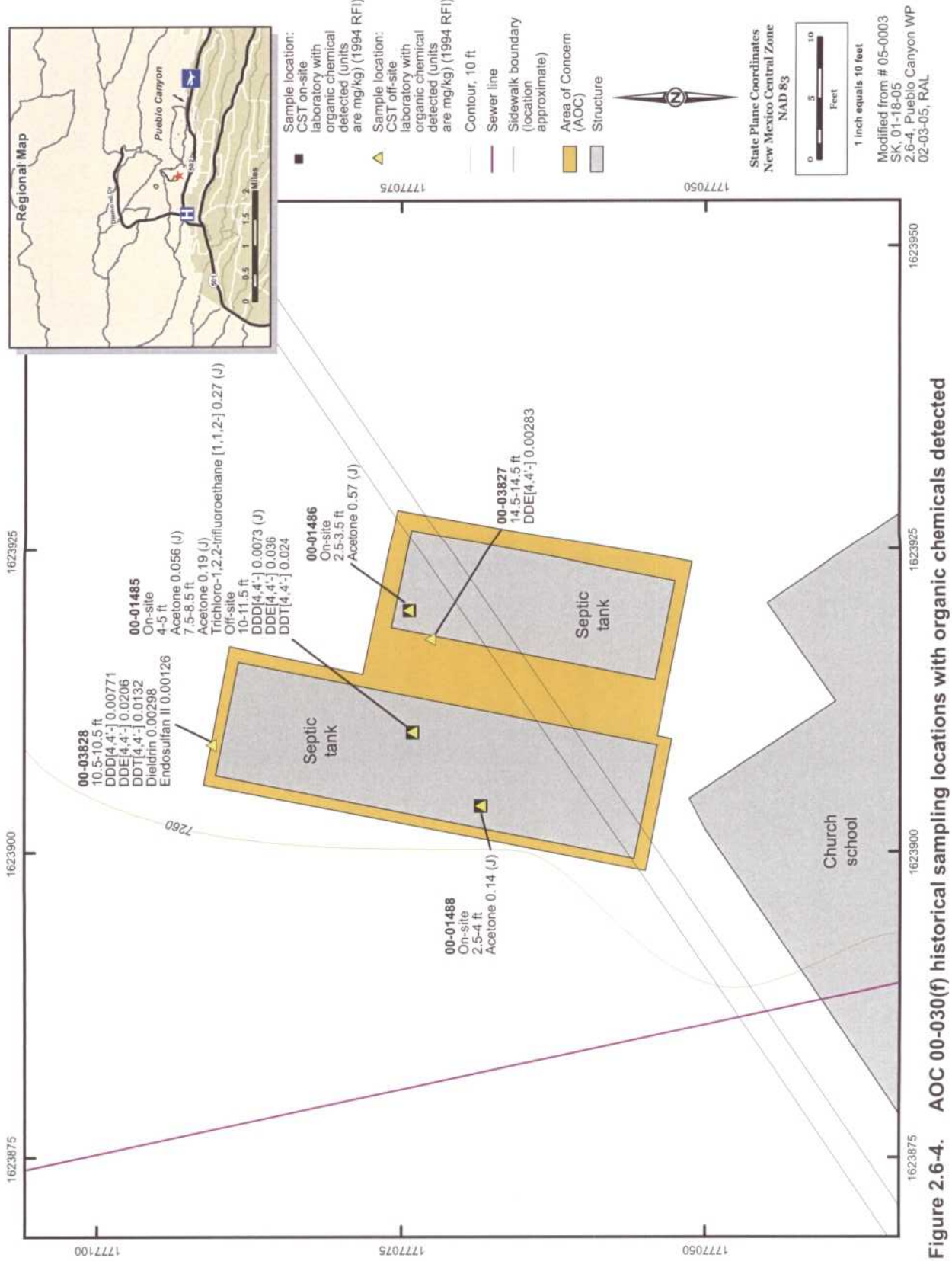


Figure 2.6-4. AOC 00-030(f) historical sampling locations with organic chemicals detected

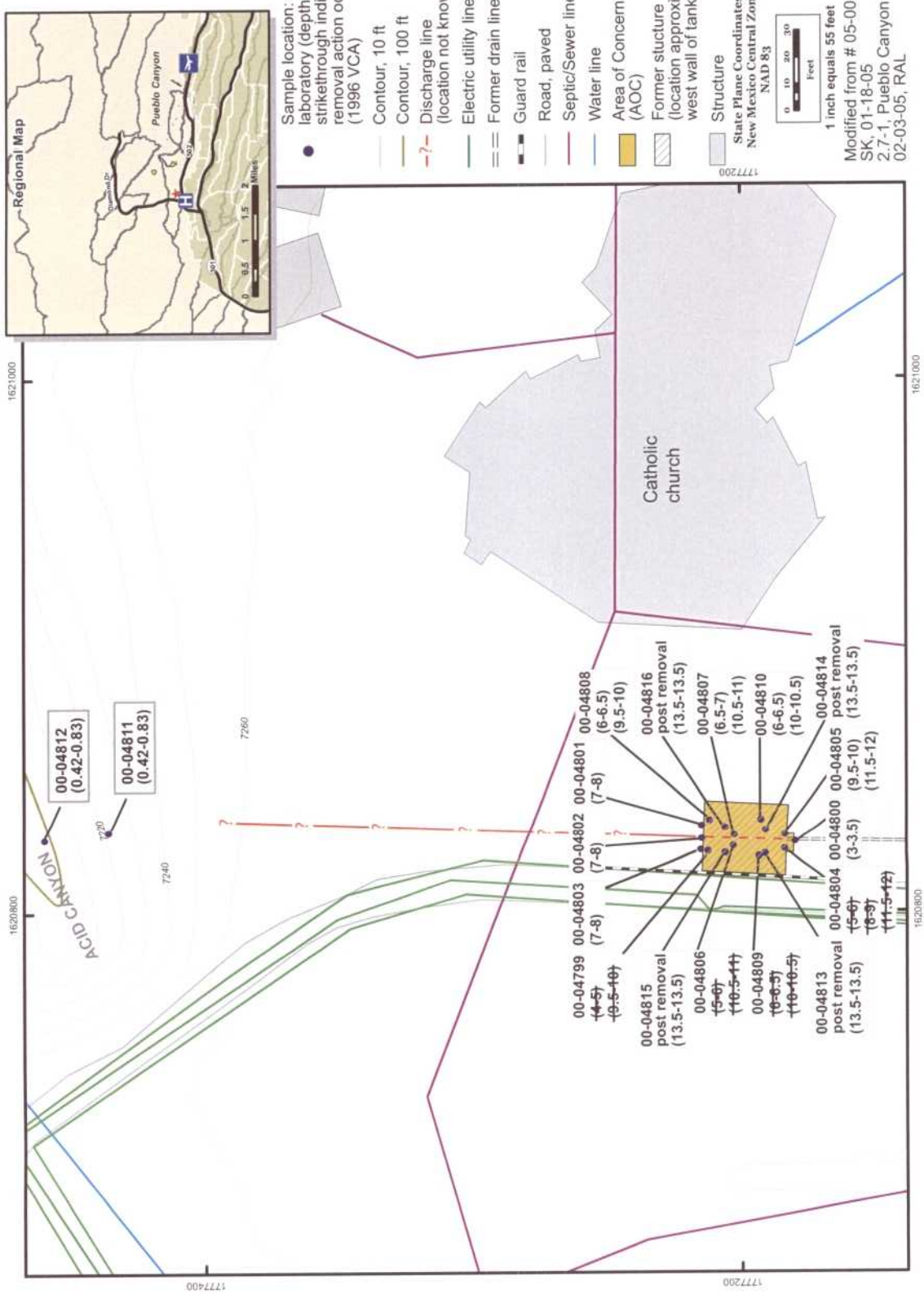


Figure 2.7-1. AOC 00-030(h) historical sampling locations and depths

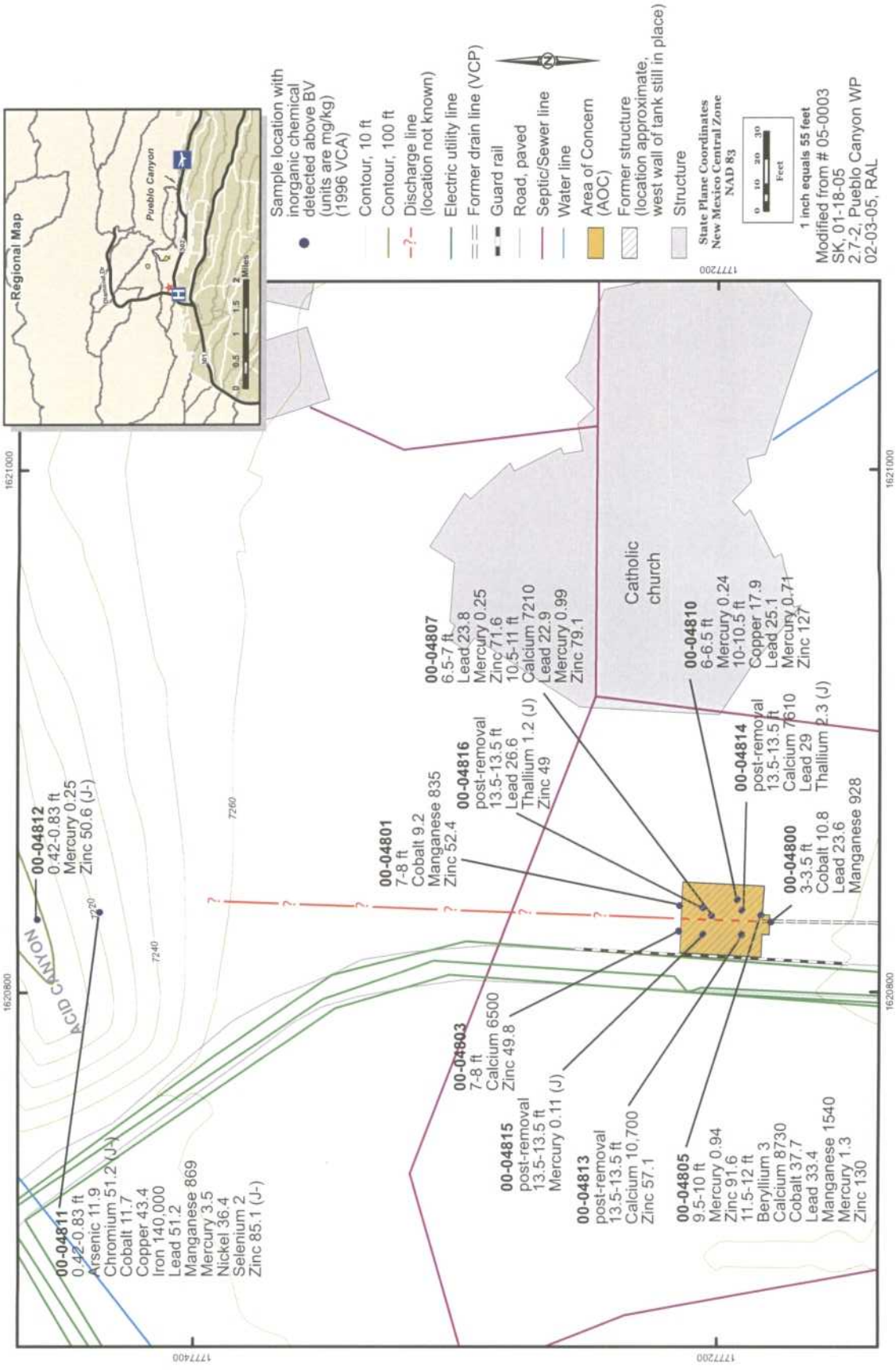


Figure 2.7-2. AOC 00-030(h) sampling locations with inorganic chemicals detected above BVs

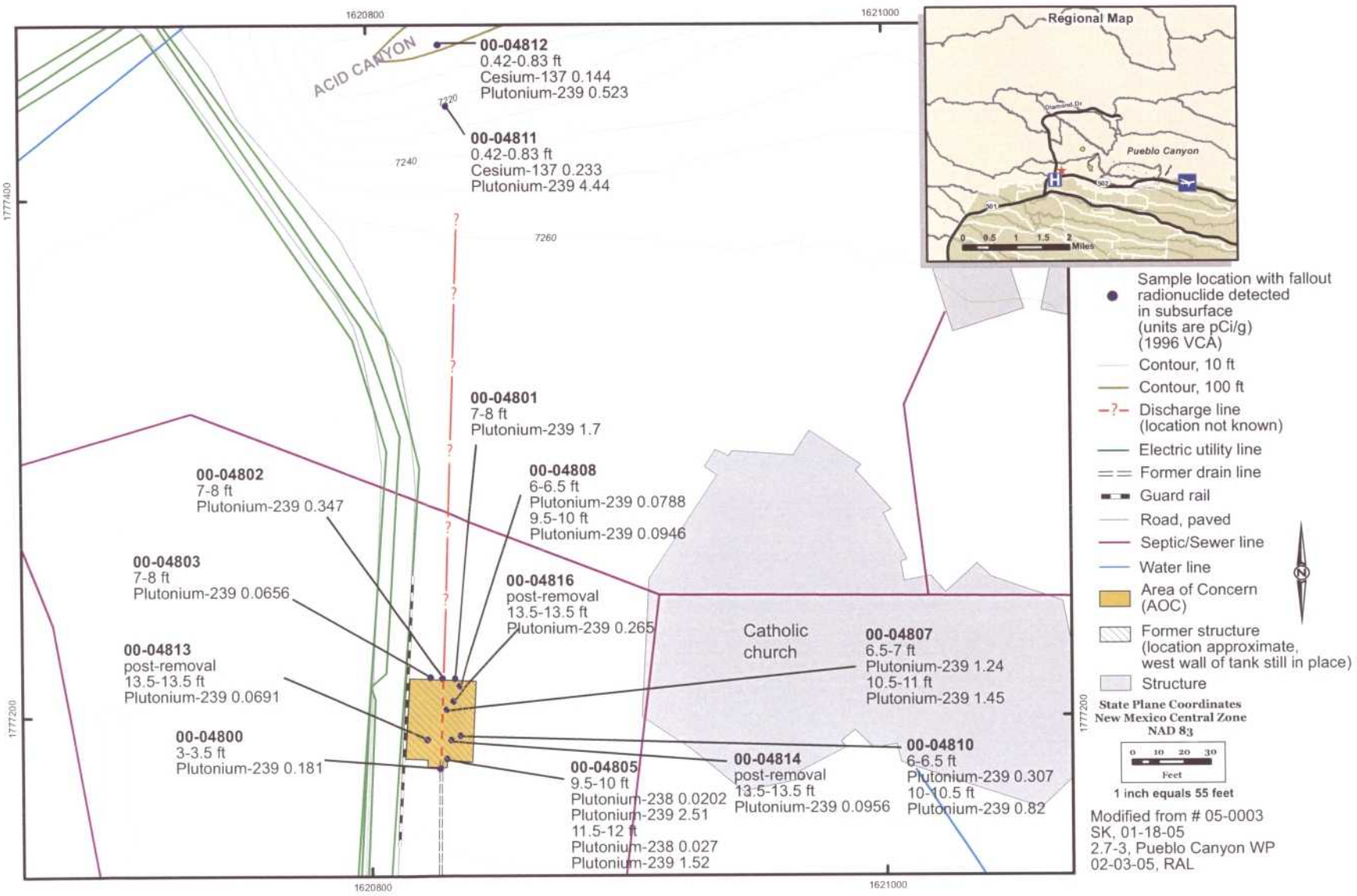


Figure 2.7-3. AOC 00-030(h) historical sampling locations with detected radionuclides

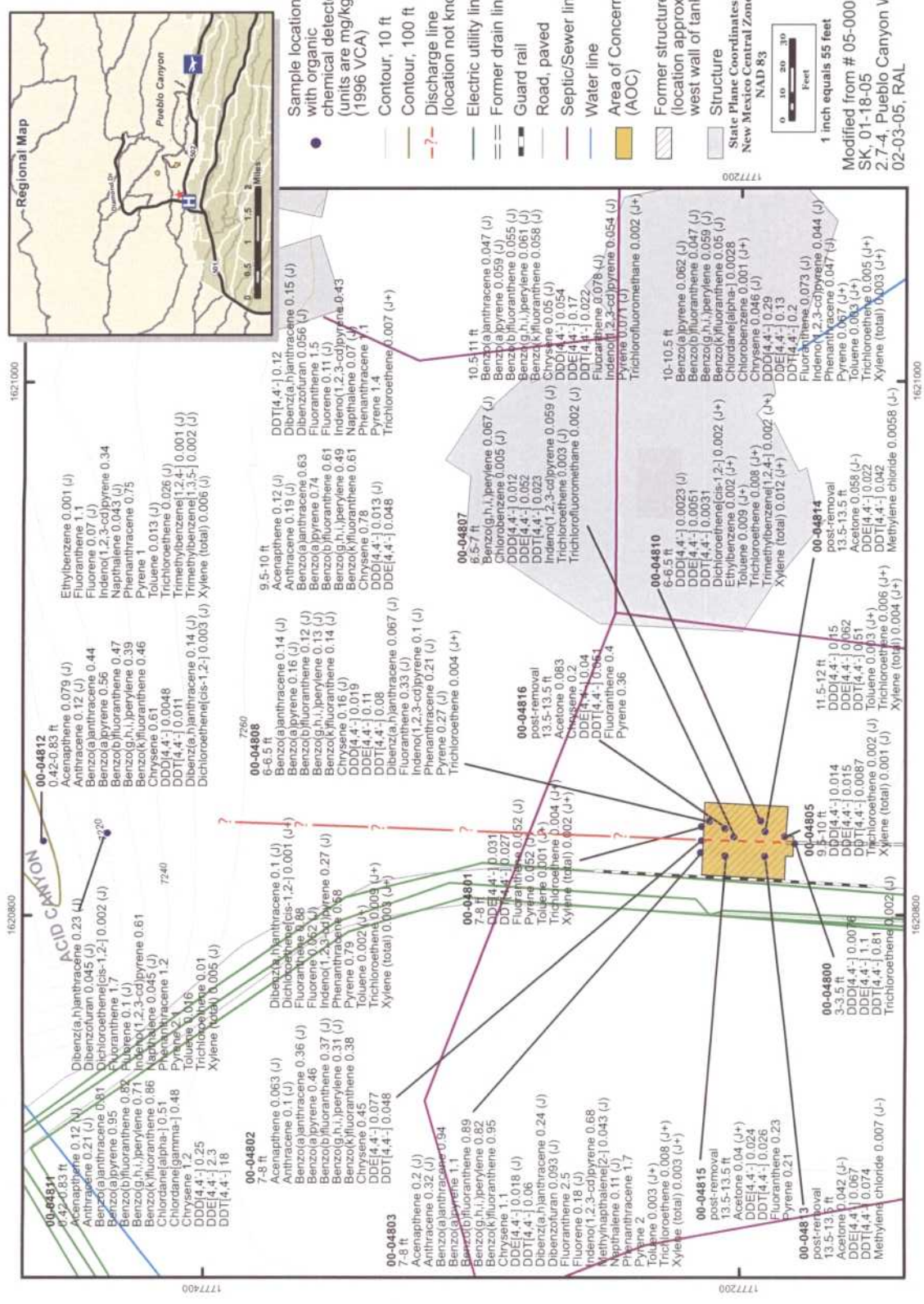


Figure 2.7-4. AOC 00-030(h) historical sampling locations with organic chemicals detected

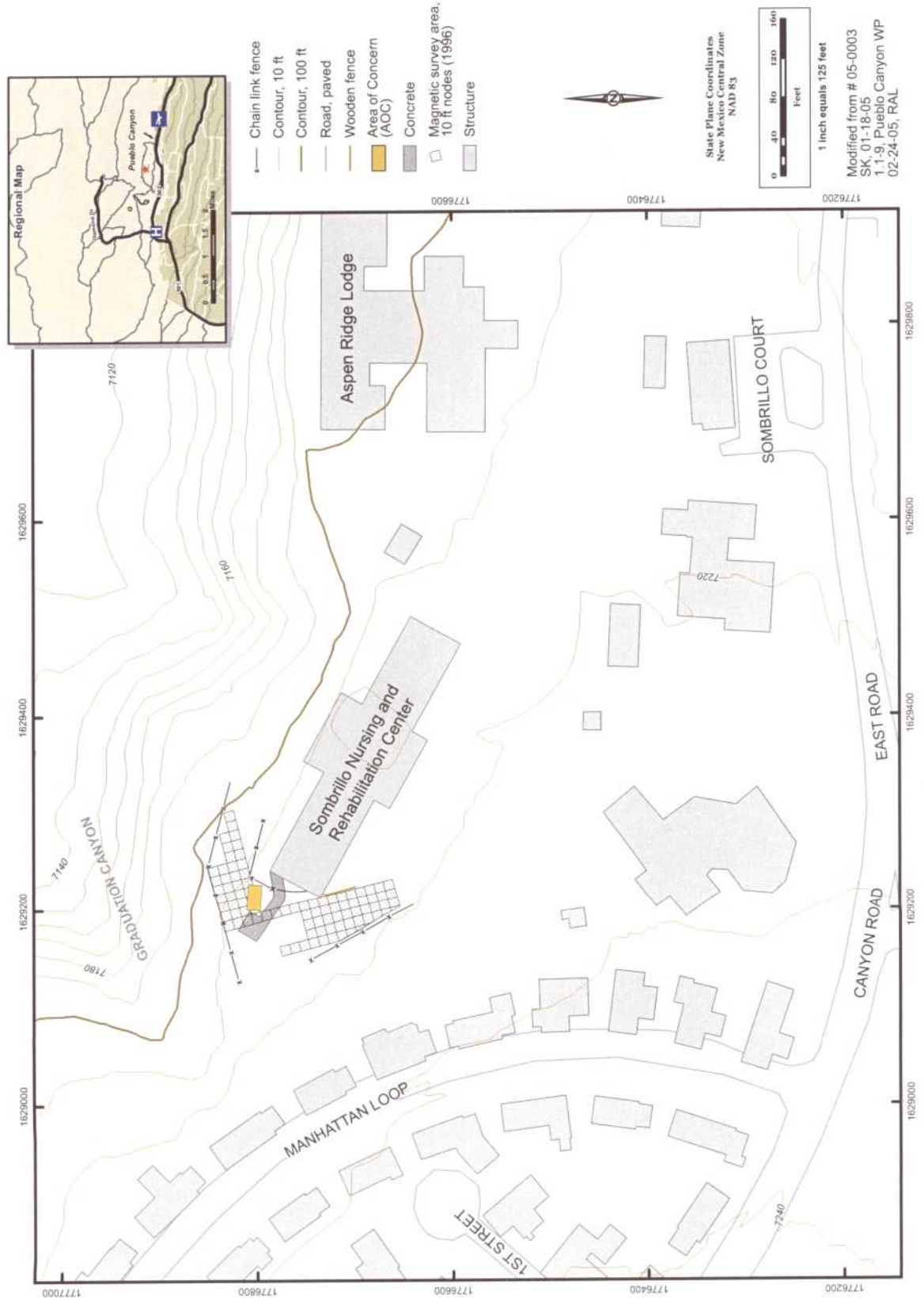


Figure 2.8-1. AOC 00-030(j), historical investigation area

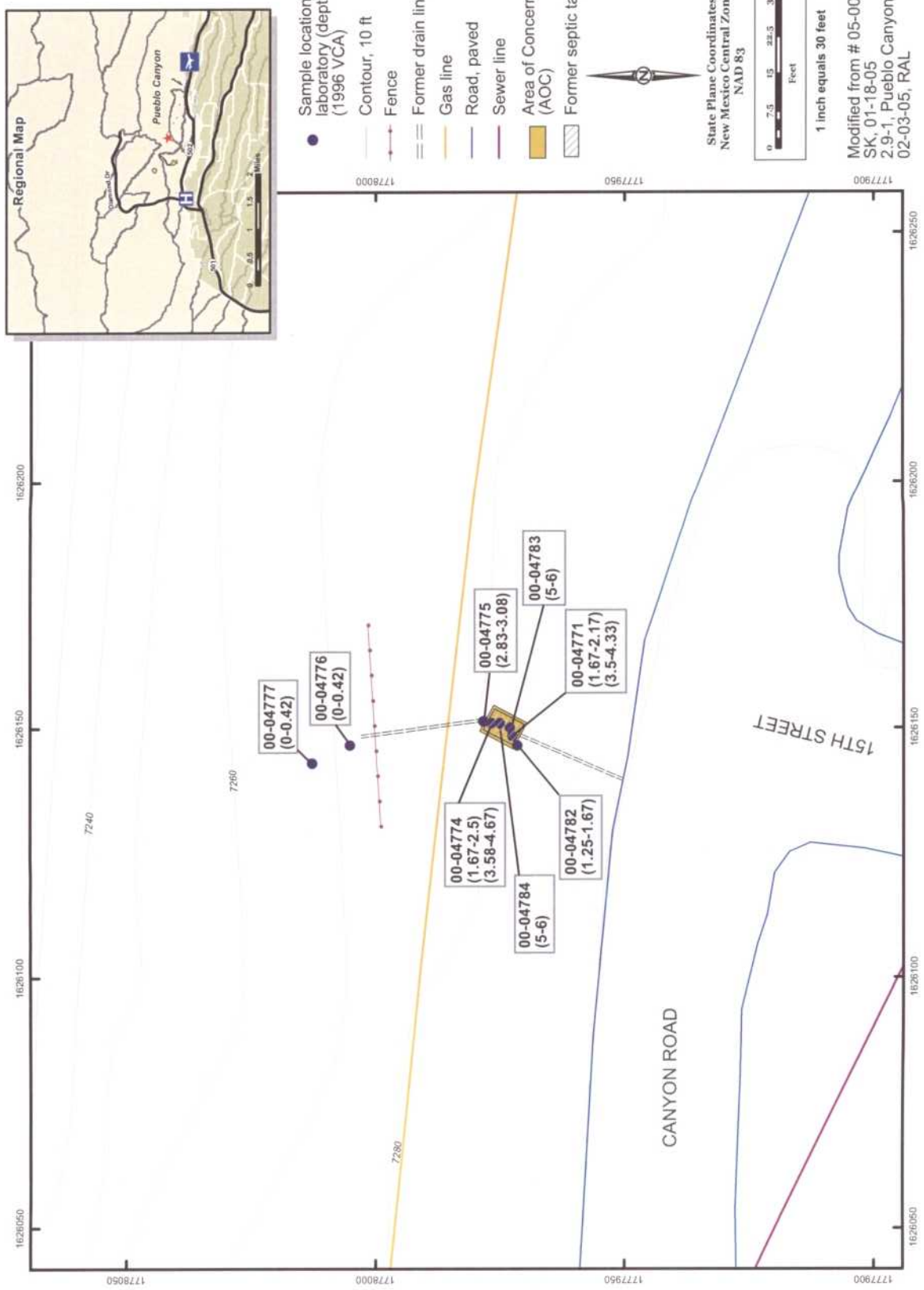


Figure 2.9-1. AOC 00-030(n) historical investigation sampling locations and depths

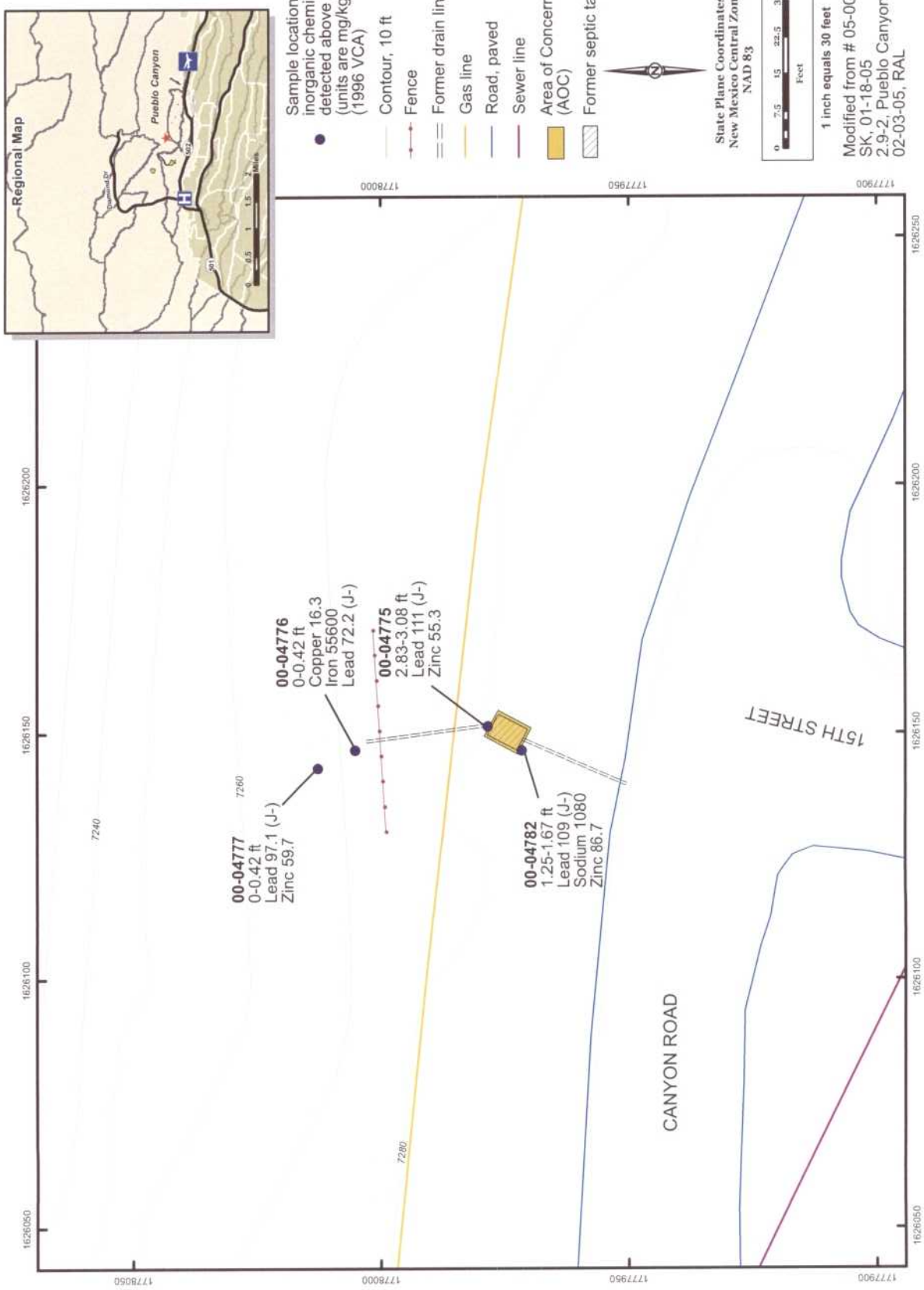


Figure 2.9-2. AOC 00-030(n) historical sampling locations with inorganic chemicals detected above BVs

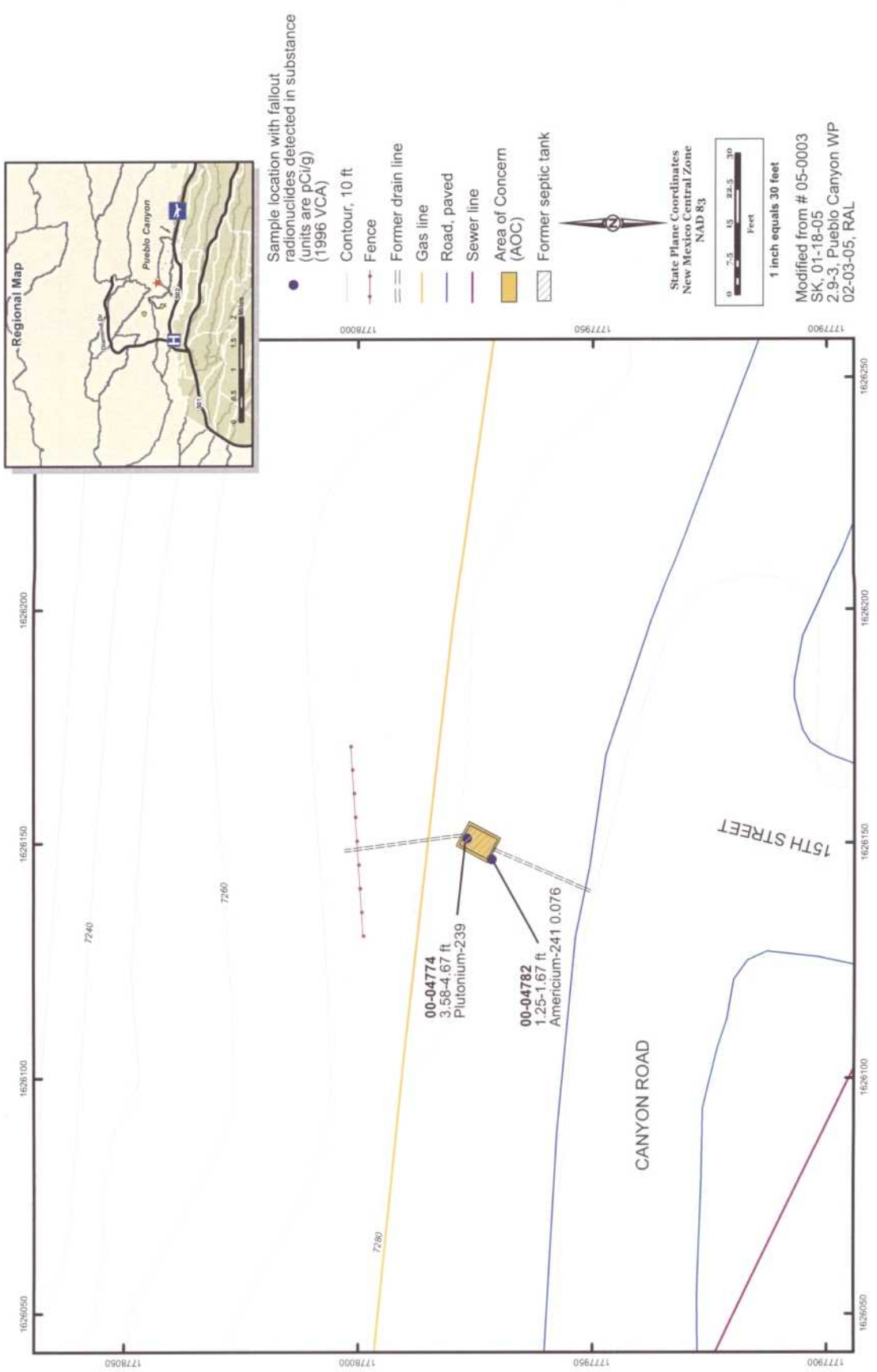


Figure 2.9-3. AOC 00-030(n) historical sampling locations with detected radionuclides

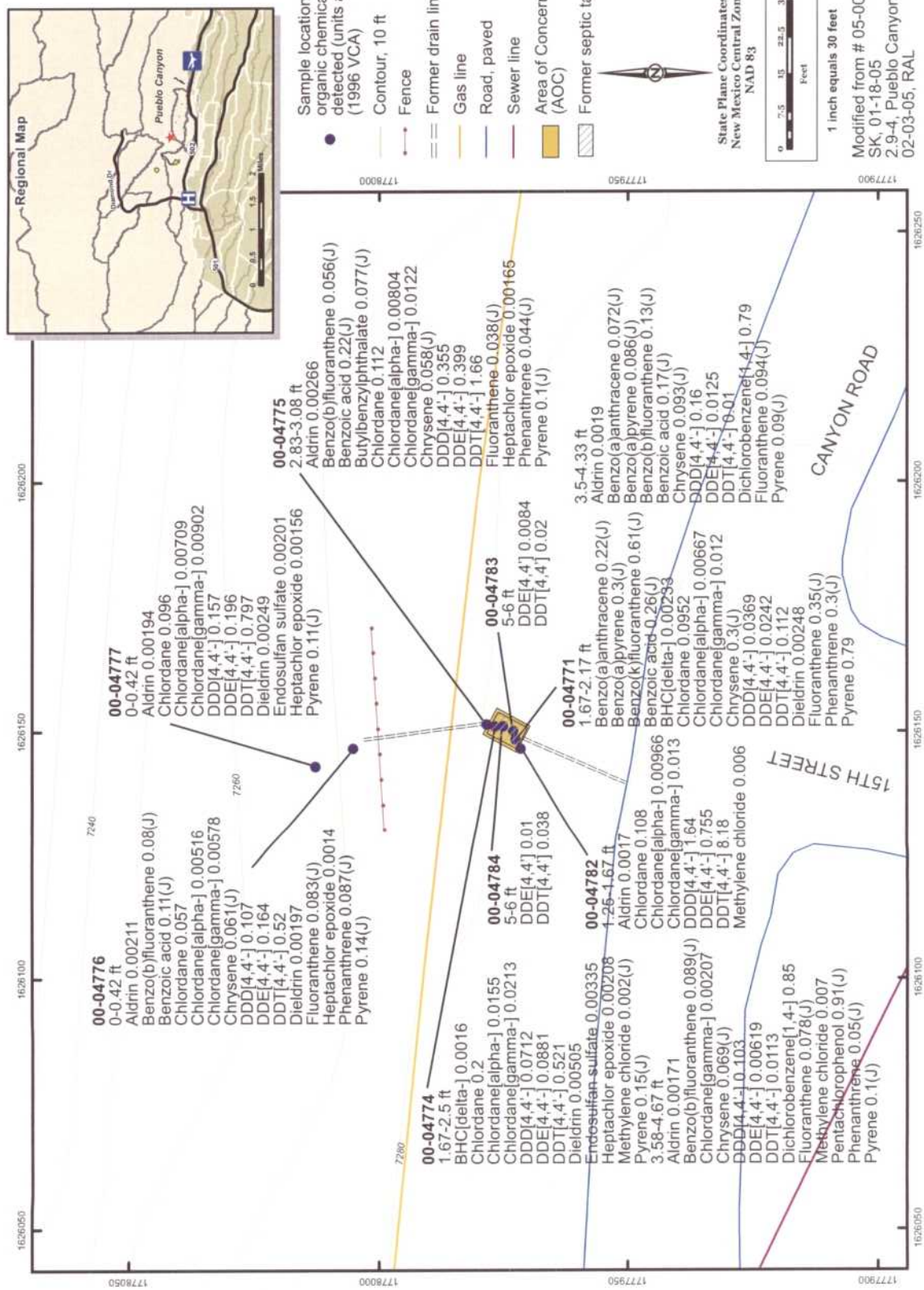


Figure 2.9-4. AOC 00-030(n) historical sampling locations with organic chemicals detected

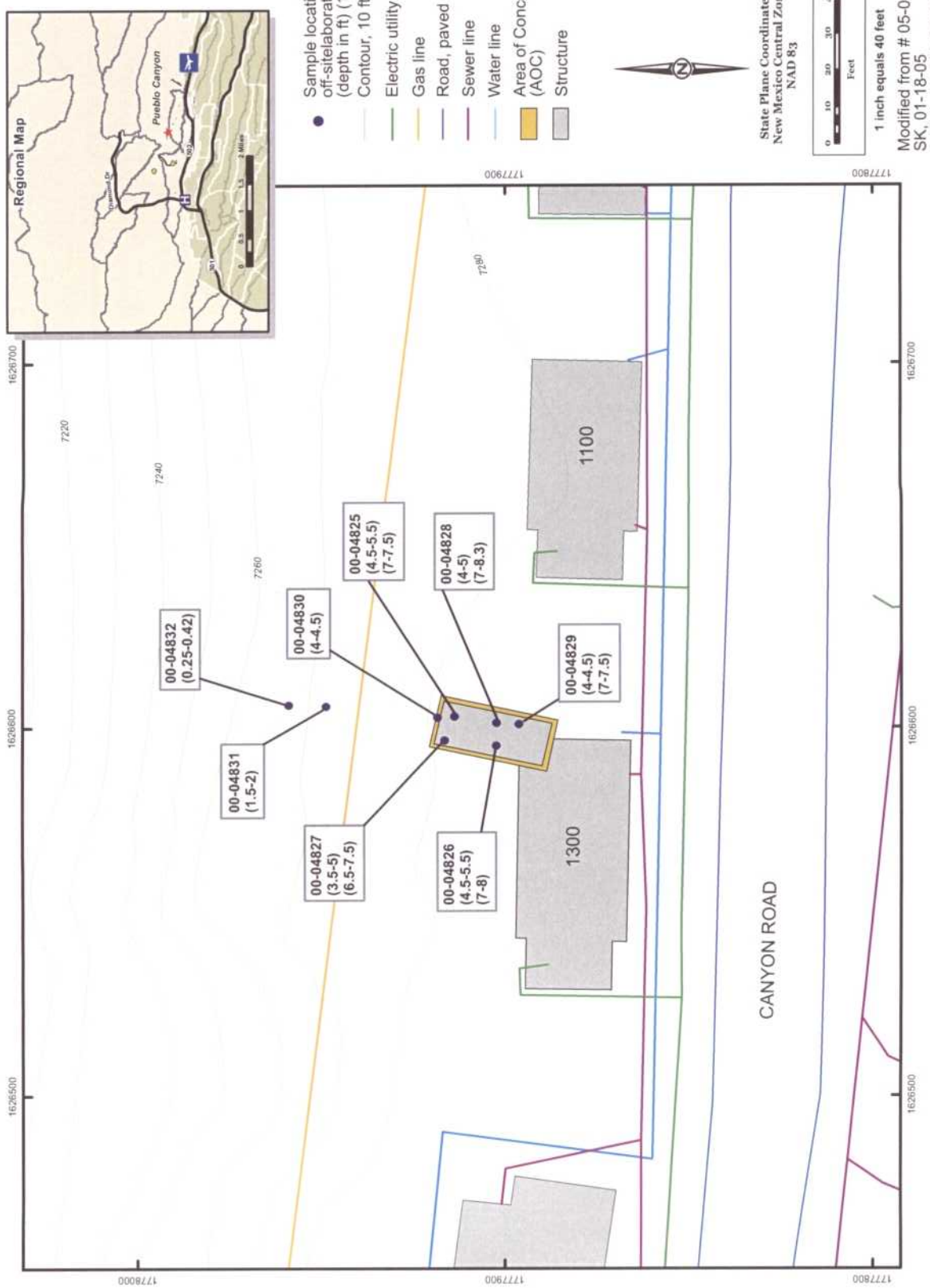


Figure 2.10-1. AOC 00-030(o) historical sampling locations and depths

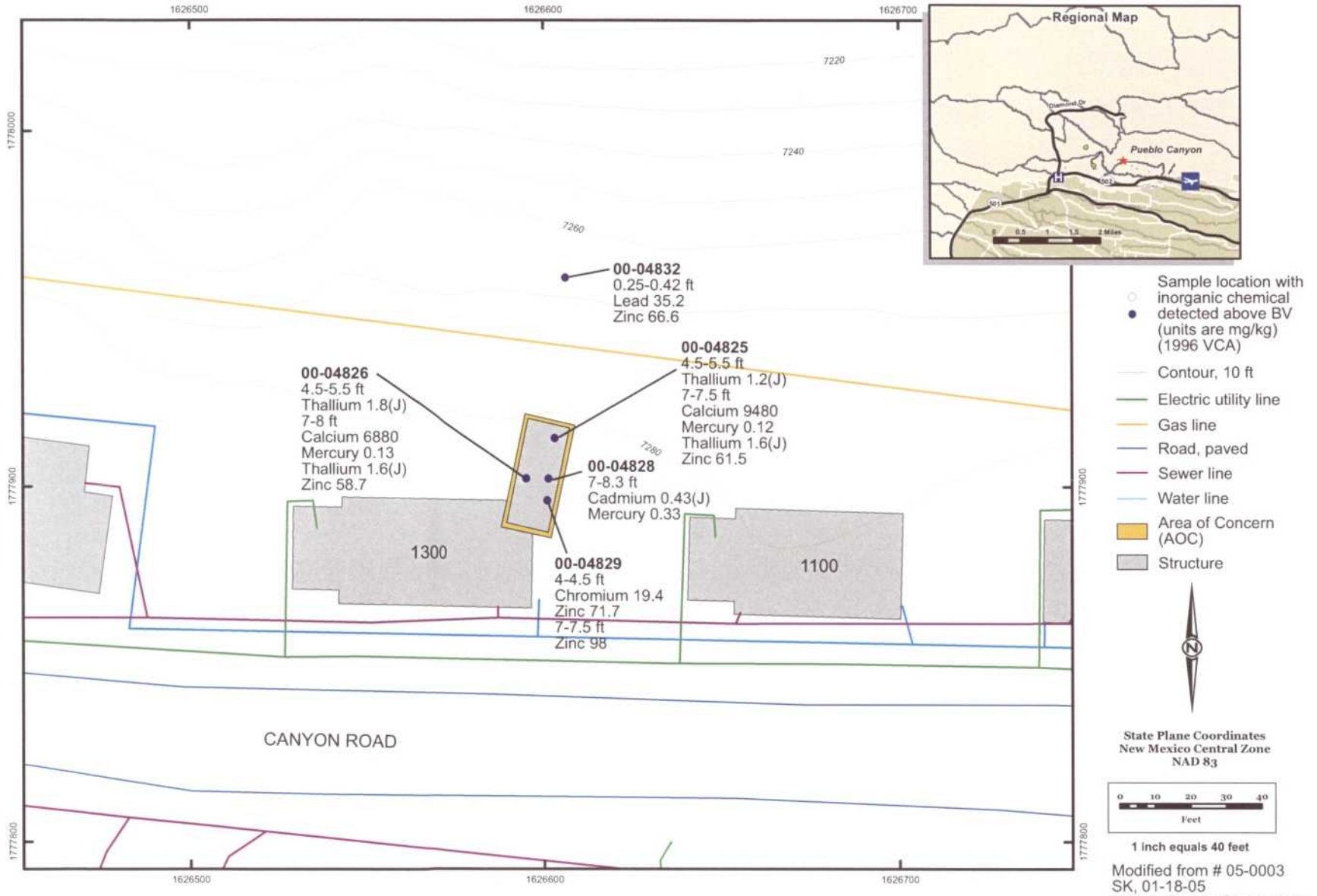


Figure 2.10-2. AOC 00-030(o) historical sampling locations with inorganic chemicals detected above BVs

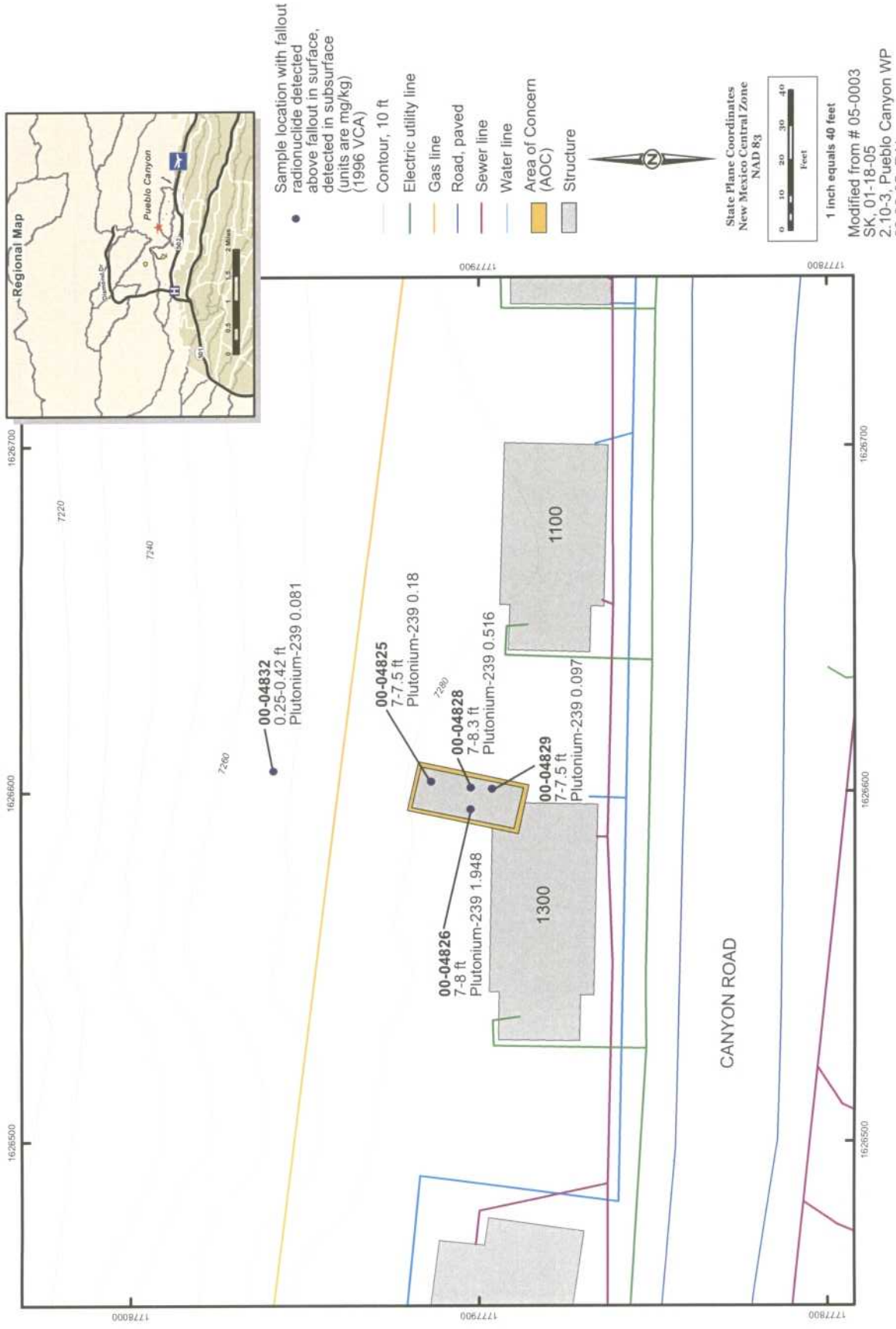


Figure 2.10-3. AOC 00-030(o) historical sampling locations with radionuclides detected above FVs

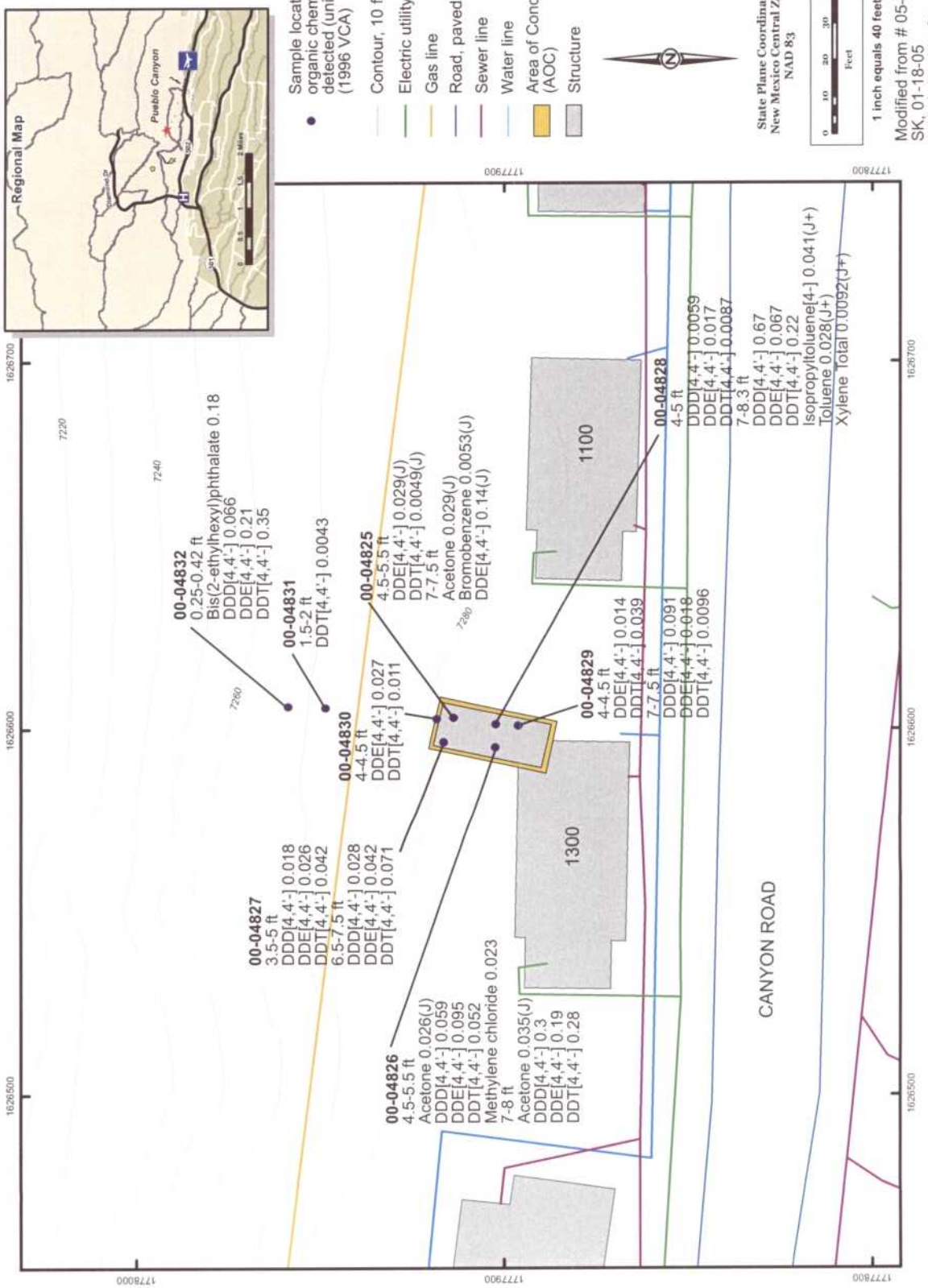


Figure 2.10-4. AOC 00-030(o) historical sampling locations with organic chemicals detected

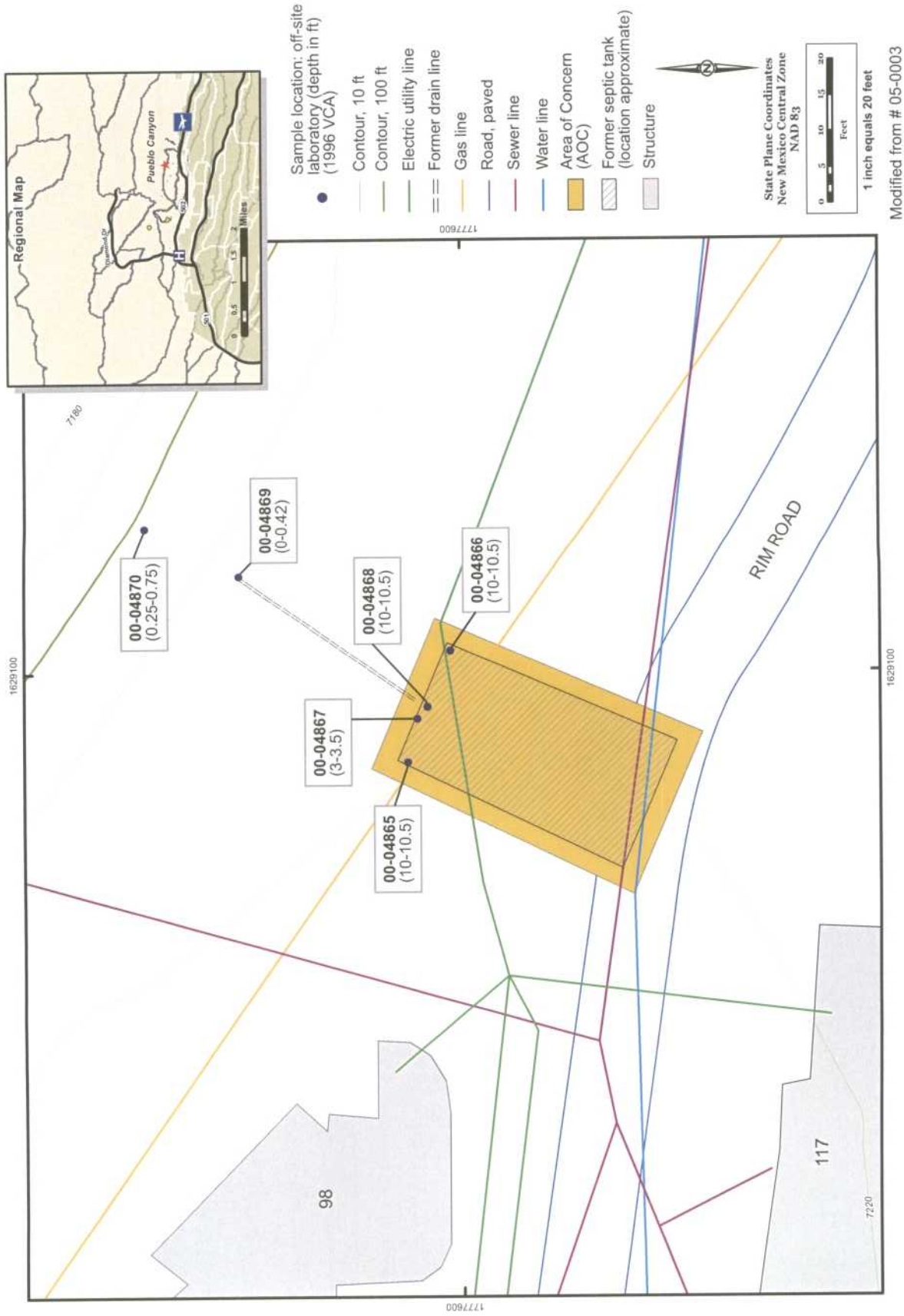


Figure 2.11-1. AOC 00-030(p) historical investigation sampling locations and depths

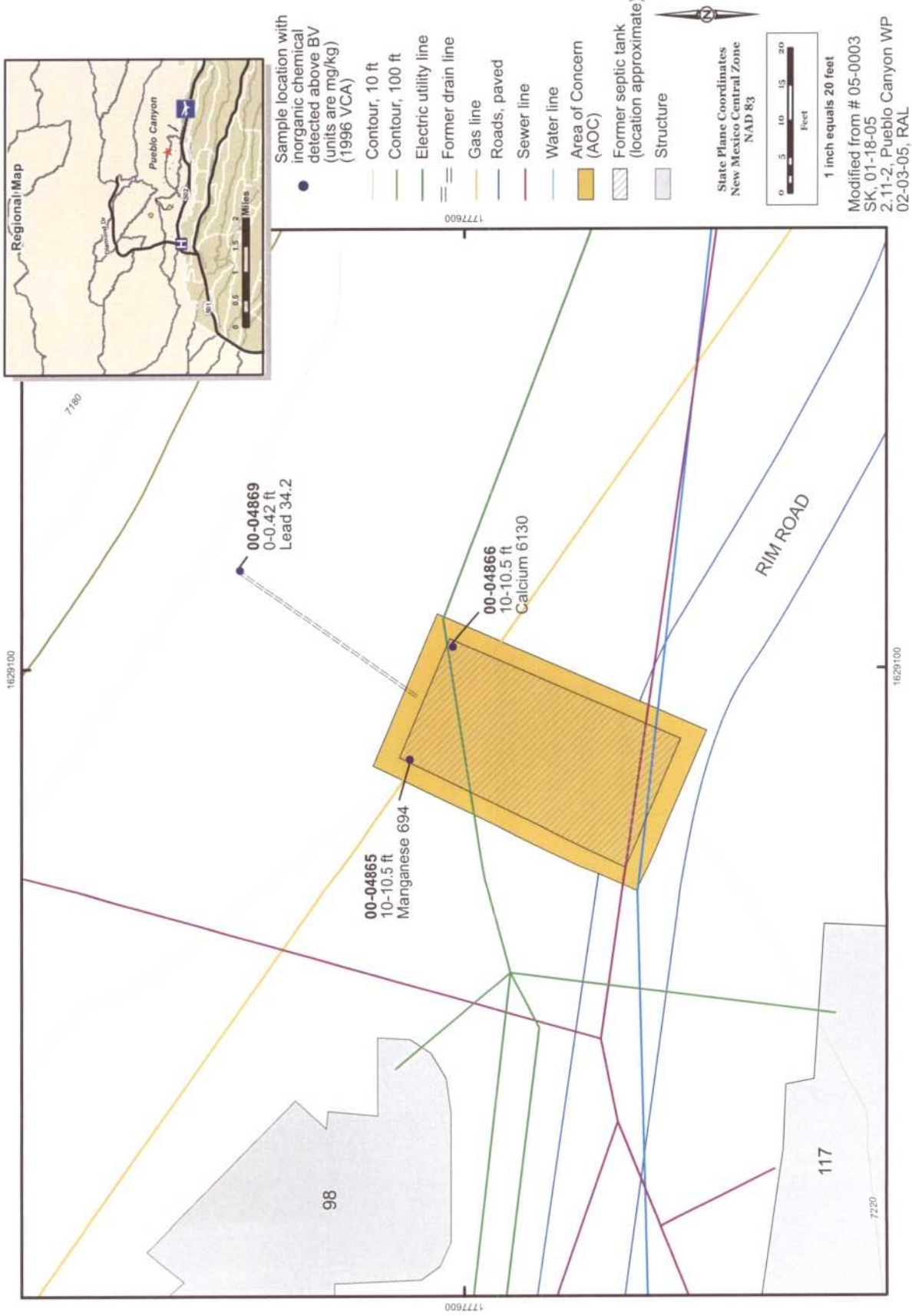


Figure 2.11-2. AOC 00-030(p) historical sampling locations with inorganic chemicals detected above BVs

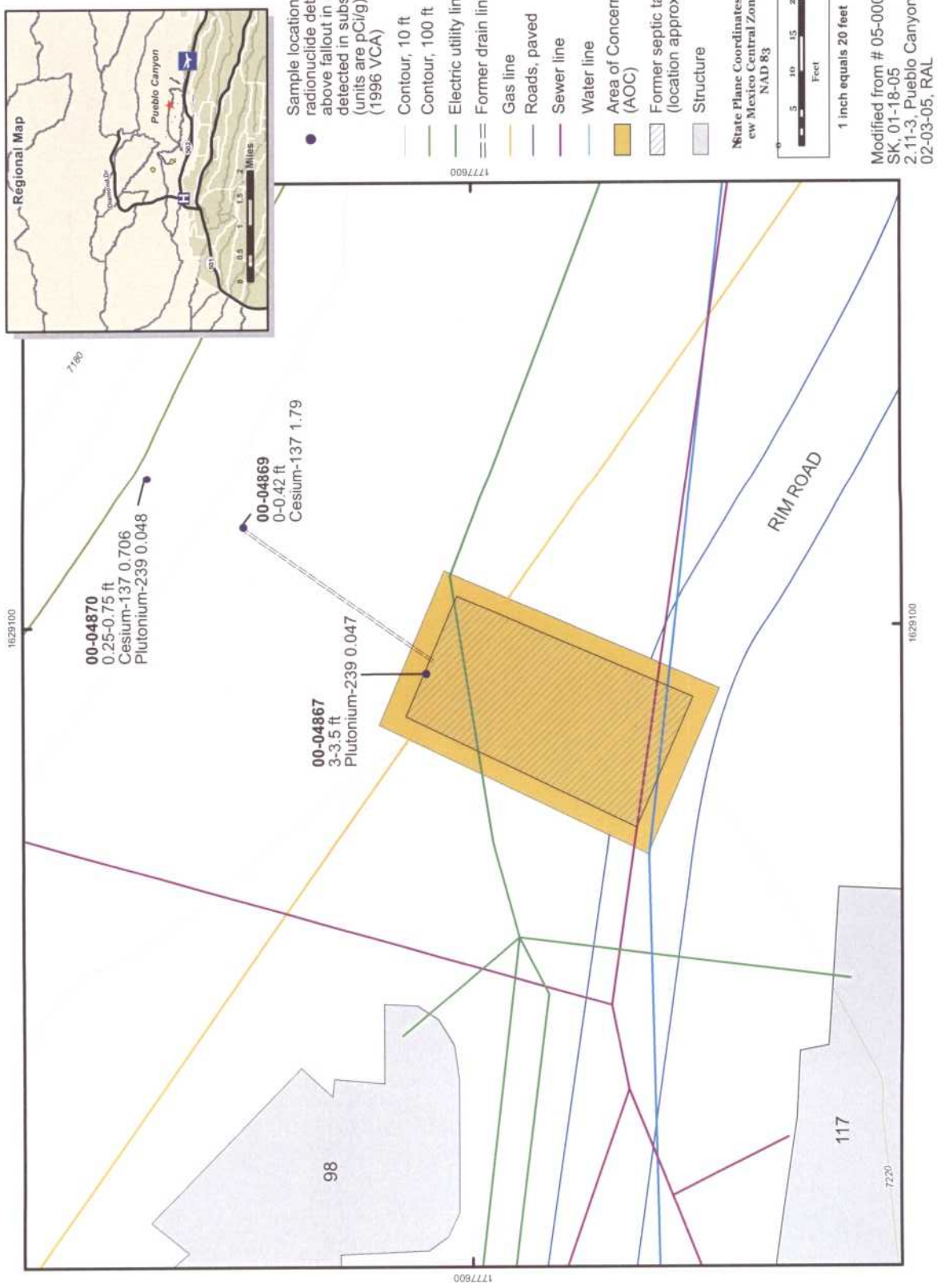


Figure 2.11-3. AOC 00-030(p) historical sampling locations with radionuclides detected above FVs

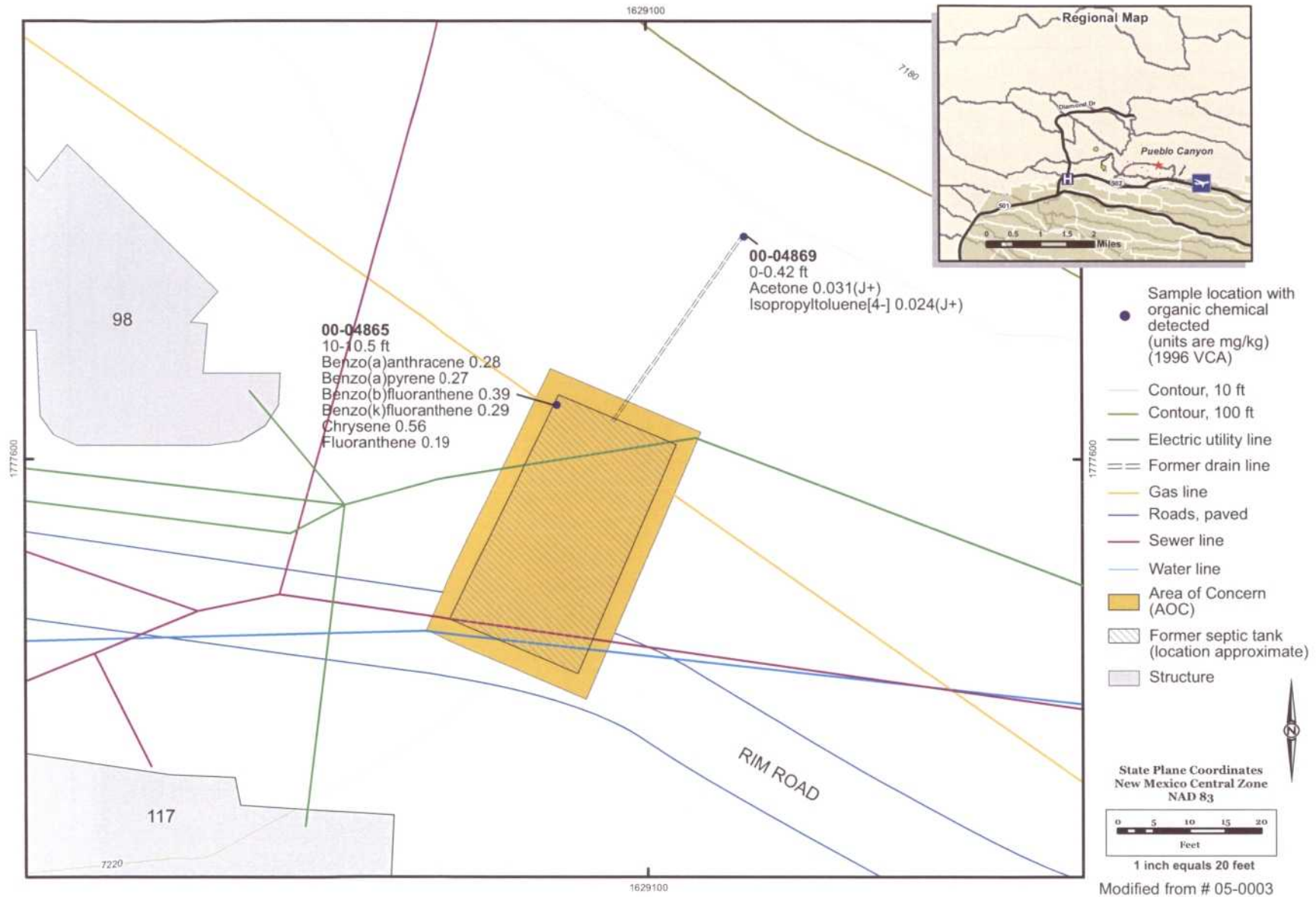


Figure 2.11-4. AOC 00-030(p) historical sampling locations with organic chemicals detected

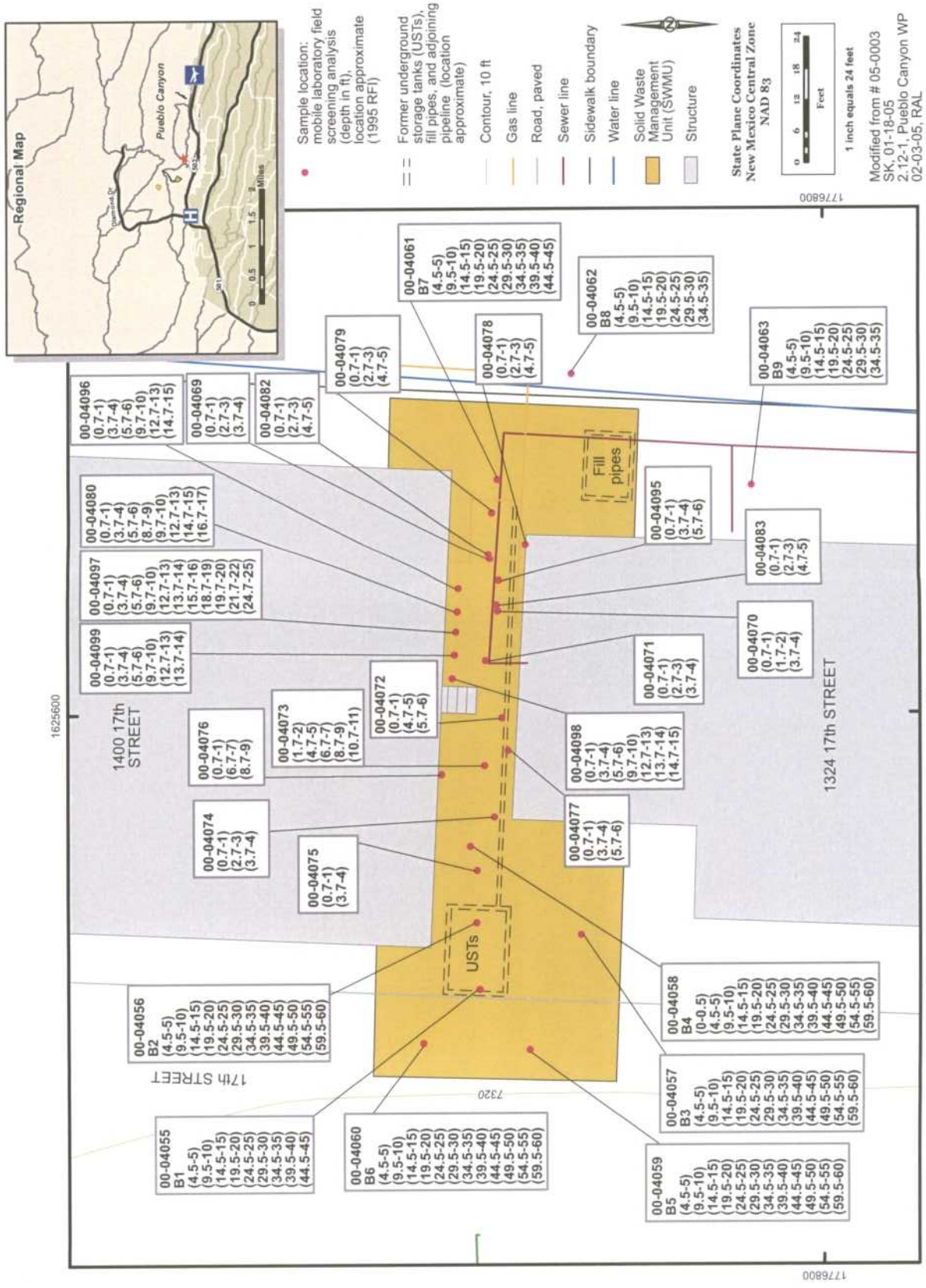


Figure 2.12-1. SWMU 00-039 historical investigation sampling locations and depths

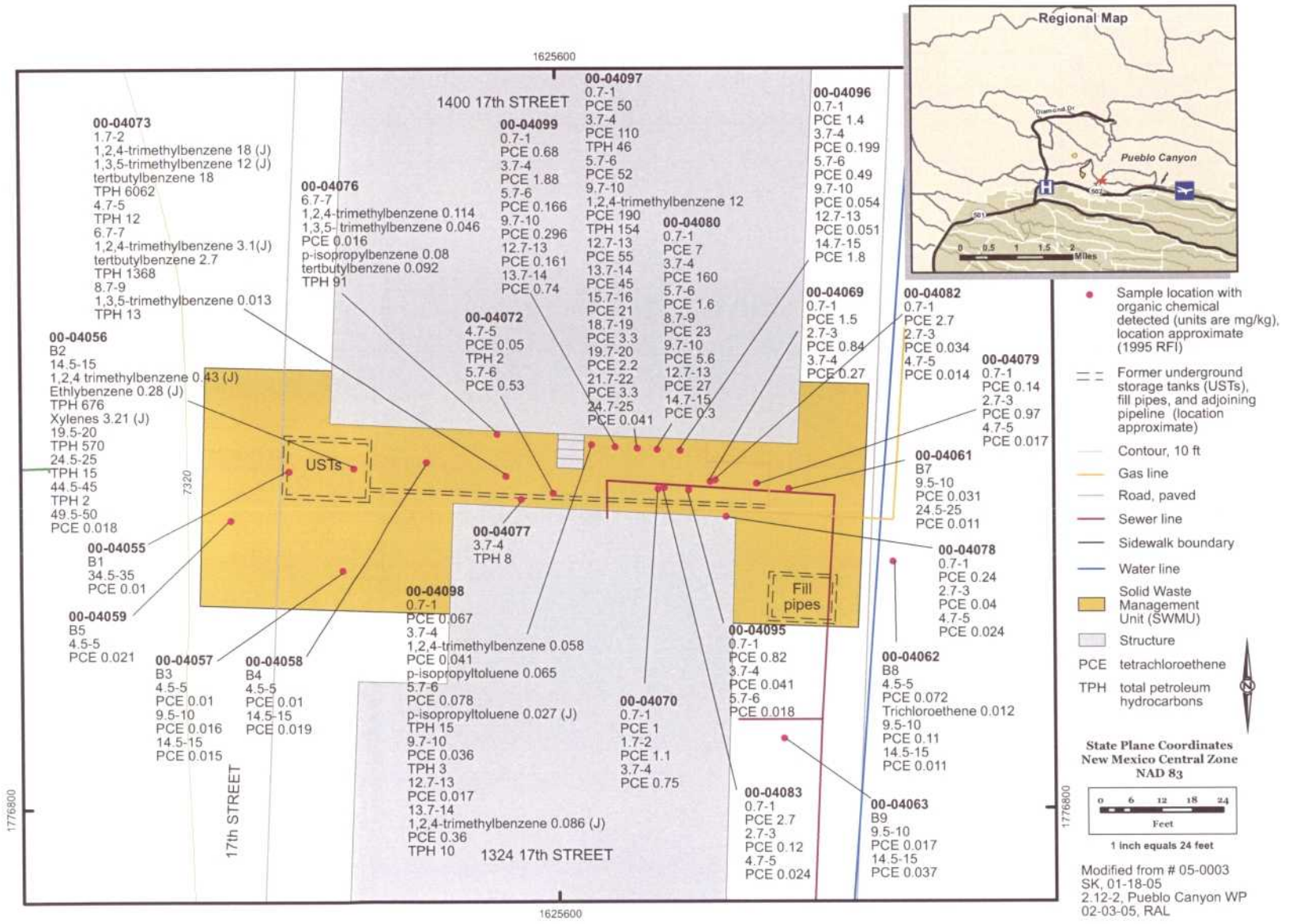


Figure 2.12-2. SWMU 00-039 historical sampling locations with organic chemicals detected

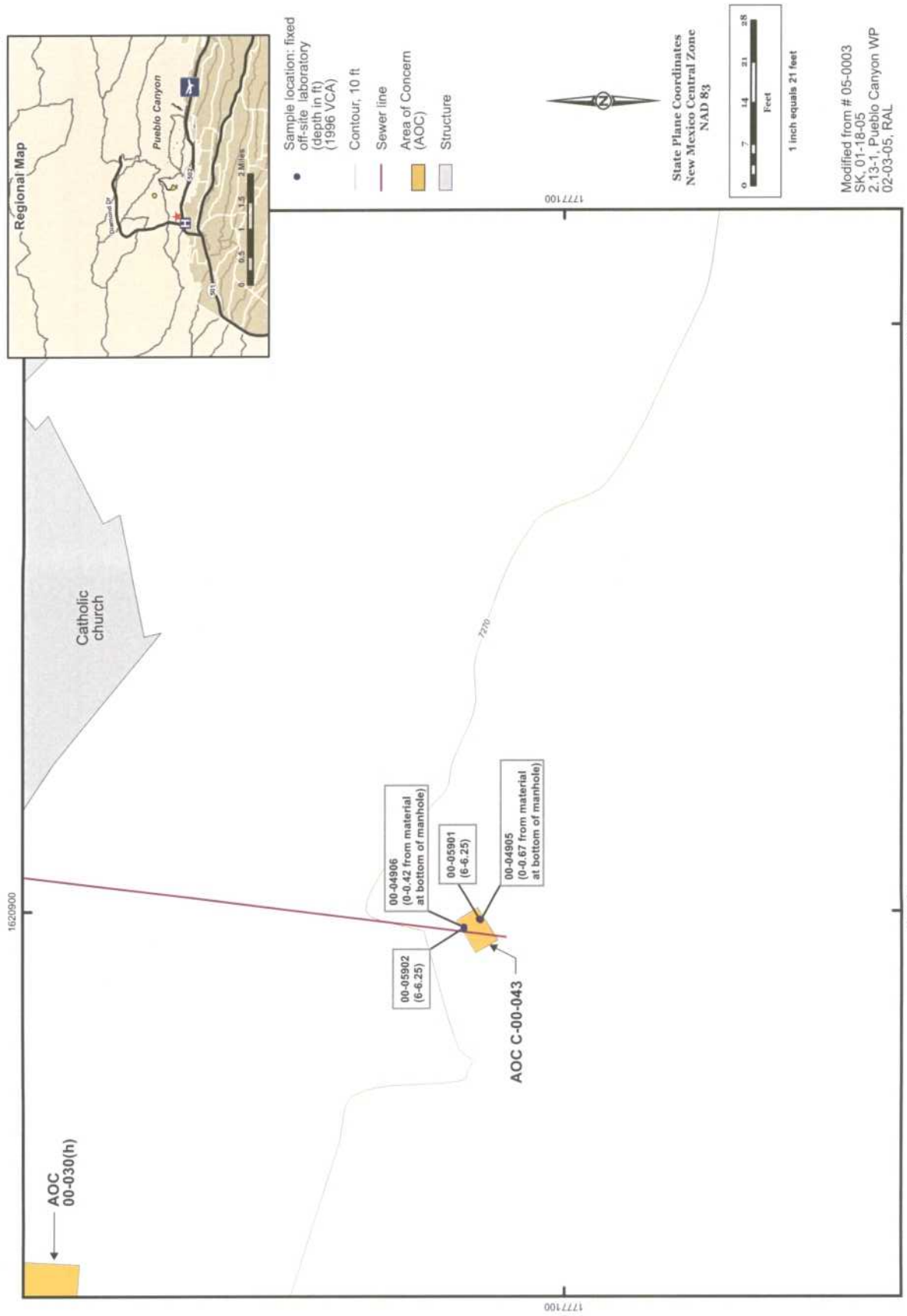


Figure 2.13-1. AOC C-00-043 historical sampling locations and depths

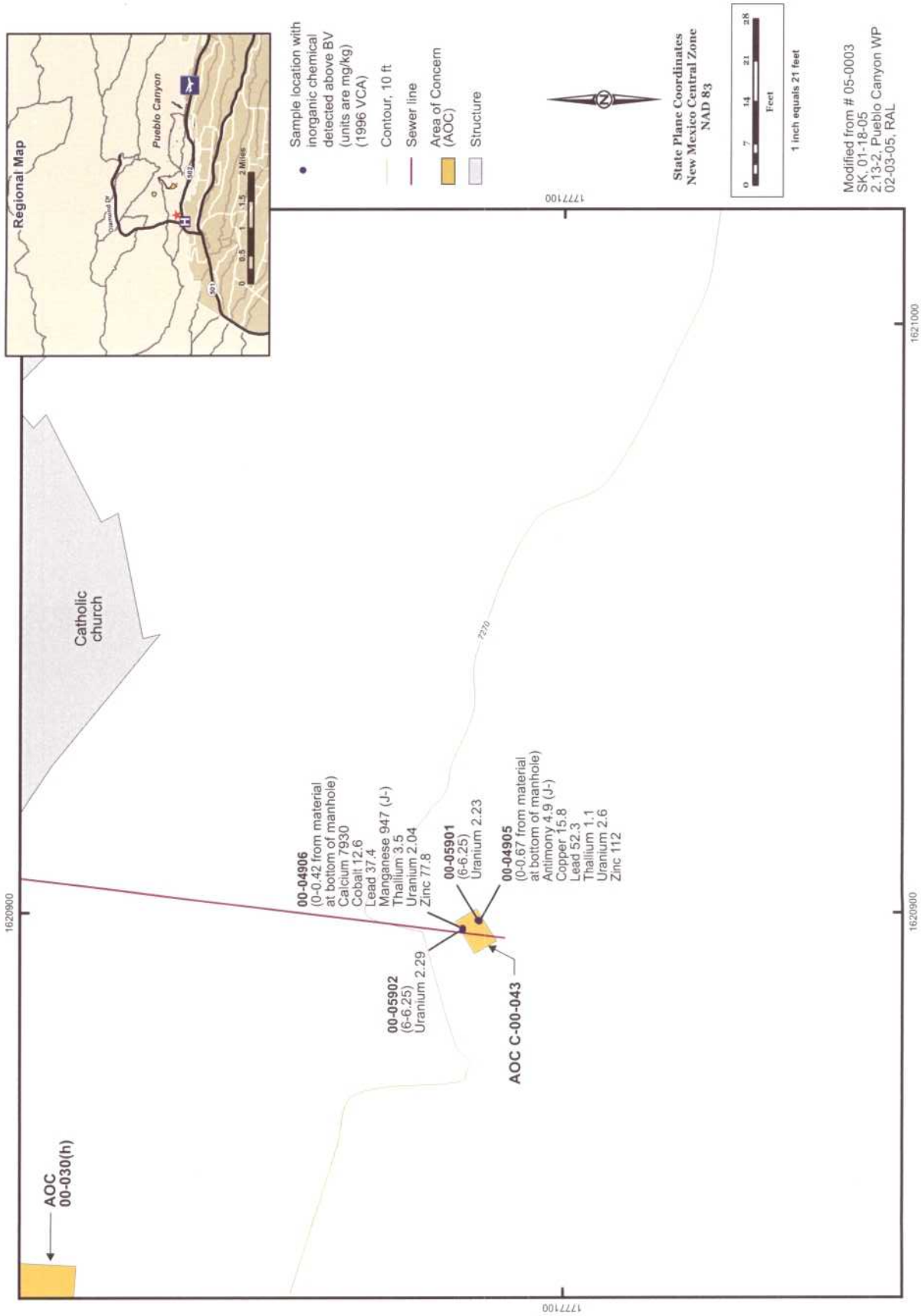


Figure 2.13-2. AOC C-00-043 historical sampling locations with inorganic chemicals detected above BVs

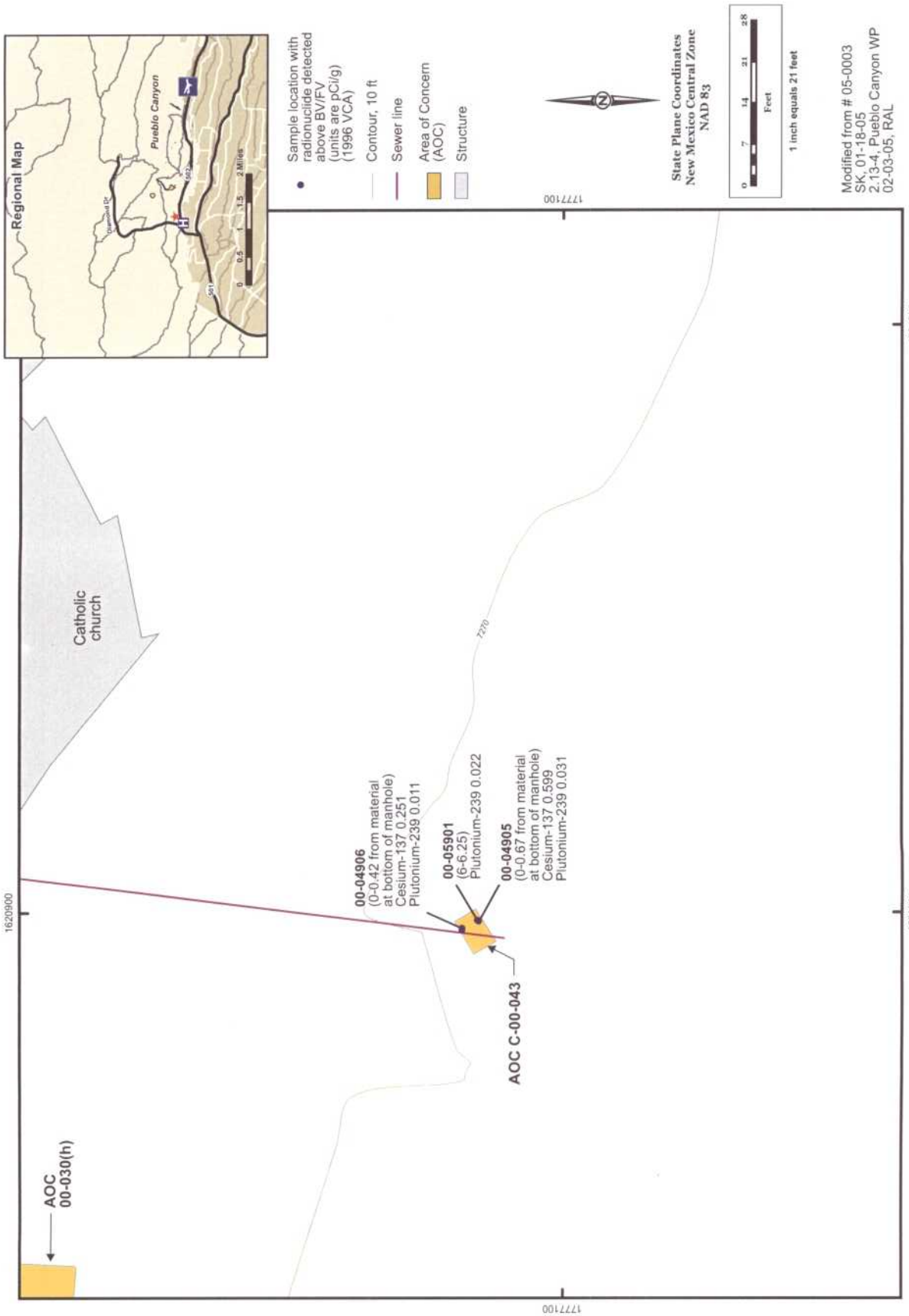


Figure 2.13-3. AOC C-00-043 historical sampling locations with radionuclides detected above BVs/FVs

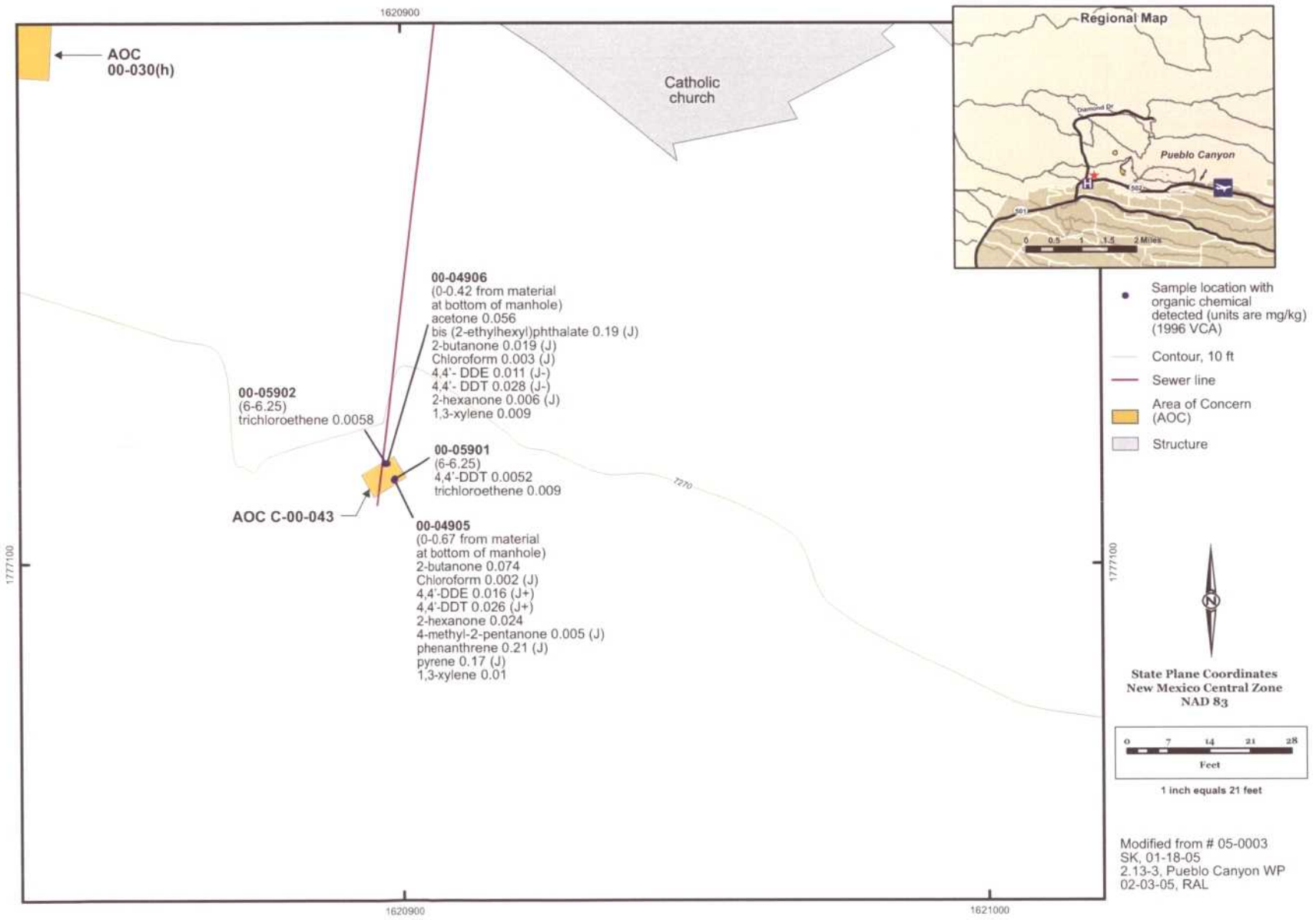


Figure 2.13-4. AOC C-00-043 historical sampling locations with organic chemicals detected

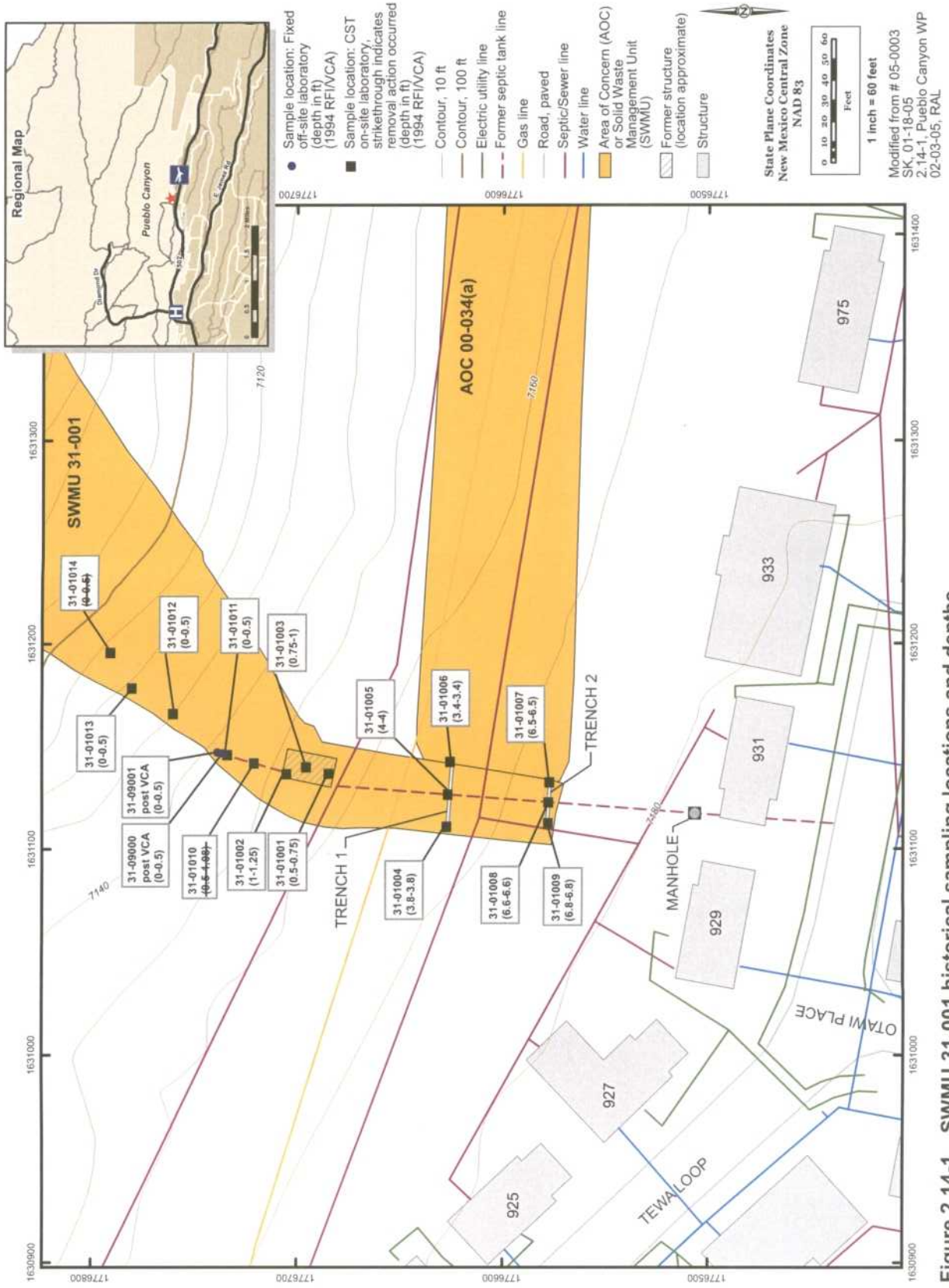


Figure 2.14-1. SWMU 31-001 historical sampling locations and depths

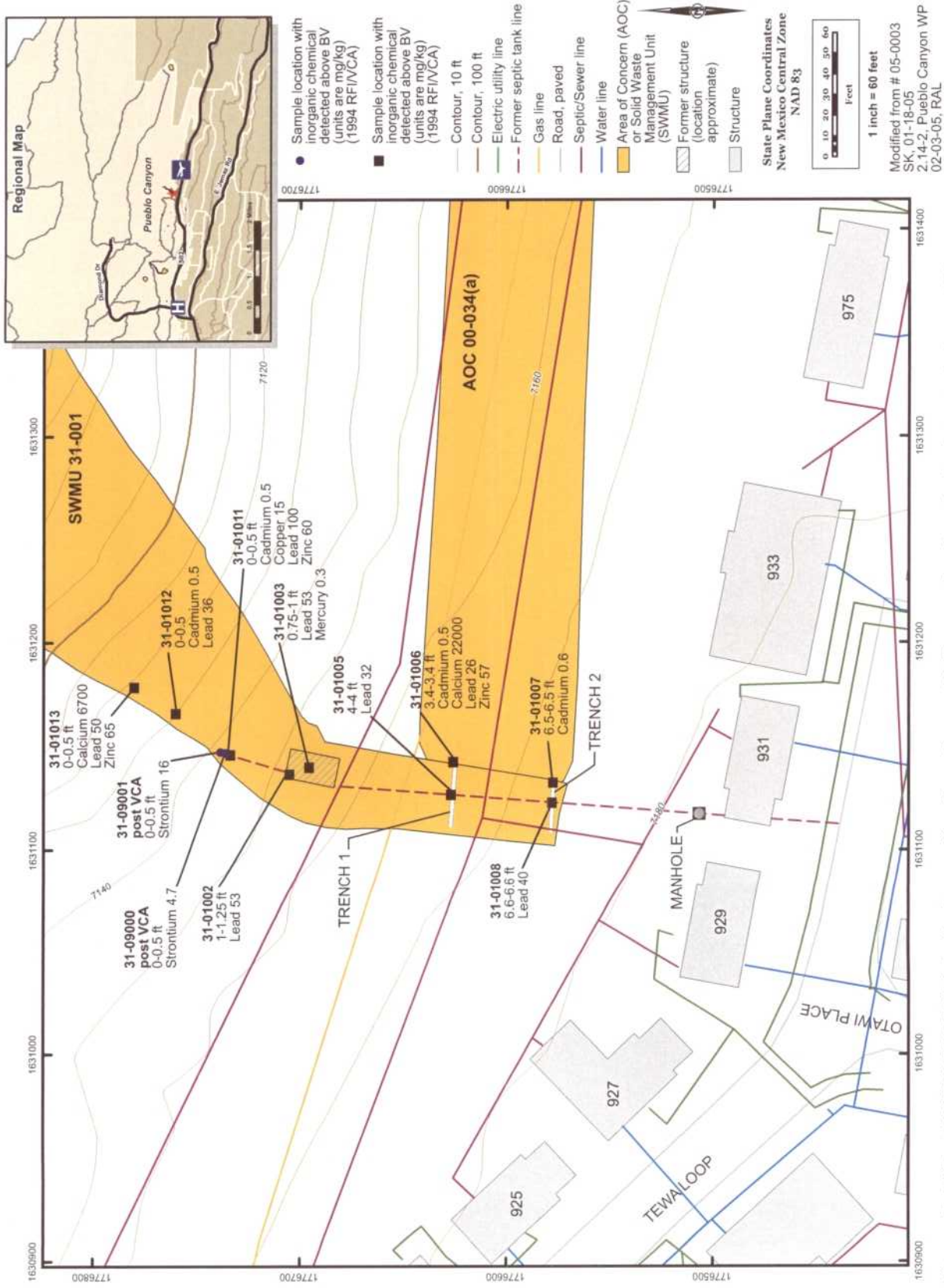


Figure 2.14-2. SWMU 31-001 historical sampling locations with inorganic chemicals detected above BVs

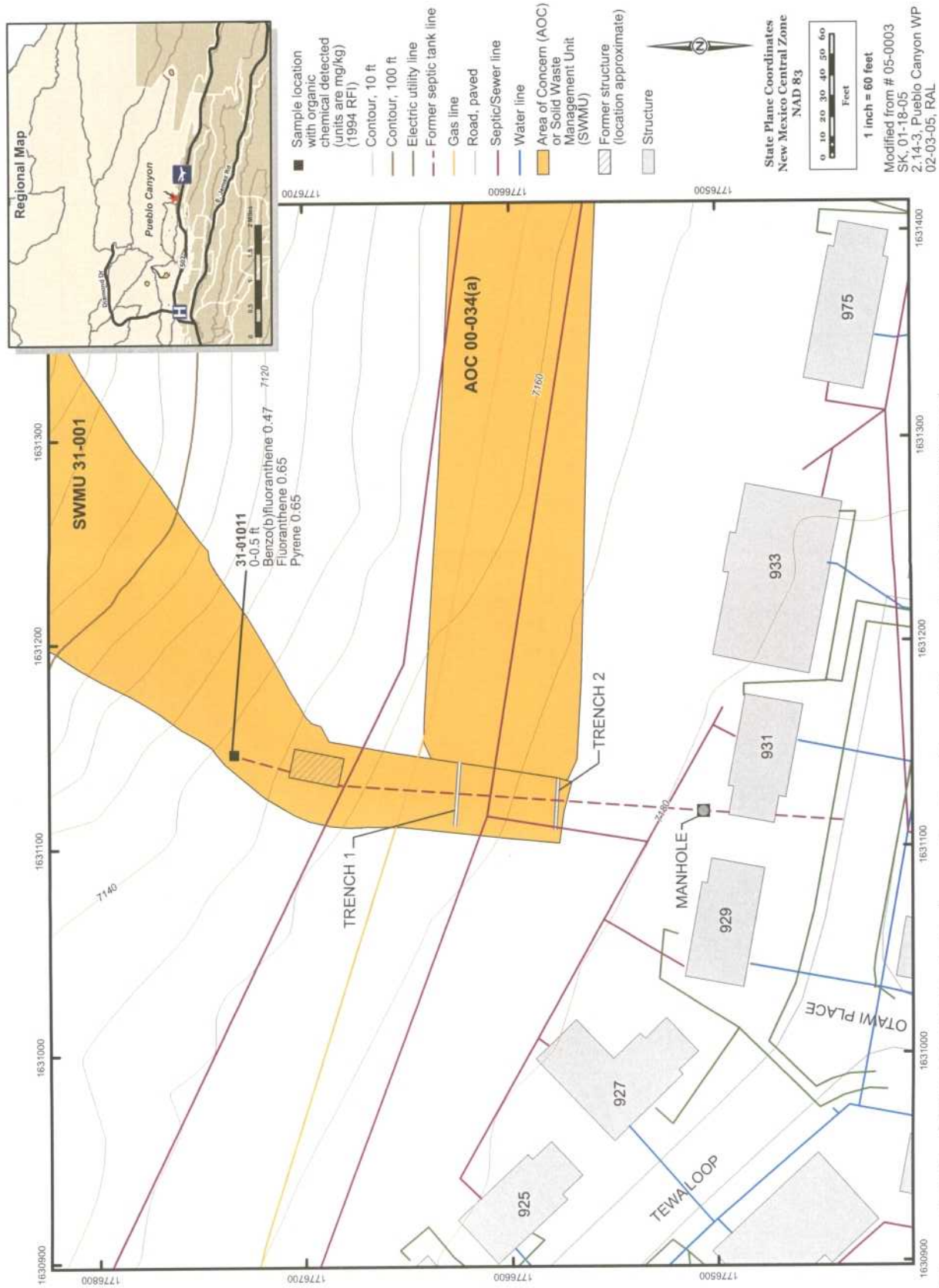


Figure 2.14-3. SWMU 31-001 historical sampling locations with organic chemicals detected

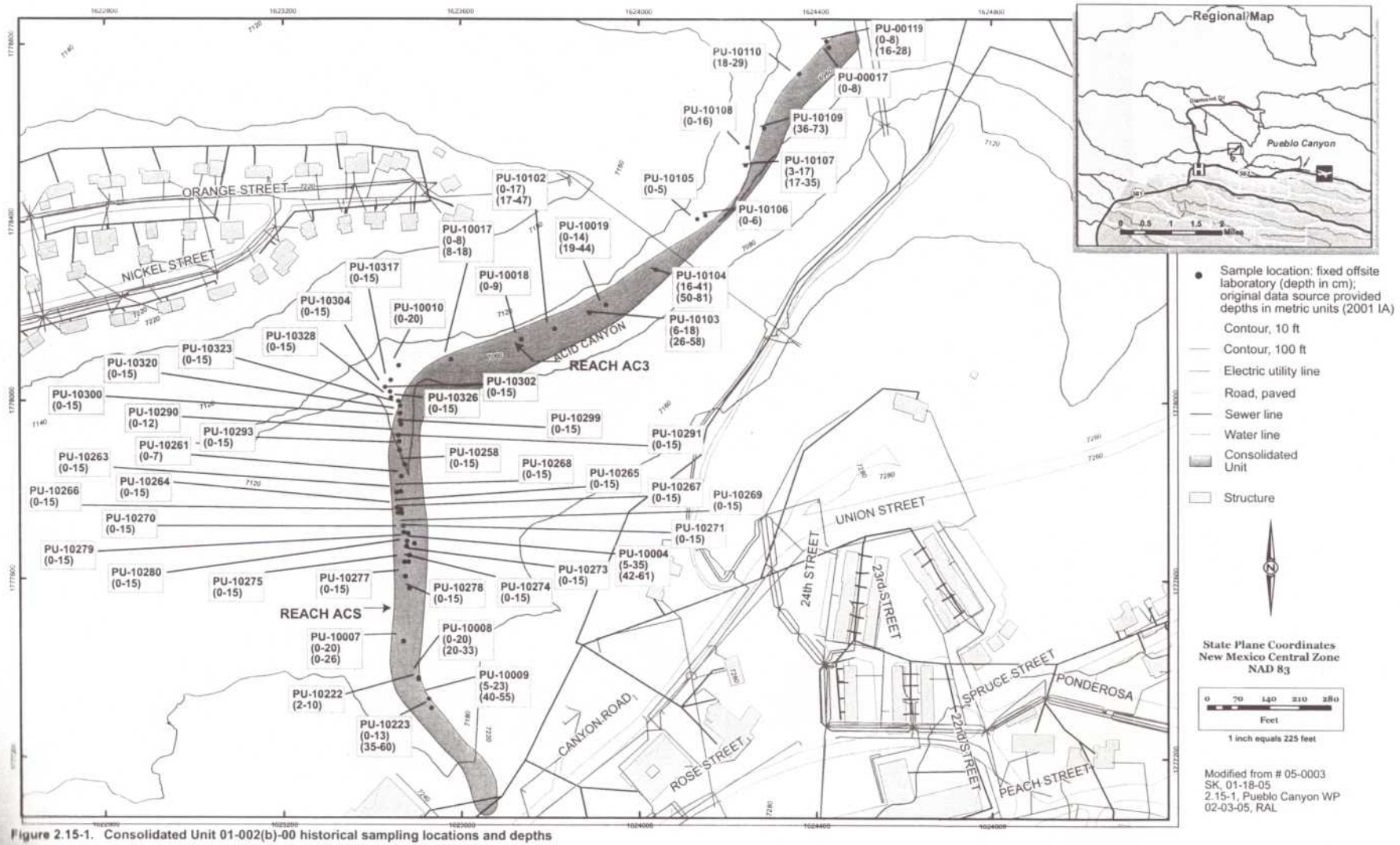


Figure 2.15-1. Consolidated Unit 01-002(b)-00 historical sampling locations and depths

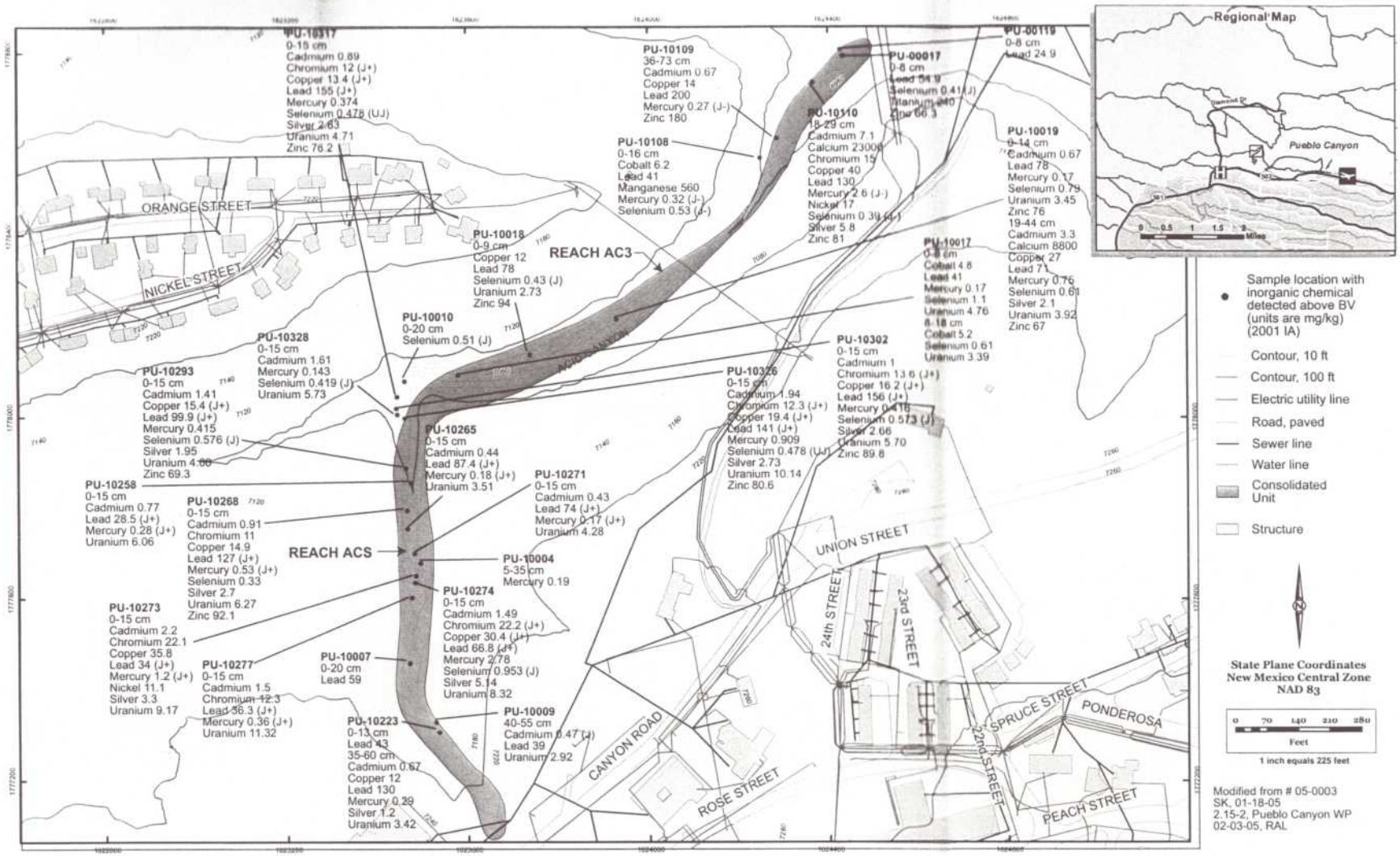


Figure 2.15-2. Consolidated Unit 01-002(b)-00 historical sampling locations with inorganic chemicals detected above BVs

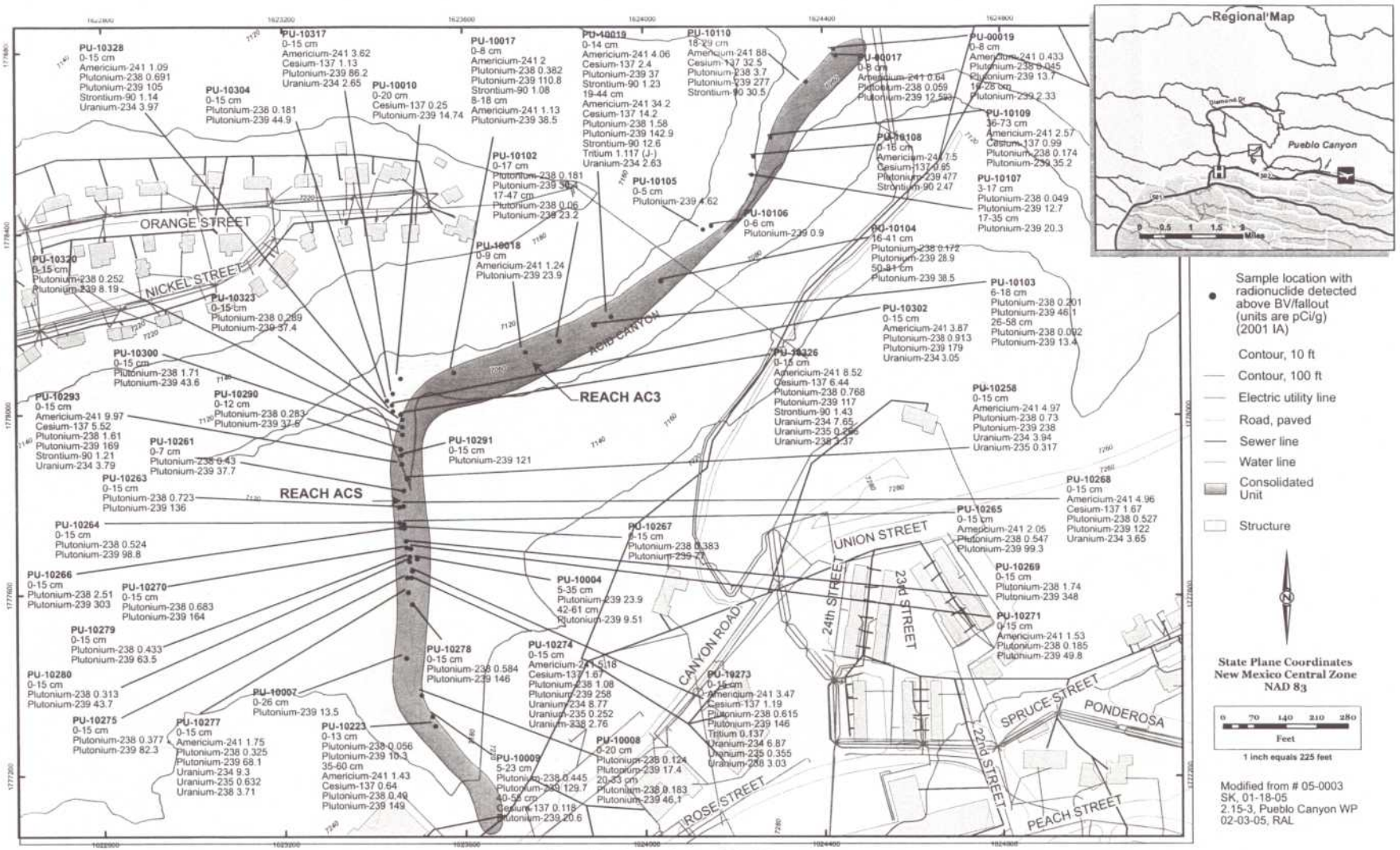


Figure 2.15-3. Consolidated Unit 01-002(b)-00 historical sampling locations with radionuclides detected above BVs/FVs

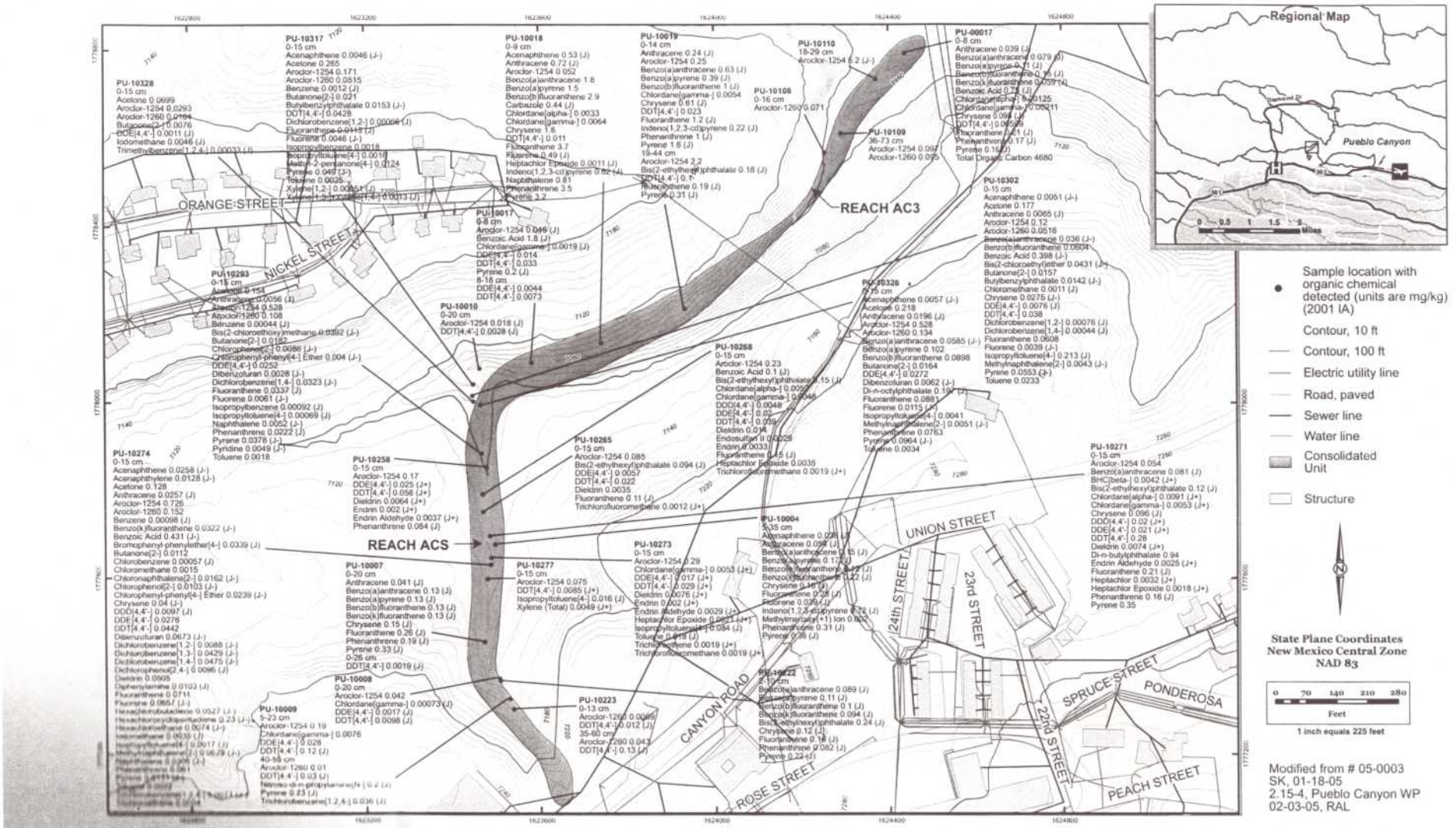


Figure 2.15-4. Consolidated Unit 01-002(b)-00 historical sampling locations with organic chemicals detected

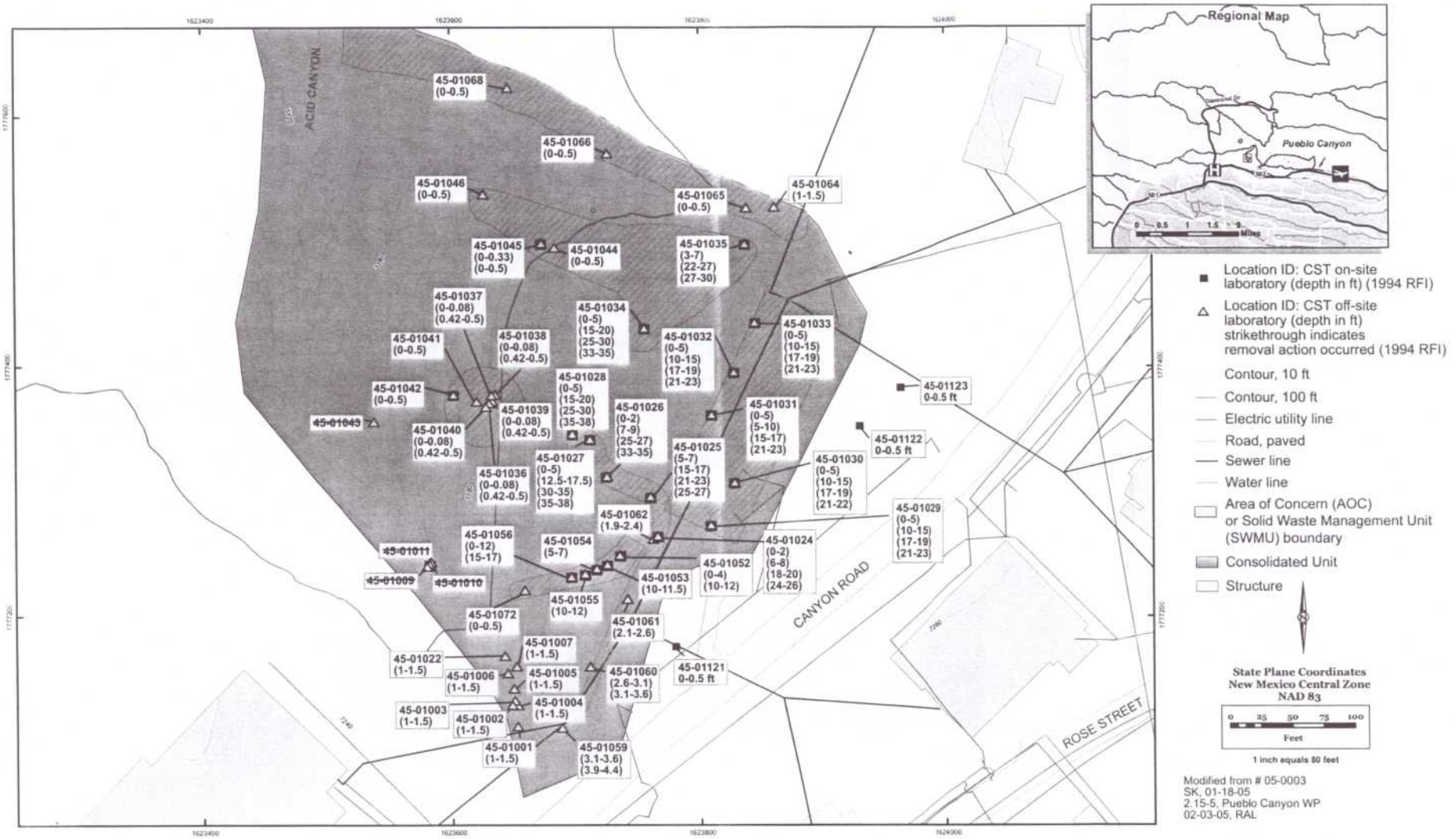


Figure 2.15-5. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] and depths

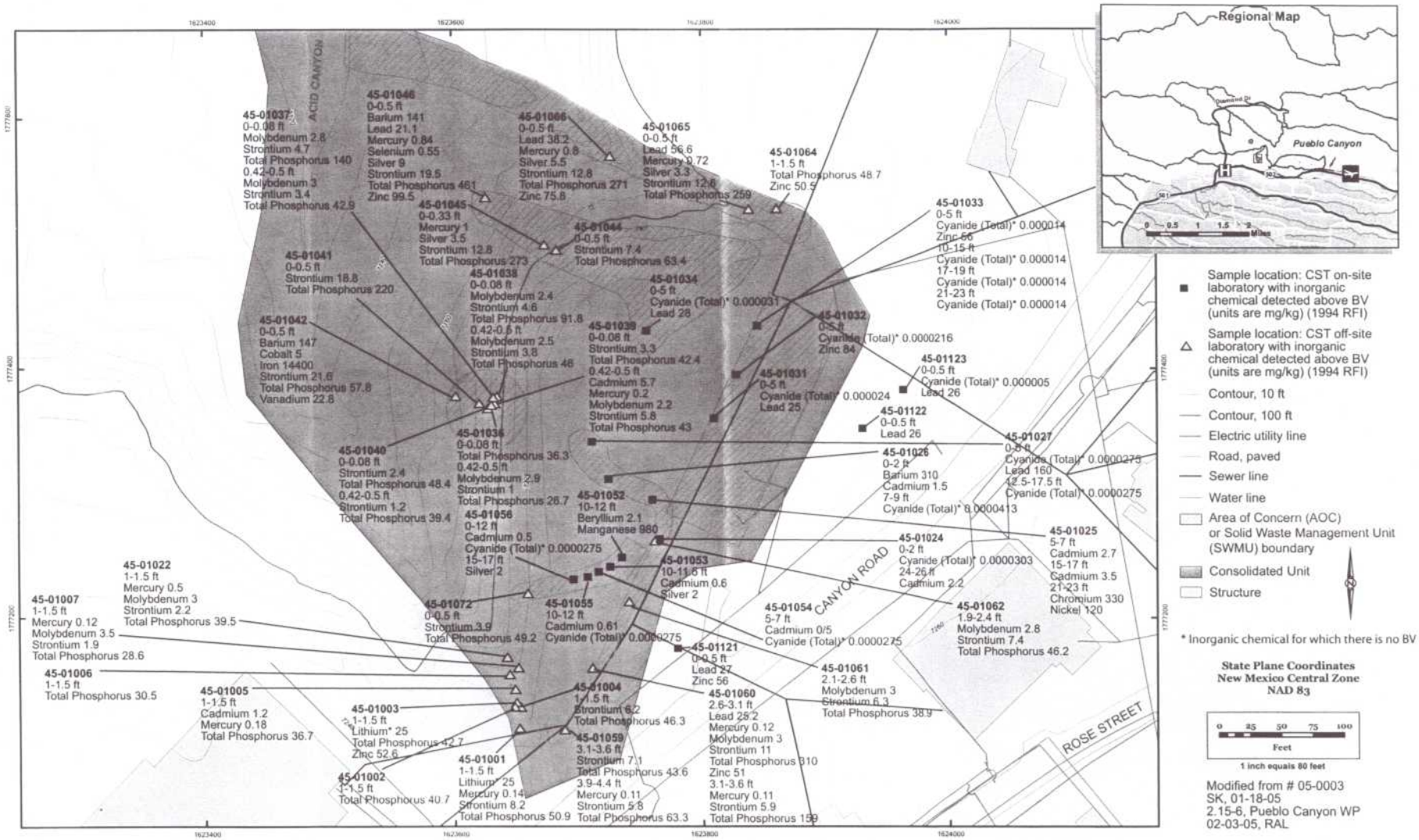


Figure 2.15-6. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] with inorganic chemicals detected above BVs

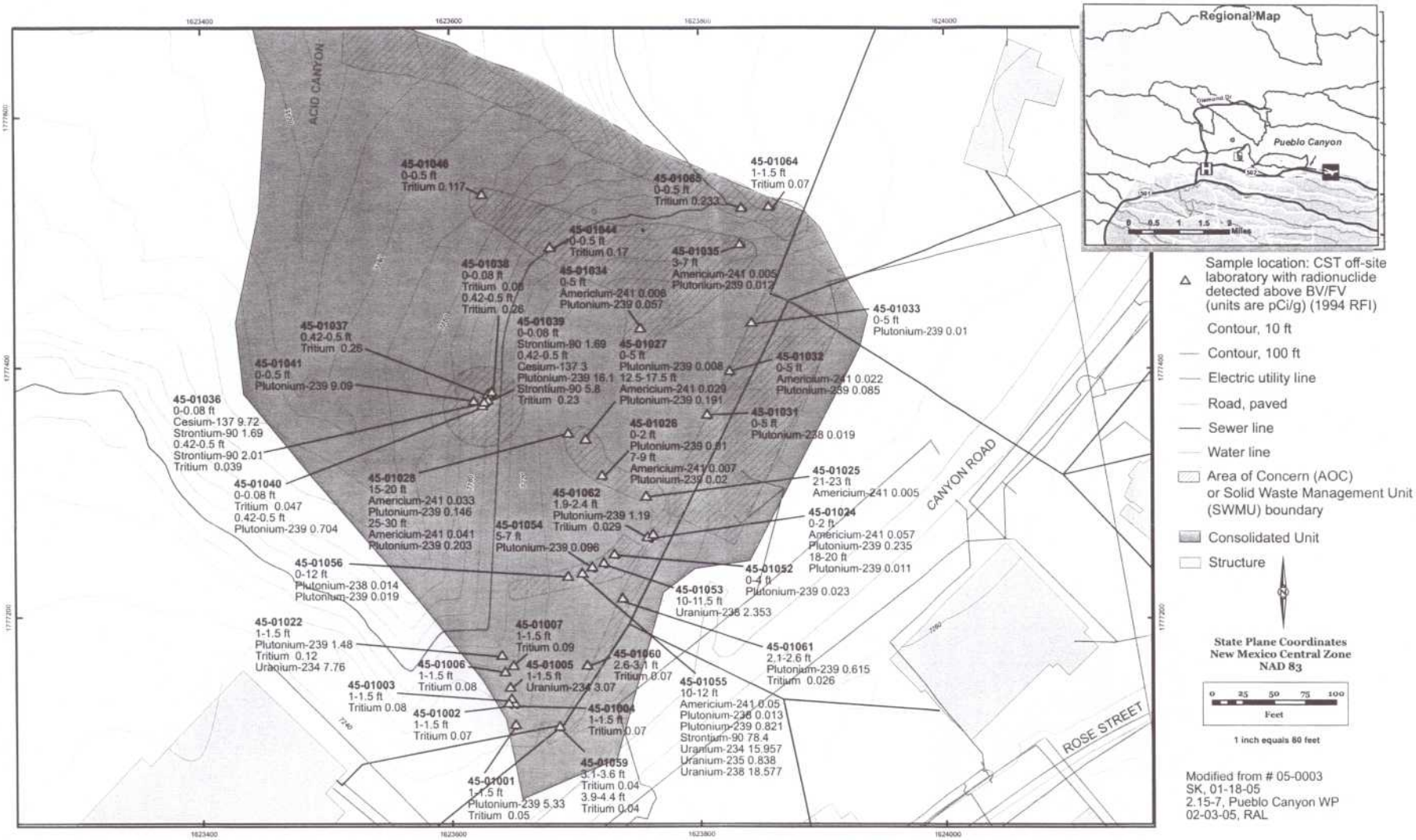


Figure 2.15-7. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] with radionuclides detected above BVs/FVs

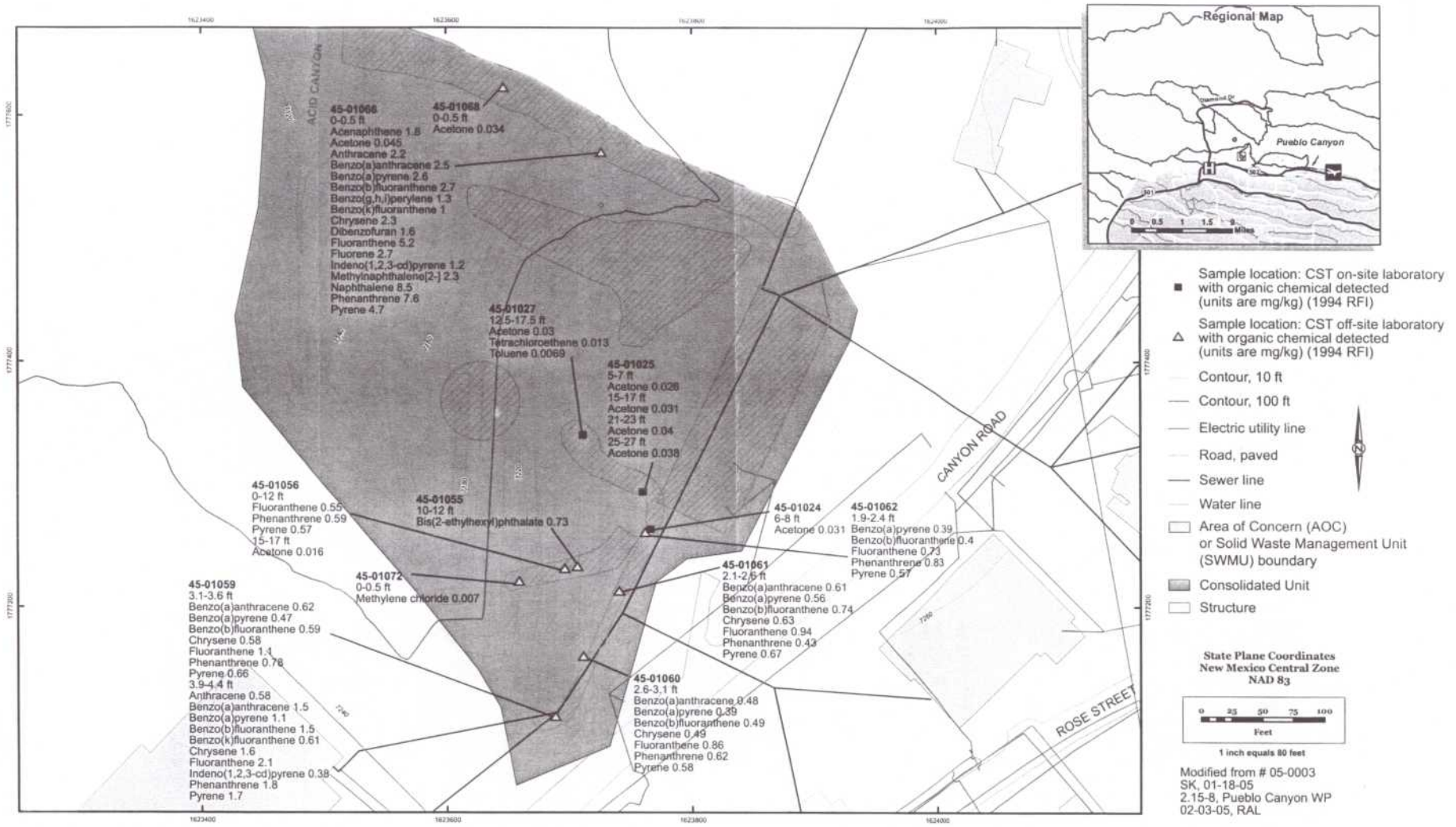


Figure 2.15-8. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] with organic chemicals detected

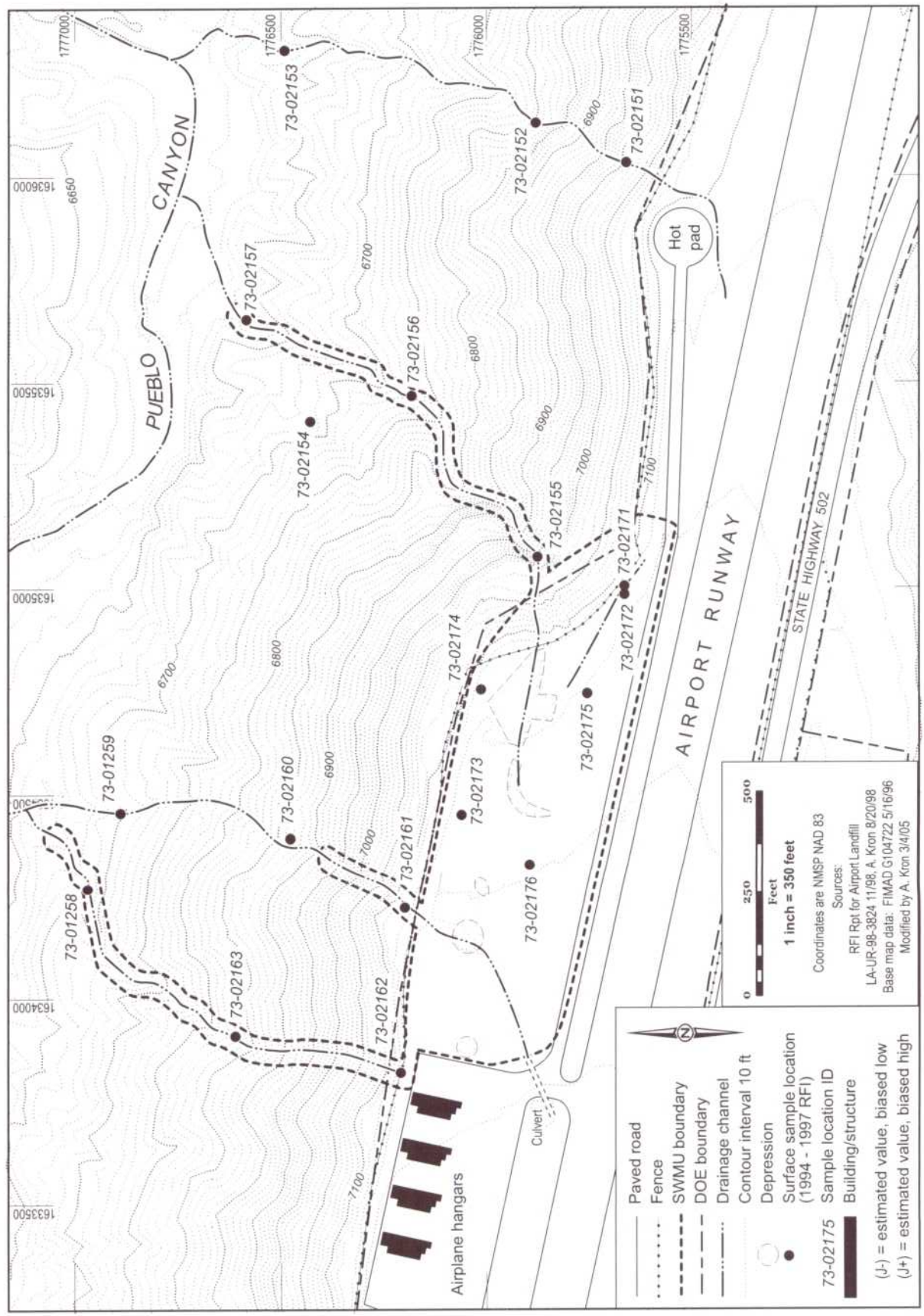


Figure 2.16-1. Consolidated Unit 73-001(a)-99 surface sampling locations

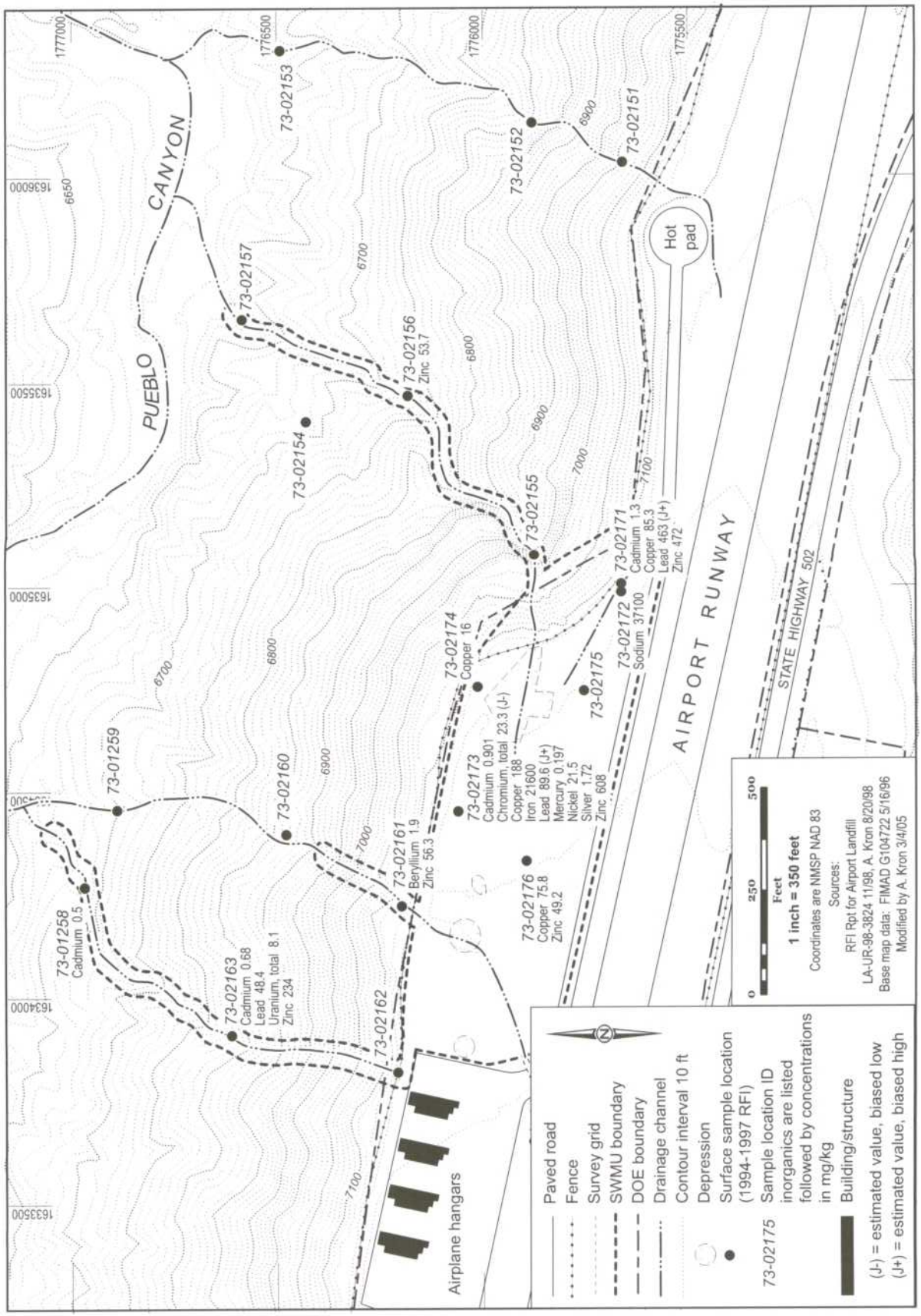


Figure 2.16-2. Consolidated Unit 73-001(a)-99 surface sampling locations with maximum inorganic chemical concentrations

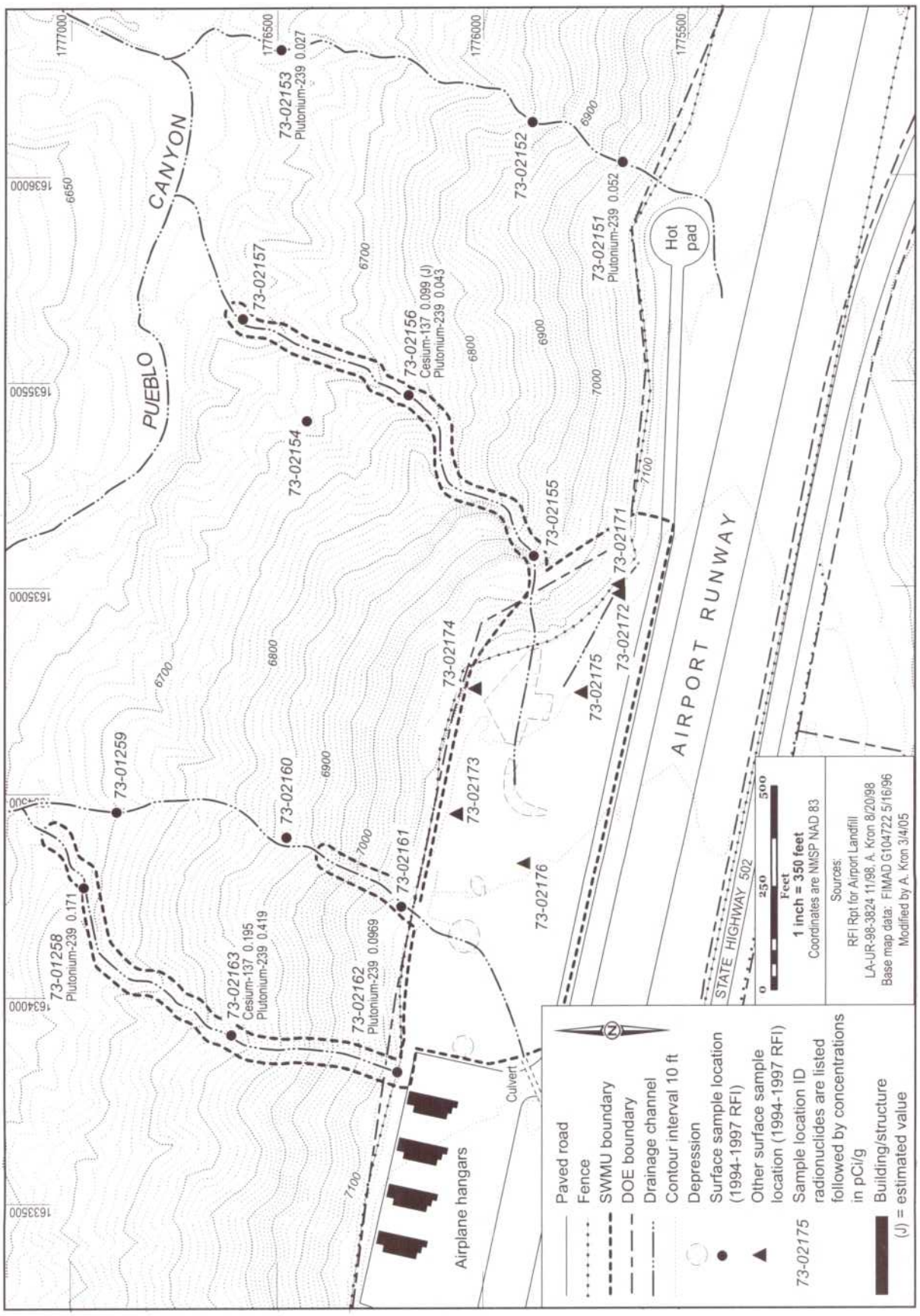


Figure 2.16-3. Consolidated Unit 73-001(a)-99 surface sampling locations with maximum radionuclide activities

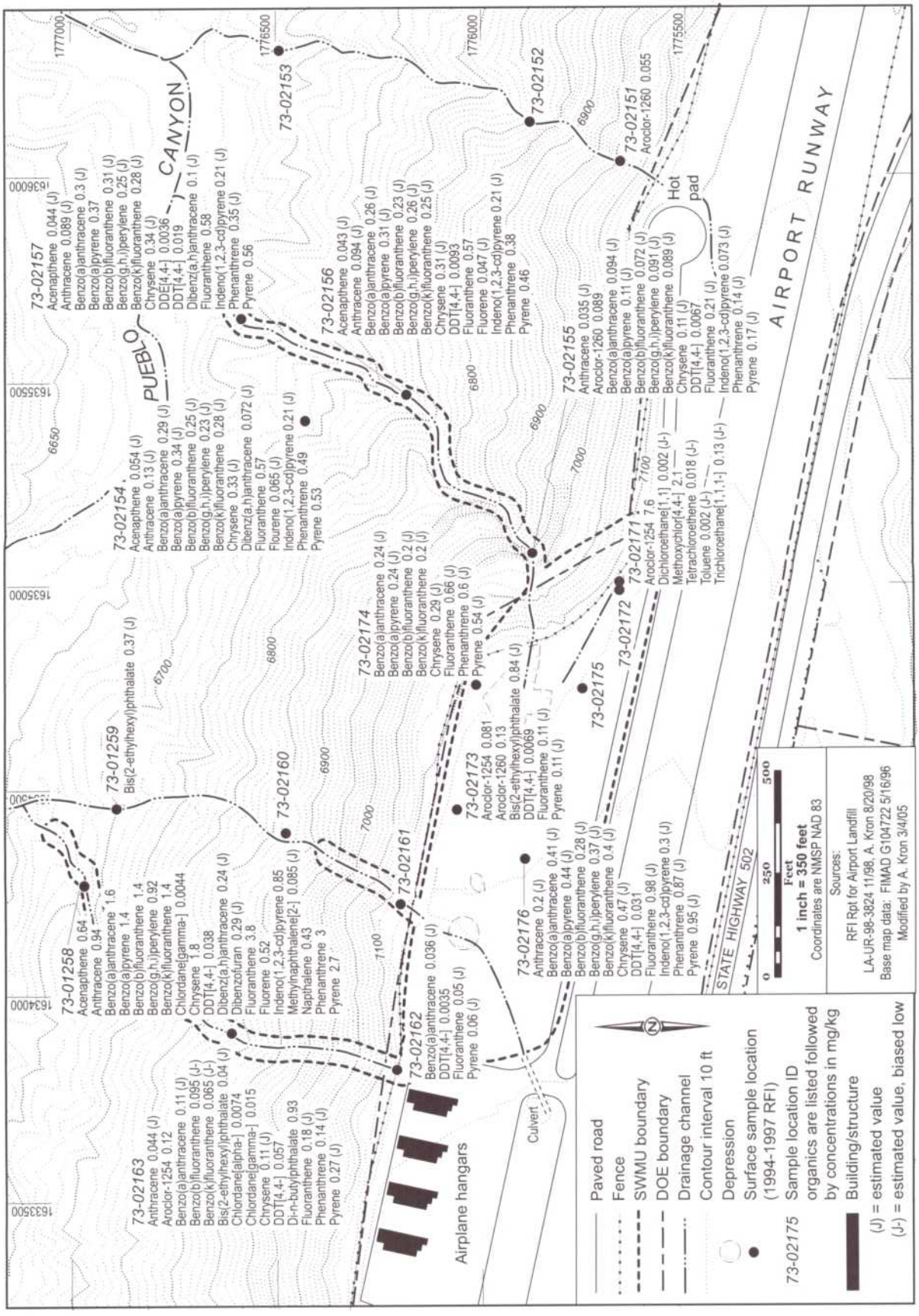


Figure 2.16-4. Consolidated Unit 73-001(a)-99 surface sampling locations with maximum detected organic chemical concentrations

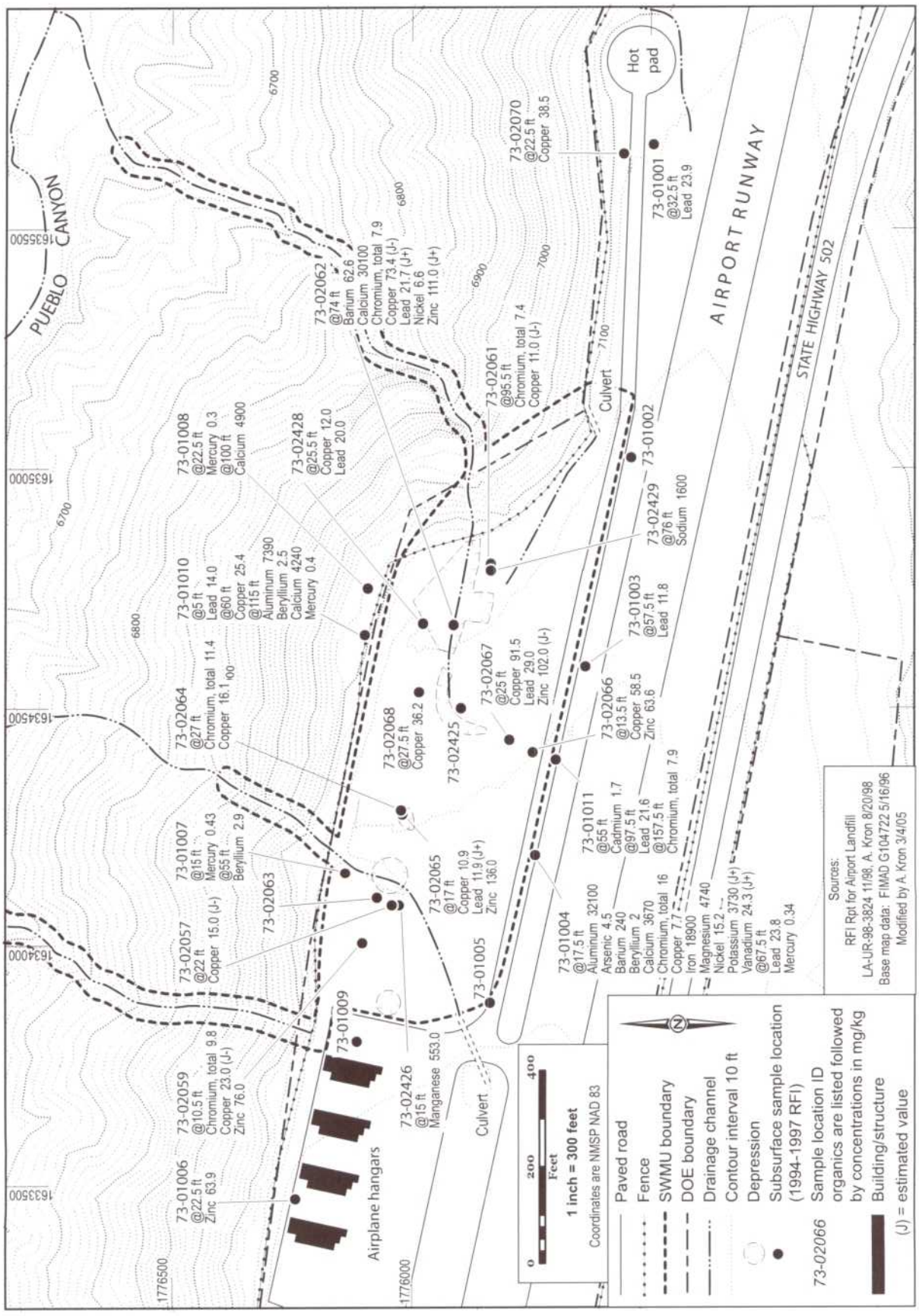


Figure 2.16-5. Consolidated Unit 73-001(a)-99 subsurface sampling locations with maximum inorganic chemical concentrations

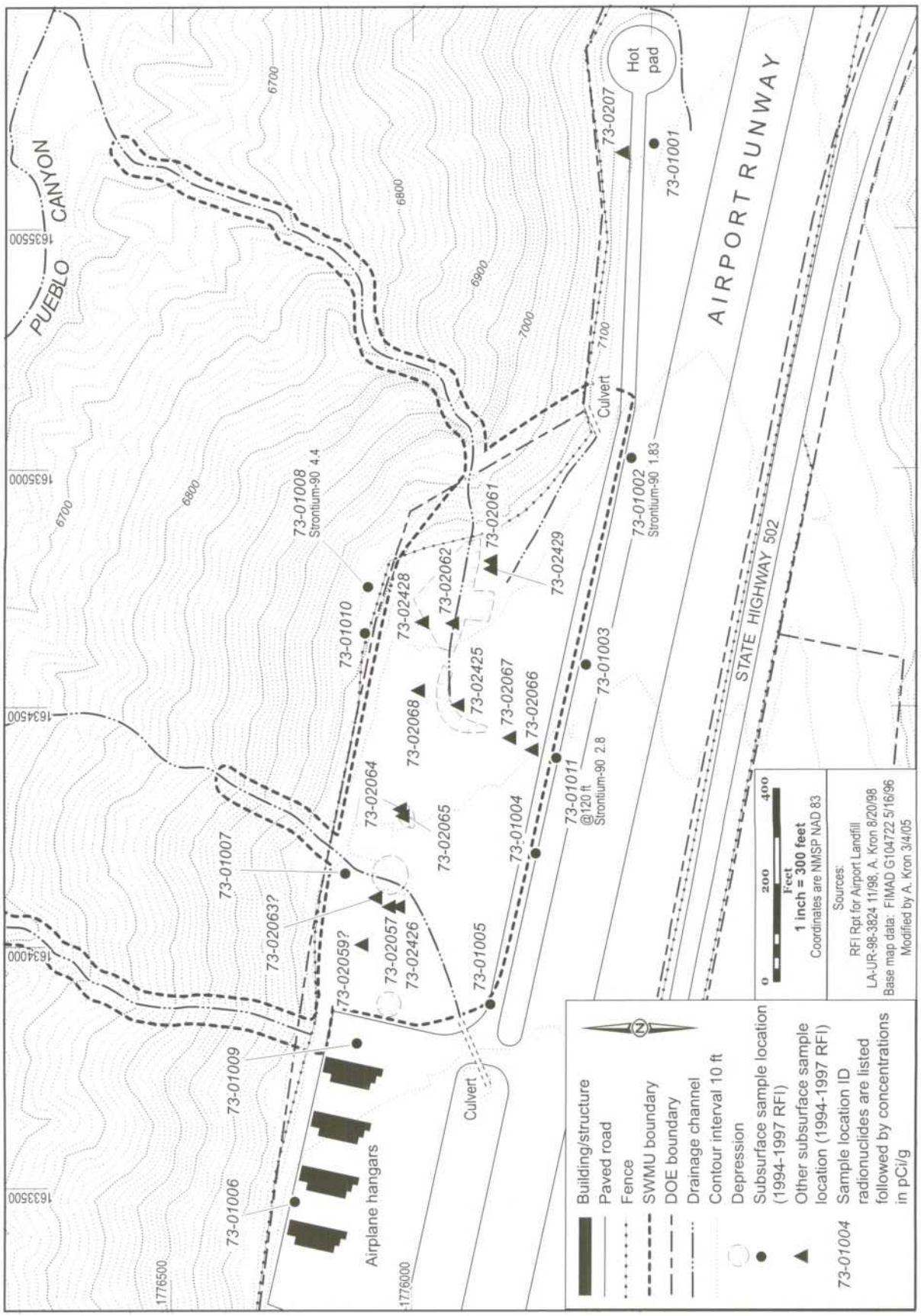


Figure 2.16-6. Consolidated Unit 73-001(a)-99 subsurface sampling locations with maximum radionuclide activities

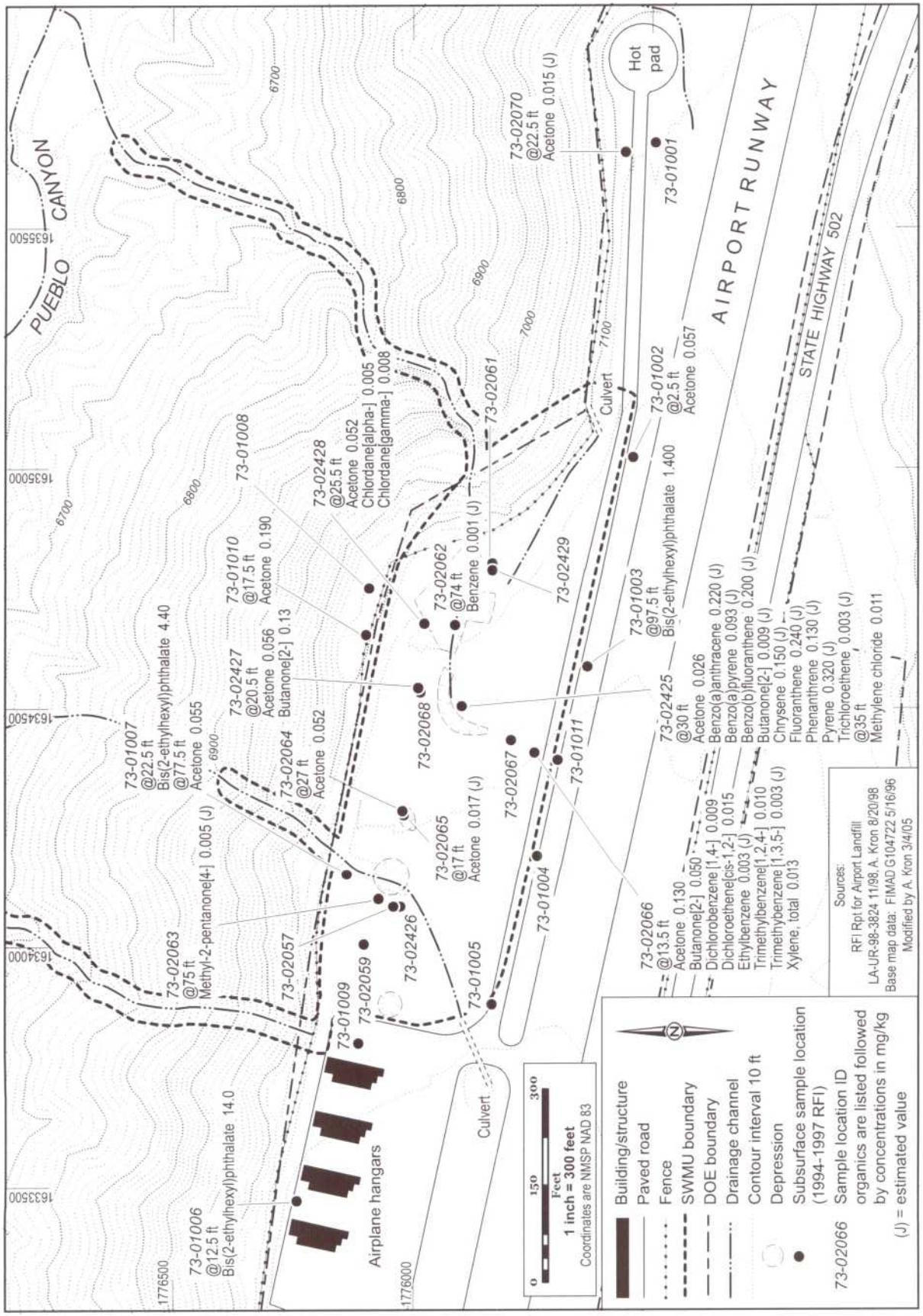


Figure 2.16-7. Consolidated Unit 73-001(a)-99 subsurface sampling locations with maximum detected organic chemical concentrations

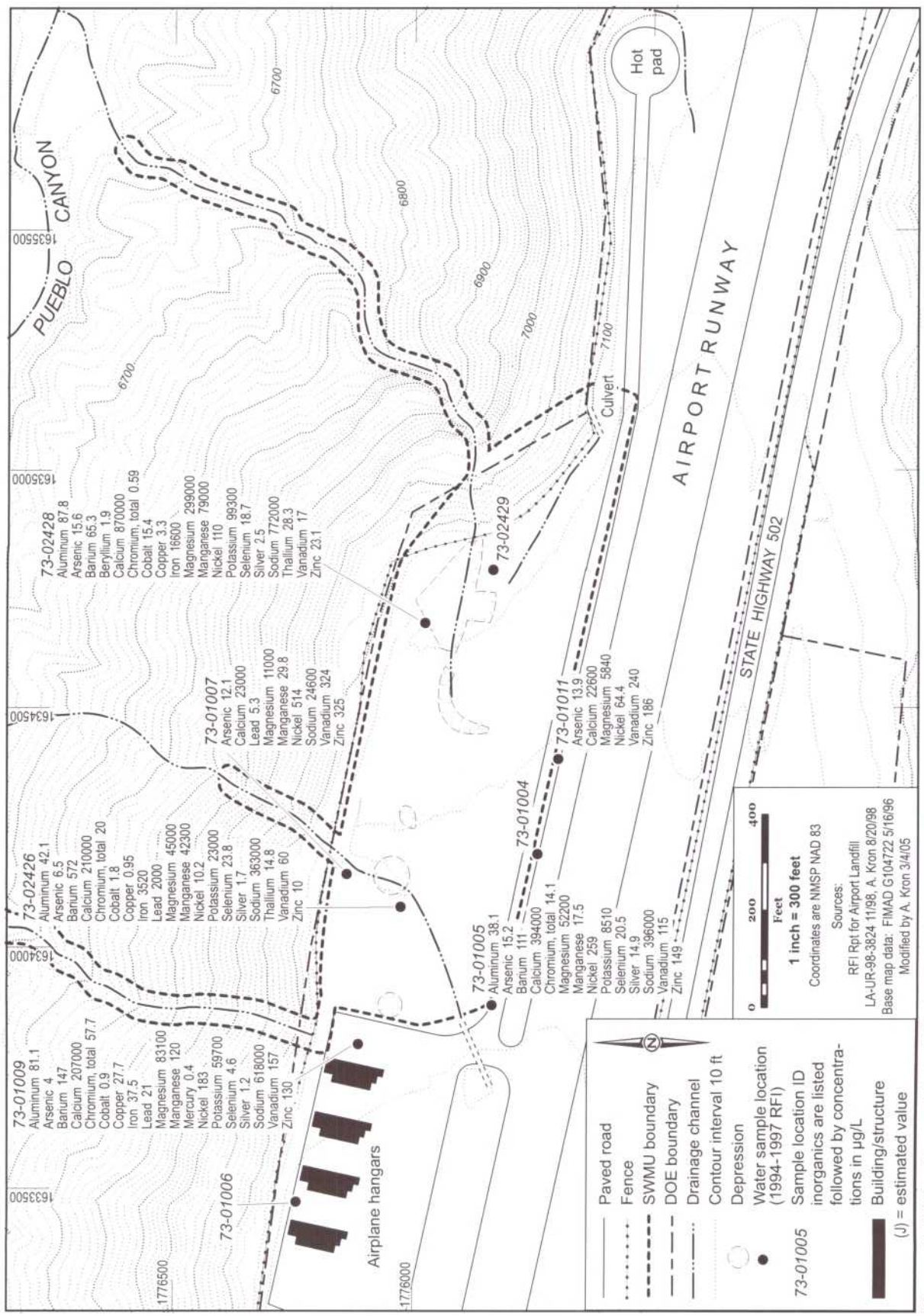


Figure 2.16-8. Consolidated Unit 73-001(a)-99 inorganic chemicals detected in pore water

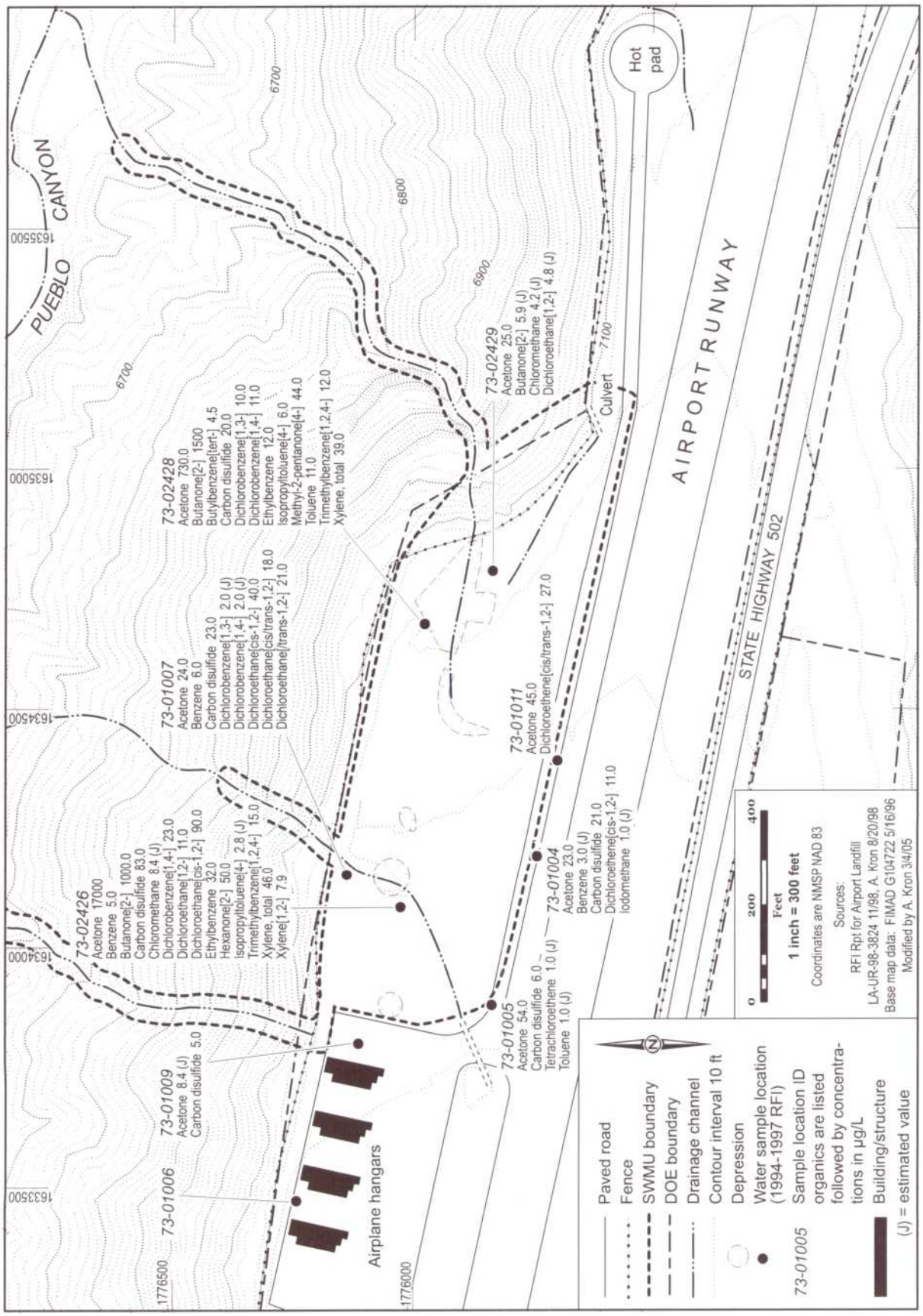


Figure 2.16-9 Consolidated Unit 73-001(a)-99 organic chemicals detected in pore water

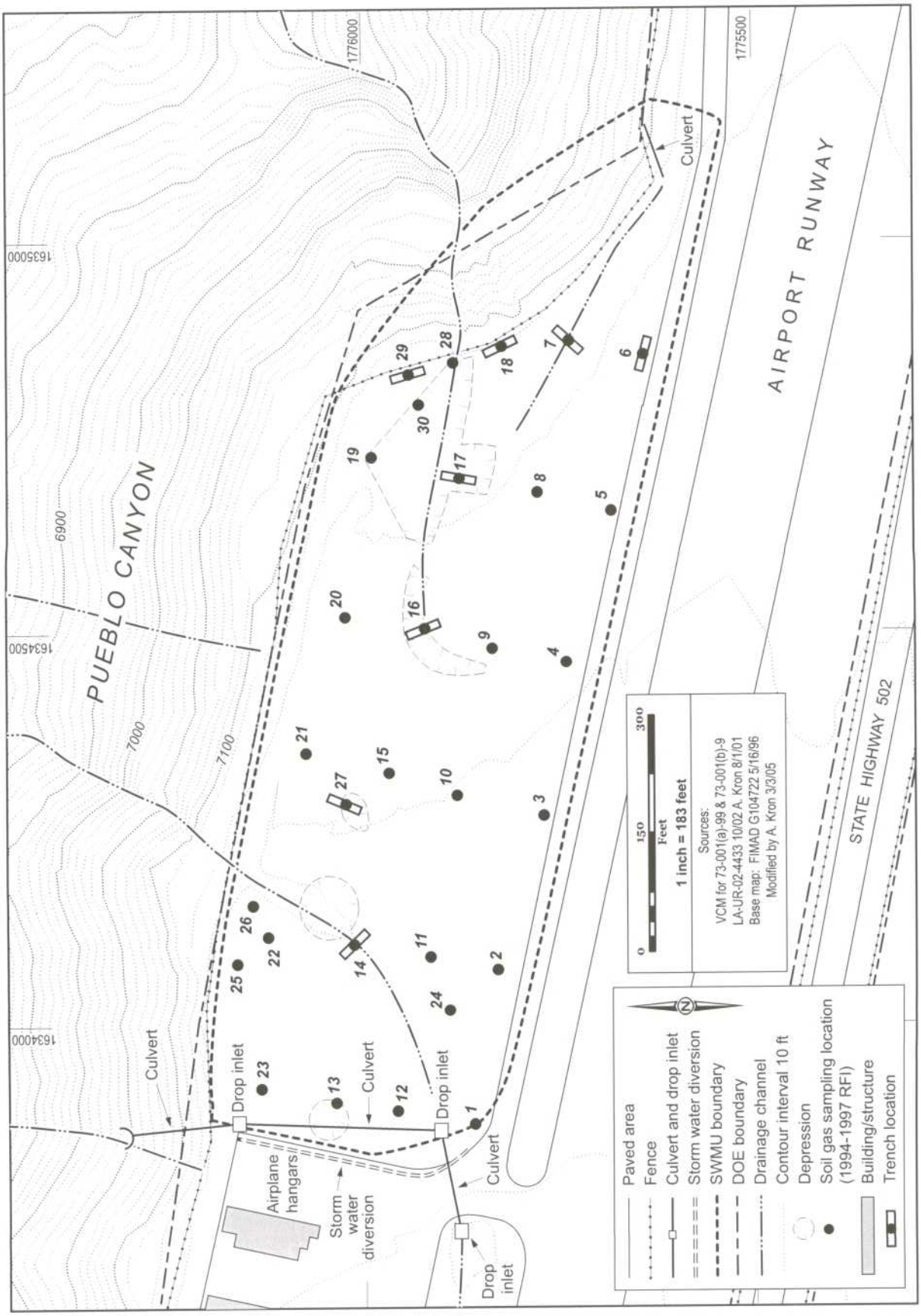


Figure 2.16-10. Consolidated Unit 73-001(a)-99 soil-gas sampling locations and trenching locations

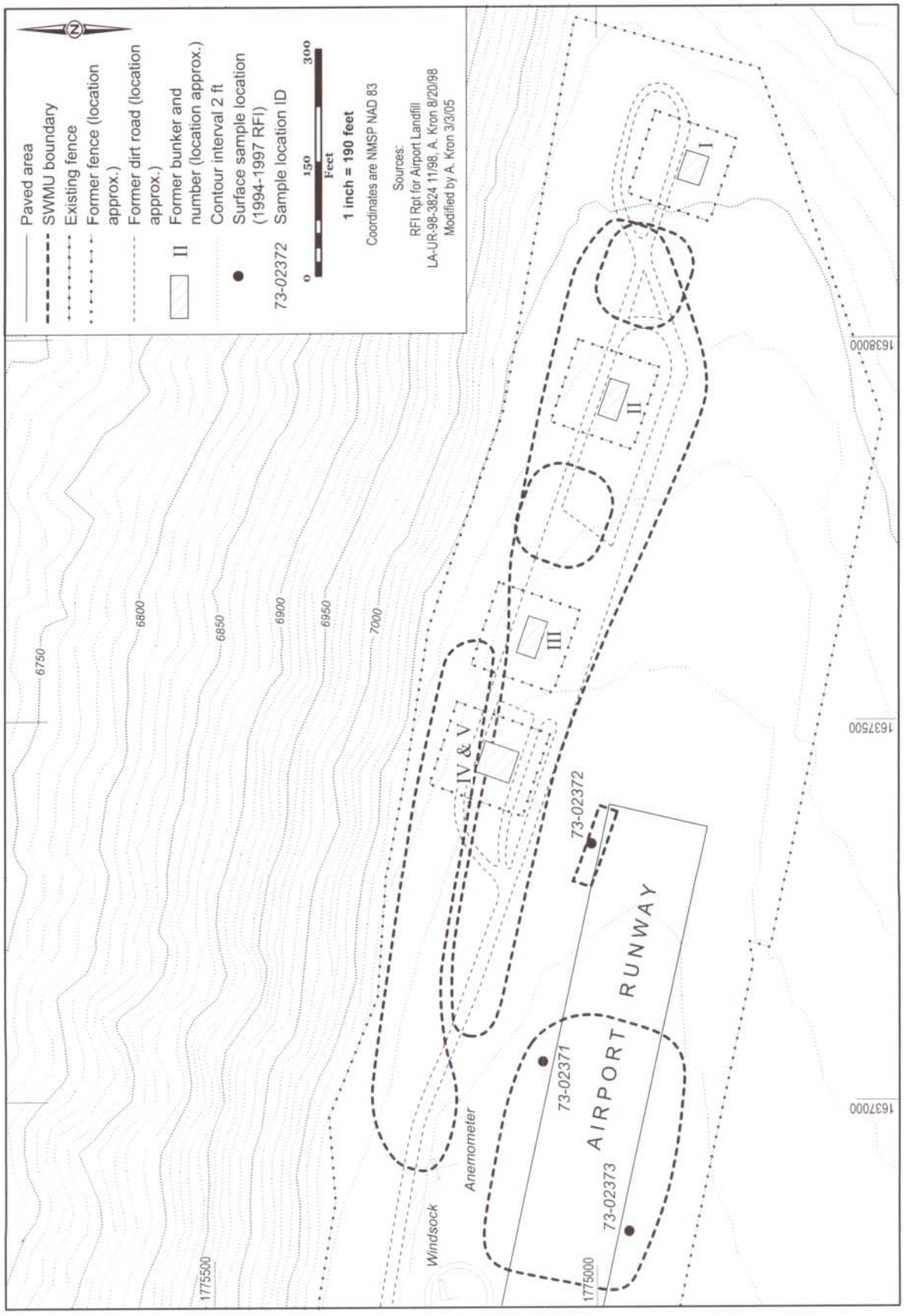


Figure 2.17-1. Consolidated Unit 73-001(b)-99 surface sampling locations

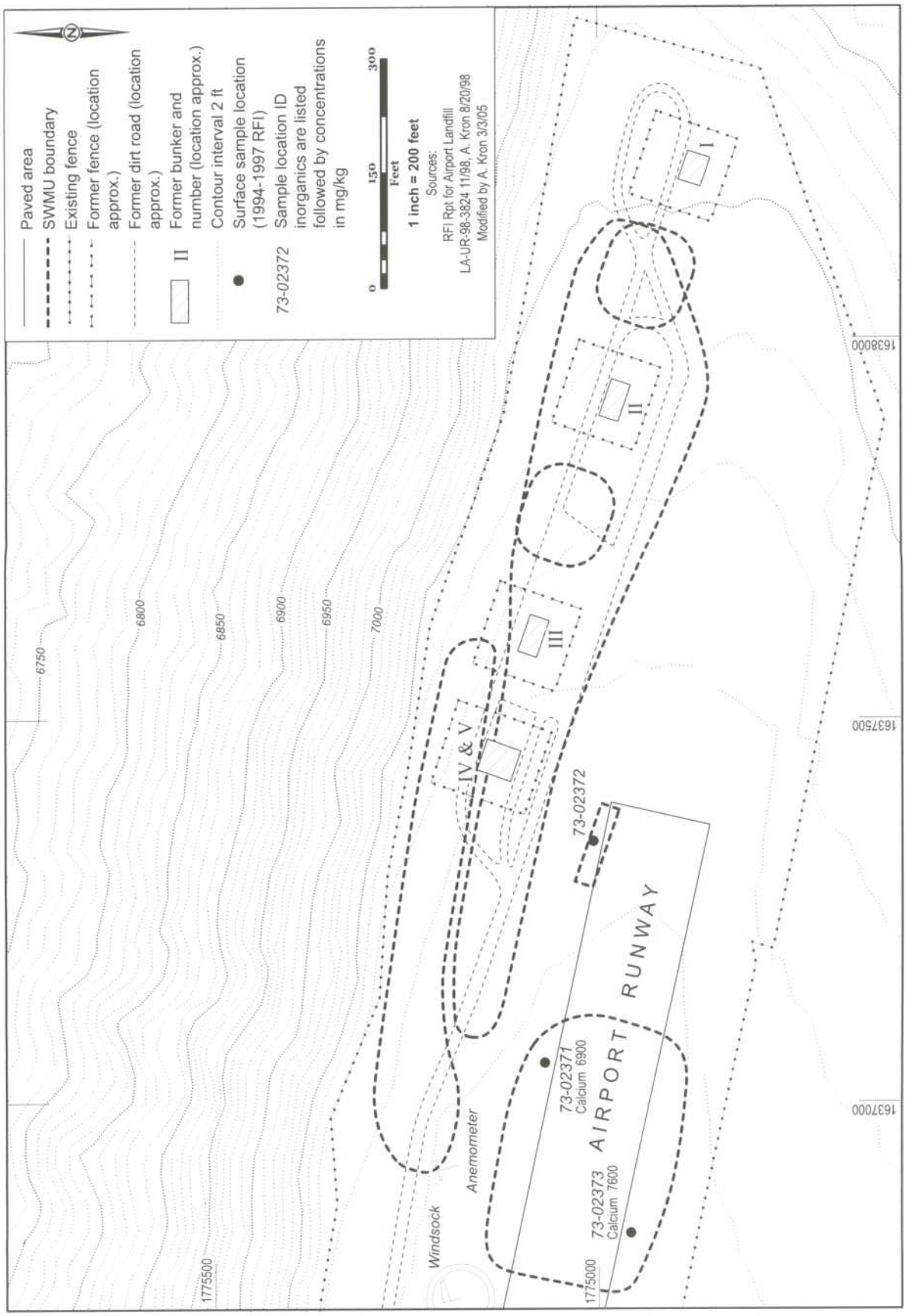


Figure 2.17-2. Consolidated Unit 73-001(b)-99 surface sampling locations with maximum inorganic chemical concentrations

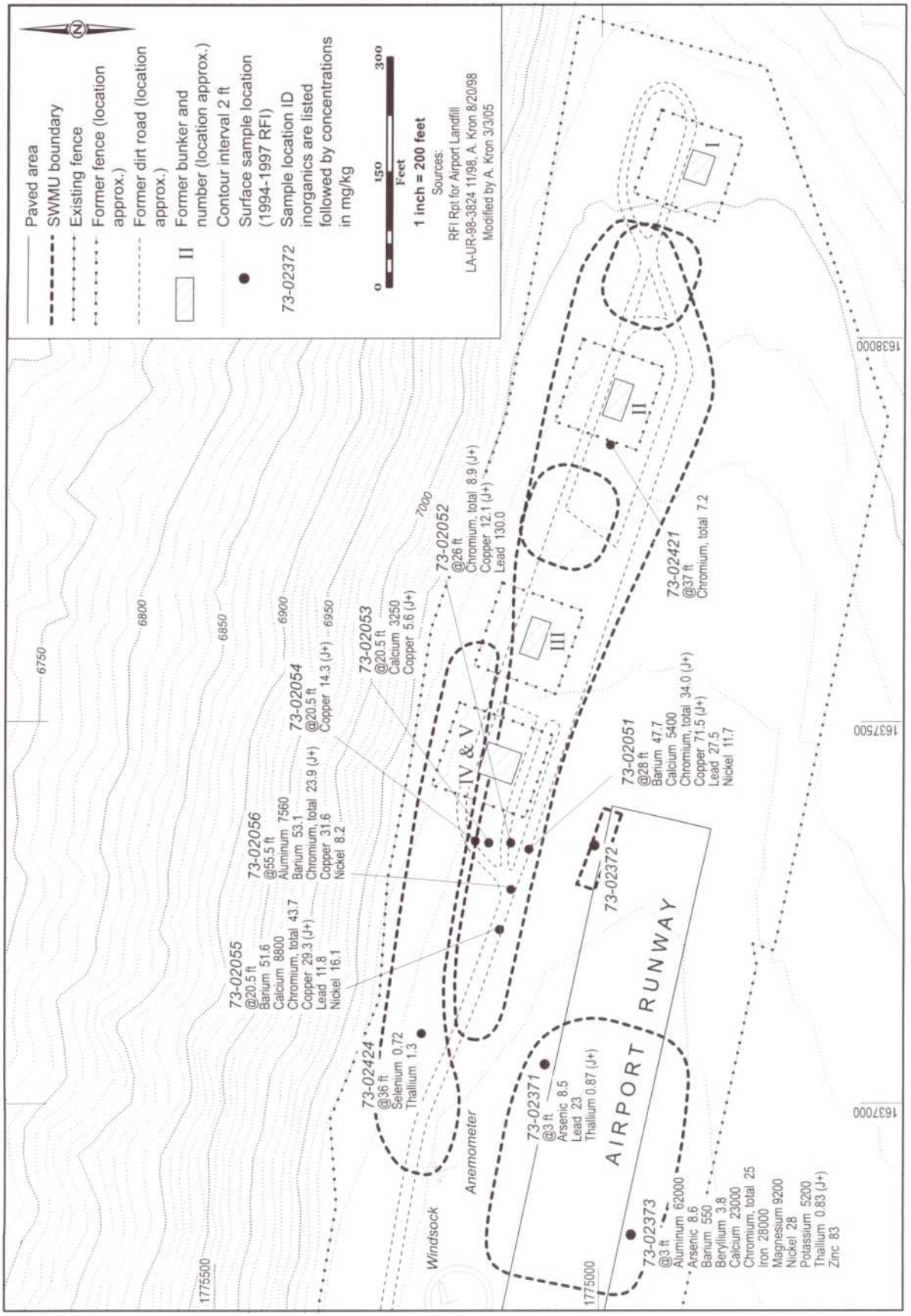


Figure 2.17-3. Consolidated Unit 73-001(b)-99 subsurface sampling locations with maximum inorganic chemical concentrations

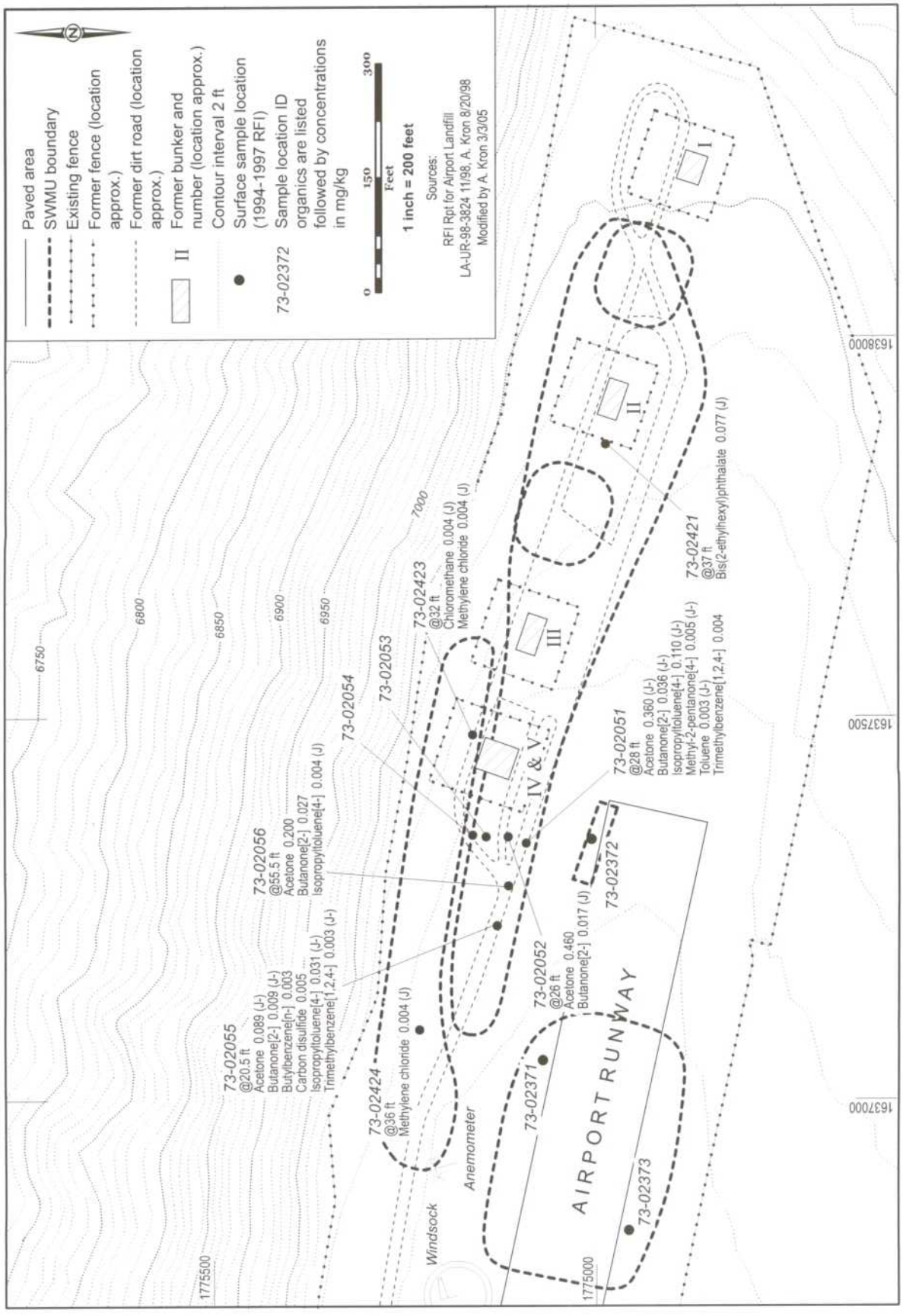


Figure 2.17-4. Consolidated Unit 73-001(b)-99 subsurface sampling locations with maximum detected organic concentrations

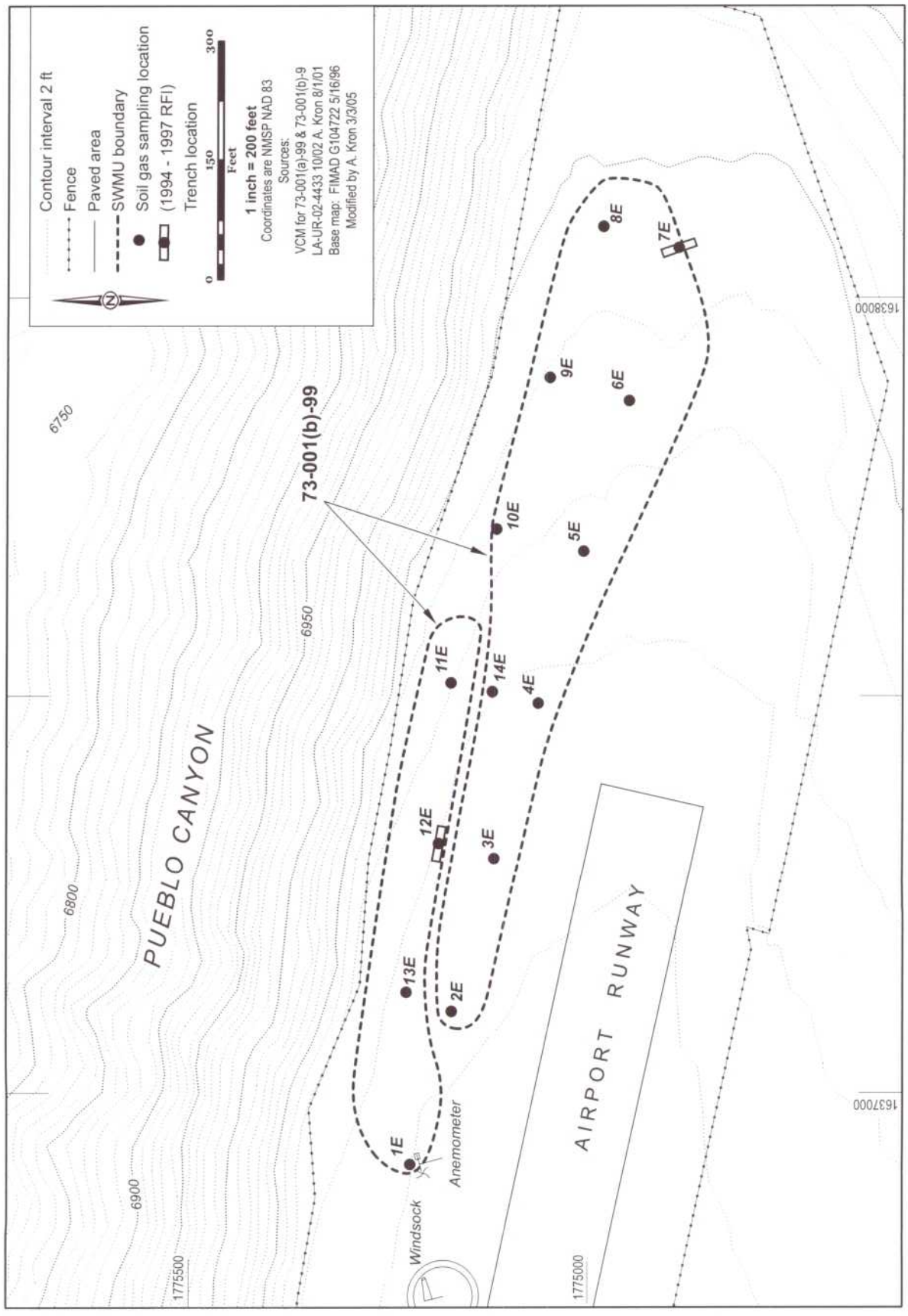


Figure 2.17-5. Consolidated Unit 73-001(b)-99 soil-gas sampling locations and trenching locations

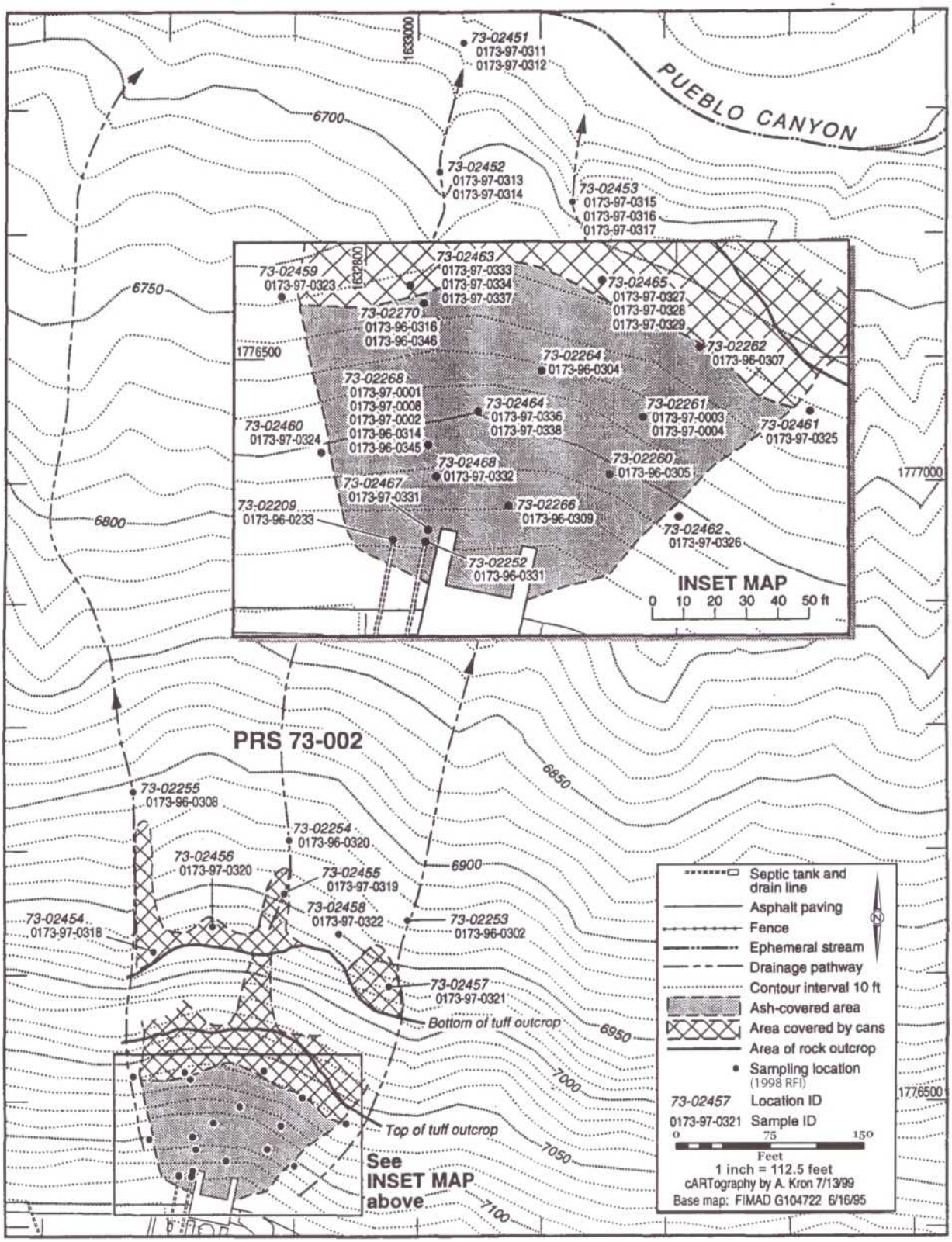


Figure 2.18-1. SWMU 73-002 historical investigation sampling locations

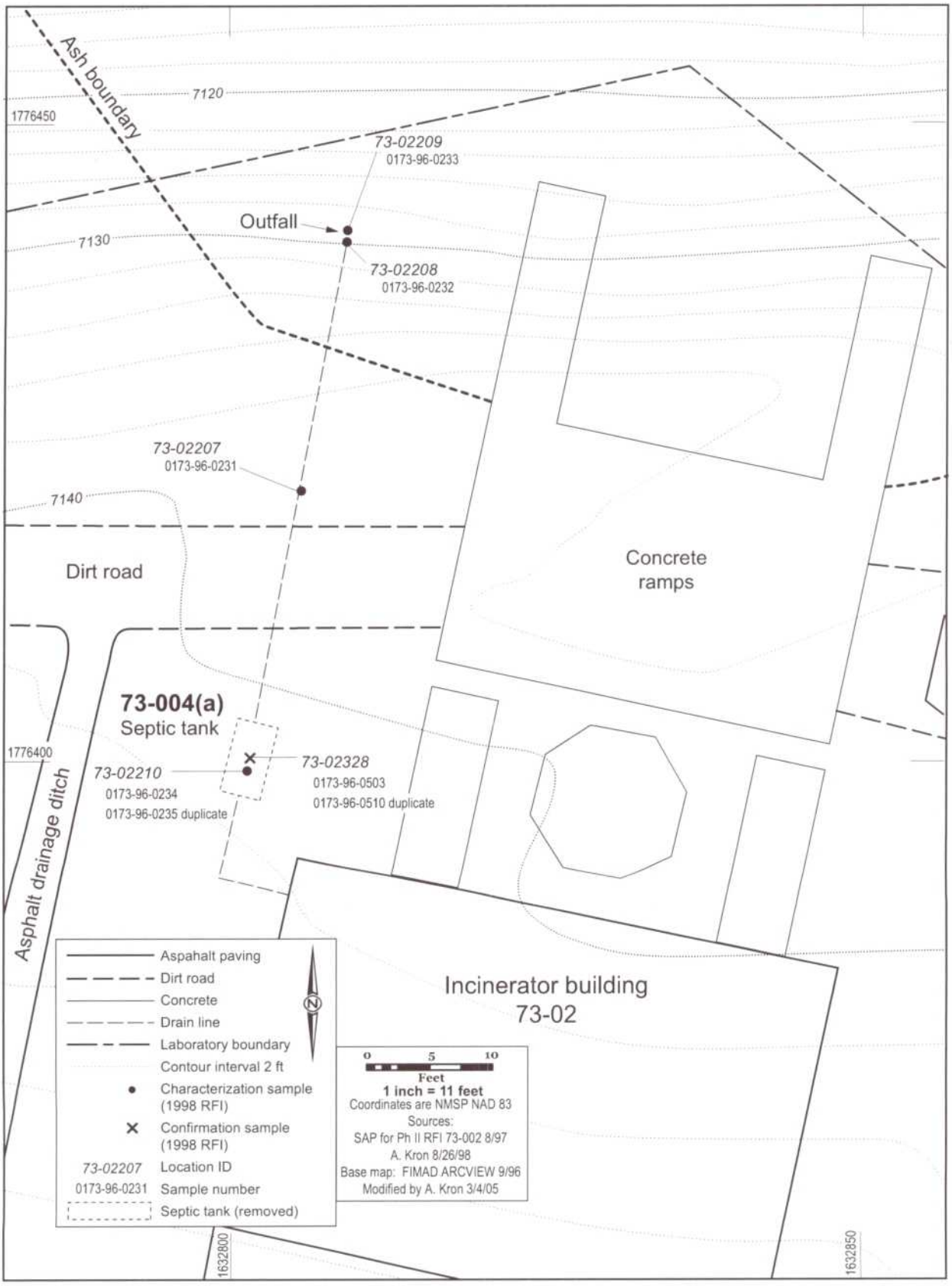


Figure 2.18-2. SWMU 73-004(a) historical investigation sampling locations

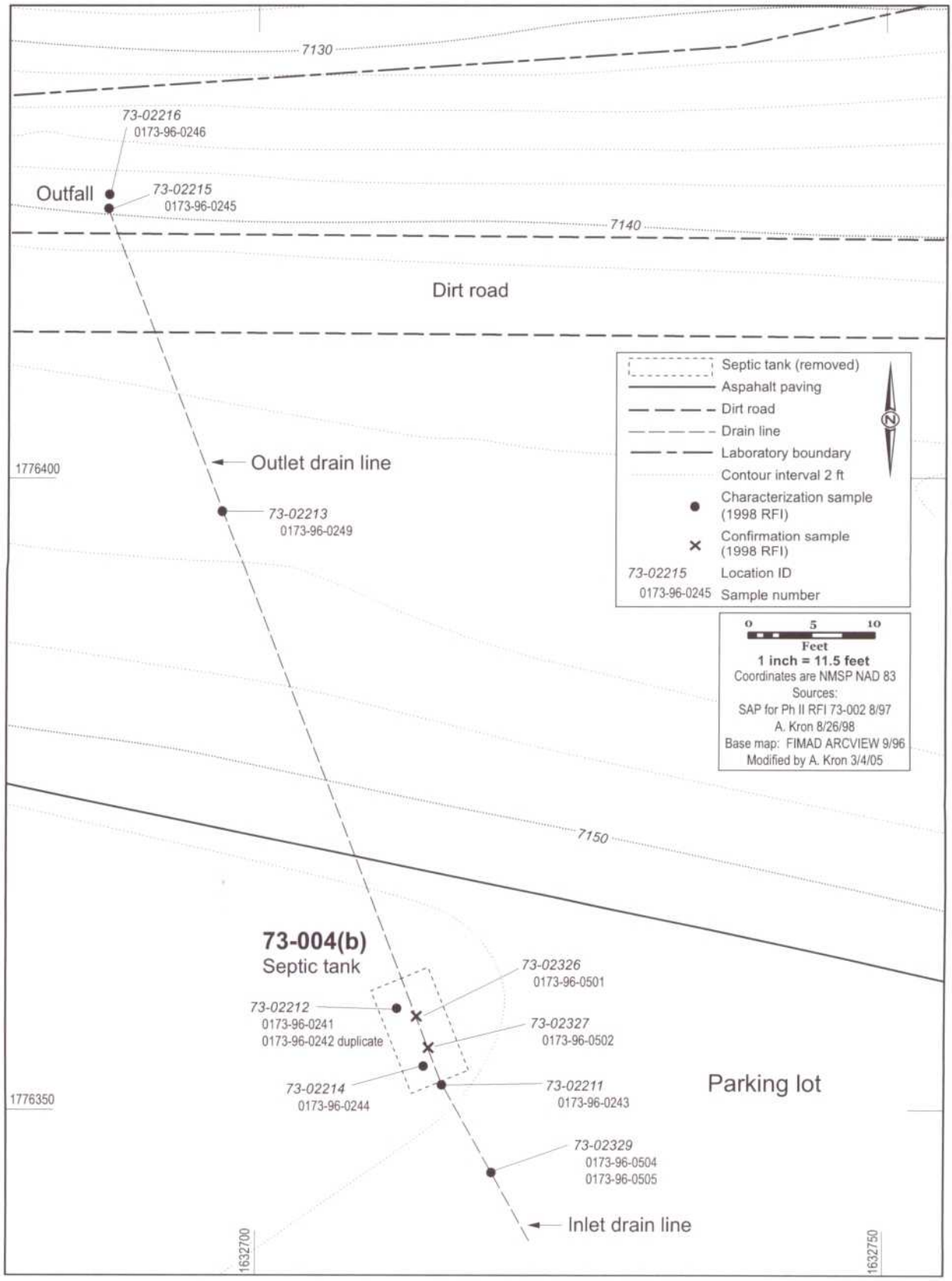


Figure 2.18-3. SWMU 73-004(b) historical investigations sampling locations

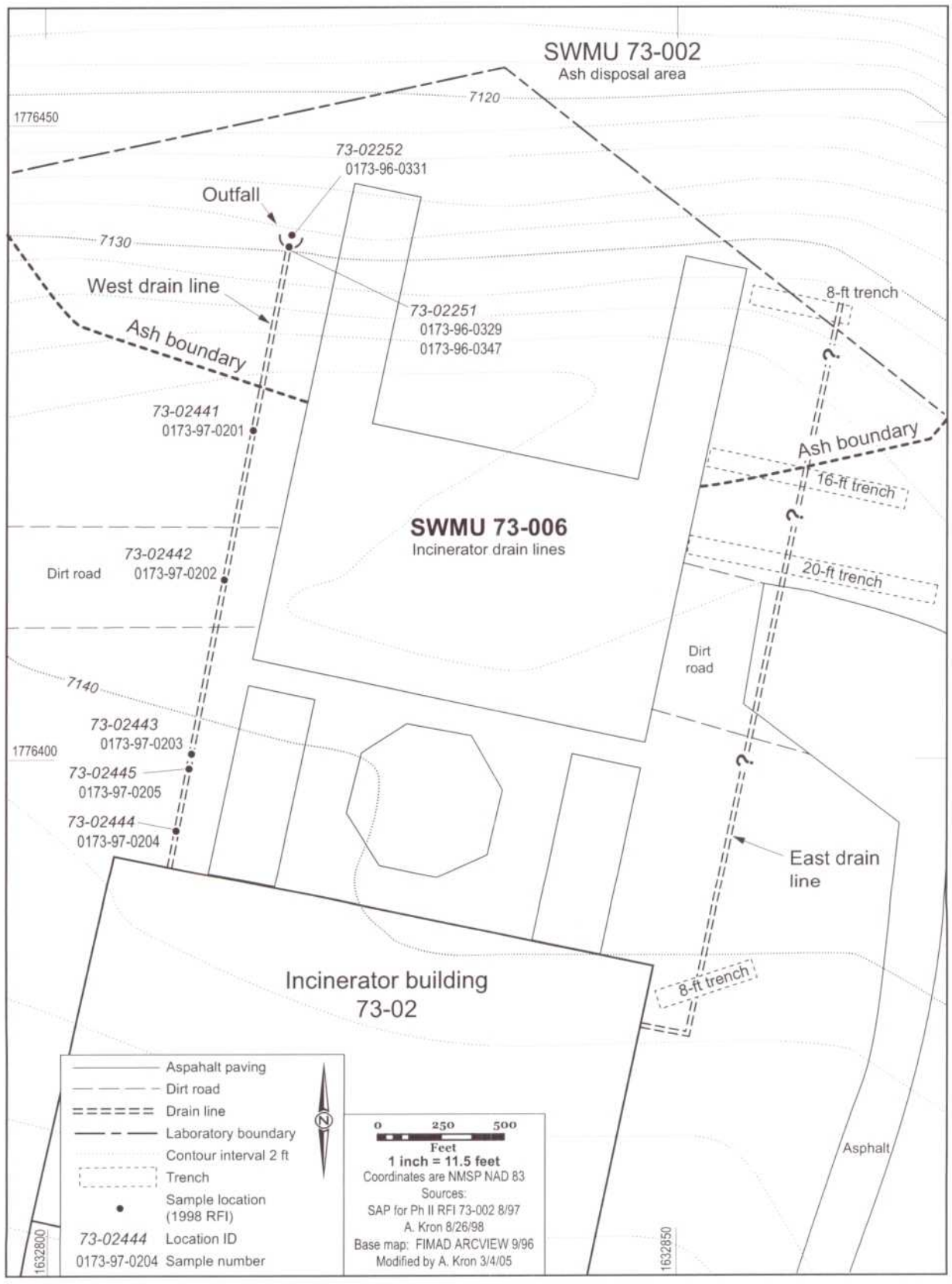
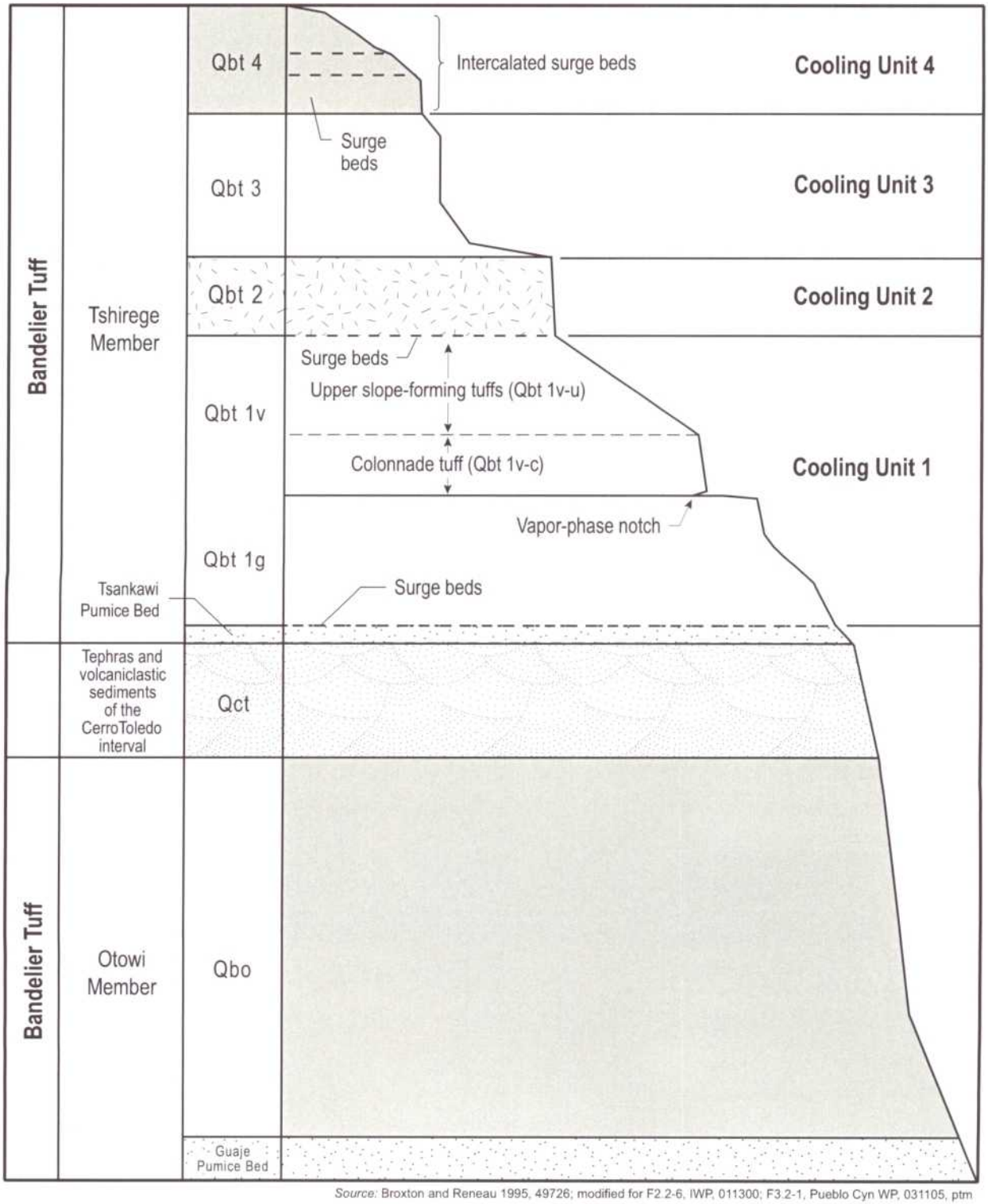
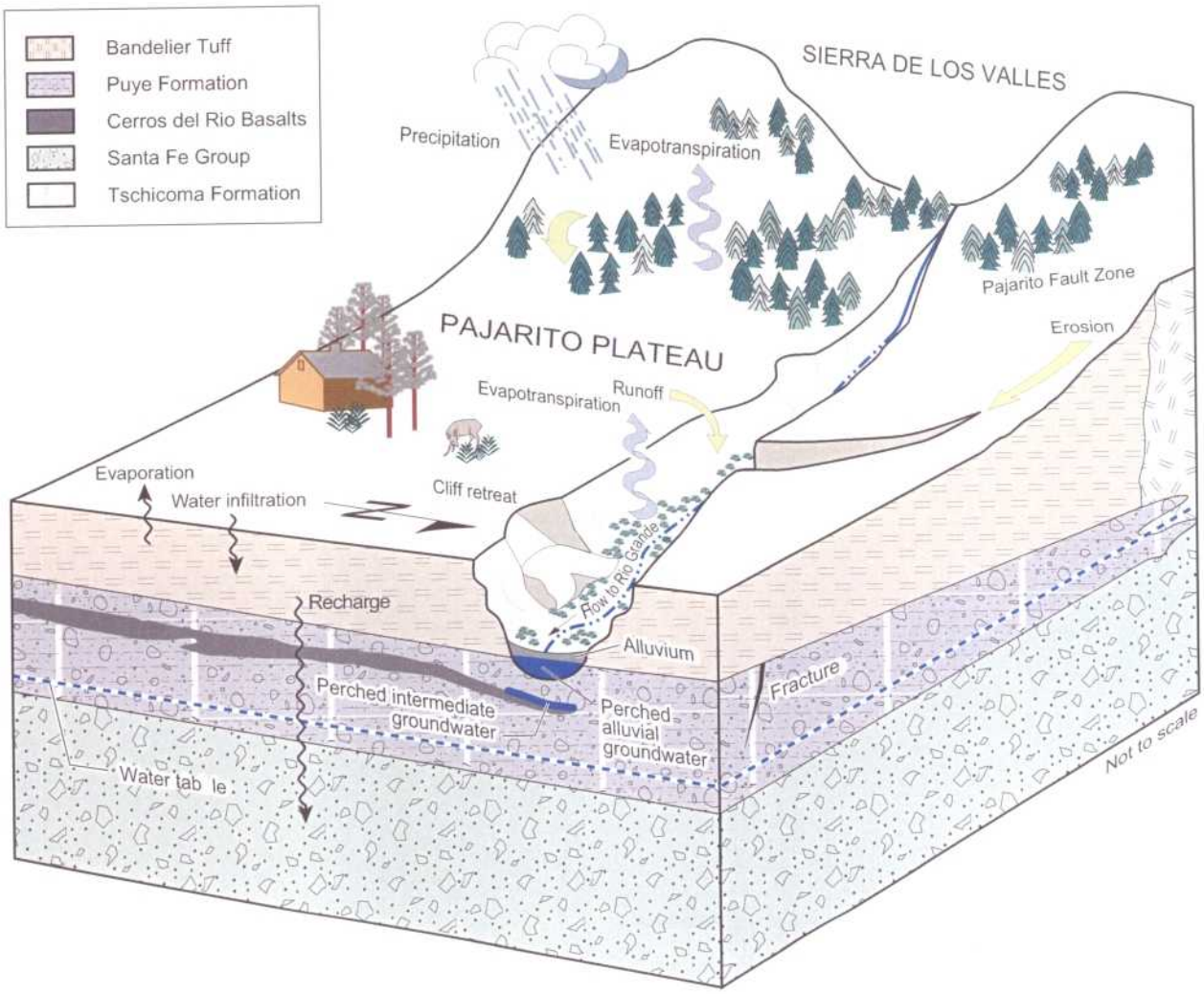


Figure 2.18-4. SWMU 73-006 historical investigation sampling locations



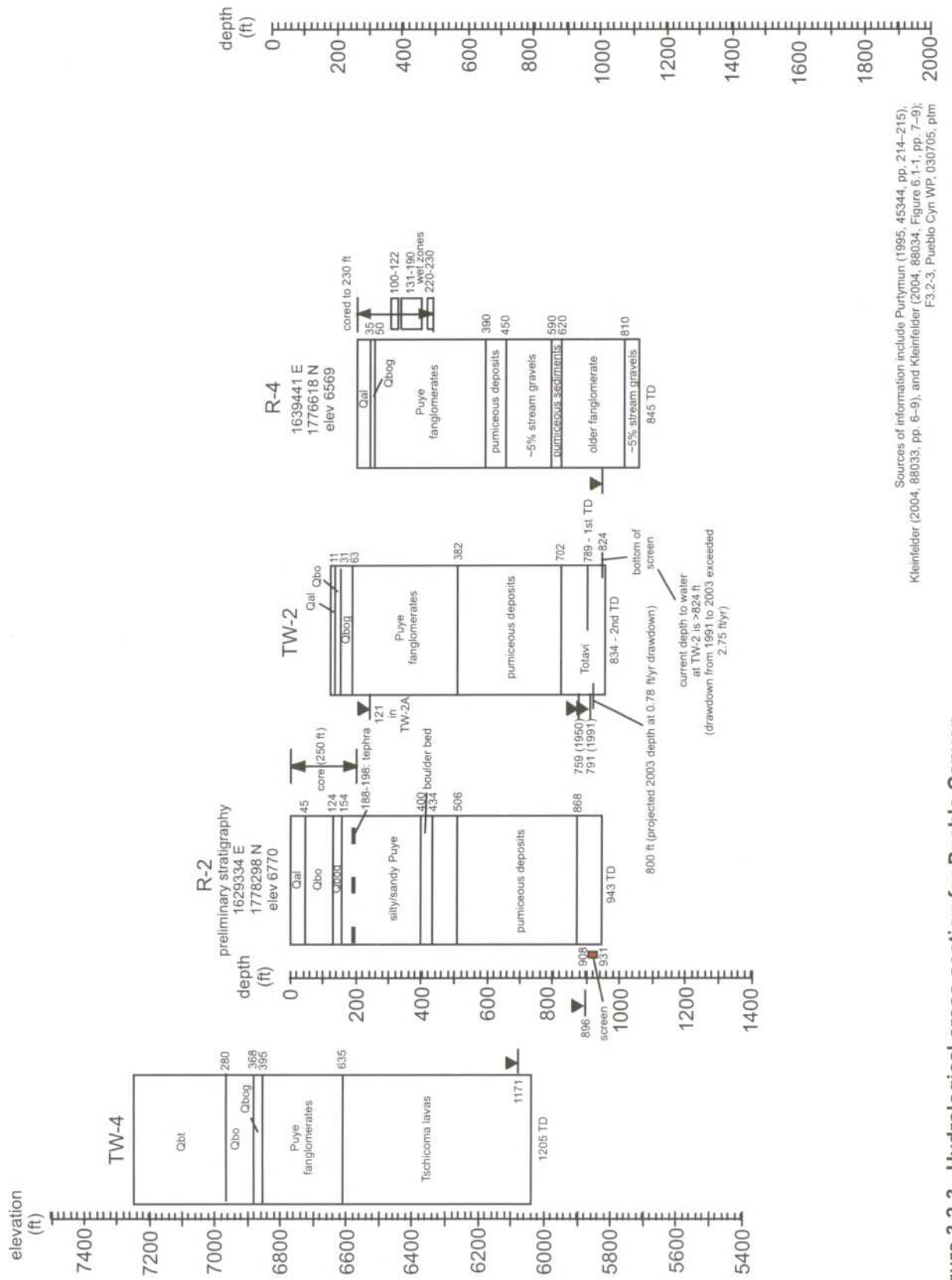
Source: Broxton and Reneau 1995, 49726; modified for F2.2-6, IWP, 011300; F3.2-1, Pueblo Cyn WP, 031105, ptm

Figure 3.2-1. Generalized stratigraphy underlying SWMUs/AOCs in the Pueblo Canyon aggregate area



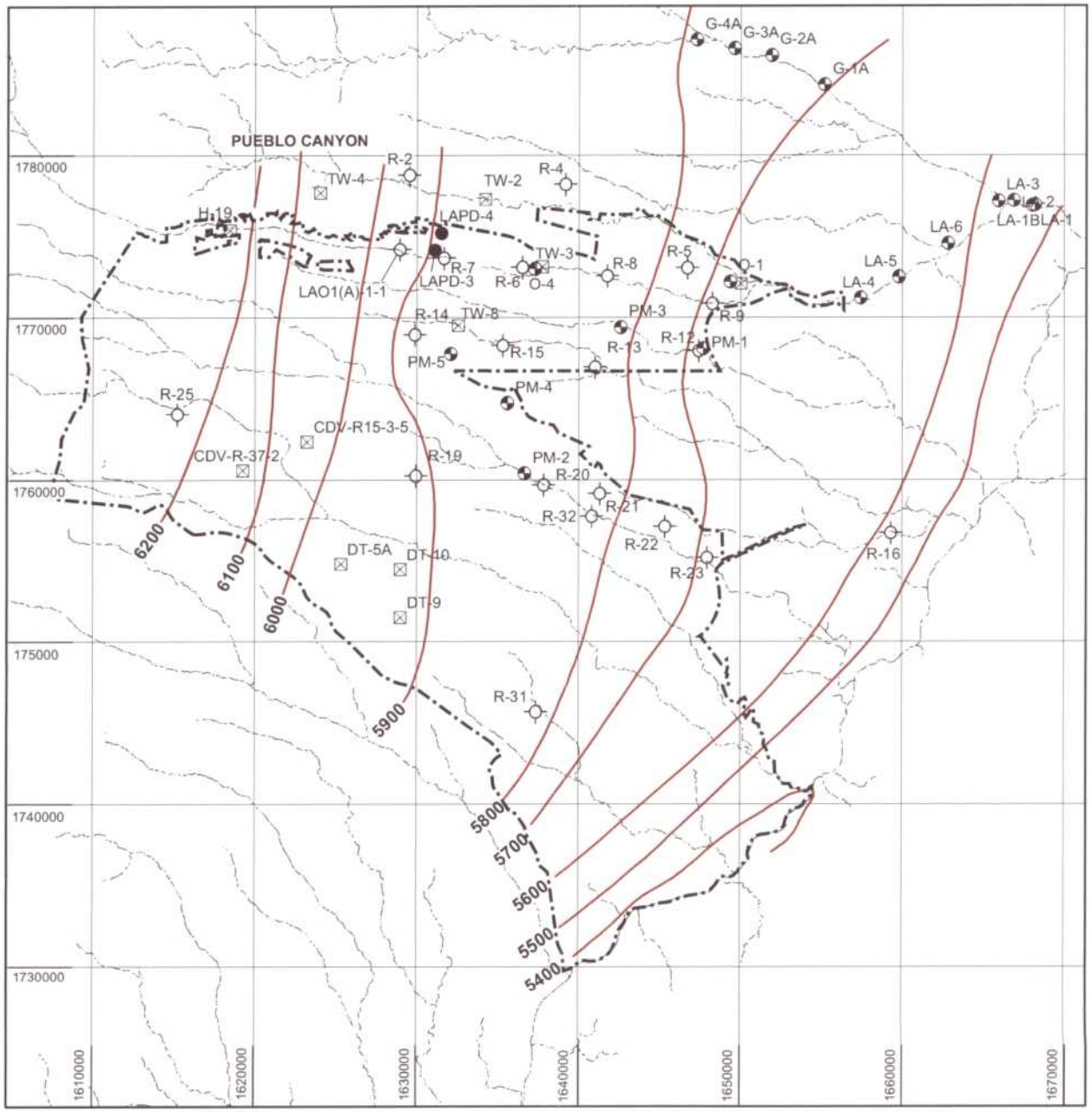
Source: "Investigation Work Plan for Solid Waste Management Unit 21-018(a)-99 Material Disposal Area V, at Technical Area 21," (LANL 2004, 87291, Figure 3.2-2, p. 35)
Figure 3.2-2 (hydrogeo model).ai

Figure 3.2-2. Schematic of the hydrogeologic model for the Pajarito Plateau

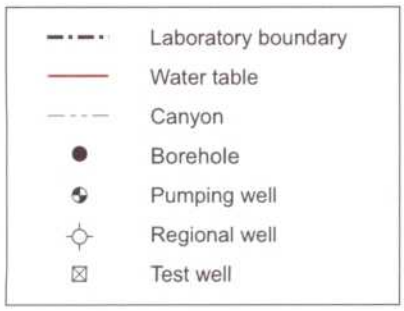


Sources of information include Purtymun (1995, 45344, pp. 214–215), Kleinfelder (2004, 88033, pp. 6–9), and Kleinfelder (2004, 88034, Figure 6.1-1, pp. 7–9); F3.2-3, Pueblo Cyn WP, 030705, ptm

Figure 3.2-3. Hydrological cross-section for Pueblo Canyon



Source: LANL 2005 (MDA A IWP), 87455; modified for F3.2-4, Pueblo Cyn WP, 031105, ptm



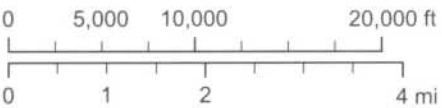


Figure 3.2-4. Locations of groundwater monitoring wells and selected boreholes in the vicinity of Pueblo Canyon

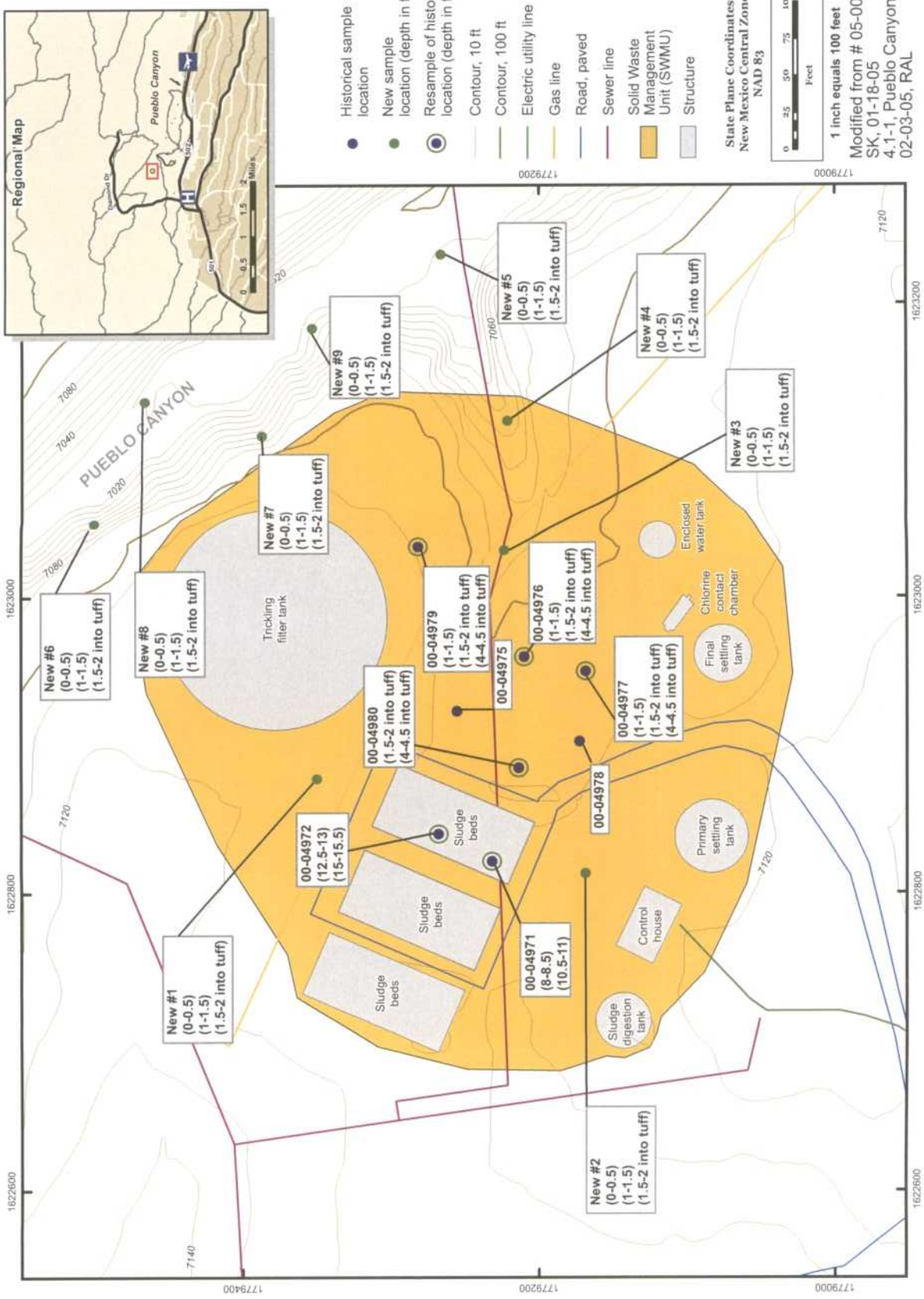


Figure 4.1-1. SWMU 00-018(a) proposed sampling locations and depths

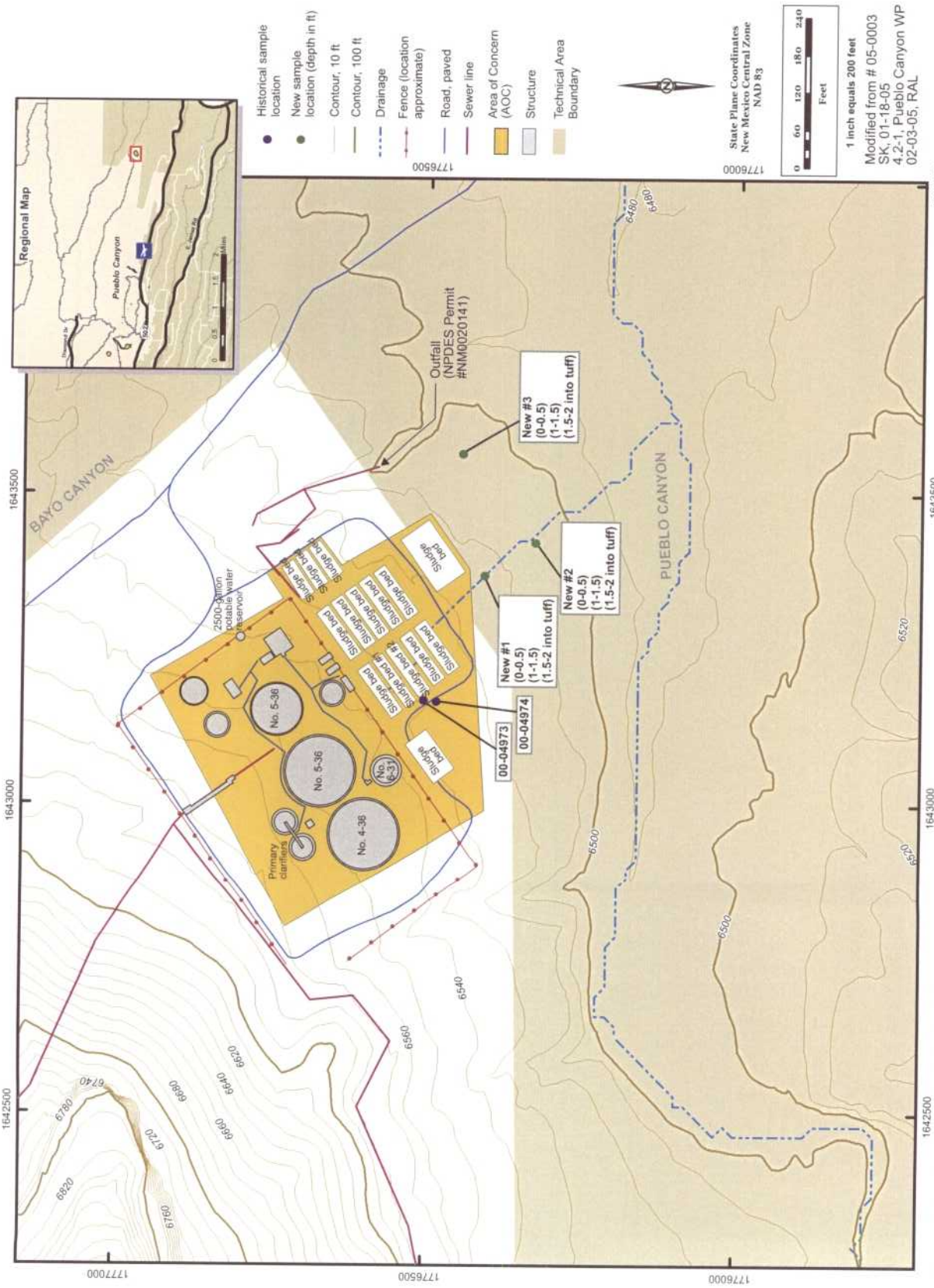


Figure 4.2-1. AOC 00-018(b) proposed sampling locations and depths

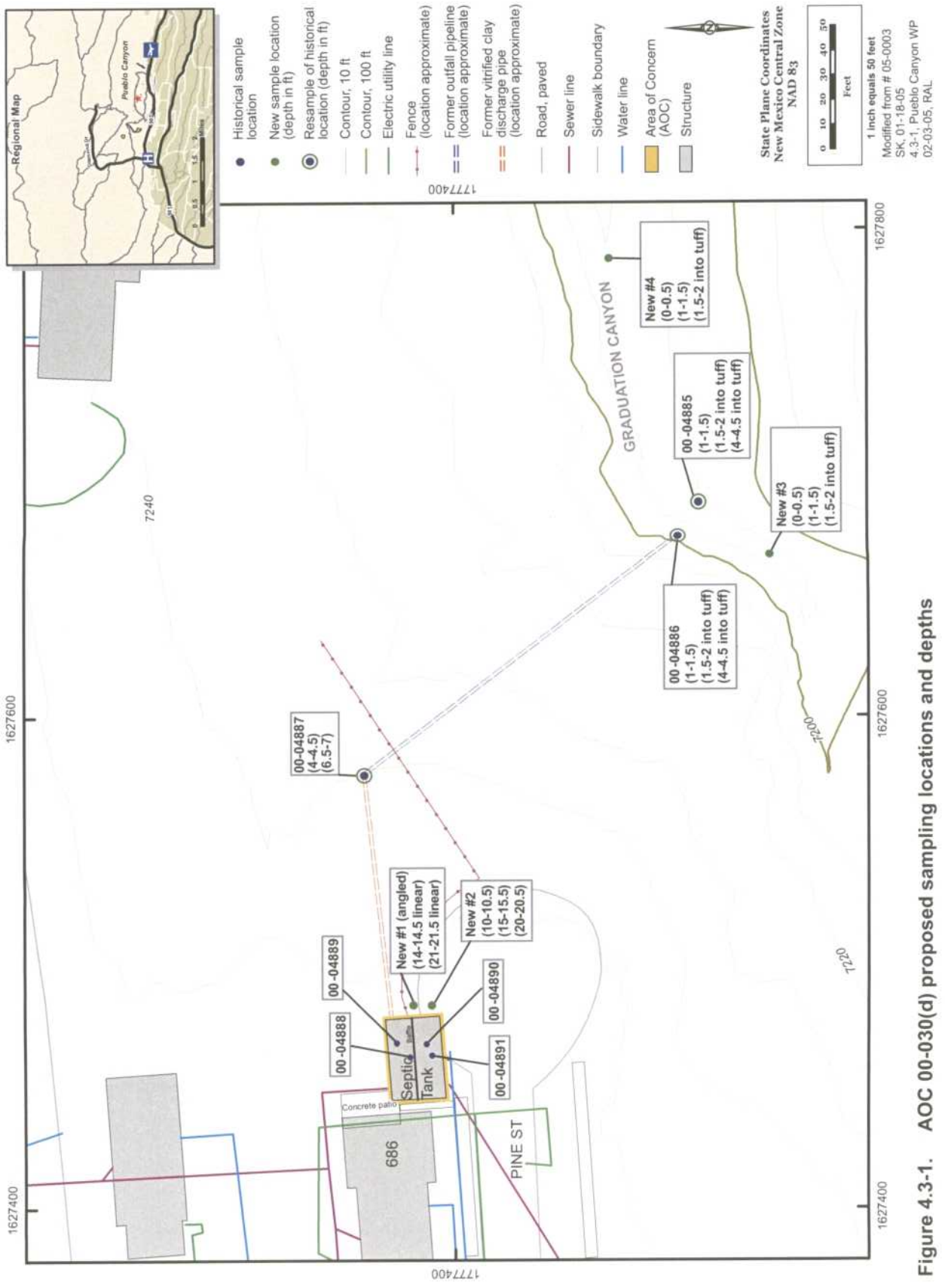


Figure 4.3-1. AOC 00-030(d) proposed sampling locations and depths

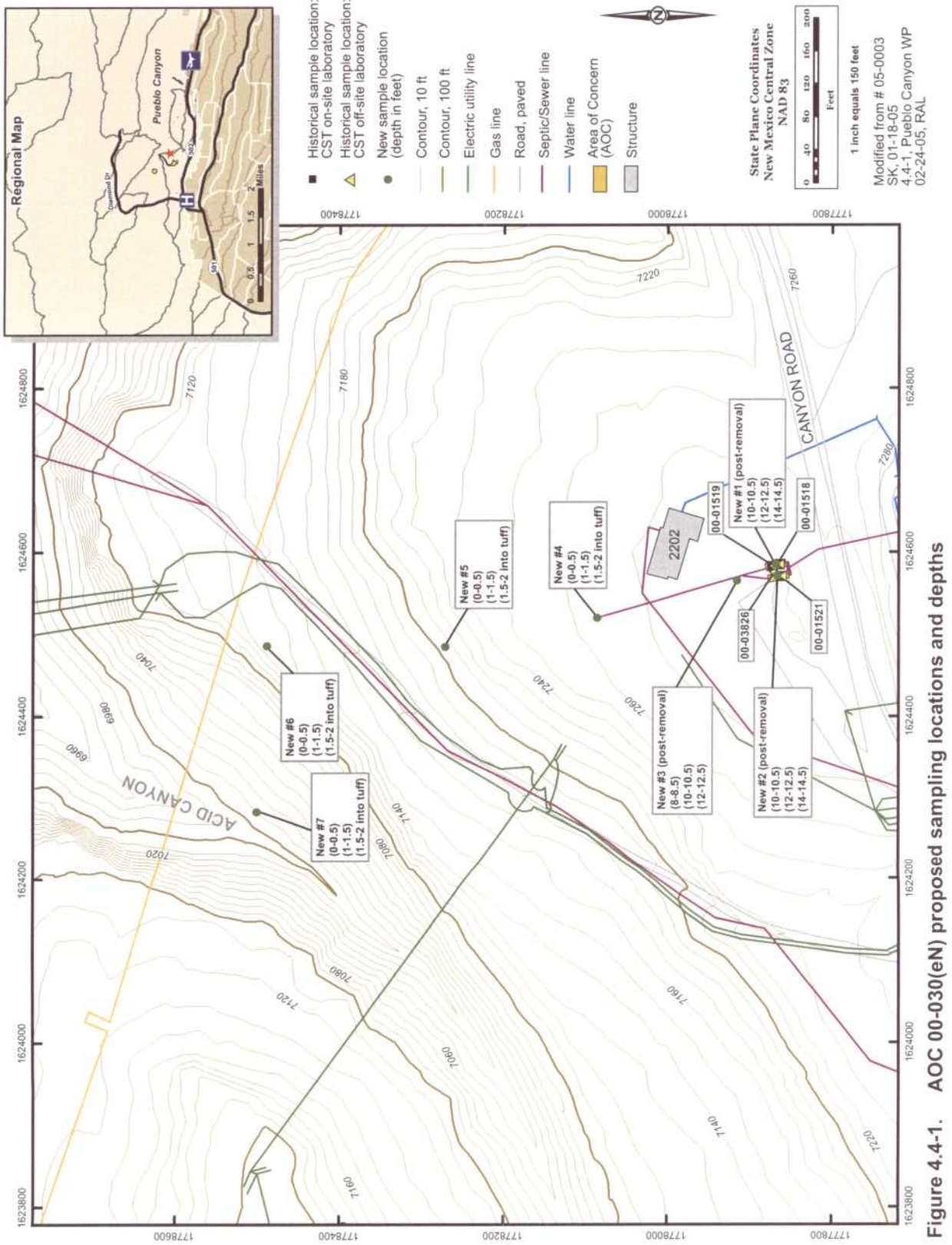


Figure 4.4-1. AOC 00-030(eN) proposed sampling locations and depths

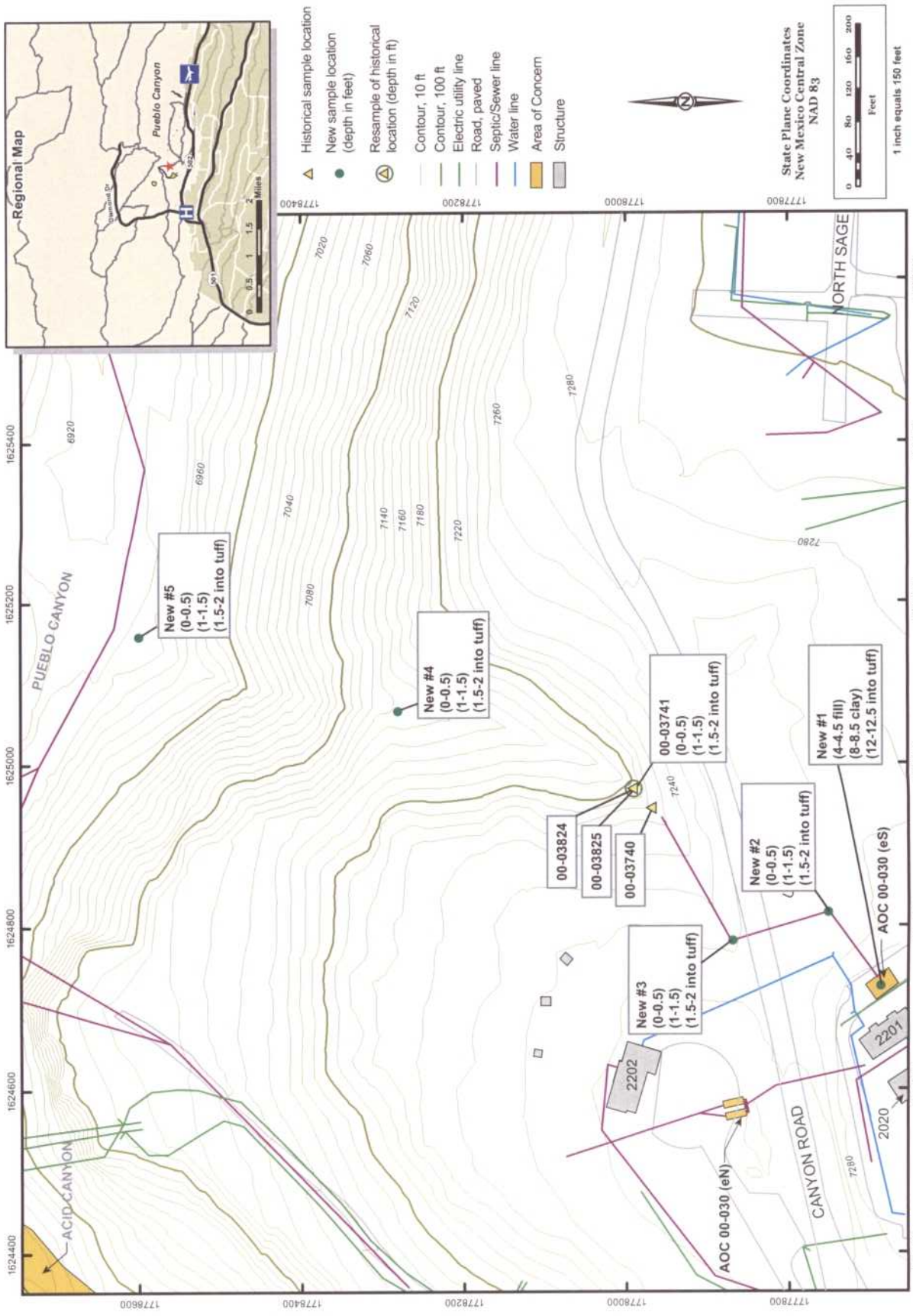


Figure 4.5-1. AOC 00-030(eS) proposed sampling locations and depths

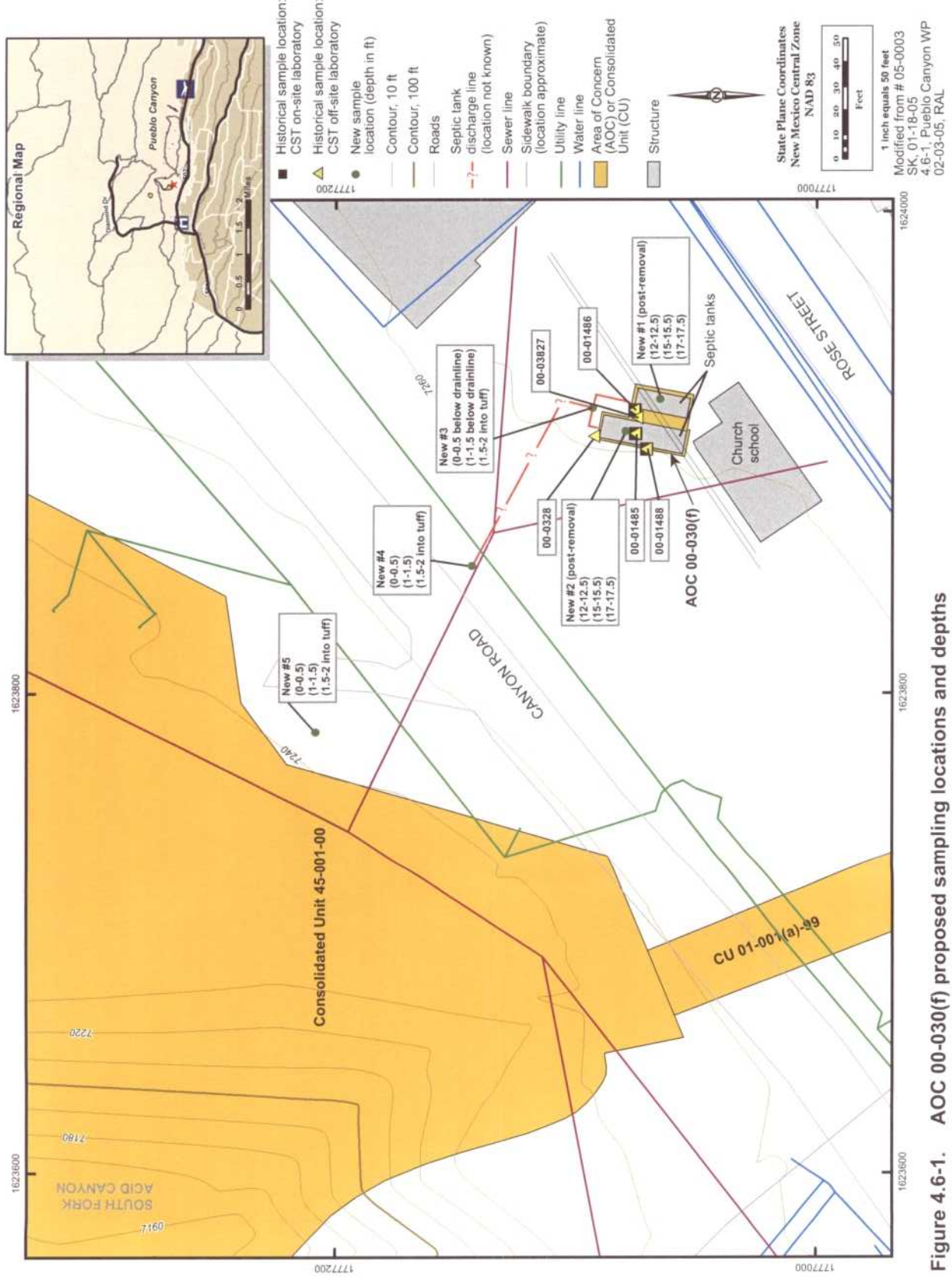


Figure 4.6-1. AOC 00-030(f) proposed sampling locations and depths

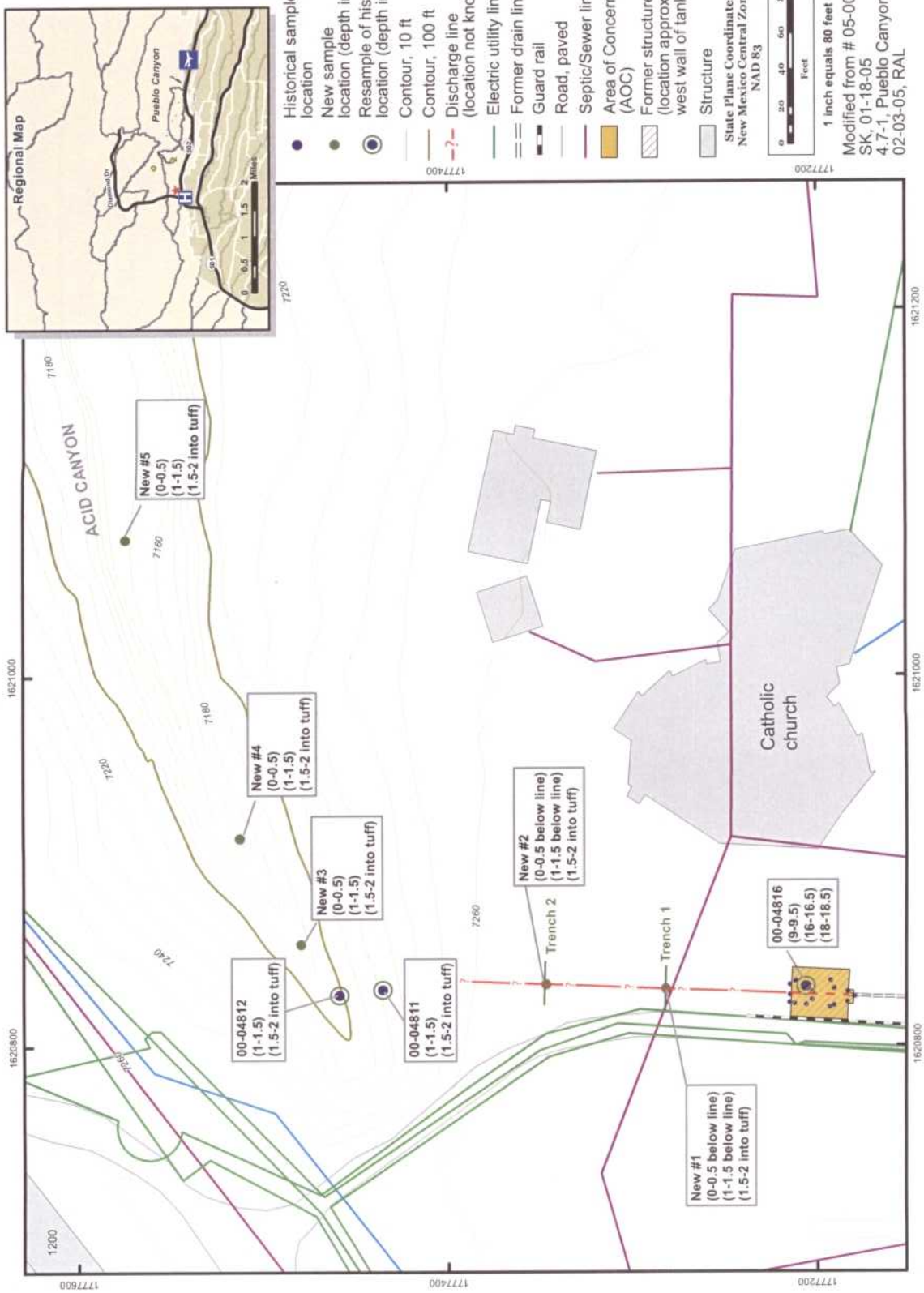


Figure 4.7-1. AOC 00-030(h) proposed sampling locations and depths

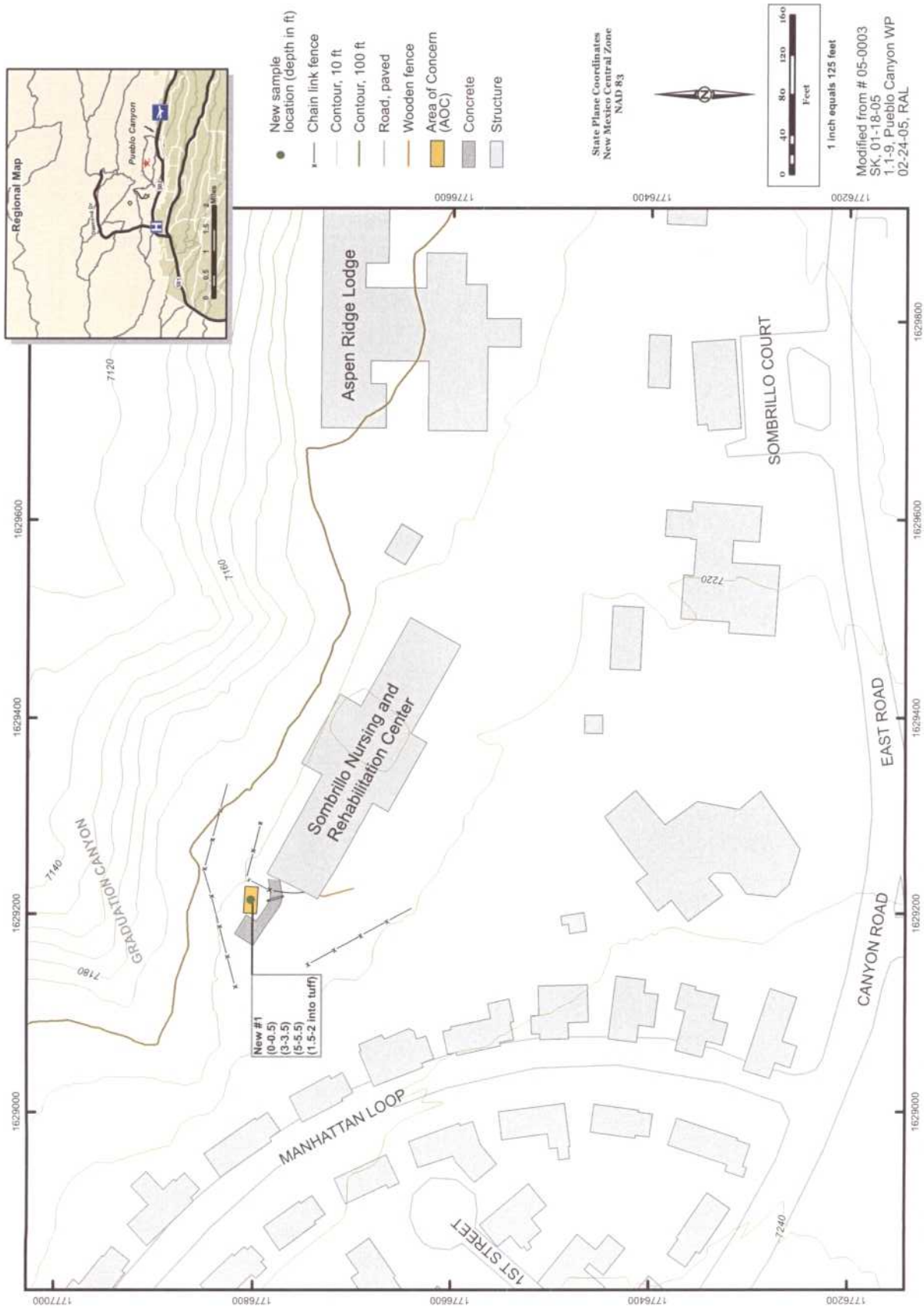


Figure 4.8-1. AOC 00-030(j) proposed sampling locations and depths

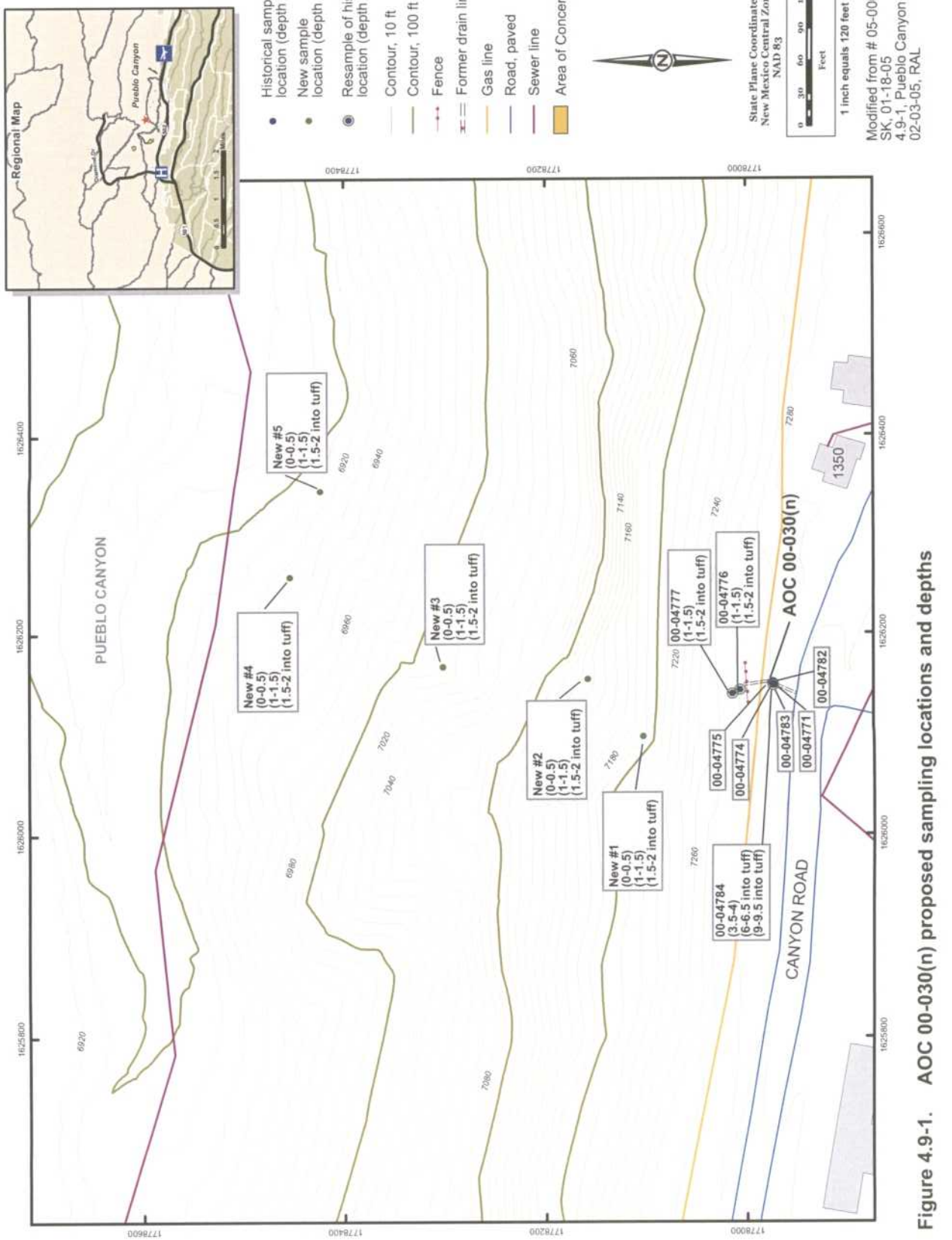


Figure 4.9-1. AOC 00-030(n) proposed sampling locations and depths

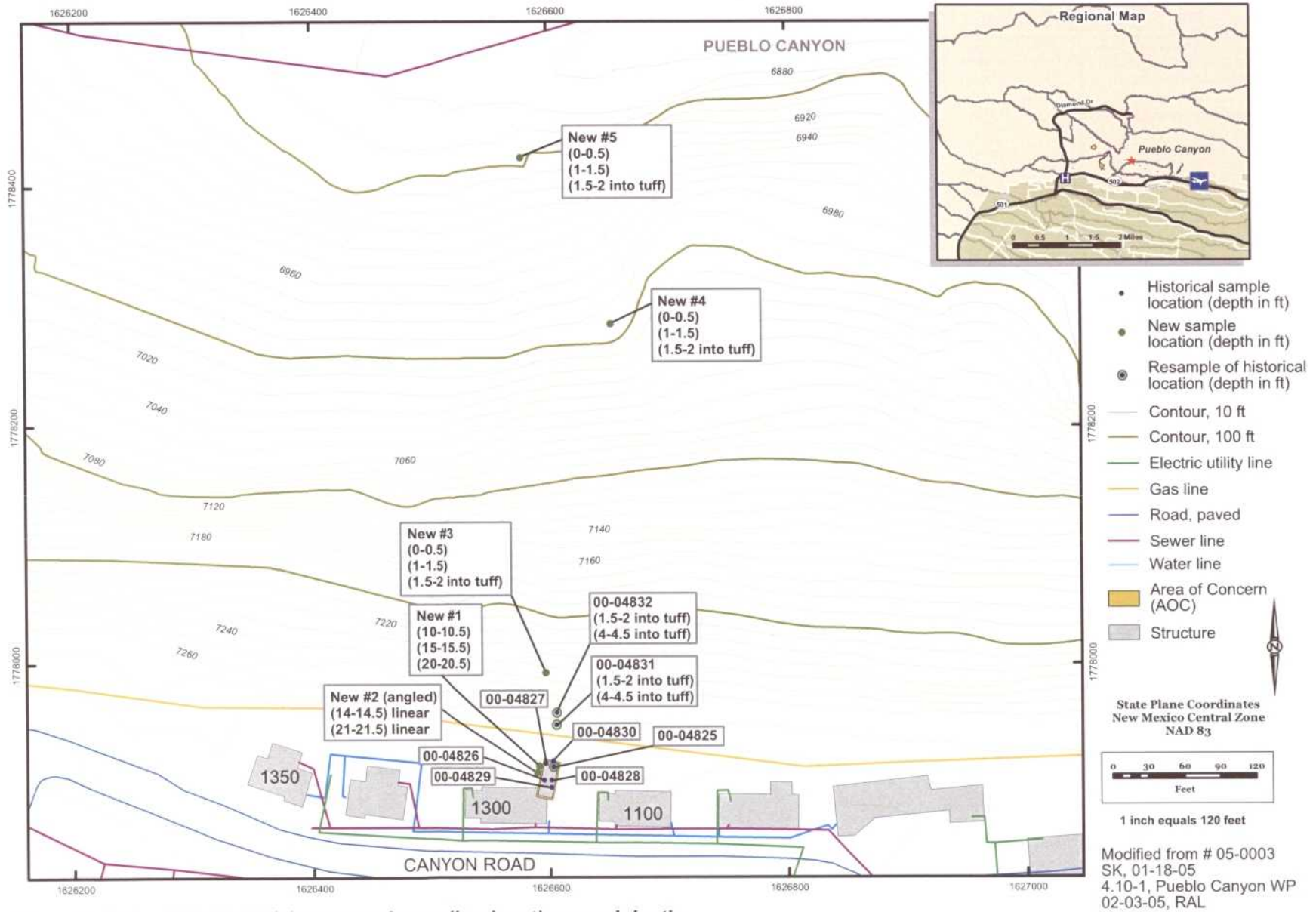


Figure 4.10-1. AOC 00-030(o) proposed sampling locations and depths

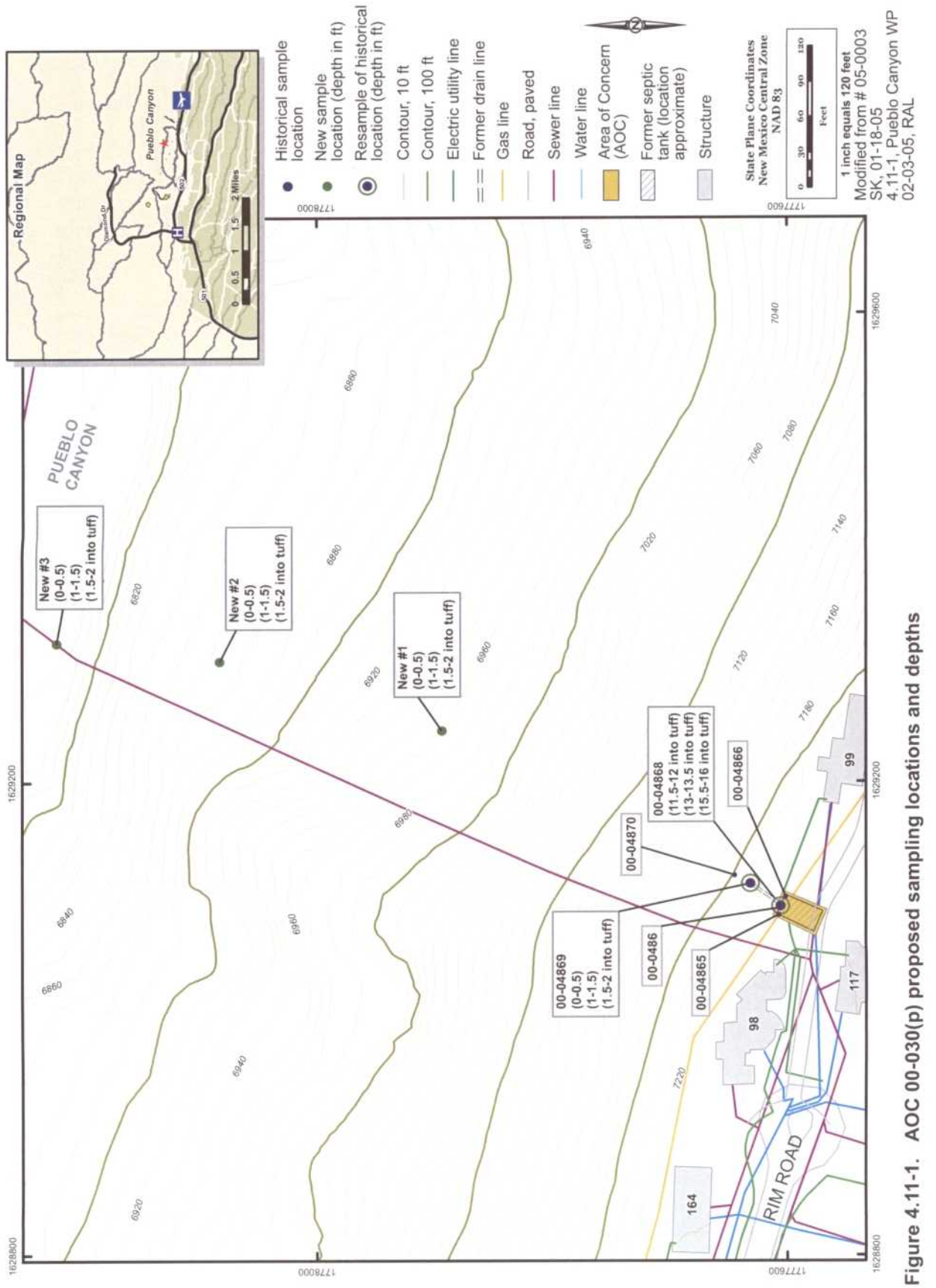


Figure 4.11-1. AOC 00-030(p) proposed sampling locations and depths

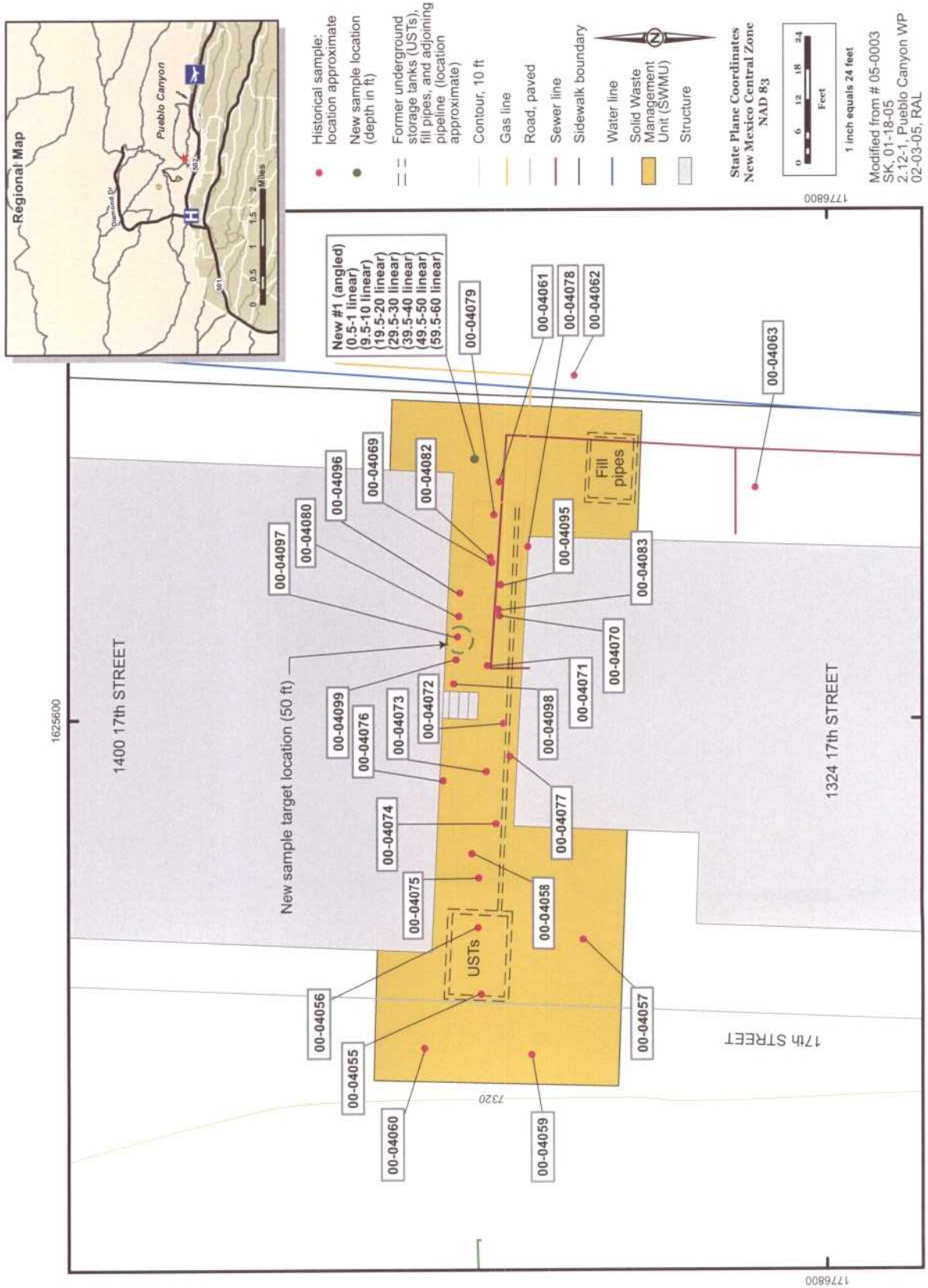


Figure 4.12-1. SWMU 00-039 proposed sampling locations and depths

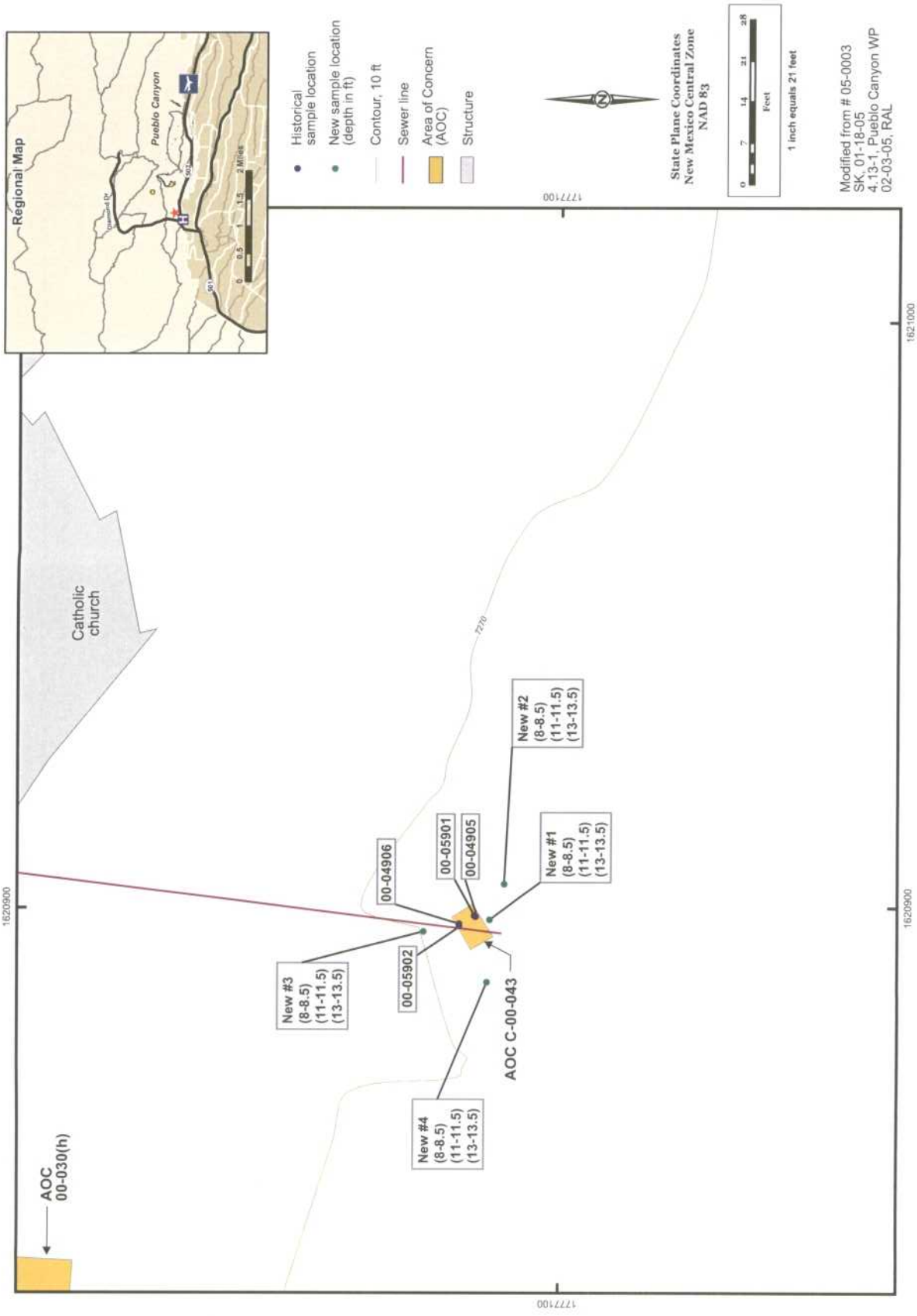


Figure 4.13-1. AOC C-00-043 proposed sampling locations and depths

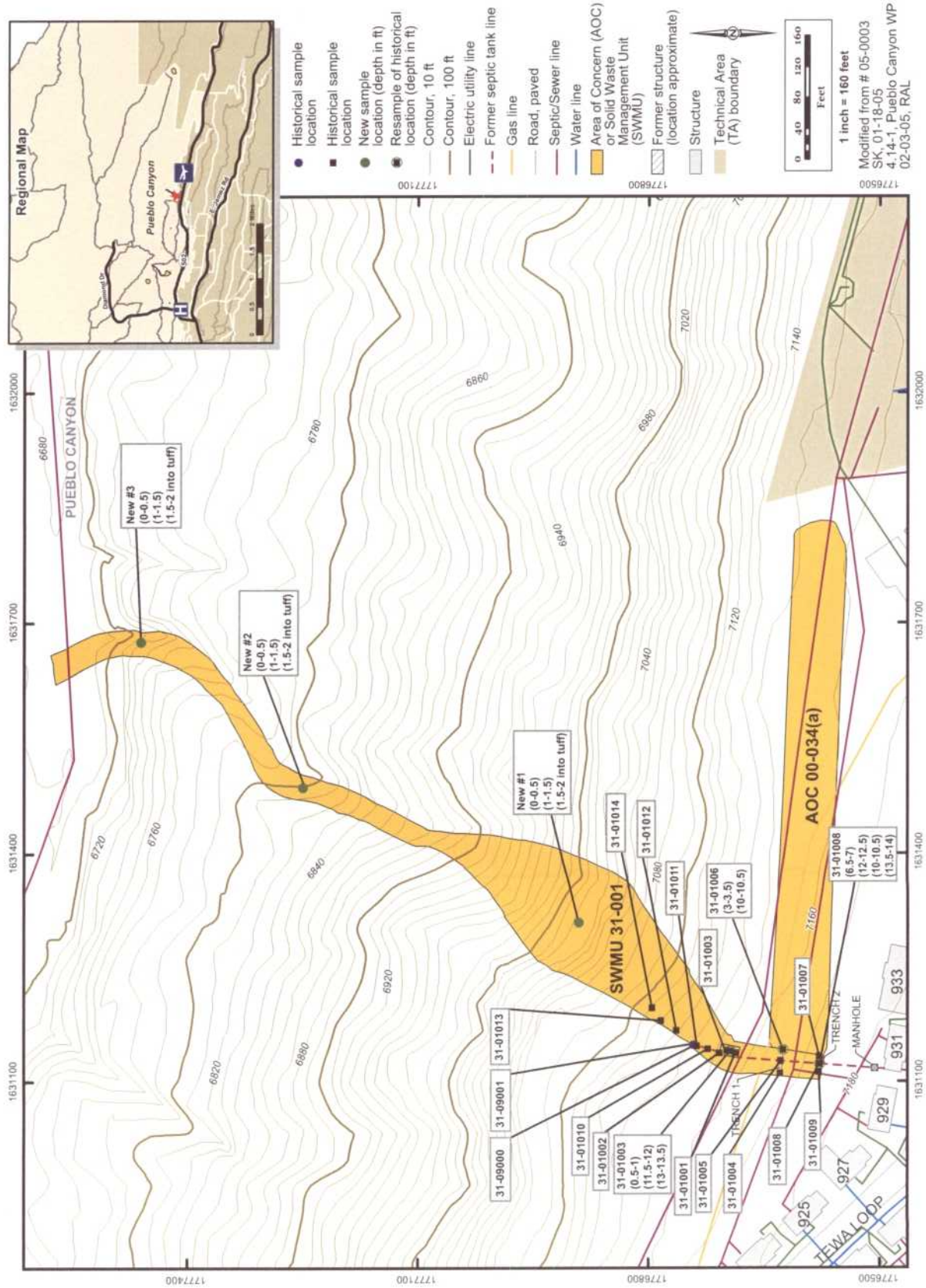


Figure 4.14-1. SWMU 31-001 proposed sampling locations and depths

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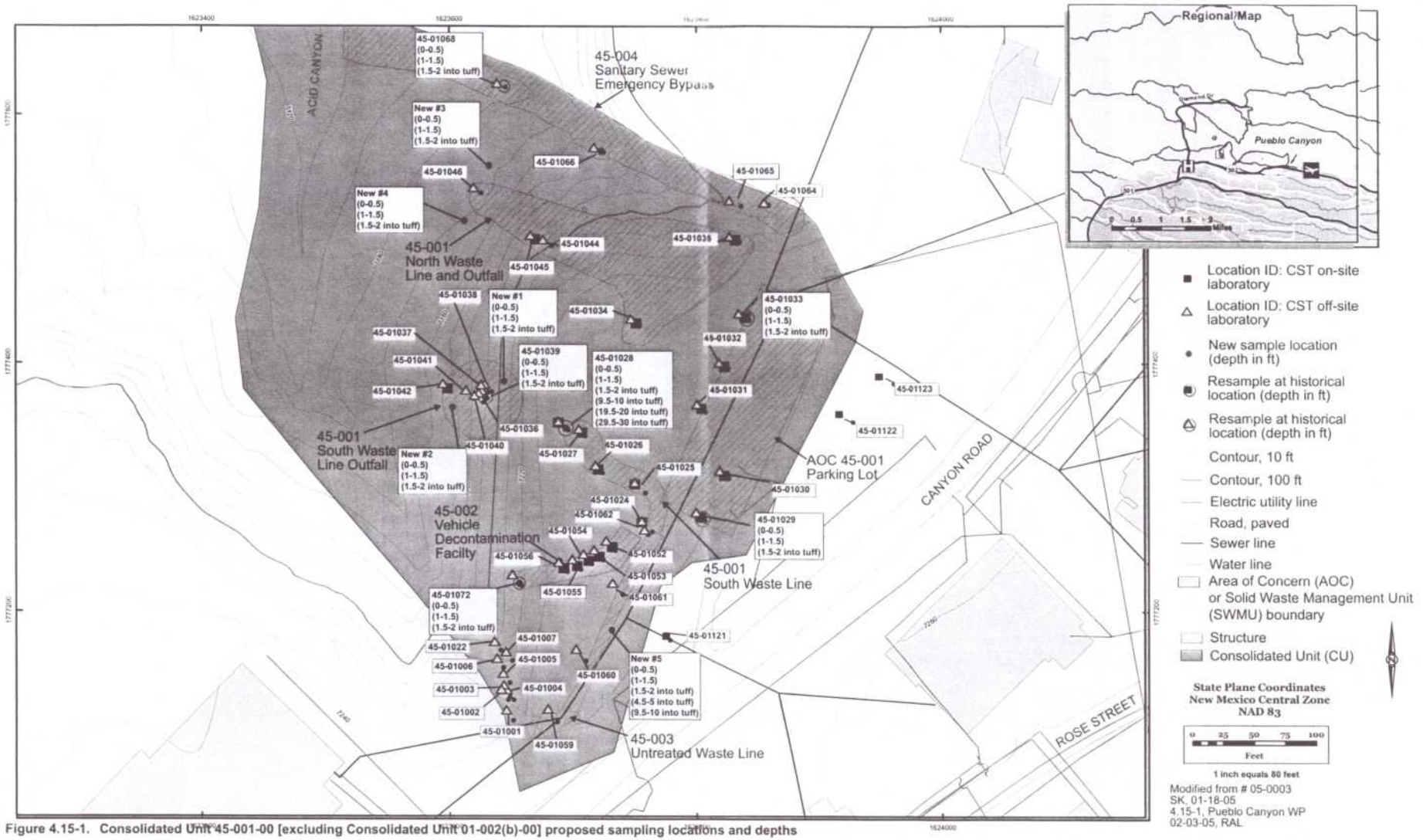

Figure 4.15-1. Consolidated Unit 45-001-00 [excluding Consolidated Unit 01-002(b)-00] proposed sampling locations and depths

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Table 1.1-1
Pueblo Canyon Aggregate Area SWMUs/AOCs

Consolidated Unit	SWMU/AOC Number	Site Description	Administrative Authority	Site Status	Reference
	SWMU 00-018(a)	Sludge-bed Wastewater Treatment Plant, Pueblo Canyon	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-018(b)	Sludge-bed Wastewater Treatment Plant (Bayo Canyon-active)	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	SWMU 00-019	Wastewater Treatment Plant, Central	NMED	NMED approval of VCA completion report, NFA approval pending completion of Los Alamos/Pueblo Canyons investigation	NMED 2002, 73204
00-028(a)-00 Los Alamos County Recreation Area	SWMU 00-028(a)	Effluent Discharge, Golf Course (active)	NMED	NFA approved by NMED; Class III Permit Modification approved	NMED 2003, 78138 NMED 2003, 79282
	SWMU 00-028(b)	Effluent Discharge, Ball Fields (active)	NMED	NFA approved by NMED; Class III Permit Modification approved	NMED 2003, 78138 NMED 2003, 79282
	AOC 00-030(c)	Septic System	DOE	NFA approved by EPA	EPA 2005, 88464
	AOC 00-030(d)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(eN)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(eS)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(f)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(g)	Septic System (near old Catholic Church parking lot)	NMED	NMED approval of RFI report; NFA pending completion of Los Alamos/ Pueblo Canyons investigation	NMED 2003, 76018
	AOC 00-030(h)	Septic System (near new Catholic Church)	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(j)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	

Table 1.1-1 (continued)

Consolidated Unit	SWMU/AOC Number	Site Description	Administrative Authority	Site Status	Reference
	AOC 00-030(k)	Septic System	DOE	NFA approved by DOE	DOE 1998, 59694
	AOC 00-030(n)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(o)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(p)	Septic System	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-030(q)	Septic System	DOE	NFA approved by EPA	EPA 2005, 88464
	AOC 00-034(a)	Landfill, Eastern Area	DOE	NFA approved by DOE	DOE 1998, 59694
	SWMU 00-039	Underground Tanks	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 00-040	Underground Tank	DOE	NFA approved by EPA	EPA 2005, 88464
	AOC C-00-043	Manhole (removed)	DOE	Included in this investigation work plan for Pueblo Canyon aggregate area	
19-001-99 Former East Gate Laboratory and Septic System	SWMU 19-001	Septic System	NMED	Included in TA-19/Eastgate Laboratory Accelerated Corrective Action Work Plan (LANL 2004, 85521); approved with modifications by NMED	NMED 2004, 87285
	SWMU 19-002	Surface Disposal Site	NMED		
	SWMU 19-003	Septic Tank	NMED		
	AOC C-19-001	Soil Contamination	DOE		
	SWMU 31-001	Septic System	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC C-31-001	Buildings	DOE	NFA approved by EPA	EPA 2005, 88464
45-001-00 Wastewater Treatment Plant-TA-45	Consolidated Unit 01-002(b)-00	Outfall TA-01 (inactive)	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	SWMU 45-001	Wastewater treatment facility (inactive)	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	SWMU 45-002	Vehicle decontamination facility (inactive)	NMED		
	SWMU 45-003	Waste Lines (inactive)	NMED		
	SWMU 45-004	Sanitary Sewer Outfall (inactive)	NMED		

Table 1.1-1 (continued)

Consolidated Unit	SWMU/AOC Number	Site Description	Administrative Authority	Site Status	Reference
	AOC C-45-001	Parking lot of former treatment plant (inactive)	DOE		
73-001(a)-99 Former Landfill	SWMU 73-001(a)	Landfill	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	SWMU 73-004(d)	Septic Tank (landfill)	NMED		
73-001(b)-99 Former Landfill	SWMU 73-001(b)	Surface Disposal Site (waste oil pit)	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	SWMU 73-001(c)	Landfill	NMED		
	SWMU 73-001(d)	Landfill	NMED		
73-002-99 Miscellaneous Airport Structures	SWMU 73-002	Incinerator Surface Disposal	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	
	AOC 73-003	Steam-Cleaning Plant	DOE		
	SWMU 73-004(a)	Septic Tank	NMED		
	SWMU 73-004(b)	Septic Tank	NMED		
	SWMU 73-006	Airport Building Outfalls	NMED		
	SWMU 73-004(c)	Septic System	NMED	Included in this investigation work plan for Pueblo Canyon aggregate area	

Note: Shaded rows are SWMUs/AOCs not included in this work plan.

Table 1.1-2
SWMUs/AOCs in the Pueblo Canyon Aggregate Area Investigated by LANL

Consolidated Unit	SWMU/AOC Number	Site Description	Activities Proposed in this Work Plan
	SWMU 00-018(a)	Sludge-bed Wastewater Treatment Plant, Pueblo Canyon	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-018(b)	Sludge-bed Wastewater Treatment Plant (Bayo Canyon-active)	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-030(d)	Septic System	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-030(eN)	Septic System	Removal of the septic tank structure and drainline (if feasible). Confirmatory sampling in the structure/drainline location. Additional surface and subsurface sampling downstream of the outfall to define nature and extent of potential contamination.
	AOC 00-030(eS)	Septic System	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-030(f)	Septic System	Removal of the septic tank structure and drainline (if feasible) and confirmatory sampling in the structure location. Additional surface and subsurface sampling downstream of the outfall to define nature and extent of potential contamination.
	AOC 00-030(h)	Septic System (near new Catholic Church)	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-030(j)	Septic System	Surface and subsurface sampling to confirm presence/absence of septic tank.
	AOC 00-030(n)	Septic System	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-030(o)	Septic System	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC 00-030(p)	Septic System	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	SWMU 00-039	Underground Tanks	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	AOC C-00-043	Manhole (removed)	Additional surface and subsurface sampling to define nature and extent of potential contamination.

Table 1.1-2 (continued)

Consolidated Unit	SWMU/AOC Number	Site Description	Activities Proposed in this Work Plan
	SWMU 31-001	Septic System	Additional surface and subsurface sampling to define nature and extent of potential contamination.
45-001-00 Wastewater Treatment Plant-TA-45	Consolidated Unit 01-002(b)-00	Outfall TA-01 (inactive)	Additional surface and subsurface sampling to define nature and extent of potential contamination.
	SWMU 45-001	Wastewater treatment facility (inactive)	
	SWMU 45-002	Vehicle decontamination facility (inactive)	
	SWMU 45-003	Waste Lines (inactive)	
	SWMU 45-004	Sanitary Sewer Outfall (inactive)	
	AOC C-45-001	Parking lot of former treatment plant (inactive)	

Table 1.1-3
SWMUs/AOCs in the Pueblo Canyon Aggregate Area Investigated by DOE

Consolidated Unit	SWMU/AOC Number	Site Description	Proposed Activities
73-001(a)-99 Former Landfill	SWMU 73-001(a)	Landfill	Historical published data are presented in the work plan. Future work at this site will be conducted directly by the DOE and reported separately, therefore, no additional activities are proposed in this work plan.
	SWMU 73-004(d)	Septic Tank (landfill)	
73-001(b)-99 Former Landfill	SWMU 73-001(b)	Surface Disposal Site (waste oil pit)	Historical published data are presented in the work plan. Future work at this site will be conducted directly by the DOE and reported on separately; therefore, no additional activities are proposed in this work plan.
	SWMU 73-001(c)	Landfill	
	SWMU 73-001(d)	Landfill	
73-002-99 Miscellaneous Airport Structures	SWMU 73-002	Incinerator Surface Disposal	Historical data are presented in the work plan. Future work at this site will be conducted directly by the DOE and reported separately, therefore, no additional activities are proposed in this work plan.
	AOC 73-003	Steam Cleaning Plant	
	SWMU 73-004(a)	Septic Tank	
	SWMU 73-004(b)	Septic Tank	
	SWMU 73-006	Airport Building Outfalls	
	SWMU 73-004(c)	Septic System	New and historical data are presented in the work plan. Future work at this site will be conducted directly by the DOE and reported separately, therefore, no additional activities are proposed in this work plan.

Table 2.1-1
SWMU 00-018(a) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Tritium	Isotopic Uranium	Metals	PCBs	Pesticides	Pesticides/ PCBs	Strontium-90	SVOCs	VOCs
00-04971	0.5–1.8	0100-96-0501	FILL[a]	—[b]	—	—	2620[c]	—	2619	—	—	2619	2619
00-04971	1.8–2.2	0100-96-0502	FILL	—	—	—	2620	—	2619	—	—	2619	2619
00-04971	5.5–6.5	0100-96-0523	QBT3	2737	2737	—	2736	2735	2735	—	—	2635	2635
00-04972	0.25–1.2	0100-96-0505	FILL	—	—	—	2620	—	2619	—	—	2619	2619
00-04972	0.25–1.2	0100-96-0593	FILL	2836	—	—	—	—	—	—	—	—	—
00-04972	1.2–1.8	0100-96-0506	FILL	—	—	—	2620	—	2619	—	—	2619	2619
00-04972	10–11	0100-96-0525	QBT3	2737	2737	—	2736	2735	2735	—	—	2735	2735
00-04972	6–7	0100-96-0524	QBT3	2737	2737	—	2736	2735	2735	—	—	2635	2635
00-04975	0–0.5	0100-96-0507	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04975	0–0.5	0100-96-0588	[c]	2836	—	—	—	—	—	—	—	—	—
00-04975	0–0.5	0100-97-0211	ALLH	3188R	—	3188R	—	—	—	—	3188R	—	—
00-04976	0–0.5	0100-96-0508	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04976	0–0.5	0100-96-0589	[c]	2836	—	—	—	—	—	—	—	—	—
00-04977	0–0.5	0100-96-0509	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04977	0–0.5	0100-96-0590	[c]	2836	—	—	—	—	—	—	—	—	—
00-04978	0–1	0100-96-0510	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04978	1–2	0100-96-0511	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04978	1–2	0100-96-0591	[c]	2836	—	—	—	—	—	—	—	—	—
00-04979	0–0.5	0100-96-0512	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04979	0–0.5	0100-96-0592	[c]	2836	—	—	—	—	—	—	—	—	—
00-04980	0–0.5	0100-96-0530	[c]	2631	—	—	—	—	—	—	—	—	—
00-04980	0–1	0100-96-0513	[c]	—	—	—	2630	—	—	2629	—	2629	2629
00-04980	1–1.5	0100-96-0514	[c]	—	—	—	2630	—	—	2629	—	2629	2629

Notes: 1. Historical RFI samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] For 00-018(a), "FILL" denotes a sand/gravel matrix within the sludge beds.

[b] — = Not analyzed.

[c] For 00-018(a), denotes a soil/sludge matrix surrounding the sludge beds.

Table 2.1-2
SWMU 00-018(a) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Barium	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Thallium	Zinc
LANL BV QBT3[a]				**0.5**	**46**	**1.63**	**7.14**	**4.66**	**11.2**	**0.1**	**0.3**	**1**	**1.1**	**63.5**
LANL BV ALLH[a]				**0.83**	**295**	**0.4**	**19.3**	**14.7**	**22.3**	**0.1**	**1.52**	**1**	**0.73**	**48.8**
SSL Residential[b]				**31.3**	**5450**	**74.1**	**2100**	**3130**	**400**	**23**	**391**	**391**	**5.16**	**23500**
00-04971	0.5–1.8	0100-96-0501	FILL[c]	—[d]	—	2.5	—	73.9	31.3	1.7	—	2.6	—	128
00-04971	1.8–2.2	0100-96-0502	FILL	—	—	—	—	69.6	—	0.6	—	—	0.79 (J)	—
00-04971	5.5–6.5	0100-96-0523	QBT3	11 (UJ)	—	—	—	—	—	0.11 (U)	—	2.3 (U)	—	—
00-04972	0.25–1.2	0100-96-0505	FILL	—	—	—	—	—	—	0.14	—	—	—	—
00-04972	1.2–1.8	0100-96-0506	FILL	—	—	—	—	—	—	0.14	—	—	—	—
00-04972	10–11	0100-96-0525	QBT3	11 (UJ)	—	—	—	5.7	—	0.11 (U)	—	2.3 (U)	—	—
00-04972	6–7	0100-96-0524	QBT3	11 (UJ)	—	—	—	11	—	0.2	—	2.2 (U)	—	—
00-04975	0–0.5	0100-96-0507	[e]	6.1 (U)	—	0.67 (U)	—	—	—	—	—	1.5 (U)	0.78 (U)	—
00-04976	0–0.5	0100-96-0508	[e]	6 (U)	—	0.67 (U)	—	—	—	0.11 (J)	—	1.5 (U)	0.78 (U)	51.7
00-04977	0–0.5	0100-96-0509	[e]	6.1 (U)	—	0.67 (U)	—	16.3	—	0.49	—	3.3	0.78 (U)	76.7
00-04978	0–1	0100-96-0510	[e]	5.9 (U)	—	0.65 (U)	—	—	—	0.14	—	1.4 (U)	0.76 (U)	53.3
00-04978	1–2	0100-96-0511	[e]	5.8 (U)	—	0.64 (U)	—	—	—	—	—	1.4 (U)	0.74 (U)	—
00-04979	0–0.5	0100-96-0512	[e]	6.2 (U)	—	0.68 (U)	—	—	—	—	—	1.5 (U)	0.84 (J)	—
00-04980	0–1	0100-96-0513	[e]	6.2 (U)	394	2.5	25.6	145	53.3	2.6	1.8	5.3	1.1 (J)	324
00-04980	1–1.5	0100-96-0514	[e]	6.1 (U)	—	0.67 (U)	—	21	—	0.35	—	1.5 (U)	0.79 (U)	73.8

Notes: 1. Historical RFI samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] Bvs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] For 00-018(a), "FILL" denotes a sand/gravel matrix within the sludge beds.

[d] — = If analyzed, sample result is less than BV.

[e] For 00-018(a), denotes a soil/sludge matrix surrounding the sludge beds.

Table 2.1-3
SWMU 00-018(a) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Tritium
LANL BV QBT3[a]				**n/a**[b]
SAL Residential[c]				**890**
00-04971	5.5–6.5	0100-96-0523	QBT3	0.36

Notes: 1. Historical RFI samples collected in 1996.
2. All values in pCi/g.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] n/a = Not applicable; tritium has no fallout value for subsurface soil or tuff; all detected activities are reported for fallout radionuclides in tuff.

[c] SALs from LANL 2002 (73705) using RESRAD 6.21.

Table 2.1-4
SWMU 00-018(a) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene	Benzo(b)fluoranthene	Bis(2-ethylhexyl)phthalate	Chlordane[alpha-]	Chlordane[gamma-]	Chloroaniline[4-]
SSL Residential[a]				**1.11**	**2.22**	**0.621**	**6.21**	**347**	**16.2**	**16.2**	**244**[b]
00-04971	0.5–1.8	0100-96-0501	FILL[c]	0.066	—[d]	—	—	—	—	—	2
00-04976	0–0.5	0100-96-0508	[e]	—	—	—	—	—	0.00215	—	—
00-04977	0–0.5	0100-96-0509	[e]	0.112	0.0891	—	—	0.088 (J)	0.00599	0.00354	—
00-04980	0–1	0100-96-0513	[e]	0.194	0.107	0.13 (J)	0.23 (J)	0.61	0.0132	—	0.38
00-04980	1–1.5	0100-96-0514	[e]	—	—	—	—	—	—	—	0.077 (J)
00-04971	0.5–1.8	0100-96-0501	FILL	0.22	0.0075	—	—	—	—	—	—

Table 2.1-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Chrysene	DDE[4,4'-]	Dieldrin	Endosulfan Sulfate	Endrin Aldehyde	Fluoranthene	Indeno(1,2,3-cd)pyrene	Pyrene
SSL Residential[a]				**1.11**	**2.22**	**0.621**	**6.21**	**347**	**16.2**	**16.2**	**244**[b]
00-04976	0–0.5	0100-96-0508	[e]	—	—	—	—	—	—	—	—
00-04977	0–0.5	0100-96-0509	[e]	—	—	—	—	—	—	—	—
00-04980	0–1	0100-96-0513	[e]	0.13 (J)	0.00597	0.0118	0.00712	0.0078	0.094 (J)	0.098 (J)	0.13 (J)
00-04980	1–1.5	0100-96-0514	[e]	—	—	—	—	—	—	—	—

Notes: 1. Historical RFI samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] EPA Region 6 value (EPA 2004, 87478).

[c] For 00-018(a), "FILL" denotes a sand/gravel matrix within the sludge beds.

[d] — = If analyzed, sample result is not detected.

[e] For 00-018(a), denotes a soil/sludge matrix surrounding the sludge beds.

Table 2.2-1
AOC 00-018(b) Borehole Drilling Profile

Borehole	Angle from Vertical (degrees)	Sample ID	Linear Distance (ft)	Approximate Vertical Depth (ft bgs)	Approximate Lateral Distance from Surface (ft)
Bayo-1	45	0100-96-0561	33–35.5	23.3–25.1	23
		0100-96-0563	54.5–56.5	38.5–40	38.5
Bayo-2	30	0100-96-0564	16–17	13.9–14.7	8
		0100-96-0565	31.5–32.6	27.3–28.2	15.8
		0100-96-0566	51.5–52.5	44.6–45.5	25.8

Note: Historical RFI samples collected in 1996.

Table 2.2-2
AOC 00-018(b) Summary of Historical Samples Collected

Location ID	Depth (ft)[a]	Sample ID	Media Code	Gamma Spectroscopy	Tritium	Metals	PCBs	Pesticides	SVOCs	VOCs
00-04973[b]	33–35.5	0100-96-0561	ALLH	2737	2737	2736	2735	2735	2735	2735
00-04973[b]	54.5–56.5	0100-96-0563	ALLH	2737	2737	2736	2735	2735	2735	2735
00-04974[c]	16–17	0100-96-0564	ALLH	2737	2737	2736	2735	2735	2735	2735
00-04974[c]	31.5–32.6	0100-96-0565	ALLH	2737	2737	2736	2735	2735	2735	2735
00-04974[c]	51.5–52.5	0100-96-0566	ALLH	2737	2737	2736	2735	2735	2735	2735

Notes: 1. Historical RFI samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] Depth is listed in linear feet, not vertical.

[b] Bayo-1 borehole was drilled 45 degrees from vertical.

[c] Bayo-2 borehole was drilled 30 degrees from vertical.

Table 2.2-3
AOC 00-018(b) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)[a]	Sample ID	Media Code	Antimony	Cadmium	Mercury	Silver
LANL BV Soil[b]				**0.83**	**0.4**	**0.1**	**1**
SSL Residential[c]				**31.3**	**74.1**	**23**	**391**
00-04973[d]	33–35.5	0100-96-0561	ALLH	12 (UJ)	0.62 (U)	0.12 (U)	2.5 (U)
00-04973[d]	54.5–56.5	0100-96-0563	ALLH	13 (UJ)	0.66 (U)	0.13 (U)	2.6 (U)
00-04974[e]	16–17	0100-96-0564	ALLH	11 (UJ)	0.57 (U)	0.11 (U)	2.3 (U)
00-04974[e]	31.5–32.6	0100-96-0565	ALLH	13 (UJ)	0.64 (U)	0.13 (U)	2.6 (U)
00-04974[e]	51.5–52.5	0100-96-0566	ALLH	11 (UJ)	0.56 (U)	0.11 (U)	2.2 (U)

Notes: 1. Historical RFI samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] Depth is listed in linear feet, not vertical.

[b] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[c] SSLs from NMED 2004 (85615), unless otherwise noted.

[d] Bayo-1 borehole was drilled 45 degrees from vertical.

[e] Bayo-2 borehole was drilled 30 degrees from vertical.

Table 2.2-4
AOC 00-018(b) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)[a]	Sample ID	Media Code	Europium-152
LANL BV Soil[b]				**n/a[c]**
SAL Residential[d]				**2.7**
00-04973[e]	33–35.5	0100-96-0561	ALLH	0.451

Notes: 1. Historical RFI samples collected in 1996.
2. All values in pCi/g.

[a] Depth is listed in linear feet, not vertical.

[b] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[c] n/a = Not applicable; europium-152 has no background value; all detected activities are reported.

[d] SALs from LANL 2002 (73705) using RESRAD 6.21.

[e] Bayo-1 borehole was drilled 45 degrees from vertical.

Table 2.2-5
AOC 00-018(b) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)[a]	Sample ID	Media Code	Acetone
SSL Residential[b]				**70400**
00-04973[c]	33–35.5	0100-96-0561	ALLH	0.12
00-04974[d]	16–17	0100-96-0564	ALLH	0.055
00-04974[d]	31.5–32.6	0100-96-0565	ALLH	0.091

Notes: 1. Historical RFI samples collected in 1996.
2. All values in mg/kg.

[a] Depth is listed in linear feet, not vertical.

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] Bayo-1 borehole was drilled 45 degrees from vertical.

[d] Bayo-2 borehole was drilled 30 degrees from vertical.

Table 2.3-1
AOC 00-030(d) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Isotopic Plutonium	Metals[a]	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
00-04885	0–0.42	0100-96-1451	ALLH	2746	2746	2745	—[b]	—	2744	2744	2744
00-04886	0–0.42	0100-96-1452	ALLH	2746	2746	2745	—	—	2744	2744	2744
00-04887	2–2.5	0100-96-1453	ALLH	2746	2746	2745	—	—	2744	2744	2744
00-04888	4–4.5	0100-96-1454	FILL[c]	2768	2768	2767	2766	2766	—	2766	2766
00-04888	7.5–8	0100-96-1455	ALLH	2768	2768	2767	2766	2766	—	2766	2766
00-04889	4–4.5	0100-96-1456	FILL	2768	2768	2767	2766	2766	—	2766	2766
00-04889	6.5–7	0100-96-1457	ALLH	2768	2768	2767	2766	2766	—	2766	2766
00-04890	2.5–3	0100-96-1458	ALLH	2768	2768	2767	2766	2766	—	2766	2766
00-04890	7–7.8	0100-96-1459	ALLH	2768	2768	2767	2766	2766	—	2766	2766
00-04891	3–3.5	0100-96-1460	ALLH	2768	2768	2767	2766	2766	—	2766	2766
00-04891	7–7.6	0100-96-1461	ALLH	2768	2768	2767	2766	2766	—	2766	2766

Notes: 1. Historical RFI samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] The metals analytical suite includes uranium analysis.

[b] — = Not analyzed.

[c] For 00-030(d), "FILL" denotes soil within the septic tank.

Table 2.3-2
AOC 00-030(d) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Calcium	Copper	Iron	Lead	Mercury	Selenium	Silver	Thallium	Uranium	Zinc
LANL BV Soil[a]				**0.83**	**0.4**	**6120**	**14.7**	**21500**	**22.3**	**0.1**	**1.52**	**1**	**0.73**	**1.82**	**48.8**
SSL Residential[b]				**31.3**	**74.1**	**n/a**[c]	**3130**	**23500**	**400**	**23**	**391**	**391**	**5.16**	**16**[d]	**23500**
00-04885	0–0.42	0100-96-1451	ALLH	1 (U)	—[e]	—	—	—	52.4	—	—	—	0.79 (U)	3.66	52.1
00-04886	0–0.42	0100-96-1452	ALLH	1.1 (U)	—	—	—	—	56.9	—	—	—	0.82 (U)	3.92	—
00-04887	2–2.5	0100-96-1453	ALLH	1.7 (J)	—	—	—	42300	—	—	1.8	—	—	2.4	—
00-04888	4–4.5	0100-96-1454	FILL	5.2 (U)	0.52 (U)	—	—	—	—	—	—	—	—	2.8	—
00-04888	7.5–8	0100-96-1455	ALLH	5.57 (U)	0.557 (U)	—	—	—	—	0.17	—	—	—	2.5	—
00-04889	4–4.5	0100-96-1456	FILL	5.39 (U)	0.539 (U)	—	—	—	—	0.164	—	—	—	2.86	51.6
00-04889	6.5–7	0100-96-1457	ALLH	5.4 (U)	0.54 (U)	7550	—	—	—	0.17	—	—	—	2.38	54.9
00-04890	2.5–3	0100-96-1458	ALLH	5.37 (U)	0.537 (U)	—	—	—	—	—	—	—	—	2.96	—
00-04890	7–7.8	0100-96-1459	ALLH	5.56 (U)	0.556 (U)	9630	24.3	—	50.5	0.593	—	1.45	—	3.49	189
00-04891	3–3.5	0100-96-1460	ALLH	5.43 (U)	0.543 (U)	—	—	—	—	—	—	—	—	2.55	—
00-04891	7–7.6	0100-96-1461	ALLH	5.42 (U)	0.542 (U)	—	—	—	—	0.146	—	—	—	2.86	63.9

Notes: 1. Historical RFI samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] EPA Region 9 PRG (http://www.epa.gov/region09/waste/sfund/prg/index.html).

[e] — = If analyzed, sample result is less than BV.

Table 2.3-3
AOC 00-030(d) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Plutonium-239
LANL BV Soil[a]				**0.054[b]**
SAL Residential[c]				**44**
00-04885	0–0.42	0100-96-1451	ALLH	0.099
00-04886	0–0.42	0100-96-1452	ALLH	0.124
00-04887	2–2.5	0100-96-1453	ALLH	0.092
00-04888	7.5–8	0100-96-1455	ALLH	0.061
00-04889	6.5–7	0100-96-1457	ALLH	0.089
00-04890	7–7.8	0100-96-1459	ALLH	0.446
00-04891	7–7.6	0100-96-1461	ALLH	0.215

Notes: 1. Historical RFI samples collected in 1996.
2. All values in pCi/g.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] FVs for plutonium-239 applies to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[c] SALs from LANL 2002 (73705) using RESRAD 6.21.

Table 2.3-4
AOC 00-030(d) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Acenaphthene	Acenaphthylene	Aldrin	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene
SSL Residential[a]				**4690**	**2300**	**0.284**	**23500**	**6.21**	**0.621**	**6.21**	**2300**	**62.1**
00-04885	0–0.42	0100-96-1451	ALLH	—[b]	—	—	—	—	—	—	—	—
00-04886	0–0.42	0100-96-1452	ALLH	—	—	—	—	—	—	—	—	—
00-04887	2–2.5	0100-96-1453	ALLH	—	—	—	—	—	—	—	—	—
00-04888	4–4.5	0100-96-1454	FILL[c]	—	—	—	—	—	—	—	—	—
00-04888	7.5–8	0100-96-1455	ALLH	—	0.085 (J)	—	0.062 (J)	0.17 (J)	0.27 (J)	0.2 (J)	0.15 (J)	0.081 (J)
00-04889	4–4.5	0100-96-1456	FILL	—	—	—	—	—	—	—	—	—
00-04889	6.5–7	0100-96-1457	ALLH	—	—	—	0.081 (J)	0.4	0.43	0.48	0.21 (J)	0.22 (J)
00-04890	2.5–3	0100-96-1458	ALLH	—	—	0.00108	—	—	—	—	—	—
00-04890	7–7.8	0100-96-1459	ALLH	0.085 (J)	0.18 (J)	—	0.88	2.7	2.7	3.1	1.1	1.2
00-04891	3–3.5	0100-96-1460	ALLH	—	—	0.00144	0.059 (J)	0.17 (J)	0.12 (J)	0.14 (J)	—	0.065 (J)
00-04891	7–7.6	0100-96-1461	ALLH	—	0.2 (J)	—	0.1 (J)	0.55	0.75	0.64	0.33 (J)	0.24 (J)

Table 2.3-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Carbazole	Chlordane[alpha-]	Chlordane[gamma-]	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dichlorobenzene[1,4-]
SSL Residential[a]				**240[d]**	**16.2**	**16.2**	**621**	**24.4**	**17.2**	**17.2**	**0.621**	**36**
00-04885	0–0.42	0100-96-1451	ALLH	—	0.0025	0.0015 (J)	—	—	—	—	—	—
00-04886	0–0.42	0100-96-1452	ALLH	—	—	—	—	0.0049	0.038	—	—	—
00-04887	2–2.5	0100-96-1453	ALLH	—	—	—	—	—	—	—	—	—
00-04888	4–4.5	0100-96-1454	FILL	—	—	—	—	—	0.00257	0.003	—	—
00-04888	7.5–8	0100-96-1455	ALLH	—	—	—	0.22 (J)	0.0157	0.00824	0.0131	—	0.11 (J)
00-04889	4–4.5	0100-96-1456	FILL	—	—	—	—	—	0.0117	0.00829	—	—
00-04889	6.5–7	0100-96-1457	ALLH	—	—	—	0.42	0.0893	0.0949	0.0482	0.06 (J)	—
00-04890	2.5–3	0100-96-1458	ALLH	—	—	—	—	0.104	0.0662	0.116	—	—
00-04890	7–7.8	0100-96-1459	ALLH	0.2 (J)	—	—	2.6	0.115	0.745	0.0439	0.31 (J)	—
00-04891	3–3.5	0100-96-1460	ALLH	—	—	—	0.2 (J)	—	0.00104	—	—	—
00-04891	7–7.6	0100-96-1461	ALLH	—	—	—	0.62	1.63	0.827	0.0921	0.083 (J)	—

Table 2.3-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Dieldrin	Endosulfan Sulfate	Endrin Ketone	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Toluene
SSL Residential[a]				**0.304**	**18**	**18**	**2250**	**3130**	**6.21**	**1800**	**2300**	**248**
00-04885	0–0.42	0100-96-1451	ALLH	—	—	—	—	—	—	—	—	0.009
00-04886	0–0.42	0100-96-1452	ALLH	—	—	—	—	—	—	—	—	0.0095
00-04887	2–2.5	0100-96-1453	ALLH	—	—	—	—	—	—	—	—	0.0051 (J)
00-04888	4–4.5	0100-96-1454	FILL[c]	—	—	—	—	—	—	—	—	—
00-04888	7.5–8	0100-96-1455	ALLH	—	0.00171	—	0.16 (J)	—	0.14 (J)	0.1 (J)	0.21 (J)	—
00-04889	4–4.5	0100-96-1456	FILL	—	—	—	—	—	—	—	—	—
00-04889	6.5–7	0100-96-1457	ALLH	0.00297	—	—	0.72	—	0.22 (J)	0.24 (J)	0.6	—
00-04890	2.5–3	0100-96-1458	ALLH	—	—	—	—	—	—	—	—	—
00-04890	7–7.8	0100-96-1459	ALLH	0.0122	—	0.0212	5.6	0.17 (J)	1.2	2.8	4.6	—
00-04891	3–3.5	0100-96-1460	ALLH	—	—	—	0.36 (J)	—	0.057 (J)	0.32 (J)	0.33 (J)	—
00-04891	7–7.6	0100-96-1461	ALLH	—	0.00284	—	0.44	—	0.3 (J)	0.18 (J)	0.62	—

Notes: 1. Historical RFI samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] — = If analyzed, sample result is not detected.

[c] For 00-030(d), "FILL" denotes soil within the septic tank.

[d] EPA Region 6 value (EPA 2004, 87478).

Table 2.4-1
AOC 00-030(eN) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Amercium-241	Gamma Spectroscopy	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	SVOCs	Uranium	VOCs
Off-site Analytical Samples													
00-01518	1.75–2.33	AAB0181	ALLH	—*	18070	18070	—	—	17856	17856	17856	18070	17856
00-01519	1.83–2.33	AAB0182	ALLH	—	18070	18070	—	—	17856	17856	17856	18070	17856
00-01521	1.83–2.33	AAB0184	ALLH	—	18070	18070	—	—	17856	17856	17856	18070	17856
00-03826	3.83–4.88	AAA8459	ALLH	20025	—	20025	20025	19853	19364	19364	19364	20025	19364
On-site Screening Samples													
00-01518	1.75–2.33	AAB0181	ALLH	—	—	—	—	17863	—	—	—	—	—
00-01519	1.83–2.33	AAB0182	ALLH	—	—	—	—	17863	—	—	—	—	—
00-01521	1.83–2.33	AAB0184	ALLH	—	—	—	—	17863	—	—	—	—	—

Notes: 1. Historical RFI samples collected in 1994.
2. Numbers in suite columns are sample request numbers.

*— = Not analyzed.

Table 2.4-2
AOC 00-030(eN) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Mercury	Thallium
LANL BV Soil[a]				**0.1**	**0.73**
SSL Residential[b]				**23**	**5.16**
00-03826	3.83–4.88	AAA8459	ALLH	0.44	0.86 (U)

Notes: 1. Historical RFI samples collected in 1994; results from off-site analytical laboratory reported; on-site (screening) analytical results not reported.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

Table 2.4-3
AOC 00-030(eN) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Americium-241[a]
SAL Residential[b]				**39**
00-03826	3.83–4.88	AAA8459	ALLH	0.0182

Notes: 1. Historical RFI samples collected in 1994.
2. All values in pCi/g.

[a] FVs for americium-241 applies to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[b] SALs from LANL 2002 (73705) using RESRAD 6.21.

Table 2.4-4
AOC 00-030(eN) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Endosulfan I
SSL Residential[a]				**24.4**	**17.2**	**17.2**	**360**
00-01518	1.75–2.33	AAB0181	ALLH	0.0565	0.0289	0.00405 (J)	—[b]
00-01519	1.83–2.33	AAB0182	ALLH	0.0118	0.0377	0.00825 (J)	—
00-01521	1.83–2.33	AAB0184	ALLH	0.128	0.0509	0.0325	—
00-03826	3.83–4.88	AAA8459	ALLH	—	—	—	0.00128

Notes: 1. Historical RFI samples collected in 1994.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] — = If analyzed, sample result is not detected.

Table 2.5-1
AOC 00-030(eS) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Cyanide	Gamma Spectroscopy	Isotopic Plutonium	Metals	PCBs	Pesticides	SVOCs	Uranium
00-03740	0–0.5	AAB3572	ALLH	—[a]	18065	18065	17664	17661	17661	17661	18065
00-03741	0–0.5	AAB3569	ALLH	—	18065	18065	17664	17661	17661	17661	18065
00-03824	0.08–0.17	AAA8453	ALLH	—	—	—	19676	—	—	—	—
00-03825	0.08–0.17	AAA8447	ALLH	19676	—	—	19676[b]	—	—	—	—

Notes: 1. Historical RFI samples collected in 1994.
2. Numbers in suite columns are sample request numbers.

[a] — = Not analyzed.

[b] The metals analytical suite for AAA8447 includes uranium analysis.

Table 2.5-2
AOC 00-030(eS) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Copper	Lead	Mercury	Selenium	Silver	Zinc
LANL BV Soil[a]				**0.83**	**0.4**	**14.7**	**22.3**	**0.1**	**1.52**	**1**	**48.8**
SSL Residential[b]				**31.3**	**74.1**	**3130**	**400**	**23**	**391**	**391**	**23500**
00-03740	0–0.5	AAB3572	ALLH	5.4 (U)	0.94 (U)	17.4	156	0.15	5.4 (U)	—[c]	96.8
00-03741	0–0.5	AAB3569	ALLH	5.7 (U)	1.3	28	615	0.21	—	—	97.5
00-3824	0.08–0.17	AAA8453	ALLH	—	0.46 (U)	—	69.9	—	—	2.3 (U)	78
00-3825	0.08–0.17	AAA8447	ALLH	1.4 (U)	1.7	17.3	210[d]	—	—	2.2 (U)	84.9 (U)

Notes: 1. Historical RFI samples collected in 1994.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] — = If analyzed, sample result is less than BV.

[d] This result was reported by the lab in an addendum to the original report. The initial value reported was 1010 mg/kg. As this result was re-evaluated by the lab and reported as 210 mg/kg in the revised report, the value of 210 mg/kg is used.

Table 2.5-3
AOC 00-030(eS) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Chlordane[alpha-]	Chlordane[gamma-]	DDT[4,4'-]	Dieldrin
SSL Residential*				**16.2**	**16.2**	**17.2**	**0.304**
00-03740	0–0.5	AAB3572	ALLH	0.00497 (J)	0.00664 (J)	0.0218 (J)	0.00471 (J)

Notes: 1. Historical RFI samples collected in 1994.
2. All values in pCi/g.
3. See Appendix A for data qualifier definitions.

*SSLs from NMED 2004 (85615), unless otherwise noted.

Table 2.6-1
AOC 00-030(f) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Gamma Spectroscopy	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	SVOCs	Uranium	VOCs
Off-site Analytical Samples													
00-01485	10–11.5	AAB0272	FILL[a]	—[b]	17008	17008	—	—	16998	16998	—	17008	—
00-01485	4–5	AAB0270	FILL	—	17008	17008	—	—	16998	16998	—	17008	—
00-01485	7.5–8.5	AAB0263	FILL	—	17008	17008	—	—	16998	16998	—	17008	—
00-01486	2.5–3.5	AAB0271	FILL	—	17008	17008	—	—	16998	16998	—	17008	—
00-01488	2.5–4	AAB0262	FILL	—	17008	17008	—	—	16998	16998	—	17008	—
00-03827	14.5–14.5	AAA8454	FILL	20025	—	20025	20025	19853	19364	19364	19364	20025	19364
00-03828	10.5–10.5	AAA8458	FILL	20025	—	20025	—	19853	19364	19364	19364	20025	19364
On-site Screening Samples													
00-01485	10–11.5	AAB0272	FILL	—	—	—	—	17010	16996	—	16996	—	—
00-01485	4–5	AAB0270	FILL	—	—	—	—	17010	16996	—	16996	—	16996
00-01485	7.5–8.5	AAB0263	FILL	—	—	—	—	17010	16996	—	16996	—	16996
00-01486	2.5–3.5	AAB0271	FILL	—	—	—	—	17010	16996	—	16996	—	16996
00-01488	2.5–4	AAB0262	FILL	—	—	—	—	17010	16996	—	16996	—	16996

Notes: 1. Historical RFI samples collected in 1994.

2. Numbers in suite columns are sample request numbers.

[a] For 00-030(f), "FILL" is assumed to be soil.

[b] — = Not analyzed.

Table 2.6-2a
AOC 00-030(f) Historical Analytical Results of Inorganic Chemicals above BVs—Screening-level Data

Location ID	Depth (ft)	Sample ID	Media Code	Cadmium	Lead	Silver
LANL BV Soil[a]				**0.4**	**22.3**	**1**
SSL Residential[b]				**74.1**	**400**	**391**
00-01485	10–11.5	AAB0272	FILL[c]	0.6	—[d]	1.6 (U)
00-01485	4–5	AAB0270	FILL	2.2	56	1.6 (U)
00-01485	7.5–8.5	AAB0263	FILL	2.4	—	1.6 (U)
00-01486	2.5–3.5	AAB0271	FILL	0.6 (U)	—	1.6 (U)
00-01488	2.5–4	AAB0262	FILL	1.2	—	1.6 (U)

Notes: 1. Historical RFI samples collected in 1994; results from on-site analytical samples.
2. All values in mg/kg.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] For 00-030(f), "FILL" is assumed to be soil.

[d] — = If analyzed, sample result is less than BV.

Table 2.6-2b
AOC 00-030(f) Historical Analytical Results of Inorganic Chemicals above BVs—Off-site Analytical Data

Location ID	Depth (ft)	Sample ID	Media Code	Mercury	Thallium
LANL BV Soil[a]				**0.1**	**0.73**
SSL Residential[b]				**23**	**5.16**
00-03827	14.5–14.5	AAA8454	FILL[c]	0.36	0.91 (U)
00-03828	10.5–10.5	AAA8458	FILL	0.31	0.88 (U)

Notes: 1. Historical RFI samples collected in 1994.
2. All values in mg/kg.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] For 00-030(f), "FILL" is assumed to be soil.

Table 2.6-3
AOC 00-030(f) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Americium-241[a]
SAL Residential[b]				**39**
00-03827	14.5–14.5	AAA8454	FILL[c]	0.0249

Notes: 1. Historical RFI samples collected in 1994.
2. All values in pCi/g.

[a] FVs for americium-241 applies to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[b] SALs from LANL 2002 (73705) using RESRAD 6.21.

[c] For 00-030(f), "FILL" is assumed to be soil.

Table 2.6-4a

AOC 00-030(f) Historical Analytical Results of Organic Chemicals Detected—Screening-Level Data

Location ID	Depth (ft)	Sample ID	Media Code	Acetone	Trichloro-1,2,2-trifluoroethane[1,1,2-]
SSL Residential[a]				**70400**	**5600[b]**
00-01485	4–5	AAB0270	FILL[c]	0.056 (J)	—[d]
00-01485	7.5–8.5	AAB0263	FILL	0.19 (J)	0.27 (J)
00-01486	2.5–3.5	AAB0271	FILL	0.57 (J)	—
00-01488	2.5–4	AAB0262	FILL	0.14 (J)	—

Notes: 1. Historical RFI samples collected in 1994; results from on-site analytical samples.
2. All values in mg/kg.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] EPA Region 6 value (EPA 2004, 87478).

[c] For 00-030(f), "FILL" is assumed to be soil.

[d] — = If analyzed, sample result is not detected.

Table 2.6-4b

AOC 00-030(f) Historical Analytical Results of Organic Chemicals Detected—Off-site Analytical Data

Location ID	Depth (ft)	Sample ID	Media Code	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dieldrin	Endosulfan II
SSL Residential[a]				**24.4**	**17.2**	**17.2**	**0.304**	**360**
00-01485	10–11.5	AAB0272	FILL[b]	0.0073 (J)	0.036	0.024	—[c]	—
00-03827	14.5–14.5	AAA8454	FILL	—	0.00283	—	—	—
00-03828	10.5–10.5	AAA8458	FILL	0.00771	0.0206	0.0132	0.00298	0.00126

Notes: 1. Historical RFI samples collected in 1994.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] For 00-030(f), "FILL" is assumed to be soil.

[c] — = If analyzed, sample result is not detected.

Table 2.7-1
AOC 00-030(h) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Isotopic Plutonium	Metals[a]	PCBs	Pesticides	SVOCs	VOCs
00-04800	3–3.5	0100-96-0403	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04801	7–8	0100-96-0437	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04802	7–8	0100-96-0438	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04803	7–8	0100-96-0439	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04805	9.5–10	0100-96-0407[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04805	11.5–12	0100-96-0408[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04807	6.5–7	0100-96-0411[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04807	10.5–11	0100-96-0412[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04808	6–6.5	0100-96-0413[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04808	9.5–10	0100-96-0414[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04810	6–6.5	0100-96-0417[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04810	10–10.5	0100-96-0418[b]	ALLH	2235	2235	2234	2233	2233	2233	2233
00-04811	0.42–0.83	0100-96-0419	ALLH	2240	2240	2239	2238	2238	2238	2238
00-04812	0.42–0.83	0100-96-0420	ALLH	2240	2240	2239	2238	2238	2238	2238
00-04813	13.5–13.5	0100-96-0421[c]	ALLH	2513	2513	2512	2510	2510	2510	2510
00-04814	13.5–13.5	0100-96-0424[c]	ALLH	2513	2513	2512	2510	2510	2510	2510
00-04815	13.5–13.5	0100-96-0425[c]	ALLH	2513	2513	2512	2510	2510	2510	2510
00-04816	13.5–13.5	0100-96-0426[c]	ALLH	2513	2513	2512	2510	2510	2510	2510

Notes: 1. Historical VCA samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] The metals analytical suite includes total uranium analysis.

[b] These samples were taken from septic tank contents that were used as fill after tank removal.

[c] Confirmation samples collected in subsurface soil after tank removal.

Table 2.7-2
AOC 00-030(h) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Arsenic	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper
LANL BV Soil[a]				**0.83**	**8.17**	**1.83**	**0.4**	**6120**	**19.3**	**8.64**	**14.7**
SSL Residential[b]				**31.3**	**3.9**	**156**	**74.1**	**n/a**[c]	**2100**	**1520**	**3130**
00-04800	3–3.5	0100-96-0403	ALLH	5.4 (U)	—[d]	—	—	—	—	10.8	—
00-04801	7–8	0100-96-0437	ALLH	5.8 (U)	—	—	—	—	—	9.2	—
00-04802	7–8	0100-96-0438	ALLH	5.6 (U)	—	—	—	—	—	—	—
00-04803	7–8	0100-96-0439	ALLH	5.6 (U)	—	—	—	6500	—	—	—
00-04805	11.5–12	0100-96-0408[e]	ALLH	6 (U)	—	3	0.53 (U)	8730	—	37.7	—
00-04805	9.5–10	0100-96-0407[e]	ALLH	6.1 (U)	—	—	—	—	—	—	—
00-04807	10.5–11	0100-96-0412[e]	ALLH	5.9 (U)	—	—	—	7210	—	—	—
00-04807	6.5–7	0100-96-0411[e]	ALLH	6.1 (U)	—	—	—	—	—	—	—
00-04808	6–6.5	0100-96-0413[e]	ALLH	5.7 (U)	—	—	—	—	—	—	—
00-04808	9.5–10	0100-96-0414[e]	ALLH	5.7 (U)	—	—	—	—	—	—	—
00-04810	10–10.5	0100-96-0418[e]	ALLH	6 (U)	—	—	0.44 (U)	—	—	—	17.9
00-04810	6–6.5	0100-96-0417[e]	ALLH	5.9 (U)	—	—	—	—	—	—	—
00-04811	0.42–0.83	0100-96-0419	ALLH	—	11.9	—	—	—	51.2 (J-)	11.7	43.4
00-04812	0.42–0.83	0100-96-0420	ALLH	—	—	—	—	—	—	—	—
00-04813	13.5–13.5	0100-96-0421[f]	ALLH	—	—	—	—	10700	—	—	—
00-04814	13.5–13.5	0100-96-0424[f]	ALLH	—	—	—	—	7610	—	—	—
00-04815	13.5–13.5	0100-96-0425[f]	ALLH	—	—	—	—	—	—	—	—
00-04816	13.5–13.5	0100-96-0426[f]	ALLH	—	—	—	—	—	—	—	—

Table 2.7-2 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Iron	Lead	Manganese	Mercury	Nickel	Selenium	Thallium	Zinc
LANL BV Soil[a]				**21500**	**22.3**	**671**	**0.1**	**15.4**	**1.52**	**0.73**	**48.8**
SSL Residential[b]				**23500**	**400**	**1550**	**23**	**1560**	**391**	**5.16**	**23500**
00-04800	3–3.5	0100-96-0403	ALLH	—	23.6	928	—	—	—	0.87 (U)	—
00-04801	7–8	0100-96-0437	ALLH	—	—	835	—	—	1.7 (U)	—	52.4
00-04802	7–8	0100-96-0438	ALLH	—	—	—	—	—	—	—	—
00-04803	7–8	0100-96-0439	ALLH	—	—	—	—	—	—	0.97 (U)	49.8
00-04805	11.5–12	0100-96-0408[e]	ALLH	—	33.4	1540	1.3	—	1.9 (U)	—	130
00-04805	9.5–10	0100-96-0407[e]	ALLH	—	—	—	0.94	—	—	—	91.6
00-04807	10.5–11	0100-96-0412[e]	ALLH	—	22.9	—	0.99	—	—	0.75 (U)	79.1
00-04807	6.5–7	0100-96-0411[e]	ALLH	—	23.8	—	0.25	—	—	1.2 (U)	71.6
00-04808	6–6.5	0100-96-0413[e]	ALLH	—	—	—	—	—	—	0.98 (U)	—
00-04808	9.5–10	0100-96-0414[e]	ALLH	—	—	—	—	—	—	1.3 (U)	—
00-04810	10–10.5	0100-96-0418[e]	ALLH	—	25.1	—	0.71	—	—	—	127
00-04810	6–6.5	0100-96-0417[e]	ALLH	—	—	—	0.24	—	—	—	—
00-04811	0.42–0.83	0100-96-0419	ALLH	140000	51.2	869	3.5	36.4	2	—	85.1 (J-)
00-04812	0.42–0.83	0100-96-0420	ALLH	—	—	—	0.25	—	—	—	50.6 (J-)
00-04813	13.5–13.5	0100-96-0421[f]	ALLH	—	—	—	—	—	—	0.8 (U)	57.1
00-04814	13.5–13.5	0100-96-0424[f]	ALLH	—	29	—	—	—	—	2.3 (J)	—
00-04815	13.5–13.5	0100-96-0425[f]	ALLH	—	—	—	0.11 (J)	—	—	0.79 (U)	—
00-04816	13.5–13.5	0100-96-0426[f]	ALLH	—	26.6	—	—	—	—	1.2 (J)	49

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] — = If analyzed, sample result is less than BV.

[e] These samples were taken from septic tank contents that were used as fill after tank removal.

[f] Confirmation samples collected in subsurface soil after tank removal.

Table 2.7-3
AOC 00-030(h) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Cesium-137	Plutonium-238	Plutonium-239
LANL BV Soil[a]				**1.65**[b]	**0.023**[b]	**0.054**[b]
SAL Residential[c]				**5.3**	**49**	**44**
00–04800	3–3.5	0100–96–0403	ALLH	—[d]	—	0.181
00–04801	7–8	0100–96–0437	ALLH	—	—	1.7
00–04802	7–8	0100–96–0438	ALLH	—	—	0.347
00–04803	7–8	0100–96–0439	ALLH	—	0.0204	0.0656
00–04805	11.5–12	0100–96–0408[e]	ALLH	—	0.027	1.52
00–04805	9.5–10	0100–96–0407[e]	ALLH	—	0.0202	2.51
00–04807	10.5–11	0100–96–0412[e]	ALLH	—	—	1.45
00–04807	6.5–7	0100–96–0411[e]	ALLH	—	—	1.24
00–04808	6–6.5	0100–96–0413[e]	ALLH	—	—	0.0788
00–04808	9.5–10	0100–96–0414[e]	ALLH	—	—	0.0946
00–04810	10–10.5	0100–96–0418[e]	ALLH	—	—	0.82
00–04810	6–6.5	0100–96–0417[e]	ALLH	—	—	0.307
00–04811	0.42–0.83	0100–96–0419	ALLH	0.233	—	4.44
00–04812	0.42–0.83	0100–96–0420	ALLH	0.144	—	0.523
00–04813	13.5–13.5	0100–96–0421[f]	ALLH	—	—	0.0691
00–04814	13.5–13.5	0100–96–0424[f]	ALLH	—	—	0.0956
00–04816	13.5–13.5	0100–96–0426[f]	ALLH	—	—	0.265

Notes: 1. Historical VCA samples collected in 1996.
2. All values in pCi/g.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] FV for cesium-137, plutonium-238, and plutonium-239 apply to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[c] SALs from LANL 2002 (73705) using RESRAD 6.21.

[d] — = If analyzed, sample result is less than BV or fallout value.

[e] These samples were taken from septic tank contents that were used as fill after tank removal.

[f] Confirmation samples collected in subsurface soil after tank removal.

Table 2.7-4
AOC 00-030(h) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Acenaphthene	Acetone	Anthracene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chlordane[alpha-]
SSL Residential[a]				**4690**	**70400**	**23500**	**6.21**	**0.621**	**6.21**	**2300**	**62.1**	**16.2**
00-04800	3–3.5	0100-96-0403	ALLH	—[b]	—	—	—	—	—	—	—	—
00-04801	7–8	0100-96-0437	ALLH	—	—	—	—	—	—	—	—	—
00-04802	7–8	0100-96-0438	ALLH	0.063 (J)	—	0.1 (J)	0.36 (J)	0.46	0.37 (J)	0.31 (J)	0.38	—
00-04803	7–8	0100-96-0439	ALLH	0.2 (J)	—	0.32 (J)	0.94	1.1	0.89	0.82	0.95	—
00-04805	11.5–12	0100-96-0408[c]	ALLH	—	—	—	—	—	—	—	—	—
00-04805	9.5–10	0100-96-0407[c]	ALLH	—	—	—	—	—	—	—	—	—
00-04807	10.5–11	0100-96-0412[c]	ALLH	—	—	—	0.047 (J)	0.059 (J)	0.055 (J)	0.061 (J)	0.058 (J)	—
00-04807	6.5–7	0100-96-0411[c]	ALLH	—	—	—	—	—	—	0.067 (J)	—	—
00-04808	6–6.5	0100-96-0413[c]	ALLH	—	—	—	0.14 (J)	0.16 (J)	0.12 (J)	0.13 (J)	0.14 (J)	—
00-04808	9.5–10	0100-96-0414[c]	ALLH	0.12 (J)	—	0.19 (J)	0.63	0.74	0.61	0.49	0.61	—
00-04810	10–10.5	0100-96-0418[c]	ALLH	—	—	—	—	0.062 (J)	0.047 (J)	0.059 (J)	0.05 (J)	0.0028
00-04810	6–6.5	0100-96-0417[c]	ALLH	—	—	—	—	—	—	—	—	—
00-04811	0.42–0.83	0100-96-0419	ALLH	0.12 (J)	—	0.21 (J)	0.81	0.95	0.82	0.71	0.86	0.51
00-04812	0.42–0.83	0100-96-0420	ALLH	0.079 (J)	—	0.12 (J)	0.44	0.56	0.47	0.39	0.46	—
00-04813	13.5–13.5	0100-96-0421[d]	ALLH	—	0.042 (J-)	—	—	—	—	—	—	—
00-04814	13.5–13.5	0100-96-0424[d]	ALLH	—	0.058 (J-)	—	—	—	—	—	—	—
00-04815	13.5–13.5	0100-96-0425[d]	ALLH	—	0.04 (J+)	—	—	—	—	—	—	—
00-04816	13.5–13.5	0100-96-0426[d]	ALLH	—	0.083	—	—	—	—	—	—	—

Table 2.7-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Chlordane[gamma-]	Chlorobenzene	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran
SSL Residential[a]				**16.2**	**176**	**621**	**24.4**	**17.2**	**17.2**	**0.621**	**313**
00-04800	3–3.5	0100-96-0403	ALLH	—	—	—	0.0076	1.1	0.81	—	—
00-04801	7–8	0100-96-0437	ALLH	—	—	—	—	0.031	0.027	—	—
00-04802	7–8	0100-96-0438	ALLH	—	—	0.45	—	0.077	0.048	0.1 (J)	—
00-04803	7–8	0100-96-0439	ALLH	—	—	1.1	—	0.018 (J)	0.06	0.24 (J)	0.093 (J)
00-04805	11.5–12	0100-96-0408[c]	ALLH	—	—	—	0.15	0.062	0.51	—	—
00-04805	9.5–10	0100-96-0407[c]	ALLH	—	—	—	0.014	0.015	0.0087	—	—
00-04807	10.5–11	0100-96-0412[c]	ALLH	—	—	0.05 (J)	0.054	0.17	0.022	—	—
00-04807	6.5–7	0100-96-0411[c]	ALLH	—	0.005 (J)	—	0.012	0.052	0.023	—	—
00-04808	6–6.5	0100-96-0413[c]	ALLH	—	—	0.16 (J)	0.019	0.11	0.08	0.067 (J)	—
00-04808	9.5–10	0100-96-0414[c]	ALLH	—	—	0.78	0.013 (J)	0.048	0.12	0.15 (J)	0.056 (J)
00-04810	10–10.5	0100-96-0418[c]	ALLH	—	0.001 (J+)	0.046 (J)	0.29	0.13	0.2	—	—
00-04810	6–6.5	0100-96-0417[c]	ALLH	—	—	—	0.0023 (J)	0.0051	0.0031 (J)	—	—
00-04811	0.42–0.83	0100-96-0419	ALLH	0.48	—	1.2	0.25	2.3	18	0.23 (J)	0.045 (J)
00-04812	0.42–0.83	0100-96-0420	ALLH	—	—	0.61	0.0048	—	0.011	0.14 (J)	—
00-04813	13.5–13.5	0100-96-0421[d]	ALLH	—	—	—	—	0.067	0.074	—	—
00-04814	13.5–13.5	0100-96-0424[d]	ALLH	—	—	—	—	0.022	0.042	—	—
00-04815	13.5–13.5	0100-96-0425[d]	ALLH	—	—	—	—	0.024	0.026	—	—
00-04816	13.5–13.5	0100-96-0426[d]	ALLH	—	—	0.2	—	0.04	0.051	—	—

Table 2.7-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Dichloroethene[cis-1,2-]	Ethylbenzene	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene
SSL Residential[a]				**782**	**10600**	**2250**	**3130**	**6.21**	**165**	**71.9**	**71.9**
00-04800	3–3.5	0100-96-0403	ALLH	—	—	—	—	—	—	—	—
00-04801	7–8	0100-96-0437	ALLH	—	—	0.052 (J)	—	—	—	—	—
00-04802	7–8	0100-96-0438	ALLH	0.001 (J+)	—	0.88	0.052 (J)	0.27 (J)	—	—	—
00-04803	7–8	0100-96-0439	ALLH	—	—	2.5	0.18 (J)	0.68	—	0.043 (J)	0.11 (J)
00-04805	11.5–12	0100-96-0408[c]	ALLH	—	—	—	—	—	—	—	—
00-04805	9.5–10	0100-96-0407[c]	ALLH	—	—	—	—	—	—	—	—
00-04807	10.5–11	0100-96-0412[c]	ALLH	—	—	0.078 (J)	—	0.054 (J)	—	—	—
00-04807	6.5–7	0100-96-0411[c]	ALLH	—	—	—	—	0.059 (J)	—	—	—
00-04808	6–6.5	0100-96-0413[c]	ALLH	—	—	0.33 (J)	—	0.1 (J)	—	—	—
00-04808	9.5–10	0100-96-0414[c]	ALLH	—	—	1.5	0.11 (J)	0.43	—	—	0.07 (J)
00-04810	10–10.5	0100-96-0418[c]	ALLH	—	—	0.073 (J)	—	0.044 (J)	—	—	—
00-04810	6–6.5	0100-96-0417[c]	ALLH	0.002 (J+)	0.002 (J+)	—	—	—	—	—	—
00-04811	0.42–0.83	0100-96-0419	ALLH	0.002 (J)	—	1.7	0.1 (J)	0.61	—	—	0.045 (J)
00-04812	0.42–0.83	0100-96-0420	ALLH	0.003 (J)	0.001 (J)	1.1	0.07 (J)	0.34	—	—	0.043 (J)
00-04813	13.5–13.5	0100-96-0421[d]	ALLH	—	—	—	—	—	0.007 (J-)	—	—
00-04814	13.5–13.5	0100-96-0424[d]	ALLH	—	—	—	—	—	0.0058 (J-)	—	—
00-04815	13.5–13.5	0100-96-0425[d]	ALLH	—	—	0.23	—	—	—	—	—
00-04816	13.5–13.5	0100-96-0426[d]	ALLH	—	—	0.4	—	—	—	—	—

Table 2.7-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Phenanthrene	Pyrene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)
SSL Residential[a]				**1800**	**2300**	**248**	**0.648**	**528**	**52.2**	**22.3**	**132**
00-04800	3–3.5	0100-96-0403	ALLH	—	—	—	0.002 (J)	—	—	—	—
00-04801	7–8	0100-96-0437	ALLH	—	0.052 (J)	0.001 (J+)	0.004 (J+)	—	—	—	0.002 (J+)
00-04802	7–8	0100-96-0438	ALLH	0.58	0.79	0.002 (J+)	0.009 (J+)	—	—	—	0.003 (J+)
00-04803	7–8	0100-96-0439	ALLH	1.7	2	0.003 (J+)	0.008 (J+)	—	—	—	0.003 (J+)
00-04805	11.5–12	0100-96-0408[c]	ALLH	—	—	0.003 (J+)	0.006 (J+)	—	—	—	0.004 (J+)
00-04805	9.5–10	0100-96-0407[c]	ALLH	—	—	—	0.002 (J)	—	—	—	0.001 (J)
00-04807	10.5–11	0100-96-0412[c]	ALLH	—	0.071 (J)	—	—	0.002 (J+)	—	—	—
00-04807	6.5–7	0100-96-0411[c]	ALLH	—	—	—	0.003 (J)	0.002 (J)	—	—	—
00-04808	6–6.5	0100-96-0413[c]	ALLH	0.21 (J)	0.27 (J)	—	0.004 (J+)	—	—	—	—
00-04808	9.5–10	0100-96-0414[c]	ALLH	1.1	1.4	—	0.007 (J+)	—	—	—	—
00-04810	10–10.5	0100-96-0418[c]	ALLH	0.047 (J)	0.067 (J)	0.003 (J+)	0.005 (J+)	—	—	—	0.003 (J+)
00-04810	6–6.5	0100-96-0417[c]	ALLH	—	—	0.009 (J+)	0.008 (J+)	—	0.002 (J+)	—	0.012 (J+)
00-04811	0.42–0.83	0100-96-0419	ALLH	1.2	2.1	0.016	0.01	—	—	—	0.005 (J)
00-04812	0.42–0.83	0100-96-0420	ALLH	0.75	1	0.013 (J)	0.026 (J)	—	0.001 (J)	0.002 (J)	0.006 (J)
00-04813	13.5–13.5	0100-96-0421[d]	ALLH	—	—	—	—	—	—	—	—
00-04814	13.5–13.5	0100-96-0424[d]	ALLH	—	—	—	—	—	—	—	—
00-04815	13.5–13.5	0100-96-0425[d]	ALLH	—	0.21	—	—	—	—	—	—
00-04816	13.5–13.5	0100-96-0426[d]	ALLH	—	0.36	—	—	—	—	—	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.
[b] — = If analyzed, sample result is not detected.
[c] These samples were taken from septic tank contents that were used as fill after tank removal.
[d] Confirmation samples collected in subsurface soil after tank removal.

Table 2.9-1
AOC 00-030(n) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Isotopic Plutonium	Metals	PCBs	Pesticides	SVOCs	VOCs
00-04771	1.67–2.17	0100-96-0141[a]	ALLH	—[b]	—	—	1950	1950	1950	—
00-04771	3.5–4.33	0100-96-0142[a]	ALLH	—	—	—	1950	1950	1950	—
00-04774	1.67–2.5	0100-96-0150[a]	ALLH	1952	1952	1952[c]	1950	1950	1950	1950
00-04774	3.58–4.67	0100-96-0151[a]	ALLH	1952	1952	1952[c]	1950	1950	1950	1950
00-04775	2.83–3.08	0100-96-0153	ALLH	—	—	1951	1950	1950	1950	—
00-04776	0–0.42	0100-96-0154	ALLH	—	—	1951	1950	1950	1950	—
00-04777	0–0.42	0100-96-0155	ALLH	—	—	1951	1950	1950	1950	—
00-04782	1.25–1.67	0100-96-0160	ALLH	1952	1952	1951[c]	1950	1950	1950	1950
00-04783	5–6	0100-96-0161[d]	ALLH	2539	2539	2547[c]	2538	2538	2538	2538
00-04784	5–6	0100-96-0162[d]	ALLH	2539	2539	2547[c]	2538	2538	2538	2538

Notes: 1. Historical VCA samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] Samples taken from septic tank contents which were used as fill at site after tank removal.

[b] — = Not analyzed.

[c] The metals analytical suite includes total uranium analysis.

[d] Confirmation samples taken from beneath tank location after removal.

Table 2.9-2
AOC 00-030(n) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Copper	Iron	Lead	Sodium	Thallium	Zinc
LANL BV Soil[a]				**0.83**	**0.4**	**14.7**	**21500**	**22.3**	**915**	**0.73**	**48.8**
SSL Residential[b]				**31.3**	**74.1**	**3130**	**23500**	**400**	**n/a**[c]	**5.16**	**23500**
00-04775	2.83–3.08	0100-96-0153	ALLH	5.54 (U)	0.554(U)	—[d]	—	111 (J-)	—	—	55.3
00-04776	0–0.42	0100-96-0154	ALLH	5.17(U)	0.517(U)	16.3	55600	72.2 (J-)	—	—	—
00-04777	0–0.42	0100-96-0155	ALLH	5.11(U)	0.511(U)	—	—	97.1 (J-)	—	—	59.7
00-04782	1.25–1.67	0100-96-0160	ALLH	5.67(U)	0.567(U)	—	—	109 (J-)	1080	—	86.7
00-04783	5–6	0100-96-0161[e]	ALLH	—	—	—	—	—	—	0.76 (U)	—
00-04784	5–6	0100-96-0162[e]	ALLH	—	—	—	—	—	—	0.77 (U)	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] — = If analyzed, sample result is less than BV.

[e] Confirmation samples taken from beneath tank location after removal.

Table 2.9-3
AOC 00-030(n) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Americium-241[a]	Plutonium-239[a]
SAL Residential[b]				**39**	**44**
00-04774	3.58–4.67	0100-96-0151[c]	ALLH	—[d]	0.25
00-04782	1.25–1.67	0100-96-0160	ALLH	0.076	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in pCi/g.

[a] FVs for americium-241 and plutonium-239 apply to upper 0–6 in. of soil; all detected activities reported for subsurface samples.

[b] SALs from LANL 2002 (73705) using RESRAD 6.21.

[c] Samples taken from septic tank contents which were used as fill at site after tank removal.

[d] — = If analyzed, sample result is less than BV or FV.

Table 2.9-4
AOC 00-030(n) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Aldrin	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzoic Acid	BHC[delta-]	Butylbenzylphthalate
SSL Residential[a]				**0.284**	**6.21**	**0.621**	**6.21**	**62.1**	**100000[b]**	**na[c]**	**240[b]**
00-04771	1.67–2.17	0100-96-0141[d]	ALLH	—[e]	0.22 (J)	0.3 (J)	—	0.61 (J)	0.26 (J)	0.00233	—
00-04771	3.5–4.33	0100-96-0142[d]	ALLH	0.0019	0.072 (J)	0.086 (J)	0.13 (J)	—	0.17 (J)	—	—
00-04774	1.67–2.5	0100-96-0150[d]	ALLH	—	—	—	—	—	—	0.0016	—
00-04774	3.58–4.67	0100-96-0151[d]	ALLH	0.00171	—	—	0.089 (J)	—	—	—	—
00-04775	2.83–3.08	0100-96-0153	ALLH	0.00266	—	—	0.056 (J)	—	0.22 (J)	—	0.077 (J)
00-04776	0–0.42	0100-96-0154	ALLH	0.00211	—	—	0.08 (J)	—	0.11 (J)	—	—
00-04777	0–0.42	0100-96-0155	ALLH	0.00194	—	—	—	—	—	—	—
00-04782	1.25–1.67	0100-96-0160	ALLH	0.0017	—	—	—	—	—	—	—
00-04783	5–6	0100-96-0161[f]	ALLH	—	—	—	—	—	—	—	—
00-04784	5–6	0100-96-0162[f]	ALLH	—	—	—	—	—	—	—	—

Table 2.9-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Chlordane (Technical Grade)	Chlordane[alpha-]	Chlordane[gamma-]	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dichlorobenzene[1,4-]
SSL Residential[a]				**16.2**	**16.2**	**16.2**	**621**	**24.4**	**17.2**	**17.2**	**36**
00-04771	1.67–2.17	0100-96-0141[d]	ALLH	0.0952	0.00667	0.012	0.3 (J)	0.0369	0.0242	0.112	—
00-04771	3.5–4.33	0100-96-0142[d]	ALLH	—	—	—	0.093 (J)	0.16	0.0125	0.01	0.79
00-04774	1.67–2.5	0100-96-0150[d]	ALLH	0.2	0.0155	0.0213	—	0.0712	0.0881	0.521	—
00-04774	3.58–4.67	0100-96-0151[d]	ALLH	—	—	0.00207	0.069 (J)	0.103	0.00619	0.0113	0.85
00-04775	2.83–3.08	0100-96-0153	ALLH	0.112	0.00804	0.0122	0.058 (J)	0.355	0.399	1.66	—
00-04776	0–0.42	0100-96-0154	ALLH	0.057	0.00516	0.00578	0.061 (J)	0.107	0.164	0.52	—
00-04777	0–0.42	0100-96-0155	ALLH	0.096	0.00709	0.00902	—	0.157	0.196	0.797	—
00-04782	1.25–1.67	0100-96-0160	ALLH	0.108	0.00966	0.013	—	1.64	0.755	8.18	—
00-04783	5–6	0100-96-0161[f]	ALLH	—	—	—	—	—	0.0084	0.02	—
00-04784	5–6	0100-96-0162[f]	ALLH	—	—	—	—	—	0.01	0.038	—

Table 2.9-4 (continued)

Location ID	Depth (ft)	Sample ID	Media Code	Dieldrin	Endosulfan Sulfate	Fluoranthene	Heptachlor Epoxide	Methylene Chloride	Pentachlorophenol	Phenanthrene	Pyrene
SSL Residential[a]				**0.304**	**18**	**2250**	**0.53[b]**	**165**	**29.8**	**1800**	**2300**
00-04771	1.67–2.17	0100-96-0141[d]	ALLH	0.00248	—	0.35 (J)	—	—	—	0.3 (J)	0.79
00-04771	3.5–4.33	0100-96-0142[d]	ALLH	—	—	0.094 (J)	—	—	—	—	0.09 (J)
00-04774	1.67–2.5	0100-96-0150[d]	ALLH	0.00505	0.00335	—	0.00208	0.002 (J)	—	—	0.15 (J)
00-04774	3.58–4.67	0100-96-0151[d]	ALLH	—	—	0.078 (J)	—	0.007	0.91 (J)	0.05 (J)	0.1 (J)
00-04775	2.83–3.08	0100-96-0153	ALLH	—	—	0.038 (J)	0.00165	—	—	0.044 (J)	0.1 (J)
00-04776	0–0.42	0100-96-0154	ALLH	0.00197	—	0.083 (J)	0.0014	—	—	0.087 (J)	0.14 (J)
00-04777	0–0.42	0100-96-0155	ALLH	0.00249	0.00201	—	0.00156	—	—	—	0.11 (J)
00-04782	1.25–1.67	0100-96-0160	ALLH	—	—	—	—	0.006	—	—	—
00-04783	5–6	0100-96-0161[f]	ALLH	—	—	—	—	—	—	—	—
00-04784	5–6	0100-96-0162[f]	ALLH	—	—	—	—	—	—	—	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] EPA Region 6 value (EPA 2004, 87478).

[c] na = Not available; SSL not found for this chemical.

[d] These samples were taken from septic tank contents that were used as fill after tank removal.

[e] — = If analyzed, sample result is not detected.

[f] Confirmation samples taken from beneath tank location after removal.

Table 2.10-1
AOC 00-030(o) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Isotopic Plutonium	Metals[a]	PCBs	Pesticides	Pesticides/PCBs	SVOCs	VOCs
00-04825	4.5–5.5	0100-96-1101	ALLH	2193	2193	2192	—[b]	—	2191	2191	2191
00-04825	7–7.5	0100-96-1102	ALLH	2193	2193	2192	—	—	2191	2191	2191
00-04826	4.5–5.5	0100-96-1103	ALLH	2193	2193	2192	—	—	2191	2191	2191
00-04826	7–8	0100-96-1104	ALLH	2193	2193	2192	—	—	2191	2191	2191
00-04827	3.5–5	0100-96-1105	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04827	6.5–7.5	0100-96-1106	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04828	4–5	0100-96-1107	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04828	7–8.3	0100-96-1108	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04829	4–4.5	0100-96-1109	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04829	7–7.5	0100-96-1110	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04830	4–4.5	0100-96-1111	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04831	1.5–2	0100-96-1112	ALLH	2331	2331	2330	2329	2329	—	2329	2329
00-04832	0.25–0.42	0100-96-1113	ALLH	2331	2331	2330	2329	2329	—	2329	2329

Notes: 1. Historical VCA samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] The metals analytical suite includes total uranium analysis.

[b] — = Not analyzed.

Table 2.10-2
AOC 00-030(o) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Calcium	Chromium	Lead	Mercury	Thallium	Zinc
LANL BV Soil[a]				**0.83**	**0.4**	**6120**	**19.3**	**22.3**	**0.1**	**0.73**	**48.8**
SSL Residential[b]				**31.3**	**74.1**	**n/a[c]**	**2100**	**400**	**23**	**5.16**	**23500**
00-04825	4.5–5.5	0100-96-1101	ALLH	—[d]	—	—	—	—	—	1.2 (J)	—
00-04825	7–7.5	0100-96-1102	ALLH	—	—	9480	—	—	0.12	1.6 (J)	61.5
00-04826	4.5–5.5	0100-96-1103	ALLH	—	—	—	—	—	—	1.8 (J)	—
00-04826	7–8	0100-96-1104	ALLH	—	—	6880	—	—	0.13	1.6 (J)	58.7
00-04827	3.5–5	0100-96-1105	ALLH	5.1 (U)	—	—	—	—	—	—	—
00-04827	6.5–7.5	0100-96-1106	ALLH	5.1 (U)	—	—	—	—	—	—	—
00-04828	4–5	0100-96-1107	ALLH	5.3 (U)	—	—	—	—	—	—	—
00-04828	7–8.3	0100-96-1108	ALLH	5.4 (U)	0.43 (J)	—	—	—	0.33	—	—
00-04829	4–4.5	0100-96-1109	ALLH	5.3 (U)	—	—	19.4	—	—	—	71.7
00-04829	7–7.5	0100-96-1110	ALLH	5.2 (U)	—	—	—	—	—	—	98
00-04830	4–4.5	0100-96-1111	ALLH	5.1 (U)	—	—	—	—	—	—	—
00-04831	1.5–2	0100-96-1112	ALLH	5.3 (U)	—	—	—	—	—	—	—
00-04832	0.25–0.42	0100-96-1113	ALLH	5.3 (U)	—	—	—	35.2	—	—	66.6

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] — = If analyzed, sample result is less than BV.

Table 2.10-3
AOC 00-030(o) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Plutonium-239
LANL BV Soil[a]				**0.054[b]**
SAL Residential[c]				**44**
00-04825	7–7.5	0100-96-1102	ALLH	0.18
00-04826	7–8	0100-96-1104	ALLH	1.948
00-04828	7–8.3	0100-96-1108	ALLH	0.516
00-04829	7–7.5	0100-96-1110	ALLH	0.097
00-04832	0.25–0.42	0100-96-1113	ALLH	0.081

Notes: 1. Historical VCA samples collected in 1996.
2. All values in pCi/g.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] FV for plutonium-239 applies to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[c] SALs from LANL 2002 (73705) using RESRAD 6.21.

Table 2.10-4
AOC 00-030(o) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Acetone	Bis(2-ethylhexyl)phthalate	Bromobenzene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Isopropyltoluene[4-]	Methylene Chloride	Toluene	Xylene (Total)
SSL Residential[a]				**70400**	**347**	**33.2**	**24.4**	**17.2**	**17.2**	**700**	**165**	**248**	**132**
00-04825	4.5–5.5	0100-96-1101	ALLH	—[b]	—	—	—	0.029 (J)	0.0049 (J)	—	—	—	—
00-04825	7–7.5	0100-96-1102	ALLH	0.029 (J)	—	0.0053 (J)	—	0.14 (J)	—	—	—	—	—
00-04826	4.5–5.5	0100-96-1103	ALLH	0.026 (J)	—	—	0.059	0.095	0.052	—	0.023	—	—
00-04826	7–8	0100-96-1104	ALLH	0.035 (J)	—	—	0.3	0.19	0.28	—	—	—	—
00-04827	3.5–5	0100-96-1105	ALLH	—	—	—	0.018	0.026	0.042	—	—	—	—
00-04827	6.5–7.5	0100-96-1106	ALLH	—	—	—	0.028	0.042	0.071	—	—	—	—
00-04828	4–5	0100-96-1107	ALLH	—	—	—	0.0054	0.017	0.0087	—	—	—	—
00-04828	7–8.3	0100-96-1108	ALLH	—	—	—	0.67	0.067	0.22	0.041 (J+)	—	0.028 (J+)	0.0092 (J+)
00-04829	4–4.5	0100-96-1109	ALLH	—	—	—	—	0.014	0.039	—	—	—	—
00-04829	7–7.5	0100-96-1110	ALLH	—	—	—	0.091	0.018	0.0096	—	—	—	—
00-04830	4–4.5	0100-96-1111	ALLH	—	—	—	—	0.027	0.011	—	—	—	—
00-04831	1.5–2	0100-96-1112	ALLH	—	—	—	—	—	0.0043	—	—	—	—
00-04832	0.25–0.42	0100-96-1113	ALLH	—	0.18	—	0.066	0.21	0.35	—	—	—	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] — = If analyzed, sample result is not detected.

Table 2.11-1
AOC 00-030(p) Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Isotopic Plutonium	Metals[a]	PCBs	Pesticides	SVOCs	VOCs
00-04865	10–10.5	0100-96-1401	FILL[b]	2399	2399	2400	2398	2398	2398	2398
00-04866	10–10.5	0100-96-1402	FILL	2399	2399	2400	2398	2398	2398	2398
00-04867	3–3.5	0100-96-1403	ALLH	2399	2399	2400	2398	2398	2398	2398
00-04868	10–10.5	0100-96-1404	FILL	2399	2399	2400	2398	2398	2398	2398
00-04869	0–0.42	0100-96-1405	ALLH	2399	2399	2400	2398	2398	2398	2398
00-04870	0.25–0.75	0100-96-1406	ALLH	2399	2399	2400	2398	2398	2398	2398

Notes: 1. Historical VCA samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] The metals analytical suite includes total uranium analysis.

[b] For 00-030(p), "FILL" denotes backfill from previous excavation.

Table 2.11-2
AOC 00-030(p) Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Calcium	Lead	Manganese
LANL BV Soil[a]				**0.83**	**0.4**	**6120**	**22.3**	**671**
SSL Residential[b]				**31.3**	**74.1**	**n/a**[c]	**400**	**1550**
00-04865	10–10.5	0100-96-1401	FILL[d]	5.3 (U)	0.53 (U)	—[e]	—	694
00-04866	10–10.5	0100-96-1402	FILL	5.24 (U)	0.524 (U)	6130	—	—
00-04867	3–3.5	0100-96-1403	ALLH	5.32 (U)	0.532 (U)	—	—	—
00-04868	10–10.5	0100-96-1404	FILL	5.22 (U)	0.522 (U)	—	—	—
00-04869	0–0.42	0100-96-1405	ALLH	7 (U)	0.7 (U)	—	34.2	—
00-04870	0.25–0.75	0100-96-1406	ALLH	6 (U)	0.6 (U)	—	—	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] For 00-030(p), "FILL" denotes backfill from previous excavation.

[e] — = If analyzed, sample result is less than BV.

Table 2.11-3
AOC 00-030(p) Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Cesium-137	Plutonium-239
LANL BV Soil[a]				**1.65[b]**	**0.054[b]**
SAL Residential[c]				**5.3**	**44**
00-04867	3–3.5	0100-96-1403	ALLH	—[d]	0.047
00-04869	0–0.42	0100-96-1405	ALLH	1.79	—
00-04870	0.25–0.75	0100-96-1406	ALLH	0.706	0.048

Notes: 1. Historical VCA samples collected in 1996.
2. All values in pCi/g.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] FVs for cesium-137 and plutonium-239 apply to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[c] SALs from LANL 2002 (73705) using RESRAD 6.21.

[d] — = If analyzed, sample result is less than BV or FV.

Table 2.11-4
AOC 00-030(p) Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Acetone	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Chrysene	Fluoranthene	Isopropyltoluene[4-]
SSL Residential[a]				**70400**	**6.21**	**0.621**	**6.21**	**62.1**	**621**	**2250**	**700**
00-04865	10–10.5	0100-96-1401	FILL[b]	—[c]	0.28	0.27	0.39	0.29	0.56	0.19	—
00-04869	0–0.42	0100-96-1405	ALLH	0.031 (J+)	—	—	—	—	—	—	0.024 (J+)

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] For 00-030(p), "FILL" denotes backfill from previous excavation.

[c] — = If analyzed, sample result is not detected.

Table 2.12-1
SWMU 00-039 Summary of Historical Samples Collected

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0000	B-1	00-4055	4.5–5	X[a]	X	—[b]	—
0100-95-0001	B-1	00-4055	9.5–10	X	X	—	—
0100-95-0002	B-1	00-4055	14.5–15	X	X	—	—
0100-95-0003	B-1	00-4055	19.5–20	X	X	—	—
0100-95-0004	B-1	00-4055	24.5–25	X	X	—	—
0100-95-0005	B-1	00-4055	29.5–30	X	X	—	—
0100-95-0006	B-1	00-4055	34.5–35	X	X	—	—
0100-95-0007	B-1	00-4055	39.5–40	X	X	—	—
0100-95-0008	B-1	00-4055	44.5–45	X	X	—	—
0100-95-0020	B-2	00-4056	4.5–5	X	X	—	—
0100-95-0021	B-2	00-4056	9.5–10	X	X	—	—
0100-95-0022	B-2	00-4056	14.5–15	X	X	—	—
0100-95-0023	B-2	00-4056	19.5–20	X	X	—	—
0100-95-0024	B-2	00-4056	24.5–25	X	X	—	—
0100-95-0025	B-2	00-4056	29.5–30	X	X	—	—
0100-95-0026	B-2	00-4056	34.5–35	X	X	—	—
0100-95-0027	B-2	00-4056	39.5–40	X	X	—	—
0100-95-0028	B-2	00-4056	44.5–45	X	X	—	—
0100-95-0029	B-2	00-4056	49.5–50	X	X	—	—
0100-95-0030	B-2	00-4056	54.5–55	X	X	—	—
0100-95-0031	B-2	00-4056	59.5–60	X	X	—	—
0100-95-0041	B-3	00-4057	4.5–5	X	X	—	—
0100-95-0042	B-3	00-4057	9.5–10	X	X	—	—
0100-95-0043	B-3	00-4057	14.5–15	X	X	—	—
0100-95-0044	B-3	00-4057	19.5–20	X	X	—	—
0100-95-0045	B-3	00-4057	24.5–25	X	X	—	—

Table 2.12-1 (continued)

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0046	B-3	00-4057	29.5–30	X	X	—	—
0100-95-0047	B-3	00-4057	34.5–35	X	X	—	—
0100-95-0048	B-3	00-4057	39.5–40	X	X	—	—
0100-95-0049	B-3	00-4057	44.5–45	X	X	—	—
0100-95-0050	B-3	00-4057	49.5–50	X	X	—	—
0100-95-0051	B-3	00-4057	54.5–55	X	X	—	—
0100-95-0052	B-3	00-4057	59.5–60	X	X	—	—
0100-95-0061	B-4	00-4058	4.5–5	X	X	—	—
0100-95-0062	B-4	00-4058	9.5–10	X	X	—	—
0100-95-0063	B-4	00-4058	14.5–15	X	X	—	—
0100-95-0064	B-4	00-4058	19.5–20	X	X	—	—
0100-95-0065	B-4	00-4058	24.5–25	X	X	—	—
0100-95-0066	B-4	00-4058	29.5–30	X	X	—	—
0100-95-0067	B-4	00-4058	34.5–35	X	X	—	—
0100-95-0068	B-4	00-4058	39.5–40	X	X	—	—
0100-95-0069	B-4	00-4058	44.5–45	X	X	—	—
0100-95-0070	B-4	00-4058	49.5–50	X	X	—	—
0100-95-0071	B-4	00-4058	54.5–55	X	X	—	—
0100-95-0073	B-4	00-4058	59.5–60	X	X	—	—
0100-95-0081	B-4	00-4058	0–0.5	X	X	—	—
0100-95-0082	B-5	00-4059	4.5–5	X	X	—	—
0100-95-0083	B-5	00-4059	9.5–10	X	X	—	—
0100-95-0084	B-5	00-4059	14.5–15	X	X	—	—
0100-95-0085	B-5	00-4059	19.5–20	X	X	—	—
0100-95-0086	B-5	00-4059	24.5–25	X	X	—	—
0100-95-0087	B-5	00-4059	29.5–30	X	X	—	—

Table 2.12-1 (continued)

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0088	B-5	00-4059	34.5–35	X	X	—	—
0100-95-0089	B-5	00-4059	39.5–40	X	X	—	—
0100-95-0090	B-5	00-4059	44.5–45	X	X	—	—
0100-95-0091	B-5	00-4059	49.5–50	X	X	—	—
0100-95-0092	B-5	00-4059	54.5–55	X	X	—	—
0100-95-0093	B-5	00-4059	59.5–60	X	X	—	—
0100-95-0102	B-6	00-4060	4.5–5	X	X	—	—
0100-95-0103	B-6	00-4060	9.5–10	X	X	—	—
0100-95-0104	B-6	00-4060	14.5–15	X	X	—	—
0100-95-0105	B-6	00-4060	19.5–20	X	X	—	—
0100-95-0106	B-6	00-4060	24.5–25	X	X	—	—
0100-95-0107	B-6	00-4060	29.5–30	X	X	—	—
0100-95-0108	B-6	00-4060	34.5–35	X	X	—	—
0100-95-0109	B-6	00-4060	39.5–40	X	X	—	—
0100-95-0110	B-6	00-4060	44.5–45	X	X	—	—
0100-95-0111	B-6	00-4060	49.5–50	X	X	—	—
0100-95-0112	B-6	00-4060	54.5–55	X	X	—	—
0100-95-0113	B-6	00-4060	59.5–60	X	X	—	—
0100-95-0122	B-7	00-4061	4.5–5	X	X	—	—
0100-95-0123	B-7	00-4061	9.5–10	X	X	—	—
0100-95-0124	B-7	00-4061	14.5–15	X	X	—	—
0100-95-0125	B-7	00-4061	19.5–20	X	X	—	—
0100-95-0126	B-7	00-4061	24.5–25	X	X	—	—
0100-95-0127	B-7	00-4061	29.5–30	X	X	—	—
0100-95-0128	B-7	00-4061	34.5–35	X	X	—	—
0100-95-0129	B-7	00-4061	39.5–40	X	X	—	—

Table 2.12-1 (continued)

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0130	B-7	00-4061	44.5–45	X	X	—	—
0100-95-0142	B-8	00-4062	4.5–5	X	X	—	—
0100-95-0143	B-8	00-4062	9.5–10	X	X	—	—
0100-95-0144	B-8	00-4062	14.5–15	X	X	—	—
0100-95-0145	B-8	00-4062	19.5–20	X	X	—	—
0100-95-0146	B-8	00-4062	24.5–25	X	X	—	—
0100-95-0147	B-8	00-4062	29.5–30	X	X	—	—
0100-95-0148	B-8	00-4062	34.5–35	X	X	—	—
0100-95-0162	B-9	00-4063	4.5–5	X	X	—	—
0100-95-0163	B-9	00-4063	9.5–10	X	X	—	—
0100-95-0164	B-9	00-4063	14.5–15	X	X	—	—
0100-95-0165	B-9	00-4063	19.5–20	X	X	—	—
0100-95-0166	B-9	00-4063	24.5–25	X	X	—	—
0100-95-0167	B-9	00-4063	29.5–30	X	X	—	—
0100-95-0168	B-9	00-4063	34.5–35	X	X	—	—
0100-95-0199	HA10-1	00-04078	0.7–1	X	X	X	X
0100-95-0200	HA10-3	00-04078	2.7–3	X	X	X	X
0100-95-0201	HA10-5	00-04078	4.7–5	X	X	X	X
0100-95-0282	HA1-1	00-04069	0.7–1	X	X	X	X
0100-95-0203	HA11-1	00-04079	0.7–1	X	X	X	X
0100-95-0204	HA11-3	00-04079	2.7–3	X	X	X	X
0100-95-0205	HA11-5	00-04079	4.7–5	X	X	X	X
0100-95-0206	HA12-1	00-04080	0.7–1	X	X	X	X
0100-95-0210	HA12-10	00-04080	9.7–10	X	X	X	X
0100-95-0211	HA12-13	00-04080	12.7–13	X	X	X	X
0100-95-0212	HA12-15	00-04080	14.7–15	X	X	X	X

Table 2.12-1 (continued)

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0213	HA12-17	00-04080	16.7–17	X	X	X	X
0100-95-0207	HA12-4	00-04080	3.7–4	X	X	X	X
0100-95-0208	HA12-6	00-04080	5.7–6	X	X	X	X
0100-95-0209	HA12-9	00-04080	8.7–9	X	X	X	X
0100-95-0284	HA1-3	00-04069	2.7–3	X	X	X	X
0100-95-0285	HA1-4	00-04069	3.7–4	X	X	X	X
0100-95-0395	HA1a-1	00-04082	0.7–1	X	X	X	X
0100-95-0396	HA1a-3	00-04082	2.7–3	X	X	X	X
0100-95-0397	HA1a-5	00-04082	4.7–5	X	X	X	X
0100-95-0286	HA2-1	00-04070	0.7–1	X	X	X	X
0100-95-0287	HA2-2	00-04070	1.7–2	X	X	X	X
0100-95-0288	HA2-4	00-04070	3.7–4	X	X	X	X
0100-95-0398	HA2a-1	00-04083	0.7–1	X	X	X	X
0100-95-0197	HA2a-3	00-04083	2.7–3	X	X	X	X
0100-95-0198	HA2a-5	00-04083	4.7–5	X	X	X	X
0100-95-0289	HA3-1	00-04071	0.7–1	X	X	X	X
0100-95-0290	HA3-3	00-04071	2.7–3	X	X	X	X
0100-95-0291	HA3-4	00-04071	3.7–4	X	X	X	X
0100-95-0292	HA4-1	00-04072	0.7–1	X	X	X	X
0100-95-0293	HA4-5	00-04072	4.7–5	X	X	X	X
0100-95-0294	HA4-6	00-04072	5.7–6	X	X	X	X
0100-95-0393	HA5-11	00-04073	10.7–11	X	X	X	X
0100-95-0295	HA5-2	00-04073	1.7–2	X	X	X	X
0100-95-0383	HA5-5	00-04073	4.7–5	X	X	X	X
0100-95-0384	HA5-7	00-04073	6.7–7	X	X	X	X
0100-95-0392	HA5-9	00-04073	8.7–9	X	X	X	X

Table 2.12-1 (continued)

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0385	HA6-1	00-04074	0.7–1	X	X	X	X
0100-95-0386	HA6-3	00-04074	2.7–3	X	X	X	X
0100-95-0387	HA6-4	00-04074	3.7–4	X	X	X	X
0100-95-0388	HA7-1	00-04075	0.7–1	X	X	X	X
0100-95-0389	HA7-4	00-04075	3.7–4	X	X	X	X
0100-95-0394	HA8-1	00-04076	0.7–1	X	X	X	X
0100-95-0191	HA8-7	00-04076	6.7–7	X	X	X	X
0100-95-0192	HA8-9	00-04076	8.7–9	X	X	X	X
0100-95-0193	HA9-1	00-04077	0.7–1	X	X	X	X
0100-95-0194	HA9-4	00-04077	3.7–4	X	X	X	X
0100-95-0195	HA9-6	00-04077	5.7–6	X	X	X	X
0100-95-0214	HA13-1	00-04095	0.7–1	X	X	X	X
0100-95-0215	HA13-4	00-04095	3.7–4	X	X	X	X
0100-95-0216	HA13-6	00-04095	5.7–6	X	X	X	X
0100-95-0217	HA14-1	00-04096	0.7–1	X	X	X	X
0100-95-0218	HA14-4	00-04096	3.7–4	X	X	X	X
0100-95-0219	HA14-6	00-04096	5.7–6	X	X	X	X
0100-95-0220	HA14-10	00-04096	9.7–10	X	X	X	X
0100-95-0221	HA14-13	00-04096	12.7–13	X	X	X	X
0100-95-0222	HA14-15	00-04096	14.7–15	X	X	X	X
0100-95-0223	HA15-1	00-04097	0.7–1	X	X	X	X
0100-95-0224	HA15-4	00-04097	3.7–4	X	X	X	X
0100-95-0225	HA15-6	00-04097	5.7–6	X	X	X	X
0100-95-0226	HA15-10	00-04097	9.7–10	X	X	X	X
0100-95-0227	HA15-13	00-04097	12.7–13	X	X	X	X
0100-95-0228	HA15-14	00-04097	13.7–14	X	X	X	X

Table 2.12-1 (continued)

Sample ID	Location Description	Location ID	Sampling Interval (ft)	Total Petroleum Hydrocarbons	VOCs	1-Methylnaphthalene	2-Methylnaphthalene
0100-95-0243	HA15-16	00-04097	15.7–16	X	X	X	X
0100-95-0244	HA15-19	00-04097	18.7–19	X	X	X	X
0100-95-0245	HA15-20	00-04097	19.7–20	X	X	X	X
0100-95-0246	HA15-22	00-04097	21.7–22	X	X	X	X
0100-95-0247	HA15-25	00-04097	24.7–25	X	X	X	X
0100-95-0229	HA16-1	00-04098	0.7–1	X	X	X	X
0100-95-0230	HA16-4	00-04098	3.7–4	X	X	X	X
0100-95-0231	HA16-6	00-04098	5.7–6	X	X	X	X
0100-95-0232	HA16-10	00-04098	9.7–10	X	X	X	X
0100-95-0233	HA16-13	00-04098	12.7–13	X	X	X	X
0100-95-0234	HA16-14	00-04098	13.7–14	X	X	X	X
0100-95-0235	HA17-1	00-04099	0.7–1	X	X	X	X
0100-95-0236	HA17-4	00-04099	3.7–4	X	X	X	X
0100-95-0237	HA17-6	00-04099	5.7–6	X	X	X	X
0100-95-0238	HA17-10	00-04099	9.7–10	X	X	X	X
0100-95-0239	HA17-13	00-04099	12.7–13	X	X	X	X
0100-95-0240	HA17-14	00-04099	13.7–14	X	X	X	X

Note: Historical RFI samples collected in 1995.

[a] X = Analysis performed.

[b] — = Not analyzed.

Table 2.12-2
SWMU 00-039 Historical Analytical Results of Organic Chemicals Detected—Mobile Laboratory Data

Location Description	Sample ID	Location ID	Depth (ft)	1,2,4 Trimethylbenzene	1,3,5 Trimethylbenzene	Ethylbenzene	Tetrachloroethene (PCE)	p-Isopropylbenzene	p-Isopropyltoluene	Tertbutylbenzene	Total Petroleum Hydrocarbons (TPH)	Trichloroethene	Xylenes
SSL Residential[a]				**52.2**	**22.3**	**10600**	**9.83**	**700**	**700**	**106**	**na**[b]	**0.648**	**132**
B-1	0100-95-0006	00-4055	34.5–35	—[c]	—	—	0.01	—	—	—	—	—	—
B-2	0100-95-0022	00-4056	14.5–15	0.43 (J)	—	0.28 (J)	—	—	—	—	676	—	3.21 (J)
B-2	0100-95-0023	00-4056	19.5–20	—	—	—	—	—	—	—	570	—	—
B-2	0100-95-0024	00-4056	24.5–25	—	—	—	—	—	—	—	15	—	—
B-2	0100-95-0028	00-4056	44.5–45	—	—	—	—	—	—	—	2	—	—
B-2	0100-95-0029	00-4056	49.5–50	—	—	—	0.018	—	—	—	—	—	—
B-3	0100-95-0041	00-4057	4.5–5	—	—	—	0.01	—	—	—	—	—	—
B-3	0100-95-0042	00-4057	9.5–10	—	—	—	0.016	—	—	—	—	—	—
B-3	0100-95-0043	00-4057	14.5–15	—	—	—	0.015	—	—	—	—	—	—
B-4	0100-95-0061	00-4058	4.5–5	—	—	—	0.01	—	—	—	—	—	—
B-4	0100-95-0063	00-4058	14.5–15	—	—	—	0.019	—	—	—	—	—	—
B-5	0100-95-0082	00-4059	4.5–5	—	—	—	0.021	—	—	—	—	—	—
B-7	0100-95-0123	00-4061	9.5–10	—	—	—	0.031	—	—	—	—	—	—
B-7	0100-95-0126	00-4061	24.5–25	—	—	—	0.011	—	—	—	—	—	—
B-8	0100-95-0142	00-4062	4.5–5	—	—	—	0.072	—	—	—	—	0.012	—
B-8	0100-95-0143	00-4062	9.5–10	—	—	—	0.11	—	—	—	—	—	—
B-8	0100-95-0144	00-4062	14.5–15	—	—	—	0.011	—	—	—	—	—	—
B-9	0100-95-0163	00-4063	9.5–10	—	—	—	0.017	—	—	—	—	—	—
B-9	0100-95-0164	00-4063	14.5–15	—	—	—	0.037	—	—	—	—	—	—
B-9	0100-95-0167	00-4063	29.5–30	—	—	—	—	—	—	—	—	—	—
HA1-1	0100-95-0282	00-4069	0.7–1	—	—	—	1.5	—	—	—	—	—	—
HA1-3	0100-95-0284	00-4069	2.7–3	—	—	—	0.84	—	—	—	—	—	—

Table 2.12-2 (continued)

Location Description	Sample ID	Location ID	Depth (ft)	1,2,4 Trimethylbenzene	1,3,5 Trimethylbenzene	Ethylbenzene	Tetrachloroethene (PCE)	p-Isopropylbenzene	p-Isopropyltoluene	Tertbutylbenzene	Total Petroleum Hydrocarbons (TPH)	Trichloroethene	Xylenes
SSL Residential[a]				**52.2**	**22.3**	**10600**	**9.83**	**700**	**700**	**106**	**na[b]**	**0.648**	**132**
HA1-4	0100-95-0285	00-4069	3.7–4	—	—	—	0.27	—	—	—	—	—	—
HA2-1	0100-95-0286	00-4070	0.7–1	—	—	—	1	—	—	—	—	—	—
HA2-2	0100-95-0287	00-4070	1.7–2	—	—	—	1.1	—	—	—	—	—	—
HA2-4	0100-95-0288	00-4070	3.7–4	—	—	—	0.75	—	—	—	—	—	—
HA4-5	0100-95-0293	00-4072	4.7–5	—	—	—	0.05	—	—	—	2	—	—
HA4-6	0100-95-0294	00-4072	5.7–6	—	—	—	0.53	—	—	—	—	—	—
HA5-2	0100-95-0295	00-4073	1.7–2	18 (J)	12 (J)	—	—	—	—	18	6062	—	—
HA5-5	0100-95-0383	00-4073	4.7–5	—	—	—	—	—	—	—	12	—	—
HA5-7	0100-95-0384	00-4073	6.7–7	3.1 (J)	—	—	—	—	—	2.7	1368	—	—
HA5-9	0100-95-0392	00-4073	8.7–9	—	0.013	—	—	—	—	—	13	—	—
HA8-7	0100-95-0191	00-4076	6.7–7	0.114	0.046	—	0.016	0.08	—	0.092	91	—	—
HA9-4	0100-95-0194	00-4077	3.7–4	—	—	—	—	—	—	—	8	—	—
HA10-1	0100-95-0199	00-4078	0.7–1	—	—	—	0.24	—	—	—	—	—	—
HA10-3	0100-95-0200	00-4078	2.7–3	—	—	—	0.04	—	—	—	—	—	—
HA10-5	0100-95-0201	00-4078	4.7–5	—	—	—	0.024	—	—	—	—	—	—
HA11-1	0100-95-0203	00-4079	0.7–1	—	—	—	0.14	—	—	—	—	—	—
HA11-3	0100-95-0204	00-4079	2.7–3	—	—	—	0.97	—	—	—	—	—	—
HA11-5	0100-95-0205	00-4079	4.7–5	—	—	—	0.017	—	—	—	—	—	—
HA12-1	0100-95-0206	00-4080	0.7–1	—	—	—	7	—	—	—	—	—	—
HA12-4	0100-95-0207	00-4080	3.7–4	—	—	—	160	—	—	—	—	—	—
HA12-6	0100-95-0208	00-4080	5.7–6	—	—	—	1.6	—	—	—	—	—	—
HA12-9	0100-95-0209	00-4080	8.7–9	—	—	—	23	—	—	—	—	—	—
HA12-10	0100-95-0210	00-4080	9.7–10	—	—	—	5.6	—	—	—	—	—	—

Table 2.12-2 (continued)

Location Description	Sample ID	Location ID	Depth (ft)	1,2,4 Trimethylbenzene	1,3,5 Trimethylbenzene	Ethylbenzene	Tetrachloroethene (PCE)	p-Isopropylbenzene	p-Isopropyltoluene	Tertbutylbenzene	Total Petroleum Hydrocarbons (TPH)	Trichloroethene	Xylenes
SSL Residential[a]				**52.2**	**22.3**	**10600**	**9.83**	**700**	**700**	**106**	**na[b]**	**0.648**	**132**
HA12-13	0100-95-0211	00-4080	12.7–13	—	—	—	27	—	—	—	—	—	—
HA12-15	0100-95-0212	00-4080	14.7–15	—	—	—	0.3	—	—	—	—	—	—
HA1a-1	0100-95-0395	00-4082	0.7–1	—	—	—	2.7	—	—	—	—	—	—
HA1a-3	0100-95-0396	00-4082	2.7–3	—	—	—	0.034	—	—	—	—	—	—
HA1a-5	0100-95-0397	00-4082	4.7–5	—	—	—	0.014	—	—	—	—	—	—
HA2a-3	0100-95-0197	00-4083	2.7–3	—	—	—	0.12	—	—	—	—	—	—
HA2a-5	0100-95-0198	00-4083	4.7–5	—	—	—	0.024	—	—	—	—	—	—
HA2a-1	0100-95-0398	00-4083	0.7–1	—	—	—	2.7	—	—	—	—	—	—
HA13-1	0100-95-0214	00-4095	0.7–1	—	—	—	0.82	—	—	—	—	—	—
HA13-4	0100-95-0215	00-4095	3.7–4	—	—	—	0.041	—	—	—	—	—	—
HA13-6	0100-95-0216	00-4095	5.7–6	—	—	—	0.018	—	—	—	—	—	—
HA14-1	0100-95-0217	00-4096	0.7–1	—	—	—	1.4	—	—	—	—	—	—
HA14-4	0100-95-0218	00-4096	3.7–4	—	—	—	0.199	—	—	—	—	—	—
HA14-6	0100-95-0219	00-4096	5.7–6	—	—	—	0.49	—	—	—	—	—	—
HA14-10	0100-95-0220	00-4096	9.7–10	—	—	—	0.054	—	—	—	—	—	—
HA14-13	0100-95-0221	00-4096	12.7–13	—	—	—	0.051	—	—	—	—	—	—
HA14-15	0100-95-0222	00-4096	14.7–15	—	—	—	1.8	—	—	—	—	—	—
HA15-1	0100-95-0223	00-4097	0.7–1	—	—	—	50	—	—	—	—	—	—
HA15-4	0100-95-0224	00-4097	3.7–4	—	—	—	110	—	—	—	46	—	—
HA15-6	0100-95-0225	00-4097	5.7–6	—	—	—	52	—	—	—	—	—	—
HA15-10	0100-95-0226	00-4097	9.7–10	12	—	—	190	—	—	—	154	—	—
HA15-13	0100-95-0227	00-4097	12.7–13	—	—	—	55	—	—	—	—	—	—
HA15-14	0100-95-0228	00-4097	13.7–14	—	—	—	45	—	—	—	—	—	—

Table 2.12-2 (continued)

Location Description	Sample ID	Location ID	Depth (ft)	1,2,4 Trimethylbenzene	1,3,5 Trimethylbenzene	Ethylbenzene	Tetrachloroethene (PCE)	p-Isopropylbenzene	p-Isopropyltoluene	Tertbutylbenzene	Total Petroleum Hydrocarbons (TPH)	Trichloroethene	Xylenes
SSL Residential[a]				**52.2**	**22.3**	**10600**	**9.83**	**700**	**700**	**106**	**na[b]**	**0.648**	**132**
HA15-16	0100-95-0243	00-4097	15.7–16	—	—	—	21	—	—	—	—	—	—
HA15-19	0100-95-0244	00-4097	18.7–19	—	—	—	3.3	—	—	—	—	—	—
HA15-20	0100-95-0245	00-4097	19.7–20	—	—	—	2.2	—	—	—	—	—	—
HA15-22	0100-95-0246	00-4097	21.7–22	—	—	—	3.3	—	—	—	—	—	—
HA15-25	0100-95-0247	00-4097	24.7–25	—	—	—	0.041	—	—	—	—	—	—
HA16-1	0100-95-0229	00-4098	0.7–1	—	—	—	0.067	—	—	—	—	—	—
HA16-4	0100-95-0230	00-4098	3.7–4	0.058	—	—	0.041	—	0.065	—	—	—	—
HA16-6	0100-95-0231	00-4098	5.7–6	—	—	—	0.078	—	0.027 (J)	—	15	—	—
HA16-10	0100-95-0232	00-4098	9.7–10	—	—	—	0.036	—	—	—	3	—	—
HA16-13	0100-95-0233	00-4098	12.7–13	—	—	—	0.017	—	—	—	—	—	—
HA16-14	0100-95-0234	00-4098	13.7–14	0.086 (J)	—	—	0.36	—	—	—	10	—	—
HA17-1	0100-95-0235	00-4099	0.7–1	—	—	—	0.68	—	—	—	—	—	—
HA17-4	0100-95-0236	00-4099	3.7–4	—	—	—	1.88	—	—	—	—	—	—
HA17-6	0100-95-0237	00-4099	5.7–6	—	—	—	0.166	—	—	—	—	—	—
HA17-10	0100-95-0238	00-4099	9.7–10	—	—	—	0.296	—	—	—	—	—	—
HA17-13	0100-95-0239	00-4099	12.7–13	—	—	—	0.161	—	—	—	—	—	—
HA17-14	0100-95-0240	00-4099	13.7–14	—	—	—	0.74	—	—	—	—	—	—

Notes: 1. Historical RFI samples collected in 1995.

2. All values in mg/kg.

3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] na = Not available; SSL not found for chemical.

[c] — = If analyzed, sample result is not detected.

Table 2.13-1
AOC C-00-043 Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Gamma Spectroscopy	Isotopic Plutonium	Metals[a]	PCBs	Pesticides	SVOCs	VOCs
00-04905	0–0.67[b]	0100-96-0427	ALLH	2551	2551	2550	2549	2549	2549	2549
00-04906	0–0.42[b]	0100-96-0428	ALLH	2551	2551	2550	2549	2549	2549	2549
00-05901	6–6.25	0100-96-2262	ALLH	2852	2852	2851	2847	2847	2847	2847
00-05902	6–6.25	0100-96-2261	ALLH	2852	2852	2851	2847	2847	2847	2847

Notes: 1. Historical VCA samples collected in 1996.
2. Numbers in suite columns are sample request numbers.

[a] The metals analytical suite includes uranium analysis.

[b] Depths are measured from top of material at bottom of manhole approximately 5 ft bgs.

Table 2.13-2
AOC C-00-043 Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Calcium	Cobalt	Copper	Lead	Manganese	Thallium	Uranium	Zinc
LANL BV Soil[a]				**0.83**	**0.4**	**6120**	**8.64**	**14.7**	**22.3**	**671**	**0.73**	**1.82**	**48.8**
SSL Residential[b]				**31.3**	**74.1**	**n/a**[c]	**1520**	**3130**	**400**	**1550**	**5.16**	**16**[d]	**23500**
00-04905	0–0.67[e]	0100-96-0427	ALLH	4.9 (J-)	—[f]	7690	—	15.8	52.3	—	1.1	2.6	112
00-04906	0–0.42[e]	0100-96-0428	ALLH	—	—	7930	12.6	—	37.4	947 (J-)	3.5	2.04	77.8
00-05901	6–6.25	0100-96-2262	ALLH	5.72 (U)	0.572 (U)	—	—	—	—	—	—	2.23	—
00-05902	6–6.25	0100-96-2261	ALLH	5.57 (U)	0.557 (U)	—	—	—	—	—	—	2.29	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] EPA Region 9 PRG (http://www.epa.gov/region09/waste/sfund/prg/index.html).

[e] Depths are measured from top of material at bottom of manhole approximately 5 ft bgs.

[f] — = If analyzed, sample result is less than BV.

Table 2.13-3
AOC C-00-043 Historical Analytical Results of Radionuclides above BVs or FVs

Location ID	Depth (ft)	Sample ID	Media Code	Cesium-137	Plutonium-239
LANL BV Soil[a]				**1.65**[b]	**0.054**[b]
SAL Residential[c]				**5.3**	**44**
00-04905	0–0.67[d]	0100-96-0427	ALLH	0.599	0.031
00-04906	0–0.42[d]	0100-96-0428	ALLH	0.251	0.011
00-05901	6–6.25	0100-96-2262	ALLH	—[e]	0.022

Notes: 1. Historical VCA samples collected in 1996.
2. All values in pCi/g.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] FVs for cesium-137 and plutonium-239 apply to upper 0–6 in. of soil; all detected activities are reported for subsurface samples.

[c] SALs from LANL 2002 (73705) using RESRAD 6.21.

[d] Depths are measured from top of material at bottom of manhole approximately 5 ft bgs.

[e] — = If analyzed, sample result is less than BV or fallout value.

Table 2.13-4
AOC C-00-043 Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Acetone	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Chloroform	DDE[4,4'-]	DDT[4,4'-]	Hexanone[2-]	Methyl-2-pentanone[4-]	Phenanthrene	Pyrene	Trichloroethene	Xylene[1,3-]
SSL Residential[a]				**70400**	**347**	**573**	**3.56**	**17.2**	**17.2**	**573**	**5430**	**1800**	**2300**	**0.648**	**80**
00-04905	0–0.67[b]	0100-96-0427	ALLH	—[c]	—	0.074	0.002 (J)	0.016 (J+)	0.026 (J+)	0.024	0.005 (J)	0.21 (J)	0.17 (J)	—	0.01
00-04906	0–0.42[b]	0100-96-0428	ALLH	0.056	0.19 (J)	0.019 (J)	0.003 (J)	0.011 (J-)	0.028 (J-)	0.006 (J)	—	—	—	—	0.009
00-05901	6–6.25	0100-96-2262	ALLH	—	—	—	—	—	0.0052	—	—	—	—	0.009	—
00-05902	6–6.25	0100-96-2261	ALLH	—	—	—	—	—	—	—	—	—	—	0.0058	—

Notes: 1. Historical VCA samples collected in 1996.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] Depths are measured from top of material at bottom of manhole approximately 5 ft bgs.

[c] — = If analyzed, sample result is not detected.

Table 2.14-1
SWMU 31-001 Summary of Historical Samples Collected

Location ID	Depth (ft)	Sample ID	Media Code	Metals	PCBs	Pesticides/PCBs	SVOCs
31-01001	0.5–0.75	AAA4670	ALLH	15690	—[a]	—	—
31-01002	1–1.25	AAA4671	ALLH	15672	15674	—	15674
31-01003	0.75–1	AAA4672	ALLH	15672	15674	—	15674
31-01004	3.8–3.8	AAA4674	ALLH	15690	—	—	—
31-01005	4–4	AAA4675	ALLH	15690	—	—	—
31-01006	3.4–3.4	AAA4676	ALLH	15690	—	—	—
31-01007	6.5–6.5	AAA4677	ALLH	15691	15689	—	—
31-01008	6.6–6.6	AAA4678	ALLH	15691	15689	—	—
31-01009	6.8–6.8	AAA4679	ALLH	15690	—	—	—
31-01011	0–0.5	AAA4681	ALLH	15672	15674	—	15674
31-01012	0–0.5	AAA4682	ALLH	15672	15674	—	15674
31-01013	0–0.5	AAA4683	ALLH	15672	15674	—	15674
31-01014	0–0.5	AAA4684	ALLH	15672	15674	—	15674
31-09000	0–0.5	VCXX-95-0055[b]	ALLH	6528110[c]	—	6527924	—
31-09001	0–0.5	VCXX-95-0056[b]	ALLH	6528110[c]	—	6527924	—

Notes: 1. Historical RFI on-site analytical (screening) samples collected in 1995.
2. Numbers in suite columns are sample request numbers.

[a] — = Not analyzed.

[b] Confirmation samples taken after VCA; analyzed at off-site laboratory.

[c] Request numbers 6528111, 6528112, 6528113, 6528135, and 6528136 are also used for metals analysis.

Table 2.14-2
SWMU 31-001 Historical Analytical Results of Inorganic Chemicals above BVs

Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Cadmium	Calcium	Copper	Lead	Mercury	Silver	Strontium	Thallium	Zinc
LANL BV Soil[a]				**0.83**	**0.4**	**6120**	**14.7**	**22.3**	**0.1**	**1**	**n/a[b]**	**0.73**	**48.8**
SSL Residential[c]				**31.3**	**74.1**	**n/a[b]**	**3130**	**400**	**23**	**391**	**46900**	**5.16**	**23500**
31-01001	0.5–0.75	AAA4670	ALLH	1 (U)	—[d]	—	—	—	—	—	—	1 (U)	—
31-01002	1–1.25	AAA4671	ALLH	1 (U)	—	—	—	53	—	—	—	1 (U)	—
31-01003	0.75–1	AAA4672	ALLH	1 (U)	—	—	—	55	0.3	—	—	1 (U)	—
31-01004	3.8–3.8	AAA4674	ALLH	1 (U)	—	—	—	—	—	—	—	1 (U)	—
31-01005	4–4	AAA4675	ALLH	1 (U)	—	—	—	32	—	—	—	1 (U)	—
31-01006	3.4–3.4	AAA4676	ALLH	1 (U)	0.5	22000	—	26	—	—	—	1 (U)	57
31-01007	6.5–6.5	AAA4677	ALLH	1 (U)	0.6	—	—	—	—	—	—	1 (U)	—
31-01008	6.6–6.6	AAA4678	ALLH	1 (U)	—	—	—	40	—	—	—	1 (U)	—
31-01009	6.8–6.8	AAA4679	ALLH	1 (U)	—	—	—	—	—	—	—	1 (U)	—
31-01011	0–0.5	AAA4681	ALLH	1 (U)	0.5	—	15	100	—	—	—	1 (U)	60
31-01012	0–0.5	AAA4682	ALLH	1 (U)	0.5	—	—	36	—	—	—	1 (U)	—
31-01013	0–0.5	AAA4683	ALLH	1 (U)	—	6700	—	50	—	—	—	1 (U)	65
31-01014	0–0.5	AAA4684	ALLH	1 (U)	—	—	—	26	—	—	—	1 (U)	—
31-09000	0–0.5	VCXX-95-0055[e]	ALLH	8.1 (U)	1 (U)	—	—	—	—	2 (U)	4.7	1 (U)	—
31-09001	0–0.5	VCXX-95-0056[e]	ALLH	8.2 (U)	1 (U)	—	—	—	—	2.1 (U)	16	1 (U)	—

Notes: 1. Historical RFI samples collected in 1995.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] Detected values reported.SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs.

[d] — = If analyzed, sample result is less than BV.

[e] Confirmation samples taken after VCA; analyzed at off-site laboratory.

Table 2.14-3
SWMU 31-001 Historical Analytical Results of Organic Chemicals Detected

Location ID	Depth (ft)	Sample ID	Media Code	Benzo(b)fluoranthene	Fluoranthene	Pyrene
SSL Residential*				**6.21**	**2250**	**2300**
31-01011	0–0.5	AAA4681	ALLH	0.47	0.65	0.65

Notes: 1. Historical RFI samples collected in 1995.
2. All values in mg/kg.

*SSLs from NMED 2004 (85615), unless otherwise noted.

Table 2.15-1a
Consolidated Unit 01-002(b)-00 ACS/AC-3 Interim Action Confirmation Samples Collected

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Americium-241	Cyanide	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Metals	Methyl Mercury
AC-3	PU-00017	0–8	04PU-96-0109	SED	—*	—	—	—	—	—	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	2252	2252	2252	2252	2252	2252	2252	2252	—
AC-3	PU-00119	0–8	04PU-97-0079	SED	—	—	3285R	—	3285R	—	—	3284R	—
AC-3	PU-00119	16–28	04PU-97-0084	SED	—	—	3285R	—	3285R	—	—	3284R	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	6201R	6201R	6201R	—	6201R	6200R	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	6201R	6201R	6201R	—	6201R	6200R	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	6201R	6201R	6201R	—	6201R	6200R	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	6201R	6201R	6201R	—	6201R	6200R	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	6201R	6201R	6201R	—	6201R	6200R	—
AC-3	PU-10102	0–17	CAPU-00-0117	SED	—	—	—	—	7392R	—	—	—	—
AC-3	PU-10102	17–47	CAPU-00-0118	SED	—	—	—	—	7392R	—	—	—	—
AC-3	PU-10103	26–58	CAPU-00-0120	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10103	6–18	CAPU-00-0119	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10104	16–41	CAPU-00-0121	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10104	50–81	CAPU-00-0122	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10105	0–5	CAPU-00-0123	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10106	0–6	CAPU-00-0124	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10107	17–35	CAPU-00-0126	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10107	3–17	CAPU-00-0125	SED	—	—	—	—	7387R	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	7387R	—	7387R	—	—	7385R	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	7387R	—	7387R	—	—	7385R	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	7387R	—	7387R	—	—	7385R	—
ACS	PU-10004	42–61	CAPU-99-1036	SED	—	—	—	—	6192R	—	—	—	—

Table 2.15-1a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Americium-241	Cyanide	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Metals	Methyl Mercury
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	—	—	9004R	9002R
ACS	PU-10004	5–35	CAPU-99-1035	SED	—	—	—	—	6192R	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	9007R	9007R	—	—	9007R	9003R	9002R
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-99-1041	SED	—	—	—	—	6192R	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-99-1042	SED	—	—	—	—	6201R	—	—	—	—
ACS	PU-10008	20–33	CAPU-99-1043	SED	—	—	—	—	6201R	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	9007R	9007R	—	—	9007R	9003R	—
ACS	PU-10009	40–55	CAPU-99-1045	SED	—	—	—	—	6201R	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-99-1044	SED	—	—	—	—	6201R	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	6201R	6201R	6201R	—	6201R	6200R	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	9007R	—	—	—	9007R	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	9007R	9007R	9007R	—	9007R	9003R	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	9007R	—	9007R	—	9007R	9003R	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	280S	280S	280S	—	280S	126S	—
ACS	PU-10261	0–7	CAPU-01-0366	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10263	0–15	CAPU-01-0365	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10264	0–15	CAPU-01-0364	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	280S	280S	280S	—	280S	126S	—
ACS	PU-10266	0–15	CAPU-01-0362	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10267	0–15	CAPU-01-0363	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	280S	280S	280S	—	280S	126S	—

Table 2.15-1a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Americium-241	Cyanide	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Metals	Methyl Mercury
ACS	PU-10269	0–15	CAPU-01-0361	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10270	0–15	CAPU-01-0360	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	280S	280S	280S	—	280S	126S	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	280S	280S	280S	—	280S	126S	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	—	—	206S	206S	206S	—	206S	204S	—
ACS	PU-10275	0–15	CAPU-01-0358	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	280S	280S	280S	—	280S	126S	—
ACS	PU-10278	0–15	CAPU-01-0357	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10279	0–15	CAPU-01-0368	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10280	0–15	CAPU-01-0359	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10290	0–12	CAPU-01-0370	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10291	0–15	CAPU-01-0369	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	206S	206S	206S	—	206S	204S	—
ACS	PU-10299	0–15	CAPU-01-0371	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10300	0–15	CAPU-01-0372	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	—	206S	206S	206S	—	206S	204S	—
ACS	PU-10304	0–15	CAPU-01-0375	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	206S	206S	206S	—	206S	204S	—
ACS	PU-10320	0–15	CAPU-01-0373	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10323	0–15	CAPU-01-0374	SED	—	—	—	—	206S	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	206S	206S	206S	—	206S	204S	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	206S	206S	206S	—	206S	204S	—

Table 2.15-1a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	PCBs	Pesticides	Pesticides/ PCBs	Strontium-90	SVOCs	Total Organic Carbon	Uranium	VOCs
AC-3	PU-00017	0–8	04PU-96-0109	SED	2184	2184	—	—	2184	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	2252	—	2252	2252	—
AC-3	PU-00119	0–8	04PU-97-0079	SED	—	—	—	—	—	—	—	—
AC-3	PU-00119	16–28	04PU-97-0084	SED	—	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	6199R	6199R	—	6201R	6199R	—	6201R	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	6199R	6199R	—	6201R	6199R	—	6201R	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	6199R	6199R	—	6201R	6199R	—	6201R	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	6199R	6199R	—	6201R	6199R	—	6201R	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	6199R	6199R	—	6201R	6199R	—	6201R	—
AC-3	PU-10102	0–17	CAPU-00-0117	SED	—	—	—	—	—	—	—	—
AC-3	PU-10102	17–47	CAPU-00-0118	SED	—	—	—	—	—	—	—	—
AC-3	PU-10103	26–58	CAPU-00-0120	SED	—	—	—	—	—	—	—	—
AC-3	PU-10103	6–18	CAPU-00-0119	SED	—	—	—	—	—	—	—	—
AC-3	PU-10104	16–41	CAPU-00-0121	SED	—	—	—	—	—	—	—	—
AC-3	PU-10104	50–81	CAPU-00-0122	SED	—	—	—	—	—	—	—	—
AC-3	PU-10105	0–5	CAPU-00-0123	SED	—	—	—	—	—	—	—	—
AC-3	PU-10106	0–6	CAPU-00-0124	SED	—	—	—	—	—	—	—	—
AC-3	PU-10107	17–35	CAPU-00-0126	SED	—	—	—	—	—	—	—	—
AC-3	PU-10107	3–17	CAPU-00-0125	SED	—	—	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	7384R	—	—	7387R	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	7384R	—	—	7387R	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	7384R	—	—	7387R	—	—	—	—
ACS	PU-10004	42–61	CAPU-99-1036	SED	—	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	9001R	—	—	—

Table 2.15-1a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	PCBs	Pesticides	Pesticides/ PCBs	Strontium-90	SVOCs	Total Organic Carbon	Uranium	VOCs
ACS	PU-10004	5–35	CAPU-99-1035	SED	—	—	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	9001R	—	—	—	9001R	—	9007R	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	7375R	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-99-1041	SED	—	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	7375R	—	7375R	—	—	—
ACS	PU-10008	0–20	CAPU-99-1042	SED	—	—	—	—	—	—	—	—
ACS	PU-10008	20–33	CAPU-99-1043	SED	—	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	9001R	9001R	—	9007R	9001R	—	9007R	—
ACS	PU-10009	40–55	CAPU-99-1045	SED	—	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	7375R	—	7375R	—	—	—
ACS	PU-10009	5–23	CAPU-99-1044	SED	—	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	6199R	6199R	—	6201R	6199R	—	6201R	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	9001R	—	9007R	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	9001R	9001R	—	9007R	9001R	—	9007R	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	9001R	9001R	—	9007R	—	—	9007R	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	125S	125S	—	280S	125S	—	280S	125S
ACS	PU-10261	0–7	CAPU-01-0366	SED	—	—	—	—	—	—	—	—
ACS	PU-10263	0–15	CAPU-01-0365	SED	—	—	—	—	—	—	—	—
ACS	PU-10264	0–15	CAPU-01-0364	SED	—	—	—	—	—	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	125S	125S	—	280S	125S	—	280S	125S
ACS	PU-10266	0–15	CAPU-01-0362	SED	—	—	—	—	—	—	—	—
ACS	PU-10267	0–15	CAPU-01-0363	SED	—	—	—	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	125S	125S	—	280S	125S	—	280S	125S
ACS	PU-10269	0–15	CAPU-01-0361	SED	—	—	—	—	—	—	—	—

Table 2.15-1a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	PCBs	Pesticides	Pesticides/ PCBs	Strontium-90	SVOCs	Total Organic Carbon	Uranium	VOCs
ACS	PU-10270	0–15	CAPU-01-0360	SED	—	—	—	—	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	125S	125S	—	280S	125S	—	280S	125S
ACS	PU-10273	0–15	CAPU-01-0286	SED	125S	125S	—	280S	125S	—	280S	125S
ACS	PU-10274	0–15	CAPU-01-0288	SED	203S	203S	—	206S	203S	—	206S	203S
ACS	PU-10275	0–15	CAPU-01-0358	SED	—	—	—	—	—	—	—	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	125S	125S	—	280S	125S	—	280S	125S
ACS	PU-10278	0–15	CAPU-01-0357	SED	—	—	—	—	—	—	—	—
ACS	PU-10279	0–15	CAPU-01-0368	SED	—	—	—	—	—	—	—	—
ACS	PU-10280	0–15	CAPU-01-0359	SED	—	—	—	—	—	—	—	—
ACS	PU-10290	0–12	CAPU-01-0370	SED	—	—	—	—	—	—	—	—
ACS	PU-10291	0–15	CAPU-01-0369	SED	—	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	203S	203S	—	206S	203S	—	206S	203S
ACS	PU-10299	0–15	CAPU-01-0371	SED	—	—	—	—	—	—	—	—
ACS	PU-10300	0–15	CAPU-01-0372	SED	—	—	—	—	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	203S	203S	—	206S	203S	—	206S	203S
ACS	PU-10304	0–15	CAPU-01-0375	SED	—	—	—	—	—	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	203S	203S	—	206S	203S	—	206S	203S
ACS	PU-10320	0–15	CAPU-01-0373	SED	—	—	—	—	—	—	—	—
ACS	PU-10323	0–15	CAPU-01-0374	SED	—	—	—	—	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	203S	203S	—	206S	203S	—	206S	203S
ACS	PU-10328	0–15	CAPU-01-0291	SED	203S	203S	—	206S	203S	—	206S	203S

Notes: 1. Historical IA samples collected in 2001.

2. Numbers in suite columns are sample request numbers.

*— = Not analyzed.

Table 2.15-1b
Consolidated Unit 45-001-00 Summary of Historical Mesa Top Samples Collected—Off-site Analytical Samples

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Gamma Spectroscopy	Tritium	High Explosives	Isotopic Plutonium	Isotopic Uranium	Metals	Phosphorus	Strontium-90	SVOCs	VOCs
01-002	45-01001	1–1.5	AAA1054	QAL	—*	13231	13231	—	13231	13231	13229	13229	13231	13230	—
01-002	45-01002	1–1.5	AAA1057	QAL	—	13231	13231	—	13231	13231	13229	13229	13231	13230	—
01-002	45-01003	1–1.5	AAA1058	QAL	—	13231	13231	—	13231	13231	13229	13229	13231	13230	—
01-002	45-01004	1–1.5	AAA1059	QAL	—	13231	13231	—	13231	13231	13229	13229	13231	13230	—
01-002	45-01005	1–1.5	AAA1060	QAL	—	13231	13231	—	13231	13231	13229	13229	13231	13230	—
01-002	45-01006	1–1.5	AAA1061	QAL	—	13231	13231	—	13231	13231	13229	13229	13231	13230	—
01-002	45-01007	1–1.5	AAA1062	QAL	—	13253	13253	—	13253	13253	13251	13251	13253	13252	—
01-002	45-01022	1–1.5	AAA1030	ALLH	—	13253	13253	—	13253	13253	13251	13251	13253	13252	—
45-001	45-01024	0–2	AAA2871	ALLH	15005	—	—	—	15005	15005	—	—	15005	—	—
45-001	45-01024	18–20	AAA2850	ALLH	15011	—	—	—	15011	15011	—	—	15011	—	—
45-001	45-01024	24–26	AAA2863	ALLH	15011	—	—	—	15011	15011	—	—	15011	—	—
45-001	45-01024	6–8	AAA2825	ALLH	15011	—	—	—	15011	15011	—	—	15011	—	—
45-001	45-01025	15–17	AAA2855	ALLH	15005	—	—	—	15005	15005	—	—	15005	—	—
45-001	45-01025	21–23	AAA2842	ALLH	15005	—	—	—	15005	15005	—	—	15005	—	—
45-001	45-01025	25–27	AAA2848	ALLH	15005	—	—	—	15005	15005	—	—	15005	—	—
45-001	45-01025	5–7	AAA2856	ALLH	15005	—	—	—	15005	15005	—	—	15005	—	—
45-001	45-01026	0–2	AAA2864	ALLH	15011	—	—	—	15011	15011	—	—	15011	—	—
45-001	45-01026	25–27	AAA2869	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—
45-001	45-01026	33–35	AAA2872	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—
45-001	45-01026	7–9	AAA2821	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—
45-001	45-01027	0–5	AAA2852	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—
45-001	45-01027	12.5–17.5	AAA2827	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—

Table 2.15-1b (continued)

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Gamma Spectroscopy	Tritium	High Explosives	Isotopic Plutonium	Isotopic Uranium	Metals	Phosphorus	Strontium-90	SVOCs	VOCs
45-001	45-01027	30–35	AAA2829	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—
45-001	45-01027	35–38	AAA2859	ALLH	15048	—	—	—	15048	15048	—	—	15048	—	—
45-001	45-01028	0–5	AAA2865	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01028	15–20	AAA2846	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01028	25–30	AAA2831	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01028	35–38	AAA2851	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01029	0–5	AAA2826	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01029	10–15	AAA2822	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01029	17–19	AAA2815	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01029	21–23	AAA2828	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01030	0–5	AAA2832	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01030	10–15	AAA2839	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01030	17–19	AAA2866	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01030	21–22	AAA2840	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01031	0–5	AAA2819	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01031	15–17	AAA2830	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01031	21–23	AAA2817	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01031	5–10	AAA2834	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01032	0–5	AAA2854	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01032	10–15	AAA2816	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01032	17–19	AAA2891	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01032	21–23	AAA2813	ALLH	15097	—	—	—	15097	15097	—	—	15097	—	—
45-001	45-01033	0–5	AAA2812	ALLH	15113	—	—	—	15113	15113	—	—	15113	—	—

Table 2.15-1b (continued)

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Amercium-241	Gamma Spectroscopy	Tritium	High Explosives	Isotopic Plutonium	Isotopic Uranium	Metals	Phosphorus	Strontium-90	SVOCs	VOCs
45-001	45-01033	10–15	AAA2857	ALLH	15113	—	—	—	15113	15113	—	—	15113	—	—
45-001	45-01033	17–19	AAA2845	ALLH	15113	—	—	—	15113	15113	—	—	15113	—	—
45-001	45-01033	21–23	AAA2811	ALLH	15113	—	—	—	15113	15113	—	—	15113	—	—
45-001	45-01034	0–5	AAA2824	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01034	15–20	AAA2823	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01034	25–30	AAA2837	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01034	33–35	AAA2838	ALLH	15065	—	—	—	15065	15065	—	—	15065	—	—
45-001	45-01035	22–27	AAA2843	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01035	27–30	AAA2841	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01035	3–7	AAA2818	ALLH	15078	—	—	—	15078	15078	—	—	15078	—	—
45-001	45-01036	0.42–0.5	AAA1045	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01036	0–0.08	AAA1044	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01037	0.42–0.5	AAA1046	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01037	0–0.08	AAA1047	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01038	0.42–0.5	AAA1049	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01038	0–0.08	AAA1048	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01039	0.42–0.5	AAA1051	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01039	0–0.08	AAA1050	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01040	0.42–0.5	AAA1053	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01040	0–0.08	AAA1052	QAL	—	13231	13231	—	13231	13231	13229	13229	—	—	—
45-001	45-01041	0–0.5	AAA1031	SEDd	—	13193	13193	—	13193	13193	13191	13191	—	—	—
45-001	45-01042	0–0.5	AAA1032	SED	—	13193	13193	—	13193	13193	13191	13191	—	—	—
45-001	45-01044	0–0.5	AAA1034	SED	—	13193	13193	—	13193	13193	13191	13191	—	—	—

Table 2.15-1b (continued)

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Gamma Spectroscopy	Tritium	High Explosives	Isotopic Plutonium	Isotopic Uranium	Metals	Phosphorus	Strontium-90	SVOCs	VOCs
45-001	45-01045	0–0.33	AAA1035	SED	—	13193	13193	—	13193	13193	13191	13191	—	—	—
45-001	45-01046	0–0.5	AAA1036	SED	—	13193	13193	—	13193	13193	13191	13191	—	—	—
45-002	45-01052	0–4	AAA2875	ALLH	14961	—	—	14954	14961	14961	—	—	14961	14954	14954
45-002	45-01052	10–12	AAA2890	ALLH	14961	—	—	14954	14961	14961	—	—	14961	14954	14954
45-002	45-01053	10–11.5	AAA2879	ALLH	15002	—	—	14983	15002	15002	—	—	15002	14983	14983
45-002	45-01054	5–7	AAA2883	ALLH	15002	—	—	14983	15002	15002	—	—	15002	14983	14983
45-002	45-01055	10–12	AAA2847	ALLH	15004	—	—	14993	15004	15004	—	—	15004	14993	14993
45-002	45-01056	0–12	AAA2886	ALLH	15004	—	—	14993	15004	15004	—	—	15004	14993	14993
45-002	45-01056	15–17	AAA2887	ALLH	15004	—	—	14993	15004	15004	—	—	15004	14993	14993
45-002	45-01072	0–0.5	AAA1076	QAL	—	13253	13253	13252	13253	13253	13251	13251	—	13252	13252
45-003	45-01059	3.1–3.6	AAA1064	ALLH	—	13253	13253	—	13253	13253	13251	13251	—	13252	—
45-003	45-01059	3.9–4.4	AAA1074	QAL	—	13253	13253	—	13253	13253	13251	13251	—	13252	—
45-003	45-01060	2.6–3.1	AAA1065	ALLH	—	13253	13253	—	13253	13253	13251	13251	—	13252	—
45-003	45-01060	3.1–3.6	AAA1069	QAL	—	13253	13253	—	13253	13253	13251	13251	—	13252	—
45-003	45-01061	2.1–2.6	AAA1066	QAL	—	13253	13253	—	13253	13253	13251	13251	—	13252	—
45-003	45-01062	1.9–2.4	AAA1067	QAL	—	13253	13253	—	13253	13253	13251	13251	—	13252	—
45-004	45-01064	1–1.5	AAA1040	QAL	—	13193	13193	—	13193	13193	13191	13191	—	13192	13192
45-004	45-01065	0–0.5	AAA1038	SED	—	13193	13193	—	13193	13193	13191	13191	—	—	—
45-004	45-01066	0–0.5	AAA1039	SED	—	13193	13193	—	13193	13193	13191	13191	—	13192	13192
45-004	45-01068	0–0.5	AAA1041	SED	—	—	—	—	—	—	—	—	—	13192	13192

Notes: 1. Historical RFI samples collected in 1992 and 1993.

2. Numbers in suite columns are sample request numbers.

*— = Not analyzed.

Table 2.15-1c
Consolidated Unit 45-001-00 Summary of Historical Mesa Top Samples Collected—Screening-level Data

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Cyanide	Metals	SVOCs	VOCs
01-002	45-01121	0–0.5	AAA2977	ALLH	14910	14910	—*	—
01-002	45-01122	0–0.5	AAA2978	ALLH	14910	14910	—	—
01-002	45-01123	0–0.5	AAA2979	ALLH	14910	14910	—	—
45-001	45-01024	0–2	AAA2871	ALLH	15003	15003	15006	15006
45-001	45-01024	24–26	AAA2863	ALLH	15008	15008	15009	—
45-001	45-01024	6–8	AAA2825	ALLH	15008	15008	15009	15009
45-001	45-01025	15–17	AAA2855	ALLH	15003	15003	15006	15006
45-001	45-01025	21–23	AAA2842	ALLH	15003	15003	15006	15006
45-001	45-01025	25–27	AAA2848	ALLH	15003	15003	15006	15006
45-001	45-01025	5–7	AAA2856	ALLH	15003	15003	15006	15006
45-001	45-01026	0–2	AAA2864	ALLH	15008	15008	15009	—
45-001	45-01026	25–27	AAA2869	ALLH	15047	15047	15041	—
45-001	45-01026	33–35	AAA2872	ALLH	15047	15047	15041	—
45-001	45-01026	7–9	AAA2821	ALLH	15047	15047	15041	—
45-001	45-01027	0–5	AAA2852	ALLH	15047	15047	15041	—
45-001	45-01027	12.5–17.5	AAA2827	ALLH	15047	15047	15041	15041
45-001	45-01027	30–35	AAA2829	ALLH	15047	15047	15041	—
45-001	45-01027	35–38	AAA2859	ALLH	15047	15047	15041	—
45-001	45-01027	35–38	AAA2900	ALLH	—	15037	—	—
45-001	45-01028	0–5	AAA2865	ALLH	15059	15059	15056	—
45-001	45-01028	15–20	AAA2846	ALLH	15059	15059	15056	—
45-001	45-01028	25–30	AAA2831	ALLH	15059	15059	15056	—
45-001	45-01028	35–38	AAA2851	ALLH	15059	15059	15056	—

Table 2.15-1c (continued)

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Cyanide	Metals	SVOCs	VOCs
45-001	45-01029	0–5	AAA2826	ALLH	15083	15083	15081	—
45-001	45-01029	10–15	AAA2822	ALLH	15083	15083	15081	—
45-001	45-01029	17–19	AAA2815	ALLH	15083	15083	15081	—
45-001	45-01029	21–23	AAA2828	ALLH	15083	15083	15081	—
45-001	45-01030	0–5	AAA2832	ALLH	15099	15099	15095	—
45-001	45-01030	10–15	AAA2839	ALLH	15099	15099	15095	—
45-001	45-01030	17–19	AAA2866	ALLH	15099	15099	15095	—
45-001	45-01030	21–22	AAA2840	ALLH	15099	15099	15095	—
45-001	45-01031	0–5	AAA2819	ALLH	15083	15083	15081	—
45-001	45-01031	15–17	AAA2830	ALLH	15083	15083	15081	—
45-001	45-01031	21–23	AAA2817	ALLH	15083	15083	15081	—
45-001	45-01031	5–10	AAA2834	ALLH	15083	15083	15081	—
45-001	45-01032	0–5	AAA2854	ALLH	15099	15099	15095	—
45-001	45-01032	10–15	AAA2816	ALLH	15099	15099	15095	—
45-001	45-01032	17–19	AAA2891	ALLH	15099	15099	15095	—
45-001	45-01032	21–23	AAA2813	ALLH	15099	15099	15095	—
45-001	45-01033	0–5	AAA2812	ALLH	15116	15116	15109	—
45-001	45-01033	10–15	AAA2857	ALLH	15116	15116	15109	—
45-001	45-01033	17–19	AAA2845	ALLH	15116	15116	15109	—
45-001	45-01033	21–23	AAA2811	ALLH	15116	15116	15109	—
45-001	45-01034	0–5	AAA2824	ALLH	15059	15059	15056	—
45-001	45-01034	15–20	AAA2823	ALLH	15059	15059	15056	—
45-001	45-01034	25–30	AAA2837	ALLH	15059	15059	15056	—
45-001	45-01034	33–35	AAA2838	ALLH	15059	15059	15056	—

Table 2.15-1c (continued)

SWMU/AOC	Location ID	Depth (ft)	Sample ID	Media Code	Cyanide	Metals	SVOCs	VOCs
45-001	45-01035	22–27	AAA2843	ALLH	15083	15083	15081	—
45-001	45-01035	27–30	AAA2841	ALLH	15083	15083	15081	—
45-001	45-01035	3–7	AAA2818	ALLH	15083	15083	15081	—
45-001	45-01042	0–0.5	AAA2982	SED	14910	—	—	—
45-001	45-01045	0–0.5	AAA2983	SED	14910	—	—	—
45-002	45-01052	0–4	AAA2875	ALLH	14960	14960	—	—
45-002	45-01052	10–12	AAA2890	ALLH	14960	14960	—	—
45-002	45-01053	10–11.5	AAA2879	ALLH	14998	14998	—	—
45-002	45-01054	5–7	AAA2883	ALLH	14998	14998	—	—
45-002	45-01055	10–12	AAA2847	ALLH	15000	15000	—	—
45-002	45-01056	0–12	AAA2886	ALLH	15000	15000	—	—
45-002	45-01056	15–17	AAA2887	ALLH	15000	15000	—	—

Notes: 1. Historical RFI on-site (screening) analytical samples collected in 1992 and 1993.

2. Numbers in suite columns are sample request numbers.

*— = Not analyzed.

Table 2.15-2a
Consolidated Unit 01-002(b)-00 ACS/AC-3 Interim Action Confirmation Samples
Analytical Results of Inorganic Chemicals Greater than Background

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Cadmium	Calcium	Chromium	Cobalt	Copper	Lead	Manganese
LANL BV Sediment[a]					**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**19.7**	**543**
SSL Residential[b]					**74.1**	**n/a[c]**	**2100**	**1520**	**3130**	**400**	**1550**
AC-3	PU-00017	0–8	04PU-96-0124	SED	—[d]	—	—	—	—	54.9	—
AC-3	PU-00119	0–8	04PU-97-0079	SED	—	—	—	—	—	24.9	—
AC-3	PU-00119	16–28	04PU-97-0084	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	4.8	—	41	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	5.2	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	—	—	12	78	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	0.67	—	—	—	—	78	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	3.3	8800	—	—	27	71	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	6.2	—	41	560
AC-3	PU-10109	36–73	CAPU-00-0101	SED	0.67	—	—	—	14	200	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	7.1	23000	15	—	40	130	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	59	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	0.47 (J)	—	—	—	—	39	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	43	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	0.67	—	—	—	12	130	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	0.77	—	—	—	—	28.5 (J+)	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	0.44	—	—	—	—	87.4 (J+)	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	0.91	—	11	—	14.9	127 (J+)	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	0.43	—	—	—	—	74 (J+)	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	2.2	—	22.1	—	35.8	34 (J+)	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	1.49	—	22.2 (J+)	—	30.4 (J+)	66.8 (J+)	—

Table 2.15-2a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Cadmium	Calcium	Chromium	Cobalt	Copper	Lead	Manganese
LANL BV Sediment[a]					**0.4**	**4420**	**10.5**	**4.73**	**11.2**	**19.7**	**543**
SSL Residential[b]					**74.1**	**n/a[c]**	**2100**	**1520**	**3130**	**400**	**1550**
ACS	PU-10277	0–15	CAPU-01-0287	SED	1.5	—	12.3	—	—	36.3 (J+)	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	1.41	—	—	—	15.4 (J+)	99.9 (J+)	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	1	—	13.6 (J+)	—	16.2 (J+)	156 (J+)	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	0.89	—	12 (J+)	—	13.4 (J+)	155 (J+)	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	1.94	—	12.3 (J+)	—	19.4 (J+)	141 (J+)	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	1.61	—	—	—	—	—	—

Table 2.15-2a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Mercury	Nickel	Selenium	Silver	Titanium	Uranium	Zinc
LANL BV Sediment[a]					**0.1**	**9.38**	**0.3**	**1**	**na[e]**	**2.22**	**60.2**
SSL Residential[b]					**23**	**1560**	**391**	**391**	**na[e]**	**16[f]**	**23500**
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	0.41 (J)	—	240	—	66.3
AC-3	PU-00119	0–8	04PU-97-0079	SED	—	—	0.59 (U)[j]	—	—	—	—
AC-3	PU-00119	16–28	04PU-97-0084	SED	—	—	0.58 (U)	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	0.17	—	1.1	—	—	4.76	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	0.61	—	—	3.39	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	0.43 (J)	—	—	2.73	94
AC-3	PU-10019	0–14	CAPU-99-1003	SED	0.17	—	0.79	—	—	3.45	76
AC-3	PU-10019	19–44	CAPU-99-1004	SED	0.75	—	0.61	2.1	—	3.92	67
AC-3	PU-10108	0–16	CAPU-00-0100	SED	0.32 (J-)	—	0.53 (J-)	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	0.27 (J-)	—	—	—	—	—	180
AC-3	PU-10110	18–29	CAPU-00-0102	SED	2.6 (J-)	17	0.39 (J-)	5.8	—	—	81
ACS	PU-10004	5–35	CAPU-01-0070	SED	0.19	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—

Table 2.15-2a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Mercury	Nickel	Selenium	Silver	Titanium	Uranium	Zinc
LANL BV Sediment[a]					**0.1**	**9.38**	**0.3**	**1**	**na[e]**	**2.22**	**60.2**
SSL Residential[b]					**23**	**1560**	**391**	**391**	**na[e]**	**16[f]**	**23500**
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	2.92	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	0.51 (J)	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	0.29	—	—	1.2	—	3.42	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	0.28 (J+)	—	—	—	—	6.06	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	0.18 (J+)	—	—	—	—	3.51	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	0.53 (J+)	—	0.33	2.7	—	6.27	92.1
ACS	PU-10271	0–15	CAPU-01-0285	SED	0.17 (J+)	—	—	—	—	4.28	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	1.2 (J+)	11.1	—	3.3	—	9.17	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	2.78	—	0.953 (J)	5.14	—	8.32	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	0.36 (J+)	—	—	—	—	11.32	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	0.415	—	0.576 (J)	1.95	—	4.60	69.3
ACS	PU-10302	0–15	CAPU-01-0292	SED	0.416	—	0.573 (J)	2.66	—	5.69	89.8
ACS	PU-10317	0–15	CAPU-01-0293	SED	0.374	—	0.478 (UJ)	2.83	—	4.71	76.2
ACS	PU-10326	0–15	CAPU-01-0290	SED	0.909	—	0.478(UJ)	2.73	—	10.14	80.6
ACS	PU-10328	0–15	CAPU-01-0291	SED	0.143	—	0.419 (J)	—	—	5.73	—

Notes: 1. Historical IA samples collected in 2001.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] — = If analyzed, sample result is less than BV.

[e] na = BV not available for this chemical.

[f] EPA Region 9 PRG (http://www.epa.gov/region09/waste/sfund/prg/index.html).

Table 2.15-2b
Consolidated Unit 45-001-00 Historical Analytical Results of Inorganic Chemicals Greater than Background—Off-site Analytical Data

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Barium	Cadmium	Cobalt	Iron	Lead	Lithium	Mercury
LANL BV Soil[a]					**0.83**	**295**	**0.4**	**8.64**	**21500**	**22.3**	**na[b]**	**0.1**
LANL BV Sediment[a]					**0.83**	**127**	**0.4**	**4.73**	**13800**	**19.7**	**na[b]**	**0.1**
SSL Residential[c]					**31.3**	**5450**	**74.1**	**1520**	**23500**	**400**	**1600**	**23**
01-002	45-01001	1–1.5	AAA1054	QAL	—[d]	—	1.1 (U)	—	—	—	25	0.14
01-002	45-01002	1–1.5	AAA1057	QAL	—	—	1.1 (U)	—	—	—	—	—
01-002	45-01003	1–1.5	AAA1058	QAL	—	—	1.1 (U)	—	—	—	25	—
01-002	45-01004	1–1.5	AAA1059	QAL	—	—	1.1 (U)	—	—	—	—	—
01-002	45-01005	1–1.5	AAA1060	QAL	—	—	1.2	—	—	—	—	0.18
01-002	45-01006	1–1.5	AAA1061	QAL	—	—	1.2 (U)	—	—	—	—	—
01-002	45-01007	1–1.5	AAA1062	QAL	2.4 (U)	—	1.2 (U)	—	—	—	—	0.12
01-002	45-01022	1–1.5	AAA1030	ALLH	2.5 (U)	—	1.3 (U)	—	—	—	—	0.5
45-001	45-01036	0.42–0.5	AAA1045	QAL	2 (U)	—	1 (U)	—	—	—	—	1 (U)
45-001	45-01036	0–0.08	AAA1044	QAL	—	—	1 (U)	—	—	—	—	—
45-001	45-01037	0.42–0.5	AAA1046	QAL	2.2 (U)	—	1.1 (U)	—	—	—	—	—
45-001	45-01037	0–0.08	AAA1047	QAL	2.2 (U)	—	1.1 (U)	—	—	—	—	—
45-001	45-01038	0.42–0.5	AAA1049	QAL	2.3 (U)	—	1.1 (U)	—	—	—	—	—
45-001	45-01038	0–0.08	AAA1048	QAL	2.2 (U)	—	1.1 (U)	—	—	—	—	1 (U)
45-001	45-01039	0.42–0.5	AAA1051	QAL	2.2 (U)	—	5.7	—	—	—	—	0.2
45-001	45-01039	0–0.08	AAA1050	QAL	2.2 (U)	—	1.1 (U)	—	—	—	—	—
45-001	45-01040	0.42–0.5	AAA1053	QAL	2.1 (U)	—	1.1 (U)	—	—	—	—	—
45-001	45-01040	0–0.08	AAA1052	QAL	2 (U)	—	1 (U)	—	—	—	—	—
45-001	45-01041	0–0.5	AAA1031	SED	—	—	1.1 (U)	—	—	—	—	—
45-001	45-01042	0–0.5	AAA1032	SED	—	147	1.1 (U)	5	14400	—	—	—
45-001	45-01044	0–0.5	AAA1034	SED	—	—	1.1 (U)	—	—	—	—	—
45-001	45-01045	0–0.33	AAA1035	SED	—	—	1.1 (U)	—	—	—	—	1
45-001	45-01046	0–0.5	AAA1036	SED	—	141	1.1 (U)	—	—	21.1	—	0.84
45-002	45-01072	0–0.5	AAA1076	QAL	2.1 (U)	—	1 (U)	—	—	—	—	—
45-003	45-01059	3.1–3.6	AAA1064	ALLH	2.2 (U)	—	1.1 (U)	—	—	—	—	—
45-003	45-01059	3.9–4.4	AAA1074	QAL	2.2 (U)	—	1.1 (U)	—	—	—	—	0.11

Table 2.15-2b (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Antimony	Barium	Cadmium	Cobalt	Iron	Lead	Lithium	Mercury
LANL BV Soil[a]					**0.83**	**295**	**0.4**	**8.64**	**21500**	**22.3**	**na[b]**	**0.1**
LANL BV Sediment[a]					**0.83**	**127**	**0.4**	**4.73**	**13800**	**19.7**	**na[b]**	**0.1**
SSL Residential[c]					**31.3**	**5450**	**74.1**	**1520**	**23500**	**400**	**1600**	**23**
45-003	45-01060	2.6–3.1	AAA1065	ALLH	2.3 (U)	—	1.2 (U)	—	—	25.2	—	0.12
45-003	45-01060	3.1–3.6	AAA1069	QAL	2.3 (U)	—	1.2 (U)	—	—	—	—	0.11
45-003	45-01061	2.1–2.6	AAA1066	QAL	2.1 (U)	—	1 (U)	—	—	—	—	—
45-003	45-01062	1.9–2.4	AAA1067	QAL	2.1 (U)	—	1.1 (U)	—	—	—	—	—
45-004	45-01064	1–1.5	AAA1040	QAL	—	—	1.2 (U)	—	—	—	—	—
45-004	45-01065	0–0.5	AAA1038	SED	—	—	1.2 (U)	—	—	56.6	—	0.72
45-004	45-01066	0–0.5	AAA1039	SED	—	—	1.2 (U)	—	—	38.2	—	0.8

Table 2.15-2b (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Molybdenum	Selenium	Silver	Strontium	Total Phosphorus	Vanadium	Zinc
LANL BV Soil[a]					**na[b]**	**1.52**	**1**	**na**	**na**	**39.6**	**48.8**
LANL BV Sediment[a]					**na**	**0.3**	**1**	**na**	**na**	**19.7**	**60.2**
SSL Residential[c]					**391**	**391**	**391**	**46900**	**n/a[e]**	**548**	**23500**
01-002	45-01001	1–1.5	AAA1054	QAL	—	—	2.2 (U)	8.2	50.9	—	—
01-002	45-01002	1–1.5	AAA1057	QAL	—	—	2.2 (U)	—	40.7	—	—
01-002	45-01003	1–1.5	AAA1058	QAL	—	—	2.3 (U)	—	42.7	—	52.6
01-002	45-01004	1–1.5	AAA1059	QAL	—	—	2.3 (U)	6.2	46.3	—	—
01-002	45-01005	1–1.5	AAA1060	QAL	—	—	2.2 (U)	—	36.7	—	—
01-002	45-01006	1–1.5	AAA1061	QAL	—	—	2.3 (U)	—	30.5	—	—
01-002	45-01007	1–1.5	AAA1062	QAL	3.5	1.8 (U)	2.4 (U)	1.9	28.6	—	—
01-002	45-01022	1–1.5	AAA1030	ALLH	3	1.9 (U)	2.5 (U)	2.2	39.5	—	—
45-001	45-01036	0.42–0.5	AAA1045	QAL	2.9	—	2 (U)	1	26.7	—	—
45-001	45-01036	0–0.08	AAA1044	QAL	—	—	2 (U)	—	36.3	—	—
45-001	45-01037	0.42–0.5	AAA1046	QAL	3	1.7 (U)	2.2 (U)	3.4	42.9	—	—
45-001	45-01037	0–0.08	AAA1047	QAL	2.8	1.6 (U)	2.2 (U)	4.7	140	—	—
45-001	45-01038	0.42–0.5	AAA1049	QAL	2.5	1.7 (U)	2.3 (U)	3.8	46	—	—

Table 2.15-2b (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Molybdenum	Selenium	Silver	Strontium	Total Phosphorus	Vanadium	Zinc
LANL BV Soil[a]					**na[b]**	**1.52**	**1**	**na**	**na**	**39.6**	**48.8**
LANL BV Sediment[a]					**na**	**0.3**	**1**	**na**	**na**	**19.7**	**60.2**
SSL Residential[c]					**391**	**391**	**391**	**46900**	**n/a[e]**	**548**	**23500**
45-001	45-01038	0–0.08	AAA1048	QAL	2.4	1.6 (U)	2.2 (U)	4.6	91.8	—	—
45-001	45-01039	0.42–0.5	AAA1051	QAL	2.2	1.7 (U)	2.2 (U)	5.8	43	—	—
45-001	45-01039	0–0.08	AAA1050	QAL	—	1.6 (U)	2.2 (U)	3.3	42.4	—	—
45-001	45-01040	0.42–0.5	AAA1053	QAL	—	1.6 (U)	2.1 (U)	1.2	39.4	—	—
45-001	45-01040	0–0.08	AAA1052	QAL	—	—	2 (U)	2.4	48.4	—	—
45-001	45-01041	0–0.5	AAA1031	SED	—	0.34 (U)	2.3 (U)	18.8	220	—	—
45-001	45-01042	0–0.5	AAA1032	SED	—	0.34 (U)	2.3 (U)	21.6	57.8	22.8	—
45-001	45-01044	0–0.5	AAA1034	SED	—	0.33 (U)	2.2 (U)	7.4	63.4	—	—
45-001	45-01045	0–0.33	AAA1035	SED	—	0.34 (U)	3.5	12.8	273	—	—
45-001	45-01046	0–0.5	AAA1036	SED	—	0.55	9	19.5	461	—	99.5
45-002	45-01072	0–0.5	AAA1076	QAL	—	1.6 (U)	2.1 (U)	3.9	49.2	—	—
45-003	45-01059	3.1–3.6	AAA1064	ALLH	—	1.6 (U)	2.2 (U)	7.1	43.6	—	—
45-003	45-01059	3.9–4.4	AAA1074	QAL	—	1.7 (U)	2.2 (U)	5.8	63.3	—	—
45-003	45-01060	2.6–3.1	AAA1065	ALLH	3	1.7 (U)	2.3 (U)	11	310	—	51
45-003	45-01060	3.1–3.6	AAA1069	QAL	—	1.7 (U)	2.3 (U)	5.9	159	—	—
45-003	45-01061	2.1–2.6	AAA1066	QAL	3	1.6 (U)	2.1 (U)	6.3	38.9	—	—
45-003	45-01062	1.9–2.4	AAA1067	QAL	2.8	1.6 (U)	2.1 (U)	7.4	46.2	—	—
45-004	45-01064	1–1.5	AAA1040	QAL	—	—	2.4 (U)	—	48.7	—	50.5
45-004	45-01065	0–0.5	AAA1038	SED	—	0.35 (U)	3.3	12.6	259	—	—
45-004	45-01066	0–0.5	AAA1039	SED	—	0.37 (U)	5.5	12.8	271	—	75.8

Notes: 1. Historical RFI samples collected in 1992.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).
[b] na = BV not available for this chemical.
[c] SSLs from NMED 2004 (85615), unless otherwise noted.
[d] — = If analyzed, sample result is less than BV.
[e] n/a = Not applicable; SSL not found for this chemical.

Table 2.15-2c
Consolidated Unit 45-001-00 Historical Analytical Results of Inorganic Chemicals Greater than Background—Screening-level Data

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Barium	Beryllium	Cadmium	Chromium	Cyanide (Total)	Lead	Manganese	Nickel	Silver	Zinc
LANL BV Soil[a]					**295**	**1.83**	**0.4**	**19.3**	**na[b]**	**22.3**	**671**	**15.4**	**1**	**48.8**
SSL Residential[c]					**5450**	**156**	**74.1**	**2100**	**1560**	**400**	**1550**	**1560**	**391**	**23500**
01-002	45-01121	0–0.5	AAA2977	ALLH	—[d]	—	—	—	—	27	—	—	—	56
01-002	45-01122	0–0.5	AAA2978	ALLH	—	—	—	—	—	26	—	—	—	—
01-002	45-01123	0–0.5	AAA2979	ALLH	—	—	—	—	0.000005	26	—	—	—	—
45-001	45-01024	0–2	AAA2871	ALLH	—	—	—	—	0.0000303	—	—	—	—	—
45-001	45-01024	24–26	AAA2863	ALLH	—	—	2.2	—	—	—	—	—	—	—
45-001	45-01025	15–17	AAA2855	ALLH	—	—	3.5	—	—	—	—	—	—	—
45-001	45-01025	21–23	AAA2842	ALLH	—	—	—	330	—	—	—	120	—	—
45-001	45-01025	5–7	AAA2856	ALLH	—	—	2.7	—	—	—	—	—	—	—
45-001	45-01026	0–2	AAA2864	ALLH	310	—	1.5	—	—	—	—	—	—	—
45-001	45-01026	7–9	AAA2821	ALLH	—	—	—	—	0.0000413	—	—	—	—	—
45-001	45-01027	0–5	AAA2852	ALLH	—	—	4 (U)	—	0.0000275	160	—	—	—	—
45-001	45-01027	12.5–17.5	AAA2827	ALLH	—	—	—	—	0.0000275	—	—	—	—	—
45-001	45-01031	0–5	AAA2819	ALLH	—	—	—	—	0.000024	25	—	—	—	—
45-001	45-01032	0–5	AAA2854	ALLH	—	—	—	—	0.0000216	—	—	—	—	84
45-001	45-01033	0–5	AAA2812	ALLH	—	—	—	—	0.000014	—	—	—	—	56
45-001	45-01033	10–15	AAA2857	ALLH	—	—	—	—	0.000014	—	—	—	—	—
45-001	45-01033	17–19	AAA2845	ALLH	—	—	—	—	0.000014	—	—	—	—	—
45-001	45-01033	21–23	AAA2811	ALLH	—	—	—	—	0.000014	—	—	—	—	—
45-001	45-01034	0–5	AAA2824	ALLH	—	—	—	—	0.000031	28	—	—	—	—
45-002	45-01052	10–12	AAA2890	ALLH	—	2.1	—	—	—	—	980	—	—	—
45-002	45-01053	10–11.5	AAA2879	ALLH	—	—	0.6	—	—	—	—	—	2	—

Table 2.15-2c (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Barium	Beryllium	Cadmium	Chromium	Cyanide (Total)	Lead	Manganese	Nickel	Silver	Zinc
LANL BV Soil[a]					**295**	**1.83**	**0.4**	**19.3**	**na[b]**	**22.3**	**671**	**15.4**	**1**	**48.8**
SSL Residential[c]					**5450**	**156**	**74.1**	**2100**	**1560**	**400**	**1550**	**1560**	**391**	**23500**
45-002	45-01054	5–7	AAA2883	ALLH	—	—	0.5	—	0.0000275	—	—	—	—	—
45-002	45-01055	10–12	AAA2847	ALLH	—	—	0.61	—	0.0000275	—	—	—	—	—
45-002	45-01056	0–12	AAA2886	ALLH	—	—	0.5	—	0.0000275	—	—	—	—	—
45-002	45-01056	15–17	AAA2887	ALLH	—	—	—	—	—	—	—	—	2	—

Notes: 1. Historical RFI on-site analytical (screening) samples collected in 1992.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] na = BV not available for this chemical.

[c] SSLs from NMED 2004 (85615), unless otherwise noted.

[d] — = If analyzed, sample result is less than BV.

Table 2.15-3a

SWMU 01-002(b)-00 ACS/AC-3 Interim Action Confirmation Samples Analytical Results of Radionuclides above BVs or FVs

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
LANL BV Sediment[a]					**0.04[b]**	**0.9[b]**	**0.006[b]**	**0.068[b]**	**1.04[b]**	**0.093[b]**	**2.59**	**0.2**	**2.29**
SSL Residential[c]					**39**	**5.3**	**49**	**44**	**5.7**	**890**	**63**	**17**	**86**
AC-3	PU-00017	0–8	04PU-96-0124	SED	0.64	—[d]	0.059	12.593	—	—	—	—	—
AC-3	PU-00119	0–8	04PU-97-0079	SED	0.433	—	0.045	13.7	—	—	—	—	—
AC-3	PU-00119	16–28	04PU-97-0084	SED	—	—	—	2.33	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	2	—	0.382	110.8	1.08	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	1.13	—	—	38.5	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	1.24	—	—	23.9	—	—	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	4.06	2.4	—	37	1.23	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	34.2	14.2	1.58	142.9	12.6	1.117 (J-)	2.63	—	—
AC-3	PU-10102	0–17	CAPU-00-0117	SED	—	—	0.181	36.4	—	—	—	—	—
AC-3	PU-10102	17–47	CAPU-00-0118	SED	—	—	0.06	23.2	—	—	—	—	—
AC-3	PU-10103	26–58	CAPU-00-0120	SED	—	—	0.092	13.4	—	—	—	—	—
AC-3	PU-10103	6–18	CAPU-00-0119	SED	—	—	0.201	46.1	—	—	—	—	—
AC-3	PU-10104	16–41	CAPU-00-0121	SED	—	—	0.172	28.9	—	—	—	—	—
AC-3	PU-10104	50–81	CAPU-00-0122	SED	—	—	—	38.5	—	—	—	—	—
AC-3	PU-10105	0–5	CAPU-00-0123	SED	—	—	—	4.62	—	—	—	—	—
AC-3	PU-10106	0–6	CAPU-00-0124	SED	—	—	—	0.9	—	—	—	—	—
AC-3	PU-10107	17–35	CAPU-00-0126	SED	—	—	—	20.3	—	—	—	—	—
AC-3	PU-10107	3–17	CAPU-00-0125	SED	—	—	0.049	12.7	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	7.5	0.65	—	477	2.47	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	2.57	0.99	0.174	35.2	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	88	32.5	3.7	277	30.5	—	—	—	—
ACS	PU-10004	42–61	CAPU-99-1036	SED	—	—	—	9.51	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-99-1035	SED	—	—	—	23.9	—	—	—	—	—

Table 2.15-3a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
LANL BV Sediment[a]					**0.04[b]**	**0.9[b]**	**0.006[b]**	**0.068[b]**	**1.04[b]**	**0.093[b]**	**2.59**	**0.2**	**2.29**
SSL Residential[c]					**39**	**5.3**	**49**	**44**	**5.7**	**890**	**63**	**17**	**86**
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-99-1041	SED	—	—	—	13.5	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-99-1042	SED	—	—	0.124	17.4	—	—	—	—	—
ACS	PU-10008	20–33	CAPU-99-1043	SED	—	—	0.183	46.1	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	0.118	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-99-1045	SED	—	—	—	20.6	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-99-1044	SED	—	—	0.445	129.7	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	0.25	—	14.74	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	0.056	10.3	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	1.43	0.64	0.49	149	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	4.97	—	0.73	238	—	—	3.94	0.317	—
ACS	PU-10261	0–7	CAPU-01-0366	SED	—	—	0.43	37.7	—	—	—	—	—
ACS	PU-10263	0–15	CAPU-01-0365	SED	—	—	0.723	136	—	—	—	—	—
ACS	PU-10264	0–15	CAPU-01-0364	SED	—	—	0.524	98.8	—	—	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	2.05	—	0.547	99.3	—	—	—	—	—
ACS	PU-10266	0–15	CAPU-01-0362	SED	—	—	2.51	303	—	—	—	—	—
ACS	PU-10267	0–15	CAPU-01-0363	SED	—	—	0.383	77	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	4.96	1.67	0.527	122	—	—	3.65	—	—
ACS	PU-10269	0–15	CAPU-01-0361	SED	—	—	1.74	348	—	—	—	—	—
ACS	PU-10270	0–15	CAPU-01-0360	SED	—	—	0.683	164	—	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	1.53	—	0.185	49.8	—	—	—	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	3.47	1.19	0.615	146	—	0.137	6.87	0.355	3.03
ACS	PU-10274	0–15	CAPU-01-0288	SED	5.18	1.67	1.08	258	—	—	8.77	0.252	2.76
ACS	PU-10275	0–15	CAPU-01-0358	SED	—	—	0.377	82.3	—	—	—	—	—

Table 2.15-3a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
LANL BV Sediment[a]					**0.04[b]**	**0.9[b]**	**0.006[b]**	**0.068[b]**	**1.04[b]**	**0.093[b]**	**2.59**	**0.2**	**2.29**
SSL Residential[c]					**39**	**5.3**	**49**	**44**	**5.7**	**890**	**63**	**17**	**86**
ACS	PU-10277	0–15	CAPU-01-0287	SED	1.75	—	0.325	68.1	—	—	9.3	0.632	3.71
ACS	PU-10278	0–15	CAPU-01-0357	SED	—	—	0.584	146	—	—	—	—	—
ACS	PU-10279	0–15	CAPU-01-0368	SED	—	—	0.433	63.5	—	—	—	—	—
ACS	PU-10280	0–15	CAPU-01-0359	SED	—	—	0.313	43.7	—	—	—	—	—
ACS	PU-10290	0–12	CAPU-01-0370	SED	—	—	0.283	37.5	—	—	—	—	—
ACS	PU-10291	0–15	CAPU-01-0369	SED	—	—	—	121	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	9.97	5.52	1.61	169	1.21	—	3.79	—	—
ACS	PU-10299	0–15	CAPU-01-0371	SED	—	—	—	—	—	—	—	—	—
ACS	PU-10300	0–15	CAPU-01-0372	SED	—	—	1.71	43.6	—	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	3.87	—	0.913	179	—	—	3.05	—	—
ACS	PU-10304	0–15	CAPU-01-0375	SED	—	—	0.181	44.9	—	—	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	3.62	1.13	—	86.2	—	—	2.65	—	—
ACS	PU-10320	0–15	CAPU-01-0373	SED	—	—	0.252	8.19	—	—	—	—	—
ACS	PU-10323	0–15	CAPU-01-0374	SED	—	—	0.289	37.4	—	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	8.52	6.44	0.768	117	1.43	—	7.65	0.266	3.37
ACS	PU-10328	0–15	CAPU-01-0291	SED	1.09	—	0.691	105	1.14	—	3.97	—	—

Notes: 1. Historical IA samples collected in 2001.
2. All values in pCi/g.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] FVs for americium-241, cesium-137, plutonium-238, plutonium-239, strontium-90, and tritium apply to upper 0–6 in. (15.24 cm) of soil/sediment; all detected activities reported for subsurface samples.

[c] SSLs from NMED 2004 (85615), unless otherwise noted.

[d] — = If analyzed, sample result is less than BV or FV.

Table 2.15-3b

Consolidated Unit 45-001-00 Historical Analytical Results of Radionuclides above BV or FVs—Off-site Analytical Data

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Strontium-90	Tritium[a]	Tritium (pCi/mL)[a]	Uranium-234	Uranium-235	Uranium-238
LANL BV Soil[b]					**0.013[c]**	**1.65[c]**	**0.023[c]**	**0.054[c]**	**1.31[c]**	**na[d]**	**0.766[c]**	**2.59**	**0.2**	**2.29**
LANL BV Sediment[b]					**0.04[c]**	**0.9[c]**	**0.006[c]**	**0.068[c]**	**1.04[c]**	**0.093[b]**	**na[d]**	**2.59**	**0.2**	**2.29**
SAL Residential[e]					**39**	**5.3**	**49**	**44**	**5.7**	**890**	**na**	**63**	**17**	**86**
01-002	45-01001	1–1.5	AAA1054	QAL	—[f]	—	—	5.33	—	0.05	0.525	—	—	—
01-002	45-01002	1–1.5	AAA1057	QAL	—	—	—	—	—	0.07	0.597	—	—	—
01-002	45-01003	1–1.5	AAA1058	QAL	—	—	—	—	—	0.08	0.647	—	—	—
01-002	45-01004	1–1.5	AAA1059	QAL	—	—	—	—	—	0.07	0.49	—	—	—
01-002	45-01005	1–1.5	AAA1060	QAL	—	—	—	—	—	—	—	3.07	—	—
01-002	45-01006	1–1.5	AAA1061	QAL	—	—	—	—	—	0.08	0.535	—	—	—
01-002	45-01007	1–1.5	AAA1062	QAL	—	—	—	—	—	0.09	0.481	—	—	—
01-002	45-01022	1–1.5	AAA1030	ALLH	—	—	—	1.48	—	0.12	0.458	7.76	—	—
45-001	45-01024	0–2	AAA2871	ALLH	0.057	—	—	0.235	—	—	—	—	—	—
45-001	45-01024	18–20	AAA2850	ALLH	—	—	—	0.011	—	—	—	—	—	—
45-001	45-01025	21–23	AAA2842	ALLH	0.005	—	—	—	—	—	—	—	—	—
45-001	45-01026	0–2	AAA2864	ALLH	—	—	—	0.01	—	—	—	—	—	—
45-001	45-01026	7–9	AAA2821	ALLH	0.007	—	—	0.02	—	—	—	—	—	—
45-001	45-01027	0–5	AAA2852	ALLH	—	—	—	0.008	—	—	—	—	—	—
45-001	45-01027	12.5–17.5	AAA2827	ALLH	0.029	—	—	0.191	—	—	—	—	—	—
45-001	45-01028	15–20	AAA2846	ALLH	0.033	—	—	0.146	—	—	—	—	—	—
45-001	45-01028	25–30	AAA2831	ALLH	0.041	—	—	0.203	—	—	—	—	—	—
45-001	45-01031	0–5	AAA2819	ALLH	—	—	0.019	—	—	—	—	—	—	—
45-001	45-01032	0–5	AAA2854	ALLH	0.022	—	—	0.085	—	—	—	—	—	—

Table 2.15-3b (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Strontium-90	Tritium[a]	Tritium (pCi/mL)[a]	Uranium-234	Uranium-235	Uranium-238
LANL BV Soil[b]					**0.013[c]**	**1.65[c]**	**0.023[c]**	**0.054[c]**	**1.31[c]**	**na[d]**	**0.766[c]**	**2.59**	**0.2**	**2.29**
LANL BV Sediment[b]					**0.04[c]**	**0.9[c]**	**0.006[c]**	**0.068[c]**	**1.04[c]**	**0.093[b]**	**na[d]**	**2.59**	**0.2**	**2.29**
SAL Residential[e]					**39**	**5.3**	**49**	**44**	**5.7**	**890**	**na**	**63**	**17**	**86**
45-001	45-01033	0–5	AAA2812	ALLH	—	—	—	0.01	—	—	—	—	—	—
45-001	45-01034	0–5	AAA2824	ALLH	0.006	—	—	0.057	—	—	—	—	—	—
45-001	45-01035	3–7	AAA2818	ALLH	0.005	—	—	0.012	—	—	—	—	—	—
45-001	45-01036	0.42–0.5	AAA1045	QAL	—	—	—	—	2.01	0.039	1.354	—	—	—
45-001	45-01036	0–0.08	AAA1044	QAL	—	9.72	—	—	1.69	—	—	—	—	—
45-001	45-01037	0.42–0.5	AAA1046	QAL	—	—	—	—	—	0.26	2.420	—	—	—
45-001	45-01037	0–0.08	AAA1047	QAL	—	—	—	—	—	—	—	—	—	—
45-001	45-01038	0.42–0.5	AAA1049	QAL	—	—	—	—	—	0.26	2.216	—	—	—
45-001	45-01038	0–0.08	AAA1048	QAL	—	—	—	—	—	0.06	0.957	—	—	—
45-001	45-01039	0.42–0.5	AAA1051	QAL	—	3	—	16.1	5.8	0.23	2.757	—	—	—
45-001	45-01039	0–0.08	AAA1050	QAL	—	—	—	—	1.69	—	—	—	—	—
45-001	45-01040	0.42–0.5	AAA1053	QAL	—	—	—	0.704	—	—	—	—	—	—
45-001	45-01040	0–0.08	AAA1052	QAL	—	—	—	—	—	0.047	1.399	—	—	—
45-001	45-01041	0–0.5	AAA1031	SED	—	—	—	9.09	—	—	—	—	—	—
45-001	45-01042	0–0.5	AAA1032	SED	—	—	—	—	—	—	—	—	—	—
45-001	45-01044	0–0.5	AAA1034	SED	—	—	—	—	—	0.17	1.449	—	—	—
45-001	45-01045	0–0.33	AAA1035	SED	—	—	—	—	—	—	—	—	—	—
45-001	45-01046	0–0.5	AAA1036	SED	—	—	—	—	—	0.1169492	0.900	—	—	—
45-002	45-01052	0–4	AAA2875	ALLH	—	—	—	0.023	—	—	—	—	—	—
45-002	45-01053	10–11.5	AAA2879	ALLH	—	—	—	—	—	—	—	—	—	2.353
45-002	45-01054	5–7	AAA2883	ALLH	—	—	—	0.096	—	—	—	—	—	—

Table 2.15-3b (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Americium-241	Cesium-137	Plutonium-238	Plutonium-239	Strontium-90	Tritium[a]	Tritium (pCi/mL)[a]	Uranium-234	Uranium-235	Uranium-238
LANL BV Soil[b]					**0.013[c]**	**1.65[c]**	**0.023[c]**	**0.054[c]**	**1.31[c]**	**na[d]**	**0.766[c]**	**2.59**	**0.2**	**2.29**
LANL BV Sediment[b]					**0.04[c]**	**0.9[c]**	**0.006[c]**	**0.068[c]**	**1.04[c]**	**0.093[b]**	**na[d]**	**2.59**	**0.2**	**2.29**
SAL Residential[e]					**39**	**5.3**	**49**	**44**	**5.7**	**890**	**na**	**63**	**17**	**86**
45-002	45-01055	10–12	AAA2847	ALLH	0.05	—	0.013	0.821	78.4	—	—	15.957	0.838	18.577
45-002	45-01056	0–12	AAA2886	ALLH	—	—	0.014	0.019	—	—	—	—	—	—
45-002	45-01072	0–0.5	AAA1076	QAL	—	—	—	—	—	—	—	—	—	—
45-003	45-01059	3.1–3.6	AAA1064	ALLH	—	—	—	—	—	0.04	0.508	—	—	—
45-003	45-01059	3.9–4.4	AAA1074	QAL	—	—	—	—	—	0.04	0.392	—	—	—
45-003	45-01060	2.6–3.1	AAA1065	ALLH	—	—	—	—	—	0.07	0.449	—	—	—
45-003	45-01061	2.1–2.6	AAA1066	QAL	—	—	—	0.615	—	0.026	0.552	—	—	—
45-003	45-01062	1.9–2.4	AAA1067	QAL	—	—	—	1.19	—	0.029	0.410	—	—	—
45-004	45-01064	1–1.5	AAA1040	QAL	—	—	—	—	—	0.07	0.368	—	—	—
45-004	45-01065	0–0.5	AAA1038	SED	—	—	—	—	—	0.2333333	1.099	—	—	—
45-004	45-01066	0–0.5	AAA1039	SED	—	—	—	—	—	—	—	—	—	—

Notes: 1. Historical RFI samples collected in 1992 and 1993.
2. All values in pCi/g, unless otherwise noted.
3. See Appendix A for data qualifier definitions.

[a] Tritium is reported in both pCi/g and pCi/mL for ease of comparison to BVs; conversion per LANL 1998 (59730, Table 6.0-2); SAL for units of pCi/g provided.

[b] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[c] FVs for americium-241, cesium-134, plutonium-238, plutonium-239, strontium-90, and tritium apply to upper 0–6 in. of soil/sediment; all detected activities reported for subsurface samples.

[d] na = BV not available for this chemical.

[e] SALs from LANL 2002 (73705) using RESRAD 6.21

[f] — = If analyzed, sample result is less than BV or FV.

Table 2.15-4a

Consolidated Unit 01-002(b)-00 ACS/AC-3 Interim Action Confirmation Samples Analytical Results of Organic Chemicals Detected

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzene	Benz(a)anthracene
SSL Residential[a]					4690	2300	70400	23500	1.11	2.22	27	6.21
AC-3	PU-00017	0–8	04PU-96-0109	SED	—[b]	—	—	0.039 (J)	—	—	—	0.079 (J)
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	0.046 (J)	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	0.53 (J)	—	—	0.72 (J)	0.052	—	—	1.8
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	—	0.24 (J)	0.25	—	—	0.63 (J)
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	—	2.2	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	0.071	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	0.097	0.095	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	6.2 (J-)	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	0.038 (J)	—	—	0.054 (J)	—	—	—	0.15 (J)
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	0.041 (J)	—	—	—	0.13 (J)
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	0.042	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	0.01	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	0.19	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	0.018 (J)	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	—	—	—	0.089 (J)
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	0.0069	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	0.043	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzene	Benz(a)anthracene
SSL Residential[a]					**4690**	**2300**	**70400**	**23500**	**1.11**	**2.22**	**27**	**6.21**
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	0.17	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	—	—	0.085	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	—	—	0.23	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	—	—	0.054	—	—	0.081 (J)
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	—	0.29	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.0258 (J-)	0.0128 (J-)	0.128	0.0257 (J)	0.726	0.152	0.00098 (J)	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	0.075	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	0.154	0.0056 (J)	0.528	0.108	0.00044 (J)	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	0.0051 (J-)	—	0.177	0.0065 (J)	0.12	0.0516	—	0.036 (J-)
ACS	PU-10317	0–15	CAPU-01-0293	SED	0.0046 (J-)	—	0.265	—	0.171	0.0515	0.0012 (J)	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	0.0057 (J-)	—	0.218	0.0196 (J)	0.528	0.134	—	0.0585 (J-)
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	0.0699	—	0.0293	0.0184	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzoic Acid	BHC[beta-]	Bis(2-chloroethoxy) methane	Bis(2-chloroethyl) ether
SSL Residential[a]					**0.621**	**6.21**	**62.1**	**100000**	**3.16**	**na[c]**	**2.04**
AC-3	PU-00017	0–8	04PU-96-0109	SED	0.11 (J)	0.15 (J)	0.059 (J)	0.75 (J)	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	1.8 (J)	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	1.5	2.9	—	—	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	0.39 (J)	1 (J)	—	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	0.17 (J)	0.12 (J)	0.22 (J)	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	0.13 (J)	0.13 (J)	0.13 (J)	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	0.11 (J)	0.1 (J)	0.094 (J)	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzoic Acid	BHC[beta-]	Bis(2-chloroethoxy) methane	Bis(2-chloroethyl) ether
SSL Residential[a]					**0.621**	**6.21**	**62.1**	**100000**	**3.16**	**na[c]**	**2.04**
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	—	0.1 (J)	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	—	—	0.0042 (J+)	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	—	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	—	—	0.0322 (J-)	0.431 (J-)	—	—	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	—	—	—	0.0392 (J-)	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	0.0604	—	0.398 (J-)	—	—	0.0431 (J-)
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	—	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	0.102	0.0898	—	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Bis(2-ethylhexyl) phthalate	Bromophenyl-phenylether[4-]	Butanone[2-]	Butylbenzylphthalate	Carbazole	Chlordane[alpha-]	Chlordane[gamma-]
SSL Residential[a]					**347**	**na[c]**	**573**	**240**	**240**	**16.2**	**16.2**
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	—	—	—	—	0.00125	0.00211
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	—	—	0.0019 (J)
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	—	—	0.44 (J)	0.0033	0.0064
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	—	—	—	—	0.0054
AC-3	PU-10019	19–44	CAPU-99-1004	SED	0.18 (J)	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	0.00073 (J)
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	0.0076
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	0.24 (J)	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	0.094 (J)	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Bis(2-ethylhexyl) phthalate	Bromophenyl-phenylether[4-]	Butanone[2-]	Butylbenzylphthalate	Carbazole	Chlordane[alpha-]	Chlordane[gamma-]
SSL Residential[a]					**347**	**na[c]**	**573**	**240**	**240**	**16.2**	**16.2**
ACS	PU-10268	0–15	CAPU-01-0283	SED	0.15 (J)	—	—	—	—	0.0052	0.0048
ACS	PU-10271	0–15	CAPU-01-0285	SED	0.12 (J)	—	—	—	—	0.0091 (J+)	0.0053 (J+)
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	—	—	—	0.0053 (J+)
ACS	PU-10274	0–15	CAPU-01-0288	SED	—	0.0339 (J)	0.0112	—	—	—	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	0.0182	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	—	0.0157	0.0142 (J-)	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	0.021	0.0153 (J-)	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	0.0164	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	0.0076	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Chlorobenzene	Chloromethane	Chloronaphthalene[2-]	Chlorophenol[2-]	Chlorophenyl-phenyl [4-] Ether	Chrysene	DDD[4,4'-]
SSL Residential[a]					**176**	**19.5**	**6260**	**391**	**na[c]**	**621**	**24.4**
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	—	—	—	—	0.098 (J)	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	—	—	—	1.6	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	—	—	—	0.61 (J)	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	0.18 (J)	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	0.15 (J)	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	—	0.12 (J)	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Chlorobenzene	Chloromethane	Chloronaphthalene[2-]	Chlorophenol[2-]	Chlorophenyl-phenyl [4-] Ether	Chrysene	DDD[4,4'-]
SSL Residential[a]					**176**	**19.5**	**6260**	**391**	**na[c]**	**621**	**24.4**
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	—	—	—	—	0.0048
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	—	—	—	0.096 (J)	0.02 (J+)
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	—	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.00057 (J)	0.0015	0.0162 (J-)	0.0103 (J-)	0.0239 (J-)	0.04 (J-)	0.0097 (J)
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	—	0.0086 (J-)	0.004 (J-)	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	0.0011 (J)	—	—	—	0.0275 (J-)	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	—	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	—	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	DDE[4,4'-]	DDT[4,4'-]	Dibenzofuran	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]	Dichlorophenol[2,4-]
SSL Residential[a]					**17.2**	**17.2**	**313**	**116**	**70.4**	**36**	**180**
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	0.00599	—	—	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	0.014	0.033	—	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	0.0044	0.0073	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	0.011	—	—	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	0.023	—	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	0.1	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	0.0019 (J)	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	0.0017 (J)	0.0098 (J)	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	0.03 (J)	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	0.028	0.12 (J)	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	0.0028 (J)	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	0.012 (J)	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	0.13 (J)	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	0.025 (J+)	0.058 (J+)	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	DDE[4,4'-]	DDT[4,4'-]	Dibenzofuran	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]	Dichlorophenol[2,4-]
SSL Residential[a]					**17.2**	**17.2**	**313**	**116**	**70.4**	**36**	**180**
ACS	PU-10265	0–15	CAPU-01-0284	SED	0.0057	0.022	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	0.02	0.039	—	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	0.021 (J+)	0.28	—	—	—	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	0.017 (J+)	0.029 (J+)	—	—	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.0276	0.0442	0.0673 (J-)	0.0088 (J-)	0.0429 (J-)	0.0475 (J-)	0.0096 (J)
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	0.0085 (J+)	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	0.0252	—	0.0028 (J-)	—	—	0.0323 (J-)	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	0.0076 (J)	0.038	—	0.00076 (J)	—	0.00044 (J)	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	0.0428	—	0.00066 (J)	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	0.0272	—	0.0062 (J-)	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	0.0011 (J)	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Dieldrin	Di-n-butylphthalate	Di-n-octylphthalate	Diphenylamine	Endosulfan II	Endrin	Endrin Aldehyde
SSL Residential[a]					0.304	6000	2400[d]	1500[d]	360	18	18
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	—	—	—	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	—	—	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	—	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	0.0064 (J+)	—	—	—	—	0.002 (J+)	0.0037 (J+)
ACS	PU-10265	0–15	CAPU-01-0284	SED	0.0035	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Dieldrin	Di-n-butylphthalate	Di-n-octylphthalate	Diphenylamine	Endosulfan II	Endrin	Endrin Aldehyde
SSL Residential[a]					**0.304**	**6000**	**2400[d]**	**1500[d]**	**360**	**18**	**18**
ACS	PU-10268	0–15	CAPU-01-0283	SED	0.014	—	—	—	0.0029	0.0033	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	0.0074 (J+)	0.94	—	—	—	—	0.0025 (J+)
ACS	PU-10273	0–15	CAPU-01-0286	SED	0.0076 (J+)	—	—	—	—	0.002 (J+)	0.0029 (J+)
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.0505	—	—	0.0103 (J)	—	—	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	—	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	—	—	—	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	—	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	0.197 (J)	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Fluoranthene	Fluorene	Heptachlor	Heptachlor Epoxide	Hexachlorobutadiene	Hexachlorocyclo-pentadiene	Hexachloroethane
SSL Residential[a]					2250	3130	1.08	0.53	12	125	60
AC-3	PU-00017	0–8	04PU-96-0109	SED	0.21 (J)	—	—	—	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	3.7	0.49 (J)	—	0.0011 (J)	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	1.2 (J)	—	—	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	0.19 (J)	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	0.28 (J)	0.039 (J)	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	0.26 (J)	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	0.16 (J)	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Fluoranthene	Fluorene	Heptachlor	Heptachlor Epoxide	Hexachlorobutadiene	Hexachlorocyclo-pentadiene	Hexachloroethane
SSL Residential[a]					**2250**	**3130**	**1.08**	**0.53**	**12**	**125**	**60**
ACS	PU-10265	0–15	CAPU-01-0284	SED	0.11 (J)	—	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	0.15 (J)	—	—	0.0035	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	0.21 (J)	—	0.0032 (J+)	0.0018 (J+)	—	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	0.0021 (J+)	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.0711	0.0657 (J-)	—	—	0.0527 (J-)	0.23 (J-)	0.0074 (J-)
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	0.0337 (J)	0.0061 (J-)	—	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	0.0608	0.0039 (J-)	—	—	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	0.0113 (J)	0.0046 (J-)	—	—	—	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	0.0881	0.0115 (J-)	—	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Indeno(1,2,3-cd) pyrene	Iodomethane	Isopropylbenzene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylmercury(+1) Ion	Methylnaphthalene[2-]
SSL Residential[a]					6.21	na[c]	700	700	5430	6.11	71.9
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	—	—	—	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	0.62 (J)	—	—	—	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	0.22 (J)	—	—	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	0.12 (J)	—	—	—	—	0.002	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Indeno(1,2,3-cd) pyrene	Iodomethane	Isopropylbenzene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylmercury(+1) Ion	Methylnaphthalene[2-]
SSL Residential[a]					**6.21**	**na[c]**	**700**	**700**	**5430**	**6.11**	**71.9**
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	—	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	—	—	—	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	0.084 (J)	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	—	0.0035 (J)	—	0.0017 (J)	—	—	0.0629 (J-)
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	0.016 (J)	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	0.00092 (J)	0.00069 (J)	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	—	—	0.213 (J)	—	—	0.0043 (J-)
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	0.0018	0.0016	0.0124	—	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	—	0.0041	—	—	0.0051 (J-)
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	0.0046 (J)	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Naphthalene	Nitroso-di-n-propylamine[N-]	Phenanthrene	Pyrene	Pyridine	Toluene	Total Organic Carbon
SSL Residential[a]					**71.9**	**0.69[d]**	**1800**	**2300**	**61[d]**	**248**	**na[c]**
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	—	0.17 (J)	0.16 (J)	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	4680
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	0.2 (J)	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	0.81	—	3.5	3.2	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	1 (J)	1.6 (J)	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	0.31 (J)	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	0.31 (J)	0.36 (J)	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	0.19 (J)	0.33 (J)	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	—	0.2 (J)	—	0.23 (J)	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	0.082 (J)	0.22 (J)	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Naphthalene	Nitroso-di-n-propylamine[N-]	Phenanthrene	Pyrene	Pyridine	Toluene	Total Organic Carbon
SSL Residential[a]					**71.9**	**0.69[d]**	**1800**	**2300**	**61[d]**	**248**	**na[c]**
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	0.084 (J)	—	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	—	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	—	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	0.16 (J)	0.35	—	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	—	—	—	—	0.018 (J)	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.0306 (J-)	—	0.061	0.0131 (J-)	—	0.0022	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	—	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	0.0052 (J-)	—	0.0222 (J)	0.0378 (J-)	0.0049 (J-)	0.0018	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	—	—	0.0553 (J-)	—	0.0233	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	—	0.049 (J-)	—	0.0025	—
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	0.0763	0.0964 (J-)	—	0.0034	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Trichlorobenzene[1,2,4-]	Trichloroethene	Trichlorofluoro-methane	Trimethylbenzene[1,2,4-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
SSL Residential[a]					**651**	**0.648**	**528**	**52.2**	**132**	**98.6**	**na[c]**
AC-3	PU-00017	0–8	04PU-96-0109	SED	—	—	—	—	—	—	—
AC-3	PU-00017	0–8	04PU-96-0124	SED	—	—	—	—	—	—	—
AC-3	PU-10017	0–8	CAPU-99-1000	SED	—	—	—	—	—	—	—
AC-3	PU-10017	8–18	CAPU-99-1001	SED	—	—	—	—	—	—	—
AC-3	PU-10018	0–9	CAPU-99-1002	SED	—	—	—	—	—	—	—
AC-3	PU-10019	0–14	CAPU-99-1003	SED	—	—	—	—	—	—	—
AC-3	PU-10019	19–44	CAPU-99-1004	SED	—	—	—	—	—	—	—
AC-3	PU-10108	0–16	CAPU-00-0100	SED	—	—	—	—	—	—	—
AC-3	PU-10109	36–73	CAPU-00-0101	SED	—	—	—	—	—	—	—
AC-3	PU-10110	18–29	CAPU-00-0102	SED	—	—	—	—	—	—	—
ACS	PU-10004	5–35	CAPU-01-0070	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–20	CAPU-01-0066	SED	—	—	—	—	—	—	—
ACS	PU-10007	0–26	CAPU-00-0095	SED	—	—	—	—	—	—	—
ACS	PU-10008	0–20	CAPU-00-0094	SED	—	—	—	—	—	—	—
ACS	PU-10009	40–55	CAPU-01-0064	SED	0.036 (J)	—	—	—	—	—	—
ACS	PU-10009	5–23	CAPU-00-0093	SED	—	—	—	—	—	—	—
ACS	PU-10010	0–20	CAPU-99-1010	SED	—	—	—	—	—	—	—
ACS	PU-10222	2–10	CAPU-01-0065	SED	—	—	—	—	—	—	—
ACS	PU-10223	0–13	CAPU-01-0059	SED	—	—	—	—	—	—	—
ACS	PU-10223	35–60	CAPU-01-0060	SED	—	—	—	—	—	—	—

Table 2.15-4a (continued)

Reach	Location ID	Depth (cm)	Sample ID	Media Code	Trichlorobenzene[1,2,4-]	Trichloroethene	Trichlorofluoro-methane	Trimethylbenzene[1,2,4-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
SSL Residential[a]					**651**	**0.648**	**528**	**52.2**	**132**	**98.6**	**na[c]**
ACS	PU-10258	0–15	CAPU-01-0282	SED	—	—	—	—	—	—	—
ACS	PU-10265	0–15	CAPU-01-0284	SED	—	—	0.0012 (J+)	—	—	—	—
ACS	PU-10268	0–15	CAPU-01-0283	SED	—	—	0.0019 (J+)	—	—	—	—
ACS	PU-10271	0–15	CAPU-01-0285	SED	—	—	—	—	—	—	—
ACS	PU-10273	0–15	CAPU-01-0286	SED	—	0.0019 (J+)	0.0019 (J+)	—	—	—	—
ACS	PU-10274	0–15	CAPU-01-0288	SED	0.0071 (J-)	0.0054	—	—	—	—	—
ACS	PU-10277	0–15	CAPU-01-0287	SED	—	—	—	—	0.0049 (J+)	—	—
ACS	PU-10293	0–15	CAPU-01-0289	SED	—	—	—	—	—	—	—
ACS	PU-10302	0–15	CAPU-01-0292	SED	—	—	—	—	—	—	—
ACS	PU-10317	0–15	CAPU-01-0293	SED	—	—	—	—	—	0.00051 (J)	0.0013 (J)
ACS	PU-10326	0–15	CAPU-01-0290	SED	—	—	—	—	—	—	—
ACS	PU-10328	0–15	CAPU-01-0291	SED	—	—	—	0.00033 (J)	—	—	—

Notes: 1. Historical IA samples collected in 2001.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] — = If analyzed, sample result is not detected.

[c] na =Not available; SSL not found for this chemical.

[d] EPA Region 6 value (EPA 2004, 87478).

Table 2.15-4b
Consolidated Unit 45-001-00 Historical Analytical Results of Organic Chemicals Detected—Off-site Analytical Data

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Acenaphthene	Acetone	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene
SSL Residential[a]					**4690**	**70400**	**23500**	**6.21**	**0.621**	**6.21**	**2300**	**62.1**	**347**	**621**
45-002	45-01055	10–12	AAA2847	ALLH	—[b]	—	—	—	—	—	—	—	0.73	—
45-002	45-01056	0–12	AAA2886	ALLH	—	—	—	—	—	—	—	—	—	—
45-002	45-01056	15–17	AAA2887	ALLH	—	0.016	—	—	—	—	—	—	—	—
45-002	45-01072	0–0.5	AAA1076	QAL	—	—	—	—	—	—	—	—	—	—
45-003	45-01059	3.1–3.6	AAA1064	ALLH	—	—	—	0.62	0.47	0.59	—	—	—	0.58
45-003	45-01059	3.9–4.4	AAA1074	QAL	—	—	0.58	1.5	1.1	1.5	—	0.61	—	1.6
45-003	45-01060	2.6–3.1	AAA1065	ALLH	—	—	—	0.48	0.39	0.49	—	—	—	0.49
45-003	45-01061	2.1–2.6	AAA1066	QAL	—	—	—	0.61	0.56	0.74	—	—	—	0.63
45-003	45-01062	1.9–2.4	AAA1067	QAL	—	—	—	—	0.39	0.4	—	—	—	—
45-004	45-01066	0–0.5	AAA1039	SED	1.8	0.045	2.2	2.5	2.6	2.7	1.3	1	—	2.3
45-004	45-01068	0–0.5	AAA1041	SED	—	0.034	—	—	—	—	—	—	—	—

Table 2.15-4b (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene
SSL Residential[a]					**313**	**2250**	**3130**	**6.21**	**165**	**71.9**	**71.9**	**1800**	**2300**
45-002	45-01055	10–12	AAA2847	ALLH	—	—	—	—	—	—	—	—	—
45-002	45-01056	0–12	AAA2886	ALLH	—	0.55	—	—	—	—	—	0.59	0.57
45-002	45-01056	15–17	AAA2887	ALLH	—	—	—	—	—	—	—	—	—
45-002	45-01072	0–0.5	AAA1076	QAL	—	—	—	—	0.007	—	—	—	—
45-003	45-01059	3.1–3.6	AAA1064	ALLH	—	1.1	—	—	—	—	—	0.78	0.66
45-003	45-01059	3.9–4.4	AAA1074	QAL	—	2.1	—	0.38	—	—	—	1.8	1.7
45-003	45-01060	2.6–3.1	AAA1065	ALLH	—	0.86	—	—	—	—	—	0.62	0.58
45-003	45-01061	2.1–2.6	AAA1066	QAL	—	0.94	—	—	—	—	—	0.43	0.67
45-003	45-01062	1.9–2.4	AAA1067	QAL	—	0.73	—	—	—	—	—	0.83	0.57
45-004	45-01066	0–0.5	AAA1039	SED	1.6	5.2	2.7	1.2	—	2.3	8.5	7.6	4.7
45-004	45-01068	0–0.5	AAA1041	SED	—	—	—	—	—	—	—	—	—

Notes: 1. Historical RFI samples collected in 1992.

2. All values in mg/kg.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] — = If analyzed, sample result is not detected.

Table 2.15-4c
Consolidated Unit 45-001-00 Historical Analytical Results of Organic Chemicals Detected—Screening-level Data

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Acetone	Tetrachloroethene	Toluene
SSL Residential[a]					**70400**	**9.83**	**248**
45-001	45-01024	6–8	AAA2825	ALLH	0.031	—[b]	—
45-001	45-01025	15–17	AAA2855	ALLH	0.031	—	—
45-001	45-01025	21–23	AAA2842	ALLH	0.04	—	—
45-001	45-01025	25–27	AAA2848	ALLH	0.038	—	—
45-001	45-01025	5–7	AAA2856	ALLH	0.026	—	—
45-001	45-01027	12.5–17.5	AAA2827	ALLH	0.03	0.013	0.0069

Notes: 1. Historical RFI on-site (screening) analytical samples collected in 1992.
2. All values in mg/kg.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] — = If analyzed, sample result is not detected.

Table 2.18-1
Consolidated Unit 73-002-99 Historical and Interim Action Confirmation Samples Collected

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dioxin/Furan	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
73-002	73-02209	0.3–0.8	0173-96-0233[a]	n/a[b]	—[c]	—	2385	—	—	2385	2385	2385	—	2385	2385
73-002	73-02252	0.1–0.3	0173-96-0331[a]	n/a	—	—	2286	—	—	2286	2286	2286	—	2286	2286
73-002	73-02253	0–0.5	0173-96-0302	ALLH	—	—	2328	—	—	2327	2326	2326	—	2326	2326
73-002	73-02254	0–0.5	0173-96-0320	ALLH	—	—	2328	—	—	2327	2326	2326	—	2326	2326
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	2328	—	—	2327	2326	2326	—	2326	2326
73-002	73-02260	0–0.7	0173-96-0305[a]	n/a	—	—	2370	—	—	2369	2368	2368	—	2368	2368
73-002	73-02261	0.5–1	0173-97-0003[a]	n/a	2860	—	—	—	—	2861	—	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[a]	n/a	2860	—	—	—	—	2861	—	—	2860	2860	2860
73-002	73-02262	0–1	0173-96-0307[d]	n/a	—	—	2370	—	—	2369	2368	2368	—	2368	2368
73-002	73-02264	0–0	0173-96-0304[a]	n/a	—	—	2370	—	—	2369	2368	2368	—	2368	2368
73-002	73-02266	0–0	0173-96-0309[a]	n/a	—	—	2370	—	—	2369	2368	2368	—	2368	2368
73-002	73-02268	0.5–1	0173-97-0002[a]	n/a	2860	—	—	—	—	2861	—	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[a]	n/a	—	—	2370	—	—	2369	2368	2368	—	2368	2368
73-002	73-02268	1.2–2.2	0173-97-0001[a]	n/a	2860	—	—	—	—	2861	—	—	2860	2860	2860
73-002	73-02270	0–0	0173-96-0316[d]	n/a	—	—	2370	—	—	2369	2368	2368	—	2368	2368
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	3793R	—	—	—	—	3794R	—	—	—	—	—
73-002	73-02451	0.5–1	0173-97-0312	ALLH	3794R	—	—	—	—	3794R	—	—	—	—	—
73-002	73-02452	0.1–0.5	0173-97-0313	ALLH	3794R	—	—	—	—	3794R	—	—	—	—	—
73-002	73-02452	0.5–1	0173-97-0314	ALLH	3794R	—	—	—	—	3794R	—	—	—	—	—
73-002	73-02453	0.1–0.5	0173-97-0315	ALLH	3794R	—	—	—	—	3794R	—	—	—	—	—
73-002	73-02453	1.5–2	0173-97-0317	ALLH	3794R	—	—	—	—	3794R	—	—	—	—	—
73-002	73-02454	0.1–0.5	0173-97-0318	ALLH	3805R	—	—	—	—	3805R	—	—	—	3805R	—
73-002	73-02455	0.1–0.5	0173-97-0319	ALLH	3805R	—	—	—	—	3805R	—	—	—	3805R	—

Table 2.18-1 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dioxin/Furan	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
73-002	73-02456	0.1–0.5	0173-97-0320	ALLH	3805R	—	—	—	—	3805R	—	—	—	3805R	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	3804R	—	—	—	—	3805R	—	—	—	3805R	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	3804R	—	—	—	—	3805R	—	—	—	3805R	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	3808R	—	—	—	3808R	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	3809R	—	—	—	—	3808R	—	—	—	3808R	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	3809R	—	—	—	—	3808R	—	—	—	3808R	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	3808R	—	—	—	3808R	—
73-002	73-02463	3.5–4	0173-97-0333	QBT3	3823R	—	—	—	—	3823R	—	—	—	3823R	3823R
73-002	73-02463	4–4.3	0173-97-0334	QBT3	3824R	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[d]	n/a	3824R	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[d]	n/a	3821R	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	3820R	—	—	—	—	3820R	—	—	—	3820R	3820R
73-002	73-02465	4.5–4.8	0173-97-0329	QBT3	3820R	—	—	—	—	—	—	—	—	—	3820R
73-002	73-02467	0.1–0.5	0173-97-0331[a]	n/a	—	3826R	—	—	3826R	—	—	—	—	—	—
73-002	73-02468	0.1–0.5	0173-97-0332[d]	n/a	—	3826R	—	—	3826R	—	—	—	—	—	—
73-002	73-10000	0–0.5	RE73-98-0001[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10001	0–0.5	RE73-98-0003[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10002	0–0.5	RE73-98-0066[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10003	0–0.5	RE73-98-0004[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10004	0–0.5	RE73-98-0005[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10005	0–0.5	RE73-98-0006[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10006	0–0.5	RE73-98-0007[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10007	0–0.5	RE73-98-0008[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10008	0–0.5	RE73-98-0009[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—

Table 2.18-1 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dioxin/Furan	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
73-002	73-10009	0–0.5	RE73-98-0010[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10010	0–0.5	RE73-98-0011[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10011	0–0.5	RE73-98-0012[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10026	0–0.5	RE73-98-0027[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10027	0–0.5	RE73-98-0028[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10028	0–0.5	RE73-98-0029[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10029	0–0.5	RE73-98-0030[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10030	0–0.5	RE73-98-0031[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10031	0–0.5	RE73-98-0032[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10032	0–0.5	RE73-98-0033[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10033	0–0.5	RE73-98-0034[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10034	0–0.5	RE73-98-0035[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10035	0–0.5	RE73-98-0036[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10036	0–0.5	RE73-98-0037[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-002	73-10037	0–0.5	RE73-98-0038[a]	n/a	—	4872R	—	4872R	4872R	—	—	—	—	—	—
73-003	73-10104	2.8–3.3	RE73-99-0097	FILL[e]	—	—	—	—	—	5268R	5267R	5267R	—	5267R	5267R
73-003	73-10104	5.5–6	RE73-99-0098	FILL	—	—	—	—	—	5268R	5267R	5267R	—	5267R	5267R
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	5284R	5283R	5283R	—	5283R	5283R
73-003	73-10105	7–7.5	RE73-99-0101	ALLH	—	—	—	—	—	5284R	5283R	5283R	—	5283R	5283R
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL	—	—	—	—	—	5284R	5283R	5283R	—	5283R	5283R
73-003	73-10106	6–6.4	RE73-99-0103	QBT3	—	—	—	—	—	5284R	5283R	5283R	—	5283R	5283R
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	5284R	5283R	5283R	—	5283R	5283R
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	5284R	5283R	5283R	—	5283R	5283R
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	2389	—	—	2384	2385	2385	—	2385	2385

Table 2.18-1 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dioxin/Furan	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	5268R	5267R	5267R	—	5267R	5267R
73-004(a)	73-02328	9–10	0173-96-0503	FILL	—	—	—	—	—	2569	2568	2568	—	2568	2568
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	5268R	5267R	5267R	—	5267R	5267R
73-004(a)	73-10095	6–6.5	RE73-99-0136	QBT3	—	—	—	—	—	5612R	5611R	5611R	—	—	—
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	5612R	5611R	5611R	—	—	—
73-004(a)	73-10121	6.5–7	RE73-99-0135	QBT3	—	—	—	—	—	5612R	5611R	5611R	—	—	—
73-004(b)	73-02211	11.5–12.5	RE73-99-0088	QBT3	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	—	2392	—	—	2390	—	—	2391	2391	2391
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	2392	—	—	2390	—	—	2391	2391	2391
73-004(b)	73-02213	6.5–7.5	RE73-99-0092	QBT3	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-02215	0–0	0173-96-0245[f]	n/a	—	—	2490	—	—	2488	2487	2487	—	2487	2487
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	—	2490	—	—	2488	2487	2487	—	2487	2487
73-004(b)	73-02216	4–4.5	RE73-99-0091	QBT3	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	—	—	—	—	2569	2568	2568	—	2568	2568
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	2569	2568	2568	—	2568	2568
73-004(b)	73-02329	3–4	0173-96-0504	FILL	—	—	—	—	—	—	—	—	2611	—	—
73-004(b)	73-02329	7–7.5	0173-96-0505	FILL	—	—	—	—	—	—	—	—	2611	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-10099	7.5–8.5	RE73-99-0089	FILL	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-10099	10–10.5	RE73-99-0090	QBT3	—	—	—	—	—	5268R	5267R	5267R	—	5267R	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	5303R	5303R	5303R	—	5303R	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	5303R	5303R	5303R	—	5303R	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	5303R	5303R	5303R	—	5303R	—

Table 2.18-1 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dioxin/Furan	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Metals	PCBs	Pesticides	Pesticides/ PCBs	SVOCs	VOCs
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	5303R	5303R	5303R	—	5303R	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	5303R	5303R	5303R	—	5303R	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	3464R	—	—	—	—	3465R	—	—	3464R	3464R	3464R
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	5285R	—	5285R	5285R	5284R	5283R	5283R	—	5283R	5283R
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	3464R	—	—	—	—	3465R	—	—	3464R	3464R	3464R
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	5285R	—	5285R	5285R	5284R	5283R	5283R	—	5283R	5283R
73-006	73-02444	3–3.2	0173-97-0204	FILL	3464R	—	—	—	—	3465R	—	—	3464R	3464R	3464R
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	5285R	—	5285R	5285R	5284R	5283R	5283R	—	5283R	5283R
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	5285R	—	5285R	5285R	5284R	5283R	5283R	—	5283R	5283R
73-006	73-10096	7–7.5	RE73-99-0133	QBT3	—	—	—	—	—	—	—	5611R	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	5285R	—	5285R	5285R	5284R	5283R	5283R	—	5283R	5283R
73-006	73-10097	7.5–8	RE73-99-0132	QBT3	—	—	—	—	—	5612R	—	—	—	—	—

Notes: 1. Historical RFI samples collected from 1994 to 1997.
2. Numbers in suite columns are sample request numbers.

[a] Nongeologic ash.

[b] n/a = Not applicable.

[c] — = Not analyzed.

[d] Debris.

[e] For 73-002-99, "FILL" denotes soil.

[f] Material obtained from end of outlet pipe.

Table 2.18-2
Consolidated Unit 73-002-99 Historical and Interim Action Confirmation Analytical Results of Inorganic Chemicals Greater than Background

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
LANL BV QBT3[a]					**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
LANL BV Soil[a]					**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
SSL Residential[b]					**77800**	**31.3**	**3.9**	**5450**	**156**	**74.1**	**n/a[c]**	**2100**
73-002	73-02209	0.3–0.8	0173-96-0233[d]	[d]	32000	59 (U)	45	4400	2.9 (U)	4.6	9100	110
73-002	73-02252	0.1–0.3	0173-96-0331[d]	[d]	—[e]	56 (J-)	90	650	2.8 (U)	7.4	—	90
73-002	73-02253	0–0.5	0173-96-0302	ALLH	—	10 (J-)	—	—	—	0.52 (U)	—	—
73-002	73-02254	0–0.5	0173-96-0320	ALLH	—	11 (J-)	—	—	—	0.56 (U)	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	12 (J-)	—	—	—	0.62 (U)	—	—
73-002	73-02260	0–0.7	0173-96-0305[d]	[d]	—	40.1 (U)	11.4	883	—	12.6 (J+)	12500	76.5
73-002	73-02261	0.5–1	0173-97-0003[d]	[d]	—	16.8 (J-)	19.8	2330 (J-)	—	11.2 (J+)	30300	133
73-002	73-02261	3.5–4.5	0173-97-0004[d]	[d]	—	29.6 (J-)	20.1	1920 (J-)	—	42.9 (J+)	38700	90.5
73-002	73-02262	0–1	0173-96-0307[f]	[f]	—	85.7 (U)	28.3	440	—	7.5 (U)	24300	90.2
73-002	73-02264	0–0	0173-96-0304[d]	[d]	—	54.6 (U)	15	5290	—	5	12800	94.8
73-002	73-02266	0–0	0173-96-0309[d]	[d]	—	54.4 (U)	—	6280	—	15.1 (J+)	39800	106
73-002	73-02268	0.5–1	0173-97-0002[d]	[d]	—	49 (J-)	76.5	2020 (J-)	—	24.9 (J+)	36200	74.3
73-002	73-02268	0–1	0173-96-0314[d]	[d]	—	119 (J+)	8.9	3030	—	11.4 (J+)	29600	103
73-002	73-02268	1.2–2.2	0173-97-0001[d]	[d]	—	32.5 (J-)	27	1490 (J-)	—	23.3 (J+)	45900	73.9
73-002	73-02270	0–0	0173-96-0316[f]	[f]	—	41.3 (U)	9.7	689	—	4.5	8990	58.3
73-002	73-02451	0.5–1	0173-97-0312	ALLH	—	—	—	—	—	—	—	—
73-002	73-02452	0.1–0.5	0173-97-0313	ALLH	—	—	—	—	—	—	—	—
73-002	73-02454	0.1–0.5	0173-97-0318	ALLH	—	—	—	—	—	12.2	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
LANL BV QBT3[a]					**7340**	**0.5**	**2.79**	**46**	**1.21**	**1.63**	**2200**	**7.14**
LANL BV Soil[a]					**29200**	**0.83**	**8.17**	**295**	**1.83**	**0.4**	**6120**	**19.3**
SSL Residential[b]					**77800**	**31.3**	**3.9**	**5450**	**156**	**74.1**	**n/a[c]**	**2100**
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	—	325	—	0.81 (J)[n]	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	415	—	0.65 (J)	—	—
73-002	73-02463	3.5–4	0173-97-0333	QBT3	—	0.71 (U)	—	—	—	—	—	—
73-003	73-10104	2.8–3.3	RE73-99-0097	FILL[g]	—	—	—	—	—	—	—	—
73-003	73-10104	5.5–6	RE73-99-0098	FILL	—	—	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL	—	—	—	—	—	—	—	—
73-003	73-10106	6–6.4	RE73-99-0103	QBT3	18000	—	4.1	79	—	—	3000	10
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	12 (U)	—	—	—	0.61 (U)	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	3.2	80	—	—	17000	—
73-004(a)	73-02328	9–10	0173-96-0503	FILL	—	12 (U)	—	—	—	0.62 (U)	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	2.1 (J-)	—	962	—	—	—	—
73-004(b)	73-02211	11.5–12.5	RE73-99-0088	QBT3	13000	—	4.1	130	—	—	2500	11
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	11 (J-)	3.2	100	—	—	4800	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	11 (J-)	—	—	—	0.55 (U)	—	—
73-004(b)	73-02215	0–0	0173-96-0245[h]	[h]	—	13 (J-)	8.8 (J-)	—	—	1.1 (J+)	—	30
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	14 (J-)	13 (J-)	—	—	0.68 (U)	—	36
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	12 (U)	—	—	—	0.59 (U)	6500	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	12 (U)	—	—	—	0.59 (U)	—	—
73-004(b)	73-10099	7.5–8.5	RE73-99-0089	FILL	35000	—	—	—	1.9	—	—	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium
73-004(b)	73-10099	10–10.5	RE73-99-0090	QBT3	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	1 (J+)	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	0.48	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	0.59	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	1.5 (J+)	—	22
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	7.9 (J-)	—	—	—	0.69 (J-)	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	55	—	—	2800	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	8.5 (J-)	—	—	—	1.6 (J-)	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	50	—	—	3200	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	8.6 (J-)	—	—	—	3.4 (J-)	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	0.84	27000	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel
LANL BV QBT3[a]					**3.14**	**4.66**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**
LANL BV Soil[a]					**8.64**	**14.7**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**
SSL Residential[b]					**1520**	**3130**	**23500**	**400**	**n/a[c]**	**1550**	**23**	**1560**
73-002	73-02209	0.3–0.8	0173-96-0233[d]	[d]	13	960	120000	2700	—	790	1	76
73-002	73-02252	0.1–0.3	0173-96-0331[d]	[d]	13	1800	170000	1300	—	730	19	60
73-002	73-02253	0–0.5	0173-96-0302	ALLH	—	—	—	—	—	—	—	—
73-002	73-02254	0–0.5	0173-96-0320	ALLH	—	—	—	—	—	—	0.11 (U)	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	48	—	—	0.12 (U)	—
73-002	73-02260	0–0.7	0173-96-0305[d]	[d]	22.5	999	160000	3020	6010	1250	1.3 (J+)	165
73-002	73-02261	0.5–1	0173-97-0003[d]	[d]	22.7	1550	78400	2690	—	1660	1.2	236
73-002	73-02261	3.5–4.5	0173-97-0004[d]	[d]	17.7	4590	70600	4480	—	1760	2.2	112
73-002	73-02262	0–1	0173-96-0307[f]	[f]	37.8	543	431000	4290	—	1960	0.55 (J+)	119 (J+)
73-002	73-02264	0–0	0173-96-0304[d]	[d]	26	3690	—	4500	—	1240	2 (J+)	131 (J+)
73-002	73-02266	0–0	0173-96-0309[d]	[d]	30.3	843	174000	2170	—	1500	1.4 (J+)	134 (J+)
73-002	73-02268	0.5–1	0173-97-0002[d]	[d]	16.7	2230	98600	3770	—	1880	0.49	147
73-002	73-02268	0–1	0173-96-0314[d]	[d]	18	6330	106000	9620	—	1140	2.3 (J+)	94.1 (J+)
73-002	73-02268	1.2–2.2	0173-97-0001[d]	[d]	17.2	2760	52800	6790	4800	1330	0.41	79.9
73-002	73-02270	0–0	0173-96-0316[f]	[f]	24.2	1360	265000	1380	—	1190	1.1 (J+)	81.2 (J+)
73-002	73-02451	0.5–1	0173-97-0312	ALLH	—	—	—	—	—	—	—	—
73-002	73-02452	0.1–0.5	0173-97-0313	ALLH	—	—	—	—	—	—	—	—
73-002	73-02454	0.1–0.5	0173-97-0318	ALLH	—	—	—	168	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	9.9 (J)	—	—	44.6	—	790	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	28.8	—	—	0.14	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	15.1	—	23.4	—	—	—	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel
LANL BV QBT3[a]					**3.14**	**4.66**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**
LANL BV Soil[a]					**8.64**	**14.7**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**
SSL Residential[b]					**1520**	**3130**	**23500**	**400**	**n/a[c]**	**1550**	**23**	**1560**
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	40.2	—	82.2	—	—	0.24	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	36.8	—	83.7	—	—	—	—
73-002	73-02463	3.5–4	0173-97-0333	QBT3	—	—	—	—	—	—	—	—
73-003	73-10104	2.8–3.3	RE73-99-0097	FILL[g]	9.8	—	—	130	—	—	—	—
73-003	73-10104	5.5–6	RE73-99-0098	FILL	—	—	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	88	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL	—	—	—	32	—	—	—	—
73-003	73-10106	6–6.4	RE73-99-0103	QBT3	—	5.3	17000	—	3100	—	—	6.7
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	0.12 (U)	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—
73-004(a)	73-02328	9–10	0173-96-0503	FILL	—	—	—	—	—	—	0.12 (U)	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	73.7	—	113	—	—	—	—
73-004(b)	73-02211	11.5–12.5	RE73-99-0088	QBT3	5.8	9.4	15000	14	2200	—	0.23	6.8
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	3.4	—	—	13	—	—	0.11 (U)	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	0.11 (U)	—
73-004(b)	73-02215	0–0	0173-96-0245[h]	[h]	—	20	—	35	—	—	0.2	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	23 (J+)	—	190	—	—	0.93	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	—	—	—	—	—	0.12 (U)	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	0.12 (U)	—
73-004(b)	73-10099	7.5–8.5	RE73-99-0089	FILL	—	—	25000	—	5500	—	0.14	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel
LANL BV QBT3[a]					**3.14**	**4.66**	**14500**	**11.2**	**1690**	**482**	**0.1**	**6.58**
LANL BV Soil[a]					**8.64**	**14.7**	**21500**	**22.3**	**4610**	**671**	**0.1**	**15.4**
SSL Residential[b]					**1520**	**3130**	**23500**	**400**	**n/a[c]**	**1550**	**23**	**1560**
73-004(b)	73-10099	10–10.5	RE73-99-0090	QBT3	—	—	—	—	—	—	0.11 (U)	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	15	—	42	—	—	0.13	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	23	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	46	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	25	—	110	—	690	0.38	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	16	—	—	—	—	0.82	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	6.5	—	12	—	—	0.11 (U)	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	46.1	—	38.3	—	—	1.5	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	14	—	15	—	—	0.16	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	9.2 (J)	83.1	—	22.9	—	—	7.9	30.3
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	48	—	—	—	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
LANL BV QBT3[a]					**3500**	**0.3**	**1**	**2770**	**1.1**	**17**	**63.5**
LANL BV Soil[a]					**3460**	**1.52**	**1**	**915**	**0.73**	**39.6**	**48.8**
SSL Residential[b]					**n/a[c]**	**391**	**391**	**n/a[c]**	**5.16**	**548**	**23500**
73-002	73-02209	0.3–0.8	0173-96-0233[d]	[d]	—	—	220	1200	1.5	62	2000
73-002	73-02252	0.1–0.3	0173-96-0331[d]	[d]	—	—	66	—	1.4	47	1900
73-002	73-02253	0–0.5	0173-96-0302	ALLH	—	—	2.1 (J-)	—	1.3	—	—
73-002	73-02254	0–0.5	0173-96-0320	ALLH	—	—	2.2 (J-)	—	1.4 (J-)	—	470 (J-)
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	2.5 (J-)	—	1.5 (J-)	—	52 (J-)
73-002	73-02260	0–0.7	0173-96-0305[d]	[d]	—	—	28.9	940 (J)	—	—	1470
73-002	73-02261	0.5–1	0173-97-0003[d]	[d]	—	2.8	55.4	3530	9.3	—	4380
73-002	73-02261	3.5–4.5	0173-97-0004[d]	[d]	5040	1.9	19.6	7760	6.4	—	7170
73-002	73-02262	0–1	0173-96-0307[f]	[f]	—	—	23.2	—	—	—	752
73-002	73-02264	0–0	0173-96-0304[d]	[d]	—	1.7	213	—	—	—	3820
73-002	73-02266	0–0	0173-96-0309[d]	[d]	—	4.3 (U)	448	1760	—	—	2530
73-002	73-02268	0.5–1	0173-97-0002[d]	[d]	4610	2.1	55.3	3180	10.6	—	3860
73-002	73-02268	0–1	0173-96-0314[d]	[d]	—	—	156	2280	—	—	4260
73-002	73-02268	1.2–2.2	0173-97-0001[d]	[d]	4290	2	21.3	3930	7.4	—	4790
73-002	73-02270	0–0	0173-96-0316[f]	[f]	—	—	41.8	—	—	—	1050
73-002	73-02451	0.5–1	0173-97-0312	ALLH	—	—	—	—	0.87 (J)	—	—
73-002	73-02452	0.1–0.5	0173-97-0313	ALLH	—	—	—	—	0.8 (J)	—	—
73-002	73-02454	0.1–0.5	0173-97-0318	ALLH	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	1.1 (J)	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	1.9 (J)	—	0.77 (J)	—	—

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
LANL BV QBT3[a]					**3500**	**0.3**	**1**	**2770**	**1.1**	**17**	**63.5**
LANL BV Soil[a]					**3460**	**1.52**	**1**	**915**	**0.73**	**39.6**	**48.8**
SSL Residential[b]					**n/a[c]**	**391**	**391**	**n/a[c]**	**5.16**	**548**	**23500**
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	8.8	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	10.7	—	—	—	—
73-002	73-02463	3.5–4	0173-97-0333	QBT3	—	—	—	—	—	—	—
73-003	73-10104	2.8–3.3	RE73-99-0097	FILL[g]	—	—	—	—	—	—	—
73-003	73-10104	5.5–6	RE73-99-0098	FILL	—	—	—	—	—	—	50
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL	—	—	—	—	—	—	—
73-003	73-10106	6–6.4	RE73-99-0103	QBT3	—	0.57 (J-)	—	—	—	18	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	2.4	—	1.5 (U)	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—
73-004(a)	73-02328	9–10	0173-96-0503	FILL	—	—	2.5 (U)	—	1.2 (U)	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	1.7	—	—	—	74
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	31.9	—	—	—	215
73-004(b)	73-02211	11.5–12.5	RE73-99-0088	QBT3	—	—	—	—	—	22	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	—	2.2 (U)	—	1.4 (J-)	—	80
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	2.2 (U)	—	1.4 (J-)	—	—
73-004(b)	73-02215	0–0	0173-96-0245[h]	[h]	—	—	2.5 (U)	—	1.6 (U)	40	210
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	—	2.7 (U)	—	1.7 (U)	42	150
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	—	2.4 (U)	—	1.2 (U)	—	260
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	2.4 (U)	—	1.2 (U)	—	61
73-004(b)	73-10099	7.5–8.5	RE73-99-0089	FILL	—	—	—	—	—	—	62

Table 2.18-2 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
LANL BV QBT3[a]					**3500**	**0.3**	**1**	**2770**	**1.1**	**17**	**63.5**
LANL BV Soil[a]					**3460**	**1.52**	**1**	**915**	**0.73**	**39.6**	**48.8**
SSL Residential[b]					**n/a[c]**	**391**	**391**	**n/a[c]**	**5.16**	**548**	**23500**
73-004(b)	73-10099	10–10.5	RE73-99-0090	QBT3	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	460
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	180
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	340
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	130
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	4.1	—	—	—	420
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	57.8
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	4.1	—	—	—	270
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	2.2 (J)	—	—	—	1250
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	0.41 (J-)	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	—	63

Notes: 1. Historical RFI samples collected from 1994 to 1997.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[b] SSLs from NMED 2004 (85615), unless otherwise noted.

[c] n/a = Not applicable; essential nutrients do not have SSLs. Detected values reported.

[d] Nongeologic ash.

[e] — = If analyzed, sample result is less than BV.

[f] Debris.

[g] For 73-002-99, "FILL" denotes soil.

[h] Material obtained from end of outlet pipe.

Table 2.18-3
Consolidated Unit 73-002-99 Historical and Interim Action
Confirmation Analytical Results of Radionuclides above BVs or FVs

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Plutonium-239	Tritium (pCi/mL)[a]	Uranium-234	Uranium-235	Uranium-238
LANL BV QBT3[b]					**n/a[c]**	**n/a[c]**	**1.98**	**0.09**	**1.93**
LANL BV Soil[b]					**0.054[c]**	**0.766[c]**	**2.59**	**0.2**	**2.29**
SSL Residential[d]					**44**	**na[e]**	**63**	**17**	**86**
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—[f]	0.813	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[g]	[g]	—	—	—	—	—
73-002	73-02467	0.1–0.5	0173-97-0331[g]	[g]	—	—	12.57	0.5	8.84
73-002	73-02468	0.1–0.5	0173-97-0332[h]	[h]	—	—	17.1	0.771	15.93
73-002	73-10000	0–0.5	RE73-98-0001[g]	[g]	2.54	—	5.37	0.308	2.51
73-002	73-10001	0–0.5	RE73-98-0003[g]	[g]	0.522	—	3.84	0.352	—
73-002	73-10002	0–0.5	RE73-98-0066[g]	[g]	0.801	—	2.82	0.219	—
73-002	73-10003	0–0.5	RE73-98-0004[g]	[g]	1.228	—	14.15	0.765	6.6
73-002	73-10004	0–0.5	RE73-98-0005[g]	[g]	0.731	—	14.53	0.966	11.62
73-002	73-10005	0–0.5	RE73-98-0006[g]	[g]	0.709	—	9.41	0.783	8.11
73-002	73-10006	0–0.5	RE73-98-0007[g]	[g]	1.82	—	5.89	0.523	4.31
73-002	73-10007	0–0.5	RE73-98-0008[g]	[g]	1.052	—	4.97	0.289	4.32
73-002	73-10008	0–0.5	RE73-98-0009[g]	[g]	0.469	—	3.15	0.211	2.41
73-002	73-10009	0–0.5	RE73-98-0010[g]	[g]	0.363	—	3.53	0.219	2.83
73-002	73-10010	0–0.5	RE73-98-0011[g]	[g]	0.627	—	5.7	0.439	4.57
73-002	73-10011	0–0.5	RE73-98-0012[g]	[g]	1.95	—	6.71	0.353	4.12
73-002	73-10029	0–0.5	RE73-98-0030[g]	[g]	0.51	—	2.88	0.201	—
73-002	73-10032	0–0.5	RE73-98-0033[g]	[g]	0.353	—	2.67	0.226	—
73-002	73-10034	0–0.5	RE73-98-0035[g]	[g]	0.322	—	3.18	0.306	2.98
73-002	73-10035	0–0.5	RE73-98-0036[g]	[g]	0.48	—	4	0.409	3.48
73-002	73-10036	0–0.5	RE73-98-0037[g]	[g]	0.346	—	5.25	0.383	4.92
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	1.298	—	—	—

Table 2.18-3 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Plutonium-239	Tritium (pCi/mL)[a]	Uranium-234	Uranium-235	Uranium-238
LANL BV QBT3[b]					**n/a[c]**	**n/a[c]**	**1.98**	**0.09**	**1.93**
LANL BV Soil[b]					**0.054[c]**	**0.766[c]**	**2.59**	**0.2**	**2.29**
SSL Residential[d]					**44**	**na[e]**	**63**	**17**	**86**
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	0.886	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	0.0211	—	—	—	—

Notes: 1. Historical RFI samples collected from 1994 to 1997.
2. All values in pCi/g, unless otherwise noted.

[a] Conversion of pCi/g to pCi/mL per LANL 1998 (59730, Table 6.0-2).

[b] BVs from LANL 1998 (59730, Table 6.0-2, p. 45).

[c] n/a = Not applicable. FVs for plutonium-239 and tritium apply to upper 0–6 in. of soil; all detected activities reported for subsurface soil and tuff.

[d] SSLs from NMED 2004 (85615), unless otherwise noted.

[e] na = Not available; no SSL found for this radionuclide.

[f] — = If analyzed, sample result is less than BV or FV.

[g] Nongeologic ash.

[h] Debris.

Table 2.18-4
Consolidated Unit 73-002-99 Historical and Interim Action Confirmation Analytical Results of Detected Organic Chemicals

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Acenaphthene	Acetone	Aldrin	Anthracene	Aroclor-1254	Benzene	Benz[a]anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	BHC[alpha-]	BHC[beta-]	BHC[delta-]	BHC[gamma-]
SSL Residential[a]					4690	70400	0.284	23500	1.11	27	6.21	0.621	6.21	2300	62.1	100000	0.902	3.16	na[b]	4.37
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—[d]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	0.066	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	0.046	—	—	—	—	—	—	—	—	0.0026	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	0.002 (J)	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	0.17	—	0.043 (J)	—	—	—	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	0.059	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.092 (J)	—	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.043 (J)	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	0.035 (J)	—	—	0.061 (J)	—	—	0.1 (J)	0.11 (J)	0.21 (J)	—	—	0.051 (J)	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	0.78	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Acenaphthene	Acetone	Aldrin	Anthracene	Aroclor-1254	Benzene	Benz(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	BHC[alpha-]	BHC[beta-]	BHC[delta-]	BHC[gamma-]
SSL Residential[a]					**4690**	**70400**	**0.284**	**23500**	**1.11**	**27**	**6.21**	**0.621**	**6.21**	**2300**	**62.1**	**100000**	**0.902**	**3.16**	**na[b]**	**4.37**
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	0.022 (J)	—	—	—	0.0055 (J)	0.14 (J)	0.13 (J)	0.27 (J)	0.089 (J)	—	—	—	—	—	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	0.28 (J)	0.32 (J)	0.56	0.17 (J)	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	—	—	—	—	—	0.33	0.36	0.38	—	0.36	—	—	—	—	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	0.025 (J)	—	—	—	0.0063 (J)	0.39	0.35	0.37	—	0.29	—	—	—	—	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	0.025 (J-)	—	—	—	0.0057 (J)	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	10	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	0.82	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	2.1	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	1.2	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	5	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	0.0019 (J-)	—	—	—	—	—	—	—	—	—	0.0019 (J-)	0.0019 (J-)	0.0019 (J-)	0.0019 (J-)
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	—	—	—	0.052 (J)	0.046 (J)	0.12 (J)	—	—	—	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	0.0019 (J-)	—	—	—	—	—	—	—	—	—	0.0019 (J-)	0.0019 (J-)	0.0019 (J-)	0.0019 (J-)
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	0.0018 (J-)	—	—	—	—	—	—	—	—	—	0.0018 (J-)	0.0018 (J-)	0.0018 (J-)	0.0018 (J-)
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	0.0018 (J-)	—	—	—	—	—	—	—	—	—	0.0018 (J-)	0.0018 (J-)	0.0018 (J-)	0.0018 (J-)

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Bis(2-ethylhexyl)phthalate	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Butanone[2-]	Butylbenzene[n-]	Butylbenzene[sec-]	Butylbenzene[tert-]	Carbon Disulfide	Carbon Tetrachloride	Chlordane (Technical Grade)	Chlordane[alpha-]	Chlordane[gamma-]	Chlorobenzene
SSL Residential[a]					347	33.2	na[b]	103	811	7.62	573	62	60.5	106	3760	3.13	16.2	16.2	16.2	176
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	0.235	0.0194	0.0278	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0035	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	0.19 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	0.032 (J)	—	—	0.032 (J)	—	—	0.032 (J)	0.032 (J)	0.032 (J)	—	—	—	—	—	0.032 (J)
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	0.05 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	—	—	—	—	—	0.0055 (J)	0.0055 (J)	0.0055 (J)	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0021 (J+)	0.0034 (J+)	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Bis(2-ethylhexyl)phthalate	Bromobenzene	Bromochloromethane	Bromodichloromethane	Bromoform	Bromomethane	Butanone[2-]	Butylbenzene[n-]	Butylbenzene[sec-]	Butylbenzene[tert-]	Carbon Disulfide	Carbon Tetrachloride	Chlordane (Technical Grade)	Chlordane[alpha-]	Chlordane[gamma-]	Chlorobenzene
SSL Residential[a]					347	33.2	na[b]	103	811	7.62	573	62	60.5	106	3760	3.13	16.2	16.2	16.2	176
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	0.64	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.011 (J)	0.022 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	—	—	—	0.0055 (J)
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	0.34 (J)	—	—	—	—	—	—	—	—	—	—	—	—	0.066 (J)	0.069 (J)	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	0.0082 (J)	—	—	0.0082 (J)	—	—	0.0082 (J)	0.0082 (J)	0.0082 (J)	—	—	—	0.21	0.26	0.0082 (J)
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.013 (J)	0.025 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	—	0.46	0.52	0.0063 (J)
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	—	0.023 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	—	0.0057 (J)	—	0.028	0.038	0.0057 (J)
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	1.2	1.7	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.84	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.79	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0019 (J-)	0.0019 (J-)	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	0.069 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0019 (J-)	0.0019 (J-)	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0018 (J-)	0.0018 (J-)	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0018 (J-)	0.0018 (J-)	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Chlorotoluene[2-]	Chlorotoluene[4-]	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibromo-3-Chloropropane[1,2-]	Dibromoethane[1,2-]	Dibromomethane	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]
SSL Residential[a]					76.2	1380	3.56	19.5	1560	na[b]	621	24.4	17.2	17.2	3.64	0.0714	112	116	70.4	36
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	—	1.3 (J)	0.78	3.19	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	1.3 (J)	0.31	3.9	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	0.029	0.034	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	0.0057	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	0.12 (J)	0.12 (J)	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	0.032	0.024	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	0.019	0.02	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	—	—	0.047 (J)	—	0.03	0.022	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	—	—	—	0.032 (J)	0.032 (J)	—	—	—	—	0.065 (J)	0.032 (J)	—	0.032 (J)	0.032 (J)	0.032 (J)
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	0.0072	0.006	—	—	—	—	—	0.01
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	—	—	—	—	0.11 (J)	—	—	—	—	—	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	—	—	0.0055 (J)	0.0055 (J)	—	—	—	—	0.011 (J)	—	—	0.0055 (J)	0.0055 (J)	0.0055 (J)
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	0.006	—	0.19	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	0.0046	0.03	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	0.0049 (J-)	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	0.173	0.14	0.5	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	0.0076	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	0.058	0.12	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Chlorodibromomethane	Chloroethane	Chloroform	Chloromethane	Chlorotoluene[2-]	Chlorotoluene[4-]	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibromo-3-Chloropropane[1,2-]	Dibromoethane[1,2-]	Dibromomethane	Dichlorobenzene[1,2-]	Dichlorobenzene[1,3-]	Dichlorobenzene[1,4-]
SSL Residential[a]					**76.2**	**1380**	**3.56**	**19.5**	**1560**	**na[b]**	**621**	**24.4**	**17.2**	**17.2**	**3.64**	**0.0714**	**112**	**116**	**70.4**	**36**
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	0.0043 (J+)	0.016 (J+)	0.37 (J+)	—	—	—	—	—	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	0.0055 (J)	0.011 (J)	0.0055 (J)	0.011 (J)	0.0055 (J)	0.0055 (J)	0.16 (J)	—	—	170	0.011 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	0.29 (J)	4.7	—	0.13 (J)	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	g	0.0082 (J)	—	—	—	0.0082 (J)	0.0082 (J)	0.46	1.3	0.18	0.054	0.016 (J)	0.0082 (J)	—	0.0082 (J)	0.0082 (J)	0.0082 (J)
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	0.0063 (J)	0.013 (J)	0.0063 (J)	0.013 (J)	0.0063 (J)	0.0063 (J)	0.46	1.5	0.13	0.34	0.013 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)
73-004(b)	73-02326	14–15	0173-96-0501	FILL	0.0057 (J)	—	0.0057 (J)	—	0.0057 (J)	0.0057 (J)	—	0.31	0.089	0.11	0.011 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	0.042	0.01	0.021	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	0.0043	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	0.0059	0.011	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	1	0.22	0.11	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	0.14	0.08	0.061	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	0.16	0.18	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	0.047	0.034	0.022	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	0.13	0.18	0.38	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	0.0048	0.035	0.23	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	—	—	—	—	0.0038 (J-)	0.0044 (J-)	0.058 (J-)	—	—	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	—	—	0.05 (J)	—	—	0.047	—	—	—	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	—	—	—	—	0.0037 (J-)	0.0037 (J-)	0.0037 (J-)	—	—	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	0.022	—	0.22	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	—	—	—	—	—	0.0036 (J-)	0.0036 (J-)	0.0036 (J-)	—	—	—	—	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	0.0041	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	—	—	0.0035 (J-)	0.0035 (J-)	0.0035 (J-)	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis/trans-1,2-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]	Dichloropropane[1,3-]	Dichloropropane[2,2-]	Dichloropropene[1,1-]	Dichloropropene[cis-1,3-]	Dichloropropene[trans-1,3-]	Dieldrin	Di-n-butylphthalate	Diethylphthalate
SSL Residential[a]					144	820	5.07	820	na[b]	782	1560	10	na[b]	na[b]	na[b]	na[b]	na[b]	0.304	6000	48000
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.25 (J)	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	0.032 (J)	—	—	—
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.19 (J)	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.077 (J)	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Dichlorodifluoromethane	Dichloroethane[1,1-]	Dichloroethane[1,2-]	Dichloroethene[1,1-]	Dichloroethene[cis/trans-1,2-]	Dichloroethene[cis-1,2-]	Dichloroethene[trans-1,2-]	Dichloropropane[1,2-]	Dichloropropane[1,3-]	Dichloropropane[2,2-]	Dichloropropene[1,1-]	Dichloropropene[cis-1,3-]	Dichloropropene[trans-1,3-]	Dieldrin	Di-n-butylphthalate	Diethylphthalate
SSL Residential[a]					144	820	5.07	820	na[b]	782	1560	10	na[b]	na[b]	na[b]	na[b]	na[b]	0.304	6000	48000
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	0.011 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	—	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	—	—	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	g	—	—	—	—	—	—	—	—	0.0082 (J)	—	—	—	—	—	—	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	0.013 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.013 (J)	—	—	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	—	—	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	0.0057 (J)	0.0057 (J)	—	0.011 (J)	—	—	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)	—	—	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.067 (J)
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0038 (J-)	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16 (J)
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0037 (J-)	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16 (J)
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0036 (J-)	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0035 (J-)	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	Ethylbenzene	Fluoranthene	Heptachlor	Heptachlor Epoxide	Heptachlorodibenzodioxin [1,2,3,4,6,7,8-]	Heptachlorodibenzodioxins (Total)	Heptachlorodibenzofuran [1,2,3,4,6,7,8-]	Heptachlorodibenzofuran [1,2,3,4,7,8,9-]
SSL Residential[a]					360	360	18	18	18	18	10600	2250	1.08	0.53	n/a[h]	n/a[h]	n/a[h]	n/a[h]
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	—	0.36 (J)	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	—	—	1.1E-09	0.0018	0.00013	0.000011
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	0.0023	—	—	—	—	—	—	—	—	—	9E-10	0.0016	0.00035	0.0000088
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	—	—	1.8E-10	0.00033	0.000066	0.0000064
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	—	—	—	0.078 (J)	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	—	—	—	—	—	0.032 (J)	—	—	—	0.00018	0.00033	0.000098	0.0000053
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	0.000001 (J)	—	0.00000065 (J)	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	—	0.0000035 (J)	0.0000069 (J)	0.0000022 (J)	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	—	0.000005 (J)	0.0000099 (J)	0.0000016 (J)	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	—	0.000014	0.000026	0.0000033 (J)	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	—	—	—	—	—	0.24 (J)	—	—	0.0001	0.00017	0.000044 (J)	0.0000043 (J)
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	0.000049 (J)	0.000094 (J)	0.00028	0.0000099 (J)
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	0.000059	0.00011	0.000011	0.00000075 (J)
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	0.56	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Endosulfan I	Endosulfan II	Endosulfan Sulfate	Endrin	Endrin Aldehyde	Endrin Ketone	Ethylbenzene	Fluoranthene	Heptachlor	Heptachlor Epoxide	Heptachlorodibenzodioxin [1,2,3,4,6,7,8-]	Heptachlorodibenzodioxins (Total)	Heptachlorodibenzofuran [1,2,3,4,6,7,8-]	Heptachlorodibenzofuran [1,2,3,4,7,8,9-]
SSL Residential[a]					360	360	18	18	18	18	10600	2250	1.08	0.53	n/a[h]	n/a[h]	n/a[h]	n/a[h]
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	—	—	—	—	—	0.0055 (J)	0.36 (J)	—	—	—	—	—	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	—	0.27 (J)	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	—	—	—	—	—	0.0082 (J)	0.67	—	—	—	—	—	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	—	—	—	—	—	0.0063 (J)	0.7	—	—	—	—	—	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	—	—	—	—	—	0.0057 (J)	—	—	—	—	—	—	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	0.0019 (J-)	0.0038 (J-)	0.0038 (J-)	0.0038 (J-)	0.00038 (J-)	0.0038 (J-)	—	—	0.0019 (J-)	0.0019 (J-)	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	—	—	—	0.077 (J)	—	—	—	0.00024 (J)	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	0.0019 (J-)	0.0037 (J-)	0.0037 (J-)	0.0037 (J-)	0.00037 (J-)	0.0037 (J-)	—	—	0.0019 (J-)	0.0019 (J-)	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	0.0018 (J-)	0.0036 (J-)	0.0036 (J-)	0.0036 (J-)	0.00036 (J-)	0.0036 (J-)	—	—	0.0018 (J-)	0.0018 (J-)	—	—	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	0.0018 (J-)	0.0035 (J-)	0.0035 (J-)	0.0035 (J-)	0.00035 (J-)	0.0035 (J-)	—	—	0.0018 (J-)	0.0018 (J-)	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Heptachlorodibenzofurans (Total)	Hexachlorobutadiene	Hexachlorodibenzodioxin [1,2,3,4,7,8-]	Hexachlorodibenzodioxin [1,2,3,6,7,8-]	Hexachlorodibenzodioxin [1,2,3,7,8,9-]	Hexachlorodibenzodioxins (Total)	Hexachlorodibenzofuran [1,2,3,4,7,8-]	Hexachlorodibenzofuran [1,2,3,6,7,8-]	Hexachlorodibenzofuran [1,2,3,7,8,9-]	Hexachlorodibenzofuran [2,3,4,6,7,8-]	Hexachlorodibenzofurans (Total)	Hexanone[2-]	Indeno(1,2,3-cd)pyrene
SSL Residential[a]					n/a[h]	12	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	573	6.21
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	0.00025	—	0.000014	0.000056	0.000065	0.00046	0.000023	0.000021	—	0.000027	0.00021	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	0.00061	—	0.000026	0.00014	0.00012	0.001	0.000046	0.000049	—	0.000052	0.0005	—	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	0.00011	—	0.0000059	0.000021	0.000025	0.00014	0.000025	0.000017	—	0.000018	0.00015	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	0.00017	—	0.0000062	0.000024	0.000022	0.00018	0.000012	0.000011	—	0.000012	0.00012	0.13 (J)	—
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	0.0000041 (J)	—	—	—	—	0.0000023 (J)	0.00000066 (J)	0.00000041 (J)	—	0.00000032 (J)	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	0.0000029 (J)	—	—	0.00000034 (J)	—	0.0000027 (J)	—	—	—	—	0.0000013 (J)	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	0.0000073 (J)	—	0.00000027 (J)	0.00000081 (J)	0.00000085 (J)	0.0000068 (J)	0.00000067 (J)	0.0000021 (J)	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	0.00012	—	0.0000033 (J)	0.0000068	0.0000073	0.000052	0.0000059	0.000022	—	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	0.00034	—	0.000016 (J)	0.00002 (J)	0.000041 (J)	0.00027	0.00043	0.00014	0.0000061 (J)	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	0.000024	—	0.00000067 (J)	0.0000037 (J)	0.0000033 (J)	0.00003	0.0000021 (J)	0.0000019 (J)	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	0.0055 (J)	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Heptachlorodibenzofurans (Total)	Hexachlorobutadiene	Hexachlorodibenzodioxin [1,2,3,4,7,8-]	Hexachlorodibenzodioxin [1,2,3,6,7,8-]	Hexachlorodibenzodioxin [1,2,3,7,8,9-]	Hexachlorodibenzodioxins (Total)	Hexachlorodibenzofuran [1,2,3,4,7,8-]	Hexachlorodibenzofuran [1,2,3,6,7,8-]	Hexachlorodibenzofuran [1,2,3,7,8,9-]	Hexachlorodibenzofuran [2,3,4,6,7,8-]	Hexachlorodibenzofurans (Total)	Hexanone[2-]	Indeno(1,2,3-cd)pyrene
SSL Residential[a]					n/a[h]	12	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	573	6.21
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	0.006 (J)	—	—	—	—	—	—	—	—	—	0.022 (J)	0.077 (J)
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.17 (J)
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	—	—	—	—	—	—	—	—	—	—	0.033 (J)	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.025 (J)	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	—	—	—	—	—	—	—	—	—	—	0.023 (J)	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.051 (J)
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Iodomethane	Isopropylbenzene	Isopropyltoluene[4-]	Methoxychlor[4,4'-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Octachlorodibenzodioxin [1,2,3,4,6,7,8,9-]	Octachlorodibenzofuran [1,2,3,4,6,7,8,9-]	Pentachlorodibenzodioxin [1,2,3,7,8-]	Pentachlorodibenzodioxins (Total)	Pentachlorodibenzofuran [1,2,3,7,8-]	Pentachlorodibenzofuran [2,3,4,7,8-]
SSL Residential[a]					na[b]	700	700	na[b]	5430	165	71.9	71.9	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	0.25 (J)	0.36 (J)	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	0.013 (J+)	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	0.0048	0.0001	0.000016	0.00025	0.000019	0.000032
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	—	—	—	—	—	—	—	—	0.0032	0.00015	0.000049	0.00058	0.00011	0.00015
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	0.00068	0.000031	0.0000084	0.000071	0.000023	0.000035
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	0.032 (J)	0.032 (J)	—	—	—	—	—	0.00064	0.000048	0.0000082	0.0001	0.000014	0.000021
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	0.00000071 (J)	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	0.0000024 (J)	—	0.00000066 (J)	—	0.00000068 (J)
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	0.0000025 (J)	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	0.000005 (J)	0.00000037 (J)	0.0000016 (J)	—	0.00000045 (J)
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	—	—	—	—	—	0.041 (J)	—	0.000055	0.0000026 (J)	0.000017 (J)	0.0000022 (J)	0.0000025 (J)
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	0.00006	0.00056	0.00043	0.00054
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	0.00000095 (J)	0.000014 (J)	0.00000066 (J)	0.00000091 (J)
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	0.0055 (J)	—	—	—	—	0.0055 (J)	—	—	—	—	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	0.22 (J)	0.16 (J)	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Iodomethane	Isopropylbenzene	Isopropyltoluene[4-]	Methoxychlor[4,4'-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Octachlorodibenzodioxin [1,2,3,4,6,7,8,9-]	Octachlorodibenzofuran [1,2,3,4,6,7,8,9-]	Pentachlorodibenzodioxin [1,2,3,7,8-]	Pentachlorodibenzodioxins (Total)	Pentachlorodibenzofuran [1,2,3,7,8-]	Pentachlorodibenzofuran [2,3,4,7,8-]
SSL Residential[a]					na[b]	700	700	na[b]	5430	165	71.9	71.9	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]	n/a[h]
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	0.0055 (J)	0.0055 (J)	0.0055 (J)	—	0.022 (J)	0.0055 (J)	—	0.006 (J)	—	—	—	—	—	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	0.0082 (J)	0.0082 (J)	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	0.0063 (J)	0.0063 (J)	0.0063 (J)	—	0.025 (J)	0.0063 (J)	—	—	—	—	—	—	—	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	0.0057 (J)	0.0057 (J)	—	0.023 (J)	0.0057 (J)	—	—	—	—	—	—	—	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	0.019 (J-)	—	—	—	—	—	—	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	—	—	—	—	0.00078 (J)	—	—	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	0.019 (J-)	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	0.001 (J)	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	—	0.018 (J-)	—	—	—	—	—	—	—	—	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	0.00076 (J)	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	0.018 (J-)	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Pentachlorodibenzofurans (Totals)	Phenanthrene	Phenol	Propylbenzene[1-]	Pyrene	Styrene	Tetrachlorodibenzodioxin [2,3,7,8-]	Tetrachlorodibenzodioxins (Total)	Tetrachlorodibenzofuran [2,3,7,8-]	Tetrachlorodibenzofurans (Total)	Tetrachloroethane[1,1,1,2-]	Tetrachloroethane[1,1,2,2-]	Tetrachloroethene	Toluene
SSL Residential[a]					n/a[h]	1800	18000	53.2	2300	419	n/a[h]	n/a[h]	n/a[h]	n/a[h]	39.3	5.2	9.83	248
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	0.28 (J)	0.52 (J)	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	0.004 (J)	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	0.0004	—	—	—	—	—	0.0000064	0.00027	0.000032	0.00057	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	0.0019	0.25 (J)	—	—	—	—	0.000037	0.00071	0.00035	0.0054	—	—	—	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	0.003 (J)	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	0.00043	—	—	—	—	—	0.0000045	0.00012	0.000042	0.00079	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	0.076 (J)	—	—	—	—	—	—	—	0.005 (J)	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	0.00024	—	—	0.032 (J)	—	0.032 (J)	0.0000033	0.0001	0.000029	0.00051	0.032 (J)	0.032 (J)	—	—
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	0.008	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	0.0000094	—	—	—	—	—	—	0.0000011 (J)	0.0000031	0.000026	—	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	0.0000019 (J)	—	—	—	—	—	—	0.00000081 (J)	0.00000085 (J)	0.0000045 (J)	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	0.000017 (J)	—	—	—	—	—	—	0.00000073 (J)	0.00000097 (J)	0.000017	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	0.000089	0.21 (J)	—	—	0.32 (J)	—	0.00000069 (J)	0.000012	0.0000062	0.000093	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	0.0063	—	—	—	—	—	0.000096	0.0015	0.0045	0.028	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	0.000019 (J)	—	—	—	—	—	—	0.0000084	0.0000026	0.000025	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	—	0.0055 (J)	—	—	—	—	—	—	—	0.0055 (J)	—	—
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	0.45	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	0.1 (J)	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00026 (J)
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Pentachlorodibenzofurans (Totals)	Phenanthrene	Phenol	Propylbenzene[1-]	Pyrene	Styrene	Tetrachlorodibenzodioxin [2,3,7,8-]	Tetrachlorodibenzodioxins (Total)	Tetrachlorodibenzofuran [2,3,7,8-]	Tetrachlorodibenzofurans (Total)	Tetrachloroethane[1,1,1,2-]	Tetrachloroethane[1,1,2,2-]	Tetrachloroethene	Toluene
SSL Residential[a]					n/a[h]	1800	18000	53.2	2300	419	n/a[h]	n/a[h]	n/a[h]	n/a[h]	39.3	5.2	9.83	248
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	0.17 (J)	—	0.0055 (J)	0.28 (J)	0.0055 (J)	—	—	—	—	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	0.25 (J)	—	—	—	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	0.28	—	0.0082 (J)	0.56	0.0082 (J)	—	—	—	—	0.0082 (J)	0.0082 (J)	0.0082 (J)	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	0.38	—	0.0063 (J)	0.54	0.0063 (J)	—	—	—	—	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	—	—	0.0057 (J)	—	0.0057 (J)	—	—	—	—	0.0057 (J)	0.0057 (J)	0.0057 (J)	0.0057 (J)
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	—	—	—	0.072 (J)	—	—	—	—	—	—	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Toxaphene (Technical Grade)	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichlorobenzene[1,2,3-]	Trichlorobenzene[1,2,4-]	Trichloroethane[1,1,1-]	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trichloropropane[1,2,3-]	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Vinyl Chloride	Xylene (Total)	Xylene[1,4-]
SSL Residential[a]					4.42	5600	na[b]	651	551	10.7	0.648	528	3.2	52.2	22.3	0.349	132	na[b]
73-002	73-02209	0.3–0.8	0173-96-0233[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02252	0.1–0.3	0173-96-0331[c]	[c]	—	—	—	—	—	—	—	—	—	—	0.01 (J+)	—	—	—
73-002	73-02255	0–0.5	0173-96-0308	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02260	0–0.7	0173-96-0305[c]	[c]	—	—	—	—	0.006	—	0.006	—	—	—	—	—	—	—
73-002	73-02261	0.5–1	0173-97-0003[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02261	3.5–4.5	0173-97-0004[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02262	0–1	0173-96-0307[e]	[e]	—	—	—	—	0.002 (J)	—	0.001 (J)	—	—	—	—	—	—	—
73-002	73-02264	0–0	0173-96-0304[c]	[c]	—	—	—	—	0.004 (J)	—	—	—	—	—	—	—	—	—
73-002	73-02266	0–0	0173-96-0309[c]	[c]	—	—	—	—	0.004 (J)	—	0.007	—	—	—	—	—	—	—
73-002	73-02268	0.5–1	0173-97-0002[c]	[c]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02268	0–1	0173-96-0314[c]	[c]	—	—	—	—	0.007	—	0.002 (J)	0.016	—	—	—	—	—	—
73-002	73-02268	1.2–2.2	0173-97-0001[c]	[c]	—	—	—	—	—	0.032 (J)	—	—	0.032 (J)	0.032 (J)	0.032 (J)	—	0.032 (J)	—
73-002	73-02270	0–0	0173-96-0316[e]	[e]	—	—	—	—	0.003 (J)	—	0.004 (J)	0.006 (J)	—	—	—	—	—	—
73-002	73-02451	0.1–0.5	0173-97-0311	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02457	0.1–0.5	0173-97-0321	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02458	0.1–0.5	0173-97-0322	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02459	0.1–0.5	0173-97-0323	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02460	0.1–0.5	0173-97-0324	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02461	0.1–0.5	0173-97-0325	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02462	0.1–0.5	0173-97-0326	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02464	7–7.5	0173-97-0336[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	3.2–3.7	0173-97-0327[e]	[e]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-002	73-02465	4.2–4.5	0173-97-0328	ALLH	—	—	0.0055 (J)	0.0055 (J)	—	—	—	—	0.0055 (J)	0.0055 (J)	0.0055 (J)	—	—	0.0055 (J)
73-003	73-10105	5–5.5	RE73-99-0100	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10106	4.8–5.3	RE73-99-0102	FILL[f]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	6–6.5	RE73-99-0104	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-003	73-10107	8–8.5	RE73-99-0105	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-02207	3.5–3.8	0173-96-0231	ALLH	—	—	—	—	—	—	—	0.007	—	—	—	—	—	—
73-004(a)	73-02207	5.5–6	RE73-99-0094	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10095	3.5–4	RE73-99-0096	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(a)	73-10121	3–4	RE73-99-0134	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table 2.18-4 (continued)

PRS	Location ID	Depth (ft)	Sample ID	Media Code	Toxaphene (Technical Grade)	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichlorobenzene[1,2,3-]	Trichlorobenzene[1,2,4-]	Trichloroethane[1,1,1-]	Trichloroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trichloropropane[1,2,3-]	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Vinyl Chloride	Xylene (Total)	Xylene[1,4-]
SSL Residential[a]					**4.42**	**5600**	**na[b]**	**651**	**551**	**10.7**	**0.648**	**528**	**3.2**	**52.2**	**22.3**	**0.349**	**132**	**na[b]**
73-004(b)	73-02211	7.2–7.4	0173-96-0243	QBT3	—	0.006 (J)	0.006 (J)	0.006 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.0055 (J)	0.011 (J)	0.0055 (J)	—
73-004(b)	73-02213	4.2–4.5	0173-96-0249	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-02215	0–0	0173-96-0245[g]	[g]	—	0.0082 (J)	—	—	—	0.0082 (J)	—	—	0.0082 (J)	0.0082 (J)	0.0082 (J)	—	0.0082 (J)	—
73-004(b)	73-02216	0–2.5	0173-96-0246	ALLH	—	0.0063 (J)	—	—	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.0063 (J)	0.013 (J)	0.0063 (J)	—
73-004(b)	73-02326	14–15	0173-96-0501	FILL	—	0.0057 (J)	—	—	0.0057 (J)	0.0057 (J)	0.0057 (J)	—	0.0057 (J)	0.0057 (J)	0.0057 (J)	—	0.0057 (J)	—
73-004(b)	73-02327	14–15	0173-96-0502	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	7.5–7.75	RE73-99-0093	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10098	12.5–13.5	RE73-99-0087	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	0.3–0.8	RE73-99-0111	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10100	1–1.33	RE73-99-0113	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10101	0.25–0.5	RE73-99-0112	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10102	0.33–0.83	RE73-99-0114	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-004(b)	73-10103	0.33–0.67	RE73-99-0115	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	2.8–3	0173-97-0202	FILL	—	0.002 (J)	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02442	5–5.5	RE73-99-0108	QBT3	0.19 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02443	3.2–3.4	0173-97-0203	FILL	—	0.002 (J)	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02443	5–5.5	RE73-99-0107	QBT3	0.19 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	3–3.2	0173-97-0204	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-02444	5.5–6	RE73-99-0106	QBT3	0.18 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10096	4.3–4.8	RE73-99-0109	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—
73-006	73-10097	5–5.5	RE73-99-0110	FILL	0.18 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—

Notes: 1. Historical RFI samples collected from 1994 to 1997.
2. All values in mg/kg.
3. See Appendix A for data qualifier definitions.

[a] SSLs from NMED 2004 (85615), unless otherwise noted.

[b] na = Not available; no SSL found for this chemical.

[c] Nongeologic ash.

[d] — = Not analyzed.

[e] Debris.

[f] For 73-002-99, "FILL" denotes soil.

[g] Material obtained from end of outlet pipe.

[h] n/a = Not applicable. Dioxins and furans do not have individual SSLs; risk comparisons based on conversion to TCDD-like toxicity using applicable toxicity equivalency factors (EPA 2005, http://www.epa.gov/toxteam/pcbid/tefs.htm).

Table 3.1-1
Surface Water Site Assessment Matrix Scores

Site	Matrix Score*	Year of Assessment
SWMU 00-018(a)	42.8	1997
AOC 00-018(b)	34.3	2005
AOC 00-030(d)	10.6	2005
AOC 00-030(eN)	20.5	2005
AOC 00-030(eS)	35.4	2005
AOC 00-030(f)	10.6	2005
AOC 00-030(h)	14.6	2005
AOC 00-030(j)	31.5	2005
AOC 00-030(n)	27.5	2005
AOC 00-030(o)	10.6	2005
AOC 00-030(p)	3.6	1999
AOC C-00-043	8.8	2005
SWMU 31-001	18.8	1997
SWMU 73-004(c)	10.6	1997
SWMU 00-039	10.6	2001
Consolidated Unit 45-001-00		
Consolidated Unit 01-002(b)-00	71.5	1999
SWMU 45-001	50.3	2001
SWMU 45-002	27.6	1999
SWMU 45-003	27.6	1999
SWMU 45-004	50.2	1999
AOC C-45-001	93.5	2005
Consolidated Unit 73-001(a)-99		
SWMU 73-001(a)	85.5	1998
SWMU 73-004(d)	46.7	1997
Consolidated Unit 73-001(b)-99		
SWMU 73-001(b)	22.3	2001
SWMU 73-001(c)	3.6	2001
SWMU 73-001(d)	22.3	2001
Consolidated Unit 73-002-99		
SWMU 73-002	56	1997
AOC 73-003	10.6	1997
SWMU 73-004(a)	3.6	1997
SWMU 73-004(b)	10.6	1997
SWMU 73-006	56	1997

*Maximum score of 100, with a higher score indicating a higher potential for erosion/sediment transport; a score of 40 or higher is deemed a high priority site.

Table 4.1-1
SWMU 00-018(a) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW 846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
00-04971	East sludge bed	Sampling of historical location to define vertical extent of contamination; tritium detected at 5.5–6.5 ft	8–8.5 10.5–11	Tuff Tuff	X X	X X	X X	X X	—*	—
00-04972	East sludge bed	Sampling of historical location to define vertical extent of contamination; copper detected above background at 10–11 ft	12.5–13 15–15.5	Tuff Tuff	X X	X X	X X	X X	X X	—
00-04976	Sludge fill area	Sampling of historical location to define vertical extent of contamination; mercury detected above background and pesticides detected in surface soil	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	—
00-04977	Sludge fill area	Sampling of historical location to define vertical extent of contamination; metals detected above background in surface soil; PCBs, SVOCs, and pesticides detected in surface soil	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	—
00-04979	Sludge fill area	Sampling of historical location to define vertical extent of contamination; thallium detected above background in surface soil	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	—
00-04980	Sludge fill area	Sampling of historical location to define vertical extent of contamination; metals detected above background and SVOCs detected at 1–1.5 ft	1.5–2 (into tuff) 4–4.5 (into tuff)	Tuff Tuff	X X	X X	X X	X X	X X	—
New (#1)	North of oldest sludge bed	Sampling to define nature and extent of lateral contamination from the sludge bed	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.1-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW 846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
New (#2)	South of oldest sludge bed	Sampling to define nature and extent of lateral contamination from the sludge bed	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3)	Upper reach of unnamed drainage tributary to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#4)	Middle reach of unnamed drainage tributary to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#5)	Lower reach of unnamed drainage tributary to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#6)	Hillslope to Pueblo Canyon, approximately 20 ft downslope from terrace containing SWMU 00-018(a), northern extent	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#7)	Hillslope to Pueblo Canyon, approximately 20 ft downslope from terrace containing SWMU 00-018(a), southern extent	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#8)	Toe of hillslope adjacent to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#9)	Toe of hillslope adjacent to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.1-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Tritium (EPA Method 906)
00-04971	East sludge bed	Sampling of historical location to define vertical extent of contamination; tritium detected at 5.5–6.5 ft	8–8.5 10.5–11	Tuff Tuff	—	—	—	—	X X
00-04972	East sludge bed	Sampling of historical location to define vertical extent of contamination; copper detected above background at 10–11 ft	12.5–13 15–15.5	Tuff Tuff	—	—	—	—	—
00-04976	Sludge fill area	Sampling of historical location to define vertical extent of contamination; mercury detected above background and pesticides detected in surface soil	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	—	X X X	—	—	—
00-04977	Sludge fill area	Sampling of historical location to define vertical extent of contamination; metals detected above background in surface soil; PCBs, SVOCs, and pesticides detected in surface soil	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	—	—
00-04979	Sludge fill area	Sampling of historical location to define vertical extent of contamination; thallium detected above background in surface soil	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	—	—	—	—	—
00-04980	Sludge fill area	Sampling of historical location to define vertical extent of contamination; metals detected above background and SVOCs detected at 1–1.5 ft	1.5–2 (into tuff) 4–4.5 (into tuff)	Tuff Tuff	X X	—	—	—	—
New (#1)	North of oldest sludge bed	Sampling to define nature and extent of lateral contamination from the sludge bed	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—

Table 4.1-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Tritium (EPA Method 906)
New (#2)	South of oldest sludge bed	Sampling to define nature and extent of lateral contamination from the sludge bed	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#3)	Upper reach of unnamed drainage tributary to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#4)	Middle reach of unnamed drainage tributary to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#5)	Lower reach of unnamed drainage tributary to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#6)	Hillslope to Pueblo Canyon, approximately 20 ft downslope from terrace containing SWMU 00-018(a), northern extent	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#7)	Hillslope to Pueblo Canyon, approximately 20 ft downslope from terrace containing SWMU 00-018(a), southern extent	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#8)	Toe of hillslope adjacent to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#9)	Toe of hillslope adjacent to Pueblo Canyon	Sampling to define nature and extent of lateral contamination downgradient of SWMU	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—

*— = Analysis will not be performed for this sample.

Table 4.2-1
AOC 00-018(b) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)
New (#1)	Just outside AOC boundary within drainage to Pueblo Canyon running beneath oldest sludge beds	Sampling to define nature and extent of lateral contamination beyond AOC boundary	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#2)	Within drainage to Pueblo Canyon running beneath oldest sludge beds, approximately 120 ft downgradient of AOC boundary	Sampling to define nature and extent of lateral contamination beyond AOC boundary	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#3)	Downgradient of AOC, approximately halfway between AOC boundary and Pueblo Canyon	Sampling to define nature and extent of lateral contamination beyond AOC boundary	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X

Table 4.2-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	VOCs (SW-846 8260B)	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)
New (#1)	Just outside AOC boundary within drainage to Pueblo Canyon running beneath oldest sludge beds	Sampling to define nature and extent of lateral contamination beyond AOC boundary	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X
New (#2)	Within drainage to Pueblo Canyon running beneath oldest sludge beds, approximately 120 ft downgradient of AOC boundary	Sampling to define nature and extent of lateral contamination beyond AOC boundary	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X
New (#3)	Downgradient of AOC, approximately halfway between AOC boundary and Pueblo Canyon	Sampling to define nature and extent of lateral contamination beyond AOC boundary	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X

Table 4.3-1
AOC 00-030(d) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
00-04885	15 ft downgradient of outfall	Sampling of historical location to define vertical extent of contamination; several COPCs detected at 0.42 ft	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
00-04886	At end of outfall pipe	Sampling of historical location to define vertical extent of contamination; several COPCs detected at 0.42 ft	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
00-04887	Joint between steel outfall pipe and vitrified clay pipe	Sampling of historical location to define vertical extent of contamination; several COPCs detected at 2.5 ft	4–4.5 6.5–7	Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#1)	Beneath septic tank, 45 degree angled boring	Sampling of historical location to define vertical extent of contamination below tank (will angle drill 45 degrees under bottom of concrete tank). 10–10.5 ft (vertical) to sample fill material around tank; 15–15.5 ft (vertical) will be in tuff	14–14.5 (linear) 21–21.5 (linear)	Fill or tuff Tuff	X X	X X	X X	X X	X X	X X
New (#2)	Eastern edge of southern-half of septic tank	Vertical borehole to determine vertical extent of contamination near the septic tank	10–10.5 15–15.5 20–20.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3)	Graduation Canyon, 40 ft upgradient of location 00-04885	Sampling to define nature and extent of potential contamination upgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#4)	Graduation Canyon, 100 ft downgradient of location 00-04885	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.3-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Isotopic Plutonium (HASL-300)
00-04885	15 ft downgradient of outfall	Sampling of historical location to define vertical extent of contamination; several COPCs detected at 0.42 ft	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X
00-04886	At end of outfall pipe	Sampling of historical location to define vertical extent of contamination; several COPCs detected at 0.42 ft	1–1.5 1.5–2 (into tuff) 4–4.5 (into tuff)	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X
00-04887	Joint between steel outfall pipe and vitrified clay pipe	Sampling of historical location to define vertical extent of contamination; several COPCs detected at 2.5 ft	4–4.5 6.5–7	Tuff Tuff	X X	X X	X X	X X	X X
New (#1)	Beneath septic tank, 45 degree angled boring	Sampling of historical location to define vertical extent of contamination below tank (will angle drill 45 degrees under bottom of concrete tank). 10–10.5 ft (vertical) to sample fill material around tank; 15–15.5 ft (vertical) will be in tuff	14–14.5 (linear) 21–21.5 (linear)	Fill or tuff Tuff	X X	X X	X X	X X	X X
New (#2)	Eastern edge of southern-half of septic tank	Vertical borehole to determine vertical extent of contamination near the septic tank	10–10.5 15–15.5 20–20.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X
New (#3)	Graduation Canyon, 40 ft upgradient of location 00-04885	Sampling to define nature and extent of potential contamination upgradient of 00-030(d) outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X
New (#4)	Graduation Canyon, 100 ft downgradient of location 00-04885	Sampling to define nature and extent of potential contamination downgradient of 00-030(d) outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X

Table 4.4-1
AOC 00-030(eN) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
New (#1) Post-removal	Beneath east septic tank (after removal)	Sampling to define nature and extent of potential releases from east septic tank	10–10.5 12–12.5 14–14.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#2) Post-removal	Beneath west septic tank (after removal)	Sampling to define nature and extent of potential releases from west septic tank	10–10.5 12–12.5 14–14.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3) Post-removal	Septic tanks discharge line connection	Sampling to define nature and extent of potential releases from septic tanks discharge lines	8–8.5 10–10.5 12–12.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#4)	Outfall area	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#5)	Mid-slope of hillslope, approximately 200 ft downslope of the outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#6)	Mid-slope of hillslope, approximately 380 ft downslope of the outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#7)	Toe of hillslope adjacent to Acid Canyon (tributary to Pueblo Canyon)	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.4-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Americium-241 (HASL 300)
New (#1) Post-removal	Beneath east septic tank (after removal)	Sampling to define nature and extent of potential releases from east septic tank	10–10.5	Tuff	X	X	X	X	X
			12–12.5	Tuff	X	X	X	X	X
			14–14.5	Tuff					
New (#2) Post-removal	Beneath west septic tank (after removal)	Sampling to define nature and extent of potential releases from west septic tank	10–10.5	Tuff	X	X	X	X	X
			12–12.5	Tuff	X	X	X	X	X
			14–14.5	Tuff					
New (#3) Post-removal	Septic tanks discharge line connection	Sampling to define nature and extent of potential releases from septic tanks discharge lines	8–8.5	Tuff	X	X	X	X	X
			10–10.5	Tuff	X	X	X	X	X
			12–12.5	Tuff					
New (#4)	Outfall area	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X
New (#5)	Mid-slope of hillslope, approximately 200 ft downslope of the outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X
New (#6)	Mid-slope of hillslope, approximately 380 ft downslope of the outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X
New (#7)	Toe of hillslope adjacent to Acid Canyon (tributary to Pueblo Canyon)	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5	Soil	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X

Table 4.5-1
AOC 00-030(eS) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)
New (#1)	Beneath former septic tank location	Sampling to define nature and extent of potential releases from septic tank	4–4.5 (fill) 8–8.5 (red clay) 12–12.5 (tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#2)	Beneath drainline connection	Sampling to define nature and extent of potential releases from drainline	0–0.5 (below drainline) 1–1.5 (below drainline) 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X
New (#3)	Beneath drainline connection (key concrete)	Sampling to define nature and extent of potential releases from drainline	0–0.5 (below drainline) 1–1.5 (below drainline) 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X
00-03741	Outfall area	Sampling to define vertical extent of potential releases from septic tank outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#4)	Mid-slope of hillslope, approximately 280 ft downslope of the 00-030(eS) outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#5)	Toe of hillslope adjacent to Pueblo Canyon	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X

Table 4.5-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	VOCs (SW-846 8260B)	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)
New (#1)	Beneath former septic tank location	Sampling to define nature and extent of potential releases from septic tank	4–4.5 (fill) 8–8.5 (red clay) 12–12.5 (tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#2)	Beneath drainline connection	Sampling to define nature and extent of potential releases from drainline	0–0.5 (below drainline) 1–1.5 (below drainline) 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X
New (#3)	Beneath drainline connection (key concrete)	Sampling to define nature and extent of potential releases from drainline	0–0.5 (below drainline) 1–1.5 (below drainline) 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X
00-03741	Outfall area	Sampling to define vertical extent of potential releases from septic tank outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#4)	Mid-slope of hillslope, approximately 280 ft downslope of the outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#5)	Toe of hillslope adjacent to Pueblo Canyon	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X

Table 4.6-1
AOC 00-030(f) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
New #1 Post-removal	Beneath northwest (larger) tank	Remove tank and sample beneath to define vertical extent of potential contamination	12–12.5	Tuff	X	X	X	X	X	X
			15–15.5	Tuff	X	X	X	X	X	X
			17–17.5	Tuff	X	X	X	X	X	X
New #2 Post-removal	Beneath southeast (smaller) tank	Remove tank and sample beneath to define vertical extent of potential contamination	12–12.5	Tuff	X	X	X	X	X	X
			15–15.5	Tuff	X	X	X	X	X	X
			17–17.5	Tuff	X	X	X	X	X	X
New #3	Beneath drainline connection	Remove drainline, sample beneath drainline connection to define vertical extent of potential contamination	0–0.5 (below drainline)	Soil	X	X	X	X	X	X
			1–1.5 (below drainline)	Soil or tuff	X	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X	X
New #4	Septic tank outfall	Sampling to define nature and extent of potential contamination at outfall	0–0.5	Soil	X	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X	X
New #5	100 ft downgradient of outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5	Soil	X	X	X	X	X	X
			1–1.5	Soil	X	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X	X

Table 4.6-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Americium-241 (HASL 300)
New #1	Beneath northwest (larger) tank	Remove tank and sample beneath to define vertical extent of potential contamination	12–12.5 15–15.5 17–17.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X
New #2	Beneath southeast (smaller) tank	Remove tank and sample beneath to define vertical extent of potential contamination	12–12.5 15–15.5 17–17.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X
New #3	Beneath drainline connection	Remove drainline, sample beneath drainline connection to define vertical extent of potential contamination	0–0.5 (below drainline) 1–1.5 (below drainline) 1.5–2 (into tuff)	Soil Soil or tuff Tuff	X X X	X X X	X X X	X X X	X X X
New #4	Septic tank outfall	Sampling to define nature and extent of potential contamination at outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New #5	100 ft downgradient of outfall	Sampling to define nature and extent of potential contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X

Table 4.7-1
AOC 00-030(h) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
00-04816	Eastern half of excavation, underlying tuff	Estimated outfall location Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in tuff	9–9.5 16–16.5 18–18.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
00-04811	Estimated outfall location	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
00-04812	Estimated outfall location	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
New (#1) Trench 1	Drainline location	Horizontal trench to locate drainline; sampling to define nature and extent of potential releases from septic tank discharge line	0–0.5 (beneath line) 1–1.5 (beneath line) 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#2) Trench 2	Drainline location	Horizontal trench to locate drainline; sampling to define nature and extent of potential releases from septic tank discharge line	0–0.5 (beneath line) 1–1.5 (beneath line) 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#4)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#5)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.7-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Cesium-137 (HASL 300)	Isotopic Plutonium (HASL-300)
00-04816	Eastern half of excavation, underlying tuff	Estimated outfall location Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in tuff	9–9.5 16–16.5 18–18.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
00-04811	Estimated outfall location	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
00-04812	Estimated outfall location	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
New (#1) Trench 1	Drainline location	Horizontal trench to locate drainline; sampling to define nature and extent of potential releases from septic tank discharge line	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#2) Trench 2	Drainline location	Horizontal trench to locate drainline; sampling to define nature and extent of potential releases from septic tank discharge line	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#4)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#5)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.8-1
AOC 00-030(j) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)
New (#1)	Center of surveyed septic tank location	Sampling to define nature and extent of contamination at the septic tank	0–0.5	Soil	X	X	X	X	X
			3–3.5	Soil	X	X	X	X	X
			5–5.5	Soil	X	X	X	X	X
			1.5–2 (into tuff)	Tuff	X	X	X	X	X

Table 4.8-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	VOCs (SW-846 8260B)	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)
New (#1)	Center of surveyed septic tank location	Sampling to define nature and extent of contamination at the septic tank	0–0.5	Soil	x	x	x	x	x
			3–3.5	Soil	x	x	x	x	x
			5–5.5	Soil	x	x	x	x	x
			1.5–2 (into tuff)	Tuff	x	x	x	x	x

Table 4.9-1
AOC 00-030(n) Septic Tank

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
00-04784	Excavation backfill	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in tuff	3.5–4 6–6.5 9–9.5	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	—*
00-04776	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
00-04777	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
New (#1)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#2)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#3)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#4)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#5)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X

Table 4.9-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Amercium-241 (HASL 300)	Isotopic Plutonium (HASL 300)
00-04784	Excavation backfill	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in tuff	3.5–4 6–6.5 9–9.5	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
00-04776	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
00-04777	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	1–1.5 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X	X X
New (#1)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#2)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#4)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#5)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

*— = Analysis will not be performed for this sample.

Table 4.10-1
AOC 00-030(o) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
New (#1)	Tuff beneath septic tank	Vertical companion to angled tuff boring, with sampling to define nature and extent of vertical contamination beneath the tank; existing tank bottom consists of heavily reinforced concrete	10–10.5 15–15.5 20–20.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#2)	Tuff beneath septic tank	Angled tuff boring and sampling to define nature and extent of vertical contamination beneath the tank; existing tank bottom consists of heavily reinforced concrete	14–14.5 (linear) 21–21.5 (linear)	Tuff Tuff	X X	X X	X X	X X	X X	X X
00-04831	Vicinity of the former outfall	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1.5–2 (into tuff) 4–4.5 (into tuff)	Tuff Tuff	X X	X X	X X	X X	X X	X X
00-04832	Vicinity of the former outfall	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1.5–2 (into tuff) 4–4.5 (into tuff)	Tuff Tuff	X X	X X	X X	X X	X X	X X
New (#3)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	—* X X
New (#4)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#5)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X

Table 4.10-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Isotopic Plutonium (HASL 300)
New (#1)	Tuff beneath septic tank	Vertical companion to angled tuff boring, with sampling to define nature and extent of vertical contamination in tuff beneath the tank; existing tank bottom consists of heavily reinforced concrete	10–10.5 15–15.5 20–20.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X
New (#2)	Tuff beneath septic tank	Angled tuff boring and sampling to define nature and extent of vertical contamination in tuff beneath the tank; existing tank bottom consists of heavily reinforced concrete	14–14.5 (linear) 21–21.5 (linear)	Tuff Tuff	X X	X X	X X	X X	X X
00-04831	Vicinity of the former outfall	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1.5–2 (into tuff) 4–4.5 (into tuff)	Tuff Tuff	X X	X X	X X	X X	X X
00-04832	Vicinity of the former outfall	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in soil	1.5–2 (into tuff) 4–4.5 (into tuff)	Tuff Tuff	X X	X X	X X	X X	X X
New (#3)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#4)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#5)	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X

*— = Analysis will not be performed for this sample.

Table 4.11-1
AOC 00-030(p) Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
00-04868	Excavation backfill	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in tuff	11.5–12 13–13.5 15.5–16	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X	X X X
00-04869	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	—* X X
New (#1)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#2)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X
New (#3)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	— X X

Table 4.11-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Cesium-137 (HASL 300)	Isotopic Plutonium (HASL 300)
00-04868	Excavation backfill	Sampling of historical location to define vertical extent of contamination; numerous analytes detected above background in tuff	11.5–12 13–13.5 15.5–16	Tuff Tuff Tuff	X X X	— 	X X X	X X X	X X X	X X X
00-04869	Vicinity of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X 	X X X	X X X	X X X	X X X	X X X
New (#1)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X 	X X X	X X X	X X X	X X X	X X X
New (#2)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X 	X X X	X X X	X X X	X X X	X X X
New (#3)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X 	X X X	X X X	X X X	X X X	X X X

*— = Analysis will not be performed for this sample.

Table 4.12-1
SWMU 00-039 Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)	SVOCs (SW-846 8270C)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Pesticides (SW-846 8081A)
New (#1)	Angled borehole with a target depth of 50 ft bgs beneath historical sample location 00-04097	Sampling to define vertical extent of PCE plume beneath assumed source area	0.5–1 (linear)	Soil	—*	—	—	—	—	X	X (for PCE)	—	—	—
			9.5–10 (linear)	Soil						X	X (for PCE)			
			19.5–20 (linear)	Tuff						X	X (for PCE)			
			25.9–30 (linear)	Tuff						X	X (for PCE)			
			39.5–40 (linear)	Tuff						X	X (for PCE)			
			49.5–50 (linear)	Tuff						X	X (for PCE)			
			59.5–60 (linear)	Tuff						X	X (for PCE)			

*— = Analysis will not be performed for this sample.

Table 4.13-1
AOC C-00-043 Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Cesium-137 (HASL 300)	Isotopic Plutonium (HASL 300)
New (#1)	Adjacent to former manhole	Sampling of location to define vertical extent of contamination	8–8.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			11–11.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			13–13.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
New (#2)	Adjacent to former manhole	Sampling of location to define lateral and vertical extent of contamination	8–8.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			11–11.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			13–13.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
New (#3)	Adjacent to former manhole	Sampling of location to define lateral and vertical extent of contamination	8–8.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			11–11.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			13–13.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
New (#4)	Adjacent to former manhole	Sampling of location to define lateral and vertical extent of contamination	8–8.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			11–11.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X
			13–13.5	Tuff	X	X	X	X	X	X	X	X	X	X	X	X

Table 4.14-1
SWMU 31-001 Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)
31-01003	Former septic tank location	Sampling of historical location to define vertical extent of contamination; several detection limits for metals were above background; additional analytical suites	0.5–1 11.5–12 13–13.5	Soil Tuff Tuff	X X X	X X X	X X X	X X X	X X X
31-01006 Trench 1	Former drainline location	Sampling of historical location to define vertical extent of contamination; several detection limits for metals were above background; additional analytical suites	3–3.5 6.5–7 10–10.5	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X
31-01008 Trench 2	Former drainline location	Sampling of historical location to define vertical extent of contamination; metals detected above background in tuff	6.5–7 10–10.5 13.5–14	Tuff Tuff Tuff	X X X	X X X	X X X	X X X	X X X
New (#1)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#2)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X
New (#3)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X

Table 4.14-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	VOCs (SW-846 8260B)	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)
31-01003	Former septic tank location	Sampling of historical location to define vertical extent of contamination; several detection limits for metals were above background; additional analytical suites	0.5–1 11.5–12 13–13.5	Soil Tuff Tuff	X X X	X X X	X X X	—*	X X X
31-01006 Trench 1	Former drainline location	Sampling of historical location to define vertical extent of contamination; several detection limits for metals were above background; additional analytical suites	3–3.5 6.5–7 10–10.5	Tuff Tuff Tuff	X X X	X X X	X X X	—	X X X
31-01008 Trench 2	Former drainline location	Sampling of historical location to define vertical extent of contamination; metals detected above background in tuff	6.5–7 10–10.5 13.5–14	Tuff Tuff Tuff	X X X	X X X	X X X	—	X X X
New (#1)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	— X X	X X X	X X X	X X X	X X X
New (#2)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	— X X	X X X	X X X	X X X	X X X
New (#3)	Downgradient of the former outfall	Sampling to define nature and extent of lateral contamination downgradient of outfall	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	— X X	X X X	X X X	X X X	X X X

*— = Analysis will not be performed for this sample.

Table 4.15-1
Consolidated Unit 45-001-00 Proposed Soil and Tuff Samples

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
45-01028	South Waste Line, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals and organic chemicals within South Waste Line area	0–0.5 1–1.5 1.5–2 (into tuff) 9.5–10 (into tuff) 19.5–20 (into tuff) 29.5–30 (into tuff)	Soil Soil Tuff Tuff Tuff Tuff	X X X X X X	X X X X X X	X X X X X X	X X X X X X	X X X X X X	X X X X X X
45-01039	South Waste Line Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within South Waste Line Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#1)	South Waste Line Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within South Waste Line Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#2)	South Waste Line Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within South Waste Line Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
New (#3)	North Waste Line and Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of organic chemicals within North Waste Line and Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—*	X X X

Table 4.15-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	pH (SW-846 9045C)	Nitrates (EPA Method 300.0)	Cyanide (SW-846 9012A)	Perchlorate (EPA Method 314.0 and SW-846 8321A)	TAL Metals (SW-846 6010B)	VOCs (SW-846 8260B)
New (#4)	North Waste Line and Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of organic chemicals within North Waste Line and Outfall area	0–0.5 1–1.5 1.5–2 (into Tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—	X X X
45-01029	Parking Lot, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals and organic chemicals within Parking Lot area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
45-01033	Parking Lot, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals and organic chemicals within parking lot area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X
45-01072	Vehicle Decontamination Facility, SWMU 45-002	Sampling to define nature and extent of lateral and vertical contamination of metals and radionuclides within vehicle decontamination facility area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X	—
New (#5)	Untreated Waste Line, SWMU 45-003	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and PAHs within untreated waste line area	0–0.5 1–1.5 1.5–2 (into tuff) 4.5–5 (into tuff) 9.5–10 (into tuff)	Soil Soil Tuff Tuff Tuff	X X X X X	X X X X X	X X X X X	X X X X X	X X X X X	—
45-01068	Sanitary Sewer Emergency Bypass, SWMU 45-004	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within sanitary sewer emergency bypass area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	X X X	X X X

Table 4.15-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Tritium (EPA Method 906)
45-01028	South Waste Line, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals and organic chemicals within South Waste Line area	0–0.5 1–1.5 1.5–2 (into tuff) 9.5–10 (into tuff) 19.5–20 (into tuff) 29.5–30 (into tuff)	Soil Soil Tuff Tuff Tuff Tuff	X X X X X X	X X X X X X	X X X X X X	—	—
45-01039	South Waste Line Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within South Waste Line Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#1)	South Waste Line Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within South Waste Line Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#2)	South Waste Line Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within South Waste Line Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	X X X	—
New (#3)	North Waste Line and Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of organic chemicals within North Waste Line and Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	—	—
New (#4)	North Waste Line and Outfall, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of organic chemicals within North Waste Line and Outfall area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	—	—

Table 4.15-1 (continued)

Location ID	Location Description	Sampling Justification	Depth (ft bgs)	Media Type	SVOCs (SW-846 8270C)	Pesticides (SW-846 8081A)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Tritium (EPA Method 906)
45-01029	Parking Lot, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals and organic chemicals within Parking Lot area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	—	—
45-01033	Parking Lot, SWMU 45-001	Sampling to define nature and extent of lateral and vertical contamination of metals and organic chemicals within parking lot area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	—	—
45-01072	Vehicle Decontamination Facility, SWMU 45-002	Sampling to define nature and extent of lateral and vertical contamination of metals and radionuclides within vehicle decontamination facility area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	—	—	X X X	X X X	—
New (#5)	Untreated Waste Line, SWMU 45-003	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and PAHs within untreated waste line area	0–0.5 1–1.5 1.5–2 (into tuff) 4.5–5 (into tuff) 9.5–10 (into tuff)	Soil Soil Tuff Tuff Tuff	X (PAHs) X (PAHs) X (PAHs) X (PAHs) X (PAHs)	—	X x x x x	X x x x x	—
45-01068	Sanitary Sewer Emergency Bypass, SWMU 45-004	Sampling to define nature and extent of lateral and vertical contamination of metals, radionuclides, and organic chemicals within sanitary sewer emergency bypass area	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X x x	X x x	X x x	X x x

*— = Analysis will not be performed for this sample.

Table 5.0-1
Summary of Applicable SOPs and QPs

Procedure	Title	Summary
SOP-01.01	General Instructions for Field Investigations	This SOP provides an overview of instructions regarding activities to be performed before, during, and after field investigations. It is assumed that field investigations involve standard sampling equipment, personal protective equipment, waste-management, and site-control equipment/materials. The procedure covers pre-mobilization activities, mobilization to the site, documentation and sample collection activities, sample media evaluation, surveying, and completing lessons learned.
SOP-01.02	Sample Containers and Preservation	This SOP describes the specific requirements/process for sample containers, preservation techniques, and holding times as specified by field regulations and guidance documents. The use of specific types of sample containers and preservation techniques is mandatory for hazardous site investigations because the integrity of any sample is diminished over time. Physical factors (light, pressure, temperature, etc.), chemical factors (changes in pH, volatilization, etc.), and biological factors may alter the original quality of the sample. Because the various target parameters are uniquely altered at varying rates, distinct sample containers, preservation techniques, and holding times have been established to maintain sample integrity for a reasonable and acceptable period of time. The procedure covers documenting SOP deviations, using proper sample containers and preservatives, performing data entry, implementing containment procedures, preserving samples, implementing holding times, completing documentation, implementing post-operation activities, and performing lessons learned.
SOP-01.03	Handling, Packaging and Transporting Field Samples	This SOP directs field team members in the preparation of environmental and waste characterization samples for transportation to the Laboratory's Sample Management Office (SMO) or an approved radiation screening laboratory. In general, samples taken are expected to have a low concentration of potential contaminants, although higher concentrations will be present in some cases. These low-concentration samples that do not satisfy the Department of Transportation (DOT) hazard-class definitions are classified as environmental samples and are not subject to DOT regulations. Historical data, knowledge of processes, and field screening results will assist the team members in making decisions as to whether a sample can be designated as "environmental" or needs to be treated as a DOT-regulated material. The procedure covers transportation of environmental and DOT-regulated samples.
SOP-01.04	Sample Control and Field Documentation	This SOP describes the process for documenting samples collected using sample control and field documentation, specifically, container labels, sample collection logs, chain of custody (COC)/request for analysis forms, and daily activity log forms or field notebooks. The procedure covers performing request notification, generating sample control and field documentation, completing sample collection logs, using field chain of custody forms, delivering samples to the sample management office, delivering samples to another analytical laboratory, using custody seals, collecting the samples, completing sample control and field documentation, completing field investigation summaries, and performing field closeouts.
SOP-01.05	Field Quality Control Samples	This SOP describes the requirements for the collection of field quality control (QC) samples to ensure the reliability and validity of field and laboratory data. Field QC samples shall be collected as described in this procedure and taken to the Laboratory's SMO with the regular field samples for subsequent chemical and physical testing. The procedure covers pre-operation activities, collecting and preparing each type of QC sample including equipment rinsate blank, field duplicate, and trip blank.

Table 5.0-1 (continued)

Procedure	Title	Summary
SOP-01.06	Management of Environmental Restoration Project Wastes	This SOP describes the process for managing waste generated during corrective action activities. This procedure outlines the preparation, approval, and retention of all required documents associated with waste generation. The procedure covers waste identification and characterization, waste minimization/recycling, waste generation/storage, segregation, waste treatment, authorized release limits, packaging/transportation, disposal options, and specific policies, including area of contamination policy, environmental media, and contained in policy.
SOP-01.08	Field Decontamination of Drilling and Sampling Equipment	This SOP describes the process for the general field decontamination of drilling and sampling equipment. It is intended to help ensure the integrity of soil, sediment, rock, water, and other samples collected from potentially contaminated sites and to minimize the potential for cross contamination between sampling locations. Implementation of this procedure will help protect site and community personnel, requiring that equipment not be removed from a controlled area without proper decontamination. The procedure covers set up of dry and wet decontamination areas, drilling/excavation equipment decontamination, and sampling equipment decontamination.
SOP-01.10	Waste Characterization	This SOP describes the development of a strategy for characterizing wastes generated during projects performed at the Laboratory. Specifically, the SOP (1) identifies the steps involved in waste identification and characterization as delineated by Laboratory requirements, and (2) provides instructions for completing a Waste Characterization Strategy Form (WCSF). A WCSF is required for projects that include (but are not limited to) site investigations, corrective actions, drilling, closures, and decommissioning projects.
SOP-02.01	Surface Water Site Assessments	This SOP describes the process for determining whether a site has the potential to adversely affect surface-water quality. The procedure identifies responsible participants and provides a detailed checklist to evaluate the erosion potential at a site that does not meet the criterion for no further action. SWMUs with highest priority are those adjacent to drainages and canyon systems or those with an erosion matrix score greater than 40 based on an evaluation of erosion/sediment transport potential. Erosion matrix scores range from 1 to 100 and are qualitatively determined based on a systematic assessment of the site. The assessment involves an evaluation of the site setting, examination of the site for evidence of runoff and erosion, and documentation of structures and/or operations that are directing storm water onto the site.
SOP-03.11	Coordinating and Evaluating Geodetic Surveys	This SOP describes the methodology for coordinating and evaluating geodetic surveys and establishing quality assurance (QA) and control for geodetic survey data. Procedure covers: evaluating geodetic survey requirements, preparing to perform a geodetic survey, performing geodetic survey field activities, preparing geodetic survey data for QA review, performing QA review of geodetic survey data, and submitting geodetic survey data.

Table 5.0-1 (continued)

Procedure	Title	Summary
SOP-04.04	Contract Geophysical Logging	This SOP states the responsibilities and describes the general process for obtaining borehole logging data of acceptable quality regardless of logging system or logging contractor, to meet site-characterization and/or subsurface-sampling requirements of the investigation. Borehole-logging techniques are used in situ to determine physical, chemical, geological, and hydrological conditions in an open borehole. The procedure covers pre-contract considerations, pre-operation activities, borehole geophysical logging activities, and post-operation activities. The primary concerns during logging activities are monitoring the logging equipment as it emerges from the borehole or before it leaves the work site for contamination, verifying field calibration both immediately before and immediately after a logging run or runs with a logging tool, and ensuring that the logging equipment is decontaminated between sampling events.
SOP-05.07	Operation of LANL Owned Borehole Logging Trailer	This SOP describes the process for operation and maintenance of the borehole video/geophysics logging trailer. The procedure covers running the borehole video camera system, running the borehole caliper tool, running the borehole conductivity/resistivity (induction) tool, running the gamma tool, and running the borehole spontaneous potential/single point resistance tool.
SOP-06.01	Purging and Sampling Methods for Single Completion Wells	This SOP describes the methods used for evacuating stagnant water from a well bore in sufficient quantities so the water samples collected afterwards are representative of the formation interval open to the well bore. Stagnant groundwater in the well bore is subject to chemical reactions that may significantly alter the composition of the formation water. Before collecting a representative groundwater sample for laboratory analysis, groundwater must be purged. The procedure covers the preliminary activities, pre-operation field activities, well-purging operations, water sampling operations, and post-operation activities.
SOP-06.03	Sampling for Volatile Organic Compounds in Groundwater	This SOP states the responsibilities and describes the process for sampling for VOCs in groundwater. This SOP also describes the selection of equipment and materials used in the sampling process. The objectives are to collect valid samples for volatile organic analysis (VOA) and to subject samples to the least amount of turbulence and subsequent possible aeration. The procedure covers conducting pre-operation activities, sampling, preparing documentation, and conducting post-operation activities.
SOP-06.09	Spade and Scoop Method for the Collection of Soil Samples	This SOP describes the process for spade-and-scoop collection of shallow (i.e., typically 0 to 12 in.) soil samples. The spade-and-scoop method involves digging a hole to the desired depth, as prescribed in the sampling and analysis plan, and collecting a discrete grab or portion of a composite sample. The procedure covers pre-sampling activities, sampling activities, and post sampling activities.
SOP-06.10	Hand Auger and Thin-Wall Tube Sampler	This SOP states the responsibilities and describes the process for collecting surface and subsurface (up to about 15.) soil samples with a hand auger and thin-wall tube sampler. This procedure describes the selection and use of sampling methods and equipment at sites that may include contamination with hazardous or radioactive materials. The procedure covers pre-sampling activities, sampling activities, collecting field duplicates, and post-sampling activities.

Table 5.0-1 (continued)

Procedure	Title	Summary
SOP-06.24	Sample Collection from Split-Spoon Samplers and Shelby-Tube Samplers	This SOP states the responsibilities and describes the process for collecting soil and sediment samples using either split-spoon samplers or Shelby-tube samplers. A split-spoon sampler is used to take subsurface soil or sediment samples by forcefully driving the sampler into the soil or sediment at the bottom of a borehole. The Shelby tube is a similar type of sampling apparatus. The split spoon is a multipiece sampler; the Shelby tube is a single-piece metal tube of thinner gauge. The procedure covers pre-sampling activities, sampling activities, and post-sampling activities.
SOP-06.26	Core-Barrel Sampling for Subsurface Earth Materials	This SOP describes the process for collecting core-barrel samples of subsurface earth materials and is limited to sampling of subsurface sediments for radionuclides (including tritium), metals, polychlorinated biphenyls, total petroleum hydrocarbons, and VOCs and SVOCs. The field team may sample for other constituents under this SOP (or modifications thereof) at the discretion of the field team leader and project leader. The procedure covers pre-sampling activities, sampling activities, and post-sampling activities.
SOP-06.31	Sampling of Subatmospheric Air	This SOP describes the process of sampling subatmospheric air from vapor ports in monitoring wells and boreholes. The procedure covers pre-sampling activities, B&K sampling to detect and quantify gaseous organic concentration in air, SUMMA sampling (a passive collection and containment system of laboratory-quality air samples), adsorbent column sampling, sampling through the packer system (a sampling system that uses inflatable bladders to seal off a desired interval in an open borehole, or at the end of drill casing, to obtain a sample from a discrete section), and post-sampling activities.
SOP-06.33	Headspace Vapor Screening with a Photoionization Detector	This SOP describes the process for screening headspace vapor for VOCs in soil samples with a photoionization detector (PID). The PID is a portable, nonspecific, vapor/gas detector employing the principle of photoionization to detect and measure real-time concentrations of a variety of chemical compounds, both organic and inorganic, in air. The procedure covers performing field calibration, operating, and post operating activities.
SOP-07.05	Subsurface Moisture Measurements Using a Neutron Probe	This SOP describes the process of collecting subsurface moisture measurements using a neutron probe, which is used to measure the subsurface moisture with a probe containing a source of high-energy neutrons and a slow neutron detector. The procedure covers performing a daily field standard count, preparing instrument for field measurements, taking a field measurement, and documenting the results of the field measurement.
SOP-10.14	Performing and Documenting Gross Gamma Radiation Scoping Surveys	This SOP describes the process for performing and documenting gross gamma radiation scoping surveys in buildings and soil. Scoping surveys are conducted after an assessment of the site history is completed and consist of judgmental measurements based on historical site information and data. If the scoping survey locates contamination, a characterization survey is typically performed.

Table 5.0-1 (continued)

Procedure	Title	Summary
SOP-12.01	Field Logging, Handling, and Documentation of Borehole Materials	This SOP prescribes the specific borehole material management methods to be followed and documentation to be prepared during handling and field logging of selected borehole materials identified in the site guidance documents and WCSF. This procedure is limited to the activities necessary to take custody of core and cuttings from drill rig personnel, conduct field-screening, remove time-sensitive analytical samples and subsamples for preliminary characterization, complete photograph documentation when necessary, perform field structural and lithologic description, and mark, package, and temporarily store the borehole materials at a drill site borehole material storage trailer. This procedure describes the handling of the subset of borehole materials to be curated from the time they are withdrawn from the borehole to the time they are ready to be transported to the Field Support Facility (FSF) for curating and archiving. For the purposes of this SOP, borehole material may also refer to other solid materials, such as drive samples or augured materials. Procedure covers: borehole material staging, temporary packaging of time sensitive analytical samples, measurement and determination of material loss, marking core (depth notation and stripes), core photography, core logging, removal of analytical samples (core), and core box loading and storing.
QP-2.2	Personnel Training Management	This QP describes the responsibilities and process for managing personnel training. This QP integrates the criteria of the Quality Management Plan (QMP) for ENV-ERS Program. The QP discusses site-specific training, subcontractor personnel training requirements, Laboratory personnel training requirements, documenting procedural training, processing completed training documentation forms, and performing work.
QP-3.4	Corrective Action Process	This QP describes the responsibilities and process for providing consistency in identifying, logging, resolving, and reporting conditions adverse to quality. Informed decisions can then be made in terms of efficient resourcing and systemic problem solving. The procedure describes discovering and reporting a nonconformance, noncompliance, or deficiency, performing a Price-Anderson Amendment Act of 1988 (PAAA) determination, performing a health, safety, and radiation (HSR) review, implementing a corrective action report (CAR) disposition, logging and numbering a CAR, initiating a CAR closeout, reporting an overdue corrective action, changing a CAR, resolving a dispute regarding a CAR, and developing a trend report.
QP-4.4	Record Transmittal to the Records Processing Facility	This QP describes the responsibilities of transmitting records to the RPF and describes the process for transmitting documents to RPF. The procedure defines the types of information the term "records" includes, the records that should be submitted, and the steps necessary to submit records.
QP-4.12	Documenting Oral Communication	This QP describes the process for documenting oral communications that represent evidence of quality or safety concerns, organizations, functions, policies, decisions, procedures, operations, or other material that contain valuable information. The procedure describes determining whether or not documentation is required, documenting oral communication, and transmitting an oral communication record to the RPF.
QP-5.2	Control of Measuring and Test Equipment	This QP describes the process for identifying, maintaining, and managing measuring and test equipment (M&TE). Use of this mandatory procedure and its attachments ensures individual M&TE accuracy by determining proper status of the equipment before use. This procedure does not include calibration instructions for M&TE.

Table 5.0-1 (continued)

Procedure	Title	Summary
QP-5.3	Readiness Planning and Reviews	This QP describes the responsibilities and defines the process for conducting readiness planning and reviews. The procedure is used as a planning tool for preparing fieldwork, as a method to ensure compliance with all identified requirements and gain consensus on key preparations before field activities can proceed. The QP defines the personnel responsible for the various readiness planning and review activities. The procedure also presents the criteria in determining whether or not a readiness review meeting is necessary as well as details the process for conducting such a meeting. A readiness-review checklist is required to ensure all requirements are met and to assign responsible personnel for meeting the requirements.
QP-5.7	Notebook Documentation for Environmental Restoration Technical Activities	This QP describes the responsibilities and process for properly documenting environmental restoration technical activities and defines the requirements for documenting field activities including those for notebooks, notebook entries, notebook attachments, notebook data evaluation, technical review of notebooks, Quality Integration and Improvement review of notebooks, and notebook submission as a record.
QP-7.1	Procurement	This QP describes the responsibilities and process for procurement of quality-affecting items and services and details the processes for initiating a procurement, procuring built-to-order items, procuring non-analytical services, procuring internal and external analytical services, procuring calibration standards, reviewing documents for procuring services, purchase requisitions, and material receipt inspection. The procedure necessitates a graded approach in implementing its requirements. The QP provides an example services statement of work checklist and a "guidance document" statement of technical and quality requirements for purchase requisitions to use in following the procedure's requirements.
QP-7.2	Supplier Evaluation	This QP describes the requirements and process for evaluating and approving potential suppliers of items and/or services. The QP also describes the requirements and process for implementing and maintaining the Qualified Suppliers List. The procedure specifically excludes certain items to which the QP does not apply.
QP-10.3	Stop Work and Restart	Thos QP describes the responsibilities and process for issuing and controlling formal Stop Work and Restart processes. All personnel have the authority and the responsibility to stop work if adverse work conditions are identified. Supervisors must be included in any stop-work action to ensure that a greater hazard is not created in stopping work. The procedure also describes the method for following up and/or restarting work after a stop-work action.
QMP	Quality Management Plan for LANL RRES-RS Project	The QMP establishes the principles, requirements, and practices necessary to execute a constructive quality assurance program. The document is based on the ten criteria of 10 Code of Federal Regulations 830 Subpart A, "Quality Assurance Requirements," and DOE Order 414.1, "Quality Assurance," as directed by Laboratory Performance Requirement 308-00-00, "Institutional Quality Management."

Appendix A

Acronyms, Glossary, and
Metric Conversion and Data Qualifier Definition Tables

ACRONYMS

AA	administrative authority
AK	acceptable knowledge
AOC	area of concern
asl	above sea level
ASTM	American Society for Testing and Materials
B&K	Brüel and Krajer
bgs	below ground surface
BMP	best management practice
BV	background value
CAR	corrective action report
COC	chain of custory
COPC	chemical of potential concern
CSM	conceptual site model
D&D	decontamination and decommissioning
DDD	dichlorodiphenyldichloroethane [4,4'-]
DDE	dichlorodiphenyldichloroethylene [4,4']
DDT	dichlorodiphenyltrichloroethane [4,4']
DOE	Department of Energy
DOT	Department of Transportation
DP	Delta Prime
ENV-ECR	Environmental Characterization and Remediation Group
ENV-ERS	Environmental Stewardship–Environmental Remediation and Surveillance Program
EPA	Environmental Protection Agency
EQL	estimated quantitation limit
ER ID	Environmental Restoration Project identification number
ER	environmental restoration
ERDB	Environmental Restoration Database
ESL	ecological screening level
FSF	Field Support Facility
FUSRAP	Formerly Utilized Sites Remedial Action Program
FV	fallout values
GPS	global positioning system
HE	high explosives
HP	horsepower

HWA	Hazardous Waste Act
HRL	health research laboratory
HSR	health safety and radiation
HWFP	Hazardous Waste Facility Permit
IA	interim action
ICPMS	inductively coupled plasma mass spectrometry
IDW	investigation-derived waste
IM	interim measure
KPA	kinetic phosphorescence analysis
LANL	Los Alamos National Laboratory
LAPCIR	Los Alamos and Pueblo Canyons Investigation Report
LIR	Laboratory Implementation Requirement
M&TE	measuring and testing equipment
MCAL	mobile chemical analytical laboratory
MDA	minimum detectable activity
MDL	method detection limit
msl	mean sea level
NFA	no further action
NMED	New Mexico Environment Department
NMHWA	New Mexico Hazardous Waste Act
NMSA	New Mexico Statutes Annotated
NOI	Notice of Intent
PAAA	Price-Anderson Award Act
PAH	polyaromatic hydrocarbons
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PID	photoionization detector
PPE	personal protective equipment
ppmv	parts per million by volume
PRS	potential release site
QA	quality assurance
QC	quality control
QMP	quality management plan
QP	quality procedure
QPM	quality management plan

RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RL	reporting limits
RLW	radioactive liquid waste
RPF	Records Processing Facility
RQD	rock quality designation
SAL	screening action level
SAP	sampling and analysis plan
SMO	Sample Management Office
SOP	standard operating procedure
SOW	statement of work
SSL	soil screening level
SVOC	semivolatile organic compound
SWA	Solid Waste Act
SWMU	solid waste management unit
TA	technical area
TAL	target analyte list
TCE	trichloroethene
TCLP	toxicity characteristic leaching procedure
TD	total depth
TPH	total petroleum hydrocarbons
UST	underground storage tank
VCA	voluntary corrective action
VCP	vitrified clay pipe
VOA	volatile organic analysis
VOC	volatile organic compound
WCSF	Waste Characterization Strategy Form
WQCC	Water Quality Control Commission
WWTP	wastewater treatment plant
XRF	X-ray fluorescence

GLOSSARY

abandonment—The plugging of a well or *borehole* in a manner that precludes the *migration* of surface *runoff* or *groundwater* along the length of the well or borehole.

accuracy—A measure of the closeness of measurements to the true value of the parameter being measured.

action level—(1) A numerical value that has been established by statistical *analysis* or has been set according to regulatory limits and is used as a criterion for action. Contamination found in a particular medium below an appropriate action level would not generally be subject to *remediation* or further study. (2) A health- and environment-based concentration derived using *chemical*-specific toxicity information and standardized exposure assumptions. An action level can be developed on a *facility*-specific basis or can be taken from standardized lists. (61 Federal Register 19446)

administrative authority—For Los Alamos National Laboratory, one or more regulatory agencies, such as the New Mexico Environment Department, the *U.S. Environmental Protection Agency*, or the *U.S. Department of Energy*, as appropriate.

aggregate—At the Los Alamos National Laboratory, an area within a *watershed* containing *solid waste management units* (SWMUs) and/or areas of concern (AOCs), and the media affected or potentially affected by *releases* from those SWMUs and/or AOCs. Aggregates are designated to promote efficient and effective *corrective action* activities.

aliquot—A measured portion of a *sample* taken for *analysis*.

alkalinity—In water *analysis*, the presence of carbonates, bicarbonates, and/or hydroxides, and occasionally borates, chlorates, silicates, or phosphates.

alluvial—Pertaining to geologic deposits or features formed by running water.

alluvium—*Soil* deposited by a river or other running water.

alpha radiation—A form of particle *radiation* that is highly ionizing and has low penetration. Alpha radiation consists of two protons and two neutrons bound together into a particle that is identical to a helium nucleus and can be written as He^{2+}.

analysis—A critical evaluation, usually made by breaking a subject (either material or intellectual) down into its constituent parts, then describing the parts and their relationship to the whole. Analyses may include physical analysis, *chemical analysis*, toxicological analysis, and knowledge-of-process determinations.

analyte—The element, nuclide, or ion a *chemical analysis* seeks to identify and/or quantify; the chemical constituent of interest.

analytical method—A procedure or technique for systematically performing an activity.

aquifer—An underground geological formation (or group of formations) containing water that is the source of *groundwater* for wells and *springs*.

area of concern—(1) A *release* that warrants investigation or *remediation*, whether or not it is associated with a specific *solid waste management unit* (SWMU). (2) An area at Los Alamos National Laboratory[0] that may have had a release of a *hazardous waste* or a *hazardous constituent* but is not a SWMU. (Note: Generally, the acronym AOC is used for *area of concern*.)

area of contamination—A discrete regulatory definition under *Environmental Protection Agency* policy: certain areas of generally dispersed contamination that could be equated to a *Resource*

Conservation and Recovery Act (RCRA) landfill. The movement of *hazardous wastes* within those areas would not be considered *land disposal* and would not trigger RCRA *land-disposal restrictions*.

artificial fill—A material that has been imported and typically consists of disturbed *soils* mixed with crushed Bandelier Tuff or other rock types.

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

assessment—(1) The act of reviewing, inspecting, testing, checking, conducting surveillance, auditing, or otherwise determining and documenting whether items, processes, or services meet specified requirements. (2) An evaluation process used to measure the performance or effectiveness of a system and its elements. In this glossary, assessment is an all-inclusive term used to denote any one of the following: *audit*, *performance evaluation*, management system review, *peer review*, *inspection*, or surveillance.

audit (quality)—An independent, systematic examination to determine whether quality activities and related results comply with planned arrangements, whether these arrangements are implemented effectively, and whether they are suitable for achieving objectives.

auger flights—Winding metal strips welded to auger sections that carry cuttings to the surface when an auger is rotated.

background concentration—Naturally occurring concentrations of an inorganic *chemical* or *radionuclide* in *soil*, *sediment*, or *tuff*.

background data—Data that represent naturally occurring concentrations of inorganic and *radionuclide* constituents in a geologic *medium*. Los Alamos National Laboratory's (the Laboratory's) background data are derived from *samples* collected at locations that are either within, or adjacent to, the Laboratory. These locations (1) are representative of geological media found within Laboratory boundaries, and (2) have not been affected by Laboratory operations.

background level—(1) The concentration of a substance in an environmental *medium* (air, water, or *soil*) that occurs naturally or is not the result of human activities. (2) In exposure *assessment*, the concentration of a substance in a defined control area over a fixed period of time before, during, or after a data-gathering operation.

background radiation—The amount of *radioactivity* naturally present in the environment, including cosmic rays from space and natural *radiation* from *soils* and rock.

background sample—A *sample* collected from an area or *site* that is similar to the one being studied but known, or thought, to be free from constituents of concern.

background value (BV)—The *background concentration* of a *chemical* used to represent the background of statistically derived BV in the *upper tolerance limit* (UTL) of the distribution. If a UTL cannot be derived, either the *detection limit* or maximum reported value in the *background data* set is used.

basalt—A fine-grained, dark volcanic rock comprised chiefly of plagioclase, augite, olivine, and magnetite.

baseline contaminant level—*Anthropogenic* soil concentrations of a given *chemical* associated with Los Alamos National Laboratory and/or with commercial activities or processes that may not be related to source material(s) or *release(s)* from within a *potential release site*. (Also see *contaminant*.)

baseline data—Data that result from *samples* not directly associated with, or attributed to, a *site*. Baseline data must be identified during planning as originating from baseline samples. They are not

equivalent to Los Alamos National Laboratory *background data*, usually are specific to an industrial area (such as a *technical area*), and are not applicable to another site without approval by the *administrative authority*.

bentonite—An absorbent aluminum silicate clay formed from volcanic ash and used in various adhesives, cements, and ceramic fillers. Because bentonite can absorb large quantities of water and expand to several times its normal volume, it is a common drilling mud additive.

best management practices—Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from non-point sources.

beta radiation—High-energy electrons emitted by certain types of radioactive nuclei, such as potassium-40. The beta particles emitted are a form of ionizing *radiation* also known as beta rays.

blank—A *sample* that is expected to have a negligible or unmeasurable amount of an *analyte*. Results of blank sample analyses indicate whether *field samples* might have been contaminated during the sample collection, *transport*, storage, preparation, or *analysis* processes.

borehole—(1) A hole drilled or bored into the ground, usually for exploratory or economic purposes. (2) A hole into which *casing*, screen, and other materials may be installed to construct a well.

borehole logging—The process of making remote measurements of physical, chemical, or other parameters at multiple depths in a *borehole*.

borehole logging technical specifications—*Documents* included in a *site*-specific *drilling package* that define the capabilities and the data quality required of prospective logging contractors for a given *operable unit* or a portion thereof.

caldera—A large crater formed by a volcanic explosion or by the collapse of a volcanic cone.

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

calibration blank—A *calibration standard* prepared to contain negligible or unmeasurable amounts of *analytes*. A calibration blank is used to establish the zero concentration point for analytical measurement *calibrations*.

calibration standard—A *sample* prepared to contain known amounts of *analytes* of interest and other constituents required for an *analysis*.

canyon—A stream-cut chasm or gorge, the sides of which are composed of cliffs or a series of cliffs rising from the canyon's bed. Canyons are characteristic of arid or semiarid regions where downcutting by streams greatly exceeds weathering.

casing—A solid piece of pipe, typically steel, stainless steel, or polyvinyl chloride (PVC) plastic, used to keep a well open in either unconsolidated material or unstable rock and as a means to contain zone-isolation materials, such as cement *grout* or *bentonite*.

chain of custody—An unbroken, documented trail of accountability that is designed to ensure the uncompromised physical integrity of *samples*, data, and *records*.

chemical—Any naturally occurring or human-made substance characterized by a definite molecular composition, including molecules that contain *radionuclides*.

chemical analysis—A process used to measure one or more attributes of a *sample* in a clearly defined, controlled, and systematic manner. Chemical analysis often requires treating a sample chemically or physically before measurement.

chemical of potential concern (COPC)—A detected chemical compound or element that has the potential to adversely affect human *receptors* as a result of its concentration, distribution, and toxicity. A COPC remains a concern until *exposure pathways* and receptors are evaluated in a *site*-specific human-health *risk assessment*. (Also see *chemical of potential ecological concern*.)

Code of Federal Regulations (CFR)—A *document* that codifies all rules of the executive departments and agencies of the federal government. The code is divided into 50 volumes, known as titles. Title 40 of the CFR (referenced as 40 CFR) covers environmental regulations.

collocated sample—One of two or more *samples* collected within close proximity of each other and meant to represent the same immediate area.

colluvium—A loose deposit of rock debris accumulated through the action of gravity at the base of a cliff or *slope*.

comparability—A qualitative measure of the degree to which one item or data set can be compared with another.

Compliance Order on Consent (Consent Order)—For the *Environmental Restoration Project*, an enforcement *document* signed by the New Mexico Environment Department, the *U.S. Department of Energy*, and the University of California on March 1, 2005, which prescribes the requirements for *corrective action* at Los Alamos National Laboratory. The purposes of the Consent Order are (1) to define the nature and extent of *releases* of *contaminants* at, or from, the *facility* ; (2) to identify and evaluate, where needed, alternatives for *corrective measures* to clean up contaminants in the environment and prevent or mitigate the *migration* of contaminants at, or from, the facility; and (3) to implement such corrective measures. The Consent Order supersedes the corrective action requirements previously specified in Module VIII of the *Hazardous Waste Facility Permit*.

composite sample—A *sample* collected over a temporal or spatial range that typically consists of a series of discrete equal samples which have been combined or composited.

conceptual hydrogeologic model—An approximation of the occurrence, movement, and quality of *groundwater* in a given area and the relationship of that groundwater to the surface water, *soil water*, and geologic framework in that area.

conceptual model—See *site conceptual model*.

confined—Pertaining to *groundwater* in an artesian *aquifer*.

confluence—A place where two or more streams or *canyons* meet; the point where a tributary meets the main stream.

Consent Order—See *Compliance Order on Consent*.

construction worker scenario—A scenario that evaluates exposures to a human *receptor* throughout a construction project. The activities typically involve substantial short-term on-site exposures.

contaminant—(1) Any *chemical* (including *radionuclides*) present in environmental media or on structural debris above *background levels*. (2) According to the New Mexico Environment Department (NMED) *Consent Order*, any *hazardous waste* listed or identified as characteristic in 40 Code of Federal Regulations (CFR) 261 (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC]); any *hazardous constituent* listed in 40 CFR 261 Appendix VIII (incorporated by 20.4.1.200 NMAC) or 40 CFR 264 Appendix IX (incorporated by 20.4.1.500 NMAC); any *groundwater* contaminant listed in the Water Quality Control Commission (WQCC) Regulations at 20.6.3.3103 NMAC; any *toxic pollutant* listed in the WQCC Regulations at 20.6.2.7 NMAC; explosive compounds; nitrate; and

perchlorate. (Note: Under the NMED Consent Order, the term "contaminant" does not include radionuclides or the radioactive portion of *mixed waste*.)

contract analytical laboratory—An analytical laboratory under contract to the University of California to analyze samples from work performed at Los Alamos National Laboratory.

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

daily calibration—The combination of a *calibration blank* and *calibration standard* used to determine if the instrument response to an *analyte* concentration is within acceptable bounds relative to the *initial calibration*. A daily *calibration* establishes the instrument response factors on which quantitations are based, thus verifying the satisfactory performance of an instrument on a day-to-day basis.

data package—The hard copy deliverable for each sample delivery group produced by a *contract analytical laboratory* in accordance with the statement of work for analytical services.

data quality assessment—The statistical and/or scientific evaluation of a data set that establishes whether the data set is adequate for its intended use.

data quality objectives—Qualitative and quantitative statements of the overall level of uncertainty that a decision-maker will accept regarding results or decisions based on environmental data. The objectives provide the statistical framework for planning and managing environmental data operations that will meet user needs.

data validation—A systematic process that applies a defined set of performance-based criteria to a body of data and that may result in the *qualification* of the data. The data-validation process is performed independently of the analytical laboratory that generates the data set and occurs before conclusions are drawn from the data. The process may comprise a standardized data review (*routine data validation*) and/or a problem-specific data review (*focused data validation*).

data verification—The process of evaluating the completeness, correctness, consistency, and compliance of a laboratory *data package* against a specified standard or contract.

- Completeness: All required information is present—in both hard copy and electronic forms.
- Correctness: The reported results are based on properly documented and correctly applied algorithms.
- Consistency: The values are the same when they appear in different reports or are transcribed from one report to another.
- Compliance: The data pass numerical *quality control* tests based on parameters or limits specified in a contract or in an auxiliary *document*.

decontamination—The removal of unwanted material from the surface of, or from within, another material.

detect (detection)—An analytical result, as reported by an analytical laboratory, that denotes a *chemical* or *radionuclide* to be present in a *sample* at a given concentration.

detection limit—The minimum concentration that can be determined by a single measurement of an instrument. A detection limit implies a specified statistical confidence that the analytical concentration is greater than zero.

discharge—The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of *hazardous waste* into, or on, any land or water. (Resource Conservation and Recovery Act, 40 Code of Federal Regulations [CFR] 260.10)

disposal—The *discharge*, deposit, injection, dumping, spilling, leaking, or placing of any *solid waste* or *hazardous waste* into, or on, any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including *groundwaters*. (40 Code of Federal Regulations [CFR] 260.10)

drill bit—The cutting tool attached to the bottom of a drill stem.

drilling string—The string of pipe (extending from the bit to the driving mechanism) that serves to carry mud down a *borehole* and to rotate a bit.

drill rod (drill pipe)—Special pipe used to transmit rotation and energy from the drill rig to the bit. This conduit conveys circulation fluids such as air, water, or other mixtures to cool the bit and evacuate the *borehole* cuttings.

duplicate analysis—An *analysis* performed on one member of a pair of identically prepared *subsamples* taken from the same *sample*.

duplicate measurement—An additional measurement performed on a *prepared sample* under identical conditions to evaluate any variance in measurement.

effluent—Wastewater (treated or untreated) that flows out of a *treatment* plant, sewer, or industrial *outfall*. Generally refers to wastes discharged into surface waters.

Environmental Restoration (ER) Project—A Los Alamos National Laboratory project established in 1989 as part of a *U.S. Department of Energy* nationwide program. The ER Project's specific purposes are (1) to investigate hazardous and/or *radioactive materials* that may be present in the environment as a result of past Laboratory operations, (2) to determine if the materials currently pose an unacceptable *risk* to human health or the environment, and (3) to remediate (clean up, stabilize, or restore) those *sites* where contamination is still present.

ephemeral—Pertaining to a stream or *spring* that flows only during, and immediately after, periods of rainfall or snowmelt.

equipment blank (rinsate blank)—A *sample* used to rinse sample-collection equipment and expected to have negligible or unmeasurable amounts of *analytes*. The equipment blank is collected after the equipment *decontamination* is completed but before the collection of another *field sample*.

ER data—Data derived from *samples* that have been collected and paid for through *Environmental Restoration Project* funding.

ER database (ERDB)—A database housing analytical and other programmatic information for the *Environmental Restoration Project*. The ERDB currently contains about 3 million analyses in 300 tables.

ER identification (ER ID) number—A unique identifier assigned by the *Environmental Restoration (ER) Project*'s Records Processing Facility to each *document* when it is submitted as a final *record*. The ER ID number signals the end of the document process.

error—The quantifiable difference between an observed value and the true value of a parameter being measured.

estimated detection limit—A *reporting limit* required by a Los Alamos National Laboratory statement of work for analytical services.

estimated quantitation limit (EQL)—The lowest concentration that can be reliably achieved within specified limits of *precision* and *accuracy* during routine analytical-laboratory operating conditions. The low point on a *calibration* curve should reflect this quantitation limit. The EQL is not used to

establish detection status. Sample EQLs are highly matrix-dependent and the specified EQLs might not always be achievable.

evapotranspiration—(1) The discharge of water from the Earth's surface to the atmosphere by evaporation from lakes, streams, and soil surfaces and by transpiration from plants. (2) The loss of water from the *soil* by evaporation and/or by transpiration from the plants growing in the soil.

exposure pathway—Any path from the sources of *contaminants* to humans and other species or settings via *soil*, water, or food.

exposure unit—The bounded area or volume within which a person or other *receptor* could be exposed to *contaminants* that have been *released* into the environment.

external standard calibration—A comparison of instrument responses from a *sample* to the responses from target compounds in the *calibration standards*. The sample's peak areas (or peak heights) are compared to the standards' peak areas (or peak heights).

facility—All contiguous land (and structures, other appurtenances, and improvements on the land) used for treating, storing, or disposing of *hazardous waste*. A facility may consist of several *treatment*, storage, or *disposal* operational units. For the purpose of implementing a *corrective action*, a facility is all the contiguous property that is under the control of the owner or operator seeking a *permit* under Subtitle C of the Resource Conservation and Recovery Act (40 Code of Federal Regulations 260.10).

fallout radionuclides—*Radionuclides* that are present at globally elevated levels in the environment as a result of fallout from atomic weapons tests. The Los Alamos National Laboratory (the Laboratory) *background data* sets consist of *environmental surveillance samples* taken from marginal and regional locations for the following radionuclides associated with fallout: tritium, cesium-137, americium-241, plutonium-238, plutonium-239/240, and strontium-90. Samples were collected from regional and marginal locations in the Laboratory's vicinity that were (1) representative of geological media found within Laboratory boundaries, and (2) were not impacted by Laboratory operations.

fault—A fracture, or zone of fractures, in rock along which vertical or horizontal movement has taken place and adjacent rock layers or bodies have been displaced.

Federal Register—The official daily publication for Rules, Proposed Rules, and Notices from federal agencies and organizations, as well as Executive Orders and other presidential documents.

field blank (field reagent blank)—A *blank sample* prepared in the field or carried to the sampling *site*, exposed to sampling conditions (e.g., by removing bottle caps), and returned to a laboratory to be analyzed in the same manner in which *environmental samples* are being analyzed. Field blanks are used to identify the presence of any contamination that may have been added during the sampling and *analysis* process.

field duplicate (replicate) samples—Two separate, independent *samples* taken from the same source, which are collected as *collocated samples* (i.e., equally representative of a sample matrix at a given location and time).

field matrix spike—A known amount of a *field sample* to which a known amount of a *target analyte* has been added and used to compute the proportion of the added analyte that is recovered upon *analysis*.

field notebook—A *record* of activities performed in the field or a compilation of field data.

field reagent blank—See *field blank*.

field sample—See *sample*.

field split—A *field sample* that has been homogenized and divided, in the field, into equally representative portions which are submitted for *analysis*. (Also see *split sample*.)

filter pack—Sand, gravel, or glass beads that are uniform, clean, and well-rounded and are placed in the annulus of a well, between the *borehole* wall and the well intake, to stabilize the formation and to prevent foreign material from entering through the well intake.

flood plain—The flat, or nearly flat, land along a river or stream, or in a tidal area, that is covered by water during a flood.

focused data validation—A technically based *analyte-*, *sample-*, and data-use-specific process that extends the *qualification* of data beyond method or contractual compliance and provides a higher level of confidence that an analyte is present or absent. If an analyte is present, the quality of the quantitation may be obtained through focused validation. (Also see *data validation*.)

gamma radiation—A form of electromagnetic, high-energy ionizing *radiation* emitted from a nucleus. Gamma rays are essentially the same as x-rays (though at higher energy) and require heavy shielding, such as concrete or steel, to be blocked.

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

grab sample—A specimen collected by a single application of a field sampling procedure to a target *population* (e.g., the surface *soil* from a single hole collected after the spade-and-scoop sampling procedure, or a single air filter left in the field for 3 months).

gravimetric moisture content—See *water content*.

groundwater—Interstitial water that occurs in saturated earth material and is capable of entering a well in sufficient amounts to be used as a water supply.

grout—Cement or *bentonite* mixtures used for sealing *boreholes* and wells and for zone isolation. Only Portland Type I or II cement is approved for use at investigative *sites*.

Hazardous and Solid Waste Amendments (HSWA)—The HSWA of 1984 (Public Law No. 98-616, 98 Stat. 3221), which amended the Resource Conservation and Recovery Act of 1976 (42 United States Code § 6901 *et seq*).

hazardous constituent (hazardous waste constituent)—According to the New Mexico Environment Department's *Consent Order*, any constituent identified in Appendix VIII to 40 Code of Federal Regulations (CFR) 261 (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC]) or any constituent identified in 40 CFR 264, Appendix IX (incorporated by 20.4.1.500 NMAC).

hazardous samples—*Samples* of on-site air particulates, *soil*, or water and materials collected at waste sites that are known, or thought, to meet the definition of a hazard class per 49 Code of Federal Regulations 171.8. The term "hazardous samples" does not refer to *Resource Conservation and Recovery Act hazardous wastes* unless so stated.

hazardous waste—(1) *Solid waste* (as defined in 40 Code of Federal Regulations [CFR] 261.2) that is a listed *hazardous waste* (as provided in 40 CFR Subpart D), or a waste that exhibits any of the characteristics of hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity, as provided in 40 CFR Subpart C). (2) According to the New Mexico Environment Department's *Consent Order*, any solid waste or combination of solid wastes which, because of its quantity, concentration, or physical, chemical, or infectious characteristics, meets the description set forth in New Mexico Statutes Annotated 1978, § 74-4-3(K) and is listed as a hazardous waste or exhibits a hazardous

waste characteristic under 40 CFR 261 (incorporated by 20.4.1.200 New Mexico Administrative Code).

Hazardous Waste Facility Permit[0]—The *permit* issued to Los Alamos National Laboratory (the Laboratory) by the New Mexico Environment Department that allows the Laboratory to operate as a *hazardous waste treatment*, storage, and *disposal facility*.

Hazardous Waste Bureau—The New Mexico Environment Department bureau charged with providing regulatory oversight and technical guidance to New Mexico *hazardous waste* generators and to *treatment, storage, and disposal facilities*, as required by the New Mexico Hazardous Waste Act and by regulations promulgated under the Act.

high-explosive wastes—Any waste-containing material having an amount of stored chemical energy that could start a violent reaction when initiated by impact, spark, or heat. This violent reaction would be accompanied by a strong shock wave and the potential for high-velocity particles to be propelled. (Laboratory Implementation Requirement 404-00-02.3)

holding time—The maximum elapsed time a *sample* can be stored without unacceptable changes in *analyte* concentrations. Holding times apply under prescribed conditions, and deviations from these conditions may affect the holding times. Extraction holding time refers to the time lapsed between sample collection and sample preparation. Analytical holding time refers to the time lapsed between sample preparation and *analysis*.

HSWA module—Module VIII of the Los Alamos National Laboratory (the Laboratory) *Hazardous Waste Facility Permit*. This *permit* allows the Laboratory to operate as a *hazardous waste treatment, storage, and disposal facility*. Module VIII incorporates requirements from the *Hazardous and Solid Waste Amendments*, including the requirement of *corrective actions* for *releases* from *solid waste management units*.

hydraulic conductivity—(1) A coefficient of proportionality that describes the rate at which a fluid can move through a permeable *medium*. The rate is a function of both the medium and the fluid flowing through it. (2) The quantity of water that will flow through a unit of cross-sectional area of a porous material per unit time under a *hydraulic gradient* of 1.00 (measured at right angles to the direction of flow) at a specified temperature. (Also see *unsaturated hydraulic conductivity*.)

hydraulic gradient—The rate of change in *hydraulic head* per unit of distance in the direction of *groundwater* flow.

hydrogen-ion activity (pH)—The effective concentration (activity) of dissociated hydrogen ions (H+); a measure of the acidity or *alkalinity* of a solution that is numerically equal to 7 for neutral solutions, increases with alkalinity, and decreases as acidity increases.

"Hydrogeologic Workplan"—The *document* that describes the activities planned by Los Alamos National Laboratory (the Laboratory) to characterize the hydrologic setting beneath the Laboratory and to enhance the Laboratory's *groundwater* monitoring program.

hydrogeology—The science dealing with the occurrence of surface water and *groundwater*, their utilizations, and their functions in modifying the Earth, primarily by erosion and deposition.

industrial scenario—A land-use condition in which current Los Alamos National Laboratory operations or industrial/commercial operations within Los Alamos County are continued or planned. Any necessary *remediation* involves *cleanup* to standards designed to ensure a safe and healthy work environment for workers.

infiltration—(1) The penetration of water through the ground surface into subsurface *soil*. (2) The technique of applying large volumes of wastewater to land to penetrate the surface and percolate through the underlying soil.

instrument detection limit (IDL)—A measure of instrument *sensitivity* without any consideration for contributions to the signal from reagents. The IDL is calculated as follows: Three times the average of the standard deviations obtained on three nonconsecutive days from the *analysis* of a standard solution, with seven consecutive measurements of that solution per day. The standard solution must be prepared at a concentration of three to five times the instrument manufacturer's estimated IDL.

interim measure—An action that can be implemented to minimize or prevent *migration* of *contaminants*, and to minimize or prevent actual or potential human or ecological exposure to contaminants, while long-term final *corrective action* remedies are evaluated and, if necessary, implemented.

intermittent stream—A stream that flows only in certain reaches as a result of the channel bed's losing and gaining characteristics.

internal standards—Compounds added to a *sample* after the sample has been prepared for qualitative and quantitative instrument *analysis*. The compounds serve as a standard of retention time and response which is invariant from run to run.

Investigation-derived waste—*Solid waste* or *hazardous waste* that was generated as a result of *corrective action* investigation or *remediation* field activities. Investigation-derived waste may include drilling muds, cuttings, and purge water from the installation of test pits or wells; purge water, *soil*, and other materials from the collection of *samples*; residues from the testing of *treatment* technologies and pump-and-treat systems; contaminated personal protective equipment; and solutions (aqueous or otherwise) used to decontaminate nondisposable protective clothing and equipment. (U.S. Environmental Protection Agency, January 1992. Publication 9345.3-03FS)

laboratory qualifier (laboratory flag)—Codes applied to data by a *contract analytical laboratory* to indicate, on a gross scale, a verifiable or potential data deficiency. These flags are applied according to the *U.S. Environmental Protection Agency* contract-laboratory program guidelines.

LANL (Los Alamos National Laboratory) data validation qualifiers—The Los Alamos National Laboratory data qualifiers which are defined by, and used, in the *Environmental Restoration (ER) Project* validation process. The qualifiers describe the general usability (or quality) of data. For a complete list of data qualifiers applicable to any particular analytical suite, consult the appropriate ER Project *standard operating procedure*.

LANL (Los Alamos National Laboratory) data validation reason codes—The Los Alamos National Laboratory designations applied to sample data by data validators who are independent of the contract laboratory that performed a given sample *analysis*. Reason codes provide an analysis-specific explanation for applying a qualifier, with some description of the qualifier's potential impact on data use. For a complete list of data qualifiers applicable to any particular analytical suite, consult the appropriate *Environmental Restoration Project standard operating procedure*.

log book—A notebook used to record tabulated data (e.g., the history of *calibrations*, *sample* tracking, numerical data, or other technical data).

Los Alamos unlimited release (LA-UR) number—A unique identification number required for all *documents* or presentations prepared for distribution outside Los Alamos National Laboratory (the Laboratory). LA-UR numbers are obtained by filling out a technical information release form (http://enterprise.lanl.gov/alpha.htm) and submitting the form together with 2 copies of the document to the Laboratory's Classification Group (S-7) for review.

matrix—Relatively fine material in which coarser fragments or crystals are embedded; also called "ground mass" in the case of igneous rocks. (Also see *sample matrix*.)

matrix spike—An *aliquot* of a *sample* spiked with a known concentration of *target analyte(s)*. Matrix spike samples are used to measure the ability to recover prescribed analytes from a native *sample matrix*. The spiking typically occurs before sample preparation and *analysis*. (Also see *matrix spike duplicate*.)

matrix spike duplicate—An intralaboratory duplicate *sample* spiked with a known amount of *target analyte(s)*. Spiking typically occurs before sample preparation and *analysis*. (Also see *matrix spike*.)

maximum contaminant level (MCL)—Under the Safe Drinking Water Act, the maximum permissible level of a *contaminant* in water that is delivered to any user of a public water system serving 15 or more connections and 25 or more people. MCLs are enforceable standards and take into account the feasibility and cost of attaining the standards.

medium (environmental)—Any medium capable of absorbing or transporting constituents. Examples of media include *tuffs*, *soils* and *sediments* derived from these tuffs, surface water, *soil water*, *groundwater*, air, structural surfaces, and debris.

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

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

method detection limit (MDL)—The minimum concentration of a substance that can be measured and reported with a known statistical confidence that the *analyte* concentration is greater than zero. After subjecting *samples* to the usual preparation, the MDL is determined by analyzing those samples of a given matrix type that contain the analyte. The MDL is used to establish detection status.

migration—The movement of inorganic and organic chemical species through unsaturated or saturated materials.

migration pathway—A route (e.g., a stream or subsurface flow path) for the potential movement of *contaminants* to environmental *receptors* (plants, humans, or other animals).

minimum detectable activity (MDA)—For the *analysis* of *radionuclides*, the lowest detectable *radioactivity* for a given analytical technique. The following equation is used to calculate the MDA unless otherwise noted or approved by Los Alamos National Laboratory. (Note: "MDA" here should not to be confused with *material disposal area)*:

$$MDA = \frac{4.65(BKG)^{0.5} + 2.71}{2.22 \times EFF \times V \times T_S \times Y},$$

where BKG = the total background counts,
EFF = the fraction detector efficiency,
V = the volume or unit weight,
T_s = the sample count duration, and
Y = the fractional chemical recovery obtained from the *tracer* recovery.

Depending on the type of analysis, other terms may also be required in the denominator (e.g., gamma abundance).

mixed waste—Waste containing both hazardous and source, special nuclear, or byproduct materials subject to the Atomic Energy Act of 1954. (Laboratory Implementation Requirement 404-00-03.1)

model—A schematic description of a physical, biological, or social system, theory, or phenomenon that accounts for its known or inferred properties and may be used for the further study of its characteristics.

monitoring well—(1) A well used to obtain water-quality *samples* or to measure *groundwater* levels. (2) A well drilled at a *hazardous waste* management facility or *Superfund site* to collect groundwater samples for the purpose of physical, chemical, or biological analysis and to determine the amounts, types, and distribution of *contaminants* in the groundwater beneath the site.

National Pollutant Discharge Elimination System—The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing *permits* to discharge wastewater or storm water, and for imposing and enforcing pretreatment requirements under the Clean Water Act.

no further action—Under the *Resource Conservation and Recovery Act*, a corrective-action determination whereby, based on evidence or *risk assessment*, no further investigation or *remediation* is warranted.

nondetect—A result that is less than the *method detection limit*.

notice of deficiency (NOD)—A written notification from the *administrative authority* to a *facility* owner/operator following the review of a *permit* application or other permit-related plan or report. The NOD requests additional information before a decision can be made regarding the original plan or report.

notices of approval, of approval with modification, or of disapproval—Notices issued by the New Mexico Environment Department (NMED). Upon receipt of a *work plan*, schedule, report, or other deliverable *document*, NMED reviews the document and approves the document as submitted, modifies the document and approves it as modified, or disapproves the document. A notice of approval means that the document is approved as submitted. A notice of approval with modifications means that the document is approved but with modifications specified by NMED. A notice of disapproval means that the document is disapproved and it states the deficiencies and other reasons for disapproval. If NMED issues a notice of disapproval for a document, it may include written instructions for modifying and resubmitting the document. (Note: Notices of disapproval have grown out of the NMED's *Consent Order*. *Notices of deficiency* are used more broadly by NMED and have been in use for a longer time. Generally, the acronym NOD is used for a notice of deficiency.)

operable units (OUs)—At Los Alamos National Laboratory, 24 areas originally established for administering the *Environmental Restoration Project*. Set up as groups of *potential release sites*, the OUs were aggregated according to geographic proximity for the purposes of planning and conducting *Resource Conservation and Recovery Act (RCRA) facility assessments* and *RCRA facility investigations*. As the project matured, it became apparent that there were too many areas to allow efficient communication and to ensure consistency in approach. In 1994, the 24 OUs were reduced to 6 administrative field units.

outfall—A place where *effluent* is discharged into receiving waters.

percent recovery (%R)—The amount of material detected in a *sample* (less any amount already in the sample) divided by the amount added to the sample, expressed as a percentage.

perched water—A zone of unpressurized water held above the *water table* by impermeable rock or *sediment*.

perennial stream—Water in a channel or bed that flows continuously throughout the year.

permit—An authorization, license, or equivalent control *document* issued by the *U.S. Environmental Protection Agency* or an approved state agency to implement the requirements of an environmental regulation. (40 Code of Federal Regulations 270.2)

permit modification—A change to a condition in Los Alamos National Laboratory's *Hazardous Waste Facility Permit*, initiated by either a request from the permittee or by the *administrative authority*'s action.

piezometer—A nonpumping well (generally of small diameter) for measuring the elevation of a *water table*.

piezometric surface (potentiometric surface)—The surface that represents the static head in an *aquifer* ; applies to both *confined* and *unconfined aquifers*.

polychlorinated biphenyls (PCBs)—Any chemical substance that is limited to the biphenyl molecule which has been chlorinated to varying degrees, or any combination that contains such substances. PCBs are colorless, odorless compounds that are chemically, electrically, and thermally stable and have proven to be toxic to both humans and other animals.

porosity—The degree to which *soil*, gravel, *sediment*, or rock is permeated with pores or cavities through which water or air can move.

potential release site (PRS)—A potentially contaminated *site* at Los Alamos National Laboratory. PRSs are further divided into *solid waste management units* (SWMUs) and *areas of contamination* (AOCs).

potentiometric surface—See *piezometric surface*.

prepared sample—A *sample* that has been treated to render it amenable to *analysis*. The sample preparation may include additives or treatments such as digestate, distillate, electroplate, extract, filter retentate, filtrate, homogenate, precipitate, pulverized/sieved portion of sample, or residue.

quality-assessment sample—A *sample* submitted for *analysis*, the data from which are used to assess the performance quality of a sampling or analysis process. May include *performance-evaluation samples*, *field duplicates*, or *field blanks*.

quality assurance/quality control—A system of procedures, checks, *audits*, and *corrective actions* set up to ensure that all *U.S. Environmental Protection Agency* research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

quality control—See *quality assurance/quality control*.

quality control sample—A *specimen* which, upon *analysis*, is intended to provide information that is useful for adjusting, controlling, or verifying the continuing acceptability of sampling and/or analysis activities in progress.

Quality Management Plan (QMP)—A document providing a framework for planning, implementing, and assessing work performed by an organization and for carrying out required *quality assurance/quality control*. A QMP is part of an organization's structured and documented management system that describes the policies, objectives, principles, organizational authority, responsibilities, accountability, and implementation plan for ensuring quality in work processes, products, and services.

quality procedure—A *document* that describes the process, method, and responsibilities for performing, controlling, and documenting any quality-affecting activity governed by a *quality management plan*.

Quaternary—The second period of the Cenozoic Era, following the Tertiary, and including the last two to three million years of Earth history.

radiation—A stream of particles or electromagnetic waves emitted by atoms and molecules of a radioactive substance as a result of nuclear decay. The particles or waves emitted can consist of neutrons, positrons, alpha particles, beta particles, or *gamma radiation*.

radioactive material—For purposes of complying with U.S. Department of Transportation regulations, any material having a specific activity (activity per unit mass of the material) greater than 2 nanocuries per gram (nCi/g) and in which the *radioactivity* is evenly distributed.

radioactive waste—Waste that, by either monitoring and *analysis*, or acceptable knowledge, or both, has been determined to contain added (or concentrated and naturally occurring) *radioactive material* or activation products, or that does not meet radiological *release* criteria.

radioactivity (radioactive decay; radioactive disintegration)—The spontaneous change in an atom by the emission of charged particles and/or gamma rays.

radionuclide—Radioactive particle (human-made or natural) with a distinct atomic weight number; can have as long a life as *soil* or water pollutants.

RCRA facility investigation (RFI)—A *Resource Conservation and Recovery Act (RCRA)* investigation that determines if a *release* has occurred and characterizes the nature and extent of contamination at a *hazardous waste facility*. The RFI is generally equivalent to the remedial investigation portion of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

reach—A specific length of a *canyon* that is treated as a single unit for sampling and *analysis*. Reaches tend to be internally uniform with respect to geomorphic setting and land use.

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

recharge—The process by which water is added to a zone of saturation, usually by *percolation* from the *soil* surface (e.g., the recharge of an *aquifer*).

record—Any book, paper, map, photograph, machine-readable material, or other documentary material, regardless of physical form or characteristics.

recreational scenario—A land-use condition under which individuals may be exposed to *contaminants* for a limited amount of time as a result of outdoor activities such as hiking, camping, hunting, or fishing.

reference set—A hard-copy compilation of reference items cited in *Environmental Restoration Project documents*.

regional aquifer—Geologic material(s) or unit(s) of regional extent whose saturated portion yields significant quantities of water to wells, contains the regional zone of saturation, and is characterized by the regional *water table* or *potentiometric surface*. (Also see *aquifer*.)

regulatory standard—Media-specific *contaminant* concentration levels of potential concern which are mandated by federal or state legislation or regulation (e.g., the Safe Drinking Water Act, New Mexico Water Quality Control Commission regulations).

release—Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, *leaching*, dumping, or disposing of *hazardous waste* or *hazardous constituents* into the environment.

remediation—(1) The process of reducing the concentration of a *contaminant* (or contaminants) in air, water, or *soil* media to a level that poses an acceptable *risk* to human health and the environment. (2) The act of restoring a contaminated area to a usable condition based on specified standards.

reporting limit (RL)—The numerical value that an analytical laboratory (in conjunction with its client) selects for determining if a *target analyte* has been detected. Results below the RL are considered to

be undetected, whereas results above the RL are considered to be detected. The RLs are not necessarily based on instrument *sensitivity*. RLs can be established at the *instrument detection limit*, *method detection limit*, *estimated quantitation limit*, or *contract-required detection limit*.

representativeness—The degree to which data accurately and precisely represent a characteristic of a *population* or an environmental condition.

residential scenario—The land use under which individuals may be exposed to *contaminants* as a result of living on or near contaminated *sites*.

Resource Conservation and Recovery Act—The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976. (Public Law [PL] 94-580, as amended by PL 95-609 and PL 96-482, United States Code 6901 *et seq.*)

rill erosion—An erosion process in which numerous small channels only several inches deep are formed by concentrated *runoff* that flows during and immediately after rain storms.

rinsate blank—See *equipment blank*.

routine data validation—The process of reviewing analytical data relative to quantitative routine acceptance criteria. The objective of routine *data validation* is two-fold:

- to estimate the technical quality of the data relative to minimum national standards adopted by the *Environmental Restoration Project*, and
- to indicate to data users the technical data quality at a gross level by assigning *laboratory qualifiers* to environmental data whose *quality indicators* do not meet acceptance criteria.

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

run-on—Surface water that flows onto an area as a result of *runoff* occurring higher up on a *slope*.

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

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

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

sediment—(1) A mass of fragmented inorganic solid that comes from the weathering of rock and is carried or dropped by air, water, gravity, or ice. (2) A mass that is accumulated by any other natural agent and that forms in layers on the Earth's surface (e.g., sand, gravel, silt, mud, fill, or loess). (3) A solid material that is not in solution and is either distributed through the liquid or has settled out of the liquid.

site—An area or place that falls under the jurisdiction of the *U.S. Environmental Protection Agency* and/or a state for *corrective action*.

site characterization—Defining the pathways and methods of *migration* of *hazardous waste* or *constituents*, including the media affected; the extent, direction and speed of the *contaminants*;

complicating factors influencing movement; or concentration profiles. (U.S. Environmental Protection Agency, May 1994. Publication EPA-520/R-94/004)

site conceptual model—A qualitative or quantitative description of sources of contamination, environmental *transport* pathways for contamination, and *receptors* that may be impacted by contamination and whose relationships describe qualitatively or quantitatively the *release* of contamination from the sources, the movement of contamination along the pathways to the exposure points, and the uptake of *contaminants* by the receptors.

slope—A ratio of units of elevation change to units of horizontal change, usually expressed in degrees.

soil—A sample media group that includes soil and can include artificial fill materials. "Soil" refers to a material that overlies bedrock and has been subject to soil-forming processes. The sample media group of soil includes soils from all soil horizons.

soil gas—Gaseous elements and compounds in the small spaces between particles of the earth and *soil*. Such gases can be moved or driven out under pressure.

soil moisture—The water contained in the pore space of the *unsaturated zone*.

soil screening level (SSL)—The concentration of a *chemical* (inorganic or organic) below which no potential for unacceptable *risk* to human health exists. The derivation of an SSL is based on conservative exposure and land-use assumptions, and on target levels of either a *hazard quotient* of 1.0 for a noncarcinogenic chemical or a cancer risk of 10^{-5} for a carcinogenic chemical.

soil water—Water in the *unsaturated zone*, regardless of whether it occurs in *soil* or rock.

solid waste—Any garbage, refuse, or sludge from a waste *treatment* plant, water-supply treatment plant, or air-pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from *community* activities. Solid waste does not include solid or dissolved materials in domestic sewage; solid or dissolved materials in irrigation return flows; industrial *discharges* which are point sources subject to *permits* under section 402 of the Federal Water Pollution Control Act, as amended; or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended.

solid waste management unit (SWMU)—(1) Any discernible site at which *solid wastes* have been placed at any time, whether or not the site use was intended to be the management of solid or hazardous waste. SWMUs include any site at a *facility* at which solid wastes have been routinely and systematically released. This definition includes regulated sites (i.e., landfills, surface impoundments, waste piles, and land *treatment* sites), but does not include passive leakage or one-time spills from production areas and sites in which wastes have not been managed (e.g., product storage areas). (2) According to the New Mexico Environment Department (NMED) *Consent Order*, any discernible site at which solid waste has been placed at any time, and from which NMED determines there may be a *risk* of a release of *hazardous waste* or hazardous waste constituents (*hazardous constituents*), whether or not the site use was intended to be the management of solid or hazardous waste. Such sites include any area in Los Alamos National Laboratory at which solid wastes have been routinely and systematically released; they do not include one-time spills.

split sample—A *sample* that has been divided into two or more portions that are expected to be of the same composition; used to characterize within-sample heterogeneity, sample handling, and measurement variability.

split-spoon sampler—A hollow, tubular sampling device below a drill stem that is driven by a weight to retrieve *soil samples*. The core barrel can be opened to remove samples. This is a sampling method

commonly used with auger drilling. The split-spoon sampler can be driven into the ground or can be advanced inside hollow-stem augers.

standard operating procedure—A *document* that details the officially approved method(s) for an operation, *analysis*, or action, with thoroughly prescribed techniques and steps.

stratigraphy—The study of the formation, composition, and sequence of *sediments*, whether consolidated or not.

Superfund—Another term for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The two terms are used interchangeably.

surface sample—A *sample* taken at a collection depth that is (or was) representative of the *medium*'s surface during the period of investigative interest. A typical depth interval for a surface sample is 0 to 6 in. for mesa-top locations, but may be up to several feet in *sediment*-deposition areas within *canyons*.

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

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

technical area (TA)—At Los Alamos National Laboratory, an administrative unit of operational organization (e.g., TA-21).

tentatively identified compound (TIC)—A chemical compound detected in a *sample* that is not a *target analyte*, *internal standard*, or *surrogate*. Up to 30 chromatographic peaks may be subject to mass spectral matching for identification as TICs.

topography—The physical or natural features of an object or entity and their structural relationships.

transport (transportation)—(1) The movement of a *hazardous waste* by air, rail, highway, or water. (40 Code of Federal Regulations 260.10) (2) The movement of a *contaminant* from a source through a *medium* to a *receptor*.

treatment, storage, and disposal facility—An interim-status or permitted facility in which *hazardous waste* is treated, stored, or disposed.

tremie pipe—A small-diameter pipe used to carry sand pack, *bentonite*, or grouting materials to a borehole's bottom. Materials are pumped under pressure or poured to the hole bottom through the pipe. The pipe is retracted as the *annular space* is filled.

trip blank—A *sample* of *analyte*-free medium taken from a sampling *site* and returned to an analytical laboratory unopened, along with samples taken in the field; used to monitor cross contamination of samples during handling and storage both in the field and in the analytical laboratory.

tuff—Consolidated volcanic ash, composed largely of fragments produced by volcanic eruptions.

unconfined aquifer—An *aquifer* containing water that is not under pressure; the water level in a well is the same as the *water table* outside the well.

underground storage tank—A tank located at least partially underground and designed to hold gasoline or other petroleum products or *chemicals*.

unrestricted area—Any area, whose access is not controlled by a licensee for purposes of protecting individuals from exposure to *radiation* and *radioactive materials*, and any area used for residential quarters. (10 Code of Federal Regulations 60.2) (Also see *restricted area*.)

unsaturated hydraulic conductivity—A coefficient that describes the rate at which a fluid can potentially move through a permeable, unsaturated *medium*. (Also see *hydraulic conductivity*.)

unsaturated zone—The area above the *water table* where *soil* pores are not fully saturated, although some water may be present.

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

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

vadose zone—The zone between the land surface and the *water table* within which the moisture content is less than saturation (except in the capillary fringe) and pressure is less than atmospheric. *Soil* pore space also typically contains air or other gases. The capillary fringe is included in the vadose zone. (Also see *unsaturated zone*.)

watershed—A region or basin drained by, or contributing waters to, a river, stream, lake, or other body of water and separated from adjacent drainage areas by a divide, such as a mesa, ridge, or other geologic feature.

water table—The top of the regional saturated zone; the *piezometric surface* associated with an *unconfined aquifer*.

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

work plan—A *document* that specifies the activities to be performed when implementing an investigation or remedy. At a minimum, the work plan should identify the scope of the work to be performed, specify the procedures to be used to perform the work, and present a schedule for performing the work. The work plan may also present the technical basis for performing the work.

Metric to English Conversions

Multiply SI (Metric) Unit	by	To Obtain US Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
millimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (µg/g)	1	parts per million (ppm)
liters (l)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

Data Qualifier Definitions

Data Qualifier	Definition
U	The analyte was analyzed for but not detected.
J	The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
J+	The analyte was positively identified, and the result is likely to be biased high.
J-	The analyte was positively identified, and the result is likely to be biased low.
UJ	The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
R	The data are rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Appendix B

SWMU/AOC Descriptions and
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B-1.0 SWMU 00-018(a), PUEBLO CANYON WASTEWATER TREATMENT PLANT

B-1.1 Site Description and Operational History

Solid Waste Management Unit (SWMU) 00-018(a) is the decommissioned Pueblo Canyon wastewater treatment plant (WWTP), located at the end of Olive Street in Pueblo Canyon (Figure B-1) on Los Alamos County property (LANL 1997, 56614, p. 28). The plant, which was built between 1946 and 1948, began operating in 1951, primarily receiving waste from residential and business properties, including the Los Alamos Medical Center (LANL 1997, 56614, p. 28). This WWTP also received laboratory-scale (e.g., less than 10 L per month) waste from the Health Research Laboratory (HRL) at Technical Area 43 (TA-43) from 1953 to 1983, the only known Los Alamos National Laboratory (the Laboratory) contributor to the waste stream at the plant (LANL 1997, 56614, p. 29). From 1983 to 1991, the plant received only sanitary waste from Los Alamos businesses and residences (LANL 1997, 56614, p. 29; LANL 1992, 07667, p. 5-61). Originally, the Zia Company operated the plant for the Atomic Energy Commission (LANL 1997, 56614, p. 28). In the early 1960s, Los Alamos County assumed control (LANL 1997, 56614, p. 28). The county decommissioned the Pueblo Canyon WWTP during 1991 and 1992 (LANL 1997, 56614, p. 29). After decontamination and decommissioning (D&D), sludge was transferred from the plant's digester to the sludge beds that were sampled during the 1996 Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) (LANL 1997, 56614, p. 29). The plant structures still exist and remain connected to the main county sewer system, although wastewater bypasses the plant structures and pipelines.

B-1.2 Land Use

The site has been occupied by the WWTP since it was constructed in 1946 (LANL 1997, 56614, p. 28). The plant buildings and structures still remain. The past use was industrial, and currently, the site is inactive. The future land use is recreational.

B-1.3 Relationship to Other SWMUs and AOCs

No SWMUs are present within 1000 ft of Pueblo Canyon WWTP (Figure B-1). Pueblo Canyon is an area of concern (AOC), and the investigation reaches are located upstream (reach P-1FW) and downstream (reach P-1W) of SWMU 00-018-a) (LANL 2004, 87390) (Figure B-2).

B-1.4 Waste Inventory

Waste sludge was removed from the digester tank and transferred to the eastern drying bed during D&D of the plant from 1991 to 1992 (LANL 1997, 56614, p. 29). The sludge in the drying beds was later removed by Los Alamos County personnel (LANL 1997, 56614, p. 29) and transported to the county landfill where it was mixed with wood chips and used as mulch.

B-1.5 Historical Releases

The HRL generated chemical and radioactive wastes, but Laboratory policy required that radioactive wastes generated at the HRL be managed at the facility and not discharged to the drains (LANL 1997, 56614, p. 28). Before 1990, liquid wastes containing phosphorus-32 were permitted in the HRL's sanitary waste streams; however, the half-life of phosphorus-32 is 14.3 days, and it would have decayed shortly after being deposited (LANL 1997, 56614, pp. 29–30). Most HRL chemical wastes consisted of salt buffers and cell-culture media as well as small amounts of organic chemicals (LANL 1997, 56614, p. 29). Additionally, the waste stream from the HRL generated only Laboratory-scale quantities of waste (on the

order of µL per month up to 10 L per month). During D&D, sludge in the plant's digester was transferred to the eastern sludge drying bed (LANL 1997, 56614, p. 29), which was later removed by Los Alamos County and transported to the county landfill where it was mixed with wood chips and used as mulch. The sludge removal from the site was performed in accordance with regulations applicable to publicly owned treatment works (LANL 1997, 56614, p. 29). No accidental spills or releases have been documented for SWMU 00-018(a) (LANL 1999, 07667, p. 5-54). Potential contaminants at SWMU 00-018(a) are organic chemicals, inorganic chemicals, and radionuclides (LANL 1997, 56614, p. 29).

B-1.6 Summary of Historical Investigations

Sanitary effluent samples were collected in 1972 and 1991 to address the requirements of the plant's National Pollutant Discharge Elimination System (NPDES) permit (LANL 1997, 56614, p. 29). The 1972 samples were analyzed for radionuclides and inorganic chemicals (LANL 1997, 56614, p. 30). Cadmium, lead, and mercury were detected in the effluent (LANL 1997, 56614, p. 30). The 1991 samples were analyzed only for inorganic chemicals. Lead was detected but met the NPDES permit requirements (LANL 1997, 56614, pp. 29–30).

An RFI conducted at SWMU 00-018(a) (LANL 1997, 56614) in 1996 consisted of a site survey, geodetic survey, augering and drilling, field screening, and subsurface sampling. In all, 29 samples were collected (LANL 1997, 56614, Table 5.1.4-1); 26 samples from 8 locations (LANL 1997, 56614, Figure 5.1.4-1) were analyzed for radionuclides, inorganic chemicals, and organic chemicals. Three samples of the sludge were analyzed for waste characterization to ensure that no radionuclide contamination was present (LANL 1997, 56614, pp. 33–34). Six of the eight sample locations were in an area where dried sludge had been used as fill. Two of the eight sample locations were taken from the oldest sludge bed at the site that may have been impacted by historical Laboratory operations. Inorganic chemicals and tritium were detected in the sludge samples (LANL 1997, 56614, pp. 38–42). Organic chemicals, including Aroclor-1254, Aroclor-1260, pesticides (chlordane, dieldrin, edrin), and benzo(a)pyrene, were also detected (LANL 1997, 56614, pp. 42–44).

B-2.0 AOC 00-018(b), BAYO CANYON WASTEWATER TREATMENT PLANT

B-2.1 Site Description and Operational History

AOC 00-018(b) is the active Bayo Canyon WWTP, located at the intersection of Pueblo and Bayo Canyons; it is owned and operated by Los Alamos County (Figure B-3). It began operating in 1963 and was upgraded in 1966 to handle wastes from the decommissioned Central WWTP, SWMU 00-019, which treated sanitary waste from the TA-01 area (LANL 1997, 56614, p. 5). It is unlikely that the Bayo Canyon WWTP received wastes from TA-01 because TA-01 was decommissioned at approximately the same time that operations began at the Bayo Canyon WWTP (LANL 1997, 56614, p. 5). The Bayo Canyon WWTP received sanitary wastes from eastern Los Alamos businesses and residences until 1991 and in 1992 began receiving sanitary waste from northern and western Los Alamos residential areas after the D&D of the Pueblo Canyon WWTP (LANL 1997, 56614, p. 5). This treatment plant has been the primary supplier of effluent for seasonal irrigation at the Los Alamos golf course and recreational ball fields since 1992 (LANL 1997, 56614, p. 51). The plant operates under NPDES permit number NM0020141 (LANL 1997, 56614, p. 51).

B-2.2 Land Use

The site has been occupied by the WWTP since the plant became operational in 1963. Past, current, and future use is industrial.

B-2.3 Relationship to Other SWMUs and AOCs

No SWMUs are present within 1000 ft of the Bayo Canyon WWTP (Figure B-3). Pueblo Canyon is an AOC, and an investigation reach is located upstream (reach P-3W) of the outfall of AOC 00-018(b); another reach is located just downstream of the outfall (reach P-3E) (LANL 2004, 87390) (Figure B-2).

B-2.4 Waste Inventory

No known hazardous wastes, other than sanitary waste, are stored on-site.

B-2.5 Historical Releases

No accidental spills or releases have been documented for AOC 00-018(b) (LANL 1992, 07667, p. 5-54).

B-2.6 Summary of Historical Investigations

Sanitary effluent and sludge samples were collected from the plant in 1972 and 1991 to address requirements of the NPDES permit (LANL 1997, 56614, p. 51). Sanitary effluent samples collected in 1972 were analyzed for inorganic chemicals and radionuclides. Cadmium, lead, and mercury were detected in the samples (LANL 1997, 56614, p. 52). Plutonium-238 and plutonium-239 were detected at levels at or near the detection limit, and total uranium was also detected (LANL 1997, 56614, p. 52). Sanitary effluent samples collected in 1991 were analyzed for inorganic chemicals only, and lead was the only chemical detected (LANL 1997, 56614, p. 52). Sludge samples were also collected in 1991 and analyzed for inorganic chemicals: arsenic and barium were detected (LANL 1997, 56614, p. 5). Chemicals detected in 1972 and 1991 were acceptable under the conditions of the NPDES permit (LANL 1997, 56614, p. 52).

An RFI was conducted at AOC 00-018(b) in 1996 to determine the nature and extent of contamination at the site. RFI activities consisted of a site survey, geodetic survey, borehole drilling, field screening, and subsurface sampling (LANL 1997, 56614, p. 52). A total of seven samples were collected (LANL 1997, 56614, pp. 53–55, Table 5.2.4-1): six were collected from depths up to 52.5 ft in two boreholes, and one was collected from media inside a pipe (LANL 1997, 56614, Figure 5.2.4-1). Samples were analyzed for inorganic and organic chemicals, tritium, and gross alpha/beta/gamma radioactivity. Metals, europium-152, and acetone were detected (LANL 1997, 56614, pp. 57–58).

B-3.0 AOC 00-030(d), SEPTIC SYSTEM

B-3.1 Site Description and Operational History

AOC 00-030(d) is a septic tank (sometimes referred to as structure 2) located on Los Alamos County property at the Pine Street cul-de-sac (Figure B-4) It was installed in 1943 or 1944 and served the McKee houses, apartments, and dormitories west of Canyon Road. These locations are now known as Piñon Loop and Opal, Nugget, and Myrtle Streets (LANL 1996, 53799, p. 1). Laboratory documents indicate that structure 2 served only residences (LANL 1996, 53799, p. 1). It remained in use until the Central WWTP was completed in 1947 (LANL 1992, 07667, p. 5-94; LANL 1996, 53799, p. 1).

B-3.2 Land Use

Historical, current, and future land use is residential.

B-3.3 Relationship to Other SWMUs and AOCs

The following AOCs are located within approximately 1000 ft of AOC 00-030(d) (Figure B-4):

- AOC 00-030(o), Septic System (Section B-10 presents a description of this AOC)
- AOC 00-030(c), Septic System
    - Operational: Early 1940s–1947
    - RCRA Phase: Administratively complete; approved no further action (NFA) (EPA 2005, 88464)
    - Chemicals of potential concern (COPCs): Antimony, arsenic

B-3.4 Waste Inventory

No known wastes, other than sanitary waste, are associated with AOC 00-030(d).

B-3.5 Historical Releases

The outfall for the tank discharged to Graduation Canyon, a tributary of Pueblo Canyon (LANL 1996, 53799, pp. 6, 9). No documented releases of hazardous wastes have been identified for this outfall.

B-3.6 Summary of Historical Investigations

RFI and voluntary corrective action (VCA) characterization and removal activities were conducted at AOC 00-030(d) in 1996. During the RFI, the tank's dimensions were estimated to be 30 ft long x 20 ft wide x 8 ft deep (LANL 1997, 62542, pp. 11–14). The size was estimated because the western part of the tank had not been investigated during the RFI. Underground utility lines, landscaping, and the foundation of a private home made that portion of the tank inaccessible.

An RFI to determine whether contamination was present at AOC 00-030(d) was conducted in accordance with the RFI work plan (LANL 1992, 07667). RFI activities included site surveys, geodetic surveys, geophysical surveys, trenching in the Pine Street cul-de-sac, outfall area sampling, trenching and sampling in the playground area, and field-screening (LANL 1997, 62542, p. 5). The RFI is described in the site VCA report (LANL 1997, 62542). Eleven samples were collected from inside the tank, at the point of the vitrified clay pipes (VCP) and steel pipes, and the outfall area (LANL 1997, 62542, Table 2.2-1). Samples were field-screened for organic vapors and radioactivity and then submitted for laboratory analysis of inorganic chemicals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), pesticides, polychlorinated biphenyls (PCBs), and radionuclides (LANL 1997, 62542, pp. 14–15). No organic vapors were detected, and no radioactivity was detected above instrument background. Nine inorganic chemicals, 4 radionuclides, and 12 organic chemicals (primarily pesticides) were detected in samples from the tank, pipe joint, and outfall (LANL 1997, 62542, pp. 16–17). Additionally, 15 polyaromatic hydrocarbons (PAHs) were detected in samples from the tank (LANL 1997, 62542, pp. 20–24, Table 2.3.1-4).

A VCA was conducted after the RFI characterization. During the VCA, 170 ft of 8-in.-diameter steel outfall pipe associated with the septic system was excavated and removed (LANL 1997, 62542, p. 28). The pipe

was screened for organic vapors and gross radiological activity (LANL 1997, 62542, p. 29). No organic vapor readings were detected, and no radioactivity was detected above instrument background (LANL 1997, 62542, p. 29). Smears were collected from the steel pipe and analyzed by the Laboratory's Health Physics Operations Group. Radiological counts for the smears were all below background levels, and the pipe was transported off-site for recycling at a commercial facility (LANL 1997, 62542, p. 29). Structure 2 was left in place because it met the criteria for inaccessibility (LANL 1997, 62542, p. 29). Confirmation samples were not collected because the septic tank had not been removed (LANL 1997, 62542, p. 29).

B-4.0 AOC 00-030(eN), SEPTIC SYSTEM

B-4.1 Site Description and Operational History

AOC 00-030(eN), referred to as septic tank No. 4, consists of two parallel septic tanks, 5 ft apart (LANL 1996, 56432, p. 25). Each septic tank is 25 ft long x 10 ft wide x 8 ft deep (LANL 1996, 56432, p. 25). The tanks, located on private property north of Canyon Road at the former Boy Scout Lodge (Figures B-1 and B-5), handled waste from the original townsite (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). The septic system serviced apartments, dormitories, and some original Ranch School buildings now located on private property, and may have served TA-01 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). The information available concerning the receipt of waste from TA-01 is conflicting (LANL 1996, 56432, p. 4). The mean elevation of the former TA-01 area is 7263 ft above sea level (asl). The ground surface at AOC 00-030(eN) is approximately 7276 ft asl. With the septic tank inlet buried approximately 5 ft below ground surface (bgs) (elevation of 7271 ft asl), it is unlikely that the septic tank received waste from a gravity-feed system originating in TA-01, downgradient of AOC 00-030(eN). The tanks ceased to operate when the Central WWTP became operational in 1947 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1).

B-4.2 Land Use

Historical, current, and future land use is residential.

B-4.3 Relationship to Other SWMUs and AOCs

As shown in Figures B-1 and B-5, the following AOCs and consolidated unit are located within approximately 1000 ft of AOC 00-030(eN):

- AOC 00-030(eS), Septic System (Section B-5 presents a description of this AOC)
- AOC 00-030(f), Septic System (Section B-6 presents a description of this AOC)
- AOC 00-030(q), Septic System
    - Operational: Early 1940s–1947
    - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
    - COPC: Arsenic
- Consolidated Unit 45-001-00, WWTP (TA-45) (Section B-15 presents a description of this site)

Acid and Pueblo Canyons are AOCs, and the investigation reaches are located upstream (AC-3 and P-1W) and downstream (P-1E) of AOC 00-030(eN) (LANL 2004, 87390) (Figure B-2).

B-4.4 Waste Inventory

The tanks are still in place and no information is available on the residual waste in the tanks.

B-4.5 Historical Releases

The outfall for this tank could not be located during the RFI (LANL 1996, 56432, p. 4). However, engineering drawings from 1943 indicate the outlet pipe extended 350 ft NNW to the edge of Acid Canyon (LANL 1996, 56432, p. 25, Figure 2.3.1-1)

B-4.6 Summary of Historical Investigations

An RFI was conducted at AOC 00-030(eN) in 1994 to confirm the presence of the septic tanks and to determine whether contamination was present. RFI activities consisted of a geodetic survey, geophysical survey, and borehole augering for subsurface sample collection and characterization (LANL 1996, 56432, pp. 4, 24). Seven shallow boreholes were hand-augered in soil overlying the septic tank. Six of the seven boreholes encountered auger refusal at depths of 2.5 to 3 ft, which was interpreted in the RFI report as the result of encountering concrete or tuff (LANL 1996, 56432, p. 27). According to the RFI report, the concrete or tuff was considered the "bottom" of the septic tanks, and it was concluded that the tanks had been partially removed (LANL 1996, 56432, p. 28). Conflicting information indicates the tanks might still be in place (Francis and Sullivan 1995, 56099.105). The sampling performed during the RFI probably characterized only the fill above the septic tanks. The one borehole augered to approximately 5 ft bgs did encounter tuff, but this borehole was probably drilled between the two tanks.

Four samples were collected and submitted for laboratory analysis of inorganic chemicals, VOCs, SVOCs, pesticides, PCBs, and radionuclides (LANL 1996, 56432, pp. 25–28, Table 5.1.4-1). The samples were field-screened for radiation and organic vapors (LANL 1996, 56432, pp. 33–34). Mercury vapor monitoring was also conducted in sample headspace (LANL 1996, 56432, pp. 25–28). Field-screening results indicated that no chemical or radiological contamination was present (LANL 1996, 56432, pp. 33–34). Surface soil samples were not collected beneath the outlet pipe for this AOC because the pipe could not be located (LANL 1996, 56432, p. 25). Inorganic and organic chemicals and radionuclides were detected (LANL 1996, 56432, pp. 34–37, Tables 5.1.5-3 and 5.1.6-1).

B-5.0 AOC 00-030(eS), SEPTIC SYSTEM

B-5.1 Site Description and Operational History

AOC 00-030(eS), a septic tank (structure 4A) located on private property south of Canyon Road (Figures B-1 and B-5) at the Chapel Apartments, was installed sometime between 1943 and 1947 (LANL 1996, 56432, pp. 4–5). Structure 4A served residences and may have been connected to TA-01 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(eS) is approximately 7279 ft asl. With the septic tank inlet buried approximately 5 ft bgs (elevation of 7274 ft asl), it is unlikely that the septic tank received waste from a gravity-feed system originating in TA-01, downgradient of AOC 00-030(eS). The tank ceased to operate when the Central WWTP became operational in 1947 (LANL 1996, 56432, p. 1), and it was removed when the Chapel Apartments were built in 1949 (LANL 1996, 56432, pp. 28, 32).

B-5.2 Land Use

Historical, current, and future land use is residential.

B-5.3 Relationship to Other SWMUs and AOCs

As shown in Figure B-5, the following AOCs and consolidated unit are located within approximately 1000 ft of AOC 00-030(eS):

- AOC 00-030(eN), Septic System (Section B-4 presents a description of this AOC)
- AOC 00-030(f), Septic System (Section B-6 presents a description of this AOC)
- AOC 00-030(q), Septic System
    - Operational: Early 1940s–1947
    - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
    - COPCs: Arsenic
- Consolidated Unit 45-001-00, WWTP (TA-45) (Section B-15 presents a description of this site)

Acid and Pueblo Canyons are AOCs, and the investigation reaches are located upstream (AC-3 and P-1W) and downstream (P-1E) of AOC 00-030(eS) (LANL 2004, 87390) (Figure B-2).

B-5.4 Waste Inventory

The tank and associated waste were removed in 1949 (LANL 1996, 56432, pp. 28, 32).

B-5.5 Historical Releases

During the RFI, the outfall for this tank was located near the rim of a small, unnamed canyon that is a tributary to Pueblo Canyon, and surface soil samples were collected from the outfall (LANL 1996, 56432, p. 30, Figure 5.1.7-1).

B-5.6 Summary of Historical Investigations

An RFI was conducted at AOC 00-030(eS) in 1994 to determine whether contamination was present. RFI activities consisted of a geodetic survey, geophysical survey, and borehole augering for subsurface sample collection and characterization (LANL 1996, 56432, p. 29). Tank removal was confirmed, and the outfall was located (LANL 1996, 56432, p. 29). Four surface soil samples from four locations in the outfall area were submitted for laboratory analysis of inorganic chemicals, organic chemicals, pesticides, PCBs, and radionuclides (LANL 1996, 56432, p. 30). The samples were field-screened for radiation and organic vapors, and the results indicated that no chemical or radiological contamination was present (LANL 1996, 56432, pp. 33–34). Inorganic chemicals were detected (LANL 1996, 56432, Table 5.1.5-2). After receiving the analytical results for the sample in which the inorganic chemical was detected, two more samples were collected from locations 6 in. upstream and downstream of the original sample location (LANL 1996, 56432, p. 42). The inorganic chemical concentrations in those samples were less than the concentration in the original sample (LANL 1996, 56432, Table 5.1.7-2).

B-6.0 AOC 00-030(f), SEPTIC SYSTEM

B-6.1 Site Description and Operational History

AOC 00-030(f) is a septic tank (structure 5) consisting of two septic tanks located on private property south of Canyon Road and north of Rose Street (Figures B-1 and B-5), slightly northeast of the United

Church school building (LANL 1992, 07667, p. 5-94). In a 1943 engineering drawing, the tanks are labeled "Septic Tank No. 2" (LANL 1996, 56432, pp. 43–44). The tanks connected with sewer lines in the "Apartment Area" and handled sanitary waste from a school, a post exchange, and some of the original Ranch School buildings but did not receive waste from TA-01 operations (LANL 1996, 56432, p. 5). The tank ceased to operate when the Central WWTP became operational in 1947 (LANL 1992, 07667, p. 5-94; LANL 1996, 56432, p. 1). Both tanks are still in place.

B-6.2 Land Use

Historical, current, and future land use is residential.

B-6.3 Relationship to Other SWMUs and AOCs

As shown in Figures B-1 and B-5, the following AOCs and consolidated unit are located within approximately 1000 ft of AOC 00-030(f):

- AOC 00-030(eN), Septic System (Section B-4 presents a description of this AOC)
- AOC 00-030(eS), Septic System (Section B-5 presents a description of this AOC)
- AOC 00-030(q), Septic System
  - Operational: Early 1940s–1947
  - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
  - COPC: Arsenic
- Consolidated Unit 45-001-00, WWTP (TA-45) (Section B-15 presents a description of this site)

Acid and Pueblo Canyons are AOCs, and the investigation reaches are located downstream (ACS, AC-3, P-1W, and P-1E) of AOC 00-030(f) (LANL 2004, 87390) (Figure B-2).

B-6.4 Waste Inventory

Sanitary waste streams are expected to be associated with this AOC.

B-6.5 Historical Releases

The outfall for these tanks was not located or discussed in the RFI; however, a figure in the RFI indicates that the outfall probably drained to Acid Canyon at a location approximately 160 ft NW of the tanks, just across Canyon Road (LANL 1992, 07667, p. 5-103, Figure 5-43).

B-6.6 Summary of Historical Investigations

An RFI was conducted at AOC 00-030(f) in 1994 to determine the location and geometry of the two septic tanks and to ascertain whether contaminants within, and surrounding, the septic system were present (LANL 1996, 56432, p. 44). Site investigation activities included historical data searches and reviews, personal interviews, site surveys, and geodetic surveys of suspected tank locations (LANL 1996, 56432, p. 46). The tanks were located, and a total of 14 samples were collected from within the tanks (LANL 1996, 56432, pp. 45–50, Table 5.2.4-1). The samples were field-screened for organic chemicals, mercury vapor, and gross radiological contamination (LANL 1996, 56432, pp. 50–51) and submitted to an off-site laboratory for analysis of inorganic chemicals, organic chemicals, pesticides, PCBs, isotopic

plutonium, total uranium, and americium-241. Lead, mercury, plutonium-238,and plutonium-239,-240, and organic chemicals, including acetone, dichlorodiphenyldichloroethane (4,4'-) (DDD); dichlorodiphenyldichloroethylene (4,4'-) (DDE); dichlorodiphenyltrichloroethane (4,4'-) (DDT); dieldrin; endosulfan II; and 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113), were detected (LANL 1996, 56432, pp. 51–54, Tables 5.2.5-2, 5.2.5-3). The tanks were left in place because they are beneath an existing sidewalk and the United Church school playground (LANL 1996, 56432, pp. 45–50, Figure 5.2.4-1).

B-7.0 AOC 00-030(h), SEPTIC SYSTEM

B-7.1 Site Description and Operational History

AOC 00-030(h) was a septic tank (structure 7) located on private property north of Canyon Road (Figure B-6) beneath the asphalt-paved west parking lot at the Immaculate Heart of Mary Catholic Church, 3600 Canyon Road (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 1). Constructed of reinforced concrete, structure 7 was 30 ft long x 20 ft wide and 12 ft deep (LANL 1996, 53799, p. 7). It consisted of two chambers, a concrete baffle between the chambers, and a 6- x 2-ft splash box at the inlet line (LANL 1996, 53799, p. 7). Structure 7, which was bounded on the west by the Los Alamos High School sports field and parking lot access road, probably served the areas between Canyon Road and Trinity Drive (LANL 1996, 53799, p. 1; LANL 1996, 62416, p. 1). Buildings in this area were associated with the special engineering detachment, which included the Fort Leonard Wood housing units, dormitories, military barracks, west mess hall, supply room, gymnasium, post office, and recreational buildings (LANL 1996, 53799, p. 1). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(h) is approximately 7268 ft asl. With the septic tank inlet buried approximately 5 ft bgs (elevation of 7263 ft asl), it is not likely that the septic tank received waste from a gravity-feed system originating in TA-01 downgradient of AOC 00-030(h). The tank was used from 1945 to 1947, when the Central WWTP became operational (LANL 1996, 53799, p. 1). The tank was removed in 1996 during VCA activities (LANL 1996, 62416, pp. 13–14).

B-7.2 Land Use

Historical, current, and future land use is residential.

B-7.3 Relationship to Other SWMUs and AOCs

As shown in Figure B-6, the following SWMUs and AOCs are located within approximately 1000 ft of AOC 00-030(h):

- SWMU 00-012, Western Steam Plant
  - Operational: 1949–unknown
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 79282)
  - COPCs: Barium, lead, cobalt, manganese, PAHs, dibenzofuran, dieldrin, endrin, ketone
- AOC C-00-043, Manhole (removed) (Section B-13 presents a description of this AOC)

Acid and Pueblo Canyons are considered AOCs, and the investigation reaches are located downstream (AC-1, AC-2, AC-3, and P-1E) of AOC 00-030(h) (LANL 2004, 87390) (Figure B-2).

B-7.4 Waste Inventory

The tank and any waste contents were removed in 1996. The wastes from this AOC were sanitary.

B-7.5 Historical Releases

The outfall for this tank drained to the head of Acid Canyon (LANL 1996, 53799, p. 4).

B-7.6 Summary of Historical Investigations

RFI and VCA characterization, removal, and confirmation sampling activities were conducted at AOC 00-030(h) in 1996. In accordance with the RFI work plan (LANL 1992, 07667), characterization activities included a site survey, a geodetic survey, a geophysical survey, and sampling (LANL 1996, 62416, p. 4). The RFI is described in a VCA report (LANL 1996, 62416). Twenty-three characterization samples were collected from inside and around the tank and from the outfall drainage area (LANL 1996, 62416, pp. 7–11, Table 2.1-1). The samples were field-screened for organic vapor and radiological activity. Organic vapor readings ranged from 0.0 to 3.0 parts per million by volume (ppmv), and no detectable radiological activity was found (LANL 1996, 62416, p. 12). The samples were submitted for laboratory analysis of metals, VOCs, SVOCs, pesticides, PCBs, plutonium-238, plutonium-239,-240, americium-241, and total uranium.

Based on the results of the characterization, a VCA at AOC 00-030(h) was conducted in 1996 to remove structure 7 (LANL 1996, 62416, pp. 13–14). According to the VCA report, soil in the west chamber of the septic tank contained plutonium-239 (LANL 1996, 62416, p. 13). Soil from the east and west chambers of the septic tank was removed (LANL 1996, 62416, p. 13). Soil from the west chamber was disposed of at TA-54, and soil from the east chamber was stockpiled at the site. The tank was demolished, excavated, and disposed of at the Los Alamos County landfill (LANL 1996, 62416, pp. 13–14), with the exception of the footing at the tank's west wall, which was left in place to minimize damage to the access road for Los Alamos High School (LANL 1996, 62416, p. 14). The excavation was backfilled with soil stockpiled from the tank's east chamber, supplemented with other clean backfill, and compacted (LANL 1996, 62416, p. 14). This area was re-paved in 1997.

A total of 18 pre- and post-VCA samples (14 of excavation backfill soil and adjacent areas [pre-VCA] and 4 confirmatory samples collected at the excavation bottom [post-VCA]) were collected (LANL 1996, 62416, p. 15, Table 2.2.3-1, Figure 2.2.3-1). The samples were field-screened for radioactivity, moisture content, and tritium and submitted for laboratory analysis of inorganic chemicals, VOCs, SVOCs, pesticides, PCBs, and radionuclides. Fourteen inorganic chemicals (LANL 1996, 62416, p. 17, Table 2.2.3-3), 3 radionuclides (cesium-137, plutonium-238, and plutonium-239) (LANL 1996, 62416, pp. 21–23), and 33 organic chemicals were detected (LANL 1996, 62416, Table 2.2.3-5).

B-8.0 AOC 00-030(j), SEPTIC SYSTEM

B-8.1 Site Description and Operational History

According to Zia Company drawings from 1947, AOC 00-030(j) is a septic tank located approximately 600 ft north of East Road, east of the eastern segment of Manhattan Loop (Figure B-7). It may have served Fort Leonard Wood housing units. A geophysical investigation conducted in 1996 failed to locate either the tanks or the outfall pipe (Geophex 1996, 88036).

B-8.2 Land Use

Historical, current, and future land use is residential.

B-8.3 Relationship to Other SWMUs and AOCs

As shown in Figure B-7, the following SWMU and AOC are located within approximately 1000 ft of AOC 00-030(j):

- SWMU 00-019, Central Wastewater Treatment Plant
  - Operational: 1949–1965
  - RCRA Phase: RFI 1997, VCA 1999
  - Approved NFA: Pending completion of canyons investigation
  - COPCs: Arsenic, chromium, iron, lead, mercury, methylmercury, Aroclor-1254, Aroclor-1260, 4,4'-DDT, acenaphthylene, benz(a)anthracene, benzo(a)pyrene, benzo(a)fluoranthene, dibenz(a,h)anthracene, cesium-134, and uranium-234
- AOC 00-030(p), Septic System (Section B-11 presents a description of this AOC)

Acid and Pueblo Canyons are AOCs, and the investigation reaches are located downstream (P-2W, P-2E) and upstream (P-1W, P-1E) of AOC 00-030(j) (LANL 2004, 87390) (Figure B-2).

B-8.4 Waste Inventory

Neither the septic tank nor the outfall pipe has been located.

B-8.5 Historical Releases

If this septic system had been constructed according to the Zia Company plans, then an outfall draining to Graduation Canyon would have existed (LANL 1992, 07667, Figure 5-47). However, neither the tank nor the outfall pipe has been located.

B-8.6 Summary of Historical Investigations

An RFI was conducted to determine whether contamination is present at AOC 00-030(j) (LANL 1992, 07667). A geophysical investigation conducted in 1996 failed to find evidence to substantiate either the installation of this septic system or, if installed, its actual location (Geophex 1996, 88036).

B-9.0 AOC 00-030(n), SEPTIC SYSTEM

B-9.1 Site Description and Operational History

AOC 00-030(n) was a 6.5-ft-long x 5.5-ft-wide x 4.7-ft-deep septic tank (LANL 1992, 07667, p. 5-96; LANL 1996, 62416, p. 2) located on Los Alamos County property west of 15th Street between Canyon Road and Pueblo Canyon Figure B-4). The inlet drainline was a 6-in.-diameter VCP that entered the center of the south end of the tank (LANL 1996, 62416, p. 2). The outlet drainline was a 6-in.-diameter steel pipe that exited the center of the north end of the tank (LANL 1996, 62416, p. 2). Because of its small size and location, the septic tank probably served only residences (LANL 1996, 62416, p. 3).). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(n) is

approximately 7288 ft asl. With the septic tank inlet buried approximately 5 ft bgs elevation of 7283 ft asl), it is unlikely that the septic tank received waste from a gravity-feed system originating in TA-01, downgradient of AOC 00-030(n). The tank was used until 1947, when the Central WWTP became operational (LANL 1992, 07667, p. 5-95; LANL 1996, 53799, p. 1).

B-9.2 Land Use

Historical, current, and future land use is residential.

B-9.3 Relationship to Other SWMUs and AOCs

As shown in Figure B-4, AOC 00-030(o) is located within approximately 1000 ft of AOC 00-030(n). Section B-10 presents a description of this AOC.

Pueblo Canyon is an AOC, and the investigation reaches are located upstream (P-1E, P-1W) and downstream (P-2W, P-2E) of AOC 00-030(n) (LANL 2004, 87390) (Figure B-2).

B-9.4 Waste Inventory

The tank was removed in August 1996 as part of a Laboratory VCA (LANL 1996, 62416, p. 64).

B-9.5 Historical Releases

Effluent discharged through an outfall to Pueblo Canyon (LANL 1996, 53799, p. 60, Figure 4.1-1) at the lower end of investigation reach P-1E (LANL 2004, 87390) (Figure B-2).

B-9.6 Summary of Historical Investigations

A VCA was conducted at AOC 00-030(n) in 1996. The tank and outfall pipe were located during site reconnaissance (LANL 1996, 53799, p. 62, Figure 4.1-1). The western half of the septic tank was in an active storm water drainage channel (LANL 1996, 53799, p. 62). Eight samples were collected from locations inside, and adjacent to, the tank and drainlines and in the outfall area (LANL 1996, 53799, p. 60, Table 4.1-1). Samples were field-screened for organic vapors, radioactivity, and moisture content (LANL 1996, 53799, p. 66). Organic vapors were not detected, and radioactivity levels were within instrument background. The samples were sent to an off-site laboratory for analysis of metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides. Inorganic chemicals, organic chemicals, and radionuclides were detected (LANL 1996, 53799, pp. 66–70, Tables 4.1.1-1, 4.1.1-2, and 4.1.2-1).

The fill material was removed from the tank and placed in the bottom of the excavation. The site was released to Los Alamos County to implement storm water controls (LANL 1996, 53799, p. 77). The septic tank and outfall pipe were excavated and removed. Two confirmatory samples were collected from the bottom of the excavation and submitted for off-site laboratory analysis of metals, VOCs, SVOCs, pesticides, PCBs, and radionuclides (LANL 1996, 53799, pp. 77–80, Figure 4.2.3-1, Table 4.2.3-1). No metals, VOCs, SVOCs, radionuclides, or PCBs were detected. Two pesticides (DDT[4,4'-] and DDE[4,4'-]) were detected. The excavation was backfilled with soil removed from the septic tank, and soil was cleared from the drainage channel. The banks of the drainage channel were recontoured and armored by Los Alamos County to enhance flow through the channel (LANL 1996, 53799, p. 77).

B-10.0 AOC 00-030(o), SEPTIC SYSTEM

B-10.1 Site Description and Operational History

AOC 00-030(o) is an inactive septic tank located behind a private residence between Canyon Road and Pueblo Canyon (Figure B-4) (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). The tank's estimated dimensions are 30 ft x 12 ft x 8 ft (LANL 1996, 62416, p. 85). The tank served the Sundt Apartments, McKee Housing, a dormitory, a laundry, and the area east of 15th Street (LANL 1996, 62416, p. 3). The mean elevation of the former TA-01 area is 7263 ft asl. The ground surface at AOC 00-030(o) is approximately 7282 ft asl. With the septic tank inlet buried approximately 5 ft bgs (elevation of 7277 ft asl), it is unlikely that the septic tank received waste from a gravity-feed system originating in former TA-01, downgradient of AOC 00-030(o). The tank was used until 1947, when the Central WWTP became operational (LANL 1992, 07667, p. 5-95; LANL 1996, 53799, p. 1).

B-10.2 Land Use

Past, current, and future land use is residential.

B-10.3 Relationship to Other SWMUs and AOCs

As shown in Figure B-4, the following AOCs are located within 1000 ft of AOC 00-030(o):

- AOC 00-030(d), Septic System (Section B-3 presents a description of this AOC)
- AOC 00-030(n), Septic System (Section B-9 presents a description of this AOC)

Pueblo Canyon is an AOC, and the investigation reaches are located upstream (P-1E, P-1W) and downstream (P-2W, P-2E) of AOC 00-030(o) (LANL 2004, 87390) (Figure B-2).

B-10.4 Waste Inventory

The top of the tank had been removed and the tank backfilled prior to the RFI (LANL 1996, 62416, p. 85).

B-10.5 Historical Releases

The outfall pipe for this tank was not located during the RFI (LANL 1996, 62416, p. 82).

B-10.6 Summary of Historical Investigations

A VCA was conducted at AOC 00-030(o) in 1996. Thirteen samples were collected from eight locations both inside and outside the tank, adjacent to the drainline, and in the estimated outfall pipe location (LANL 1996, 62416, p. 85, Table 5.1-1, Figure 5.1-1). The samples were field-screened for organic vapors and radioactivity (LANL 1996, 62416, p. 89). Organic vapor readings ranged from 0 to 23 ppmv, and no detectable radioactivity was measured (LANL 1996, 62416, p. 90). The samples were submitted for off-site laboratory analysis of inorganic chemicals, organic chemicals (VOCs and SVOCs), pesticides, PCBs, and radionuclides. Seven inorganic chemicals (LANL 1996, 62416, p. 90, Table 5.1.1-1), one radionuclide (plutonium-239) (LANL 1996, 62416, p. 93, Table 5.1.1-2), and ten organic chemicals were detected (LANL 1996, 62416, pp. 93–94, Table 5.1.2-1).

None of the septic system (tank or pipeline) was removed during the 1996 VCA. Because the southern portion of the tank lies beneath the foundation of a house and is inaccessible, the homeowner did not

want to risk possible damage to the property resulting from removal of the tank (LANL 1996, 62416, p. 97). Confirmatory samples were not collected because the tank remains in place.

B-11.0 AOC 00-030(p), SEPTIC SYSTEM

B-11.1 Site Description and Operational History

AOC 00-030(p) was a septic tank located on private property at the eastern end of the Rim Road cul-de-sac, behind a private residence (Figure B-7) (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). All evidence indicates that the tank serviced only residential connections (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). Although engineering drawings are not available, the septic tank is assumed to have served the Rim Road and Quartz Street residential areas (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2). The tank was put into service in 1946 and removed from service sometime during 1947 and 1948, when the Central WWTP became operational (LANL 1992, 07667, p. 5-96; LANL 1996, 53799, p. 2).

B-11.2 Land Use

Past, current, and future land use is residential.

B-11.3 Relationship to Other SWMUs and AOCs

One AOC was identified within approximately 1000 ft of AOC 00-030(p):

- AOC 00-030(j), Septic System (Section B-8 presents a description of this AOC)

B-11.4 Waste Inventory

During 1996 RFI pre-characterization activities, it was determined that the septic tank had been removed previously (LANL 1996, 62416, p. 113). A 30-ft-long section of 6-in.-diameter steel outlet pipe was removed during VCA activities. The excavation was backfilled and compacted (LANL 1996, 62416, p. 113).

B-11.5 Historical Releases

This septic tank had an outlet pipe that drained into Pueblo Canyon (LANL 1996, 62416, p. 100, Figure 6.1-1).

B-11.6 Summary of Historical Investigations

A VCA was conducted at AOC 00-030(p) in 1996. The septic tank could not be located, but the outfall pipe was found (LANL 1996, 62416, p. 98). Based on discussions with Los Alamos County utility personnel, it was concluded that the septic tank was removed when the gas main was connected in 1950 (LANL 1996, 62416, p. 101). Samples were collected from a trench excavated to locate the septic tank, from beneath the outfall pipe, and from the outfall area (LANL 1996, 62416, Figure 6.1-1). A total of six samples were collected from six locations (LANL 1996, 62416, pp. 102–103, Table 6.1-1). The samples were field-screened for radioactivity and organic vapors. All field-screening results were negative (LANL 1996, 62416, p. 105). The samples were analyzed for inorganic chemicals, VOCs, SVOCs, pesticides, PCBs, and radionuclides. Inorganic chemicals and radionuclides were detected (LANL 1996,

62416, p. 105, Table 6.1.1-1). Sixteen short-lived radionuclides were detected (LANL 1996, 62416, pp. 106–108), although they were eliminated in the VCA report as potential contaminant at AOC 00-030(p). (Laboratory quality assurance/quality control [QA/QC] standards are cited as the cause for detections of these particular radionuclides.). Organic chemicals were also detected (LANL 1996, 62416, p. 108).

A 30-ft-long, 6-in. steel outlet pipe was located, excavated, and removed. The excavation was backfilled (LANL 1996, 62416, p. 113). Confirmatory samples were not collected after inspection because the steel pipe was found to be free of visible breaks or holes (LANL 1996, 62416, p. 114).

B-12.0 SWMU 00-039, UNDERGROUND TANKS

B-12.1 Site Description and Operational History

SWMU 00-039 is the site of two former 700-gal. underground storage tanks (USTs) and their connecting pipes used for dry cleaning businesses in an area known locally as the Community Center (Figure B-5). The tanks were used to store hydrocarbon-based dry-cleaning agent known as Stoddard™ solvent (LANL 1994, 42791, p. 1; LANL 1996, 52932, p. 1). The site is located on private property (bounded by 15th Street, 19th Street, Myrtle Street, and Central Avenue) in Los Alamos but was federally owned from 1945 until 1968 (LANL 1996, 52932, p. 1). The USTs were installed sometime before 1958. Documentation of the early history of the dry cleaning operations at the site is incomplete; however, the following information on historical operations is known (LANL 1996, 52932, p. 23):

- Engineering drawings dated February 20, 1947 show that a dry cleaning operation had been established at 1324 17th Street and two USTs had been installed to store dry cleaning solvent.
- Since at least 1958, the site was leased to private parties. Records show the site was leased to Corbett Cleaning Company, a dry cleaning business, on April 1, 1958, and was sold to the same company on November 1, 1968, with continued operation as the Corbett Cleaning Company until 1985.
- Other businesses leased the property from 1985 to 1993.
- The property at 1324 17th Street was sold to the current owner, Netuschil Development Corporation, in July 1993.
- The property at 1324 17th Street has been leased since May 1993 to Mountainair Cleaners, another dry cleaning business.
- The building located at 1400 17th Street was built by a private party in 1960, though the land itself was federally owned until its sale on November 1, 1968. Many different businesses operated in the building, including at least two coin-operated laundromats, one of which was the first business to open in the building in 1960. Other owners later installed coin-operated dry-cleaning machines that were in service in the 1980s and used tetrachloroethylene (PCE). These machines have since been removed. Conflicting information is available on the use, storage, and disposal of the PCE used in the coin-operated machines; for example, it is unclear whether the PCE was drained from the coin-operated machines or how often such operations occurred and/or whether the machines were ever located within the laundromat above the area of highest PCE concentrations in soils.
- The dry-cleaning business at 1324 17th Street discontinued using the USTs sometime before 1969, at which time the tanks were emptied and left in place.
- The USTs were removed in 1993. All of the pipelines were left in place and some were filled with concrete during the 1993 tank removal activities. Another UST at the Community Center

containing petroleum hydrocarbons was also removed in 1993 and was subsequently approved for closure by the New Mexico Environment Department (NMED) Underground Storage Tanks Bureau (LANL 1994, 42791, p. 1).

Some chemicals apparently had been released from the tanks when they were removed in 1993 (LANL 1997, 42791, p. 1). Analysis of soil samples at that time indicated the presence of PCE, naphthalene, 1-methylnaphthalene, 2- methylnaphthalene, and VOCs, all of which were attributed to the dry cleaning tanks (LANL 1994, 42791, pp. 3–4). Further excavation was stopped because the extent of contamination was greater than anticipated and exceeded the limitations of the contractor's equipment (LANL 1994, 42791, p. 3). NMED requested additional investigation to define the extent of contaminant migration. In 1994, the U.S. Department of Energy (DOE) requested that the U.S. Environmental Protection Agency (EPA) add the USTs, designated as SWMU 00-039, to Module VIII of the Hazardous Waste Facility permit (LANL 1994, 42791, p. 4). The Laboratory amended the RFI work plan in 1994 to include an investigation of SWMU 00-039 (LANL 1994, 42791, p. 4).

B-12.2 Land Use

Land use has been commercial since the mid- to late 1940s and will remain retail/commercial.

B-12.3 Relationship to Other SWMUs and AOCs

The following AOCs are located within 1000 ft of SWMU 00-039:

- AOC 00-030(q), Septic System
  - Operational: Early 1940s–1947
  - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
  - COPC: Arsenic
- SWMU 00-040, Underground Tank
  - Operational: No information
  - RCRA Phase: NFA; approved NFA (EPA 2005, 88464)
  - COPCs: Petroleum hydrocarbons

There are no known outfalls or other transport mechanisms from SWMU 00-039 into the Pueblo Canyon AOC or any of its investigation reaches (LANL 2004, 87390).

B-12.4 Waste Inventory

A mixed solvent plume containing PCE and VOCs, as well as total petroleum hydrocarbons (TPHs) is present in the soil beneath the site (LANL 1996, 52932, p. 58). The volume of TPH-contaminated soil is estimated at 49,000 ft^3 (representing approximately 71 gal.) and the volume of PCE-contaminated soil is estimated at 19,600 ft^3 (representing approximately 1.2 gal.) (LANL 1996, 52932).

B-12.5 Historical Releases

PCE, organic solvents, and TPH (LANL 1996, 52932, p. 4) have been released at the site.

B-12.6 Summary of Historical Investigations

In 1995, a Phase I RFI was conducted at SWMU 00-039 to assess the nature and extent of contaminants that may have been released from the former dry cleaning solvent USTs or associated pipelines. The suspected contaminants were PCE, naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, (components of Stoddard™ solvent, which was used in historical dry-cleaning operations at the site) (LANL 1996, 52932, p. 4). After conducting a geodetic survey, 9 boreholes were drilled (LANL 1996, 52932, pp. 33–35, Figure 5.1.4-1), and 19 boreholes were hand-augered to characterize contamination adjacent to, and beneath, the subsurface piping surrounding the UST system (LANL 1996, 52932, pp. 35–36, Figure 5.1.4-1). A total of 180 subsurface soil samples were collected and submitted to a mobile chemical laboratory for analysis of organic chemicals and TPH (LANL 1996, 52932, p. 39, Table 5.1.4-1). Detected organic chemicals included ethyl benzene; p-isopropyl benzene; p-isopropyltoluene; tert-butylbenzene; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; total xylenes; and TPH as Stoddard™ solvent (LANL 1996, 52932, p. 39). All detected organic chemicals are components of Stoddard™ solvent.

The RFI concluded that the PCE is not related to activities at the dry cleaners at the time DOE owned the property (LANL 1996, 52932. p. 58).

B-13.0 AOC C-00-043, MANHOLE (REMOVED)

B-13.1 Site Description and Operational History

AOC C-00-043 was an inactive brick-and-mortar manhole located approximately 50 ft south of the Immaculate Heart of Mary Catholic Church in a landscaped part of the church's parking lot (LANL 1996, 55103, p. 1). The manhole was bell-shaped, 2 ft in diameter at the surface, 5 to 6 ft in diameter at the base, and 5 to 5.5 ft deep (LANL 1997, 62542, p. 42, Figure 4.2-2) (Figure B-6). The base of the manhole consisted of 8-ft-diameter x 6-in.- to 8-in.-thick concrete (LANL 1997, 62542, p. 42, Figure 4.2-2). The AOC was identified in 1996 during field activities (LANL 1997, 62542, p. 40). The manhole may have been connected to sanitary sewer lines serving residential areas for the former Central WWTP (LANL 1997, 62542, pp. 40–42). The plant operated from the mid-1940s until it was decommissioned in the early 1960s (LANL 1997, 62542, p. 40).

B-13.2 Land Use

Past, current, and future land use is residential (LANL 1996, 55103, p. 1).

B-13.3 Relationship to Other SWMUs and AOCs

AOC C-00-043 is located within 1000 ft of the following AOC and SWMU:

- AOC 00-030(h) (Section B-7 presents a description of this AOC)
- SWMU 00-012, Western Steam Plant
  - Operational: 1949–unknown
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 79282)
  - COPCs: Barium, lead, cobalt, manganese, PAHs, dibenzofuran, dieldrin, endrin, ketone

B-13.4 Waste Inventory

The manhole appears to have serviced residential areas and no identified wastes have been associated with this AOC (LANL 1997, 62542, pp. 40–42).

B-13.5 Historical Releases

No known releases associated with this AOC were documented in either the VCA plan (LANL 1996, 55103) or the VCA report (LANL 1997, 62542).

B-13.6 Summary of Historical Investigations

A VCA was conducted at AOC C-00-043 in 1996. The VCA was conducted to remove the manhole (LANL 1996, 55103, p. 1). The associated characterization sampling was conducted to determine whether contamination was present (LANL 1997, 62542, p. 40). Characterization activities included a site survey, geodetic survey, manhole investigation and sampling, and field screening. Sampling activities were conducted in accordance with the VCA plan (LANL 1996, 55103). Two waste characterization samples were collected from the sediment at the bottom of the manhole (LANL 1997, 62542, p. 42). The samples were field-screened for organic vapors and gross radiological activity. No organic vapors were detected, and no radioactivity was detected above instrument background. The samples were submitted for laboratory analysis of inorganic chemicals, organic chemicals, and radionuclides.

Less than 10 yd^3 of brick, mortar, and concrete were transported to the Los Alamos County landfill for disposal (LANL 1997, 62542, p. 46). After the manhole was removed, two confirmatory samples were collected from each half of the manhole footprint (LANL 1997, 62542, p. 47). The samples were field-screened for organic vapors and gross radiological activity. No organic vapors were detected and no alpha/beta or gamma activity was detected above instrument background (LANL 1997, 62542, p. 47). The samples were submitted for laboratory analysis of inorganic chemicals, VOCs, SVOCs, and radionuclides. Inorganic chemicals (LANL 1997, 62542, p. 48, Table 4.4.4-1), organic chemicals, and radionuclides (LANL 1997, 62542, pp. 49–53, Table 2-2) were detected. The excavation was backfilled and compacted with excavated soil and clean fill material, regraded, and reseeded (LANL 1997, 62542, p. 47).

B-14.0 SWMU 31-001, SEPTIC SYSTEM

B-14.1 Site Description and Operational History

SWMU 31-001 is a former septic system located in the former TA-31 (Figure B-8). It consisted of a septic tank (structure 00-7), two sanitary sewer manholes (structures 00-41 and 00-42), associated waste lines, and an outfall (LANL 1992, 07668, p. 3-46). The former TA-31 was located in what is now the eastern residential area of Los Alamos, just west of the Los Alamos County Airport (LANL 1995, 58085, p. 1; LANL 1996, 54320, p. 32). TA-31 served as the receiving area for all truck shipments to the Laboratory from 1945 until 1954 (LANL 1995, 58085, p. 1; LANL 1996, 54320, p. 32). SWMU 31-001 served former Building 31-7, which was constructed in 1949 and served as the main warehouse at TA-31 (LANL 1992, 07668, p. 3-46). The septic tank (structure 00-7) was constructed of reinforced concrete, measured 4 x 3 ft, and was several feet high (LANL 1992, 07668, p. 3-48). This septic tank was located aboveground on a small bench above the rim of Pueblo Canyon, north of Building 31-7 (LANL 1992, 07668, p. 3-48). The septic tank was constructed in 1949, operated until 1954, and was removed in 1988 (LANL 1992, 07668, p. 3-47). The waste line from Building 31-7 to the septic tank was approximately 600 ft long and included the two manholes (structures 00-41 and 00-42) (LANL 1995, 58085, p. 3). The waste line was not encountered when the septic tank was removed in 1988 (LANL 1995, 58085, p. 4).

The contents of the septic tank were sampled when the tank was removed and found to contain no hazardous materials (LANL 1995, 58085, p. 4). When the RFI work plan was prepared in 1992, the sampling results could not be located and verified (LANL 1995, 58085, p. 4).

B-14.2 Land Use

The current and future land use is recreational open space.

B-14.3 Relationship to Other SWMUs and AOCs

The following AOCs and SWMU are located within 1000 ft of SWMU 31-001:

- AOC 00-030(k), Septic System
  - Operational: No information
  - RCRA Phase: Administratively complete; approved NFA (DOE 1998, 59694)
  - COPCs: None identified
- SWMU 00-034(a), Landfill (Eastern Area)
  - Operational: No information
  - RCRA Phase: Administratively complete; approved NFA (DOE 1998, 59694)
  - COPCs: None identified
- AOC C-31-001, Buildings
  - Operational: No information
  - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
  - COPCs: None identified

The outfall discharged to Pueblo Canyon, approximately 0.9 kilometers upstream of Pueblo Canyon investigative reach P-2W and 1.6 kilometers below Pueblo Canyon investigative reach P-1E (LANL 2004, 87390) (Figure B-2).

B-14.4 Waste Inventory

SWMU 31-001 was a sanitary septic system. No known waste streams are associated with this system.

B-14.5 Historical Releases

This septic system serviced Building TA-31-7 (LANL 1992, 07668, p. 3-48). No accidental spills have been documented at Building TA-31-7 (LANL 1992, 07668, p. 3-48). However, the outfall from the tank discharged into Pueblo Canyon (LANL 1992, 07668, p. 3-48).

B-14.6 Summary of Historical Investigations

A Phase I RFI for SWMU 31-001 was conducted in 1994 to evaluate whether residual soil contamination associated with the former septic system and outfall was present, to corroborate the results of the sampling performed during tank removal, and to determine whether the waste line had been removed (LANL 1995, 58085, p. 4). Field activities included collecting soil samples at the location of the former septic tank, along the location of the waste line, and in the outfall area (LANL 1995, 58085, p. 4,

Figure 3). Three shallow (6- to 12-in.-deep) subsurface samples were collected at the location of the former septic tank (LANL 1995, 58085, p. 5, Figure 3). Two trenches were excavated along the path of the waste line, perpendicular to the alignment of the waste line (LANL 1995, 58085, p. 5, 23, Figure 3). The first trench was located approximately 60 ft south of the septic tank, measuring 31 ft long and 4 ft deep (LANL 1995, 58085, p. 5). Three samples were collected from this trench. The waste line was not encountered in this trench, but a filled trench was observed in the bedrock that appeared to be the trench previously used for the waste line (LANL 1995, 58085, p. 23). The second trench was excavated approximately 50 ft south of the first trench and measured 25 ft long and 6.5 to 8.5 ft deep (LANL 1995, 58085, pp. 5, 23). Three samples were collected from this trench. Pieces of broken clay pipe that appeared to be from the former waste line were observed in this trench. The outfall pipe was discovered in its original location and three shallow (6- to 13-in.-deep) subsurface samples were collected from one location at the discharge of this pipe (LANL 1995, 58085, pp. 5, 23). Five surface samples were also collected from four sediment trap locations in the drainage below the outfall (LANL 1995, 58085, pp. 5, 23–24). All samples were field-screened for radioactivity and submitted for laboratory analysis of inorganic and organic chemicals. Inorganic (LANL 1995, 58085, p. 24, Table 4) and organic chemicals (LANL 1995, 58085, Table 5, Table 6) were detected.

A VCA was conducted for SWMU 31-001 in 1995. The VCA included excavation of soil from approximately 2 ft above the outfall to 4 ft below the outfall (LANL 1996, 54320, p. 33). to the underlying tuff, with the depth of the excavation ranging from 1 to 2 ft and the width ranging from 0.5 to 6 ft (LANL 1996, 54320, p. 33). Two confirmatory samples were collected from the excavation and analyzed for radionuclides, inorganic chemicals, and PCBs (LANL 1996, 54320, p. 33, Figure 1). Inorganic chemicals and radionuclides were detected (LANL 1996, 54320, Table 4). No PCBs were detected (LANL 1996, 54320, Table 4). In response to NMED comments on the VCA, the Laboratory indicated that an additional investigation would be conducted to characterize potential contamination associated with organic chemicals other than PCBs (NMED 1997, 56322, Attachment A). This investigation would address the area under the former septic system and in the outfall area to the point where the canyons investigation begins.

B-15.0 CONSOLIDATED UNIT 45-001-00, WASTEWATER TREATMENT PLANT – TA-45

B-15.1 Site Description and Operational History

Consolidated Unit 45-001-00 consists of Consolidated Unit 01-002(b)-00, SWMUs 45-001, 45-002, 45 003, 45-004, and AOC C-45-001 (Figure B-1). These SWMUs and AOC were all associated with past wastewater treatment and disposal activities at TA-45. This TA was used as an industrial waste discharge area and later served as the Laboratory's first radioactive liquid waste (RLW) treatment facility (LANL 1992, 07668, p. 3-69; LANL 1995, 48856, p. 1). These SWMUs and AOC consist of an untreated RLW outfall, a wastewater treatment facility and outfall, a vehicle decontamination facility, waste lines, a sanitary sewer outfall, and the location of a past radioactive waste spill.

B-15.1.1 Consolidated Unit 01-002(b)-00

Consolidated Unit 01-002(b)-00 consists of a former industrial waste line outfall and its drainage into Acid Canyon. The outfall was located within the boundaries of former TA-45 at the head of a small branch of Acid Canyon known as the south fork of Acid Canyon. This outfall was used to discharge untreated RLW generated in laboratories and research facilities in former TA-01 during the period from 1943/44 to 1951 (LANL 1992, 07668, p. 3-80; LANL 1995, 48856, p. 39). These wastes were routed from TA-01 facilities to the outfall by a sewer system referred to as the industrial waste sewer system or acid waste sewer

system (LANL 1992, 07668, p. 3-80). Most of this system was removed during D&D activities at TA-01, and associated contamination was investigated as part of the investigations for TA-01.
Consolidated Unit 01-002(b)-00 includes only the outfall and contamination in the drainage channel below the outfall (LANL 1995, 48856, p. 40). D&D of TA-45 began in October 1966 and included removing the outlet pipe, an associated weir box, and tuff around the outfall and on the canyon wall below the outfall (LANL 1992, 07668, pp. 3-70–3-71). Wastes generated during these activities were disposed of at TA-54 (LANL 1992, 07668, pp. 3-70–3-71). In September 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1).

B-15.1.2 SWMU 45-001

SWMU 45-001 consists of a former RLW treatment plant and associated outfalls. The TA-45 RLW treatment plant (Building 45-2) was the first such facility at the Laboratory and was located near the current intersection of Canyon Road and Central Avenue in the Los Alamos townsite (LANL 1992, 07668, p. 3-69; LANL 1995, 48856, p. 1). The treatment plant began operation in 1951 and operated until 1964. The plant initially received RLW only from TA-01. As the Laboratory operations expanded, RLW from TAs-03, -43, and -48 was also sent to SWMU 45-001 (LANL 1992, 07668, p. 3-86). The capacity of the plant was originally 90 gal./min but was expanded to 145 gal./min in 1957 (LANL 1992, 07668, p. 3-87). The treatment plant included neutralization and storage tanks, flocculation tanks, sedimentation basins, vacuum filters, and granular-media filters (LANL 1992, 07668, p. 3-86). D&D of SWMU 45-001 began in October 1966 and included demolishing and removing the treatment plant equipment, facilities, and waste lines and excavating contaminated soil (LANL 1992, 07668, pp. 3-71–3-73; LANL 1995, 48856, p. 46). Portions of the walls of Acid Canyon below the outfalls were also decontaminated (LANL 1992, 07668, pp. 3-72–3-73). Wastes generated during these activities were disposed of at TA-54. In September 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1).

B-15.1.3 SWMU 45-002

SWMU 45-002 consists of a facility (former Building 45-1) that was used to decontaminate vehicles and large equipment, including filters from the Sigma Building, trash dumpsters, and wing tanks from airplanes (LANL 1992, 07668, p. 3-90; LANL 1995, 48856, p. 53). On at least one occasion, lead shielding bricks were also decontaminated. SWMU 45-002 was located approximately 40 ft south of the TA-45 treatment plant, SWMU 45-001 (LANL 1992, 07668, Figure 3.4-10). The decontamination facility began to operate in 1952. Vehicles and other equipment were decontaminated by steam cleaning (LANL 1992, 07668, p. 3-90). This facility was operated infrequently, approximately one day per month (LANL 1992, 07668, p. 3-90; LANL 1995, 48856, p. 53). SWMU 45-002 was decommissioned in 1966, along with the other facilities in former TA-45. At that time, Building 45-1 was demolished and removed, and contaminated soil around the building was excavated (LANL 1992, 07668, p. 3-90). These wastes were sent to TA-54 for disposal (LANL 1992, 07668, p. 3-90). In September 1967, the TA-45 property was transferred to Los Alamos County (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1).

B-15.1.4 SWMU 45-003

SWMU 45-003 consists of the former buried industrial waste line and associated manhole (former structure 45-8) located within the boundaries of former TA-45. This waste line was used to convey RLW to the TA-45 treatment plant, SWMU 45-001 (LANL 1992, 07668, pp. 3-85–3-87; LANL 1995, 48856, p. 60). The waste line was connected to the existing waste line in TA-01 when the TA-45 treatment plant was constructed in 1951 (LANL 1992, 07668, p. 3-89; LANL 1995, 48856, p. 60). SWMU 45-003 was

removed as part of the TA-45 D&D activities begun in October 1966 (LANL 1992, 07668, pp. 3-87–3-88). Contaminated soil around the waste line was also removed. D&D of TA-45 was completed by July 1967 and the TA-45 property was transferred to Los Alamos County in 1967 (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1).

B-15.1.5 SWMU 45-004

SWMU 45-004 consists of a sanitary sewer outfall. This outfall was associated with the sanitary sewer system that was constructed in 1947 to serve the townsite (LANL 1995, 48856, p. 68). This sewer system included a sanitary sewer lift station (structure 45-3) and sanitary sewer manholes (structures 45-5 and 45-6). The sanitary sewer system was transferred to Los Alamos County in 1967 (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1). No environmental investigations were conducted at SWMU 45-004 before the 1995 RFI.

B-15.1.6 AOC C-45-001

AOC C-45-001 is the site of an accidental release of plutonium-contaminated sludge that occurred in the parking lot south of Building 45-2 (SWMU 45-001) in January 1957 (LANL 1995, 48856, p. 46). The parking lot was removed as part of the TA-45 D&D activities begun in October 1966 (LANL 1995, 48856, p. 46). The TA-45 property, including the site of AOC C-45-001, was transferred to Los Alamos County in 1967 (LANL 1992, 07668, p. 3-71; LANL 1995, 48856, p. 1).

B-15.2 Land Use

Land use for the site was formerly industrial (TA-45). Currently, the site is being used by the county to stockpile bulk material. The likely future use is recreational.

B-15.3 Relationship to Other SWMUs and AOCs

The following AOCs are located within approximately 1000 ft of Consolidated Unit 45-001-00:

- AOC 00-030(eN), Septic System (See Section B-4 presents a description of this AOC)
- AOC 00-030(eS), Septic System (Section B-5 presents a description of this AOC)
- AOC 00-030(f), Septic System (Section B-6 presents a description of this AOC)
- AOC 00-030(g), Septic System
    - Operational: Early 1940s–1947
    - RCRA Phase: RFI 1993–1999; approved NFA; pending completion of canyons investigation (NMED 2003, 76018)
    - COPCs: Arsenic, chromium, cyanide, lead, Aroclor-1254, Aroclor-1260, dieldrin, toxaphene, plutonium-239,-240
- AOC 00-030(q), Septic System
    - Operational: Early 1940s–1947
    - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
    - COPCs: Arsenic

Acid and Pueblo Canyons are AOCs, and the investigation reaches are located upstream (P-1W) and downstream (ACS, AC-1, P-1E) of Consolidated Unit 45-001-00 (LANL 2004, 87390) (Figure B-2).

B-15.4 Waste Inventory

RLW was treated at the former TA-45 site. No known wastes remain after D&D activities in 1966. Potential contamination includes metals, radionuclides, and organic chemicals.

B-15.5 Historical Releases

Consolidated Unit 45-001-00 consists of Consolidated Unit 01-002(b)-00, SWMUs 45-001, 45-002, 45 003, 45-004, and AOC C-45-001. The following sections contain summaries of historical releases from the SWMUs and AOC.

B-15.5.1 Consolidated Unit 01-002(b)-00

Discharges of untreated RLW from Consolidated Unit 01-002(b)-00 occurred from 1943 to 1951 and ceased when the TA-45 RLW treatment plant (SWMU 45-001) began operation. During the period between 1943 and 1951, approximately 4,800,000 gal. of untreated wastewater were discharged annually from Consolidated Unit 01-002(b)-00. Average plutonium concentrations ranged from 1000 to 10,000 pCi/L, resulting in a total estimated discharge of 1.9 g of plutonium (LANL 1992, 07668, pp. 3-81–3-82).

B-15.5.2 SWMU 45-001

Effluent from the plant discharged to Acid Canyon through outfalls located near the canyon rim, northeast of Consolidated Unit 01-002(b)-00 (LANL 1992, 07668, Figure 3.4-8). One outfall discharged treated wastewater and the other was connected to floor drains in Building 45-2. Approximately 0.34 g of plutonium-239,-240 were released in the treated effluent from 1951 to 1964 (LANL 1992, 07668, p. 3-85). Operation of the treatment plant ceased after the new RLW treatment facility was constructed in TA-50. A "small amount" of untreated RLW was discharged to Acid Canyon in May 1964 (LANL 1992, 07668, p. 3-87).

B-15.5.3 SWMU 45-002

Untreated steam-cleaning wastewater from SWMU 45-002 was originally discharged into Acid Canyon. Later, a sump was added to collect the wastewater so it could be pumped to SWMU 45-001 for treatment (LANL 1992, 07668, p. 3-92).

B-15.5.4 SWMU 45-003

No documented releases from the former buried industrial waste line and associated manhole (former structure 45-8) used to convey RLW to the TA-45 treatment plant have been documented (LANL 1992, 07668, pp. 3-119–3-121). However, during the Formerly Utilized Sites Remedial Action Program (FUSRAP) investigation, samples collected from trenches across the former waste line location contained concentrations of plutonium-239 to a minimum depth of approximately 5 ft (LANL 1992, 07668, p. 3-121).

B-15.5.5 SWMU 45-004

The outfall was located to the north of the lift station, approximately 100 ft north of the TA-45 treatment plant (SWMU 45-001), and was used for emergency discharge of overflow. The outfall discharged into a drainage leading into Acid Canyon (LANL 1995, 48856, p. 68).

B-15.5.6 AOC C-45-001

AOC C-45-001 is the site of an accidental release of plutonium-contaminated sludge that occurred in the parking lot south of Building 45-2 (SWMU 45-001) in January 1957. This release was cleaned up by excavating the parking lot and soil at the site of the release to a depth of 18 in., but documentation on residual radioactivity remaining after this cleanup is not available (LANL 1995, 48856, p. 46).

B-15.6 Summary of Historical Investigations

Consolidated Unit 451-00 consists of Consolidated Unit 01-002(b)-00, SWMUs 45-001, 45-002, 45-003, 45-004, and AOC C-45-001. The following sections summarize the historical investigations at each of the SWMUs and AOC in the consolidated unit.

B-15.6.1 Consolidated Unit 01-002(b)-00

Several environmental investigations have been conducted at Consolidated Unit 01-002(b)-00. The earliest investigations, conducted between 1945 to 1947, identified radioactivity near the outfall and downstream of the outfall (LANL 1992, 07668, p. 3-87). The DOE investigated the TA-45 site, including Consolidated Unit 01-002(b)-00, during the period from 1977 to 1981 as part of the FUSRAP (LANL 1992, 07668, pp. 3-74–3-78). This investigation included analysis of soil and sediment samples collected at and below the outfalls. Based on the results of this sampling effort, additional soil and tuff were removed from Consolidated Unit 01-002(b)-00 along the drainage channel below the outfall (LANL 1992, 07668, p. 3-81).

A Phase I RFI of Consolidated Unit 01-002(b)-00 was conducted in 1992 to determine whether residual soil/tuff contamination was associated with the former outfall. Boreholes were hand-augered to depths of 18 in. at five locations along, and adjacent to, the former waste line. A subsurface sample was collected from the bottom of each borehole (LANL 1995, 48856, p. 40). Three additional boreholes were augered to a depth of 18 in. at locations between the outfall and the canyon rim. A subsurface sample was collected from the bottom of each borehole (LANL 1995, 48856, p. 40). Surface samples were also collected from four transects across the drainage channel in sediment accumulation areas (LANL 1995, 48856, p. 40). These transects were spaced approximately 500 ft apart, starting from near the canyon rim and continuing to the confluence of Acid and Pueblo Canyons. Three samples were collected from each transect: one in the bottom of the drainage channel and one from each side of the channel bank (LANL 1995, 48856, p. 40). Including field QA samples, a total of 24 samples were collected (LANL 1995, 48856, Table A-1). All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals (LANL 1995, 48856, p. 42) and radionuclides were detected, including plutonium-238, plutonium-239,-240, tritium, and uranium-235. No organic chemicals were detected.

B-15.6.2 SWMU 45-001

Several environmental investigations have been conducted at SWMU 45-001, including those conducted as part of facility D&D activities (LANL 1992, 07668, pp. 3-87–3-88). The DOE investigated the former

TA-45 site, including SWMU 45-001, between 1977 and 1981 as part of the FUSRAP (LANL 1992, 07668, pp. 3-74, 3-80). This investigation included analyzing soil and sediment samples collected at and below the outfalls, at the former treatment plant location, in canyons, and along the waste lines.

A Phase I RFI of SWMU 45-001 was conducted in 1994 to determine whether residual soil/tuff contamination was associated with the former treatment plant and outfalls. Boreholes were drilled to depths of 20 ft at six locations along the former waste lines, and four samples were collected from each borehole (LANL 1995, 48856, p. 46). Samples were collected at the top and bottom of the borehole interval, at a location indicated by field-screening, and at a random location (LANL 1995, 48856, p. 46). All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Tuff samples were also collected at five locations from the cliff face below the treated waste outfall, and surface samples were collected from six locations in the canyon bottom below the treated waste outfall and floor drain outfall (LANL 1995, 48856, p. 48). These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of inorganic chemicals and radionuclides. The inorganic chemicals detected included cadmium, chromium, cyanide, lead, mercury, molybdenum, nickel, phosphorus, silver, and strontium (LANL 1995, 48856, p. 48). The radionuclides detected included americium-241, cesium-137, plutonium-238, plutonium-239,-240, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 (LANL 1996, 54468, p. 21). Two organic chemicals (tetrachloroethene and toluene) were also detected (LANL 1995, 48856, p. 49).

B-15.6.3 SWMU 45-002

Several environmental investigations have been conducted at SWMU 45-002, including those conducted as part of facility D&D activities (LANL 1992, 07668, pp. 3-90–3-91). The DOE investigated the TA-45 site, including SWMU 45-002, between 1977 and 1981 as part of the FUSRAP 3-LANL 1992, 07668, pp. 3-72–80). This investigation included analyzing soil and sediment samples collected at and below the outfalls, at the former treatment plant location, in canyons, and along waste lines. Soil in the drainage outfall below Building 45-1 was found to contain elevated levels of plutonium-239,-240. Soil was removed in 1982 as part of the FUSRAP activities (LANL 1992, 07668, p. 3-91).

A Phase I RFI of SWMU 45-002 was conducted in 1994 to determine whether residual soil contamination was associated with the former facility and drainage outfall. Boreholes were drilled to the soil/tuff interface at five locations at the former facility and along the drainage to Acid Canyon (LANL 1995, 48856, p. 53). Samples were collected at 5-ft intervals and field-screened for radioactivity and organic chemicals. All samples from the soil/tuff interface were submitted for laboratory analysis of inorganic chemicals, radionuclides, organic chemicals, including high explosives (HE) (LANL 1995, 48856, p. 53). Vertical composite samples were prepared from two boreholes and one surface sample was collected from the canyon wall downgradient of SWMU 45-002. These samples were submitted for laboratory analysis of inorganic chemicals, radionuclides, organic chemicals, including HE (LANL 1995, 48856, p. 55). Inorganic chemicals (LANL 1995, 48856, p. 55), radionuclides (americium-241, plutonium-239,-240, strontium-90, tritium, uranium-234, uranium-235, and uranium-238), and six organic chemicals (acetone, bis[2-ethylhexyl]phthalate, fluoranthene, methylene chloride, phenanthrene, and pyrene) were detected.

B-15.6.4 SWMU 45-003

Several environmental investigations have been conducted at SWMU 45-003, including those conducted as part of facility D&D activities (LANL 1992, 07668, pp. 3-87–3-88). The DOE investigated the former TA-45 site, including SWMU 45-003, between 1977 and 1981 as part of the FUSRAP (LANL 1992, 07668, pp. 3-72–3-80). This investigation included analysis of soil and sediment samples collected at and

below the outfalls, at the former treatment plant location, in canyons, and along waste lines (LANL 1992, 07668, p. 3-88). Plutonium-239,-240 was detected in subsurface soil where the waste lines had entered the treatment plant (LANL 1992, 07668, p. 3-88).

A Phase I RFI of SWMU 45-003 was conducted in 1994 to determine whether residual soil contamination was associated with the former waste lines. Boreholes were drilled with an auger to refusal at four locations along the alignment of the former waste line (LANL 1995, 48856, p. 60). One or two samples were collected from each borehole, depending on the depth of refusal (LANL 1995, 48856, Table A-12). These samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals (LANL 1995, 48856, pp. 62, 65), radionuclides (plutonium-238, plutonium-239,-240, tritium, and uranium-235) and ten organic chemicals (anthracene; benz[a]anthracene; benzo[a]pyrene; benzo[b]fluoranthene; benzo[k]fluoranthene; chrysene; fluoranthene; indeno[1,2,3-cd]pyrene; phenanthrene; and pyrene) were detected (LANL 1995, 48856, Table 4-13).

B-15.6.5 SWMU 45-004

A Phase I RFI of SWMU 45-004 was conducted in 1994 to determine whether residual soil or sediment contamination was present. A shallow (12- to 18-in.-deep) subsurface sample was collected from the upper end of the drainage near the former outfall, and surface samples were collected from three additional locations along the drainage (LANL 1995, 48856, p. 68, Figure 4-10). All samples were field-screened for radioactivity and organic chemicals. Samples were submitted for laboratory analysis of inorganic chemicals (three of four samples), radionuclides (three of four samples), and organic chemicals (three of four samples). Inorganic chemicals (LANL 1995, 48856, p. 68), radionuclides (plutonium-238, plutonium-239,-240, tritium, and uranium-235) and 17 organic chemicals (acenaphthene; acetone; anthracene; benz[a]anthracene; benzo[a]pyrene; benzo[b]fluoranthene; benzo[g,h,i]perylene; benzo[k]fluoranthene; chrysene; dibenzofuran; fluoranthene; fluorene; indeno[1,2,3-cd]pyrene; 2-methylnaphthalene; naphthalene; phenanthrene; and pyrene) were detected (LANL 1995, 48856, Table 4-16).

B-15.6.6 AOC C-45-001

Several environmental investigations have been conducted at AOC C-45-001, including investigations conducted as part of facility D&D activities. The DOE investigated the former TA-45 site, including AOC C-45-001, from 1977 to 1981 as part of the FUSRAP (LANL 1992, 07668, pp. 3-74–3-80). This investigation included collecting and analyzing soil and sediment samples at and below outfalls, at the former treatment plant location, in canyons, and along waste lines.

A Phase I RFI of AOC C-45-001 was conducted in 1994 to determine whether residual soil/tuff contamination was associated with this past release. Boreholes were drilled to depths of 20 ft at five locations in the former parking lot and one location at the canyon rim below the parking lot (LANL 1995, 48856, Figure 4-3). Samples were collected at the top and bottom of the borehole interval, at a location indicated by field screening, and at a random location (LANL 1995, 48856, p. 46). All samples were field-screened for radioactivity and organic chemicals and submitted for laboratory analysis of inorganic chemicals, radionuclides, and organic chemicals. Inorganic chemicals (LANL 1995, 48856, p. 68), radionuclides (americium-241, plutonium-238, plutonium-239, and uranium-235) were detected (LANL 1995, 54468, Table 4-1). No organic chemicals were detected.

B-16.0 CONSOLIDATED UNIT 73-001(a)-99, FORMER LANDFILL

B-16.1 Site Description and Operational History

Consolidated Unit 73-001(a)-99 consists of SWMUs 731(a) and 73-004(d) (Figure B-9). The SWMUs are associated with disposal activities near the TA-73 airport landfill. SWMU 73-004(d) was physically incorporated into, and is indistinguishable from, SWMU 73-001(a) and is not discussed separately. The area encompassing consolidated SWMU 73-001(a)-99 is currently part of the Los Alamos County Airport (LANL 1992, 07667, p. 5-170).

B-16.1.1 SWMU 73-001(a)

SWMU 73-001(a) is the inactive main landfill (LANL 1998, 63070, p. 2-5). It is situated north of the airport runway and has a surface area of about 12 acres (LANL 1998, 63070, pp. 2-15–2-16). The Laboratory and townsite use of the area as a landfill probably began in 1943. The Laboratory deposited sanitary wastes in the landfill. A hot-mix asphalt batch plant operated in this area from about the mid-1940s until 1954 (LANL 1992, 07667, p. 5-173). The plant was located east of the airport terminal building along the canyon rim in an area that subsequently was assimilated into the main landfill (LANL 1992, 07667, Figure 5-78). The volume of wastes in the landfill has been estimated to be between 489,500 yd^3 (LANL 1998, 63070, p. 2-5) and 536,800 yd^3 (LANL 2002, 74007, p. 6). Initially, the landfill consisted of a natural hanging valley into which municipal waste was deposited after first being burned (LANL 1998, 63070, p. 2-15). The intentional burning ceased in 1965 when Los Alamos County assumed operation of the landfill. Because more capacity was required, trenches were excavated into the tuff adjacent to the original hanging valley (LANL 1998, 63070, p. 2-16). Los Alamos County operated the landfill from 1965 until it was closed in 1973 (LANL 1998, 63070, p. 2-16). From 1984 to 1986, the western portion of the landfill was excavated and moved to the debris disposal pit [SWMU 73-001(d), now part of Consolidated Unit 73-001(b)-99], to allow construction of existing hangars and tie-down areas (LANL 2002, 74007, p. 6). Clean fill was used to replace the excavated area.

B-16.1.2 SWMU 73-004(d)

SWMU 73-004(d) is a former septic system that served the landfill office (LANL 1992, 07667, p. 5-173). It was located east of the present airport terminal building and within the footprint of SWMU 73-001(a) (LANL 1992, 07667, p. 5-173, Figure 5-78; LANL 1998, 63070, p. 2-16). A 4-in. VCP connected the building's toilet to the septic tank, which was located about 20 ft northeast of the building (LANL 1992, 07667, p. 5-173). Aerial photographs indicate that the landfill office may have been used between 1960 and 1973 (LANL 1992, 07667, p. 5-174). The building and septic tank were removed during D&D activities in the early 1970s (LANL 1997, 59367, p. 17). SWMU 73-004(d) was proposed for NFA because it is located within SWMU 73-001(a) and would be investigated as part of that SWMU (LANL 1997, 59367, p. 18).

B-16.2 Land Use

Past, current, and future land use is industrial (landfill). Currently, Los Alamos County has a 30-yr lease from DOE to operate the airport.

B-16.3 Relationship to Other SWMUs and AOCs

The following AOCs are within 1000 ft of Consolidated Unit 73-001(a)-99:

- AOC C-73-005(e), Unlined Pits
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete
  - Approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- AOC C-73-005(f), Unlined Pits
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete
  - Approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene

Pueblo Canyon is an AOC and two reaches, P-2W and P-2E, are located downstream but not within 1000 ft of SWMU 73-001(a)-99 (LANL 2004, 87390) (Figure B-2).

B-16.4 Waste Inventory

The site is a former municipal landfill, and contaminants appear consistent with this use (LANL 2002, 74007, p. 2).

B-16.5 Historical Releases

No documented releases outside the landfill boundaries have occurred (LANL 1998, 63070, p. 2-16). However, two releases of radioactive material to the landfill have been documented (LANL 1992, 07667, p. 5-173; LANL 1998, 63070, pp. 2-15–2-16). Both events occurred in 1953. The first involved the accidental disposal of approximately 125 lb of uranium-238 as scrap and oxide. An estimated 25 lb of material were recovered. The second incident involved the disposal of 25 lb of depleted uranium (uranium-238). Only a few pounds of this uranium were recovered.

B-16.6 Summary of Historical Investigations

An RFI of SWMUs in this consolidated unit was conducted between 1994 and 1997. The investigation focused on defining the nature and extent of potential contamination, and RFI activities included site surveys, radiological surveys, infrared photography surveys, geophysical surveys, geomorphologic mapping, geodetic surveys, and sampling (LANL 1998, 63070, Table 2.3.4-1). Sampling included soil-gas sampling, surface soil and sediment sampling, interior and perimeter borehole drilling, subsurface soil and tuff sampling, cone penetrometer testing, monitoring-well installation, pore-water and leachate sampling (LANL 1998, 63070, p. 2-20).

Analysis of samples collected at the landfill indicated the presence of organic chemicals, radionuclides, and inorganic chemicals. The types of chemicals and concentrations detected are typical of those reported for most other municipal landfills (LANL 1998, 63070, p. 2-345). The primary compounds detected in the soil-gas samples included methane, trichloroethene, tetrachloroethene, and vinyl chloride (LANL 1998, 63070, p. 2-34). Surface sample analytical results detected organic chemicals (LANL 1998,

63070, Table 2.3.4.3-17) inorganic chemicals (LANL 1998, 63070, Table 2.3.4.3-2), and radionuclides (LANL 1998, 63070, Table 2.3.4.3-11). Results of a surface radiological survey indicated that no beta or gamma activity above local background was present on the surface of the landfill area (LANL 1998, 63070, p. 2-36). The subsurface sampling was completed in three separate field investigations, including a drilling program conducted around the perimeter of the main landfill in 1994, a cone penetrometer testing investigation conducted within the interior of the main landfill in 1995, and a drilling program conducted in the interior of the main landfill in 1997 (LANL 1998, 63070, pp. 2-48–2-54). In addition, routine sampling of the vadose zone monitoring network was conducted at the landfill between 1994 and 1997 (LANL 1998, 63070, p. 2-76).

Subsurface soil sample results detected organic chemicals and indicated the presence of inorganic chemicals and strontium-90 (LANL 1998, 63070, Table 2.3.4.3-5). A review of laboratory QA/QC procedures indicated that the results for strontium-90 were questionable (LANL 1998, 63070, pp. 2-184, 2-223). The presence of strontium-90 was attributed to airborne disposition from historic stack emissions at the plutonium-processing facilities at TA-21, which are in close proximity to the airport landfill (LANL 1998, 63070, p. 2-184). Pore-water sample results detected organic chemicals and inorganic chemicals (LANL 1998, 63070, p. 2-217). Soil-gas sample results detected organic chemicals (LANL 1998, 63070, 2-34). The results of the RFI indicated the presence of methane and carbon dioxide in the subsurface associated with decomposing refuse (LANL 1998, 63070, p. 2-211). The RFI report recommended an in situ remedial strategy (LANL 1998, 63070, p. 2-345).

A supplemental sampling and analysis plan (SAP) was submitted to NMED in October 2001 (LANL 2001, 71258) to acquire data needed to proceed with the conceptual design of covers for the two landfill areas: the main landfill [SWMU 73-001(a)] and the debris disposal area [SWMU 73-001(d)]. NMED approved the supplemental SAP in November 2001 (NMED 2001, 72812).

An interim measure (IM) was proposed to complete cleanup of drainages associated with landfill activities (LANL 2002, 73656). Completion of the landfill investigation and subsequent cover design and construction would be completed as a voluntary corrective measure (VCM). The VCM plan was submitted to NMED for review on October 18, 2002 (LANL 2002, 74007). NMED approved the VCM on April 1, 2003 (NMED 2003, 76025).

B-17.0 CONSOLIDATED UNIT 73-001(b)-99, FORMER LANDFILL

B-17.1 Site Description and Operational History

Consolidated Unit 73-001(b)-99 consists of SWMUs 73-001(b), 73-001(c), and 73-001(d), former structures at the Los Alamos County Airport (Figure B-9). SWMUs 73-001(b) and 73-001(c) were destroyed by trench excavation for SWMU 73-001(d) and lie within its boundary (LANL 1998, 63070, pp. 2-16–2-18).

B-17.1.1 SWMU 73-001(b)

SWMU 73-001(b), a pit used to dispose of waste oil (LANL 1998, 63070, p. 2-18), was located west of the bunker area [SWMU 73-001(c)] and northeast of the end of the airport runway (LANL 1992, 07667, p. 5-170; LANL 1998, 63070, p. 2-18). The pit is estimated to have been about 100 ft x 25 ft with an unknown depth; its center is estimated to have been located near the center of the south trench in the debris disposal area [SWMU 73-001(d)] (LANL 1992, 07667, p. 5-170; LANL 1998, 63070, p. 2-16). The pit, operated by the Zia Company, was used to dispose of waste oil from the motor pool, craft shops, and a vehicle shop. Operation dates for the pit are estimated to be from 1947 to 1974 (LANL 1992, 07667,

p. 5-170; LANL 1998, 63070, p. 2-18). Clean sand was reportedly placed in the pit by the Zia Company to solidify its contents (LANL 1992, 07667, p. 5-170). At the time of the RFI work plan, no visible evidence of the waste oil pit was present at the estimated location (LANL 1998, 63070, p. 2-18).

B-17.1.2 SWMU 73-001(c)

SWMU 73-001(c) consists of four former concrete bunkers that were used to store HE (LANL 1998, 63070, p. 2-18). The bunkers, located along the north canyon rim east of the airstrip (LANL 1998, 63070, p. 2-18), were built in 1947. Each bunker measured 46 ft, 8 in. square and was built on four pads and covered with soil. The Zia Company acquired three of the bunkers in 1948, and one bunker reportedly continued to be used by the Laboratory's protective force from 1948 to 1964, at which time it was transferred to the Zia Company (LANL 1998, 63070, p. 2-18). Contamination surveys conducted in 1973 showed that the bunkers were free of radioactive contamination and indicated no significant chemical or toxic contamination (LANL 1998, 63070, p. 2-18). In 1974, the bunkers were demolished. Aerial photographs taken in 1974 indicated that rubble from the demolition may have been placed in two pits adjacent to the site and in a trench currently beneath the northeast corner of the airport runway (LANL 1992, 07667, p. 5-189; LANL 1998, 63070, p. 2-18). The debris was covered with fill. SWMU 73-001(c) was investigated as part of the airport landfill areas RFI. The investigation results indicated that the disposal pits adjacent to the bunker sites were incorporated into SWMU 73-001(d) when the disposal trenches were excavated (LANL 1998, 63070, p. 2-18).

B-17.1.3 SWMU 73-001(d)

SWMU 73-001(d) is a former landfill debris disposal area that operated from 1984 to 1986 (LANL 1998, 63070, p. 2-16). The disposal area consisted of two roughly parallel, unlined trenches dug to a depth of 35 ft. To the west, the trenches extend to within about 150 ft of the windsock; to the east, they extend about 800 ft beyond the end of the runway (LANL 1998, 63070, p. 2-5). The north and south boundaries extend to within about 50 ft of the security fence and the asphalt runway, respectively (LANL 1998, 63070, p. 2-5). The site was used in 1984 to bury debris excavated from the western portion of SWMU 73-001(a) [now part of Consolidated Unit 73-001(a)-99] and from SWMUs 73-001(b) and 73-001(c) (LANL 1992, 07667, p. 5-170). The trenches contain an estimated 126,000 yd^3 of debris (LANL 1998, 63070, p. 2-5; LANL 2001, 71258, p. 3). The debris disposal area was covered with soil in 1986 and reseeded (LANL 1992, 07667, p. 5-170; LANL 1998, 63070, p. 2-16). SWMU 73-001(d) was investigated as part of the airport landfill areas RFI (LANL 1998, 63070).

B-17.2 Land Use

Past, current, and future land use for the site is industrial (landfill). Currently, Los Alamos County has a 30-yr lease from DOE to operate the airport.

B-17.3 Relationship to Other SWMUs and AOCs

There are no SWMUs or AOCs within 1000 ft of Consolidated Unit 73-001(b)-99.

Pueblo Canyon is an AOC and two reaches, P-2W (upstream) and P-2E (downstream) (LANL 2004, 87390) (Figure B-2), could potentially have received contamination from Consolidated Unit 73-001(b)-99, but both are located more than 1000 ft away from Consolidated Unit 73-001(b)-99.

B-17.4 Waste Inventory

Potential wastes on-site include waste oil from SWMU 73-001(b) and contaminants/waste generally found in municipal landfills.

B-17.5 Historical Releases

No documented releases outside the landfill boundaries have occurred (LANL 1998, 63070, p. 2-16). However, two releases of radioactive material to the landfill have been documented (LANL 1992, 07667, p. 5-173; LANL 1998, 63070, pp. 2-15–2-16). Both events occurred in 1953. The first involved the accidental disposal of approximately 125 lb of uranium-238 as scrap and oxide. An estimated 25 lb of material were recovered. The second incident involved the disposal of 25 lb of depleted uranium (uranium-238). Only a few pounds of this uranium from this incident were recovered.

B-17.6 Summary of Historical Investigations

An RFI (the Airport Landfill Areas RFI) was conducted at the SWMUs in this consolidated unit between 1994 and 1997 (LANL 1998, 63070). For the purposes of the RFI, the waste oil pit [SWMU 73-001(b)] and the bunker debris pits [SWMU 73-001(c)] were combined with the debris disposal area [SWMU 73-001(d)]. The RFI focused on defining the nature and extent of potential contamination to determine an appropriate plan for an in situ corrective action. RFI activities included site surveys, radiological surveys, infrared photography surveys, geophysical surveys, geomorphologic mapping, geodetic surveys, and sampling. Sampling included soil-gas sampling, surface soil and sediment sampling, interior and perimeter borehole drilling, subsurface soil and tuff sampling, cone penetrometer testing, monitoring well installation, pore-water and leachate sampling (LANL 1998, 63070, p. 2-20). Sampling activities and analysis of samples collected indicated the presence of organic and inorganic chemicals (LANL 1998, 63070, pp. 2-34, 2-48–54, 2-76, 2-78). The types of chemicals and concentrations observed are typical of those reported for most other municipal landfills (LANL 1998, 63070, p. 2-184). The primary compounds detected in the soil-gas samples included methane, trichloroethene, tetrachloroethene, and vinyl chloride (LANL 1998, 63070, p. 2-34). The RFI report recommended an in situ remedial strategy (LANL 1998, 63070, p. 2-345).

A supplemental sampling and analysis plan (SAP) was submitted to NMED in October 2001 (LANL 2001, 71258 to collect the data needed to proceed with the conceptual design of covers for the two landfill areas: the main landfill [SWMU 73-001(a)] and the debris disposal area [SWMU 73-001(d)]. NMED approved the supplemental SAP in November 2001 (NMED 2001, 72812).

An interim measure (IM) was proposed to complete cleanup of drainages associated with landfill activities (LANL 2002, 73656). Completion of the landfill investigation and subsequent cover design and construction were to be completed as a VCM. The VCM plan was submitted to NMED for review on October 18, 2002 (LANL 2002, 74007). NMED approved the VCM on April 1, 2003 (NMED 2003, 76025).

B-18.0 CONSOLIDATED UNIT 73-002-99, MISCELLANEOUS AIRPORT STRUCTURES

B-18.1 Site Description and Operational History

Consolidated Unit 73-002-99 consists of SWMUs 73-002, 73-004(a), 73-004(b), and 73-006 and AOC 73-003 (Figure B-9). The SWMUs and AOC are associated with former structures and activities for the airport landfill [Consolidated Unit 73-001(a)-99] (LANL 1992, 07667).

B-18.1.1 SWMU 73-002

SWMU 73-002 is an incinerator/surface disposal area located slightly west and north of the Los Alamos County Airport terminal (LANL 1992, 07667, p. 5-189). The incinerator began operating in 1947, but operations ceased in 1948 (LANL 1992, 07667, p. 5-189; LANL 1996, 59374, p. 1). The incinerator was used to destroy municipal trash from the Los Alamos townsite, in addition to classified documents from the Laboratory (LANL 1992, 07667, p. 5-189; LANL 1996, 54916, p. 1). The incinerator equipment and stack were removed; no information on the removal operation is available (LANL 1996, 54916, p. 1). The building is currently used for storage (LANL 1996, 54916.2, p. 1). Associated with the incinerator is an ash-disposal area located north of the building, immediately below the south rim of Pueblo Canyon (LANL 1996, 54916, p. 1). A sizeable deposit of noncombustible material, primarily consisting of rusted tin cans, is located on a ledge below the top of the canyon. From this ledge, the ash deposit extends approximately 140 ft to the top of the canyon at a slope of approximately 40 degrees. The width of the ash deposit is narrow at the top (approximately 65 ft) and fans out towards the ledge to approximately 160 ft. Below the ledge, accumulations of ash and other noncombustible material continue downslope in an irregular manner for some distance but terminate at least 700 ft from the bottom of the canyon (LANL 1996, 54916, p. 1). The Zia Company acquired the building in 1948, which it held until 1973 (LANL 1992, 07667, p. 5-189).

B-18.1.2 AOC 73-003

AOC 73-003 was a steam-cleaning facility for garbage trucks, cans, and dumpsters used to collect municipal waste from the Los Alamos townsite (LANL 1992, 07667, p. 5-191). The facility, composed of concrete block on a concrete slab, had overall dimensions of 50 x 30 ft. It consisted of a drive-through bay for cleaning garbage trucks, a fully enclosed and automated system for cleaning garbage cans, and a patio area for unloading garbage cans to be cleaned, a heater room, and an office (LANL 1998, 62522, p. 7, Figure 2.2.3-1). A 50- x 20-ft gravel storage yard, used to store garbage cans, was connected to the west side of the facility (LANL 1992, 07667, p. 5-191). Wash water entered one of three 14-in.-diameter floor drains that connected to the septic tank, SWMU 73-004(b), and was discharged through a 6-in. VCP to Pueblo Canyon (LANL 1996, 54916, p. 1; LANL 1998, 62522, p. 7). The facility was used from 1949 to 1970 and was demolished in 1971. The site is now covered by the asphalt parking lot for the Los Alamos County Airport (LANL 1992, 07667, p. 5-191).

B-18.1.3 SWMU 73-004(a)

SWMU 73-004(a) was a concrete septic tank that received sanitary waste from toilets and showers in the adjacent incinerator building (Building 73-2) (LANL 1998, 62522, p. 27, Figure 3.1.1-1). The tank was located about 90 ft northwest of the steam-cleaning facility (AOC 73-003), but it was removed in August 1996 during a VCA (LANL 1996, 59374, p. 9).

B-18.1.4 SWMU 73-004(b)

SWMU 73-004(b) was a concrete septic tank located approximately 90 ft NW of the steam-cleaning facility (AOC 73-003) that received wash water from the steam-cleaning plant (LANL 1998, 62522, p. 7). During RFI activities in July and August 1996, the septic tank was exposed and found to be intact (LANL 1998, 62522, p. 7). The tank was removed during VCA activities in August 1996 (LANL 1996, 59374, p. 27).

B-18.1.5 SWMU 73-006

SWMU 73-006 consists of the two drainlines that discharged to Pueblo Canyon from the incinerator building (Building 73-2) (LANL 1998, 62522, p. 27, Figure 3.1.1-1). The west drainline, constructed of 5-in.-diameter cast iron pipe, originates at two floor drains now plugged with concrete, one on the west side of the charging floor and the other on the west side of the stoking floor (LANL 1998, 62522, p. 27). The east drainline, also constructed of 5-in.-diameter cast iron pipe, originates at similar concrete-plugged drains located on the east side of the charging and stoking floors. The drains are assumed to have handled wash water and to have operated at the same time as the incinerator (LANL 1998, 62522, p. 27).

B-18.2 Land Use

Past, current, and future land use for the site is industrial (landfill). Los Alamos County currently has a 30-yr lease from DOE to operate the airport.

B-18.3 Relationship to Other SWMUs and AOCs

As shown in Figures B-8 and B-9, the following SWMU and AOCs are located within approximately 1000 ft of Consolidated Unit 73-002-99:

- AOC C-73-005(a)
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- AOC C-73-005(b)
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- AOC C-73-005(c)
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- SWMU 73-005
  - Operational: 1947–1951
  - RCRA Phase: Administratively Complete; approved NFA (NMED 2003, 78138)
  - COPCs: None identified
- AOC C-73-004
  - Operational: 1973–1992
  - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
  - COPCs: None identified

Pueblo Canyon is an AOC, and the investigation reaches are located upstream (P-1E, P-1W) and downstream (P-2E, P-2W) of Consolidated Unit 73-002-99 (LANL 2004, 87390) (Figure B-2).

B-18.4 Waste Inventory

Waste inventory will be addressed in detail in the site-specific work plan currently being prepared for Consolidated Unit 73-002-99.

B-18.4.1 SWMU 73-002

The ash-debris area has been subjected to preliminary screening efforts. Metals, radionuclides, and organic chemicals have been identified as COPCs (LANL 1999, 87373, pp. 14–18).

B-18.4.2 AOC 73-003

The former steam-cleaning plant was demolished in 1971; its former location is now beneath the asphalt parking lot at the airport (LANL 1992, 07667, p. 5-191).

B-18.4.3 SWMU 73-004(a)

The tank was removed during VCA activities in August 1996, but the outlet pipe was left in place (LANL 1996, 59374, p. 9).

B-18.4.4 SWMU 73-004(b)

The tank was removed during VCA activities in August 1996, but the inlet and outlet pipes were left in place (LANL 1996, 59374, p. 26).

B-18.4.5 SWMU 73-006

The west drainline was removed during Phase I RFI activities in July 1997. Despite efforts to locate it, the east drainline could not be found (LANL 1998, 62522, p. 27).

B-18.5 Historical Releases

B-18.5.1 SWMUs 73-002, 73-004(a), and 73-006

Ash from the incinerator was deposited below the south rim of Pueblo Canyon, just north of the incinerator building. The outlet pipes from SWMUs 73-004(a) and 73-006 had outfalls in the ash-debris disposal area associated with SWMU 73-002 (Figure B-8). Effluent from the SWMU 73-004(b) and 73-006 outfalls and leachate from the SWMU 73-002 ash-debris pile would have drained into Pueblo Canyon, just above reach P-2W.

B-18.5.2 AOC 73-003 and SWMU 73-004(b)

Wash water and drainage from the former steam-cleaning plant (AOC 73-003) drained through an approximately 100-ft, 6-in. cast iron pipe to the septic tank designated as SWMU 73-004(b). The septic tank, in turn, had a 6-in. VCP outlet pipe that discharged to an outfall approximately 75 ft NW of the tank in Pueblo Canyon.

B-18.6 Summary of Historical Investigations

An RFI of SWMU 73-002 was conducted in 1996 and 1997 and documented the results in a Phase II SAP (LANL 1997, 56606). Ash and soil were sampled from 18 locations within and downgradient of the ash disposal area (LANL 1997, 56606, p. 1, Figures 1.2, 2.1). Samples were submitted for analysis of organic chemicals, PCBs/pesticides, dioxins/furans, inorganic chemicals, and screened for radioactivity. Analysis results showed the ash samples had a high percentage of noncombustible metal and glass fragments (LANL 1997, 56606, p. 1). Barium, cadmium, copper, lead, silver, and thallium were detected (LANL 1997, 56606, Table A-1). Eighteen organic chemicals were detected (LANL 1997, 56606, Table A-2). The field and/or laboratory screening identified no radiological constituents. Best management practices (BMPs) were installed in 1999 at the site to prevent run-on.

A Phase I RFI was conducted at SWMU 73-004(a) in 1996 and 1997, and the results were documented in a 1998 SAP (LANL 1998, 62522). Following the Phase I sampling results, the tank and its contents were removed and the inlet and outlet drainlines abandoned in place. The tank was removed during a VCA in 1996 (LANL 1996, 59374, p. 9). Based on sample analysis results, the VCA recommended NFA for SWMU 73-004(a) (LANL 1996, 59374, p. 21). It was subsequently determined that additional sampling was required to define the extent of contamination at the site, and a SAP was submitted to the NMED in 1998 (LANL 1998, 62522).

A VCA was conducted in 1996 at SWMU 73-004(b) to remove the septic tank and its associated piping. The inlet and outlet lines were not removed as part of the VCA (LANL 1996, 59374, p. 27). Currently, the area is paved and used as a parking lot. Based on sample analysis results, the VCA recommended NFA for SWMU 73-004(b) (LANL 1996, 59374, p. 27). It was subsequently determined that additional sampling was required to define the extent of contamination at the site, and a SAP was submitted to NMED in 1998 (LANL 1998, 62522).

In 1997, a Phase I RFI was conducted at SWMU 73-006. The west drainline was removed as part of this RFI. The east drainline was not found during the Phase I RFI despite efforts to locate it (LANL 1998, 62522, p. 27). A SAP was submitted to NMED in 1998 to determine the horizontal and vertical extent of contamination (LANL 1998, 62522).

B-19.0 SWMU 73-004(c), SEPTIC SYSTEM

B-19.1 Site Description and Operational History

SWMU 73-004(c) is a septic system that served the old Los Alamos County Airport terminal (LANL 1992, 07667, p. 5-193, Figure 5-90; LANL 1997, 59367, p. 14). The old terminal, constructed between 1946 and 1947, was located approximately 75 ft due east of the existing terminal building (Figures B-8 and B-9) (LANL 1997, 59367, Figure 4.1-1). Two restrooms in the northeast corner of the terminal were connected by a 4-in. VCP to the septic tank. Conflicting information places the septic tank from immediately northeast of the building to as far as 80 ft north of the building (LANL 1997, 59367, p. 14). In 1964, the terminal was connected to a gravity-flow sewer main leading to the Bayo Canyon WWTP (AOC 00-018[b]), and the septic system was abandoned (LANL 1997, 59367, p. 14).

B-19.2 Land Use

Past, current, and future land use for the site is industrial (landfill). Los Alamos County currently has a 30-yr lease from DOE to operate the airport.

B-19.3 Relationship to Other SWMUs and AOCs

As shown in Figures B-8 and B-9, the following SWMU and AOCs are within approximately 1000 ft of SWMU 73-004(c):

- AOC C-73-005(a)
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- AOC C-73-005(b)
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- AOC C-73-005(c)
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: Arsenic, iron, lead, benzo(a)pyrene
- SWMU 73-005
  - Operational: 1947–1951
  - RCRA Phase: Administratively complete; approved NFA (NMED 2003, 78138)
  - COPCs: None identified
- AOC C-73-004
  - Operational: 1973–1992
  - RCRA Phase: Administratively complete; approved NFA (EPA 2005, 88464)
  - COPCs: None identified

Pueblo Canyon is an AOC, and the investigation reaches are located upstream (P-1E, P-1W) and downstream (P-2E, P-2W) of SWMU 73-004(c) (LANL 2004, 87390) (Figure B-2).

B-19.4 Waste Inventory

No known wastes are associated with this SWMU.

B-19.5 Historical Releases

An outlet pipe from the SWMU 73-004(c) septic tank was identified in engineering drawings as having an outfall in Pueblo Canyon, approximately 135 ft northeast of the tank (LANL 1997, 59367, Figure 4.1-1). The outfall could not be located during RFI activities (LANL 1997, 59367, p. 16).

B-19.6 Summary of Historical Investigations

The tank and associated outlet pipe were not located, nor were sampling activities performed at SWMU 73-004(c), during RFI activities in 1996 (LANL 1997, 59367, p. 16).

B-20.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the ENV-ERS Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the ENV-ERS Program reference sets titled "Reference Set for OU 1071" and "Reference Set for OU 1079."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; U.S. EPA, Region 6; and the ENV-ERS Program. The sets were developed to ensure that the AA has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the AA are not included.

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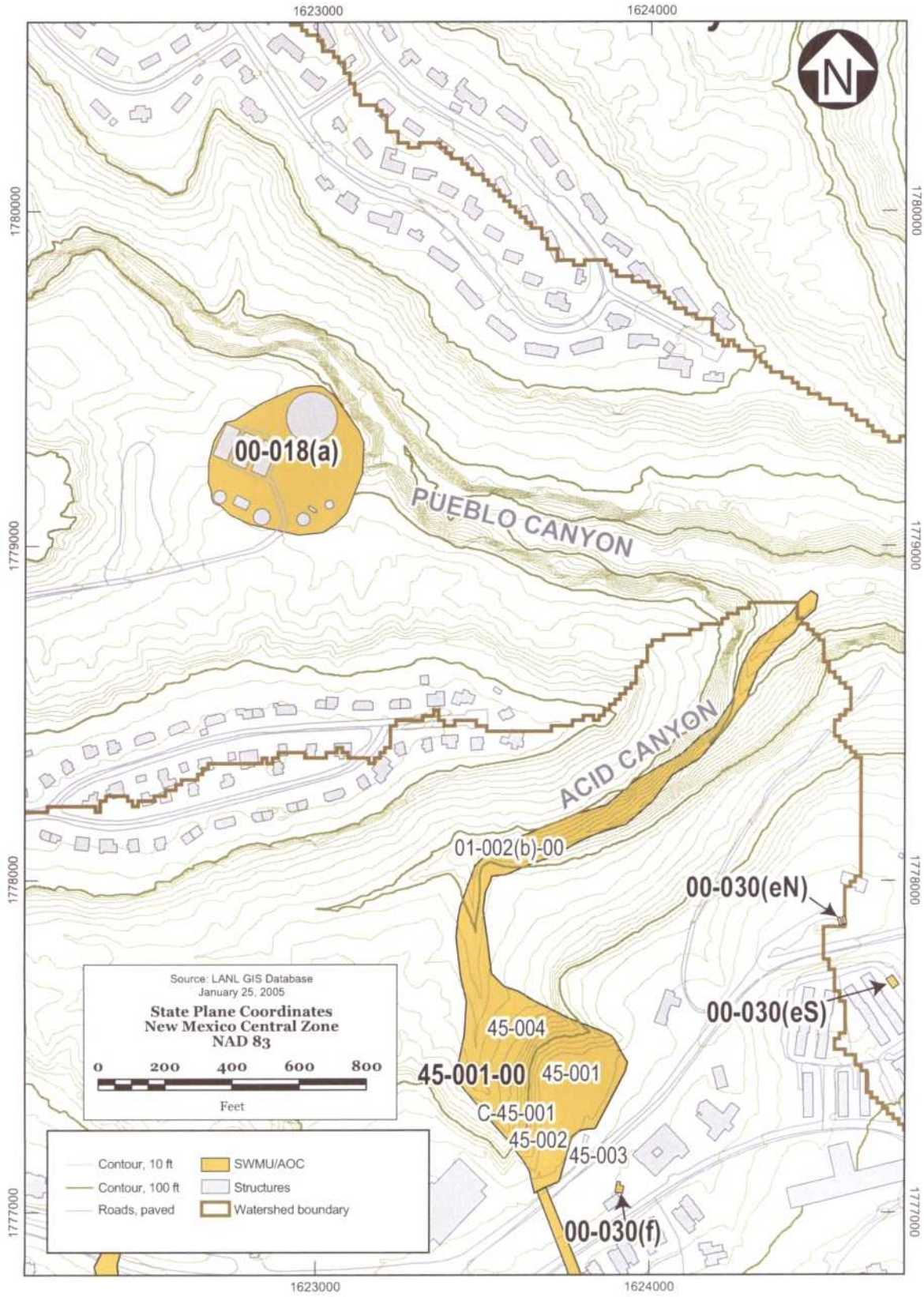

Figure B-1. Locations of SWMU 00-018(a), Consolidated Unit 45-001-00, and AOCs 00-030(eN), 00-030(eS), and 00-030(f)

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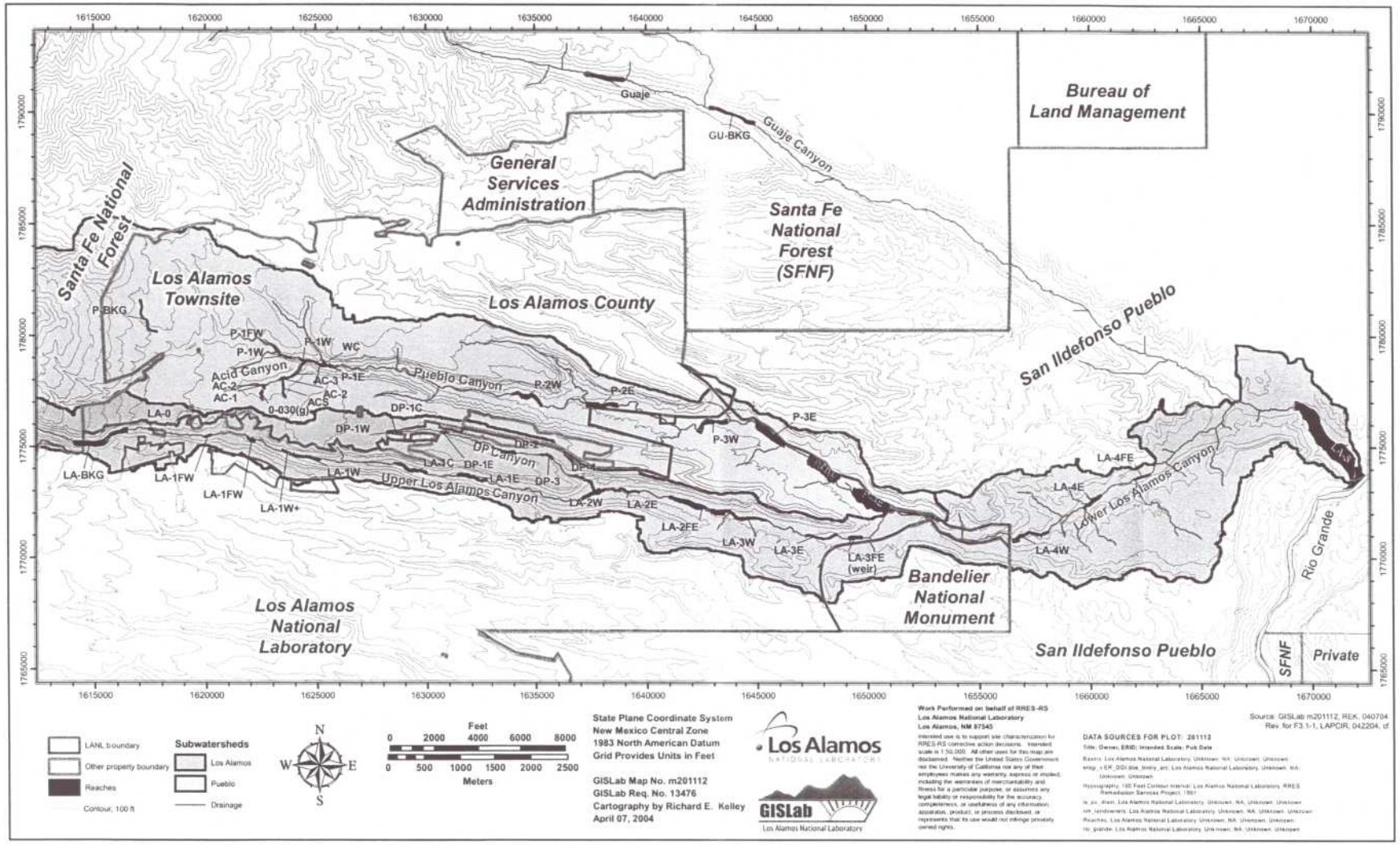

Figure B-2. Reaches in the Los Alamos and Pueblo Canyons watershed

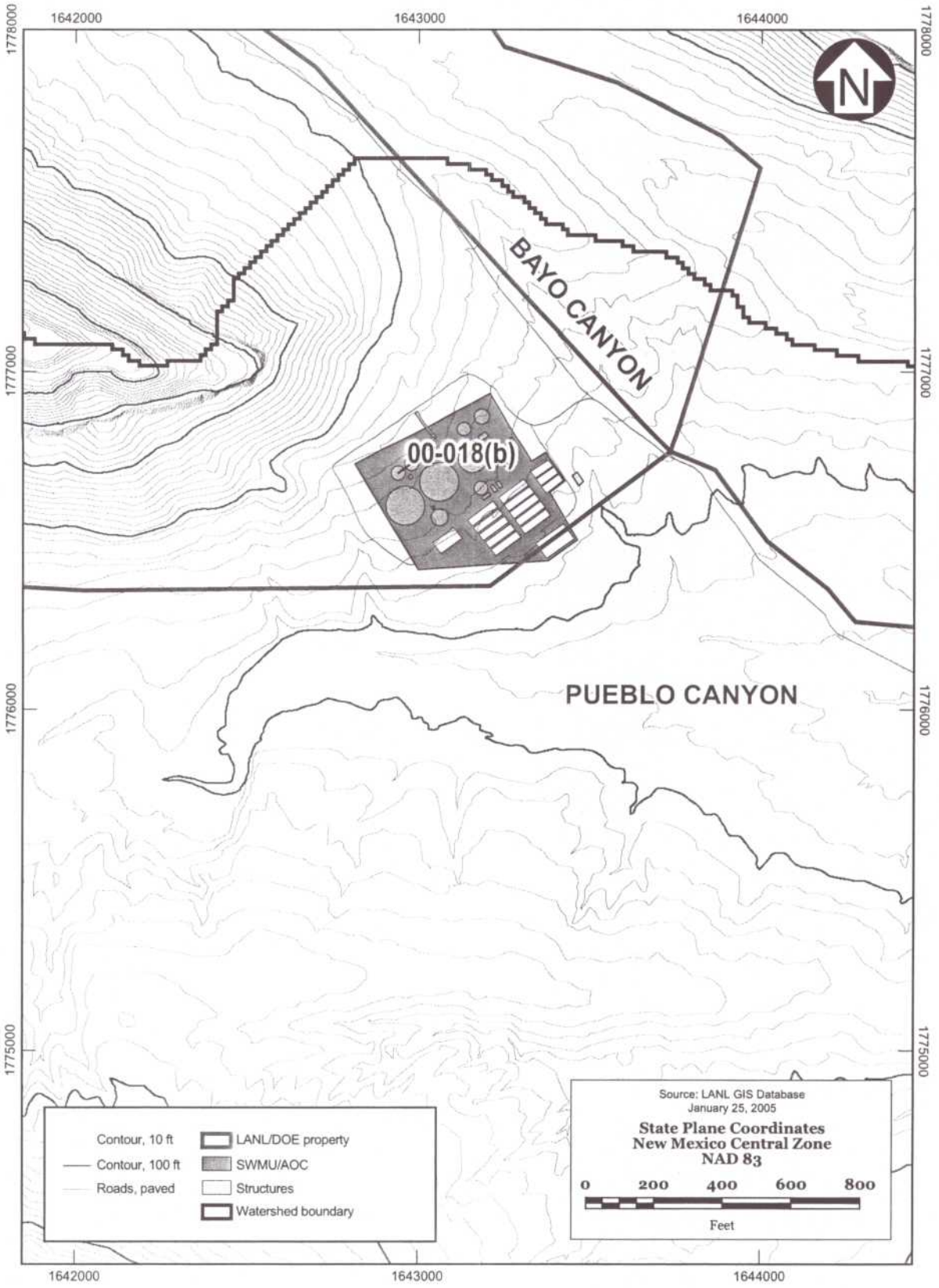

Figure B-3. Location of AOC 00-018(b)

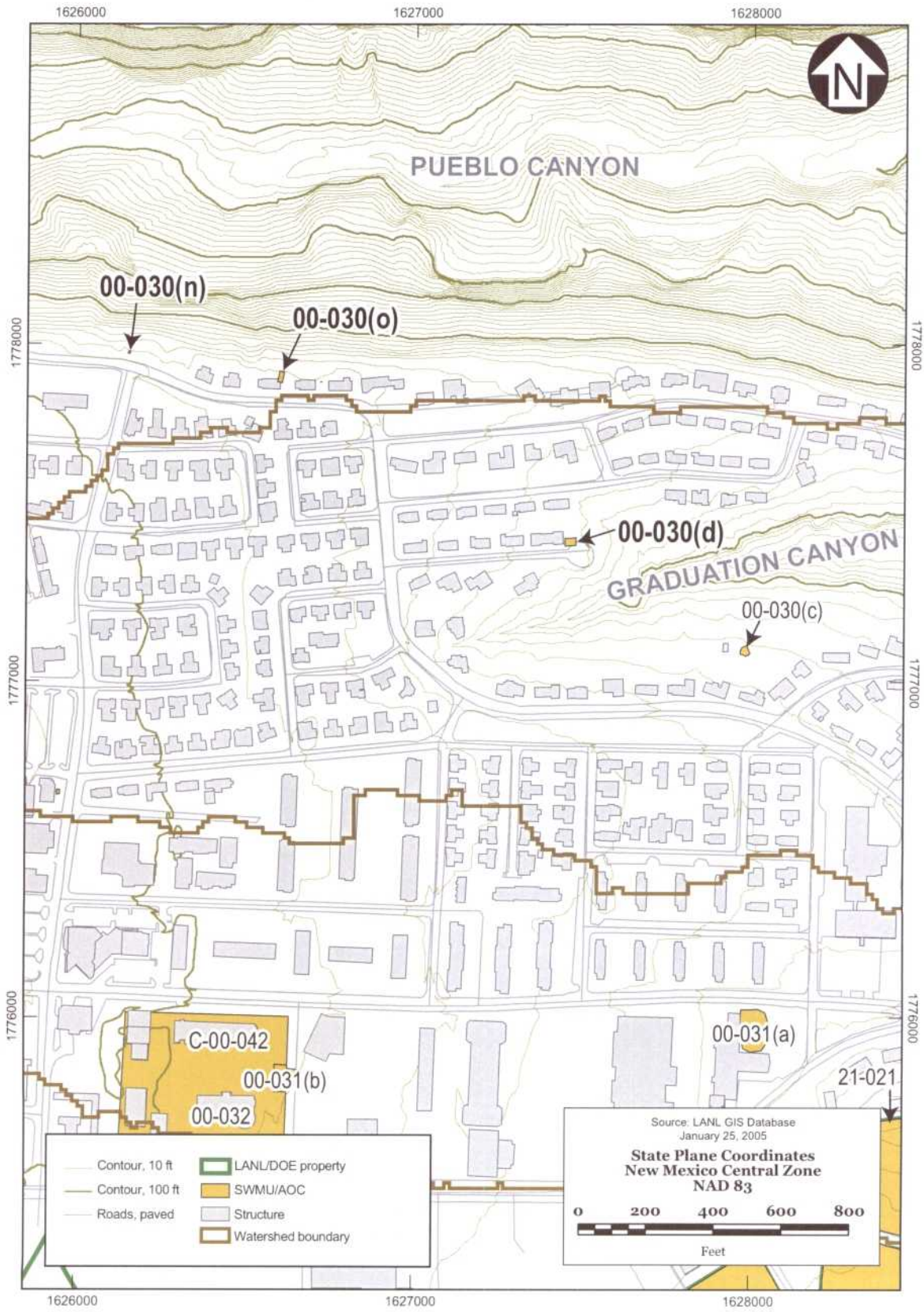

Figure B-4. Locations of AOCs 00-030(d), 00-030(n), and 00-030(o)

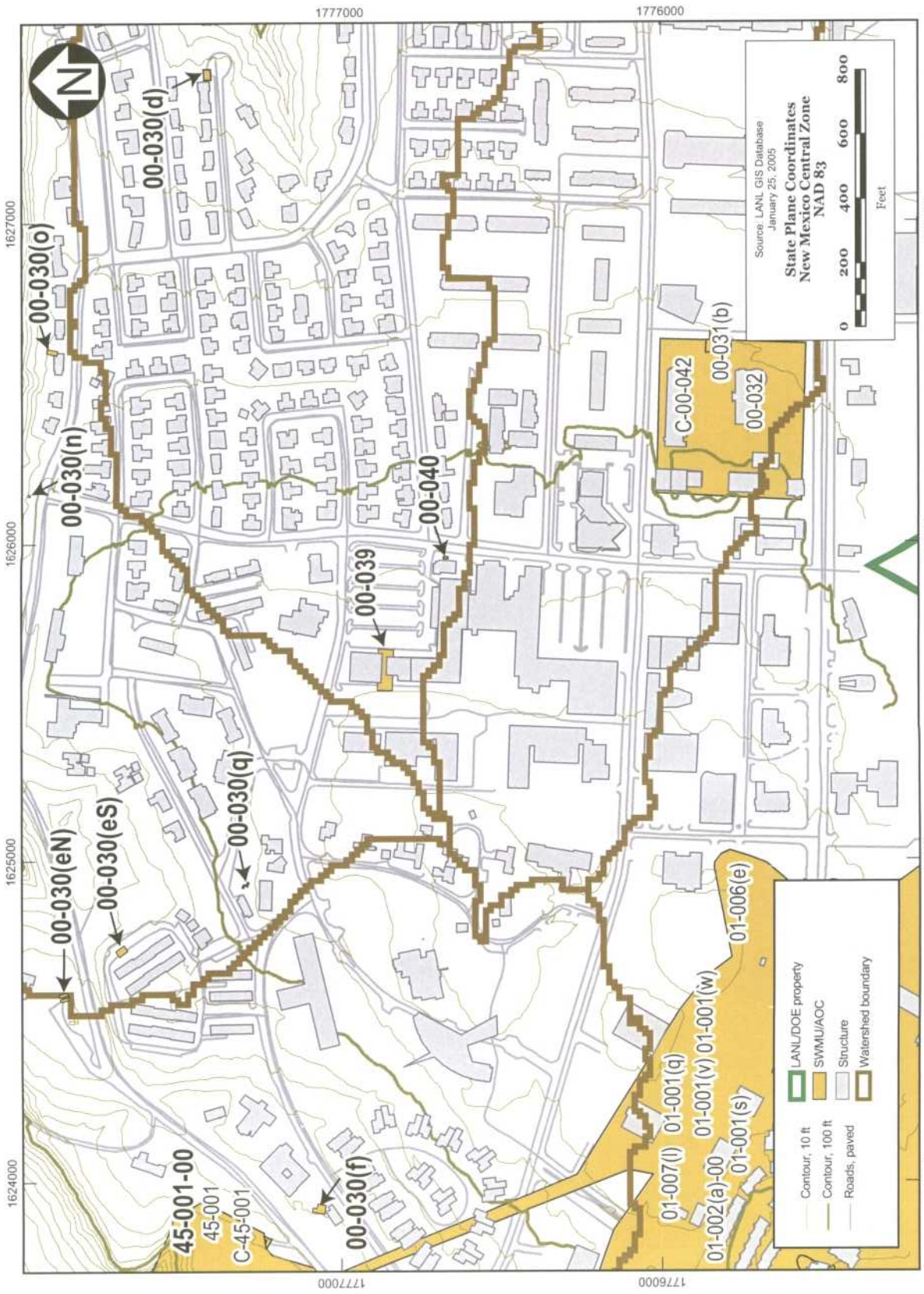

Figure B-5. Locations of SWMU 00-039 and surrounding SWMUs/AOCs

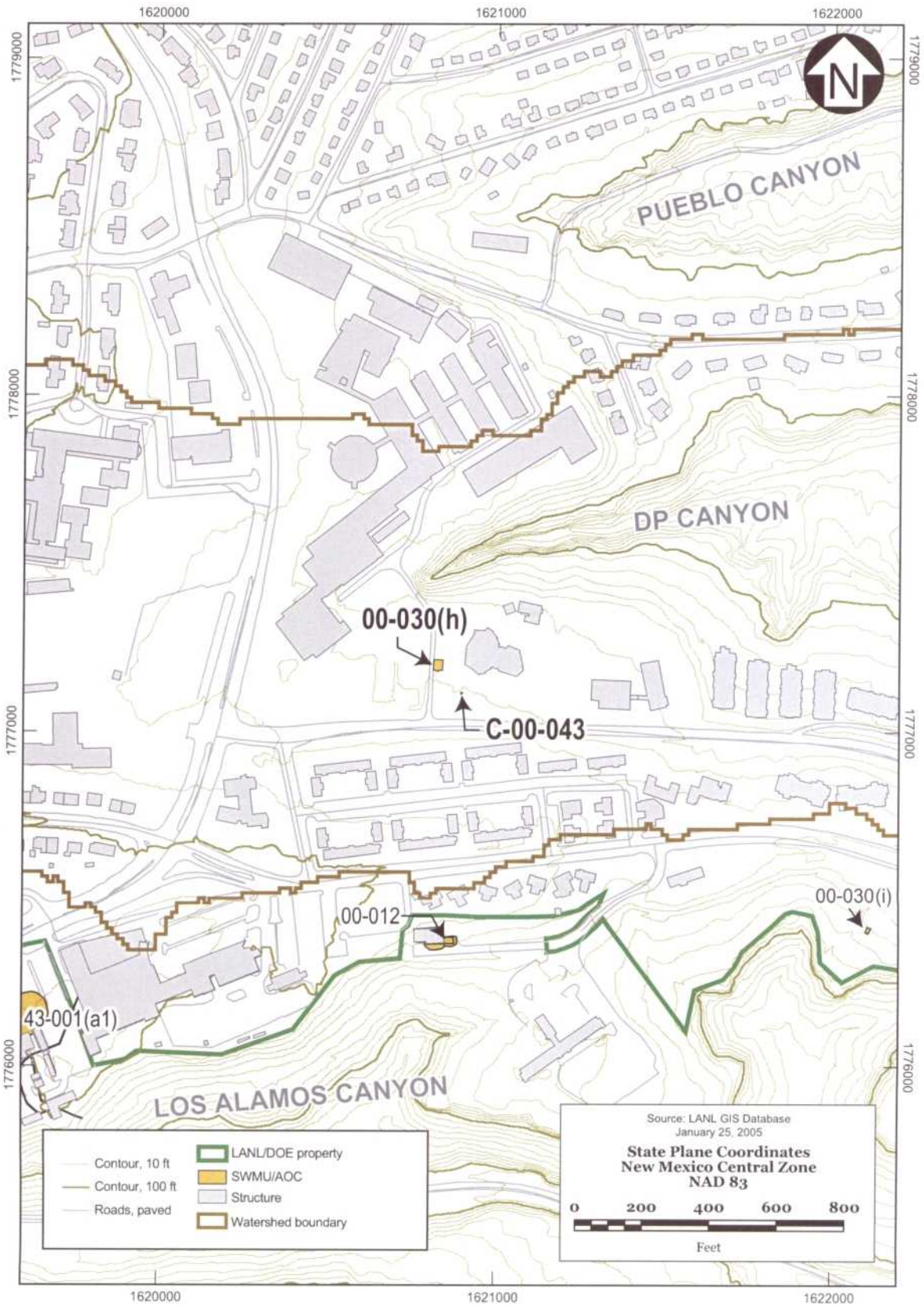

Figure B-6. Locations of AOCs 00-030(h) and C-00-043

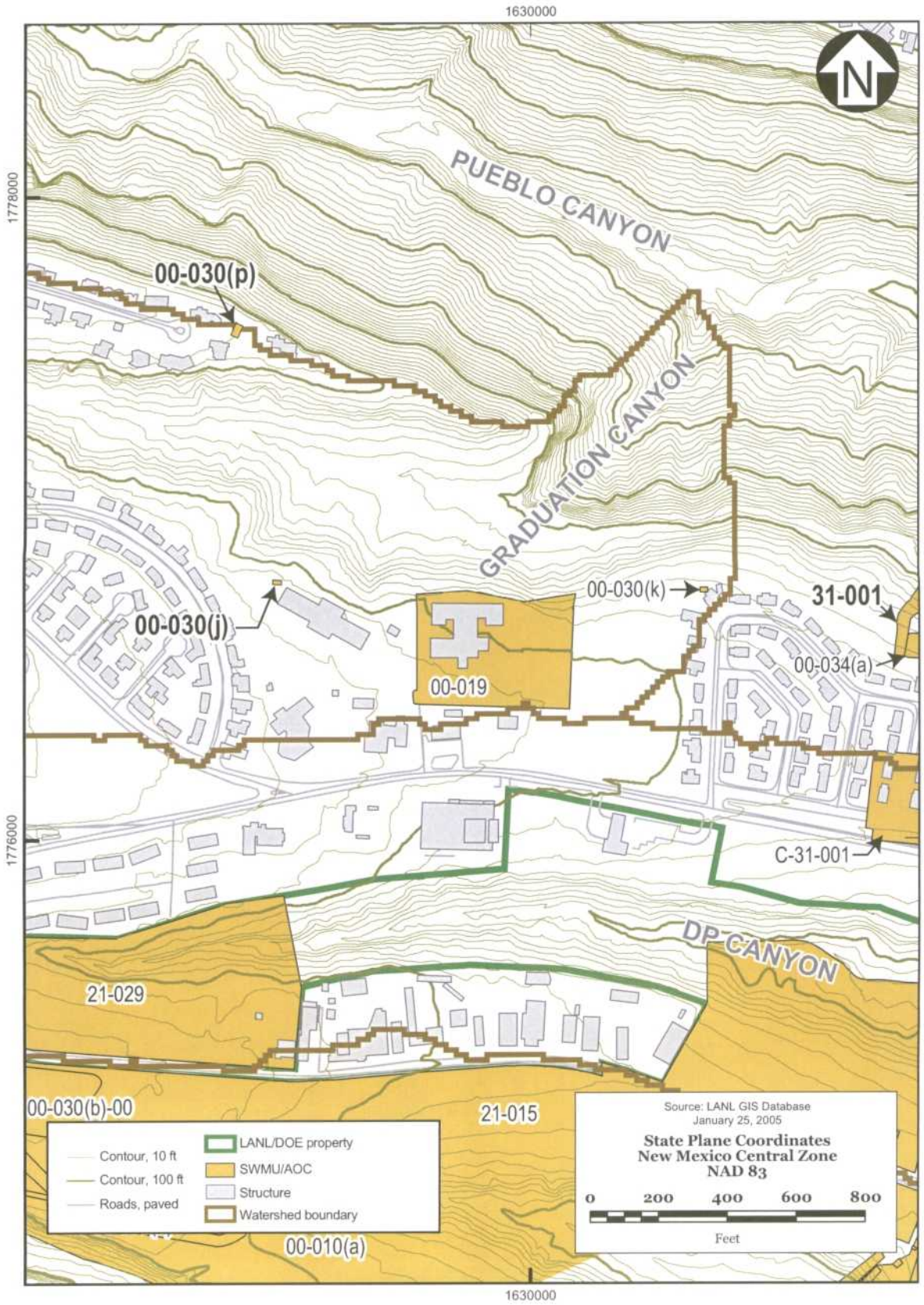

Figure B-7. Locations of AOCs 00-030(j) and 00-030(p)

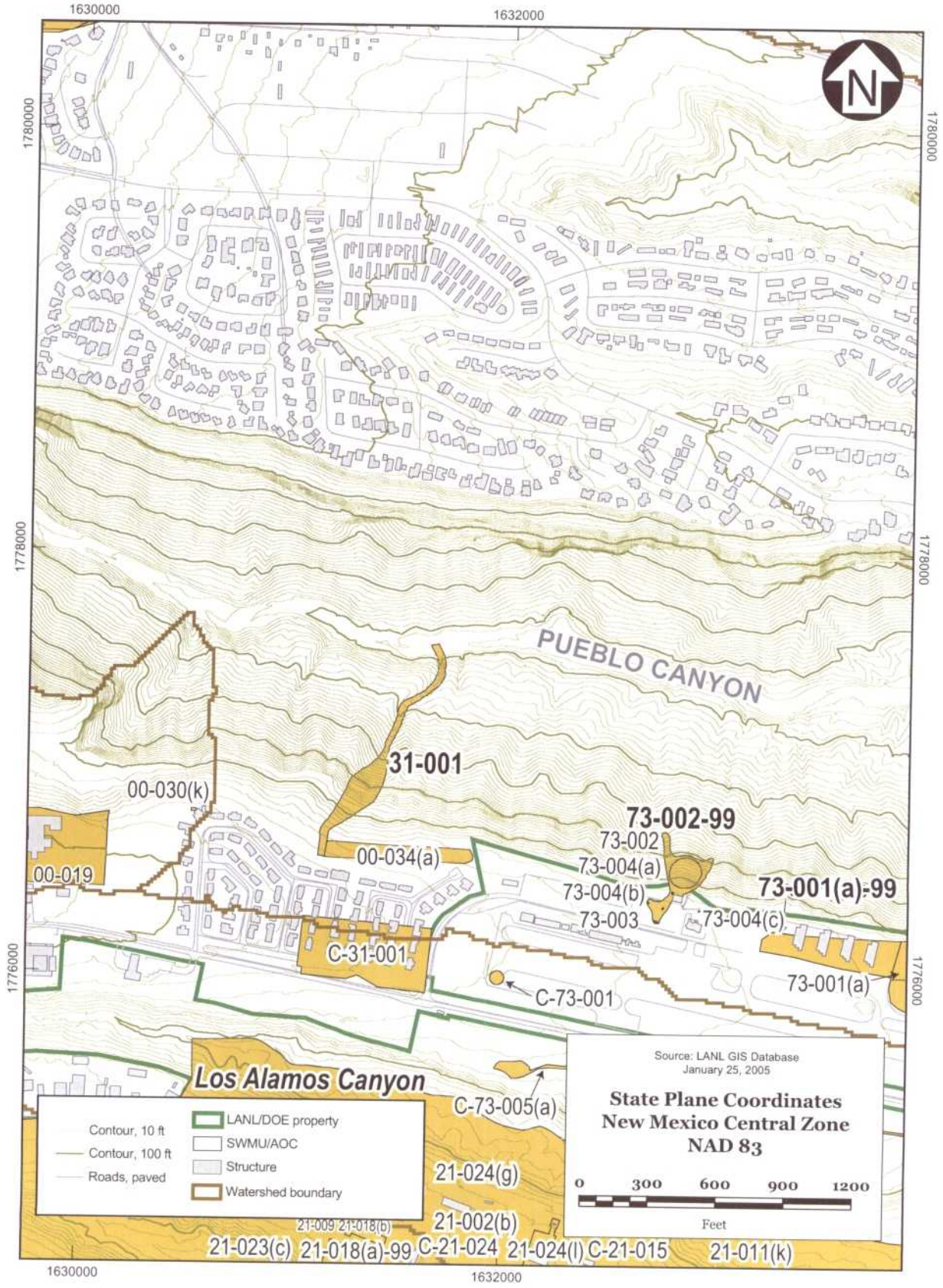

Figure B-8. Locations of SWMU 31-001 and Consolidated Unit 73-002-99

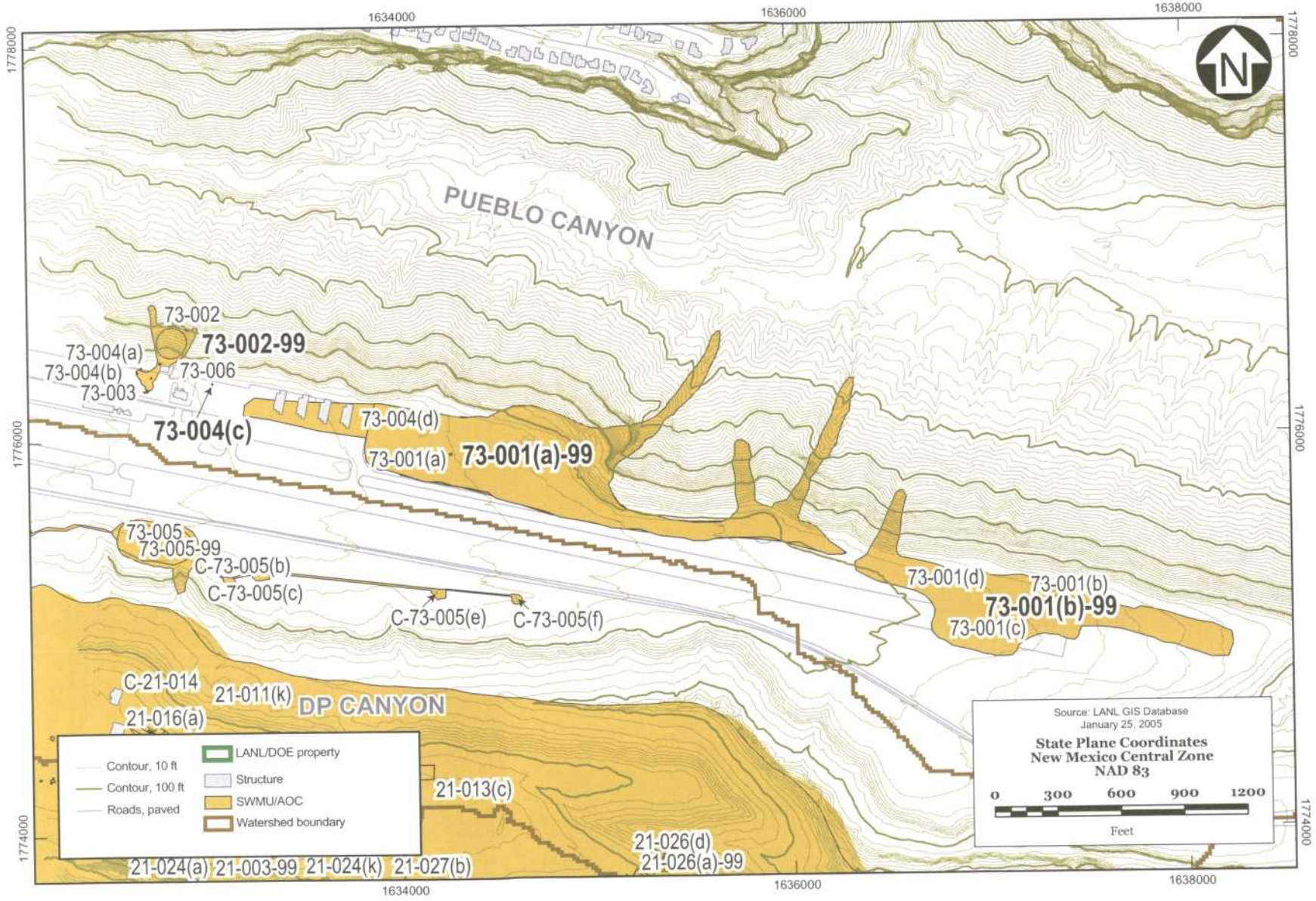

Figure B-9. Locations of Consolidated Units 73-001(a)-99, 73 001(b)-99, and 73-002-99

Appendix C

Analytical Suites and Results
(CD on inside back cover of this document)

C-1.0 ANALYTICAL RESULTS

Tables C-1.0-1 through C-1.0-14 contain analytical results for the Pueblo Canyon aggregate solid waste management unit (SWMU) and areas of concern (AOCs) samples that were analyzed by an off-site analytical laboratory. The results of these samples are discussed in Section 2 of this document. The analytical results were obtained from the Environmental Restoration Database (ERDB).

Data qualifiers presented in these tables are defined in Appendix A of this work plan.

Table C-1.0-1, SWMU 00-018(a) Analytical Results

Table C-1.0-2, AOC 00-018(b) Analytical Results

Table C-1.0-3, AOC 00-030(d) Analytical Results

Table C-1.0-4, AOC 00-030(eN) Analytical Results

Table C-1.0-5, AOC 00-030(eS) Analytical Results

Table C-1.0-6, AOC 00-030(f) Analytical Results

Table C-1.0-7, AOC 00-030(h) Analytical Results

Table C-1.0-8, AOC 00-030(n) Analytical Results

Table C-1.0-9, AOC 00-030(o) Analytical Results

Table C-1.0-10, AOC 00-030(p) Analytical Results

Table C-1.0-11, AOC C-00-043 Analytical Results

Table C-1.0-12, Consolidated Unit 45-001-00 Analytical Results

Table C-1.0-13, Canyons ACS and AC-3 Analytical Results

Table C-1.0-14, Consolidated Unit 73-002-99 Analytical Results

C-2.0 SCREENING-LEVEL RESULTS

Tables C-2.0-1 through C-2.0-7 contain results for the Pueblo Canyon aggregate SWMU/AOC samples that were analyzed by an on-site analytical or a mobile laboratory. These results are considered screening-level data. With the exception of SWMU 00-039, all data were obtained from the ERDB. Samples for SWMU 00-039 were analyzed only by the mobile chemical analytical laboratory (MCAL) and were not compiled in the ERDB. The MCAL data are presented as they were reported by MCAL.

Table C-2.0-1, AOC 00-030(eN) Screening-Level Results

Table C-2.0-2, AOC 00-030(f) Screening-Level Results

Table C-2.0-3, SWMU 00-039 Screening-Level Results–Borehole

Table C-2.0-4, SWMU 00-039 Screening-Level Results–Hand-Auger

Table C-2.0-5, SWMU 00-039 Screening-Level Results-Detection Limits

Table C-2.0-6, SWMU 31-001 Screening-Level Results

Table C-2.0-7, Consolidated Unit 45-001-00 Screening-Level Results

Appendix D

Historical RFI Analytical Data Tables for
Consolidated Units 73-001(a)-99 and 73-001(b)-99

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SWMUs 73-001(a)-99 AND 73-001(b)-99 HISTORICAL RFI DATA TABLES

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Table 2.3.4.3-5	Inorganic Chemicals with Concentrations At or Above Background Values in Subsurface Soil and Tuff
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SWMU 73-001(a) INTERIM MEASURE COMPLETION REPORT DATA

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TABLE 2.3.4.2-2

PRS 73-001(c) SAMPLE SUMMARY

				Request Number				
Sample ID	Location ID	Sample Interval (ft.)	Matrix	Rad Screening[a]	VOCs	SVOCs	PCBs/ Pest	TAL Metals
0173-97-0042[b]	73-02371	0.5-1.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0043[c]	73-02371	3.0-3.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0044[b]	73-02372	2.0-3.0	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0045[c]	73-02372	6.5-7.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0046[b]	73-02373	1.0-1.5	Soil	TA-21	3182R	3182R	3182R	3183R
0173-97-0047[c]	73-02373	3.0-3.5	Soil	TA-21	3182R	3182R	3182R	3183R

TABLE 2.3.4.2-2
SURFACE SOIL SAMPLES SUMMARY

					Analyses Requested				
Location ID	Sample Id	Sample Type	Depth (ft)	Media	VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio-nuclides
73-02151	0173-96-0101	Grab	0-0.67	Channel Sediment	NA	1923	1923	1924	1925
73-02152	0173-96-0102	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02153	0173-96-0103	Grab	0-0.67	Channel Sediment	NA	1923	1923	1924	1925
73-02154	0173-96-0104	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02154	0173-96-0105	Grab	0.83-1.67	Channel Sediment	NA	1923	1923	1924	1925
73-02155	0173-96-0106	Grab	0-1.25	Channel Sediment	NA	1923	1923	1924	1925
73-02156	0173-96-0107	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02157	0173-96-0108	Grab	0.25-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02158	0173-96-0109	Grab	0-0.83	Channel Sediment	NA	1923	1923	1924	1925
73-02159	0173-96-0110	Grab	0-0.5	Channel Sediment	NA	1923	1923	1924	1925
73-02160	0173-96-0111	Grab	0-0.5	Channel Sediment	NA	1923	1923	1924	1925
73-02161	0173-96-0112	Grab	0-0.5	Channel Sediment	NA	1923	1923	1924	1925
73-02162	0173-96-0113	Grab	0-1.0	Channel Sediment	NA	1923	1923	1924	1925
73-02163	0173-96-0114	Grab	0-1.0	Channel Sediment	NA	1923	1923	1924	1925
73-02163	0173-96-0118	Grab/ duplicate	0-1.0	Channel Sediment	NA	1923	1923	1924	1925
73-02171	0173-96-0130	Grab	0-0.17	Soil	1944	1944	1944	1945	NA
73-02171	0173-96-0131	Grab/ duplicate	0-0.17	Soil	1944	1944	1944	1945	NA
73-02172	0173-96-0129	Grab	0-0.08	Soil	NA	1944	1944	1945	NA
73-02173	0173-96-0121	Grab	0-0.25	Soil	NA	1944	1944	1945	NA
73-02174	0173-96-0122	Grab	0-0.42	Soil	NA	1944	1944	1945	NA
73-02175	0173-96-0123	Grab	0-0.5	Soil	NA	1944	1944	1945	NA
73-02176	0173-96-0128	Grab	0-0.5	Soil	NA	1944	1944	1945	NA
73-02371	0173-97-0042	Grab	0.5-1.5	Soil	3182R	3182R	3182R	3183R	NA
73-02372	0173-97-0044	Grab	2.0-3.0	Soil	3182R	3182R	3182R	3183R	NA
73-02373	0173-97-0046	Grab	1.0-1.5	Soil	3182R	3182R	3182R	3183R	NA

TABLE 2.3.4.2-5
SAMPLE SUMMARY TABLE FOR SUBSURFACE SOIL AND TUFF

						Analyses Requested				
Location ID	Borehole ID	Sample Id	Sample Type	Depth (ft)	Media	VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio-nuclides
73-01001	LP-1	AAB7473	Grab	2.5-5	Soil	19587	19587	19587	20532	20026
73-01001	LP-1	AAB7474	Grab	12.5-15	Qbt-3	19618	19618	19618	20098	20027
73-01001	LP-1	AAB7475	Grab	22.5-25	Qbt-3	19618	19618	19618	20098	20027
73-01001	LP-1	AAB7476	Grab	32.5-35	Qbt-3	19618	19618	19618	20098	20027
73-01001	LP-1	AAB7477	Grab/ duplicate	32.5-35	Qbt-3	19618	19618	19618	20098	20027
73-01002	LP-2	AAB7484	Grab	2.5-5	Soil	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7485	Grab	12.5-15	Qbt-3	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7486	Grab/ duplicate	12.5-15	Qbt-3	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7487	Grab	22.5-25	Qbt-3	19685	19685	19685	20105	20199
73-01002	LP-2	AAB7573	Grab	32.5-35	Qbt-3	19685	19685	19685	20105	20199
73-01003	LP-3	AAB7478	Grab	57.5-60	Qbt-3	19633	19633	19633	20099	20028
73-01003	LP-3	AAB7479	Grab	67.5-70	Qbt-3	19652	19652	19652	20100	20194
73-01003	LP-3	AAB7480	Grab	77.5-80	Qbt-3	19652	19652	19652	20100	20194
73-01003	LP-3	AAB7481	Grab	87.5-90	Qbt-2	19652	19652	19652	20100	20194
73-01003	LP-3	AAB7482	Grab	97.5-100	Qbt-2	19654	19654	19654	20102	20192
73-01003	LP-3	AAB7483	Grab/ duplicate	97.5-100	Qbt-2	19654	19654	19654	20102	20192
73-01004	LP-4	AAB7582	Grab	17.5-20	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7583	Grab	57.5-60	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7584	Grab	67.5-70	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7585	Grab/ duplicate	67.5-70	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7586	Grab	80-82.5	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAB7587	Grab	87.5-90	Qbt-3	19746	19746	19746	19994	20200
73-01004	LP-4	AAC0944	Grab	97.5-100	Qbt-2	19746	19746	19746	19994	20200
73-01005	LP-5	AAB7574	Grab	12.5-15	Qbt-3	19688	19688	19688	20104	20196
73-01005	LP-5	AAB7575	Grab	22.5-25	Qbt-3	19688	19688	19688	20104	20196
73-01005	LP-5	AAB7576	Grab/ duplicate	22.5-25	Qbt-3	19688	19688	19688	20104	20196
73-01005	LP-5	AAB7577	Grab	32.5-35	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7578	Grab	12.5-15	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7579	Grab/ duplicate	12.5-15	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7580	Grab	22.5-25	Qbt-3	19688	19688	19688	20104	20196
73-01006	LP-6	AAB7581	Grab	32.5-35	Qbt-3	19688	19688	19688	20104	20196
73-01007	LP-7	AAC1604	Grab	10-12.5	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1605	Grab	15-17.5	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1606	Grab	22.5-25	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1607	Grab	27.5-30	Qbt-3	19983	19983	19983	20030	20201
73-01007	LP-7	AAC1608	Grab	47.5-50	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1609	Grab	55-57.5	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1610	Grab/ duplicate	55-57.5	Qbt-3	20035	20035	20035	20265	20187

TABLE 2.3.4.2-5 (continued)

						Analyses Requested				
Location ID	Borehole ID	Sample Id	Sample Type	Depth (ft)	Media	VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio-nuclides
73-01007	LP-7	AAC1611	Grab	70-72.5	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1612	Grab	77.5-80	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1613	Grab	87.5-90	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1614	Grab	97.5-100	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1615	Grab	107.5-110	Qbt-2	20035	20035	20035	20265	20187
73-01008	LP-8	AAC0945	Grab	22.5-25	Qbt-3	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0946	Grab	57.5-60	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0947	Grab	65-67.5	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0948	Grab	77.5-80	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0949	Grab	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0950	Grab/ duplicate	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0951	Grab	100-102.5	Qbt-2	19899	19899	19899	19995	20202
73-01009	LP-9	AAC1616	Grab	22.5-25	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1617	Grab	32.5-35	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1618	Grab	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1619	Grab/ duplicate	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01010	LPS-1	AAC0952	Grab	5-7.5	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0953	Grab	17.5-20	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0954	Grab	32.5-35	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0955	Grab	60-62.5	Qbt-2	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0956	Grab	87.5-90	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0957	Grab	107.5-110	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0958	Grab	115-117.5	Qbt-2	NA	19982	19982	20041	20188
73-01010	LPS-1	AAC1601	Grab	127.5-130	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC1602	Grab	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01010	LPS-1	AAC1603	Grab/ duplicate	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01011	LPS-2	AAC1620	Grab	47.5-50	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1621	Grab	55-57.5	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1622	Grab	80-82.5	Qbt-3	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1623	Grab	97.5-100	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1624	Grab	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1625	Grab/ duplicate	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1626	Grab	137.5-140	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1627	Grab	157.5-160	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1628	Grab	177.5-180	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1629	Grab	197.5-200	Qbt-1v	20237	20237	20237	20270	20289
73-02061	CP-1	0173-95-0179	Grab	95.5-96.5	Qbt-2	1401	NA	NA	1402	NA
73-02062	CP-2A	0173-95-0180	Grab	74-75	Qbt-3	1434	NA	NA	1435	NA
73-02064	CP-5A	0173-95-0183	Grab	27-28	Qbt-3	1439	NA	NA	1440	NA
73-02065	CP-5B	0173-95-0184	Grab	17-18	Qbt-3	1439	NA	NA	1440	NA
73-02066	CP-6	0173-95-0185	Grab	13.5-14.5	Qbt-3	1439	NA	NA	1440	NA
73-02067	CP-7D	0173-95-0186	Grab	25-26	Qbt-3	1484	NA	NA	1487	NA

TABLE 2.3.4.2-5 (continued)

						Analyses Requested				
Location ID	Borehole ID	Sample Id	Sample Type	Depth (ft)	Media	VOCs	SVOCs	PCBs/ Pest.	Inorganic chemicals	Radio-nuclides
73-01007	LP-7	AAC1611	Grab	70-72.5	Qbt-3	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1612	Grab	77.5-80	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1613	Grab	87.5-90	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1614	Grab	97.5-100	Qbt-2	20035	20035	20035	20265	20187
73-01007	LP-7	AAC1615	Grab	107.5-110	Qbt-2	20035	20035	20035	20265	20187
73-01008	LP-8	AAC0945	Grab	22.5-25	Qbt-3	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0946	Grab	57.5-60	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0947	Grab	65-67.5	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0948	Grab	77.5-80	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0949	Grab	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0950	Grab/ duplicate	87.5-90	Qbt-2	19899	19899	19899	19995	20202
73-01008	LP-8	AAC0951	Grab	100-102.5	Qbt-2	19899	19899	19899	19995	20202
73-01009	LP-9	AAC1616	Grab	22.5-25	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1617	Grab	32.5-35	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1618	Grab	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01009	LP-9	AAC1619	Grab/ duplicate	42.5-45	Qbt-3	20035	20035	20035	20265	20187
73-01010	LPS-1	AAC0952	Grab	5-7.5	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0953	Grab	17.5-20	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0954	Grab	32.5-35	Qbt-3	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0955	Grab	60-62.5	Qbt-2	19927	19927	19927	20038	20189
73-01010	LPS-1	AAC0956	Grab	87.5-90	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0957	Grab	107.5-110	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC0958	Grab	115-117.5	Qbt-2	NA	19982	19982	20041	20188
73-01010	LPS-1	AAC1601	Grab	127.5-130	Qbt-2	19982	19982	19982	20041	20188
73-01010	LPS-1	AAC1602	Grab	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01010	LPS-1	AAC1603	Grab/ duplicate	147.5-150	Qbt-2	19983	19983	19983	20030	20201
73-01011	LPS-2	AAC1620	Grab	47.5-50	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1621	Grab	55-57.5	Qbt-3	20206	20206	20206	20266	20287
73-01011	LPS-2	AAC1622	Grab	80-82.5	Qbt-3	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1623	Grab	97.5-100	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1624	Grab	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1625	Grab/ duplicate	120-122.5	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1626	Grab	137.5-140	Qbt-2	20233	20233	20233	20268	20288
73-01011	LPS-2	AAC1627	Grab	157.5-160	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1628	Grab	177.5-180	Qbt-2	20237	20237	20237	20270	20289
73-01011	LPS-2	AAC1629	Grab	197.5-200	Qbt-1v	20237	20237	20237	20270	20289
73-02061	CP-1	0173-95-0179	Grab	95.5-96.5	Qbt-2	1401	NA	NA	1402	NA
73-02062	CP-2A	0173-95-0180	Grab	74-75	Qbt-3	1434	NA	NA	1435	NA
73-02064	CP-5A	0173-95-0183	Grab	27-28	Qbt-3	1439	NA	NA	1440	NA
73-02065	CP-5B	0173-95-0184	Grab	17-18	Qbt-3	1439	NA	NA	1440	NA
73-02066	CP-6	0173-95-0185	Grab	13.5-14.5	Qbt-3	1439	NA	NA	1440	NA
73-02067	CP-7D	0173-95-0186	Grab	25-26	Qbt-3	1484	NA	NA	1487	NA

N/A = Not applicable.
NA = Not analyzed.

TABLE 2.3.4.2-6
SAMPLE SUMMARY TABLE FOR PORE WATER

						Analyses Requested*		
Location ID	Well ID	Sample ID	Sample Type	Lysimeter Depth (ft)	Media	VOCs	Inorganic Chemicals	Uranium
73-01004	LP-4	0173-95-0036	Lysimeter water	34.4	Water	75	NA	NA
73-01005	LP-5	0173-95-0037	Lysimeter water	10.7	Water	75	76	NA
73-01009	LP-9	0173-95-0040	Lysimeter water	26	Water	75	76	NA
73-01005	LP-5	0173-95-0080	Lysimeter water	33.5	Water	313	NA	NA
73-01009	LP-9	0173-95-0083	Lysimeter water	26	Water	313	NA	NA
73-01005	LP-5	0173-95-0102	Lysimeter water	10.7	Water	663	NA	NA
73-01007	LP-7	0173-95-0103	Lysimeter water	55	Water	663	NA	NA
73-01009	LP-9	0173-95-0104	Lysimeter water	26	Water	663	664	NA
73-01009	LP-9	0173-96-0062	Lysimeter water	26	Water	1881	NA	NA
73-01005	LP-5	0173-96-0063	Lysimeter water	10.7	Water	1881	NA	NA
73-01009	LP-9	0173-96-0064	Lysimeter water	26	Water	NA	1913	NA
73-01009	LP-9	0173-96-0196	Lysimeter water	26	Water	2172	2175	NA
73-01007	LP-7	0173-96-0451	Lysimeter water	55	Water	2342	NA	NA
73-01009	LP-9	0173-96-0452	Lysimeter water	26	Water	2342	2343	NA
73-01005	LP-5	0173-96-0453	Lysimeter water	10.7	Water	2342	2343	NA
73-01007	LP-7	0173-96-0521	Lysimeter water	55	Water	2590	NA	NA
73-01009	LP-9	0173-96-0522	Lysimeter water	26	Water	2590	2591	NA
73-01005	LP-5	0173-96-0523	Lysimeter water	10.7	Water	2590	NA	NA
73-01007	LP-7	0173-96-0524	Lysimeter water	55	Water	2649	NA	NA
73-01009	LP-9	0173-96-0525	Lysimeter water	26	Water	2649	2650	NA
73-01005	LP-5	0173-96-0526	Lysimeter water	10.7	Water	2649	2650	NA
73-01004	LP-4	0173-96-0527	Lysimeter water	34.4	Water	2649	NA	NA
73-01007	LP-7	0173-96-0651	Lysimeter water	55	Water	2826	NA	NA
73-01009	LP-9	0173-96-0652	Lysimeter water	26	Water	2826	2825	NA
73-01005	LP-5	0173-96-0653	Lysimeter water	10.7	Water	2826	2825	NA
73-02429	LI-1	0173-97-0081	Lysimeter water	76	Water	3520R	NA	NA
73-02426	LI-3	0173-97-0082	Lysimeter water	23.3	Water	3520R	NA	NA
73-02426	LI-3	0173-97-0083	Lysimeter water	23.3	Water	3611R	NA	NA
73-02428	LI-5	0173-97-0211	Lysimeter water	28.8	Water	3665R	3666R	NA
73-02426	LI-3	0173-97-0212	Lysimeter water	23.3	Water	3665R	3666R	NA
73-02428	LI-5	0173-97-0213	Lysimeter water	28.8	Water	3726R	NA	NA
73-02426	LI-3	0173-97-0214	Lysimeter water	23.3	Water	3726R	NA	NA
73-02426	LI-3	0173-97-0215	Lysimeter water	23.3	Water	NA	3740R	3740R
73-02428	LI-5	0173-97-0361	Lysimeter water	28.8	Water	3834R	3835R	3835R
73-01006	LP-6	AAC3266	Lysimeter water	11	Water	21429	NA	NA
73-01007	LP-7	AAC3267	Lysimeter water	55	Water	NA	21431	NA
73-01009	LP-9	AAC3268	Lysimeter water	26	Water	NA	21431	NA
73-01005	LP-5	AAC3271	Lysimeter water	10.7	Water	NA	21431	NA
73-01005	LP-5	AAC4159	Lysimeter water	10.7	Water	21715	21716	NA
73-01007	LP-7	AAC4161	Lysimeter water	55	Water	21715	NA	NA
73-01009	LP-9	AAC4162	Lysimeter water	26	Water	21715	21716	NA
73-01011	LPS-2	AAC4163	Lysimeter water	20.2	Water	21715	21716	NA

* Request number is given for each analysis.

TABLE 2.3.4.3-2
INORGANIC CHEMICALS WITH CONCENTRATIONS AT OR ABOVE BACKGROUND VALUES IN SURFACE SOIL AND DRAINAGES[a]

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (in)
Antimony	73-02151	0173-96-0101	8.1 (U)	0.83	soil	0-8
	73-02152	0173-96-0102	8.1 (U)		soil	0-10
	73-02153	0173-96-0103	7.5 (U)		soil	0-8
	73-02154	0173-96-0104	7.9 (U)		soil	0-10
	73-02154	0173-96-0105	7.2 (U)		soil	10-20
	73-02155	0173-96-0106	7 (U)		soil	0-15
	73-02156	0173-96-0107	7.8 (U)		soil	0-10
	73-02157	0173-96-0108	7.5 (U)		soil	3-10
	73-02158	0173-96-0109	7.1 (U)		soil	0-10
	73-02159	0173-96-0110	7.9 (U)		soil	0-6
	73-02160	0173-96-0111	7.3 (U)		soil	0-6
	73-02161	0173-96-0112	8.5 (U)		soil	0-6
	73-02162	0173-96-0113	7.3 (U)		soil	0-12
	73-02163	0173-96-0114	7.3 (U)		soil	0-12
	73-02163	0173-96-0118	7.3 (U)		soil	0-12
	73-02171	0173-96-0130	5 (U)		soil	0-2
	73-02171	0173-96-0131	5 (U)		soil	0-2
	73-02172	0173-96-0129	5.1 (U)		soil	0-1
	73-02173	0173-96-0121	5.48 (U)		soil	0-3
	73-02174	0173-96-0122	5.49 (U)		soil	0-5
	73-02175	0173-96-0123	5.3 (U)		soil	0-6
	73-02176	0173-96-0128	5.1 (U)		soil	0-6
	73-02371	0173-97-0042	12 (UJ)		soil	6-18
	73-02372	0173-97-0044	12 (UJ)		soil	24-36
	73-02373	0173-97-0046	11 (UJ)		soil	12-18
Beryllium	73-02161	0173-96-0112	1.900	1.83	soil	0-6
Cadmium	73-02151	0173-96-0101	0.56 (U)	0.4	soil	0-8
	73-02152	0173-96-0102	0.56 (U)		soil	0-10
	73-02153	0173-96-0103	0.52 (U)		soil	0-8
	73-02154	0173-96-0104	0.55 (U)		soil	0-10
	73-02154	0173-96-0105	0.5 (U)		soil	10-20
	73-02155	0173-96-0106	0.48 (U)		soil	0-15
	73-02156	0173-96-0107	0.54 (U)		soil	0-10
	73-02157	0173-96-0108	0.52 (U)		soil	3-10
	73-02158	0173-96-0109	0.500		soil	0-10
	73-02159	0173-96-0110	0.55 (U)		soil	0-6

TABLE 2.3.4.3-2 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (in)
	73-02160	0173-96-0111	0.51 (U)		soil	0-6
	73-02161	0173-96-0112	0.59 (U)		soil	0-6
	73-02162	0173-96-0113	0.51 (U)		soil	0-12
	73-02163	0173-96-0114	0.680		soil	0-12
	73-02163	0173-96-0118	0.630		soil	0-12
	73-02171	0173-96-0130	1.000		soil	0-2
	73-02171	0173-96-0131	1.300		soil	0-2
	73-02172	0173-96-0129	0.51 (U)		soil	0-1
	73-02173	0173-96-0121	0.901		soil	0-3
	73-02174	0173-96-0122	0.549 (U)		soil	0-5
	73-02175	0173-96-0123	0.53 (U)		soil	0-6
	73-02176	0173-96-0128	0.51 (U)		soil	0-6
	73-02371	0173-97-0042	0.6 (U)		soil	6-18
	73-02372	0173-97-0044	0.58 (U)		soil	24-36
	73-02373	0173-97-0046	0.56 (U)		soil	12-18
Calcium	73-02371	0173-97-0042	6900	6120	soil	6-18
	73-02373	0173-97-0046	7600		soil	12-18
Chromium, Total	73-02173	0173-96-0121	23.30 (J-)	19.3	soil	0-3
Copper	73-02171	0173-96-0130	85.3	14.7	soil	0-2
	73-02171	0173-96-0131	35.8		soil	0-2
	73-02173	0173-96-0121	188.0		soil	0-3
	73-02174	0173-96-0122	16.0		soil	0-5
	73-02176	0173-96-0128	75.8		soil	0-6
Iron	73-02173	0173-96-0121	21600	21500	soil	0-3
Lead	73-02163	0173-96-0114	32.5	22.3	soil	0-12
	73-02163	0173-96-0118	48.4		soil	0-12
	73-02171	0173-96-0130	463 (J+)		soil	0-2
	73-02171	0173-96-0131	26.2 (J+)		soil	0-2
	73-02173	0173-96-0121	89.6 (J+)		soil	0-3
Mercury	73-02173	0173-96-0121	0.197	0.1	soil	0-3
	73-02371	0173-97-0042	0.14 (U)		soil	6-18
	73-02372	0173-97-0044	0.12 (U)		soil	24-36
	73-02373	0173-97-0046	0.14 (U)		soil	12-18
Nickel	73-02173	0173-96-0121	21.5	15.4	soil	0-3

TABLE 2.3.4.3-2 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (in)
Silver	73-02151	0173-96-0101	1.4 (UJ)	1	soil	0-8
	73-02152	0173-96-0102	1.4 (UJ)		soil	0-10
	73-02153	0173-96-0103	1.3 (UJ)		soil	0-8
	73-02154	0173-96-0104	1.3 (UJ)		soil	0-10
	73-02154	0173-96-0105	1.2 (UJ)		soil	10-20
	73-02155	0173-96-0106	1.2 (UJ)		soil	0-15
	73-02156	0173-96-0107	1.3 (UJ)		soil	0-10
	73-02157	0173-96-0108	1.3 (UJ)		soil	3-10
	73-02158	0173-96-0109	1.2 (UJ)		soil	0-10
	73-02159	0173-96-0110	1.3 (UJ)		soil	0-6
	73-02160	0173-96-0111	1.2 (UJ)		soil	0-6
	73-02161	0173-96-0112	1.4 (UJ)		soil	0-6
	73-02162	0173-96-0113	1.2 (UJ)		soil	0-12
	73-02163	0173-96-0114	1.2 (UJ)		soil	0-12
	73-02163	0173-96-0118	1.2 (UJ)		soil	0-12
	73-02173	0173-96-0121	1.72		soil	0-3
	73-02371	0173-97-0042	2.4 (U)		soil	6-18
	73-02372	0173-97-0044	2.3 (U)		soil	24-36
	73-02373	0173-97-0046	2.2 (U)		soil	12-18
Sodium	73-02172	0173-96-0129	37100	915	soil	0-1
Thallium	73-02161	0173-96-0112	0.76 (U)	0.73	soil	0-6
Uranium, Total	73-02163	0173-96-0114	8.1	5.4	soil	0-12
Zinc	73-02156	0173-96-0107	53.7	48.8	soil	0-10
	73-02161	0173-96-0112	56.3		soil	0-6
	73-02163	0173-96-0114	234		soil	0-12
	73-02163	0173-96-0118	173		soil	0-12
	73-02171	0173-96-0130	472		soil	0-2
	73-02171	0173-96-0131	79.3		soil	0-2
	73-02173	0173-96-0121	608		soil	0-3
	73-02176	0173-96-0128	49.2		soil	0-6

*** Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.**

TABLE 2.3.4.3-5
INORGANIC CHEMICALS WITH CONCENTRATIONS AT OR ABOVE BACKGROUND VALUES IN SUBSURFACE SOIL AND TUFF[a]

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Aluminum	73-02373	0173-97-0047	62000	29200	SOIL	3-3.5
	73-01010	AAC0958	7390	7340	QBT2	115-117.5
	73-01004	AAB7582	32100		QBT3	17.5-20
	73-02056	0173-95-0176	7560			55.5-56.5
Arsenic	73-02371	0173-97-0043	8.5	8.17	SOIL	3-3.5
	73-02373	0173-97-0047	8.6			3-3.5
	73-01004	AAB7582	4.5	2.79	QBT3	17.5-20
Antimony	73-02429	0173-97-0072	11 (UJ)	0.83	ALLH	76-77
	73-01011	AAC1629	4.3 (U)	0.5	QBT1V	197.5-200
	73-01007	AAC1615	4.5 (U)	0.5	QBT2	107.5-110
	73-01007	AAC1612	4.5 (U)			77.5-80
	73-01007	AAC1613	4.5 (U)			87.5-90
	73-01007	AAC1614	4.6 (U)			97.5-100
	73-01011	AAC1624	4.4 (U)			120-122.5
	73-01011	AAC1625	4.4 (U)			120-122.5
	73-01011	AAC1626	4.2 (U)			137.5-140
	73-01011	AAC1623	4.3 (U)			97.5-100
	73-01011	AAC1628	4.8 (U)			177.5-180
	73-01011	AAC1627	4.3 (U)			157.5-160
	73-02061	0173-95-0179	11 (U)			95-96.5
	73-01007	AAC1611	4.6 (U)	0.5	QBT3	70-72.5
	73-01007	AAC1608	4.4 (U)			47.5-50
	73-01007	AAC1610	4.6 (U)			46-57.5
	73-01007	AAC1609	4.7 (U)			46-57.5
	73-01009	AAC1618	4.4 (U)			42.5-45
	73-01009	AAC1619	4.4 (U)			42.5-45
	73-01009	AAC1617	4.6 (U)			32.5-35
	73-01009	AAC1616	4.9 (U)			22.5-25
	73-01011	AAC1622	4.4 (U)			67-82.5
	73-01011	AAC1621	4.6 (U)			46-57.5
	73-01011	AAC1620	4.5 (U)			47.5-50
	73-02051	0173-95-0171	3.6 (U)			28-29.3
	73-02052	0173-95-0172	3.4 (U)			26-27.5
	73-02053	0173-95-0173	3.6 (U)			20.5-21.5
	73-02054	0173-95-0174	3.4 (U)			20.5-21.5

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Antimony continued	73-02055	0173-95-0175	3.7 (UJ)	0.5	QBT3	20.5-21.5
	73-02056	0173-95-0176	3.4 (UJ)			55.5-56.5
	73-02057	0173-95-0177	11 (U)			22-23
	73-02059	0173-95-0178	11 (U)			10.5-11.5
	73-02067	0173-95-0186	0.51 (U)			25-26
	73-02070	0173-95-0188	0.51 (U)			22.5-23.5
	73-02423	0173-97-0062	0.7 (U)			32-33
	73-02424	0173-97-0063	0.72 (U)			36-37
	73-02425	0173-97-0064	9 (UJ)			30-31
	73-02425	0173-97-0065	9.1 (UJ)			35-36
	73-02426	0173-97-0066	0.53 (UJ)			15-16
	73-02427	0173-97-0067	15 (UJ)			20.5-21.5
	73-02427	0173-97-0068	10 (UJ)			25.5-26.5
	73-02428	0173-97-0069	11 (UJ)			25.5-26.5
	73-02428	0173-97-0070	11 (UJ)			25.5-26.5
	73-02428	0173-97-0071	11 (UJ)			31.5-32.5
	73-02429	0173-97-0073	11 (UJ)			81-82
Barium	73-02373	0173-97-0047	550	295	SOIL	3-3.5
	73-01004	AAB7582	240	46	QBT3	17.5-20
	73-02051	0173-95-0171	47.7			28-29.3
	73-02055	0173-95-0175	51.6			20.5-21.5
	73-02056	0173-95-0176	53.1			55.5-56.5
	73-02062	0173-95-0180	62.6			74-75
Beryllium	73-02373	0173-97-0047	3.8	1.83	SOIL	3-3.5
	73-01010	AAC0958	2.5	1.21	QBT2	115-117.5
	73-01004	AAB7582	2		QBT3	17.5-20
	73-01004	AAB7585	1.4			67.5-70
	73-01007	AAC1609	2.8			55-57.5
	73-01007	AAC1610	2.9			55-57.5
Cadmium	73-01011	AAC1621	1.7	1.63	QBT3	55-57.5
Calcium	73-02373	0173-97-0047	23000	6120	SOIL	3-3.5
	73-01008	AAC0947	3200	2200	QBT2	65-67.5
	73-01008	AAC0951	4900			100-102.5
	73-01010	AAC0958	4240			115-117.5
	73-01004	AAB7582	3670		QBT3	17.5-20
	73-02051	0173-95-0171	5400			336-351.6
	73-02053	0173-95-0173	3250			20.5-21.5
	73-02055	0173-95-0175	8800			20.5-21.5
	73-02062	0173-95-0180	30100			74-75

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Chromium, Total	73-02373	0173-97-0047	25	19.3	SOIL	3-3.5
	73-01011	AAC1629	2.3	2.24	QBT1V	197.5-166.7
	73-01011	AAC1627	7.9		QBT2	157.5-160
	73-02061	0173-95-0179	7.4	7.14		95.5-96.5
	73-01004	AAB7582	16		QBT3	17.5-20
	73-02051	0173-95-0171	34 (J+)	7.14		28-29.3
	73-02052	0173-95-0172	8.9 (J+)			26-27.5
	73-02055	0173-95-0175	43.7 (J+)			20.5-21.5
	73-02056	0173-95-0176	23.9 (J+)			55.5-56.5
	73-02059	0173-95-0178	9.8			10.5-11.5
	73-02062	0173-95-0180	7.9			74-75
	73-02064	0173-95-0183	11.4			27-28
	73-02421	0173-97-0061	7.2			37-37.5
Copper	73-01010	AAC0955	25.4	4.66	QBT2	60-62.5
	73-02061	0173-95-0179	11 (J-)			95.5-96.5
	73-01004	AAB7582	7.7		QBT3	17.5-20
	73-02051	0173-95-0171	71.5 (J+)			28-29.3
	73-02052	0173-95-0172	12.1 (J+)			26-27.5
	73-02053	0173-95-0173	5.6 (J+)			20.5-21.5
	73-02054	0173-95-0174	14.3 (J+)			20.5-21.5
	73-02055	0173-95-0175	29.3			20.5-21.5
	73-02056	0173-95-0176	31.6			55.5-56.5
	73-02057	0173-95-0177	15 (J-)			22-23
	73-02059	0173-95-0178	23 (J-)			10.5-11.5
	73-02062	0173-95-0180	73.4 (J-)			74-75
	73-02064	0173-95-0183	16.1			27-28
	73-02065	0173-95-0184	10.9			17-18
	73-02066	0173-95-0185	58.5			13.5-14.5
	73-02067	0173-95-0186	91.5			25-26
	73-02068	0173-95-0187	36.2			27.5-28.5
	73-02070	0173-95-0188	38.5			22.5-23.5
	73-02428	0173-97-0069	4.8			25.5-26.5
	73-02428	0173-97-0070	12			25.5-26.5
Iron	73-02373	0173-97-0047	28000	21500	SOIL	3-3.5
	73-01004	AAB7582	18900	14500	QBT3	17.5-20

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Lead	73-02371	0173-97-0043	23	22.3	SOIL	3-3.5
	73-01011	AAC1623	21.6	11.2	QBT2	97.5-100
	73-01001	AAB7474	16.8		QBT3	12.5-15
	73-01001	AAB7475	19.1			22.5-25
	73-01001	AAB7476	20.5			32.5-35
	73-01001	AAB7477	23.9			32.5-35
	73-01003	AAB7478	11.8			57.5-60
	73-01004	AAB7582	21.8			17.5-20
	73-01004	AAB7584	19.7			67.5-70
	73-01004	AAB7585	23.8			67.5-70
	73-01010	AAC0952	14			5-7.5
	73-01011	AAC1621	12.8			4.6-57.5
	73-02051	0173-95-0171	27.5			28-29.3
	73-02052	0173-95-0172	130			26-27.5
	73-02055	0173-95-0175	11.8			20.5-21.5
	73-02062	0173-95-0180	21.7 (J+)			74-75
	73-02065	0173-95-0184	11.9 (J+)			17-18
	73-02067	0173-95-0186	29			25-26
	73-02428	0173-97-0069	20			25.5-26.5
Magnesium	73-02373	0173-97-0047	9200	4610	SOIL	3-3.5
	73-01004	AAB7582	4740	1690	QBT3	17.5-20
Manganese	73-02426	0173-97-0066	553	482	QBT3	15-16
Mercury	73-01004	AAC0944	0.15	0.1	QBT2	97.5-100
	73-01010	AAC0958	0.44			115-117.5
	73-01004	AAB7582	0.33		QBT3	17.5-20
	73-01004	AAB7583	0.21			57.5-60
	73-01004	AAB7585	0.34			67.5-70
	73-01004	AAB7586	0.3			6.7-82.5
	73-01007	AAC1605	0.43			15-17.5
	73-01008	AAC0945	0.3			22.5-25
Nickel	73-02373	0173-97-0047	28	15.4	SOIL	3-3.5
	73-01004	AAB7582	15.2	6.58	QBT3	17.5-20
	73-02051	0173-95-0171	11.7			28-29.3
	73-02055	0173-95-0175	16.1			20.5-21.5
	73-02056	0173-95-0176	8.2			55.5-56.5
	73-02062	0173-95-0180	6.6			74-75
Potassium	73-02373	0173-97-0047	5200	3460	SOIL	3-3.5
	73-01004	AAB7582	3730 (J+)	3500	QBT3	17.5-20
Selenium	73-02424	0173-97-0063	0.72	0.3	QBT3	36-37

TABLE 2.3.4.3-5 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Background Value (mg/kg)	Media Code	Depth (ft)
Silver	73-02429	0173-97-0072	2.3 (U)	1	SOIL	76-77
	73-02061	0173-95-0179	2.1 (UJ)	1	QBT2	95.5-96.5
	73-02057	0173-95-0177	2.1 (UJ)	1	QBT3	22-23
	73-02059	0173-95-0178	2.2 (UJ)			10.5-11.5
	73-02425	0173-97-0065	1.4 (U)			35-36
	73-02425	0173-97-0064	1.4 (U)			30-31
	73-02427	0173-97-0068	2.1 (U)			25.5-26.5
	73-02427	0173-97-0067	2.9 (U)			20.5-21.5
	73-02428	0173-97-0071	2.1 (U)			31.5-32.5
	73-02428	0173-97-0070	2.2 (U)			25.5-26.5
	73-02428	0173-97-0069	2.2 (U)			25.5-26.5
	73-02429	0173-97-0073	2.2 (U)			81-82
Sodium	73-02429	0173-97-0072	1600	915	SOIL	76-77
Thallium	73-02371	0173-97-0043	0.87 (J+)	0.73	SOIL	3-3.5
	73-02373	0173-97-0047	0.83 (J+)			3-3.5
	73-02424	0173-97-0063	1.3	1.10	QBT3	36-37
Vanadium	73-01004	AAB7582	24.3 (J+)	17	QBT3	17.5-20
Zinc	73-02373	0173-97-0047	83	48.8	SOIL	3-3.5
	73-01006	AAB7580	63.9	63.5	QBT3	22.5-25
	73-02059	0173-95-0178	76			10.5-11.5
	73-02062	0173-95-0180	111 (J+)			74-75
	73-02065	0173-95-0184	136			17-18
	73-02066	0173-95-0185	63.6			13.5-14.5
	73-02067	0173-95-0186	102 (J-)			25-26

[a] Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.

TABLE 2.3.4.3-8
DETECTED INORGANICS IN SOIL POREWATER[a]

Analyte	Location ID	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Aluminum	73-01009	0173-96-0196	81.1	water	26
	73-01005	0173-96-0453	38.1	water	10.7
	73-02426	0173-97-0215	42.1	water	23.3
	73-02428	0173-97-0361	87.8	water	28.8
Arsenic	73-01009	0173-95-0104	2.6	water	26
	73-01009	0173-96-0064	2.3	water	26
	73-01009	0173-96-0196	2.1	water	26
	73-01009	0173-96-0522	4	water	26
	73-02426	0173-97-0215	6.5	water	23.3
	73-02428	0173-97-0361	15.6	water	28.8
	73-01007	AAC3267	12.1	water	55
	73-01005	AAC3271	15.2	water	10.7
	73-01011	AAC4163	13.9	water	20.2
Barium	73-01009	0173-95-0104	51.8	water	26
	73-01009	0173-96-0064	147	water	26
	73-01009	0173-96-0196	141	water	26
	73-01009	0173-96-0452	135	water	26
	73-01005	0173-96-0453	111	water	10.7
	73-01009	0173-96-0522	124	water	26
	73-01009	0173-96-0525	136	water	26
	73-01005	0173-96-0526	98.2	water	10.7
	73-01009	0173-96-0652	143	water	26
	73-01005	0173-96-0653	94	water	10.7
	73-02426	0173-97-0212	200	water	23.3
	73-02426	0173-97-0215	572	water	23.3
	73-02428	0173-97-0361	65.3	water	28.8
Beryllium	73-02428	0173-97-0361	1.9	water	28.8
Calcium	73-01005	0173-95-0037	30800	water	10.7
	73-01009	0173-95-0040	165000	water	26
	73-01009	0173-95-0104	23400	water	26
	73-01009	0173-96-0064	165000	water	26
	73-01009	0173-96-0196	178000	water	26
	73-01009	0173-96-0452	185000	water	26
	73-01005	0173-96-0453	313000	water	10.7
	73-01009	0173-96-0522	188000	water	26
	73-01009	0173-96-0525	195000	water	26
	73-01005	0173-96-0526	246000	water	10.7
	73-01009	0173-96-0652	207000	water	26
	73-01005	0173-96-0653	230000	water	10.7
	73-02428	0173-97-0211	330000	water	28.8

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
	73-02426	0173-97-0212	210000	water	23.3
	73-02426	0173-97-0215	183000	water	23.3
	73-02428	0173-97-0361	870000	water	28.8
	73-01007	AAC3267	23000	water	55
	73-01009	AAC3268	148000	water	26
	73-01005	AAC3271	62500	water	10.7
	73-01005	AAC4159	394000	water	10.7
	73-01009	AAC4162	164000	water	26
	73-01011	AAC4163	22600	water	20.2
Chromium, Total	73-01005	0173-95-0037	2.1	water	10.7
	73-01005	0173-96-0453	7.1	water	10.7
	73-01009	0173-96-0522	2.3	water	26
	73-02426	0173-97-0212	20	water	23.3
	73-02428	0173-97-0361	0.59	water	28.8
	73-01009	AAC3268	57.7	water	26
	73-01005	AAC4159	14.1	water	10.7
	73-01009	AAC4162	13	water	26
Cobalt	73-01009	0173-96-0522	0.9	water	26
	73-02426	0173-97-0215	1.8	water	23.3
	73-02428	0173-97-0361	15.4	water	28.8
Copper	73-01009	0173-95-0104	27.7	water	26
	73-01009	0173-96-0196	7.4	water	26
	73-01009	0173-96-0452	8.5	water	26
	73-01009	0173-96-0522	3.6	water	26
	73-02426	0173-97-0215	0.95	water	23.3
	73-02428	0173-97-0361	3.3	water	28.8
Iron	73-01009	0173-95-0104	33.4	water	26
	73-01009	0173-96-0196	37.5	water	26
	73-01009	0173-96-0522	25.6	water	26
	73-02428	0173-97-0211	2900	water	28.8
	73-02426	0173-97-0212	2900	water	23.3
	73-02426	0173-97-0215	3520	water	23.3
	73-02428	0173-97-0361	16600	water	28.8
Lead	73-01009	0173-96-0196	3.5	water	26
	73-01009	0173-96-0525	21	water	26
	73-02426	0173-97-0212	2000	water	23.3
	73-01007	AAC3267	5.3	water	55

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Magnesium	73-01005	0173-95-0037	15700	water	10.7
	73-01009	0173-95-0040	83100	water	26
	73-01009	0173-95-0104	6570	water	26
	73-01009	0173-96-0064	68200	water	26
	73-01009	0173-96-0196	58100	water	26
	73-01009	0173-96-0452	58000	water	26
	73-01005	0173-96-0453	44700	water	10.7
	73-01009	0173-96-0522	54200	water	26
	73-01009	0173-96-0525	57700	water	26
	73-01005	0173-96-0526	34400	water	10.7
	73-01009	0173-96-0652	58800	water	26
	73-01005	0173-96-0653	32300	water	10.7
	73-02428	0173-97-0211	120000	water	28.8
	73-02426	0173-97-0212	45000	water	23.3
	73-02426	0173-97-0215	40600	water	23.3
	73-02428	0173-97-0361	299000	water	28.8
	73-01007	AAC3267	11000	water	55
	73-01009	AAC3268	37100	water	26
	73-01005	AAC3271	8280	water	10.7
	73-01005	AAC4159	52200	water	10.7
	73-01009	AAC4162	76200	water	26
	73-01011	AAC4163	5840	water	20.2
Manganese	73-01005	0173-95-0037	17.5	water	10.7
	73-01009	0173-95-0040	87.8	water	26
	73-01009	0173-96-0064	46.9	water	26
	73-01009	0173-96-0196	18	water	26
	73-01009	0173-96-0452	9.2	water	26
	73-01005	0173-96-0453	1.8	water	10.7
	73-01009	0173-96-0522	9.2	water	26
	73-02428	0173-97-0211	42000	water	28.8
	73-02426	0173-97-0212	41000	water	23.3
	73-02426	0173-97-0215	42300	water	23.3
	73-02428	0173-97-0361	79000	water	28.8
	73-01007	AAC3267	29.8	water	55
	73-01009	AAC4162	120	water	26
Mercury	73-01009	0173-96-0522	0.03	water	26
	73-01009	AAC3268	0.4	water	26
Nickel	73-01009	0173-95-0040	176	water	26
	73-01009	0173-96-0064	183	water	26
	73-01009	0173-96-0196	73.8	water	26

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
	73-01009	0173-96-0452	21.4	water	26
	73-01009	0173-96-0522	16.8	water	26
	73-02426	0173-97-0215	10.2	water	23.3
	73-02428	0173-97-0361	110	water	28.8
	73-01007	AAC3267	514	water	55
	73-01005	AAC3271	259	water	10.7
	73-01005	AAC4159	99.3	water	10.7
	73-01009	AAC4162	149	water	26
	73-01011	AAC4163	64.4	water	20.2
Potassium	73-01005	0173-95-0037	6550	water	10.7
	73-01009	0173-95-0040	45900	water	26
	73-01009	0173-95-0104	4030	water	26
	73-01009	0173-96-0064	25600	water	26
	73-01009	0173-96-0196	27400	water	26
	73-01009	0173-96-0452	59700	water	26
	73-01005	0173-96-0453	5020	water	10.7
	73-01009	0173-96-0522	31400	water	26
	73-01009	0173-96-0525	26500	water	26
	73-01009	0173-96-0652	31300	water	26
	73-02428	0173-97-0211	21000	water	28.8
	73-02426	0173-97-0212	18000	water	23.3
	73-02426	0173-97-0215	23000	water	23.3
	73-02428	0173-97-0361	99300	water	28.8
	73-01005	AAC3271	6580	water	10.7
	73-01005	AAC4159	8510	water	10.7
	73-01009	AAC4162	39600	water	26
Selenium	73-01005	0173-96-0453	8 (J+)	water	10.7
	73-01009	0173-96-0522	4.6	water	26
	73-02426	0173-97-0215	23.8	water	23.3
	73-02428	0173-97-0361	18.7	water	28.8
	73-01005	AAC4159	20.5	water	10.7
Silver	73-01009	0173-96-0522	1.2	water	26
	73-02426	0173-97-0215	1.7	water	23.3
	73-02428	0173-97-0361	2.5	water	28.8
	73-01005	AAC4159	14.9	water	10.7
Sodium	73-01005	0173-95-0037	380000	water	10.7
	73-01009	0173-95-0040	400000	water	26
	73-01009	0173-95-0104	25100	water	26
	73-01009	0173-96-0064	510000	water	26
	73-01009	0173-96-0196	510000	water	26

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
	73-01009	0173-96-0452	254000	water	26
	73-01005	0173-96-0453	226000	water	10.7
	73-01009	0173-96-0522	618000	water	26
	73-01009	0173-96-0525	548000	water	26
	73-01005	0173-96-0526	396000	water	10.7
	73-01009	0173-96-0652	562000	water	26
	73-01005	0173-96-0653	376000	water	10.7
	73-02428	0173-97-0211	330000	water	28.8
	73-02426	0173-97-0212	350000	water	23.3
	73-02426	0173-97-0215	363000	water	23.3
	73-02428	0173-97-0361	772000	water	28.8
	73-01007	AAC3267	24600	water	55
	73-01005	AAC3271	51100	water	10.7
	73-01005	AAC4159	3410	water	10.7
	73-01009	AAC4162	410	water	26
Thallium	73-02426	0173-97-0215	14.8	water	23.3
	73-02428	0173-97-0361	28.3	water	28.8
Vanadium	73-01009	0173-95-0104	19.3	water	26
	73-01009	0173-96-0064	19.6	water	26
	73-01009	0173-96-0196	18.6	water	26
	73-01009	0173-96-0452	14.2	water	26
	73-01005	0173-96-0453	8	water	10.7
	73-01009	0173-96-0522	12.5	water	26
	73-02426	0173-97-0212	60	water	23.3
	73-02426	0173-97-0215	47.8	water	23.3
	73-02428	0173-97-0361	17	water	28.8
	73-01007	AAC3267	324	water	55
	73-01009	AAC3268	157	water	26
	73-01005	AAC3271	115	water	10.7
	73-01009	AAC4162	66.7	water	26
	73-01011	AAC4163	240	water	20.2

TABLE 2.3.4.3-8 (continued)

Analyte	Location ID	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Zinc	73-01009	0173-95-0040	50.7	water	26
	73-01009	0173-95-0104	8.6	water	26
	73-01009	0173-96-0064	52.1	water	26
	73-01009	0173-96-0196	49.5	water	26
	73-01009	0173-96-0452	16.1	water	26
	73-01005	0173-96-0453	19.5	water	10.7
	73-01009	0173-96-0522	128	water	26
	73-01009	0173-96-0525	105	water	26
	73-01005	0173-96-0526	149	water	10.7
	73-01009	0173-96-0652	69.3	water	26
	73-02426	0173-97-0212	10	water	23.3
	73-02426	0173-97-0215	9.4	water	23.3
	73-02428	0173-97-0361	23.1	water	28.8
	73-01007	AAC3267	325	water	55
	73-01009	AAC3268	106	water	26
	73-01005	AAC3271	132	water	10.7
	73-01009	AAC4162	130	water	26
	73-01011	AAC4163	186	water	20.2

* Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.

TABLE 2.3.4.3-11

RADIONUCLIDES WITH CONCENTRATIONS AT OR ABOVE BACKGROUND FALLOUT VALUES IN SURFACE SOIL AND DRAINAGES

Analyte	Media Code	Number of Samples Analyzed	Number of Detects	Concentration Range (pCi/g) [a]	Background Value/Fallout (pCi/g)	Frequency of Detects Above Background Value/Fallout [c]
Am-241	SOIL	2	0	[0.0015-0.261]	MDA [b]	0/2
	QBT1V	1	0	[0.0027]	MDA	0/1
	QBT2	27	0	[-0.0015-0.302]	MDA	0/27
	QBT3	44	0	[0.0014-0.439]	MDA	0/44
Cs-137	SOIL	2	0	[-0.0337-0.2084]	MDA	0/2
	QBT1V	1	0	[0.1568]	MDA	0/1
	QBT2	27	0	[-0.0618-0.2849]	MDA	0/27
	QBT3	44	0	[-0.0547-0.2035]	MDA	0/44
Pu-238	SOIL	2	0	[0.0039-0.0441]	MDA	0/2
	QBT1V	1	0	[0.0089]	MDA	0/1
	QBT2	27	0	[-0.0019-0.206]	MDA	0/27
	QBT3	44	0	[-0.0013-0.31]	MDA	0/44
Pu-239	SOIL	2	0	[0.0012-0.0049]	MDA	0/2
	QBT1V	1	0	[0.0011]	MDA	0/1
	QBT2	27	0	[-0.0047-0.0185]	MDA	0/27
	QBT3	44	0	[-0.0007-0.0107]	MDA	0/44
Sr-90	SOIL	2	0	[0.012-0.255]	MDA	0/2
	QBT1V	1	0	[-0.07]	MDA	0/1
	QBT2	27	2	[-1.27]-4.4	MDA	2/27
	QBT3	44	3	[-0.7]-4.03	MDA	3/44

[a] Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.

[b] MDA= minimum detectable activity.

TABLE 2.3.4.3-14

RADIONUCLIDED WITH CONCENTRATIONS AT OR ABOVE BACKGROUND/ FALLOUT VALUES IN SUBSURFACE SOIL AND TUFF[a]

Analyte	Location ID	Sample ID	Sample Concentration (pCi/g)	Background Value (pCi/g)	Media Code	Depth (feet)
SR-90	73-01008	AAC0951	4.4 (J-)	MDA[b]	QBT2	100-102.5
	73-01011	AAC1625	2.8 (J-)			120-122.5
	73-01002	AAB7573	1.83 (J-)		QBT3	32.5-35
	73-01008	AAC0945	4.03 (J-)			22.5-25
	73-01011	AAC1621	2.13 (J)			55-57.5

[a] Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.
[b] Minimum detectable activity.

TABLE 2.3.4.3-17

DETECTED ORGANIC CHEMICALS IN SURFACE SOIL AND DRAINAGES

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (in)
Acenapthene	73-02154	0173-96-0105	0.054 (J)	Soil	10-20
	73-02156	0173-96-0107	0.043 (J)	Soil	0-10
	73-02157	0173-96-0108	0.044 (J)	Soil	3-10
	73-02158	0173-96-0109	0.64	Soil	0-10
Anthracene	73-02154	0173-96-0105	0.13 (J)	Soil	10-20
	73-02155	0173-96-0106	0.035 (J)	Soil	0-15
	73-02156	0173-96-0107	0.094 (J)	Soil	0-10
	73-02157	0173-96-0108	0.089 (J)	Soil	3-10
	73-02158	0173-96-0109	0.94	Soil	0-10
	73-02163	0173-96-0118	0.044 (J)	Soil	0-12
	73-02176	0173-96-0128	0.2 (J)	Soil	0-6
Aroclor-1254	73-02163	0173-96-0114	0.12	Soil	0-12
	73-02163	0173-96-0118	0.077	Soil	0-12
	73-02171	0173-96-0130	2	Soil	0-2
	73-02171	0173-96-0131	7.6	Soil	0-2
	73-02173	0173-96-0121	0.081	Soil	0-3
Aroclor-1260	73-02151	0173-96-0101	0.055	Soil	0-8
	73-02155	0173-96-0106	0.089	Soil	0-15
	73-02173	0173-96-0121	0.13	Soil	0-3
Benzo(a)anthracene	73-02154	0173-96-0105	0.29 (J)	Soil	10-20
	73-02155	0173-96-0106	0.094 (J)	Soil	0-15
	73-02156	0173-96-0107	0.26 (J)	Soil	0-10
	73-02157	0173-96-0108	0.3 (J)	soil	3-10
	73-02158	0173-96-0109	1.6	Soil	0-10
	73-02162	0173-96-0113	0.036 (J)	Soil	0-12
	73-02163	0173-96-0114	0.081 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.11 (J)	Soil	0-12
	73-02174	0173-96-0122	0.24 (J)	Soil	0-5
	73-02176	0173-96-0128	0.41 (J)	Soil	0-6
Benzo(a)pyrene	73-02154	0173-96-0105	0.34 (J)	Soil	10-20
	73-02155	0173-96-0106	0.11 (J)	Soil	0-15
	73-02156	0173-96-0107	0.31 (J)	Soil	0-10
	73-02157	0173-96-0108	0.37	Soil	3-10
	73-02158	0173-96-0109	1.4	Soil	0-10
	73-02174	0173-96-0122	0.24 (J)	Soil	0-5
	73-02176	0173-96-0128	0.44 (J)	Soil	0-6
Benzo(b)fluoranthene	73-02154	0173-96-0105	0.25 (J)	Soil	10-20
	73-02155	0173-96-0106	0.072 (J)	Soil	0-15
	73-02156	0173-96-0107	0.23 (J)	Soil	0-10
	73-02157	0173-96-0108	0.31 (J)	Soil	3-10

TABLE 2.3.4.3-17 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (in)
	73-02158	0173-96-0109	1.4	Soil	0-10
	73-02163	0173-96-0114	0.095 (J-)	Soil	0-12
	73-02174	0173-96-0122	0.2 (J)	Soil	0-5
	73-02176	0173-96-0128	0.28 (J)	Soil	0-6
Benzo(g,h,i)perylene	73-02154	0173-96-0105	0.23 (J)	Soil	10-20
	73-02155	0173-96-0106	0.091 (J)	Soil	0-15
	73-02156	0173-96-0107	0.26 (J)	Soil	0-10
	73-02157	0173-96-0108	0.25 (J)	Soil	3-10
	73-02158	0173-96-0109	0.92	Soil	0-10
	73-02176	0173-96-0128	0.37 (J)	Soil	0-6
Benzo(k)fluoranthene	73-02154	0173-96-0105	0.28 (J)	Soil	10-20
	73-02155	0173-96-0106	0.089 (J)	Soil	0-15
	73-02156	0173-96-0107	0.25 (J)	Soil	0-10
	73-02157	0173-96-0108	0.28 (J)	Soil	3-10
	73-02158	0173-96-0109	1.4	Soil	0-10
	73-02163	0173-96-0114	0.065 (J-)	Soil	0-12
	73-02174	0173-96-0122	0.2 (J)	Soil	0-5
	73-02176	0173-96-0128	0.4 (J)	Soil	0-6
Bis(2-ethylhexyl)phthalate	73-02159	0173-96-0110	0.37 (J)	Soil	0-6
	73-02163	0173-96-0118	0.04 (J)	Soil	0-12
	73-02173	0173-96-0121	0.84 (J)	Soil	0-3
Chlordane[alpha-]	73-02163	0173-96-0114	0.0056	Soil	0-12
	73-02163	0173-96-0118	0.0074	Soil	0-12
Chlordane[gamma-]	73-02158	0173-96-0109	0.0044	Soil	0-10
	73-02163	0173-96-0114	0.013	Soil	0-12
	73-02163	0173-96-0118	0.015	Soil	0-12
Chrysene	73-02154	0173-96-0105	0.33 (J)	Soil	10-20
	73-02155	0173-96-0106	0.11 (J)	Soil	0-15
	73-02156	0173-96-0107	0.31 (J)	Soil	0-10
	73-02157	0173-96-0108	0.34 (J)	Soil	3-10
	73-02158	0173-96-0109	1.8	Soil	0-10
	73-02163	0173-96-0114	0.087 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.11 (J)	Soil	0-12
	73-02174	0173-96-0122	0.29 (J)	Soil	0-5
	73-02176	0173-96-0128	0.47 (J)	Soil	0-6
DDE [4,4-]	73-02157	0173-96-0108	0.0036	Soil	3-10

TABLE 2.3.4.3-17 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (in)
DDT[4,4-]	73-02155	0173-96-0106	0.0067	Soil	0-15
	73-02156	0173-96-0107	0.0093	Soil	0-10
	73-02157	0173-96-0108	0.019	Soil	3-10
	73-02158	0173-96-0109	0.038	Soil	0-10
	73-02162	0173-96-0113	0.0035	Soil	0-12
	73-02163	0173-96-0114	0.048	Soil	0-12
	73-02163	0173-96-0118	0.057	Soil	0-12
	73-02173	0173-96-0121	0.0069	Soil	0-3
	73-02176	0173-96-0128	0.031	Soil	0-6
Di-n-butylphthalate	73-02163	0173-96-0118	0.93	Soil	0-12
Dibenz(a,h)anthracene	73-02154	0173-96-0105	0.072 (J)	Soil	10-20
	73-02157	0173-96-0108	0.1 (J)	soil	3-10
	73-02158	0173-96-0109	0.24 (J)	Soil	0-10
Dibenzofuran	73-02158	0173-96-0109	0.29 (J)	Soil	0-10
Dichloroethane[1,1-]	73-02171	0173-96-0130	0.002 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.002 (J-)	Soil	0-2
Fluoranthene	73-02154	0173-96-0104	0.043 (J)	Soil	0-10
	73-02154	0173-96-0105	0.57	Soil	10-20
	73-02155	0173-96-0106	0.21 (J)	Soil	0-15
	73-02156	0173-96-0107	0.57	Soil	0-10
	73-02157	0173-96-0108	0.58	Soil	3-10
	73-02158	0173-96-0109	3.8	Soil	0-10
	73-02162	0173-96-0113	0.05 (J)	Soil	0-12
	73-02163	0173-96-0114	0.13 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.18 (J)	Soil	0-12
	73-02173	0173-96-0121	0.11 (J)	Soil	0-3
	73-02174	0173-96-0122	0.66 (J)	Soil	0-5
	73-02176	0173-96-0128	0.98 (J)	Soil	0-6
Fluorene	73-02154	0173-96-0105	0.065 (J)	Soil	10-20
	73-02156	0173-96-0107	0.047 (J)	Soil	0-10
	73-02158	0173-96-0109	0.52	Soil	0-10
Indeno(1,2,3-cd)pyrene	73-02154	0173-96-0105	0.21 (J)	Soil	10-20
	73-02155	0173-96-0106	0.073 (J)	Soil	0-15
	73-02156	0173-96-0107	0.21 (J)	Soil	0-10
	73-02157	0173-96-0108	0.21 (J)	Soil	3-10
	73-02158	0173-96-0109	0.85	Soil	0-10
	73-02176	0173-96-0128	0.3 (J)	Soil	0-6
Methoxychlor[4,4-]	73-02171	0173-96-0130	2.1	Soil	0-2
	73-02171	0173-96-0131	0.69	Soil	0-2
Methylnaphthalene[2-]	73-02158	0173-96-0109	0.085 (J)	Soil	0-10

TABLE 2.3.4.3-17 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (mg/kg)	Media	Depth (in)
Naphthalene	73-02158	0173-96-0109	0.43	Soil	0-10
Phenanthrene	73-02154	0173-96-0105	0.49	Soil	10-20
	73-02155	0173-96-0106	0.14 (J)	Soil	0-15
	73-02156	0173-96-0107	0.38	Soil	0-10
	73-02157	0173-96-0108	0.35 (J)	Soil	3-10
	73-02158	0173-96-0109	3	Soil	0-10
	73-02163	0173-96-0114	0.06 (J)	Soil	0-12
	73-02163	0173-96-0118	0.14 (J)	Soil	0-12
	73-02174	0173-96-0122	0.6 (J)	Soil	0-5
	73-02176	0173-96-0128	0.87 (J)	Soil	0-6
Pyrene	73-02154	0173-96-0105	0.53	Soil	10-20
	73-02155	0173-96-0106	0.17 (J)	Soil	0-15
	73-02156	0173-96-0107	0.46	Soil	0-10
	73-02157	0173-96-0108	0.56	Soil	3-10
	73-02158	0173-96-0109	2.7	Soil	0-10
	73-02162	0173-96-0113	0.06 (J)	Soil	0-12
	73-02163	0173-96-0114	0.13 (J-)	Soil	0-12
	73-02163	0173-96-0118	0.27 (J)	Soil	0-12
	73-02173	0173-96-0121	0.11 (J)	Soil	0-3
	73-02174	0173-96-0122	0.54 (J)	Soil	0-5
	73-02176	0173-96-0128	0.95 (J)	Soil	0-6
Tetrachloroethene	73-02171	0173-96-0130	0.018 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.01 (J-)	Soil	0-2
Toluene	73-02171	0173-96-0130	0.002 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.002 (J-)	Soil	0-2
Trichloroethane[1,1,1-]	73-02171	0173-96-0130	0.13 (J-)	Soil	0-2
	73-02171	0173-96-0131	0.1 (J-)	Soil	0-2

a. Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.

TABLE 2.3.4.3-20

DETECTED ORGANIC CHEMICALS IN SUBSURFACE SOIL AND TUFF[a]

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Media Code	Depth (ft)
Acetone	73-01002	AAB7484	0.057	SOIL	2.5-5
	73-01007	AAC1612	0.055	QBT2	77.5-80
	73-01010	AAC0956	0.021		87.5-90
	73-01010	AAC1601	0.024		127.5-130
	73-01010	AAC0953	0.19	QBT3	17.5-20
	73-02051	0173-95-0171	0.36 (J-)		28-29.3
	73-02052	0173-95-0172	0.46		26-27.5
	73-02055	0173-95-0175	0.089 (J-)		20.5-21.5
	73-02056	0173-95-0176	0.2		55.5-56.5
	73-02064	0173-95-0183	0.052		27-28
	73-02065	0173-95-0184	0.017 (J)		17-18
	73-02066	0173-95-0185	0.13		13.5-14.5
	73-02070	0173-95-0188	0.015 (J)		22.5-23.5
	73-02425	0173-97-0064	0.026		30-31
	73-02425	0173-97-0065	0.005 (J)		35-36
	73-02427	0173-97-0067	0.056		20.5-21.5
	73-02427	0173-97-0068	0.032		25.5-26.5
	73-02428	0173-97-0069	0.052		25.5-26.5
	73-02428	0173-97-0070	0.052		25.5-26.5
	73-02428	0173-97-0071	0.024		31.5-32.5
Benzene	73-02062	0173-95-0180	0.001 (J)	QBT3	74-75
Benzo(a)anthracene	73-02425	0173-97-0064	0.22 (J)	QBT3	30-31
Benzo(a)pyrene	73-02425	0173-97-0064	0.093 (J)	QBT3	30-31
Benzo(b)fluoranthene	73-02425	0173-97-0064	0.2 (J)	QBT3	30-31
Bis(2-ethylhexyl)phthalate	73-01003	AAB7483	1.4	QBT2	97.5-100
	73-01006	AAB7578	14	QBT3	12.5-15
	73-01007	AAC1606	4.4		22.5-25
	73-01007	AAC1607	0.45		27.5-30
	73-02421	0173-97-0061	0.077 (J)		37-37.5
Butanone [2-]	73-02051	0173-95-0171	0.036 (J-)	QBT3	28-29.3
	73-02052	0173-95-0172	0.017 (J)		26-27.5
	73-02055	0173-95-0175	0.009 (J-)		20.5-21.5
	73-02056	0173-95-0176	0.027		55.5-56.5
	73-02066	0173-95-0185	0.05		13.5-14.5
	73-02425	0173-97-0064	0.009 (J)		30-31
	73-02425	0173-97-0065	0.001 (J)		35-36
	73-02427	0173-97-0067	0.13		20.5-21.5
	73-02427	0173-97-0068	0.067		25.5-26.5

[a] Descriptions of the analytical methods used for the Landfill can be found in Appendix C-1, Table C-1.0-1. Detection limits can be found in Appendix D, Table D-1.0-1.

TABLE 2.3.4.3-20 (continued)

Analyte	Location ID	Sample ID	Sample Concentration (mg/kg)	Media Code	Depth (ft)
Butylbenzene [n-]	73-02055	0173-95-0175	0.003	QBT3	20.5-21.5
Carbon Disulfide	73-02055	0173-95-0175	0.005	QBT3	20.5-21.5
Chlordane [alpha-]	73-02428	0173-97-0070	0.0045	QBT3	25.5-26.5
Chlordane [gamma-]	73-02428	0173-97-0070	0.008	QBT3	25.5-26.5
Chloromethane	73-02423	0173-97-0062	0.004 (J)	QBT3	32-33
Chrysene	73-02425	0173-97-0064	0.15 (J)	QBT3	30-31
Dichlorobenzene [1,4-]	73-02066	0173-95-0185	0.009	QBT3	13.5-14.5
Dichloroethene [cis-1,2-]	73-02066	0173-95-0185	0.015	QBT3	13.5-14.5
Ethylbenzene	73-02066	0173-95-0185	0.003 (J)	QBT3	13.5-14.5
Fluoranthene	73-02425	0173-97-0064	0.24 (J)	QBT3	30-31
Isopropyltoluene [4-]	73-02051	0173-95-0171	0.11 (J-)	QBT3	28-29.3
	73-02055	0173-95-0175	0.031 (J-)		20.5-21.5
	73-02056	0173-95-0176	0.004 (J)		55.5-56.5
Methyl-2-pentanone [4-]	73-02051	0173-95-0171	0.005 (J-)	QBT3	28-29.3
	73-02063	0173-95-0181	0.005 (J)		75-76
Methylene Chloride	73-02423	0173-97-0062	0.004 (J)	QBT3	32-33
	73-02424	0173-97-0063	0.004 (J)		36-37
	73-02425	0173-97-0065	0.011		35-36
Phenanthrene	73-02425	0173-97-0064	0.13 (J)	QBT3	30-31
Pyrene	73-02425	0173-97-0064	0.32 (J)	QBT3	30-31
	73-02425	0173-97-0065	0.15 (J)		35-36
Toluene	73-02051	0173-95-0171	0.003 (J-)	QBT3	28-29.3
Trichloroethene	73-02425	0173-97-0064	0.003 (J)	QBT3	30-31
Trimethylbenzene [1,2,4-]	73-02051	0173-95-0171	0.004	QBT3	28-29.3
	73-02055	0173-95-0175	0.003 (J-)		20.5-21.5
	73-02066	0173-95-0185	0.01		13.5-14.5
Trimethylbenzene [1,3,5-]	73-02066	0173-95-0185	0.003 (J)	QBT3	13.5-14.5
Xylene (Total)	73-02066	0173-95-0185	0.013	QBT3	13.5-14.5

[a] Descriptions of the analytical methods used for the landfill can be found in Appendix C; detection limits can be found in Appendix D.

TABLE 2.3.4.3-23

DETECTED ORGANIC CHEMICALS IN SOIL PORE WATER[a]

Analyte	Location Id	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Acetone	73-01004	0173-95-0036	20 (J)	water	34.4
	73-01004	0173-96-0527	23	water	34.4
	73-01005	0173-95-0102	54	water	10.7
	73-01005	0173-96-0063	5 (J)	water	10.7
	73-01005	0173-96-0523	11 (J)	water	10.7
	73-01005	0173-96-0653	7 (J)	water	10.7
	73-01005	AAC4159	22	water	10.7
	73-01007	0173-95-0103	8 (J)	water	55
	73-01007	0173-96-0451	10 (J)	water	55
	73-01007	0173-96-0521	8.2 (J)	water	55
	73-01007	0173-96-0651	8 (J)	water	55
	73-01007	AAC4161	24	water	55
	73-01009	0173-95-0104	5 (J)	water	26
	73-01009	0173-96-0062	4 (J)	water	26
	73-01009	0173-96-0196	6 (J)	water	26
	73-01009	0173-96-0452	4 (J)	water	26
	73-01009	0173-96-0522	8.4 (J)	water	26
	73-01009	0173-96-0652	5 (J)	water	26
	73-01011	AAC4163	45	water	20.2
	73-02426	0173-97-0082	88	water	23.3
	73-02426	0173-97-0083	17000	water	23.3
	73-02426	0173-97-0212	16000	water	23.3
	73-02426	0173-97-0214	6700	water	23.3
	73-02428	0173-97-0211	110	water	28.8
	73-02428	0173-97-0213	730	water	28.8
	73-02429	0173-97-0081	25	water	76
Benzene	73-01004	0173-95-0036	3 (J)	water	34.4
	73-01007	0173-95-0103	5	water	55
	73-01007	0173-96-0451	3 (J)	water	55
	73-01007	0173-96-0524	2 (J)	water	55
	73-01007	AAC4161	6	water	55
	73-02426	0173-97-0082	2.8 (J)	water	23.3
	73-02426	0173-97-0214	5	water	23.3
Butanone[2-]	73-02426	0173-97-0082	8.7 (J)	water	23.3
	73-02426	0173-97-0083	670	water	23.3
	73-02426	0173-97-0212	1000	water	23.3
	73-02426	0173-97-0214	630	water	23.3
	73-02428	0173-97-0211	150	water	28.8
	73-02428	0173-97-0213	1500	water	28.8
	73-02429	0173-97-0081	5.9 (J)	water	76

TABLE 2.3.4.3-23 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Butylbenzene[tert-]	73-02428	0173-97-0361	4.5	water	28.8
Carbon Disulfide	73-01004	0173-95-0036	9	water	34.4
	73-01004	0173-96-0527	21	water	34.4
	73-01005	0173-95-0102	6	water	10.7
	73-01005	0173-96-0063	3 (J)	water	10.7
	73-01005	0173-96-0653	6	water	10.7
	73-01007	0173-95-0103	23	water	55
	73-01007	0173-96-0524	5.5	water	55
	73-01007	0173-96-0651	8	water	55
	73-01007	AAC4161	10	water	55
	73-01009	0173-95-0040	4 (J)	water	26
	73-01009	0173-95-0104	3 (J)	water	26
	73-01009	0173-96-0062	3 (J)	water	26
	73-01009	0173-96-0525	2 (J)	water	26
	73-01009	AAC4162	5	water	26
	73-02426	0173-97-0082	5.8	water	23.3
	73-02426	0173-97-0212	78	water	23.3
	73-02426	0173-97-0214	83	water	23.3
	73-02428	0173-97-0211	6	water	28.8
	73-02428	0173-97-0213	20	water	28.8
	73-02428	0173-97-0361	3.6	water	28.8
Chloromethane	73-02426	0173-97-0082	8.4 (J)	water	23.3
	73-02429	0173-97-0081	4.2 (J)	water	76
Dichlorobenzene [1,3-]	73-01007	0173-96-0651	2 (J)	water	55
	73-02428	0173-97-0211	10	water	28.8
Dichlorobenzene [1,4-]	73-01007	0173-96-0524	2 (J)	water	55
	73-01007	0173-96-0651	2 (J)	water	55
	73-02426	0173-97-0082	8.1	water	23.3
	73-02426	0173-97-0083	9	water	23.3
	73-02426	0173-97-0212	15	water	23.3
	73-02426	0173-97-0214	23	water	23.3
	73-02428	0173-97-0213	11	water	28.8
	73-02428	0173-97-0361	9	water	28.8
Dichloroethane[1,2-]	73-02426	0173-97-0082	11	water	23.3
	73-02429	0173-97-0081	4.8 (J)	water	76

TABLE 2.3.4.3-23 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Dichloroethene [cis-1,2-]	73-01004	0173-95-0036	7	water	34.4
	73-01004	0173-96-0527	11	water	34.4
	73-01007	0173-95-0103	20	water	55
	73-01007	0173-96-0451	21	water	55
	73-01007	0173-96-0521	18	water	55
	73-01007	0173-96-0524	25	water	55
	73-01007	0173-96-0651	40	water	55
	73-02426	0173-97-0082	57	water	23.3
	73-02426	0173-97-0083	50	water	23.3
	73-02426	0173-97-0212	74	water	23.3
	73-02426	0173-97-0214	90	water	23.3
Dichloroethene [cis/trans-1,2-]	73-01007	AAC4161	18	water	55
	73-01011	AAC4163	27	water	20.2
Dichloroethene [trans-1,2-]	73-01007	0173-96-0451	21	water	55
Ethylbenzene	73-02426	0173-97-0082	12	water	23.3
	73-02426	0173-97-0212	21	water	23.3
	73-02426	0173-97-0214	32	water	23.3
	73-02428	0173-97-0211	9	water	28.8
	73-02428	0173-97-0213	12	water	28.8
	73-02428	0173-97-0361	6.3	water	28.8
Hexanone[2-]	73-02426	0173-97-0212	48	water	23.3
	73-02426	0173-97-0214	50	water	23.3
Iodomethane	73-01004	0173-96-0527	1 (J)	water	34.4
Isopropyltoluene[4-]	73-02426	0173-97-0082	2.8 (J)	water	23.3
	73-02428	0173-97-0213	6	water	28.8
	73-02428	0173-97-0361	3.3	water	28.8
Methyl-2-pentanone[4-]	73-02428	0173-97-0213	44	water	28.8
Tetrachloroethene	73-01005	0173-96-0526	1 (J)	water	10.7
Toluene	73-01005	0173-96-0526	1 (J)	water	10.7
	73-02428	0173-97-0211	7	water	28.8
	73-02428	0173-97-0213	11	water	28.8
	73-02428	0173-97-0361	4.7	water	28.8

TABLE 2.3.4.3-23 (continued)

Analyte	Location Id	Sample Id	Sample Concentration (µg/l)	Media Code	Depth (ft)
Trimethylbenzene [1,2,4-]	73-02426	0173-97-0082	4.7 (J)	water	23.3
	73-02426	0173-97-0083	6	water	23.3
	73-02426	0173-97-0212	11	water	23.3
	73-02426	0173-97-0214	15	water	23.3
	73-02428	0173-97-0211	10	water	28.8
	73-02428	0173-97-0213	12	water	28.8
	73-02428	0173-97-0361	7.8	water	28.8
Xylene (Total)	73-02426	0173-97-0082	15	water	23.3
	73-02426	0173-97-0083	15	water	23.3
	73-02426	0173-97-0212	34	water	23.3
	73-02426	0173-97-0214	46	water	23.3
	73-02428	0173-97-0211	29	water	28.8
	73-02428	0173-97-0213	39	water	28.8
	73-02428	0173-97-0361	18.7	water	28.8
Xylene[1,2-]	73-02426	0173-97-0082	7.9	water	23.3

[a] Descriptions of the analytical methods used for the Landfill can be found in Appendix C; detection limits can be found in Appendix D.

Table 6.
Summary of Samples Collected for Post-Removal Sampling

Sample ID	Depth (ft)	Description of Media	Analysis Codes	Method References
LANL-WR-SS-1	0-0.58	Sand	1, 2, 3, 4, 5, 6, 7*	A, B, C, D, E, F, G**
LANL-WR-SS-2	0-1.2	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-3	0.1.2	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-4	0-0.58	Sand w/silt	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-5	0-0.51	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-6	0-0.5	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-7	0-0.63	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-8	0-0.5	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-9	0-0.5	Sand w/loam	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-10	0-0.48	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-11	0-0.71	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-12	0-0.48	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-13	0-0.42	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-14	0-0.42	Silty Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-15	0-0.42	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-16	0-0.38	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-17	0-0.75	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-18	0-0.58	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-19	0-0.50	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-20	0-0.33	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-21	0-0.33	Sandy Silt w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-22	0-0.33	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-23	0-0.30	Sandy Silt w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-24	0-0.75	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-25	0-0.33	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-26	0-0.33	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-27	0-0.42	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-28	0-0.58	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-29	0-1.25	Sandy Clay w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-30	0-0.71	Sandy Clay w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-31	0-0.42	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-32	0-0.42	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-33	0-0.33	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-34	0-0.50	Silty Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-35	0-0.33	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-36	0-0.38	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-37	0-0.25	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-38	0-0.42	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-39	0-0.67	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-40	0-0.67	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-41	0-0.29	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-42	0-0.75	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G

* Analysis Codes are defined in Table 7
** Analysis Types are defined in Table 7

Table 6 (cont.).
Summary of Samples Collected for Post-Removal Sampling

Sample ID	Depth (ft)	Description of Media	Analysis Codes	Method References
LANL-WR-SS-43	0-0.50	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-44	0-0.46	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-45	0-1.20	Clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-46	0-0.42	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-47	0-0.58	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-48	0-0.50	Silty Clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-49	0-0.67	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-50	0-0.42	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-51	0-0.38	Sandy Clay w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-52	0-0.58	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-53	0-0.38	Silty Clay w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-54	0-0.33	Silty Clay w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-55	0-0.42	Silty Clay w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-56	0-0.42	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-57	0-0.33	Silty Sand w/clay	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-58	0-0.42	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-59	0-0.54	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-60	0-0.38	Silty Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-61 (Dup SS-32)	0-0.42	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-62 (Dup SS-47)	0-0.58	Silty Clay w/sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-63 (Dup SS-17)	0-0.75	Sand w/gravel	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-64 (Dup SS-01)	0-0.58	Sand	1, 2, 3, 4, 5, 6, 7	A, B, C, D, E, F, G
LANL-WR-SS-65	Field Blank	N/A	8, 9, 10, 11, 12, 13	H, I, J, K, L, M, N
LANL-WR-SS-66	Field Blank	N/A	8, 9, 10, 11, 12, 13	H, I, J, K, L, M, N
LANL-WR-SS-67	Field Blank	N/A	8, 9, 10, 11, 12, 13	H, I, J, K, L, M, N

Table 7.
Analyses Performed and Analytical Methods Used for Post-Removal Sampling

Analysis Request	*Matrix	Analysis Code	Method
Semivolatile Organic Compounds	Solid	1	A - USEPA 3550B, 8270C
Total Metals	Solid	2	B - USEPA 3050B, 6010B, 6020, 7000 series
PCB/Pesticides	Solid	3	C - USEPA 3550B, 8081A/8082
Perchlorates	Solid	4	D - USEPA 314
^{137}Cs	Solid	5	E - USEPA 901

Table 7.
Analyses Performed and Analytical Methods Used for Post-Removal Sampling

Analysis Request	*Matrix	Analysis Code	Method
^{90}Sr	Solid	6	F - USEPA 905
^{239}Pu	Solid	7	G - DOE A-01-RC
**TPH (Diesel and Motor Oil)	Solid	N/A	USEPA 3550B, 3630C, 8015B
Semivolatile Organic Compounds	Field Blank	8	H - USEPA 3520C, 8270C
Total Metals	Field Blank	9	I - USEPA 3010A, 6010B, 6020, 7000 series
PCB/Pesticides	Field Blank	10	J - USEPA 3520C, 8081A/8082
Perchlorates	Field Blank	11	K - USEPA 314
^{137}Cs	Field Blank	12	L - USEPA 901
^{90}Sr	Field Blank	13	M - USEPA 905
^{239}Pu	Field Blank	14	N - DOE A-01-RC

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Radionuclide	Activity (pCi/g)	TPU (pCi/g)	MDC (pCi/g)	Laboratory & Validation Flags	Background Value (pCi/g)	Soil Screening Level (pCi/g)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-1	A	Cesium 137	7.48E-01	7.70E-02	1.00E-01		9.00E-01	5.10E+00	-1.52E-01	-4.35E+00	No
LANL-WR-SS-10	A	Cesium 137	6.34E-01	7.30E-02	1.20E-01		9.00E-01	5.10E+00	-2.66E-01	-4.47E+00	No
LANL-WR-SS-11	A	Cesium 137	6.78E-01	7.70E-02	1.20E-01		9.00E-01	5.10E+00	-2.22E-01	-4.42E+00	No
LANL-WR-SS-14	A	Cesium 137	9.90E-01	1.10E-01	1.20E-01		9.00E-01	5.10E+00	9.00E-02	-4.11E+00	No
LANL-WR-SS-15	A	Cesium 137	5.77E-01	8.20E-02	1.40E-01		9.00E-01	5.10E+00	-3.23E-01	-4.52E+00	No
LANL-WR-SS-2	A	Cesium 137	1.16E+00	1.10E-01	1.30E-01		9.00E-01	5.10E+00	2.60E-01	-3.94E+00	No
LANL-WR-SS-3	A	Cesium 137	2.58E-01	5.20E-02	7.80E-02		9.00E-01	5.10E+00	-6.42E-01	-4.84E+00	No
LANL-WR-SS-4	A	Cesium 137	5.34E-01	6.70E-02	9.80E-02		9.00E-01	5.10E+00	-3.66E-01	-4.57E+00	No
LANL-WR-SS-5	A	Cesium 137	6.25E-01	7.50E-02	1.10E-01		9.00E-01	5.10E+00	-2.75E-01	-4.48E+00	No
LANL-WR-SS-6	A	Cesium 137	1.47E-01	3.30E-02	7.90E-02		9.00E-01	5.10E+00	-7.53E-01	-4.95E+00	No
LANL-WR-SS-64	A (Dup SS-1)	Cesium 137	4.70E-01	1.30E-01	9.00E-02		9.00E-01	5.10E+00	-4.30E-01	-4.63E+00	No
LANL-WR-SS-7	A	Cesium 137	8.38E-01	9.40E-02	1.10E-01		9.00E-01	5.10E+00	-6.20E-02	-4.26E+00	No
LANL-WR-SS-8	A	Cesium 137	7.93E-01	9.40E-02	1.30E-01		9.00E-01	5.10E+00	-1.07E-01	-4.31E+00	No
LANL-WR-SS-9	A	Cesium 137	1.21E-01	3.70E-02	9.80E-02		9.00E-01	5.10E+00	-7.79E-01	-4.98E+00	No
LANL-WR-SS-16	B	Cesium 137	1.46E-01	3.30E-02	7.60E-02		9.00E-01	5.10E+00	-7.54E-01	-4.95E+00	No
LANL-WR-SS-18	B	Cesium 137	2.40E-01	3.50E-02	6.60E-02		9.00E-01	5.10E+00	-6.60E-01	-4.86E+00	No
LANL-WR-SS-21	B	Cesium 137	6.70E-01	9.60E-02	1.40E-01		9.00E-01	5.10E+00	-2.30E-01	-4.43E+00	No
LANL-WR-SS-22	B	Cesium 137	9.70E-01	1.00E-01	1.20E-01		9.00E-01	5.10E+00	7.00E-02	-4.13E+00	No
LANL-WR-SS-23	B	Cesium 137	4.09E-01	6.50E-02	1.40E-01		9.00E-01	5.10E+00	-4.91E-01	-4.69E+00	No
LANL-WR-SS-24	B	Cesium 137	1.47E-01	4.00E-02	8.40E-02		9.00E-01	5.10E+00	-7.53E-01	-4.95E+00	No
LANL-WR-SS-25	B	Cesium 137	1.50E-01	2.90E-02	6.60E-02		9.00E-01	5.10E+00	-7.50E-01	-4.95E+00	No
LANL-WR-SS-26	B	Cesium 137	5.40E-01	6.80E-02	1.20E-01		9.00E-01	5.10E+00	-3.60E-01	-4.56E+00	No
LANL-WR-SS-27	B	Cesium 137	5.05E-01	6.10E-02	9.40E-02		9.00E-01	5.10E+00	-3.95E-01	-4.60E+00	No
LANL-WR-SS-28	B	Cesium 137	4.20E-01	6.60E-02	1.20E-01		9.00E-01	5.10E+00	-4.80E-01	-4.68E+00	No
LANL-WR-SS-29	B	Cesium 137	4.18E-01	9.20E-02	1.30E-01		9.00E-01	5.10E+00	-4.82E-01	-4.68E+00	No
LANL-WR-SS-30	B	Cesium 137	3.43E-01	6.10E-02	1.30E-01		9.00E-01	5.10E+00	-5.57E-01	-4.76E+00	No
LANL-WR-SS-46	C	Cesium 137	7.38E-01	9.10E-02	1.20E-01	J	9.00E-01	5.10E+00	-1.62E-01	-4.36E+00	No
LANL-WR-SS-47	C	Cesium 137	8.17E-01	9.30E-02	1.20E-01	J	9.00E-01	5.10E+00	-8.30E-02	-4.28E+00	No
LANL-WR-SS-48	C	Cesium 137	1.90E-01	4.70E-02	1.00E-01	J	9.00E-01	5.10E+00	-7.10E-01	-4.91E+00	No
LANL-WR-SS-49	C	Cesium 137	2.02E-01	5.00E-02	1.30E-01	J	9.00E-01	5.10E+00	-6.98E-01	-4.90E+00	No
LANL-WR-SS-50	C	Cesium 137	3.66E-01	6.20E-02	1.20E-01	J	9.00E-01	5.10E+00	-5.34E-01	-4.73E+00	No
LANL-WR-SS-51	C	Cesium 137	5.33E-01	9.00E-02	1.40E-01	J	9.00E-01	5.10E+00	-3.67E-01	-4.57E+00	No
LANL-WR-SS-52	C	Cesium 137	1.58E-01	4.20E-02	1.40E-01	J	9.00E-01	5.10E+00	-7.42E-01	-4.94E+00	No
LANL-WR-SS-53	C	Cesium 137	8.65E-01	9.60E-02	1.20E-01	J	9.00E-01	5.10E+00	-3.50E-02	-4.24E+00	No
LANL-WR-SS-54	C	Cesium 137	9.22E-01	9.60E-02	1.40E-01	J	9.00E-01	5.10E+00	2.20E-02	-4.18E+00	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Radionuclide	Activity (pCi/g)	TPU (pCi/g)	MDC (pCi/g)	Laboratory & Validation Flags	Background Value (pCi/g)	Soil Screening Level (pCi/g)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-55	C	Cesium 137	5.28E-01	7.90E-02	1.40E-01	J	9.00E-01	5.10E+00	-3.72E-01	-4.57E+00	No
LANL-WR-SS-56	C	Cesium 137	1.84E-01	4.20E-02	8.80E-02	J	9.00E-01	5.10E+00	-7.16E-01	-4.92E+00	No
LANL-WR-SS-57	C	Cesium 137	7.41E-01	7.80E-02	9.00E-02	J	9.00E-01	5.10E+00	-1.59E-01	-4.36E+00	No
LANL-WR-SS-58	C	Cesium 137	4.00E-02	2.40E-02	9.10E-02	J	9.00E-01	5.10E+00	-8.60E-01	-5.06E+00	No
LANL-WR-SS-59	C	Cesium 137	1.58E-01	5.50E-02	1.20E-01	J	9.00E-01	5.10E+00	-7.42E-01	-4.94E+00	No
LANL-WR-SS-60	C	Cesium 137	2.50E-01	5.00E-02	1.30E-01	J	9.00E-01	5.10E+00	-6.50E-01	-4.85E+00	No
LANL-WR-SS-62	C (Dup SS-47)	Cesium 137	1.15E+00	1.20E-01	1.40E-01		9.00E-01	5.10E+00	2.50E-01	-3.95E+00	No
LANL-WR-SS-31	D2	Cesium 137	2.52E-01	4.80E-02	1.30E-01		9.00E-01	5.10E+00	-6.48E-01	-4.85E+00	No
LANL-WR-SS-33	D2	Cesium 137	4.81E-01	7.40E-02	1.40E-01		9.00E-01	5.10E+00	-4.19E-01	-4.62E+00	No
LANL-WR-SS-41	D2	Cesium 137	2.20E-01	4.90E-02	1.20E-01	J	9.00E-01	5.10E+00	-6.80E-01	-4.88E+00	No
LANL-WR-SS-42	D2	Cesium 137	2.60E-02	3.00E-02	1.20E-01	J	9.00E-01	5.10E+00	-8.74E-01	-5.07E+00	No
LANL-WR-SS-43	D2	Cesium 137	1.01E-01	3.00E-02	1.30E-01	J	9.00E-01	5.10E+00	-7.99E-01	-5.00E+00	No
LANL-WR-SS-45	D2	Cesium 137	1.60E-01	3.80E-02	1.00E-01	J	9.00E-01	5.10E+00	-7.40E-01	-4.94E+00	No
LANL-WR-SS-1	A	Plutonium 239/40	1.69E-01	3.00E-02	1.40E-02		6.80E-02	1.10E+02	1.01E-01	-1.10E+02	No
LANL-WR-SS-10	A	Plutonium 239/40	3.36E-01	4.10E-02	1.20E-02		6.80E-02	1.10E+02	2.68E-01	-1.10E+02	No
LANL-WR-SS-11	A	Plutonium 239/40	8.80E-02	2.30E-02	3.50E-02		6.80E-02	1.10E+02	2.00E-02	-1.10E+02	No
LANL-WR-SS-13	A	Plutonium 239/40	3.30E-02	1.30E-02	1.30E-02	J	6.80E-02	1.10E+02	-3.50E-02	-1.10E+02	No
LANL-WR-SS-14	A	Plutonium 239/40	2.41E-01	3.30E-02	1.20E-02		6.80E-02	1.10E+02	1.73E-01	-1.10E+02	No
LANL-WR-SS-15	A	Plutonium 239/40	2.12E-01	3.20E-02	1.20E-02		6.80E-02	1.10E+02	1.44E-01	-1.10E+02	No
LANL-WR-SS-2	A	Plutonium 239/40	1.73E-01	3.10E-02	1.50E-02		6.80E-02	1.10E+02	1.05E-01	-1.10E+02	No
LANL-WR-SS-3	A	Plutonium 239/40	7.10E-02	2.00E-02	2.90E-02		6.80E-02	1.10E+02	3.00E-03	-1.10E+02	No
LANL-WR-SS-4	A	Plutonium 239/40	6.10E-02	1.60E-02	1.10E-02		6.80E-02	1.10E+02	-7.00E-03	-1.10E+02	No
LANL-WR-SS-5	A	Plutonium 239/40	6.40E-02	1.70E-02	1.10E-02		6.80E-02	1.10E+02	-4.00E-03	-1.10E+02	No
LANL-WR-SS-6	A	Plutonium 239/40	3.00E-02	1.20E-02	1.20E-02	J	6.80E-02	1.10E+02	-3.80E-02	-1.10E+02	No
LANL-WR-SS-64	A (Dup SS-1)	Plutonium 239/40	8.90E-02	1.80E-02	1.90E-02		6.80E-02	1.10E+02	2.10E-02	-1.10E+02	No
LANL-WR-SS-7	A	Plutonium 239/40	1.27E-01	2.70E-02	3.00E-02		6.80E-02	1.10E+02	5.90E-02	-1.10E+02	No
LANL-WR-SS-8	A	Plutonium 239/40	1.22E-01	2.50E-02	1.40E-02		6.80E-02	1.10E+02	5.40E-02	-1.10E+02	No
LANL-WR-SS-16	B	Plutonium 239/40	1.61E-01	3.10E-02	1.60E-02		6.80E-02	1.10E+02	9.30E-02	-1.10E+02	No
LANL-WR-SS-17	B	Plutonium 239/40	1.26E-02	7.30E-03	1.10E-02	J	6.80E-02	1.10E+02	-5.54E-02	-1.10E+02	No
LANL-WR-SS-18	B	Plutonium 239/40	3.80E-02	1.50E-02	3.20E-02	J	6.80E-02	1.10E+02	-3.00E-02	-1.10E+02	No
LANL-WR-SS-20	B	Plutonium 239/40	2.35E-02	9.60E-03	1.10E-02	J	6.80E-02	1.10E+02	-4.45E-02	-1.10E+02	No
LANL-WR-SS-21	B	Plutonium 239/40	1.19E-01	2.20E-02	1.00E-02		6.80E-02	1.10E+02	5.10E-02	-1.10E+02	No
LANL-WR-SS-22	B	Plutonium 239/40	1.38E-01	2.50E-02	2.40E-02		6.80E-02	1.10E+02	7.00E-02	-1.10E+02	No
LANL-WR-SS-23	B	Plutonium 239/40	1.01E-01	2.00E-02	1.10E-02		6.80E-02	1.10E+02	3.30E-02	-1.10E+02	No
LANL-WR-SS-25	B	Plutonium 239/40	2.66E-02	9.40E-03	9.00E-03	J	6.80E-02	1.10E+02	-4.14E-02	-1.10E+02	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Radionuclide	Activity (pCi/g)	TPU (pCi/g)	MDC (pCi/g)	Laboratory & Validation Flags	Background Value (pCi/g)	Soil Screening Level (pCi/g)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-26	B	Plutonium 239/40	7.80E-02	1.80E-02	1.10E-02		6.80E-02	1.10E+02	1.00E-02	-1.10E+02	No
LANL-WR-SS-27	B	Plutonium 239/40	2.32E-01	3.40E-02	1.30E-02		6.80E-02	1.10E+02	1.64E-01	-1.10E+02	No
LANL-WR-SS-28	B	Plutonium 239/40	1.41E-01	2.40E-02	2.20E-02		6.80E-02	1.10E+02	7.30E-02	-1.10E+02	No
LANL-WR-SS-29	B	Plutonium 239/40	8.70E-02	2.00E-02	1.20E-02	J	6.80E-02	1.10E+02	1.90E-02	-1.10E+02	No
LANL-WR-SS-30	B	Plutonium 239/40	3.80E-02	1.10E-02	9.00E-03	J	6.80E-02	1.10E+02	-3.00E-02	-1.10E+02	No
LANL-WR-SS-46	C	Plutonium 239/40	5.63E-01	4.60E-02	9.00E-03	J	6.80E-02	1.10E+02	4.95E-01	-1.09E+02	No
LANL-WR-SS-47	C	Plutonium 239/40	2.35E-01	2.80E-02	8.00E-03	J	6.80E-02	1.10E+02	1.67E-01	-1.10E+02	No
LANL-WR-SS-48	C	Plutonium 239/40	2.20E-02	1.00E-02	2.20E-02	J	6.80E-02	1.10E+02	-4.60E-02	-1.10E+02	No
LANL-WR-SS-50	C	Plutonium 239/40	2.80E-02	1.60E-02	6.00E-03	J	6.80E-02	1.10E+02	-4.00E-02	-1.10E+02	No
LANL-WR-SS-51	C	Plutonium 239/40	1.28E-01	2.10E-02	9.00E-03		6.80E-02	1.10E+02	6.00E-02	-1.10E+02	No
LANL-WR-SS-52	C	Plutonium 239/40	2.33E-02	8.80E-03	9.00E-03	J	6.80E-02	1.10E+02	-4.47E-02	-1.10E+02	No
LANL-WR-SS-53	C	Plutonium 239/40	3.19E-01	3.80E-02	2.30E-02		6.80E-02	1.10E+02	2.51E-01	-1.10E+02	No
LANL-WR-SS-54	C	Plutonium 239/40	2.50E-01	3.10E-02	1.00E-02		6.80E-02	1.10E+02	1.82E-01	-1.10E+02	No
LANL-WR-SS-55	C	Plutonium 239/40	6.30E-02	1.50E-02	1.90E-02		6.80E-02	1.10E+02	-5.00E-03	-1.10E+02	No
LANL-WR-SS-56	C	Plutonium 239/40	6.60E-02	1.60E-02	1.00E-02		6.80E-02	1.10E+02	-2.00E-03	-1.10E+02	No
LANL-WR-SS-57	C	Plutonium 239/40	1.99E-01	2.60E-02	9.00E-03		6.80E-02	1.10E+02	1.31E-01	-1.10E+02	No
LANL-WR-SS-58	C	Plutonium 239/40	9.50E-02	1.70E-02	8.00E-03		6.80E-02	1.10E+02	2.70E-02	-1.10E+02	No
LANL-WR-SS-59	C	Plutonium 239/40	1.36E-01	2.10E-02	1.70E-02		6.80E-02	1.10E+02	6.80E-02	-1.10E+02	No
LANL-WR-SS-60	C	Plutonium 239/40	8.00E-02	1.60E-02	9.00E-03		6.80E-02	1.10E+02	1.20E-02	-1.10E+02	No
LANL-WR-SS-62	C (Dup SS-47)	Plutonium 239/40	1.80E-01	3.00E-02	1.30E-02		6.80E-02	1.10E+02	1.12E-01	-1.10E+02	No
LANL-WR-SS-31	D2	Plutonium 239/40	4.30E-02	1.50E-02	1.40E-02	J	6.80E-02	1.10E+02	-2.50E-02	-1.10E+02	No
LANL-WR-SS-32	D2	Plutonium 239/40	3.10E-02	1.20E-02	1.20E-02	J	6.80E-02	1.10E+02	-3.70E-02	-1.10E+02	No
LANL-WR-SS-33	D2	Plutonium 239/40	2.01E-01	2.60E-02	1.80E-02	J	6.80E-02	1.10E+02	1.33E-01	-1.10E+02	No
LANL-WR-SS-35	D2	Plutonium 239/40	2.42E-01	2.60E-02	7.00E-03	J	6.80E-02	1.10E+02	1.74E-01	-1.10E+02	No
LANL-WR-SS-36	D2	Plutonium 239/40	1.16E-02	5.80E-03	7.80E-03	J	6.80E-02	1.10E+02	-5.64E-02	-1.10E+02	No
LANL-WR-SS-37	D2	Plutonium 239/40	6.30E-02	1.40E-02	8.00E-03	J	6.80E-02	1.10E+02	-5.00E-03	-1.10E+02	No
LANL-WR-SS-38	D2	Plutonium 239/40	1.39E-01	2.10E-02	1.60E-02	J	6.80E-02	1.10E+02	7.10E-02	-1.10E+02	No
LANL-WR-SS-39	D2	Plutonium 239/40	9.20E-03	5.30E-03	8.30E-03	J	6.80E-02	1.10E+02	-5.88E-02	-1.10E+02	No
LANL-WR-SS-40	D2	Plutonium 239/40	8.20E-03	4.70E-03	7.40E-03	J	6.80E-02	1.10E+02	-5.98E-02	-1.10E+02	No
LANL-WR-SS-41	D2	Plutonium 239/40	7.20E-02	1.50E-02	8.00E-03	J	6.80E-02	1.10E+02	4.00E-03	-1.10E+02	No
LANL-WR-SS-42	D2	Plutonium 239/40	3.32E-01	3.90E-02	2.80E-02	J	6.80E-02	1.10E+02	2.64E-01	-1.10E+02	No
LANL-WR-SS-43	D2	Plutonium 239/40	6.80E-02	1.40E-02	1.60E-02	J	6.80E-02	1.10E+02	0.00E+00	-1.10E+02	No
LANL-WR-SS-44	D2	Plutonium 239/40	3.90E-02	1.10E-02	8.00E-03	J	6.80E-02	1.10E+02	-2.90E-02	-1.10E+02	No
LANL-WR-SS-45	D2	Plutonium 239/40	9.70E-02	1.80E-02	8.00E-03	J	6.80E-02	1.10E+02	2.90E-02	-1.10E+02	No
LANL-WR-SS-61	D2 (Dup SS-32)	Plutonium 239/40	1.21E-02	6.10E-03	8.20E-03	J	6.80E-02	1.10E+02	-5.59E-02	-1.10E+02	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-10	A	[3] Endrin aldehyde	0.0033	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-10	A	[3] Endrin ketone	0.0078	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-10	A	4,4'-DDE	0.011	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-10	A	Aroclor 1254	1.3	D	N/A	1.1	N/A	0.2	Yes
LANL-WR-SS-10	A	gamma-Chlordane	0.005	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-11	A	Aroclor 1254	0.065		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-14	A	[1] Methoxychlor	0.009	PJ	N/A	3100	N/A	-3100.0	No
LANL-WR-SS-14	A	[2] Endosulfan sulfate	0.0020	PJ	N/A	370	N/A	-370.0	No
LANL-WR-SS-14	A	[3] Endrin aldehyde	0.0085	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-14	A	[3] Endrin ketone	0.0120	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-14	A	4,4'-DDE	0.049	DPJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-14	A	Aroclor 1254	3.5	D	N/A	1.1	N/A	2.4	Yes
LANL-WR-SS-14	A	Endosulfan I	0.0025	PJ	N/A	370	N/A	-370.0	No
LANL-WR-SS-14	A	Endrin	0.0024	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-14	A	Fluoranthene	0.1500		N/A	2300	N/A	-2299.9	No
LANL-WR-SS-14	A	gamma-Chlordane	0.025	DPJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-14	A	Pyrene	0.14		N/A	1800	N/A	-1799.9	No
LANL-WR-SS-15	A	[1] Methoxychlor	0.011	PJ	N/A	3100	N/A	-3100.0	No
LANL-WR-SS-15	A	[2] Endosulfan sulfate	0.0059	PJ	N/A	370	N/A	-370.0	No
LANL-WR-SS-15	A	[3] Endrin ketone	0.0120	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-15	A	4,4'-DDE	0.15	DPJ	N/A	17	N/A	-16.9	No
LANL-WR-SS-15	A	Aroclor 1254	12.0	D	N/A	1.1	N/A	10.9	Yes
LANL-WR-SS-15	A	Benzo(a)anthracene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-15	A	Benzo(a)pyrene	0.10	J	N/A	0.62	N/A	-0.5	No
LANL-WR-SS-15	A	Benzo(b)fluoranthene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-15	A	Benzo(k)fluoranthene	0.14		N/A	62	N/A	-61.9	No
LANL-WR-SS-15	A	Chrysene	0.13		N/A	610	N/A	-609.9	No
LANL-WR-SS-15	A	Di-n-butyl phthalate	0.10	J	N/A	6100	N/A	-6099.9	No
LANL-WR-SS-15	A	Endrin	0.0068	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-15	A	Fluoranthene	0.2100		N/A	2300	N/A	-2299.8	No
LANL-WR-SS-15	A	gamma-Chlordane	0.072	DPJ	N/A	1.6	N/A	-1.5	No
LANL-WR-SS-15	A	Phenanthrene	0.10	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-15	A	Pyrene	0.20		N/A	1800	N/A	-1799.8	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-2	A	Aroclor 1254	0.08		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-4	A	Aroclor 1254	0.06		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-5	A	[3] Endrin ketone	0.0021	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-5	A	Aroclor 1254	0.13		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-6	A	Anthracene	0.37		N/A	16000	N/A	-15999.6	No
LANL-WR-SS-7	A	[3] Endrin ketone	0.0072	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-7	A	4,4'-DDE	0.009	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-7	A	Aroclor 1254	0.75		N/A	1.1	N/A	-0.4	No
LANL-WR-SS-8	A	[3] Endrin ketone	0.0060	J	N/A	18	N/A	-18.0	No
LANL-WR-SS-8	A	4,4'-DDE	0.005	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-8	A	Aroclor 1254	0.41		N/A	1.1	N/A	-0.7	No
LANL-WR-SS-64	A (DUP-SS-1)	TPH (as Diesel)	11	J	N/A	100	N/A	-89.0	No
LANL-WR-SS-64	A (DUP-SS-1)	TPH (as Motor Oil)	5.6	J	N/A	100	N/A	-94.4	No
LANL-WR-SS-19	B	Fluoranthene	0.0750	J	N/A	2300	N/A	-2299.9	No
LANL-WR-SS-19	B	Pyrene	0.08	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-20	B	Fluoranthene	0.0770	J	N/A	2300	N/A	-2299.9	No
LANL-WR-SS-20	B	Pyrene	0.08	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-21	B	4,4'-DDE	0.003		N/A	17	N/A	-17.0	No
LANL-WR-SS-21	B	4,4'-DDT	0.003	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-22	B	4,4'-DDT	0.003	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-23	B	4,4'-DDE	0.004		N/A	17	N/A	-17.0	No
LANL-WR-SS-23	B	4,4'-DDT	0.004		N/A	17	N/A	-17.0	No
LANL-WR-SS-23	B	Fluoranthene	0.0740	J	N/A	2300	N/A	-2299.9	No
LANL-WR-SS-25	B	4,4'-DDE	0.007		N/A	17	N/A	-17.0	No
LANL-WR-SS-25	B	4,4'-DDT	0.013		N/A	17	N/A	-17.0	No
LANL-WR-SS-25	B	Benzo(a)anthracene	0.08	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-25	B	Benzo(a)pyrene	0.08	J	N/A	0.62	N/A	-0.5	No
LANL-WR-SS-25	B	Chrysene	0.09	J	N/A	610	N/A	-609.9	No
LANL-WR-SS-25	B	Fluoranthene	0.1500		N/A	2300	N/A	-2299.9	No
LANL-WR-SS-25	B	Phenanthrene	0.11	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-25	B	Pyrene	0.14		N/A	1800	N/A	-1799.9	No
LANL-WR-SS-25	B	TPH (as Diesel)	60		N/A	100	N/A	-40.0	No
LANL-WR-SS-26	B	4,4'-DDE	0.004		N/A	17	N/A	-17.0	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used [illegible]in SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-26	B	4,4'-DDT	0.002	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-27	B	4,4'-DDE	0.033		N/A	17	N/A	-17.0	No
LANL-WR-SS-27	B	4,4'-DDT	0.010		N/A	17	N/A	-17.0	No
LANL-WR-SS-29	B	4,4'-DDE	0.021		N/A	17	N/A	-17.0	No
LANL-WR-SS-29	B	4,4'-DDT	0.016		N/A	17	N/A	-17.0	No
LANL-WR-SS-29	B	Benzo(a)pyrene	0.09	J	N/A	0.62	N/A	-0.5	No
LANL-WR-SS-29	B	Benzo(b)fluoranthene	0.14		N/A	6.2	N/A	-6.1	No
LANL-WR-SS-29	B	Benzo(k)fluoranthene	0.09	J	N/A	62	N/A	-61.9	No
LANL-WR-SS-29	B	Chrysene	0.09	J	N/A	610	N/A	-609.9	No
LANL-WR-SS-29	B	Dieldrin	0.003		N/A	0.30	N/A	-0.3	No
LANL-WR-SS-29	B	Fluoranthene	0.2000		N/A	2300	N/A	-2299.8	No
LANL-WR-SS-29	B	Indeno(1,2,3-cd)pyrene	0.10	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-29	B	Pyrene	0.12	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-30	B	4,4'-DDE	0.004		N/A	17	N/A	-17.0	No
LANL-WR-SS-30	B	4,4'-DDT	0.004	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-30	B	Aroclor 1260	0.07		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Fluoranthene	0.098	J	N/A	2300	N/A	-2299.9	No
LANL-WR-SS-63	B (DUP-SS-17)	Pyrene	0.08	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-63	B (DUP-SS-17)	TPH (as Diesel)	30	J	N/A	100	N/A	-70.0	No
LANL-WR-SS-63	B (DUP-SS-17)	TPH (as Motor Oil)	30	J	N/A	100	N/A	-70.0	No
LANL-WR-SS-46	C	TPH (as Motor Oil)	17	J	N/A	100	N/A	-83.0	No
LANL-WR-SS-47	C	[1] Butyl benzyl phthalate	0.09	J	N/A	240	N/A	-239.9	No
LANL-WR-SS-47	C	4,4'-DDE	0.0038		N/A	17	N/A	-17.0	No
LANL-WR-SS-47	C	4,4'-DDT	0.0032	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-47	C	TPH (as Motor Oil)	16	J	N/A	100	N/A	-84.0	No
LANL-WR-SS-48	C	TPH (as Motor Oil)	12	J	N/A	100	N/A	-88.0	No
LANL-WR-SS-49	C	4,4'-DDE	0.0020	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-49	C	4,4'-DDT	0.0033		N/A	17	N/A	-17.0	No
LANL-WR-SS-49	C	TPH (as Motor Oil)	18	J	N/A	100	N/A	-82.0	No
LANL-WR-SS-50	C	TPH (as Diesel)	11	J	N/A	100	N/A	-89.0	No
LANL-WR-SS-50	C	TPH (as Motor Oil)	12	J	N/A	100	N/A	-88.0	No
LANL-WR-SS-51	C	4,4'-DDE	0.0110		N/A	17	N/A	-17.0	No
LANL-WR-SS-51	C	4,4'-DDT	0.0098		N/A	17	N/A	-17.0	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-51	C	Chrysene	0.09	J	N/A	610	N/A	-609.9	No
LANL-WR-SS-51	C	Fluoranthene	0.15		N/A	2300	N/A	-2299.9	No
LANL-WR-SS-51	C	Phenanthrene	0.14	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-51	C	Pyrene	0.15		N/A	1800	N/A	-1799.9	No
LANL-WR-SS-51	C	TPH (as Diesel)	76	J	N/A	100	N/A	-24.0	[4] Yes
LANL-WR-SS-51	C	TPH (as Motor Oil)	80	J	N/A	100	N/A	-20.0	[4] Yes
LANL-WR-SS-52	C	Di-n-butyl phthalate	0.09	J	N/A	6100	N/A	-6099.9	No
LANL-WR-SS-52	C	Phenol	0.11	J	N/A	37000	N/A	-36999.9	No
LANL-WR-SS-52	C	TPH (as Diesel)	8.4	J	N/A	100	N/A	-91.6	No
LANL-WR-SS-52	C	TPH (as Motor Oil)	32	J	N/A	100	N/A	-68.0	No
LANL-WR-SS-53	C	TPH (as Motor Oil)	21	J	N/A	100	N/A	-79.0	No
LANL-WR-SS-55	C	4,4'-DDE	0.0032		N/A	17	N/A	-17.0	No
LANL-WR-SS-55	C	TPH (as Diesel)	20	J	N/A	100	N/A	-80.0	No
LANL-WR-SS-55	C	TPH (as Motor Oil)	21	J	N/A	100	N/A	-79.0	No
LANL-WR-SS-56	C	TPH (as Motor Oil)	7	J	N/A	100	N/A	-93.0	No
LANL-WR-SS-57	C	[3] Endrin ketone	0.0026	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-57	C	TPH (as Diesel)	640	D	N/A	100	N/A	540.0	Yes
LANL-WR-SS-57	C	TPH (as Motor Oil)	710	D	N/A	100	N/A	610.0	Yes
LANL-WR-SS-58	C	TPH (as Motor Oil)	15	J	N/A	100	N/A	-85.0	No
LANL-WR-SS-59	C	TPH (as Diesel)	47	J	N/A	100	N/A	-53.0	No
LANL-WR-SS-59	C	TPH (as Motor Oil)	48	J	N/A	100	N/A	-52.0	No
LANL-WR-SS-62	C (DUP-SS-47)	4,4'-DDE	0.0028	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-62	C (DUP-SS-47)	4,4'-DDT	0.0021		N/A	17	N/A	-17.0	No
LANL-WR-SS-62	C (DUP-SS-47)	TPH (as Motor Oil)	30	J	N/A	100	N/A	-70.0	No
LANL-WR-SS-31	D2	TPH (as Motor Oil)	16	J	N/A	100	N/A	-84.0	No
LANL-WR-SS-32	D2	[1] Carbazole	0.08	J	N/A	2400	N/A	-2399.9	No
LANL-WR-SS-32	D2	[3] Endrin ketone	0.0056	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-32	D2	4,4'-DDE	0.0023	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-32	D2	4,4'-DDT	0.0069	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-32	D2	Acenaphthene	0.1500	J	N/A	2800	N/A	-2799.9	No
LANL-WR-SS-32	D2	alpha-Chlordane	0.0033	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-32	D2	Anthracene	1.2	J D	N/A	16000	N/A	-15998.8	No
LANL-WR-SS-32	D2	Aroclor 1254	0.14		N/A	1.1	N/A	-1.0	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-32	D2	Aroclor 1260	0.25		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-32	D2	Benzo(a)anthracene	5.30	D	N/A	6.2	N/A	-0.9	No
LANL-WR-SS-32	D2	Benzo(a)pyrene	4.90	D	N/A	0.62	N/A	4.3	Yes
LANL-WR-SS-32	D2	Benzo(b)fluoranthene	3.50	D	N/A	6.2	N/A	-2.7	No
LANL-WR-SS-32	D2	Benzo(ghi)perylene	1.60	D	N/A	1800	N/A	-1798.4	No
LANL-WR-SS-32	D2	Benzo(k)fluoranthene	5.00	D	N/A	62	N/A	-57.0	No
LANL-WR-SS-32	D2	Chrysene	5.50	D	N/A	610	N/A	-604.5	No
LANL-WR-SS-32	D2	Dibenz(a,h)anthracene	1.00		N/A	0.62	N/A	0.38	Yes
LANL-WR-SS-32	D2	Fluoranthene	8.50	D	N/A	2300	N/A	-2291.5	No
LANL-WR-SS-32	D2	Fluorene	0.170		N/A	2100	N/A	-2099.8	No
LANL-WR-SS-32	D2	gamma-Chlordane	0.004	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-32	D2	Indeno(1,2,3-cd)pyrene	2.00	D	N/A	6.2	N/A	-4.2	No
LANL-WR-SS-32	D2	Phenanthrene	3.20	D	N/A	1800	N/A	-1796.8	No
LANL-WR-SS-32	D2	Pyrene	9.10	D	N/A	1800	N/A	-1790.9	No
LANL-WR-SS-33	D2	TPH (as Motor Oil)	41	J	N/A	100	N/A	-59.0	No
LANL-WR-SS-34	D2	[1] Carbazole	0.29	J	N/A	2400	N/A	-2399.7	No
LANL-WR-SS-34	D2	[1] Dibenzofuran	0.23		N/A	2900.0	N/A	-2899.8	No
LANL-WR-SS-34	D2	2-Methylnaphthalene	0.1		N/A	53	N/A	-52.9000	No
LANL-WR-SS-34	D2	[3] Endrin ketone	0.0068	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-34	D2	4,4'-DDE	0.0019	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-34	D2	4,4'-DDT	0.0100	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-34	D2	Acenaphthene	0.35		N/A	2800	N/A	-2799.7	No
LANL-WR-SS-34	D2	Anthracene	0.63		N/A	16000	N/A	-15999.4	No
LANL-WR-SS-34	D2	Aroclor 1254	0.09		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-34	D2	Aroclor 1260	0.18		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-34	D2	Benzo(a)anthracene	0.93		N/A	6.2	N/A	-5.3	No
LANL-WR-SS-34	D2	Benzo(a)pyrene	0.94		N/A	0.62	N/A	0.3	Yes
LANL-WR-SS-34	D2	Benzo(b)fluoranthene	0.67		N/A	6.2	N/A	-5.5	No
LANL-WR-SS-34	D2	Benzo(ghi)perylene	0.60		N/A	1800	N/A	-1799.4	No
LANL-WR-SS-34	D2	Benzo(k)fluoranthene	0.83		N/A	62	N/A	-61.2	No
LANL-WR-SS-34	D2	Chrysene	0.97		N/A	610	N/A	-609.0	No
LANL-WR-SS-34	D2	Dibenz(a,h)anthracene	0.18		N/A	0.62	N/A	-0.4	No
LANL-WR-SS-34	D2	Fluoranthene	2.20		N/A	2300	N/A	-2297.8	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-34	D2	Fluorene	0.410		N/A	2100	N/A	-2099.6	No
LANL-WR-SS-34	D2	gamma-Chlordane	0.0022	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-34	D2	Indeno(1,2,3-cd)pyrene	0.66		N/A	6.2	N/A	-5.5	No
LANL-WR-SS-34	D2	Naphthalene	0.38		N/A	53	N/A	-52.6	No
LANL-WR-SS-34	D2	Phenanthrene	2.30		N/A	1800	N/A	-1797.7	No
LANL-WR-SS-34	D2	Pyrene	1.80		N/A	1800	N/A	-1798.2	No
LANL-WR-SS-35	D2	[3] Endrin ketone	0.0038	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-35	D2	4,4'-DDE	0.0059		N/A	17	N/A	-17.0	No
LANL-WR-SS-35	D2	4,4'-DDT	0.0078	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-35	D2	Aroclor 1254	0.12		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-35	D2	Aroclor 1260	0.18		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-35	D2	Benzo(a)anthracene	0.10	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-35	D2	Benzo(a)pyrene	0.12	J	N/A	0.62	N/A	-0.5	No
LANL-WR-SS-35	D2	Benzo(b)fluoranthene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-35	D2	Benzo(k)fluoranthene	0.10	J	N/A	62	N/A	-61.9	No
LANL-WR-SS-35	D2	Chrysene	0.11	J	N/A	610	N/A	-609.9	No
LANL-WR-SS-35	D2	Fluoranthene	0.16		N/A	2300	N/A	-2299.8	No
LANL-WR-SS-35	D2	Indeno(1,2,3-cd)pyrene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-35	D2	Phenanthrene	0.10	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-35	D2	Pyrene	0.15		N/A	1800	N/A	-1799.9	No
LANL-WR-SS-36	D2	[3] Endrin ketone	0.0051	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-36	D2	4,4'-DDE	0.0033	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-36	D2	4,4'-DDT	0.0052	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-36	D2	alpha-Chlordane	0.0033	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-36	D2	Aroclor 1254	0.07		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-36	D2	Aroclor 1260	0.13		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-36	D2	Benzo(a)anthracene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-36	D2	Benzo(a)pyrene	0.11	J	N/A	0.62	N/A	-0.5	No
LANL-WR-SS-36	D2	Chrysene	0.13		N/A	610	N/A	-609.9	No
LANL-WR-SS-36	D2	Fluoranthene	0.16		N/A	2300	N/A	-2299.8	No
LANL-WR-SS-36	D2	gamma-Chlordane	0.0031	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-36	D2	Indeno(1,2,3-cd)pyrene	0.09	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-36	D2	Phenanthrene	0.08	J	N/A	1800	N/A	-1799.9	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-36	D2	Pyrene	0.19		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-37	D2	[3] Endrin ketone	0.0120	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-37	D2	4,4'-DDE	0.0037		N/A	17	N/A	-17.0	No
LANL-WR-SS-37	D2	4,4'-DDT	0.0120	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-37	D2	alpha-Chlordane	0.0033	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-37	D2	Anthracene	0.11	J	N/A	16000	N/A	-15999.9	No
LANL-WR-SS-37	D2	Aroclor 1254	0.09		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-37	D2	Aroclor 1260	0.15		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-37	D2	Benzo(a)anthracene	0.43		N/A	6.2	N/A	-5.8	No
LANL-WR-SS-37	D2	Benzo(a)pyrene	0.40		N/A	0.62	N/A	-0.2	No
LANL-WR-SS-37	D2	Benzo(b)fluoranthene	0.34		N/A	6.2	N/A	-5.9	No
LANL-WR-SS-37	D2	Benzo(ghi)perylene	0.30		N/A	1800	N/A	-1799.7	No
LANL-WR-SS-37	D2	Benzo(k)fluoranthene	0.33		N/A	62	N/A	-61.7	No
LANL-WR-SS-37	D2	Chrysene	0.47		N/A	610	N/A	-609.5	No
LANL-WR-SS-37	D2	Dibenz(a,h)anthracene	0.09	J	N/A	0.62	N/A	-0.5	No
LANL-WR-SS-37	D2	Fluoranthene	0.66		N/A	2300	N/A	-2299.3	No
LANL-WR-SS-37	D2	gamma-Chlordane	0.0034	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-37	D2	Indeno(1,2,3-cd)pyrene	0.33		N/A	6.2	N/A	-5.9	No
LANL-WR-SS-37	D2	Phenanthrene	0.34		N/A	1800	N/A	-1799.7	No
LANL-WR-SS-37	D2	Pyrene	0.74		N/A	1800	N/A	-1799.3	No
LANL-WR-SS-38	D2	[3] Endrin ketone	0.0036	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-38	D2	4,4'-DDD	0.0022	PJ	N/A	24	N/A	-23.9978	No
LANL-WR-SS-38	D2	4,4'-DDE	0.0041		N/A	17	N/A	-17.0	No
LANL-WR-SS-38	D2	4,4'-DDT	0.0220		N/A	17	N/A	-17.0	No
LANL-WR-SS-38	D2	alpha-Chlordane	0.0035	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-38	D2	Aroclor 1260	0.11		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-38	D2	Benzo(a)anthracene	0.13		N/A	6.2	N/A	-6.1	No
LANL-WR-SS-38	D2	Benzo(a)pyrene	0.14		N/A	0.62	N/A	-0.5	No
LANL-WR-SS-38	D2	Benzo(b)fluoranthene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-38	D2	Benzo(ghi)perylene	0.12		N/A	1800	N/A	-1799.9	No
LANL-WR-SS-38	D2	Benzo(k)fluoranthene	0.11	J	N/A	62	N/A	-61.9	No
LANL-WR-SS-38	D2	Chrysene	0.14		N/A	610	N/A	-609.9	No
LANL-WR-SS-38	D2	Fluoranthene	0.22		N/A	2300	N/A	-2299.8	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-38	D2	gamma-Chlordane	0.0048		N/A	1.6	N/A	-1.6	No
LANL-WR-SS-38	D2	Indeno(1,2,3-cd)pyrene	0.12		N/A	6.2	N/A	-6.1	No
LANL-WR-SS-38	D2	Phenanthrene	0.15	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-38	D2	Pyrene	0.24		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-39	D2	[1] Butyl benzyl phthalate	0.21	J	N/A	240	N/A	-239.8	No
LANL-WR-SS-39	D2	[3] Endrin ketone	0.0039	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-39	D2	4,4'-DDE	0.0030	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-39	D2	4,4'-DDT	0.0066	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-39	D2	Acenaphthene	0.0720	J	N/A	2800	N/A	-2799.9	No
LANL-WR-SS-39	D2	Anthracene	0.09	J	N/A	16000	N/A	-15999.9	No
LANL-WR-SS-39	D2	Aroclor 1254	0.09		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-39	D2	Aroclor 1260	0.15		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-39	D2	Benzo(a)anthracene	0.42		N/A	6.2	N/A	-5.8	No
LANL-WR-SS-39	D2	Benzo(a)pyrene	0.44		N/A	0.62	N/A	-0.2	No
LANL-WR-SS-39	D2	Benzo(b)fluoranthene	0.38		N/A	6.2	N/A	-5.8	No
LANL-WR-SS-39	D2	Benzo(ghi)perylene	0.21		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-39	D2	Benzo(k)fluoranthene	0.45		N/A	62	N/A	-61.6	No
LANL-WR-SS-39	D2	Chrysene	0.49		N/A	610	N/A	-609.5	No
LANL-WR-SS-39	D2	Fluoranthene	0.80		N/A	2300	N/A	-2299.2	No
LANL-WR-SS-39	D2	gamma-Chlordane	0.0023	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-39	D2	Indeno(1,2,3-cd)pyrene	0.27		N/A	6.2	N/A	-5.9	No
LANL-WR-SS-39	D2	Phenanthrene	0.54		N/A	1800	N/A	-1799.5	No
LANL-WR-SS-39	D2	Pyrene	0.82		N/A	1800	N/A	-1799.2	No
LANL-WR-SS-39	D2	TPH (as Diesel)	14		N/A	100	N/A	-86.0	No
LANL-WR-SS-39	D2	TPH (as Motor Oil)	15	J	N/A	100	N/A	-85.0	No
LANL-WR-SS-40	D2	[3] Endrin ketone	0.0051	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-40	D2	4,4'-DDE	0.0018		N/A	17	N/A	-17.0	No
LANL-WR-SS-40	D2	4,4'-DDT	0.0073	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-40	D2	alpha-Chlordane	0.0025	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-40	D2	Aroclor 1254	0.07		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-40	D2	Aroclor 1260	0.21		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-40	D2	Benzo(a)anthracene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-40	D2	Benzo(a)pyrene	0.12		N/A	0.62	N/A	-0.5	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-40	D2	Benzo(b)fluoranthene	0.09	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-40	D2	Benzo(k)fluoranthene	0.12		N/A	62	N/A	-61.9	No
LANL-WR-SS-40	D2	Chrysene	0.12		N/A	610	N/A	-609.9	No
LANL-WR-SS-40	D2	Fluoranthene	0.19		N/A	2300	N/A	-2299.8	No
LANL-WR-SS-40	D2	gamma-Chlordane	0.0035		N/A	1.6	N/A	-1.6	No
LANL-WR-SS-40	D2	Phenanthrene	0.11	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-40	D2	Pyrene	0.19		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-41	D2	TPH (as Motor Oil)	55	J	N/A	100	N/A	-45.0	No
LANL-WR-SS-42	D2	[3] Endrin ketone	0.0100	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-42	D2	4,4'-DDE	0.0047	J	N/A	17	N/A	-17.0	No
LANL-WR-SS-42	D2	4,4'-DDT	0.0230	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-42	D2	Acenaphthene	0.0780	J	N/A	2800	N/A	-2799.9	No
LANL-WR-SS-42	D2	alpha-Chlordane	0.0023	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-42	D2	Anthracene	0.17	J	N/A	16000	N/A	-15999.8	No
LANL-WR-SS-42	D2	Aroclor 1254	0.09		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-42	D2	Aroclor 1260	0.13		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-42	D2	Benzo(a)anthracene	0.54		N/A	6.2	N/A	-5.7	No
LANL-WR-SS-42	D2	Benzo(a)pyrene	0.50		N/A	0.62	N/A	-0.1	No
LANL-WR-SS-42	D2	Benzo(b)fluoranthene	0.36		N/A	6.2	N/A	-5.8	No
LANL-WR-SS-42	D2	Benzo(ghi)perylene	0.30		N/A	1800	N/A	-1799.7	No
LANL-WR-SS-42	D2	Benzo(k)fluoranthene	0.55		N/A	62	N/A	-61.5	No
LANL-WR-SS-42	D2	Chrysene	0.60		N/A	610	N/A	-609.4	No
LANL-WR-SS-42	D2	Dieldrin	0.004	PJ	N/A	0.30	N/A	-0.3	No
LANL-WR-SS-42	D2	Fluoranthene	0.99		N/A	2300	N/A	-2299.0	No
LANL-WR-SS-42	D2	Indeno(1,2,3-cd)pyrene	0.32		N/A	6.2	N/A	-5.9	No
LANL-WR-SS-42	D2	Phenanthrene	0.62		N/A	1800	N/A	-1799.4	No
LANL-WR-SS-42	D2	Pyrene	1.00		N/A	1800	N/A	-1799.0	No
LANL-WR-SS-43	D2	[3] Endrin ketone	0.0120	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-43	D2	4,4'-DDE	0.0076	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-43	D2	4,4'-DDT	0.0190	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-43	D2	alpha-Chlordane	0.0032	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-43	D2	Anthracene	0.13	J	N/A	16000	N/A	-15999.9	No
LANL-WR-SS-43	D2	Aroclor 1254	0.27		N/A	1.1	N/A	-0.8	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-43	D2	Benzo(a)anthracene	0.42		N/A	6.2	N/A	-5.8	No
LANL-WR-SS-43	D2	Benzo(a)pyrene	0.42		N/A	0.62	N/A	-0.2	No
LANL-WR-SS-43	D2	Benzo(b)fluoranthene	0.40		N/A	6.2	N/A	-5.8	No
LANL-WR-SS-43	D2	Benzo(ghi)perylene	0.23		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-43	D2	Benzo(k)fluoranthene	0.41		N/A	62	N/A	-61.6	No
LANL-WR-SS-43	D2	Chrysene	0.47		N/A	610	N/A	-609.5	No
LANL-WR-SS-43	D2	Fluoranthene	0.73		N/A	2300	N/A	-2299.3	No
LANL-WR-SS-43	D2	gamma-Chlordane	0.0048	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-43	D2	Indeno(1,2,3-cd)pyrene	0.25		N/A	6.2	N/A	-6.0	No
LANL-WR-SS-43	D2	Phenanthrene	0.49		N/A	1800	N/A	-1799.5	No
LANL-WR-SS-43	D2	Pyrene	0.78		N/A	1800	N/A	-1799.2	No
LANL-WR-SS-43	D2	TPH (as Motor Oil)	93		N/A	100	N/A	-7.0	No
LANL-WR-SS-44	D2	[3] Endrin ketone	0.0049	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-44	D2	4,4'-DDE	0.0020	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-44	D2	4,4'-DDT	0.0150	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-44	D2	alpha-Chlordane	0.0024	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-44	D2	Anthracene	0.08	J	N/A	16000	N/A	-15999.9	No
LANL-WR-SS-44	D2	Aroclor 1254	0.07		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-44	D2	Aroclor 1260	0.11		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-44	D2	Benzo(a)anthracene	0.29		N/A	6.2	N/A	-5.9	No
LANL-WR-SS-44	D2	Benzo(a)pyrene	0.30		N/A	0.62	N/A	-0.3	No
LANL-WR-SS-44	D2	Benzo(b)fluoranthene	0.25		N/A	6.2	N/A	-6.0	No
LANL-WR-SS-44	D2	Benzo(ghi)perylene	0.19		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-44	D2	Benzo(k)fluoranthene	0.31		N/A	62	N/A	-61.7	No
LANL-WR-SS-44	D2	Chrysene	0.32		N/A	610	N/A	-609.7	No
LANL-WR-SS-44	D2	Fluoranthene	0.47		N/A	2300	N/A	-2299.5	No
LANL-WR-SS-44	D2	gamma-Chlordane	0.0032		N/A	1.6	N/A	-1.6	No
LANL-WR-SS-44	D2	Indeno(1,2,3-cd)pyrene	0.21		N/A	6.2	N/A	-6.0	No
LANL-WR-SS-44	D2	Phenanthrene	0.30	J	N/A	1800	N/A	-1799.7	No
LANL-WR-SS-44	D2	Pyrene	0.56		N/A	1800	N/A	-1799.4	No
LANL-WR-SS-45	D2	[3] Endrin ketone	0.0088	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-45	D2	4,4'-DDE	0.0067	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-45	D2	4,4'-DDT	0.0260	PJ	N/A	17	N/A	-17.0	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection:	Target Analyte / Target Compound:	Concentration: (mg/kg)	Laboratory & Validation Flags:	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-45	D2	Anthracene	0.16	J	N/A	16000	N/A	-15999.8	No
LANL-WR-SS-45	D2	Aroclor 1254	0.24		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-45	D2	Aroclor 1260	0.24		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-45	D2	Benzo(a)anthracene	0.28		N/A	6.2	N/A	-5.9	No
LANL-WR-SS-45	D2	Benzo(a)pyrene	0.27		N/A	0.62	N/A	-0.4	No
LANL-WR-SS-45	D2	Benzo(b)fluoranthene	0.23		N/A	6.2	N/A	-6.0	No
LANL-WR-SS-45	D2	Benzo(ghi)perylene	0.16		N/A	1800	N/A	-1799.8	No
LANL-WR-SS-45	D2	Benzo(k)fluoranthene	0.30		N/A	62	N/A	-61.7	No
LANL-WR-SS-45	D2	Chrysene	0.31		N/A	610	N/A	-609.7	No
LANL-WR-SS-45	D2	Fluoranthene	0.57		N/A	2300	N/A	-2299.4	No
LANL-WR-SS-45	D2	gamma-Chlordane	0.0029	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-45	D2	Indeno(1,2,3-cd)pyrene	0.17		N/A	6.2	N/A	-6.0	No
LANL-WR-SS-45	D2	Phenanthrene	0.63		N/A	1800	N/A	-1799.4	No
LANL-WR-SS-45	D2	Pyrene	0.56		N/A	1800	N/A	-1799.4	No
LANL-WR-SS-61	D2 (DUP-SS-32)	[3] Endrin ketone	0.0035	PJ	N/A	18	N/A	-18.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	4,4'-DDE	0.0023	PJ	N/A	17	N/A	-17.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Aroclor 1254	0.14		N/A	1.1	N/A	-1.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Aroclor 1260	0.18		N/A	1.1	N/A	-0.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Benzo(a)anthracene	0.12		N/A	6.2	N/A	-6.1	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Benzo(a)pyrene	0.13		N/A	0.62	N/A	-0.5	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Benzo(b)fluoranthene	0.11	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Benzo(ghi)perylene	0.11	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Benzo(k)fluoranthene	0.14		N/A	62	N/A	-61.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Chrysene	0.15		N/A	610	N/A	-609.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Fluoranthene	0.24		N/A	2300	N/A	-2299.8	No
LANL-WR-SS-61	D2 (DUP-SS-32)	gamma-Chlordane	0.0020	PJ	N/A	1.6	N/A	-1.6	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Indeno(1,2,3-cd)pyrene	0.10	J	N/A	6.2	N/A	-6.1	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Phenanthrene	0.11	J	N/A	1800	N/A	-1799.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Pyrene	0.23		N/A	1800	N/A	-1799.8	No

1 - Used EPA Region 6 SSL; no published NMED SSL
2 - Used Endosulfan SSL as no published SSL for Endosulfan Sulfate
3 - Used Endrin SSL - no published SSL for Endrin Ketone

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-1	A	Aluminum	2240	J	15400	74000	-13160	-71760.0	No
LANL-WR-SS-1	A	Arsenic	0.75		3.98	3.90	-3	-3.2	No
LANL-WR-SS-1	A	Barium	25		127	5200	-102	-5175.0	No
LANL-WR-SS-1	A	Beryllium	0.26		1.31	150	-1	-149.7	No
LANL-WR-SS-1	A	Cadmium	0.11		0.40	70	-0.290	-69.9	No
LANL-WR-SS-1	A	Calcium	512	B	4400	NP	-3888.000	N/A	No
LANL-WR-SS-1	A	Chromium	2.80		10.5	100000	-8	-99997.2	No
LANL-WR-SS-1	A	Cobalt	1.70		4.73	4500	-3	-4498.3	No
LANL-WR-SS-1	A	Copper	2.80		11.2	2800	-8	-2797.2	No
LANL-WR-SS-1	A	Iron	7670		13800	23000	-6130	-15330.0	No
LANL-WR-SS-1	A	Lead	10.9		19.7	400	-9	-389.1	No
LANL-WR-SS-1	A	Magnesium	441		2370	NP	-1929	N/A	No
LANL-WR-SS-1	A	Manganese	250		543	7800	-293	-7550.0	No
LANL-WR-SS-1	A	Nickel	2.00		9.4	1500	-7	-1498.0	No
LANL-WR-SS-1	A	Potassium	476	B	2690	NP	-2214	N/A	No
LANL-WR-SS-1	A	Sodium	39.6	B	1470	NP	-1430	N/A	No
LANL-WR-SS-1	A	Vanadium	6.8		19.7	530	-13	-523.2	No
LANL-WR-SS-1	A	Zinc	41.2	J	60.2	23000	-19	-22958.8	No
LANL-WR-SS-10	A	Aluminum	2780	J	15400	74000	-12620	-71220.0	No
LANL-WR-SS-10	A	Antimony	3.4	J	0.83	30	2.57	-26.6	No
LANL-WR-SS-10	A	Arsenic	1.00		3.98	3.90	-3	-2.9	No
LANL-WR-SS-10	A	Barium	29.9		127	5200	-97	-5170.1	No
LANL-WR-SS-10	A	Beryllium	0.46		1.31	150	-1	-149.5	No
LANL-WR-SS-10	A	Cadmium	0.53		0.40	70	0.130	-69.5	No
LANL-WR-SS-10	A	Calcium	1670		4400	NP	-2730.000	N/A	No
LANL-WR-SS-10	A	Chromium	3.50		10.5	100000	-7	-99996.5	No
LANL-WR-SS-10	A	Cobalt	1.70		4.73	4500	-3	-4498.3	No
LANL-WR-SS-10	A	Copper	5.70		11.2	2800	-6	-2794.3	No
LANL-WR-SS-10	A	Iron	7800		13800	23000	-6000	-15200.0	No
LANL-WR-SS-10	A	Lead	27		19.7	400	7	-373.0	No
LANL-WR-SS-10	A	Magnesium	470		2370	NP	-1900	N/A	No
LANL-WR-SS-10	A	Manganese	285		543	7800	-258	-7515.0	No
LANL-WR-SS-10	A	Mercury	0.06		0.1	23	-0.038	-22.9	No
LANL-WR-SS-10	A	Nickel	3.00		9.4	1500	-6	-1497.0	No
LANL-WR-SS-10	A	Potassium	595		2690	NP	-2095	N/A	No
LANL-WR-SS-10	A	Selenium	0.48	B	0.3	380	0.18	-379.5	No
LANL-WR-SS-10	A	Sodium	65.1	B	1470	NP	-1405	N/A	No
LANL-WR-SS-10	A	Vanadium	5.9		19.7	530	-14	-524.1	No
LANL-WR-SS-10	A	Zinc	130	J	60.2	23000	70	-22870.0	No
LANL-WR-SS-11	A	Aluminum	2230	J	15400	74000	-13170	-71770.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-11	A	Antimony	0.72	BJ	0.83	30	-0.11	-29.3	No
LANL-WR-SS-11	A	Arsenic	0.86		3.98	3.90	-3	-3.0	No
LANL-WR-SS-11	A	Barium	27.3		127	5200	-100	-5172.7	No
LANL-WR-SS-11	A	Beryllium	0.54		1.31	150	-1	-149.5	No
LANL-WR-SS-11	A	Cadmium	0.20		0.40	70	-0.200	-69.8	No
LANL-WR-SS-11	A	Calcium	989		4400	NP	-3411.000	N/A	No
LANL-WR-SS-11	A	Chromium	2.80		10.5	100000	-8	-99997.2	No
LANL-WR-SS-11	A	Cobalt	1.20		4.73	4500	-4	-4498.8	No
LANL-WR-SS-11	A	Copper	4.10		11.2	2800	-7	-2795.9	No
LANL-WR-SS-11	A	Iron	7160		13800	23000	-6640	-15840.0	No
LANL-WR-SS-11	A	Lead	17.2		19.7	400	-3	-382.8	No
LANL-WR-SS-11	A	Magnesium	394		2370	NP	-1976	N/A	No
LANL-WR-SS-11	A	Manganese	306		543	7800	-237	-7494.0	No
LANL-WR-SS-11	A	Mercury	0.04		0.1	23	-0.062	-23.0	No
LANL-WR-SS-11	A	Nickel	2.10		9.4	1500	-7	-1497.9	No
LANL-WR-SS-11	A	Potassium	406	B	2690	NP	-2284	N/A	No
LANL-WR-SS-11	A	Selenium	0.22	B	0.3	380	-0.08	-379.8	No
LANL-WR-SS-11	A	Sodium	54.8	B	1470	NP	-1415	N/A	No
LANL-WR-SS-11	A	Vanadium	5.1		19.7	530	-15	-524.9	No
LANL-WR-SS-11	A	Zinc	62.7	J	60.2	23000	3	-22937.3	No
LANL-WR-SS-12	A	Aluminum	1210	J	15400	74000	-14190	-72790.0	No
LANL-WR-SS-12	A	Antimony	0.19	BJ	0.83	30	-0.64	-29.8	No
LANL-WR-SS-12	A	Arsenic	0.27	B	3.98	3.90	-4	-3.6	No
LANL-WR-SS-12	A	Barium	11.1		127	5200	-116	-5188.9	No
LANL-WR-SS-12	A	Beryllium	0.46		1.31	150	-1	-149.5	No
LANL-WR-SS-12	A	Cadmium	0.052	B	0.40	70	-0.348	-69.9	No
LANL-WR-SS-12	A	Calcium	959		4400	NP	-3441.000	N/A	No
LANL-WR-SS-12	A	Chromium	1.30		10.5	100000	-9	-99998.7	No
LANL-WR-SS-12	A	Cobalt	0.49	B	4.73	4500	-4	-4499.5	No
LANL-WR-SS-12	A	Copper	2.10		11.2	2800	-9	-2797.9	No
LANL-WR-SS-12	A	Iron	7430		13800	23000	-6370	-15570.0	No
LANL-WR-SS-12	A	Lead	10.6		19.7	400	-9	-389.4	No
LANL-WR-SS-12	A	Magnesium	263		2370	NP	-2107	N/A	No
LANL-WR-SS-12	A	Manganese	356		543	7800	-187	-7444.0	No
LANL-WR-SS-12	A	Nickel	1.10	B	9.4	1500	-8	-1498.9	No
LANL-WR-SS-12	A	Potassium	604		2690	NP	-2086	N/A	No
LANL-WR-SS-12	A	Selenium	0.31	B	0.3	380	0.01	-379.7	No
LANL-WR-SS-12	A	Sodium	137	B	1470	NP	-1333	N/A	No
LANL-WR-SS-12	A	Vanadium	2.3		19.7	530	-17	-527.7	No
LANL-WR-SS-12	A	Zinc	57.4	J	60.2	23000	-3	-22942.6	No

Table 12. Analytical Data Summary

Sample id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-13	A	Aluminum	1000	J	15400	74000	-14400	-73000.0	No
LANL-WR-SS-13	A	Antimony	0.27	BJ	0.83	30	-0.56	-29.7	No
LANL-WR-SS-13	A	Arsenic	0.38	B	3.98	3.90	-4	-3.5	No
LANL-WR-SS-13	A	Barium	10.4		127	5200	-117	-5189.6	No
LANL-WR-SS-13	A	Beryllium	0.46		1.31	150	-1	-149.5	No
LANL-WR-SS-13	A	Cadmium	0.067	B	0.40	70	-0.333	-69.9	No
LANL-WR-SS-13	A	Calcium	1620		4400	NP	-2780.000	N/A	No
LANL-WR-SS-13	A	Chromium	0.94	B	10.5	100000	-10	-99999.1	No
LANL-WR-SS-13	A	Cobalt	0.38	B	4.73	4500	-4	-4499.6	No
LANL-WR-SS-13	A	Copper	2.50		11.2	2800	-9	-2797.5	No
LANL-WR-SS-13	A	Iron	7080		13800	23000	-6720	-15920.0	No
LANL-WR-SS-13	A	Lead	12.6		19.7	400	-7	-387.4	No
LANL-WR-SS-13	A	Magnesium	206		2370	NP	-2164	N/A	No
LANL-WR-SS-13	A	Manganese	299		543	7800	-244	-7501.0	No
LANL-WR-SS-13	A	Mercury	0.04	B	0.1	23	-0.065	-23.0	No
LANL-WR-SS-13	A	Nickel	1.10	B	9.4	1500	-8	-1498.9	No
LANL-WR-SS-13	A	Potassium	513	B	2690	NP	-2177	N/A	No
LANL-WR-SS-13	A	Sodium	194	B	1470	NP	-1276	N/A	No
LANL-WR-SS-13	A	Vanadium	2.3	B	19.7	530	-17	-527.7	No
LANL-WR-SS-13	A	Zinc	65	J	60.2	23000	5	-22935.0	No
LANL-WR-SS-14	A	Aluminum	3490	J	15400	74000	-11910	-70510.0	No
LANL-WR-SS-14	A	Antimony	2.3	J	0.83	30	1.47	-27.7	No
LANL-WR-SS-14	A	Arsenic	1.4		3.98	3.90	-3	-2.5	No
LANL-WR-SS-14	A	Barium	55.6		127	5200	-71	-5144.4	No
LANL-WR-SS-14	A	Beryllium	0.44		1.31	150	-1	-149.6	No
LANL-WR-SS-14	A	Cadmium	0.61		0.40	70	0.210	-69.4	No
LANL-WR-SS-14	A	Calcium	2090		4400	NP	-2310.000	N/A	No
LANL-WR-SS-14	A	Chromium	4.30		10.5	100000	-6	-99995.7	No
LANL-WR-SS-14	A	Cobalt	2.50		4.73	4500	-2	-4497.5	No
LANL-WR-SS-14	A	Copper	8.00		11.2	2800	-3	-2792.0	No
LANL-WR-SS-14	A	Iron	7580		13800	23000	-6220	-15420.0	No
LANL-WR-SS-14	A	Lead	33.9		19.7	400	14	-366.1	No
LANL-WR-SS-14	A	Magnesium	830		2370	NP	-1540	N/A	No
LANL-WR-SS-14	A	Manganese	341		543	7800	-202	-7459.0	No
LANL-WR-SS-14	A	Mercury	0.07		0.1	23	-0.032	-22.9	No
LANL-WR-SS-14	A	Nickel	4.20		9.4	1500	-5	-1495.8	No
LANL-WR-SS-14	A	Potassium	1150		2690	NP	-1540	N/A	No
LANL-WR-SS-14	A	Selenium	0.23	B	0.3	380	-0.07	-379.8	No
LANL-WR-SS-14	A	Sodium	53.1	B	1470	NP	-1417	N/A	No
LANL-WR-SS-14	A	Vanadium	8.7		19.7	530	-11	-521.3	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-14	A	Zinc	111	J	60.2	23000	51	-22889.0	No
LANL-WR-SS-15	A	Aluminum	5710	J	15400	74000	-9690	-68290.0	No
LANL-WR-SS-15	A	Antimony	26.8	J	0.83	30	26	-3.2	No
LANL-WR-SS-15	A	Arsenic	4.0		3.98	3.90	0.020	0.1	Yes
LANL-WR-SS-15	A	Barium	127		127	5200	0	-5073.0	No
LANL-WR-SS-15	A	Beryllium	0.63		1.31	150	-1	-149.4	No
LANL-WR-SS-15	A	Cadmium	49.3		0.40	70	48.900	-20.7	No
LANL-WR-SS-15	A	Calcium	5160		4400	NP	760.000	N/A	No SSL; > BV
LANL-WR-SS-15	A	Chromium	7.40		10.5	100000	-3	-99992.6	No
LANL-WR-SS-15	A	Cobalt	5.70		4.73	4500	1	-4494.3	No
LANL-WR-SS-15	A	Copper	35.6		11.2	2800	24	-2764.4	No
LANL-WR-SS-15	A	Iron	26900		13800	23000	13100	3900.0	Yes
LANL-WR-SS-15	A	Lead	114		19.7	400	94	-286.0	No
LANL-WR-SS-15	A	Magnesium	1280		2370	NP	-1090	N/A	No
LANL-WR-SS-15	A	Manganese	423		543	7800	-120	-7377.0	No
LANL-WR-SS-15	A	Mercury	0.21		0.1	23	0.110	-22.8	No
LANL-WR-SS-15	A	Nickel	14.7		9.4	1500	5	-1485.3	No
LANL-WR-SS-15	A	Potassium	1380		2690	NP	-1310	N/A	No
LANL-WR-SS-15	A	Selenium	0.27	B	0.3	380	-0.03	-379.7	No
LANL-WR-SS-15	A	Silver	0.024	B	1.0	380	-0.98	-380.0	No
LANL-WR-SS-15	A	Sodium	59.1	B	1470	NP	-1411	N/A	No
LANL-WR-SS-15	A	Vanadium	23.7		19.7	530	4	-506.3	No
LANL-WR-SS-15	A	Zinc	2030	J	60.2	23000	1970	-20970.0	No
LANL-WR-SS-2	A	Aluminum	1780	J	15400	74000	-13620	-72220.0	No
LANL-WR-SS-2	A	Antimony	0.22	BJ	0.83	30	-0.61	-29.8	No
LANL-WR-SS-2	A	Arsenic	0.65		3.98	3.90	-3	-3.3	No
LANL-WR-SS-2	A	Barium	21.4		127	5200	-106	-5178.6	No
LANL-WR-SS-2	A	Beryllium	0.25		1.31	150	-1	-149.8	No
LANL-WR-SS-2	A	Cadmium	0.086	B	0.40	70	-0.314	-69.9	No
LANL-WR-SS-2	A	Calcium	522	B	4400	NP	-3878.000	N/A	No
LANL-WR-SS-2	A	Chromium	1.90		10.5	100000	-9	-99998.1	No
LANL-WR-SS-2	A	Cobalt	1.10		4.73	4500	-4	-4498.9	No
LANL-WR-SS-2	A	Copper	2.40		11.2	2800	-9	-2797.6	No
LANL-WR-SS-2	A	Iron	4250		13800	23000	-9550	-18750.0	No
LANL-WR-SS-2	A	Lead	9.1		19.7	400	-11	-390.9	No
LANL-WR-SS-2	A	Magnesium	327		2370	NP	-2043	N/A	No
LANL-WR-SS-2	A	Manganese	225		543	7800	-318	-7575.0	No
LANL-WR-SS-2	A	Mercury	0.02	B	0.1	23	-0.080	-23.0	No
LANL-WR-SS-2	A	Nickel	1.50		9.4	1500	-8	-1498.5	No
LANL-WR-SS-2	A	Potassium	442	B	2690	NP	-2248	N/A	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-2	A	Selenium	0.14	B	0.3	380	-0.16	-379.9	No
LANL-WR-SS-2	A	Sodium	41.2	B	1470	NP	-1429	N/A	No
LANL-WR-SS-2	A	Vanadium	3.7		19.7	530	-16	-526.3	No
LANL-WR-SS-2	A	Zinc	25.3	J	60.2	23000	-35	-22974.7	No
LANL-WR-SS-3	A	Aluminum	3200	J	15400	74000	-12200	-70800.0	No
LANL-WR-SS-3	A	Arsenic	1.2		3.98	3.90	-3	-2.7	No
LANL-WR-SS-3	A	Barium	44.6		127	5200	-82	-5155.4	No
LANL-WR-SS-3	A	Beryllium	0.44		1.31	150	-1	-149.6	No
LANL-WR-SS-3	A	Cadmium	0.084	B	0.40	70	-0.316	-69.9	No
LANL-WR-SS-3	A	Calcium	1210		4400	NP	-3190.000	N/A	No
LANL-WR-SS-3	A	Chromium	3.40		10.5	100000	-7	-99996.6	No
LANL-WR-SS-3	A	Cobalt	2.00		4.73	4500	-3	-4498.0	No
LANL-WR-SS-3	A	Copper	3.50		11.2	2800	-8	-2796.5	No
LANL-WR-SS-3	A	Iron	6270		13800	23000	-7530	-16730.0	No
LANL-WR-SS-3	A	Lead	10.4		19.7	400	-9	-389.6	No
LANL-WR-SS-3	A	Magnesium	600		2370	NP	-1770	N/A	No
LANL-WR-SS-3	A	Manganese	320		543	7800	-223	-7480.0	No
LANL-WR-SS-3	A	Nickel	2.80		9.4	1500	-7	-1497.2	No
LANL-WR-SS-3	A	Potassium	667		2690	NP	-2023	N/A	No
LANL-WR-SS-3	A	Sodium	51.1	B	1470	NP	-1419	N/A	No
LANL-WR-SS-3	A	Vanadium	7.5		19.7	530	-12	-522.5	No
LANL-WR-SS-3	A	Zinc	30	J	60.2	23000	-30	-22970.0	No
LANL-WR-SS-4	A	Aluminum	2790	J	15400	74000	-12610	-71210.0	No
LANL-WR-SS-4	A	Antimony	0.16	BJ	0.83	30	-0.67	-29.8	No
LANL-WR-SS-4	A	Arsenic	1.2		3.98	3.90	-3	-2.7	No
LANL-WR-SS-4	A	Barium	30.2		127	5200	-97	-5169.8	No
LANL-WR-SS-4	A	Beryllium	0.35		1.31	150	-1	-149.7	No
LANL-WR-SS-4	A	Cadmium	0.11		0.40	70	-0.290	-69.9	No
LANL-WR-SS-4	A	Calcium	729		4400	NP	-3671.000	N/A	No
LANL-WR-SS-4	A	Chromium	3.50		10.5	100000	-7	-99996.5	No
LANL-WR-SS-4	A	Cobalt	1.80		4.73	4500	-3	-4498.2	No
LANL-WR-SS-4	A	Copper	3.60		11.2	2800	-8	-2796.4	No
LANL-WR-SS-4	A	Iron	6340		13800	23000	-7460	-16660.0	No
LANL-WR-SS-4	A	Lead	12.6		19.7	400	-7	-387.4	No
LANL-WR-SS-4	A	Magnesium	587		2370	NP	-1783	N/A	No
LANL-WR-SS-4	A	Manganese	259		543	7800	-284	-7541.0	No
LANL-WR-SS-4	A	Nickel	2.40		9.4	1500	-7	-1497.6	No
LANL-WR-SS-4	A	Potassium	659		2690	NP	-2031	N/A	No
LANL-WR-SS-4	A	Sodium	48.4	B	1470	NP	-1422	N/A	No
LANL-WR-SS-4	A	Vanadium	6.5		19.7	530	-13	-523.5	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-4	A	Zinc	37	J	60.2	23000	-23	-22963.0	No
LANL-WR-SS-5	A	Aluminum	2990	J	15400	74000	-12410	-71010.0	No
LANL-WR-SS-5	A	Antimony	0.24	BJ	0.83	30	-0.59	-29.8	No
LANL-WR-SS-5	A	Arsenic	1.0		3.98	3.90	-3	-2.9	No
LANL-WR-SS-5	A	Barium	32.3		127	5200	-95	-5167.7	No
LANL-WR-SS-5	A	Beryllium	0.38		1.31	150	-1	-149.6	No
LANL-WR-SS-5	A	Cadmium	0.17		0.40	70	-0.230	-69.8	No
LANL-WR-SS-5	A	Calcium	915		4400	NP	-3485.000	N/A	No
LANL-WR-SS-5	A	Chromium	3.10		10.5	100000	-7	-99996.9	No
LANL-WR-SS-5	A	Cobalt	1.60		4.73	4500	-3	-4498.4	No
LANL-WR-SS-5	A	Copper	4.20		11.2	2800	-7	-2795.8	No
LANL-WR-SS-5	A	Iron	6950		13800	23000	-6850	-16050.0	No
LANL-WR-SS-5	A	Lead	15.4		19.7	400	-4	-384.6	No
LANL-WR-SS-5	A	Magnesium	578		2370	NP	-1792	N/A	No
LANL-WR-SS-5	A	Manganese	383		543	7800	-160	-7417.0	No
LANL-WR-SS-5	A	Mercury	0.02	B	0.1	23	-0.081	-23.0	No
LANL-WR-SS-5	A	Nickel	2.40		9.4	1500	-7	-1497.6	No
LANL-WR-SS-5	A	Potassium	546	B	2690	NP	-2144	N/A	No
LANL-WR-SS-5	A	Sodium	55.2	B	1470	NP	-1415	N/A	No
LANL-WR-SS-5	A	Vanadium	6.0		19.7	530	-14	-524.0	No
LANL-WR-SS-5	A	Zinc	45.1	J	60.2	23000	-15	-22954.9	No
LANL-WR-SS-6	A	Aluminum	3800	J	15400	74000	-11600	-70200.0	No
LANL-WR-SS-6	A	Antimony	0.24	BJ	0.83	30	-0.59	-29.8	No
LANL-WR-SS-6	A	Arsenic	2.1		3.98	3.90	-2	-1.8	No
LANL-WR-SS-6	A	Barium	48.7		127	5200	-78	-5151.3	No
LANL-WR-SS-6	A	Beryllium	0.42		1.31	150	-1	-149.6	No
LANL-WR-SS-6	A	Cadmium	0.28		0.40	70	-0.120	-69.7	No
LANL-WR-SS-6	A	Calcium	1780		4400	NP	-2620.000	N/A	No
LANL-WR-SS-6	A	Chromium	4.50		10.5	100000	-6	-99995.5	No
LANL-WR-SS-6	A	Cobalt	2.40		4.73	4500	-2	-4497.6	No
LANL-WR-SS-6	A	Copper	6.90		11.2	2800	-4	-2793.1	No
LANL-WR-SS-6	A	Iron	7060		13800	23000	-6740	-15940.0	No
LANL-WR-SS-6	A	Lead	28.3		19.7	400	9	-371.7	No
LANL-WR-SS-6	A	Magnesium	786		2370	NP	-1584	N/A	No
LANL-WR-SS-6	A	Manganese	376		543	7800	-167	-7424.0	No
LANL-WR-SS-6	A	Mercury	0.04		0.1	23	-0.061	-23.0	No
LANL-WR-SS-6	A	Nickel	3.20		9.4	1500	-6	-1496.8	No
LANL-WR-SS-6	A	Potassium	1160		2690	NP	-1530	N/A	No
LANL-WR-SS-6	A	Sodium	71.8	B	1470	NP	-1398	N/A	No
LANL-WR-SS-6	A	Vanadium	8.2		19.7	530	-12	-521.8	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-6	A	Zinc	55.9	J	60.2	23000	-4	-22944.1	No
LANL-WR-SS-7	A	Aluminum	2930	J	15400	74000	-12470	-71070.0	No
LANL-WR-SS-7	A	Antimony	0.35	BJ	0.83	30	-0.48	-29.7	No
LANL-WR-SS-7	A	Arsenic	0.67		3.98	3.90	-3	-3.2	No
LANL-WR-SS-7	A	Barium	37		127	5200	-90	-5163.0	No
LANL-WR-SS-7	A	Beryllium	0.42		1.31	150	-1	-149.6	No
LANL-WR-SS-7	A	Cadmium	0.3		0.40	70	-0.100	-69.7	No
LANL-WR-SS-7	A	Calcium	1530		4400	NP	-2870.000	N/A	No
LANL-WR-SS-7	A	Chromium	3.20		10.5	100000	-7	-99996.8	No
LANL-WR-SS-7	A	Cobalt	1.60		4.73	4500	-3	-4498.4	No
LANL-WR-SS-7	A	Copper	4.90		11.2	2800	-6	-2795.1	No
LANL-WR-SS-7	A	Iron	6960		13800	23000	-6840	-16040.0	No
LANL-WR-SS-7	A	Lead	17.7		19.7	400	-2	-382.3	No
LANL-WR-SS-7	A	Magnesium	497		2370	NP	-1873	N/A	No
LANL-WR-SS-7	A	Manganese	341		543	7800	-202	-7459.0	No
LANL-WR-SS-7	A	Nickel	2.50		9.4	1500	-7	-1497.5	No
LANL-WR-SS-7	A	Potassium	675		2690	NP	-2015	N/A	No
LANL-WR-SS-7	A	Selenium	0.37	B	0.3	380	0.07	-379.6	No
LANL-WR-SS-7	A	Sodium	68.1	B	1470	NP	-1402	N/A	No
LANL-WR-SS-7	A	Vanadium	5.7		19.7	530	-14	-524.3	No
LANL-WR-SS-7	A	Zinc	57.3	J	60.2	23000	-3	-22942.7	No
LANL-WR-SS-8	A	Aluminum	2820	J	15400	74000	-12580	-71180.0	No
LANL-WR-SS-8	A	Antimony	1.2	J	0.83	30	0.37	-28.8	No
LANL-WR-SS-8	A	Arsenic	1.2		3.98	3.90	-3	-2.7	No
LANL-WR-SS-8	A	Barium	40.9		127	5200	-86	-5159.1	No
LANL-WR-SS-8	A	Beryllium	0.49		1.31	150	-1	-149.5	No
LANL-WR-SS-8	A	Cadmium	0.53		0.40	70	0.130	-69.5	No
LANL-WR-SS-8	A	Calcium	1740		4400	NP	-2660.000	N/A	No
LANL-WR-SS-8	A	Chromium	3.60		10.5	100000	-7	-99996.4	No
LANL-WR-SS-8	A	Cobalt	1.90		4.73	4500	-3	-4498.1	No
LANL-WR-SS-8	A	Copper	8.30		11.2	2800	-3	-2791.7	No
LANL-WR-SS-8	A	Iron	9930		13800	23000	-3870	-13070.0	No
LANL-WR-SS-8	A	Lead	48		19.7	400	28	-352.0	No
LANL-WR-SS-8	A	Magnesium	586		2370	NP	-1784	N/A	No
LANL-WR-SS-8	A	Manganese	376		543	7800	-167	-7424.0	No
LANL-WR-SS-8	A	Mercury	0.04		0.1	23	-0.062	-23.0	No
LANL-WR-SS-8	A	Nickel	4.60		9.4	1500	-5	-1495.4	No
LANL-WR-SS-8	A	Potassium	539	B	2690	NP	-2151	N/A	No
LANL-WR-SS-8	A	Sodium	68.4	B	1470	NP	-1402	N/A	No
LANL-WR-SS-8	A	Vanadium	6.2		19.7	530	-14	-523.8	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-8	A	Zinc	82.3	J	60.2	23000	22	-22917.7	No
LANL-WR-SS-9	A	Aluminum	3400	J	15400	74000	-12000	-70600.0	No
LANL-WR-SS-9	A	Antimony	0.2	BJ	0.83	30	-0.63	-29.8	No
LANL-WR-SS-9	A	Arsenic	0.96		3.98	3.90	-3	-2.9	No
LANL-WR-SS-9	A	Barium	43.2		127	5200	-84	-5156.8	No
LANL-WR-SS-9	A	Beryllium	0.88		1.31	150	0	-149.1	No
LANL-WR-SS-9	A	Cadmium	0.14		0.40	70	-0.260	-69.9	No
LANL-WR-SS-9	A	Calcium	1760		4400	NP	-2640.000	N/A	No
LANL-WR-SS-9	A	Chromium	1.80		10.5	100000	-9	-99998.2	No
LANL-WR-SS-9	A	Cobalt	0.64	B	4.73	4500	-4	-4499.4	No
LANL-WR-SS-9	A	Copper	7.90		11.2	2800	-3	-2792.1	No
LANL-WR-SS-9	A	Iron	5480		13800	23000	-8320	-17520.0	No
LANL-WR-SS-9	A	Lead	14		19.7	400	-6	-386.0	No
LANL-WR-SS-9	A	Magnesium	328		2370	NP	-2042	N/A	No
LANL-WR-SS-9	A	Manganese	264		543	7800	-279	-7536.0	No
LANL-WR-SS-9	A	Mercury	0.03	B	0.1	23	-0.075	-23.0	No
LANL-WR-SS-9	A	Nickel	1.80		9.4	1500	-8	-1498.2	No
LANL-WR-SS-9	A	Potassium	888		2690	NP	-1802	N/A	No
LANL-WR-SS-9	A	Selenium	0.47	B	0.3	380	0.17	-379.5	No
LANL-WR-SS-9	A	Sodium	179	B	1470	NP	-1291	N/A	No
LANL-WR-SS-9	A	Vanadium	2.9		19.7	530	-17	-527.1	No
LANL-WR-SS-9	A	Zinc	43.1	J	60.2	23000	-17	-22956.9	No
LANL-WR-SS-64	A (DUP-SS-1)	Aluminum	1910	J	15400	74000	-13490	-72090.0	No
LANL-WR-SS-64	A (DUP-SS-1)	Arsenic	0.94		3.98	3.90	-3	-3.0	No
LANL-WR-SS-64	A (DUP-SS-1)	Barium	21.8		127	5200	-105	-5178.2	No
LANL-WR-SS-64	A (DUP-SS-1)	Beryllium	0.21		1.31	150	-1	-149.8	No
LANL-WR-SS-64	A (DUP-SS-1)	Cadmium	0.086	B	0.4	70	-0.314	-69.9	No
LANL-WR-SS-64	A (DUP-SS-1)	Calcium	506	B	4400	NP	-3894.000	N/A	No
LANL-WR-SS-64	A (DUP-SS-1)	Chromium	1.90	J	10.5	100000	-9	-99998.1	No
LANL-WR-SS-64	A (DUP-SS-1)	Cobalt	1.40		4.73	4500	-3	-4498.6	No
LANL-WR-SS-64	A (DUP-SS-1)	Copper	2.20		11.2	2800	-9	-2797.8	No
LANL-WR-SS-64	A (DUP-SS-1)	Iron	5230		13800	23000	-8570	-17770.0	No
LANL-WR-SS-64	A (DUP-SS-1)	Lead	10.8	J	19.7	400	-9	-389.2	No
LANL-WR-SS-64	A (DUP-SS-1)	Magnesium	388	J	2370	NP	-1982	N/A	No
LANL-WR-SS-64	A (DUP-SS-1)	Manganese	237		543	7800	-306	-7563.0	No
LANL-WR-SS-64	A (DUP-SS-1)	Mercury	0.02	B	0.1	23	-0.079	-23.0	No
LANL-WR-SS-64	A (DUP-SS-1)	Nickel	1.60	J	9.4	1500	-8	-1498.4	No
LANL-WR-SS-64	A (DUP-SS-1)	Potassium	359	B	2690	NP	-2331	N/A	No
LANL-WR-SS-64	A (DUP-SS-1)	Selenium	0.15	B	0.3	380	-0.15	-379.9	No
LANL-WR-SS-64	A (DUP-SS-1)	Silver	0.017	B	1.0	380	-0.98	-380.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-64	A (DUP-SS-1)	Sodium	35.4	B	1470	NP	-1435	N/A	No
LANL-WR-SS-64	A (DUP-SS-1)	Vanadium	5.9		19.7	530	-14	-524.1	No
LANL-WR-SS-64	A (DUP-SS-1)	Zinc	28.7	J	60.2	23000	-32	-22971.3	No
LANL-WR-SS-16	B	Aluminum	3110	J	15400	74000	-12290	-70890.0	No
LANL-WR-SS-16	B	Arsenic	1.2		3.98	3.90	-3	-2.7	No
LANL-WR-SS-16	B	Barium	50.5		127	5200	-77	-5149.5	No
LANL-WR-SS-16	B	Beryllium	0.47		1.31	150	-1	-149.5	No
LANL-WR-SS-16	B	Cadmium	0.075	B	0.40	70	-0.325	-69.9	No
LANL-WR-SS-16	B	Calcium	1390		4400	NP	-3010.000	N/A	No
LANL-WR-SS-16	B	Chromium	2.90		10.5	100000	-8	-99997.1	No
LANL-WR-SS-16	B	Cobalt	2.00		4.73	4500	-3	-4498.0	No
LANL-WR-SS-16	B	Copper	3.80		11.2	2800	-7	-2796.2	No
LANL-WR-SS-16	B	Iron	7130		13800	23000	-6670	-15870.0	No
LANL-WR-SS-16	B	Lead	16.3		19.7	400	-3	-383.7	No
LANL-WR-SS-16	B	Magnesium	644		2370	NP	-1726	N/A	No
LANL-WR-SS-16	B	Manganese	321		543	7800	-222	-7479.0	No
LANL-WR-SS-16	B	Mercury	0.03	B	0.1	23	-0.075	-23.0	No
LANL-WR-SS-16	B	Nickel	3.10		9.4	1500	-6	-1496.9	No
LANL-WR-SS-16	B	Potassium	945		2690	NP	-1745	N/A	No
LANL-WR-SS-16	B	Selenium	0.19	B	0.3	380	-0.11	-379.8	No
LANL-WR-SS-16	B	Sodium	44.8	B	1470	NP	-1425	N/A	No
LANL-WR-SS-16	B	Vanadium	7.7		19.7	530	-12	-522.3	No
LANL-WR-SS-16	B	Zinc	31	J	60.2	23000	-29	-22969.0	No
LANL-WR-SS-17	B	Aluminum	1840	J	15400	74000	-13560	-72160.0	No
LANL-WR-SS-17	B	Barium	22.2		127	5200	-105	-5177.8	No
LANL-WR-SS-17	B	Beryllium	0.38		1.31	150	-1	-149.6	No
LANL-WR-SS-17	B	Cadmium	0.04	B	0.40	70	-0.360	-70.0	No
LANL-WR-SS-17	B	Calcium	505	B	4400	NP	-3895.000	N/A	No
LANL-WR-SS-17	B	Chromium	1.60		10.5	100000	-9	-99998.4	No
LANL-WR-SS-17	B	Cobalt	0.94	B	4.73	4500	-4	-4499.1	No
LANL-WR-SS-17	B	Copper	2.00		11.2	2800	-9	-2798.0	No
LANL-WR-SS-17	B	Iron	5140		13800	23000	-8660	-17860.0	No
LANL-WR-SS-17	B	Lead	15		19.7	400	-5	-385.0	No
LANL-WR-SS-17	B	Magnesium	335		2370	NP	-2035	N/A	No
LANL-WR-SS-17	B	Manganese	242		543	7800	-301	-7558.0	No
LANL-WR-SS-17	B	Nickel	1.80		9.4	1500	-8	-1498.2	No
LANL-WR-SS-17	B	Potassium	367	B	2690	NP	-2323	N/A	No
LANL-WR-SS-17	B	Sodium	76.1	B	1470	NP	-1394	N/A	No
LANL-WR-SS-17	B	Vanadium	3.6		19.7	530	-16	-526.4	No
LANL-WR-SS-17	B	Zinc	25.2	J	60.2	23000	-35	-22974.8	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-18	B	Aluminum	1870	J	15400	74000	-13530	-72130.0	No
LANL-WR-SS-18	B	Arsenic	0.22	B	3.98	3.90	-4	-3.7	No
LANL-WR-SS-18	B	Barium	23		127	5200	-104	-5177.0	No
LANL-WR-SS-18	B	Beryllium	0.38		1.31	150	-1	-149.6	No
LANL-WR-SS-18	B	Cadmium	0.055	B	0.40	70	-0.345	-69.9	No
LANL-WR-SS-18	B	Calcium	660		4400	NP	-3740.000	N/A	No
LANL-WR-SS-18	B	Chromium	1.90		10.5	100000	-9	-99998.1	No
LANL-WR-SS-18	B	Cobalt	1.20		4.73	4500	-4	-4498.8	No
LANL-WR-SS-18	B	Copper	2.10		11.2	2800	-9	-2797.9	No
LANL-WR-SS-18	B	Iron	5340		13800	23000	-8460	-17660.0	No
LANL-WR-SS-18	B	Lead	9.4		19.7	400	-10	-390.6	No
LANL-WR-SS-18	B	Magnesium	343		2370	NP	-2027	N/A	No
LANL-WR-SS-18	B	Manganese	224		543	7800	-319	-7576.0	No
LANL-WR-SS-18	B	Nickel	1.90		9.4	1500	-7	-1498.1	No
LANL-WR-SS-18	B	Potassium	688		2690	NP	-2002	N/A	No
LANL-WR-SS-18	B	Sodium	49.8	B	1470	NP	-1420	N/A	No
LANL-WR-SS-18	B	Vanadium	4.7		19.7	530	-15	-525.3	No
LANL-WR-SS-18	B	Zinc	30.4	J	60.2	23000	-30	-22969.6	No
LANL-WR-SS-19	B	Aluminum	1710	J	15400	74000	-13690	-72290.0	No
LANL-WR-SS-19	B	Barium	20.6		127	5200	-106	-5179.4	No
LANL-WR-SS-19	B	Beryllium	0.44		1.31	150	-1	-149.6	No
LANL-WR-SS-19	B	Cadmium	0.039	B	0.40	70	-0.361	-70.0	No
LANL-WR-SS-19	B	Calcium	555		4400	NP	-3845.000	N/A	No
LANL-WR-SS-19	B	Chromium	1.20		10.5	100000	-9	-99998.8	No
LANL-WR-SS-19	B	Cobalt	0.78	B	4.73	4500	-4	-4499.2	No
LANL-WR-SS-19	B	Copper	1.70		11.2	2800	-10	-2798.3	No
LANL-WR-SS-19	B	Iron	3270		13800	23000	-10530	-19730.0	No
LANL-WR-SS-19	B	Lead	36		19.7	400	16	-364.0	No
LANL-WR-SS-19	B	Magnesium	334		2370	NP	-2036	N/A	No
LANL-WR-SS-19	B	Manganese	257		543	7800	-286	-7543.0	No
LANL-WR-SS-19	B	Nickel	1.40		9.4	1500	-8	-1498.6	No
LANL-WR-SS-19	B	Potassium	372	B	2690	NP	-2318	N/A	No
LANL-WR-SS-19	B	Sodium	65.3	B	1470	NP	-1405	N/A	No
LANL-WR-SS-19	B	Vanadium	2.8		19.7	530	-17	-527.2	No
LANL-WR-SS-19	B	Zinc	32	J	60.2	23000	-28	-22968.0	No
LANL-WR-SS-20	B	Aluminum	1720	J	15400	74000	-13680	-72280.0	No
LANL-WR-SS-20	B	Arsenic	1.7		3.98	3.90	-2	-2.2	No
LANL-WR-SS-20	B	Barium	22.1		127	5200	-105	-5177.9	No
LANL-WR-SS-20	B	Beryllium	0.28		1.31	150	-1	-149.7	No
LANL-WR-SS-20	B	Cadmium	0.59		0.40	70	0.190	-69.4	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-20	B	Calcium	619		4400	NP	-3781.000	N/A	No
LANL-WR-SS-20	B	Chromium	2.60		10.5	100000	-8	-99997.4	No
LANL-WR-SS-20	B	Cobalt	2.30		4.73	4500	-2	-4497.7	No
LANL-WR-SS-20	B	Copper	8.00		11.2	2800	-3	-2792.0	No
LANL-WR-SS-20	B	Iron	18100		13800	23000	4300	-4900.0	No
LANL-WR-SS-20	B	Lead	9.7		19.7	400	-10	-390.3	No
LANL-WR-SS-20	B	Magnesium	311		2370	NP	-2059	N/A	No
LANL-WR-SS-20	B	Manganese	227		543	7800	-316	-7573.0	No
LANL-WR-SS-20	B	Nickel	5.20		9.4	1500	-4	-1494.8	No
LANL-WR-SS-20	B	Potassium	429	B	2690	NP	-2261	N/A	No
LANL-WR-SS-20	B	Sodium	39	B	1470	NP	-1431	N/A	No
LANL-WR-SS-20	B	Vanadium	4.1		19.7	530	-16	-525.9	No
LANL-WR-SS-20	B	Zinc	202	J	60.2	23000	142	-22798.0	No
LANL-WR-SS-21	B	Aluminum	2640	J	15400	74000	-12760	-71360.0	No
LANL-WR-SS-21	B	Arsenic	0.95		3.98	3.90	-3	-3.0	No
LANL-WR-SS-21	B	Barium	30.5		127	5200	-97	-5169.5	No
LANL-WR-SS-21	B	Beryllium	0.36		1.31	150	-1	-149.6	No
LANL-WR-SS-21	B	Cadmium	0.19		0.40	70	-0.210	-69.8	No
LANL-WR-SS-21	B	Calcium	1080		4400	NP	-3320.000	N/A	No
LANL-WR-SS-21	B	Chromium	2.30		10.5	100000	-8	-99997.7	No
LANL-WR-SS-21	B	Cobalt	1.40		4.73	4500	-3	-4498.6	No
LANL-WR-SS-21	B	Copper	3.30		11.2	2800	-8	-2796.7	No
LANL-WR-SS-21	B	Iron	5190		13800	23000	-8610	-17810.0	No
LANL-WR-SS-21	B	Lead	11.9		19.7	400	-8	-388.1	No
LANL-WR-SS-21	B	Magnesium	517	J	2370	NP	-1853	N/A	No
LANL-WR-SS-21	B	Manganese	241		543	7800	-302	-7559.0	No
LANL-WR-SS-21	B	Nickel	2.20		9.4	1500	-7	-1497.8	No
LANL-WR-SS-21	B	Potassium	666		2690	NP	-2024	N/A	No
LANL-WR-SS-21	B	Sodium	72.3	B	1470	NP	-1398	N/A	No
LANL-WR-SS-21	B	Thallium	0.28	B	0.73	6.1	-0.45	-5.8	No
LANL-WR-SS-21	B	Vanadium	35.4		19.7	530	16	-494.6	No
LANL-WR-SS-21	B	Zinc	62.5		60.2	23000	2	-22937.5	No
LANL-WR-SS-22	B	Aluminum	2990	J	15400	74000	-12410	-71010.0	No
LANL-WR-SS-22	B	Arsenic	1.2		3.98	3.90	-3	-2.7	No
LANL-WR-SS-22	B	Barium	68.4		127	5200	-59	-5131.6	No
LANL-WR-SS-22	B	Beryllium	0.5		1.31	150	-1	-149.5	No
LANL-WR-SS-22	B	Cadmium	0.19		0.40	70	-0.210	-69.8	No
LANL-WR-SS-22	B	Calcium	1880		4400	NP	-2520.000	N/A	No
LANL-WR-SS-22	B	Chromium	3.00		10.5	100000	-8	-99997.0	No
LANL-WR-SS-22	B	Cobalt	1.80		4.73	4500	-3	-4498.2	No

Table 12. Analytical Data Summary

Sample id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-22	B	Copper	6.00		11.2	2800	-5	-2794.0	No
LANL-WR-SS-22	B	Iron	5830		13800	23000	-7970	-17170.0	No
LANL-WR-SS-22	B	Lead	18.2		19.7	400	-2	-381.8	No
LANL-WR-SS-22	B	Magnesium	777	J	2370	NP	-1593	N/A	No
LANL-WR-SS-22	B	Manganese	411		543	7800	-132	-7389.0	No
LANL-WR-SS-22	B	Mercury	0.06		0.1	23	-0.042	-22.9	No
LANL-WR-SS-22	B	Nickel	3.10		9.4	1500	-6	-1496.9	No
LANL-WR-SS-22	B	Potassium	731		2690	NP	-1959	N/A	No
LANL-WR-SS-22	B	Selenium	0.30	B	0.3	380	0	-379.7	No
LANL-WR-SS-22	B	Sodium	77.4	B	1470	NP	-1393	N/A	No
LANL-WR-SS-22	B	Vanadium	7.9		19.7	530	-12	-522.1	No
LANL-WR-SS-22	B	Zinc	48.3		60.2	23000	-12	-22951.7	No
LANL-WR-SS-23	B	Aluminum	2300	J	15400	74000	-13100	-71700.0	No
LANL-WR-SS-23	B	Arsenic	0.99		3.98	3.90	-3	-2.9	No
LANL-WR-SS-23	B	Barium	29.7		127	5200	-97	-5170.3	No
LANL-WR-SS-23	B	Beryllium	0.37		1.31	150	-1	-149.6	No
LANL-WR-SS-23	B	Cadmium	0.24		0.40	70	-0.160	-69.8	No
LANL-WR-SS-23	B	Calcium	1360		4400	NP	-3040.000	N/A	No
LANL-WR-SS-23	B	Chromium	2.90		10.5	100000	-8	-99997.1	No
LANL-WR-SS-23	B	Cobalt	1.30		4.73	4500	-3	-4498.7	No
LANL-WR-SS-23	B	Copper	3.50		11.2	2800	-8	-2796.5	No
LANL-WR-SS-23	B	Iron	4780		13800	23000	-9020	-18220.0	No
LANL-WR-SS-23	B	Lead	11.8		19.7	400	-8	-388.2	No
LANL-WR-SS-23	B	Magnesium	544	J	2370	NP	-1826	N/A	No
LANL-WR-SS-23	B	Manganese	249		543	7800	-294	-7551.0	No
LANL-WR-SS-23	B	Mercury	0.03	B	0.1	23	-0.070	-23.0	No
LANL-WR-SS-23	B	Nickel	2.40		9.4	1500	-7	-1497.6	No
LANL-WR-SS-23	B	Potassium	731		2690	NP	-1959	N/A	No
LANL-WR-SS-23	B	Selenium	0.17	B	0.3	380	-0.13	-379.8	No
LANL-WR-SS-23	B	Sodium	70.2	B	1470	NP	-1400	N/A	No
LANL-WR-SS-23	B	Vanadium	6.5		19.7	530	-13	-523.5	No
LANL-WR-SS-23	B	Zinc	66.2		60.2	23000	6	-22933.8	No
LANL-WR-SS-24	B	Aluminum	1120	J	15400	74000	-14280	-72880.0	No
LANL-WR-SS-24	B	Arsenic	0.36	B	3.98	3.90	-4	-3.5	No
LANL-WR-SS-24	B	Barium	11.1		127	5200	-116	-5188.9	No
LANL-WR-SS-24	B	Beryllium	0.18		1.31	150	-1	-149.8	No
LANL-WR-SS-24	B	Cadmium	0.086	B	0.40	70	-0.314	-69.9	No
LANL-WR-SS-24	B	Calcium	639		4400	NP	-3761.000	N/A	No
LANL-WR-SS-24	B	Chromium	0.97	B	10.5	100000	-10	-99999.0	No
LANL-WR-SS-24	B	Cobalt	0.44	B	4.73	4500	-4	-4499.6	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-24	B	Copper	1.70		11.2	2800	-10	-2798.3	No
LANL-WR-SS-24	B	Iron	2900		13800	23000	-10900	-20100.0	No
LANL-WR-SS-24	B	Lead	7.1		19.7	400	-13	-392.9	No
LANL-WR-SS-24	B	Magnesium	202	J	2370	NP	-2168	N/A	No
LANL-WR-SS-24	B	Manganese	143		543	7800	-400	-7657.0	No
LANL-WR-SS-24	B	Nickel	1.00	B	9.4	1500	-8	-1499.0	No
LANL-WR-SS-24	B	Potassium	353	B	2690	NP	-2337	N/A	No
LANL-WR-SS-24	B	Sodium	60.8	B	1470	NP	-1409	N/A	No
LANL-WR-SS-24	B	Vanadium	3.3	B	19.7	530	-16	-526.7	No
LANL-WR-SS-24	B	Zinc	34.5		60.2	23000	-26	-22965.5	No
LANL-WR-SS-25	B	Aluminum	2000	J	15400	74000	-13400	-72000.0	No
LANL-WR-SS-25	B	Arsenic	0.94		3.98	3.90	-3	-3.0	No
LANL-WR-SS-25	B	Barium	31.3		127	5200	-96	-5168.7	No
LANL-WR-SS-25	B	Beryllium	0.37		1.31	150	-1	-149.6	No
LANL-WR-SS-25	B	Cadmium	0.59		0.40	70	0.190	-69.4	No
LANL-WR-SS-25	B	Calcium	1330		4400	NP	-3070.000	N/A	No
LANL-WR-SS-25	B	Chromium	2.2		10.5	100000	-8	-99997.8	No
LANL-WR-SS-25	B	Cobalt	1.60		4.73	4500	-3	-4498.4	No
LANL-WR-SS-25	B	Copper	3.40		11.2	2800	-8	-2796.6	No
LANL-WR-SS-25	B	Iron	5720		13800	23000	-8080	-17280.0	No
LANL-WR-SS-25	B	Lead	11.6		19.7	400	-8	-388.4	No
LANL-WR-SS-25	B	Magnesium	435	J	2370	NP	-1935	N/A	No
LANL-WR-SS-25	B	Manganese	199		543	7800	-344	-7601.0	No
LANL-WR-SS-25	B	Nickel	2.50		9.4	1500	-7	-1497.5	No
LANL-WR-SS-25	B	Potassium	508	B	2690	NP	-2182	N/A	No
LANL-WR-SS-25	B	Sodium	63.7	B	1470	NP	-1406	N/A	No
LANL-WR-SS-25	B	Vanadium	6.8		19.7	530	-13	-523.2	No
LANL-WR-SS-25	B	Zinc	200		60.2	23000	140	-22800.0	No
LANL-WR-SS-26	B	Aluminum	2880	J	15400	74000	-12520	-71120.0	No
LANL-WR-SS-26	B	Arsenic	0.95		3.98	3.90	-3	-3.0	No
LANL-WR-SS-26	B	Barium	43.5		127	5200	-84	-5156.5	No
LANL-WR-SS-26	B	Beryllium	0.52		1.31	150	-1	-149.5	No
LANL-WR-SS-26	B	Cadmium	0.23		0.40	70	-0.170	-69.8	No
LANL-WR-SS-26	B	Calcium	1180		4400	NP	-3220.000	N/A	No
LANL-WR-SS-26	B	Chromium	2.80		10.5	100000	-8	-99997.2	No
LANL-WR-SS-26	B	Cobalt	1.70		4.73	4500	-3	-4498.3	No
LANL-WR-SS-26	B	Copper	4.70		11.2	2800	-7	-2795.3	No
LANL-WR-SS-26	B	Iron	5240		13800	23000	-8560	-17760.0	No
LANL-WR-SS-26	B	Lead	14.2		19.7	400	-6	-385.8	No
LANL-WR-SS-26	B	Magnesium	602	J	2370	NP	-1768	N/A	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-26	B	Manganese	226		543	7800	-317	-7574.0	No
LANL-WR-SS-26	B	Nickel	2.80		9.4	1500	-7	-1497.2	No
LANL-WR-SS-26	B	Potassium	931		2690	NP	-1759	N/A	No
LANL-WR-SS-26	B	Selenium	0.23	B	0.3	380	-0.07	-379.8	No
LANL-WR-SS-26	B	Sodium	108	B	1470	NP	-1362	N/A	No
LANL-WR-SS-26	B	Vanadium	8.4		19.7	530	-11	-521.6	No
LANL-WR-SS-26	B	Zinc	72.9		60.2	23000	13	-22927.1	No
LANL-WR-SS-27	B	Aluminum	5040	J	15400	74000	-10360	-68960.0	No
LANL-WR-SS-27	B	Arsenic	3.1		3.98	3.90	-1	-0.8	No
LANL-WR-SS-27	B	Barium	92.8		127	5200	-34	-5107.2	No
LANL-WR-SS-27	B	Beryllium	0.84		1.31	150	0	-149.2	No
LANL-WR-SS-27	B	Cadmium	0.81		0.40	70	0.410	-69.2	No
LANL-WR-SS-27	B	Calcium	2600		4400	NP	-1800.000	N/A	No
LANL-WR-SS-27	B	Chromium	7.70		10.5	100000	-3	-99992.3	No
LANL-WR-SS-27	B	Cobalt	4.30		4.73	4500	-0.43	-4495.7	No
LANL-WR-SS-27	B	Copper	10.2		11.2	2800	-1	-2789.8	No
LANL-WR-SS-27	B	Iron	18700		13800	23000	4900	-4300.0	No
LANL-WR-SS-27	B	Lead	24.9		19.7	400	5	-375.1	No
LANL-WR-SS-27	B	Magnesium	1140	J	2370	NP	-1230	N/A	No
LANL-WR-SS-27	B	Manganese	445		543	7800	-98	-7355.0	No
LANL-WR-SS-27	B	Mercury	0.05		0.1	23	-0.052	-23.0	No
LANL-WR-SS-27	B	Nickel	6.70		9.4	1500	-3	-1493.3	No
LANL-WR-SS-27	B	Potassium	969		2690	NP	-1721	N/A	No
LANL-WR-SS-27	B	Sodium	79.2	B	1470	NP	-1391	N/A	No
LANL-WR-SS-27	B	Vanadium	14.1		19.7	530	-6	-515.9	No
LANL-WR-SS-27	B	Zinc	296		60.2	23000	236	-22704.0	No
LANL-WR-SS-28	B	Aluminum	1540	J	15400	74000	-13860	-72460.0	No
LANL-WR-SS-28	B	Arsenic	0.96		3.98	3.90	-3	-2.9	No
LANL-WR-SS-28	B	Barium	24.3		127	5200	-103	-5175.7	No
LANL-WR-SS-28	B	Beryllium	0.47		1.31	150	-1	-149.5	No
LANL-WR-SS-28	B	Cadmium	0.13		0.40	70	-0.270	-69.9	No
LANL-WR-SS-28	B	Calcium	1390		4400	NP	-3010.000	N/A	No
LANL-WR-SS-28	B	Chromium	1.50		10.5	100000	-9	-99998.5	No
LANL-WR-SS-28	B	Cobalt	0.67	B	4.73	4500	-4	-4499.3	No
LANL-WR-SS-28	B	Copper	3.60		11.2	2800	-8	-2796.4	No
LANL-WR-SS-28	B	Iron	5300		13800	23000	-8500	-17700.0	No
LANL-WR-SS-28	B	Lead	16.3		19.7	400	-3	-383.7	No
LANL-WR-SS-28	B	Magnesium	365	J	2370	NP	-2005	N/A	No
LANL-WR-SS-28	B	Manganese	285		543	7800	-258	-7515.0	No
LANL-WR-SS-28	B	Mercury	0.04	B	0.1	23	-0.064	-23.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-28	B	Nickel	1.70		9.4	1500	-8	-1498.3	No
LANL-WR-SS-28	B	Potassium	385	B	2690	NP	-2305	N/A	No
LANL-WR-SS-28	B	Selenium	0.33	B	0.3	380	0.03	-379.7	No
LANL-WR-SS-28	B	Sodium	135	B	1470	NP	-1335	N/A	No
LANL-WR-SS-28	B	Vanadium	4.8	B	19.7	530	-15	-525.2	No
LANL-WR-SS-28	B	Zinc	55.2		60.2	23000	-5	-22944.8	No
LANL-WR-SS-29	B	Aluminum	4130	J	15400	74000	-11270	-69870.0	No
LANL-WR-SS-29	B	Arsenic	1.8		3.98	3.90	-2	-2.1	No
LANL-WR-SS-29	B	Barium	74.3		127	5200	-53	-5125.7	No
LANL-WR-SS-29	B	Beryllium	0.65		1.31	150	-1	-149.4	No
LANL-WR-SS-29	B	Cadmium	0.78		0.40	70	0.380	-69.2	No
LANL-WR-SS-29	B	Calcium	3620		4400	NP	-780.000	N/A	No
LANL-WR-SS-29	B	Chromium	5.40		10.5	100000	-5	-99994.6	No
LANL-WR-SS-29	B	Cobalt	3.10		4.73	4500	-2	-4496.9	No
LANL-WR-SS-29	B	Copper	10.8		11.2	2800	-0.40	-2789.2	No
LANL-WR-SS-29	B	Iron	13700		13800	23000	-100	-9300.0	No
LANL-WR-SS-29	B	Lead	22.7		19.7	400	3	-377.3	No
LANL-WR-SS-29	B	Magnesium	1040	J	2370	NP	-1330	N/A	No
LANL-WR-SS-29	B	Manganese	324		543	7800	-219	-7476.0	No
LANL-WR-SS-29	B	Mercury	0.07		0.1	23	-0.030	-22.9	No
LANL-WR-SS-29	B	Nickel	7.60		9.4	1500	-2	-1492.4	No
LANL-WR-SS-29	B	Potassium	1060		2690	NP	-1630	N/A	No
LANL-WR-SS-29	B	Selenium	0.33	B	0.3	380	0.03	-379.7	No
LANL-WR-SS-29	B	Sodium	176	B	1470	NP	-1294	N/A	No
LANL-WR-SS-29	B	Vanadium	11.5		19.7	530	-8	-518.5	No
LANL-WR-SS-29	B	Zinc	227		60.2	23000	167	-22773.0	No
LANL-WR-SS-30	B	Aluminum	5110	J	15400	74000	-10290	-68890.0	No
LANL-WR-SS-30	B	Arsenic	2.6		3.98	3.90	-1	-1.3	No
LANL-WR-SS-30	B	Barium	74.3		127	5200	-53	-5125.7	No
LANL-WR-SS-30	B	Beryllium	1.0		1.31	150	-0.31	-149.0	No
LANL-WR-SS-30	B	Cadmium	0.39		0.40	70	-0.010	-69.6	No
LANL-WR-SS-30	B	Calcium	2570		4400	NP	-1830.000	N/A	No
LANL-WR-SS-30	B	Chromium	3.90		10.5	100000	-7	-99996.1	No
LANL-WR-SS-30	B	Cobalt	2.30		4.73	4500	-2	-4497.7	No
LANL-WR-SS-30	B	Copper	6.60		11.2	2800	-5	-2793.4	No
LANL-WR-SS-30	B	Iron	6930		13800	23000	-6870	-16070.0	No
LANL-WR-SS-30	B	Lead	28.9		19.7	400	9	-371.1	No
LANL-WR-SS-30	B	Magnesium	914	J	2370	NP	-1456	N/A	No
LANL-WR-SS-30	B	Manganese	401		543	7800	-142	-7399.0	No
LANL-WR-SS-30	B	Mercury	0.02	B	0.1	23	-0.079	-23.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-30	B	Nickel	4.00		9.4	1500	-5	-1496.0	No
LANL-WR-SS-30	B	Potassium	1200		2690	NP	-1490	N/A	No
LANL-WR-SS-30	B	Selenium	0.37	B	0.3	380	0.07	-379.6	No
LANL-WR-SS-30	B	Sodium	211	B	1470	NP	-1259	N/A	No
LANL-WR-SS-30	B	Vanadium	10.7		19.7	530	-9	-519.3	No
LANL-WR-SS-30	B	Zinc	118		60.2	23000	58	-22882.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Aluminum	1910	J	15400	74000	-13490	-72090.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Arsenic	0.63		3.98	3.90	-3	-3.3	No
LANL-WR-SS-63	B (DUP-SS-17)	Barium	19.5		127	5200	-108	-5180.5	No
LANL-WR-SS-63	B (DUP-SS-17)	Beryllium	0.41		1.31	150	-1	-149.6	No
LANL-WR-SS-63	B (DUP-SS-17)	Cadmium	0.048	B	0.40	70	-0.352	-70.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Calcium	651		4400	NP	-3749.000	N/A	No
LANL-WR-SS-63	B (DUP-SS-17)	Chromium	1.20	J	10.5	100000	-9	-99998.8	No
LANL-WR-SS-63	B (DUP-SS-17)	Cobalt	0.93	B	4.73	4500	-4	-4499.1	No
LANL-WR-SS-63	B (DUP-SS-17)	Copper	2.00		11.2	2800	-9	-2798.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Iron	3620		13800	23000	-10180	-19380.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Lead	7.3	J	19.7	400	-12	-392.7	No
LANL-WR-SS-63	B (DUP-SS-17)	Magnesium	349	J	2370	NP	-2021	N/A	No
LANL-WR-SS-63	B (DUP-SS-17)	Manganese	183		543	7800	-360	-7617.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Nickel	1.70	J	9.4	1500	-8	-1498.3	No
LANL-WR-SS-63	B (DUP-SS-17)	Potassium	355	B	2690	NP	-2335	N/A	No
LANL-WR-SS-63	B (DUP-SS-17)	Selenium	0.37	B	0.3	380	0.07	-379.6	No
LANL-WR-SS-63	B (DUP-SS-17)	Silver	0.023	B	1.0	380	-0.98	-380.0	No
LANL-WR-SS-63	B (DUP-SS-17)	Sodium	77.2	B	1470	NP	-1393	N/A	No
LANL-WR-SS-63	B (DUP-SS-17)	Vanadium	3.3		19.7	530	-16	-526.7	No
LANL-WR-SS-63	B (DUP-SS-17)	Zinc	21.1	J	60.2	23000	-39	-22978.9	No
LANL-WR-SS-46	C	Aluminum	6000	J	15400	74000	-9400	-68000.0	No
LANL-WR-SS-46	C	Arsenic	2.2		3.98	3.90	-2	-1.7	No
LANL-WR-SS-46	C	Barium	79.8		127	5200	-47	-5120.2	No
LANL-WR-SS-46	C	Beryllium	0.68		1.31	150	-1	-149.3	No
LANL-WR-SS-46	C	Cadmium	0.1	B	0.40	70	-0.300	-69.9	No
LANL-WR-SS-46	C	Calcium	2250		4400	NP	-2150.000	N/A	No
LANL-WR-SS-46	C	Chromium	5.70		10.5	100000	-5	-99994.3	No
LANL-WR-SS-46	C	Cobalt	4.10		4.73	4500	-1	-4495.9	No
LANL-WR-SS-46	C	Copper	5.50		11.2	2800	-6	-2794.5	No
LANL-WR-SS-46	C	Iron	9130		13800	23000	-4670	-13870.0	No
LANL-WR-SS-46	C	Lead	19.5		19.7	400	-0.20	-380.5	No
LANL-WR-SS-46	C	Magnesium	1340	J	2370	NP	-1030	N/A	No
LANL-WR-SS-46	C	Manganese	427		543	7800	-116	-7373.0	No
LANL-WR-SS-46	C	Mercury	0.04		0.1	23	-0.060	-23.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-46	C	Nickel	5.10		9.4	1500	-4	-1494.9	No
LANL-WR-SS-46	C	Potassium	1130		2690	NP	-1560	N/A	No
LANL-WR-SS-46	C	Sodium	67.7	B	1470	NP	-1402	N/A	No
LANL-WR-SS-46	C	Vanadium	14.3		19.7	530	-5	-515.7	No
LANL-WR-SS-46	C	Zinc	29.7		60.2	23000	-31	-22970.3	No
LANL-WR-SS-47	C	Aluminum	4500	J	15400	74000	-10900	-69500.0	No
LANL-WR-SS-47	C	Arsenic	2.0		3.98	3.90	-2	-1.9	No
LANL-WR-SS-47	C	Barium	59.9		127	5200	-67	-5140.1	No
LANL-WR-SS-47	C	Beryllium	0.62		1.31	150	-1	-149.4	No
LANL-WR-SS-47	C	Cadmium	0.094	B	0.40	70	-0.306	-69.9	No
LANL-WR-SS-47	C	Calcium	2340		4400	NP	-2060.000	N/A	No
LANL-WR-SS-47	C	Chromium	4.20		10.5	100000	-6	-99995.8	No
LANL-WR-SS-47	C	Cobalt	2.30		4.73	4500	-2	-4497.7	No
LANL-WR-SS-47	C	Copper	5.60		11.2	2800	-6	-2794.4	No
LANL-WR-SS-47	C	Iron	7910		13800	23000	-5890	-15090.0	No
LANL-WR-SS-47	C	Lead	25.3		19.7	400	6	-374.7	No
LANL-WR-SS-47	C	Magnesium	989	J	2370	NP	-1381	N/A	No
LANL-WR-SS-47	C	Manganese	365		543	7800	-178	-7435.0	No
LANL-WR-SS-47	C	Mercury	0.06		0.1	23	-0.043	-22.9	No
LANL-WR-SS-47	C	Nickel	3.80		9.4	1500	-6	-1496.2	No
LANL-WR-SS-47	C	Potassium	851		2690	NP	-1839	N/A	No
LANL-WR-SS-47	C	Selenium	0.40	B	0.3	380	0.10	-379.6	No
LANL-WR-SS-47	C	Sodium	65.2	B	1470	NP	-1405	N/A	No
LANL-WR-SS-47	C	Vanadium	10.2		19.7	530	-10	-519.8	No
LANL-WR-SS-47	C	Zinc	39.9		60.2	23000	-20	-22960.1	No
LANL-WR-SS-48	C	Aluminum	3190	J	15400	74000	-12210	-70810.0	No
LANL-WR-SS-48	C	Arsenic	1.3		3.98	3.90	-3	-2.6	No
LANL-WR-SS-48	C	Barium	46.1		127	5200	-81	-5153.9	No
LANL-WR-SS-48	C	Beryllium	0.56		1.31	150	-1	-149.4	No
LANL-WR-SS-48	C	Cadmium	0.073	B	0.40	70	-0.327	-69.9	No
LANL-WR-SS-48	C	Calcium	1080		4400	NP	-3320.000	N/A	No
LANL-WR-SS-48	C	Chromium	3.10		10.5	100000	-7	-99996.9	No
LANL-WR-SS-48	C	Cobalt	2.00		4.73	4500	-3	-4498.0	No
LANL-WR-SS-48	C	Copper	3.50		11.2	2800	-8	-2796.5	No
LANL-WR-SS-48	C	Iron	5700		13800	23000	-8100	-17300.0	No
LANL-WR-SS-48	C	Lead	9.5		19.7	400	-10	-390.5	No
LANL-WR-SS-48	C	Magnesium	714	J	2370	NP	-1656	N/A	No
LANL-WR-SS-48	C	Manganese	287		543	7800	-256	-7513.0	No
LANL-WR-SS-48	C	Mercury	0.02	B	0.1	23	-0.081	-23.0	No
LANL-WR-SS-48	C	Nickel	3.20		9.4	1500	-6	-1496.8	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-48	C	Potassium	689		2690	NP	-2001	N/A	No
LANL-WR-SS-48	C	Sodium	58.5	B	1470	NP	-1412	N/A	No
LANL-WR-SS-48	C	Vanadium	8.2		19.7	530	-12	-521.8	No
LANL-WR-SS-48	C	Zinc	23.6		60.2	23000	-37	-22976.4	No
LANL-WR-SS-49	C	Aluminum	2960	J	15400	74000	-12440	-71040.0	No
LANL-WR-SS-49	C	Arsenic	0.74		3.98	3.90	-3	-3.2	No
LANL-WR-SS-49	C	Barium	38.5		127	5200	-89	-5161.5	No
LANL-WR-SS-49	C	Beryllium	0.57		1.31	150	-1	-149.4	No
LANL-WR-SS-49	C	Cadmium	0.095	B	0.40	70	-0.305	-69.9	No
LANL-WR-SS-49	C	Calcium	1250		4400	NP	-3150.000	N/A	No
LANL-WR-SS-49	C	Chromium	2.00		10.5	100000	-9	-99998.0	No
LANL-WR-SS-49	C	Cobalt	1.00	B	4.73	4500	-4	-4499.0	No
LANL-WR-SS-49	C	Copper	2.90		11.2	2800	-8	-2797.1	No
LANL-WR-SS-49	C	Iron	4160		13800	23000	-9640	-18840.0	No
LANL-WR-SS-49	C	Lead	13.9		19.7	400	-6	-386.1	No
LANL-WR-SS-49	C	Magnesium	589	J	2370	NP	-1781	N/A	No
LANL-WR-SS-49	C	Manganese	208		543	7800	-335	-7592.0	No
LANL-WR-SS-49	C	Mercury	0.02	B	0.1	23	-0.078	-23.0	No
LANL-WR-SS-49	C	Nickel	2.40		9.4	1500	-7	-1497.6	No
LANL-WR-SS-49	C	Potassium	1060		2690	NP	-1630	N/A	No
LANL-WR-SS-49	C	Selenium	0.14	B	0.3	380	-0.16	-379.9	No
LANL-WR-SS-49	C	Sodium	87.7	B	1470	NP	-1382	N/A	No
LANL-WR-SS-49	C	Vanadium	5.3	B	19.7	530	-14	-524.7	No
LANL-WR-SS-49	C	Zinc	20.9		60.2	23000	-39	-22979.1	No
LANL-WR-SS-50	C	Aluminum	1620	J	15400	74000	-13780	-72380.0	No
LANL-WR-SS-50	C	Arsenic	0.47	B	3.98	3.90	-4	-3.4	No
LANL-WR-SS-50	C	Barium	22.1		127	5200	-105	-5177.9	No
LANL-WR-SS-50	C	Beryllium	0.31		1.31	150	-1	-149.7	No
LANL-WR-SS-50	C	Cadmium	0.066	B	0.40	70	-0.334	-69.9	No
LANL-WR-SS-50	C	Calcium	1050		4400	NP	-3350.000	N/A	No
LANL-WR-SS-50	C	Chromium	1.60		10.5	100000	-9	-99998.4	No
LANL-WR-SS-50	C	Cobalt	1.30		4.73	4500	-3	-4498.7	No
LANL-WR-SS-50	C	Copper	2.40		11.2	2800	-9	-2797.6	No
LANL-WR-SS-50	C	Iron	3490		13800	23000	-10310	-19510.0	No
LANL-WR-SS-50	C	Lead	8.3		19.7	400	-11	-391.7	No
LANL-WR-SS-50	C	Magnesium	352	J	2370	NP	-2018	N/A	No
LANL-WR-SS-50	C	Manganese	178		543	7800	-365	-7622.0	No
LANL-WR-SS-50	C	Nickel	2.40		9.4	1500	-7	-1497.6	No
LANL-WR-SS-50	C	Potassium	182	B	2690	NP	-2508	N/A	No
LANL-WR-SS-50	C	Selenium	0.16	B	0.3	380	-0.14	-379.8	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-50	C	Sodium	43.3	B	1470	NP	-1427	N/A	No
LANL-WR-SS-50	C	Vanadium	4.5	B	19.7	530	-15	-525.5	No
LANL-WR-SS-50	C	Zinc	25		60.2	23000	-35	-22975.0	No
LANL-WR-SS-51	C	Aluminum	2710	J	15400	74000	-12690	-71290.0	No
LANL-WR-SS-51	C	Arsenic	1.3		3.98	3.90	-3	-2.6	No
LANL-WR-SS-51	C	Barium	49.1		127	5200	-78	-5150.9	No
LANL-WR-SS-51	C	Beryllium	0.55		1.31	150	-1	-149.5	No
LANL-WR-SS-51	C	Cadmium	0.38		0.40	70	-0.020	-69.6	No
LANL-WR-SS-51	C	Calcium	2410		4400	NP	-1990.000	N/A	No
LANL-WR-SS-51	C	Chromium	2.80		10.5	100000	-8	-99997.2	No
LANL-WR-SS-51	C	Cobalt	1.30		4.73	4500	-3	-4498.7	No
LANL-WR-SS-51	C	Copper	4.50		11.2	2800	-7	-2795.5	No
LANL-WR-SS-51	C	Iron	5920		13800	23000	-7880	-17080.0	No
LANL-WR-SS-51	C	Lead	16.7		19.7	400	-3	-383.3	No
LANL-WR-SS-51	C	Magnesium	648	J	2370	NP	-1722	N/A	No
LANL-WR-SS-51	C	Manganese	312		543	7800	-231	-7488.0	No
LANL-WR-SS-51	C	Mercury	0.04	B	0.1	23	-0.056	-23.0	No
LANL-WR-SS-51	C	Nickel	3.00		9.4	1500	-6	-1497.0	No
LANL-WR-SS-51	C	Potassium	260	B	2690	NP	-2430	N/A	No
LANL-WR-SS-51	C	Selenium	0.28	B	0.3	380	-0.02	-379.7	No
LANL-WR-SS-51	C	Sodium	235	B	1470	NP	-1235	N/A	No
LANL-WR-SS-51	C	Vanadium	7.3		19.7	530	-12	-522.7	No
LANL-WR-SS-51	C	Zinc	165		60.2	23000	105	-22835.0	No
LANL-WR-SS-52	C	Aluminum	2090	J	15400	74000	-13310	-71910.0	No
LANL-WR-SS-52	C	Arsenic	0.56	B	3.98	3.90	-3	-3.3	No
LANL-WR-SS-52	C	Barium	28.3		127	5200	-99	-5171.7	No
LANL-WR-SS-52	C	Beryllium	0.50		1.31	150	-1	-149.5	No
LANL-WR-SS-52	C	Cadmium	0.11	B	0.40	70	-0.290	-69.9	No
LANL-WR-SS-52	C	Calcium	1710		4400	NP	-2690.000	N/A	No
LANL-WR-SS-52	C	Chromium	1.50		10.5	100000	-9	-99998.5	No
LANL-WR-SS-52	C	Cobalt	0.68	B	4.73	4500	-4	-4499.3	No
LANL-WR-SS-52	C	Copper	2.40		11.2	2800	-9	-2797.6	No
LANL-WR-SS-52	C	Iron	4290		13800	23000	-9510	-18710.0	No
LANL-WR-SS-52	C	Lead	8.1		19.7	400	-12	-391.9	No
LANL-WR-SS-52	C	Magnesium	385	J	2370	NP	-1985	N/A	No
LANL-WR-SS-52	C	Manganese	277		543	7800	-266	-7523.0	No
LANL-WR-SS-52	C	Nickel	1.60		9.4	1500	-8	-1498.4	No
LANL-WR-SS-52	C	Potassium	211	B	2690	NP	-2479	N/A	No
LANL-WR-SS-52	C	Sodium	76	B	1470	NP	-1394	N/A	No
LANL-WR-SS-52	C	Vanadium	3.4	B	19.7	530	-16	-526.6	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-52	C	Zinc	30.2		60.2	23000	-30	-22969.8	No
LANL-WR-SS-53	C	Aluminum	2480	J	15400	74000	-12920	-71520.0	No
LANL-WR-SS-53	C	Arsenic	0.65		3.98	3.90	-3	-3.3	No
LANL-WR-SS-53	C	Barium	39		127	5200	-88	-5161.0	No
LANL-WR-SS-53	C	Beryllium	0.48		1.31	150	-1	-149.5	No
LANL-WR-SS-53	C	Cadmium	0.17		0.40	70	-0.230	-69.8	No
LANL-WR-SS-53	C	Calcium	1590		4400	NP	-2810.000	N/A	No
LANL-WR-SS-53	C	Chromium	2.60		10.5	100000	-8	-99997.4	No
LANL-WR-SS-53	C	Cobalt	1.20	B	4.73	4500	-4	-4498.8	No
LANL-WR-SS-53	C	Copper	4.40		11.2	2800	-7	-2795.6	No
LANL-WR-SS-53	C	Iron	5600		13800	23000	-8200	-17400.0	No
LANL-WR-SS-53	C	Lead	14.8		19.7	400	-5	-385.2	No
LANL-WR-SS-53	C	Magnesium	609	J	2370	NP	-1761	N/A	No
LANL-WR-SS-53	C	Manganese	290		543	7800	-253	-7510.0	No
LANL-WR-SS-53	C	Mercury	0.05		0.1	23	-0.055	-23.0	No
LANL-WR-SS-53	C	Nickel	2.40		9.4	1500	-7	-1497.6	No
LANL-WR-SS-53	C	Potassium	437	B	2690	NP	-2253	N/A	No
LANL-WR-SS-53	C	Sodium	157	B	1470	NP	-1313	N/A	No
LANL-WR-SS-53	C	Vanadium	6.1	B	19.7	530	-14	-523.9	No
LANL-WR-SS-53	C	Zinc	42.4		60.2	23000	-18	-22957.6	No
LANL-WR-SS-54	C	Aluminum	2010	J	15400	74000	-13390	-71990.0	No
LANL-WR-SS-54	C	Arsenic	0.52	B	3.98	3.90	-3	-3.4	No
LANL-WR-SS-54	C	Barium	33.4		127	5200	-94	-5166.6	No
LANL-WR-SS-54	C	Beryllium	0.54		1.31	150	-1	-149.5	No
LANL-WR-SS-54	C	Cadmium	0.11	B	0.40	70	-0.290	-69.9	No
LANL-WR-SS-54	C	Calcium	1440		4400	NP	-2960.000	N/A	No
LANL-WR-SS-54	C	Chromium	2.00		10.5	100000	-9	-99998.0	No
LANL-WR-SS-54	C	Cobalt	0.93	B	4.73	4500	-4	-4499.1	No
LANL-WR-SS-54	C	Copper	3.40		11.2	2800	-8	-2796.6	No
LANL-WR-SS-54	C	Iron	4950		13800	23000	-8850	-18050.0	No
LANL-WR-SS-54	C	Lead	10.7		19.7	400	-9	-389.3	No
LANL-WR-SS-54	C	Magnesium	435	J	2370	NP	-1935	N/A	No
LANL-WR-SS-54	C	Manganese	266		543	7800	-277	-7534.0	No
LANL-WR-SS-54	C	Nickel	2.10		9.4	1500	-7	-1497.9	No
LANL-WR-SS-54	C	Potassium	207	B	2690	NP	-2483	N/A	No
LANL-WR-SS-54	C	Selenium	0.15	B	0.3	380	-0.15	-379.9	No
LANL-WR-SS-54	C	Sodium	63.7	B	1470	NP	-1406	N/A	No
LANL-WR-SS-54	C	Vanadium	4.9	B	19.7	530	-15	-525.1	No
LANL-WR-SS-54	C	Zinc	36.5		60.2	23000	-24	-22963.5	No
LANL-WR-SS-55	C	Aluminum	2110	J	15400	74000	-13290	-71890.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-55	C	Arsenic	0.66		3.98	3.90	-3	-3.2	No
LANL-WR-SS-55	C	Barium	26.6		127	5200	-100	-5173.4	No
LANL-WR-SS-55	C	Beryllium	0.44		1.31	150	-1	-149.6	No
LANL-WR-SS-55	C	Cadmium	0.095	B	0.40	70	-0.305	-69.9	No
LANL-WR-SS-55	C	Calcium	1110		4400	NP	-3290.000	N/A	No
LANL-WR-SS-55	C	Chromium	2.20		10.5	100000	-8	-99997.8	No
LANL-WR-SS-55	C	Cobalt	0.90	B	4.73	4500	-4	-4499.1	No
LANL-WR-SS-55	C	Copper	3.20		11.2	2800	-8	-2796.8	No
LANL-WR-SS-55	C	Iron	6040		13800	23000	-7760	-16960.0	No
LANL-WR-SS-55	C	Lead	14.3		19.7	400	-5	-385.7	No
LANL-WR-SS-55	C	Magnesium	458	J	2370	NP	-1912	N/A	No
LANL-WR-SS-55	C	Manganese	247		543	7800	-296	-7553.0	No
LANL-WR-SS-55	C	Mercury	0.05		0.1	23	-0.055	-23.0	No
LANL-WR-SS-55	C	Nickel	2.00		9.4	1500	-7	-1498.0	No
LANL-WR-SS-55	C	Potassium	394	B	2690	NP	-2296	N/A	No
LANL-WR-SS-55	C	Sodium	216	B	1470	NP	-1254	N/A	No
LANL-WR-SS-55	C	Vanadium	5.5	B	19.7	530	-14	-524.5	No
LANL-WR-SS-55	C	Zinc	40.7		60.2	23000	-20	-22959.3	No
LANL-WR-SS-56	C	Aluminum	1780	J	15400	74000	-13620	-72220.0	No
LANL-WR-SS-56	C	Arsenic	0.57		3.98	3.90	-3	-3.3	No
LANL-WR-SS-56	C	Barium	21.3		127	5200	-106	-5178.7	No
LANL-WR-SS-56	C	Beryllium	0.39		1.31	150	-1	-149.6	No
LANL-WR-SS-56	C	Cadmium	0.067	B	0.40	70	-0.333	-69.9	No
LANL-WR-SS-56	C	Calcium	977		4400	NP	-3423.000	N/A	No
LANL-WR-SS-56	C	Chromium	1.60		10.5	100000	-9	-99998.4	No
LANL-WR-SS-56	C	Cobalt	0.71	B	4.73	4500	-4	-4499.3	No
LANL-WR-SS-56	C	Copper	2.50		11.2	2800	-9	-2797.5	No
LANL-WR-SS-56	C	Iron	5220		13800	23000	-8580	-17780.0	No
LANL-WR-SS-56	C	Lead	9		19.7	400	-11	-391.0	No
LANL-WR-SS-56	C	Magnesium	355	J	2370	NP	-2015	N/A	No
LANL-WR-SS-56	C	Manganese	266		543	7800	-277	-7534.0	No
LANL-WR-SS-56	C	Nickel	1.90		9.4	1500	-7	-1498.1	No
LANL-WR-SS-56	C	Potassium	269	B	2690	NP	-2421	N/A	No
LANL-WR-SS-56	C	Sodium	54.2	B	1470	NP	-1416	N/A	No
LANL-WR-SS-56	C	Vanadium	4.2	B	19.7	530	-16	-525.8	No
LANL-WR-SS-56	C	Zinc	32.5		60.2	23000	-28	-22967.5	No
LANL-WR-SS-57	C	Aluminum	2110	J	15400	74000	-13290	-71890.0	No
LANL-WR-SS-57	C	Arsenic	1.3		3.98	3.90	-3	-2.6	No
LANL-WR-SS-57	C	Barium	73.4		127	5200	-54	-5126.6	No
LANL-WR-SS-57	C	Beryllium	0.51		1.31	150	-1	-149.5	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-57	C	Cadmium	0.16		0.40	70	-0.240	-69.8	No
LANL-WR-SS-57	C	Calcium	1620		4400	NP	-2780.000	N/A	No
LANL-WR-SS-57	C	Chromium	2.20		10.5	100000	-8	-99997.8	No
LANL-WR-SS-57	C	Cobalt	1.10	B	4.73	4500	-4	-4498.9	No
LANL-WR-SS-57	C	Copper	4.00		11.2	2800	-7	-2796.0	No
LANL-WR-SS-57	C	Iron	6060		13800	23000	-7740	-16940.0	No
LANL-WR-SS-57	C	Lead	15.9		19.7	400	-4	-384.1	No
LANL-WR-SS-57	C	Magnesium	477	J	2370	NP	-1893	N/A	No
LANL-WR-SS-57	C	Manganese	346		543	7800	-197	-7454.0	No
LANL-WR-SS-57	C	Mercury	0.02	B	0.1	23	-0.078	-23.0	No
LANL-WR-SS-57	C	Nickel	2.20		9.4	1500	-7	-1497.8	No
LANL-WR-SS-57	C	Potassium	479	B	2690	NP	-2211	N/A	No
LANL-WR-SS-57	C	Selenium	0.19	B	0.3	380	-0.11	-379.8	No
LANL-WR-SS-57	C	Sodium	77.1	B	1470	NP	-1393	N/A	No
LANL-WR-SS-57	C	Vanadium	5.4	B	19.7	530	-14	-524.6	No
LANL-WR-SS-57	C	Zinc	49		60.2	23000	-11	-22951.0	No
LANL-WR-SS-58	C	Aluminum	1480	J	15400	74000	-13920	-72520.0	No
LANL-WR-SS-58	C	Arsenic	0.45	B	3.98	3.90	-4	-3.5	No
LANL-WR-SS-58	C	Barium	18.2		127	5200	-109	-5181.8	No
LANL-WR-SS-58	C	Beryllium	0.30		1.31	150	-1	-149.7	No
LANL-WR-SS-58	C	Cadmium	0.063	B	0.40	70	-0.337	-69.9	No
LANL-WR-SS-58	C	Calcium	973		4400	NP	-3427.000	N/A	No
LANL-WR-SS-58	C	Chromium	1.50		10.5	100000	-9	-99998.5	No
LANL-WR-SS-58	C	Cobalt	0.59	B	4.73	4500	-4	-4499.4	No
LANL-WR-SS-58	C	Copper	2.70		11.2	2800	-9	-2797.3	No
LANL-WR-SS-58	C	Iron	5820		13800	23000	-7980	-17180.0	No
LANL-WR-SS-58	C	Lead	9.4		19.7	400	-10	-390.6	No
LANL-WR-SS-58	C	Magnesium	364	J	2370	NP	-2006	N/A	No
LANL-WR-SS-58	C	Manganese	254		543	7800	-289	-7546.0	No
LANL-WR-SS-58	C	Nickel	1.50		9.4	1500	-8	-1498.5	No
LANL-WR-SS-58	C	Potassium	381	B	2690	NP	-2309	N/A	No
LANL-WR-SS-58	C	Selenium	0.32	B	0.3	380	0.02	-379.7	No
LANL-WR-SS-58	C	Sodium	66.2	B	1470	NP	-1404	N/A	No
LANL-WR-SS-58	C	Vanadium	4.2	B	19.7	530	-16	-525.8	No
LANL-WR-SS-58	C	Zinc	42.4		60.2	23000	-18	-22957.6	No
LANL-WR-SS-59	C	Aluminum	1420	J	15400	74000	-13980	-72580.0	No
LANL-WR-SS-59	C	Arsenic	0.67		3.98	3.90	-3	-3.2	No
LANL-WR-SS-59	C	Barium	18.9		127	5200	-108	-5181.1	No
LANL-WR-SS-59	C	Beryllium	0.41		1.31	150	-1	-149.6	No
LANL-WR-SS-59	C	Cadmium	0.1	B	0.40	70	-0.300	-69.9	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-59	C	Calcium	1310		4400	NP	-3090.000	N/A	No
LANL-WR-SS-59	C	Chromium	1.50		10.5	100000	-9	-99998.5	No
LANL-WR-SS-59	C	Cobalt	0.65	B	4.73	4500	-4	-4499.4	No
LANL-WR-SS-59	C	Copper	3.10		11.2	2800	-8	-2796.9	No
LANL-WR-SS-59	C	Iron	6500		13800	23000	-7300	-16500.0	No
LANL-WR-SS-59	C	Lead	14.2		19.7	400	-6	-385.8	No
LANL-WR-SS-59	C	Magnesium	310	J	2370	NP	-2060	N/A	No
LANL-WR-SS-59	C	Manganese	346		543	7800	-197	-7454.0	No
LANL-WR-SS-59	C	Mercury	0.03	B	0.1	23	-0.070	-23.0	No
LANL-WR-SS-59	C	Nickel	1.50		9.4	1500	-8	-1498.5	No
LANL-WR-SS-59	C	Potassium	290	B	2690	NP	-2400	N/A	No
LANL-WR-SS-59	C	Sodium	71.7	B	1470	NP	-1398	N/A	No
LANL-WR-SS-59	C	Vanadium	4.4	B	19.7	530	-15	-525.6	No
LANL-WR-SS-59	C	Zinc	46.9		60.2	23000	-13	-22953.1	No
LANL-WR-SS-60	C	Aluminum	1760	J	15400	74000	-13640	-72240.0	No
LANL-WR-SS-60	C	Arsenic	0.86		3.98	3.90	-3	-3.0	No
LANL-WR-SS-60	C	Barium	17.2		127	5200	-110	-5182.8	No
LANL-WR-SS-60	C	Beryllium	0.56		1.31	150	-1	-149.4	No
LANL-WR-SS-60	C	Cadmium	0.11	B	0.40	70	-0.290	-69.9	No
LANL-WR-SS-60	C	Calcium	1630		4400	NP	-2770.000	N/A	No
LANL-WR-SS-60	C	Chromium	1.60		10.5	100000	-9	-99998.4	No
LANL-WR-SS-60	C	Cobalt	0.60	B	4.73	4500	-4	-4499.4	No
LANL-WR-SS-60	C	Copper	3.20		11.2	2800	-8	-2796.8	No
LANL-WR-SS-60	C	Iron	5730		13800	23000	-8070	-17270.0	No
LANL-WR-SS-60	C	Lead	10.1		19.7	400	-10	-389.9	No
LANL-WR-SS-60	C	Magnesium	379	J	2370	NP	-1991	N/A	No
LANL-WR-SS-60	C	Manganese	322		543	7800	-221	-7478.0	No
LANL-WR-SS-60	C	Mercury	0.04	B	0.1	23	-0.063	-23.0	No
LANL-WR-SS-60	C	Nickel	1.60		9.4	1500	-8	-1498.4	No
LANL-WR-SS-60	C	Potassium	364	B	2690	NP	-2326	N/A	No
LANL-WR-SS-60	C	Sodium	74.8	B	1470	NP	-1395	N/A	No
LANL-WR-SS-60	C	Vanadium	4.1	B	19.7	530	-16	-525.9	No
LANL-WR-SS-60	C	Zinc	46.2		60.2	23000	-14	-22953.8	No
LANL-WR-SS-62	C (DUP-SS-47)	Aluminum	2990	J	15400	74000	-12410	-71010.0	No
LANL-WR-SS-62	C (DUP-SS-47)	Arsenic	1.4		3.98	3.90	-3	-2.5	No
LANL-WR-SS-62	C (DUP-SS-47)	Barium	39.2		127	5200	-88	-5160.8	No
LANL-WR-SS-62	C (DUP-SS-47)	Beryllium	0.38		1.31	150	-1	-149.6	No
LANL-WR-SS-62	C (DUP-SS-47)	Cadmium	0.11	B	0.40	70	-0.290	-69.9	No
LANL-WR-SS-62	C (DUP-SS-47)	Calcium	1400		4400	NP	-3000.000	N/A	No
LANL-WR-SS-62	C (DUP-SS-47)	Chromium	2.40	J	10.5	100000	-8	-99997.6	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-62	C (DUP-SS-47)	Cobalt	1.70		4.73	4500	-3	-4498.3	No
LANL-WR-SS-62	C (DUP-SS-47)	Copper	4.20		11.2	2800	-7	-2795.8	No
LANL-WR-SS-62	C (DUP-SS-47)	Iron	5500		13800	23000	-8300	-17500.0	No
LANL-WR-SS-62	C (DUP-SS-47)	Lead	16	J	19.7	400	-4	-384.0	No
LANL-WR-SS-62	C (DUP-SS-47)	Magnesium	611	J	2370	NP	-1759	N/A	No
LANL-WR-SS-62	C (DUP-SS-47)	Manganese	235		543	7800	-308	-7565.0	No
LANL-WR-SS-62	C (DUP-SS-47)	Mercury	0.03	B	0.1	23	-0.073	-23.0	No
LANL-WR-SS-62	C (DUP-SS-47)	Nickel	2.60	J	9.4	1500	-7	-1497.4	No
LANL-WR-SS-62	C (DUP-SS-47)	Potassium	525	B	2690	NP	-2165	N/A	No
LANL-WR-SS-62	C (DUP-SS-47)	Selenium	0.33	B	0.3	380	0.03	-379.7	No
LANL-WR-SS-62	C (DUP-SS-47)	Silver	0.071	B	1.0	380	-0.93	-379.9	No
LANL-WR-SS-62	C (DUP-SS-47)	Sodium	45.3	B	1470	NP	-1425	N/A	No
LANL-WR-SS-62	C (DUP-SS-47)	Vanadium	6.5		19.7	530	-13	-523.5	No
LANL-WR-SS-62	C (DUP-SS-47)	Zinc	29.9	J	60.2	23000	-30	-22970.1	No
LANL-WR-SS-31	D2	Aluminum	4500	J	15400	74000	-10900	-69500.0	No
LANL-WR-SS-31	D2	Arsenic	1.6		3.98	3.90	-2	-2.3	No
LANL-WR-SS-31	D2	Barium	117		127	5200	-10	-5083.0	No
LANL-WR-SS-31	D2	Beryllium	0.67		1.31	150	-1	-149.3	No
LANL-WR-SS-31	D2	Cadmium	0.078	B	0.40	70	-0.322	-69.9	No
LANL-WR-SS-31	D2	Calcium	1550		4400	NP	-2850.000	N/A	No
LANL-WR-SS-31	D2	Chromium	3.70		10.5	100000	-7	-99996.3	No
LANL-WR-SS-31	D2	Cobalt	3.00		4.73	4500	-2	-4497.0	No
LANL-WR-SS-31	D2	Copper	3.40		11.2	2800	-8	-2796.6	No
LANL-WR-SS-31	D2	Iron	6470		13800	23000	-7330	-16530.0	No
LANL-WR-SS-31	D2	Lead	13.3		19.7	400	-6	-386.7	No
LANL-WR-SS-31	D2	Magnesium	752	J	2370	NP	-1618	N/A	No
LANL-WR-SS-31	D2	Manganese	466		543	7800	-77	-7334.0	No
LANL-WR-SS-31	D2	Nickel	3.50		9.4	1500	-6	-1496.5	No
LANL-WR-SS-31	D2	Potassium	914		2690	NP	-1776	N/A	No
LANL-WR-SS-31	D2	Selenium	0.16	B	0.3	380	-0.14	-379.8	No
LANL-WR-SS-31	D2	Sodium	69.7	B	1470	NP	-1400	N/A	No
LANL-WR-SS-31	D2	Vanadium	11		19.7	530	-9	-519.0	No
LANL-WR-SS-31	D2	Zinc	21		60.2	23000	-39	-22979.0	No
LANL-WR-SS-32	D2	Aluminum	1170	J	15400	74000	-14230	-72830.0	No
LANL-WR-SS-32	D2	Arsenic	0.49	B	3.98	3.90	-3	-3.4	No
LANL-WR-SS-32	D2	Barium	17.9		127	5200	-109	-5182.1	No
LANL-WR-SS-32	D2	Beryllium	0.21		1.31	150	-1	-149.8	No
LANL-WR-SS-32	D2	Cadmium	0.2		0.40	70	-0.200	-69.8	No
LANL-WR-SS-32	D2	Calcium	822		4400	NP	-3578.000	N/A	No
LANL-WR-SS-32	D2	Chromium	7.30		10.5	100000	-3	-99992.7	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-32	D2	Cobalt	1.20		4.73	4500	-4	-4498.8	No
LANL-WR-SS-32	D2	Copper	8.20		11.2	2800	-3	-2791.8	No
LANL-WR-SS-32	D2	Iron	4400		13800	23000	-9400	-18600.0	No
LANL-WR-SS-32	D2	Lead	17.9		19.7	400	-2	-382.1	No
LANL-WR-SS-32	D2	Magnesium	275	J	2370	NP	-2095	N/A	No
LANL-WR-SS-32	D2	Manganese	137		543	7800	-406	-7663.0	No
LANL-WR-SS-32	D2	Mercury	0.02	B	0.1	23	-0.081	-23.0	No
LANL-WR-SS-32	D2	Nickel	4.20		9.4	1500	-5	-1495.8	No
LANL-WR-SS-32	D2	Selenium	0.18	B	0.3	380	-0.12	-379.8	No
LANL-WR-SS-32	D2	Sodium	80.3	B	1470	NP	-1390	N/A	No
LANL-WR-SS-32	D2	Vanadium	9.1		19.7	530	-11	-520.9	No
LANL-WR-SS-32	D2	Zinc	43.8		60.2	23000	-16	-22956.2	No
LANL-WR-SS-33	D2	Aluminum	3940	J	15400	74000	-11460	-70060.0	No
LANL-WR-SS-33	D2	Arsenic	1.7		3.98	3.90	-2	-2.2	No
LANL-WR-SS-33	D2	Barium	63.5		127	5200	-64	-5136.5	No
LANL-WR-SS-33	D2	Beryllium	0.67		1.31	150	-1	-149.3	No
LANL-WR-SS-33	D2	Cadmium	0.084	B	0.40	70	-0.316	-69.9	No
LANL-WR-SS-33	D2	Calcium	2010		4400	NP	-2390.000	N/A	No
LANL-WR-SS-33	D2	Chromium	4.50		10.5	100000	-6	-99995.5	No
LANL-WR-SS-33	D2	Cobalt	2.50		4.73	4500	-2	-4497.5	No
LANL-WR-SS-33	D2	Copper	4.30		11.2	2800	-7	-2795.7	No
LANL-WR-SS-33	D2	Iron	5640		13800	23000	-8160	-17360.0	No
LANL-WR-SS-33	D2	Lead	19.3		19.7	400	-0.40	-380.7	No
LANL-WR-SS-33	D2	Magnesium	897	J	2370	NP	-1473	N/A	No
LANL-WR-SS-33	D2	Manganese	254		543	7800	-289	-7546.0	No
LANL-WR-SS-33	D2	Mercury	0.03	B	0.1	23	-0.072	-23.0	No
LANL-WR-SS-33	D2	Nickel	3.80		9.4	1500	-6	-1496.2	No
LANL-WR-SS-33	D2	Potassium	1130		2690	NP	-1560	N/A	No
LANL-WR-SS-33	D2	Selenium	0.15	B	0.3	380	-0.15	-379.9	No
LANL-WR-SS-33	D2	Sodium	72.9	B	1470	NP	-1397	N/A	No
LANL-WR-SS-33	D2	Vanadium	9.4		19.7	530	-10	-520.6	No
LANL-WR-SS-33	D2	Zinc	32.9		60.2	23000	-27	-22967.1	No
LANL-WR-SS-34	D2	Aluminum	658	J	15400	74000	-14742	-73342.0	No
LANL-WR-SS-34	D2	Arsenic	0.56		3.98	3.90	-3	-3.3	No
LANL-WR-SS-34	D2	Barium	11.2		127	5200	-116	-5188.8	No
LANL-WR-SS-34	D2	Beryllium	0.14		1.31	150	-1	-149.9	No
LANL-WR-SS-34	D2	Cadmium	0.091	B	0.40	70	-0.309	-69.9	No
LANL-WR-SS-34	D2	Calcium	456	B	4400	NP	-3944.000	N/A	No
LANL-WR-SS-34	D2	Chromium	2.10		10.5	100000	-8	-99997.9	No
LANL-WR-SS-34	D2	Cobalt	0.59	B	4.73	4500	-4	-4499.4	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-34	D2	Copper	4.70		11.2	2800	-7	-2795.3	No
LANL-WR-SS-34	D2	Iron	2650		13800	23000	-11150	-20350.0	No
LANL-WR-SS-34	D2	Lead	11.6		19.7	400	-8	-388.4	No
LANL-WR-SS-34	D2	Magnesium	207	J	2370	NP	-2163	N/A	No
LANL-WR-SS-34	D2	Manganese	83.8		543	7800	-459	-7716.2	No
LANL-WR-SS-34	D2	Mercury	0.02	B	0.1	23	-0.078	-23.0	No
LANL-WR-SS-34	D2	Nickel	1.70		9.4	1500	-8	-1498.3	No
LANL-WR-SS-34	D2	Sodium	50.7	B	1470	NP	-1419	N/A	No
LANL-WR-SS-34	D2	Vanadium	5.5		19.7	530	-14	-524.5	No
LANL-WR-SS-34	D2	Zinc	29.1		60.2	23000	-31	-22970.9	No
LANL-WR-SS-35	D2	Aluminum	4180	J	15400	74000	-11220	-69820.0	No
LANL-WR-SS-35	D2	Antimony	1.1	BJ	0.83	30	0.27	-28.9	No
LANL-WR-SS-35	D2	Arsenic	3.5		3.98	3.90	-0.48	-0.4	No
LANL-WR-SS-35	D2	Barium	102		127	5200	-25	-5098.0	No
LANL-WR-SS-35	D2	Beryllium	0.7		1.31	150	-1	-149.3	No
LANL-WR-SS-35	D2	Cadmium	0.99		0.40	70	0.590	-69.0	No
LANL-WR-SS-35	D2	Calcium	2350		4400	NP	-2050.000	N/A	No
LANL-WR-SS-35	D2	Chromium	9.70		10.5	100000	-1	-99990.3	No
LANL-WR-SS-35	D2	Cobalt	4.40		4.73	4500	-0.33	-4495.6	No
LANL-WR-SS-35	D2	Copper	39.3		11.2	2800	28	-2760.7	No
LANL-WR-SS-35	D2	Iron	12500		13800	23000	-1300	-10500.0	No
LANL-WR-SS-35	D2	Lead	84.6		19.7	400	65	-315.4	No
LANL-WR-SS-35	D2	Magnesium	937	J	2370	NP	-1433	N/A	No
LANL-WR-SS-35	D2	Manganese	333		543	7800	-210	-7467.0	No
LANL-WR-SS-35	D2	Mercury	0.20		0.1	23	0.100	-22.8	No
LANL-WR-SS-35	D2	Nickel	9.20		9.4	1500	-0.180	-1490.8	No
LANL-WR-SS-35	D2	Potassium	758		2690	NP	-1932	N/A	No
LANL-WR-SS-35	D2	Selenium	0.23	B	0.3	380	-0.07	-379.8	No
LANL-WR-SS-35	D2	Sodium	95.9	B	1470	NP	-1374	N/A	No
LANL-WR-SS-35	D2	Vanadium	25		19.7	530	5	-505.0	No
LANL-WR-SS-35	D2	Zinc	137		60.2	23000	77	-22863.0	No
LANL-WR-SS-36	D2	Aluminum	1130	J	15400	74000	-14270	-72870.0	No
LANL-WR-SS-36	D2	Arsenic	0.46	B	3.98	3.90	-4	-3.4	No
LANL-WR-SS-36	D2	Barium	21.8		127	5200	-105	-5178.2	No
LANL-WR-SS-36	D2	Beryllium	0.24		1.31	150	-1	-149.8	No
LANL-WR-SS-36	D2	Cadmium	0.18		0.40	70	-0.220	-69.8	No
LANL-WR-SS-36	D2	Calcium	592		4400	NP	-3808.000	N/A	No
LANL-WR-SS-36	D2	Chromium	3.20		10.5	100000	-7	-99996.8	No
LANL-WR-SS-36	D2	Cobalt	1.10		4.73	4500	-4	-4498.9	No
LANL-WR-SS-36	D2	Copper	8.40		11.2	2800	-3	-2791.6	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-36	D2	Iron	4560		13800	23000	-9240	-18440.0	No
LANL-WR-SS-36	D2	Lead	20.1		19.7	400	0.40	-379.9	No
LANL-WR-SS-36	D2	Magnesium	283	J	2370	NP	-2087	N/A	No
LANL-WR-SS-36	D2	Manganese	152		543	7800	-391	-7648.0	No
LANL-WR-SS-36	D2	Nickel	2.90		9.4	1500	-6	-1497.1	No
LANL-WR-SS-36	D2	Sodium	59.2	B	1470	NP	-1411	N/A	No
LANL-WR-SS-36	D2	Vanadium	9.2		19.7	530	-11	-520.8	No
LANL-WR-SS-36	D2	Zinc	47.8		60.2	23000	-12	-22952.2	No
LANL-WR-SS-37	D2	Aluminum	977	J	15400	74000	-14423	-73023.0	No
LANL-WR-SS-37	D2	Arsenic	0.33	B	3.98	3.90	-4	-3.6	No
LANL-WR-SS-37	D2	Barium	18.6		127	5200	-108	-5181.4	No
LANL-WR-SS-37	D2	Beryllium	0.24		1.31	150	-1	-149.8	No
LANL-WR-SS-37	D2	Cadmium	0.12		0.40	70	-0.280	-69.9	No
LANL-WR-SS-37	D2	Calcium	654		4400	NP	-3746.000	N/A	No
LANL-WR-SS-37	D2	Chromium	4.90		10.5	100000	-6	-99995.1	No
LANL-WR-SS-37	D2	Cobalt	1.40		4.73	4500	-3	-4498.6	No
LANL-WR-SS-37	D2	Copper	8.50		11.2	2800	-3	-2791.5	No
LANL-WR-SS-37	D2	Iron	6210		13800	23000	-7590	-16790.0	No
LANL-WR-SS-37	D2	Lead	76.5		19.7	400	57	-323.5	No
LANL-WR-SS-37	D2	Magnesium	268	J	2370	NP	-2102	N/A	No
LANL-WR-SS-37	D2	Manganese	153		543	7800	-390	-7647.0	No
LANL-WR-SS-37	D2	Mercury	0.03	B	0.1	23	-0.074	-23.0	No
LANL-WR-SS-37	D2	Nickel	3.60		9.4	1500	-6	-1496.4	No
LANL-WR-SS-37	D2	Sodium	60	B	1470	NP	-1410	N/A	No
LANL-WR-SS-37	D2	Vanadium	14.4		19.7	530	-5	-515.6	No
LANL-WR-SS-37	D2	Zinc	45.6		60.2	23000	-15	-22954.4	No
LANL-WR-SS-38	D2	Aluminum	690	J	15400	74000	-14710	-73310.0	No
LANL-WR-SS-38	D2	Arsenic	0.45	B	3.98	3.90	-4	-3.5	No
LANL-WR-SS-38	D2	Barium	15.3		127	5200	-112	-5184.7	No
LANL-WR-SS-38	D2	Beryllium	0.23		1.31	150	-1	-149.8	No
LANL-WR-SS-38	D2	Cadmium	0.069	B	0.40	70	-0.331	-69.9	No
LANL-WR-SS-38	D2	Calcium	2410		4400	NP	-1990.000	N/A	No
LANL-WR-SS-38	D2	Chromium	1.40		10.5	100000	-9	-99998.6	No
LANL-WR-SS-38	D2	Cobalt	0.57	B	4.73	4500	-4	-4499.4	No
LANL-WR-SS-38	D2	Copper	4.80		11.2	2800	-6	-2795.2	No
LANL-WR-SS-38	D2	Iron	3170		13800	23000	-10630	-19830.0	No
LANL-WR-SS-38	D2	Lead	9.2		19.7	400	-11	-390.8	No
LANL-WR-SS-38	D2	Magnesium	233	J	2370	NP	-2137	N/A	No
LANL-WR-SS-38	D2	Manganese	169		543	7800	-374	-7631.0	No
LANL-WR-SS-38	D2	Nickel	1.70		9.4	1500	-8	-1498.3	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-38	D2	Selenium	0.20	B	0.3	380	-0.10	-379.8	No
LANL-WR-SS-38	D2	Sodium	61.8	B	1470	NP	-1408	N/A	No
LANL-WR-SS-38	D2	Vanadium	4.6	B	19.7	530	-15	-525.4	No
LANL-WR-SS-38	D2	Zinc	36.9		60.2	23000	-23	-22963.1	No
LANL-WR-SS-39	D2	Aluminum	708	J	15400	74000	-14692	-73292.0	No
LANL-WR-SS-39	D2	Antimony	0.28	BJ	0.83	30	-0.55	-29.7	No
LANL-WR-SS-39	D2	Arsenic	0.52	B	3.98	3.90	-3	-3.4	No
LANL-WR-SS-39	D2	Barium	17		127	5200	-110	-5183.0	No
LANL-WR-SS-39	D2	Beryllium	0.15		1.31	150	-1	-149.9	No
LANL-WR-SS-39	D2	Cadmium	0.13		0.40	70	-0.270	-69.9	No
LANL-WR-SS-39	D2	Calcium	469	B	4400	NP	-3931.000	N/A	No
LANL-WR-SS-39	D2	Chromium	7.00		10.5	100000	-4	-99993.0	No
LANL-WR-SS-39	D2	Cobalt	1.60		4.73	4500	-3	-4498.4	No
LANL-WR-SS-39	D2	Copper	10.5		11.2	2800	-1	-2789.5	No
LANL-WR-SS-39	D2	Iron	4410		13800	23000	-9390	-18590.0	No
LANL-WR-SS-39	D2	Lead	12.5		19.7	400	-7	-387.5	No
LANL-WR-SS-39	D2	Magnesium	233	J	2370	NP	-2137	N/A	No
LANL-WR-SS-39	D2	Manganese	131		543	7800	-412	-7669.0	No
LANL-WR-SS-39	D2	Nickel	4.20		9.4	1500	-5	-1495.8	No
LANL-WR-SS-39	D2	Sodium	47.1	B	1470	NP	-1423	N/A	No
LANL-WR-SS-39	D2	Vanadium	14.3		19.7	530	-5	-515.7	No
LANL-WR-SS-39	D2	Zinc	39.1		60.2	23000	-21	-22960.9	No
LANL-WR-SS-40	D2	Aluminum	866	J	15400	74000	-14534	-73134.0	No
LANL-WR-SS-40	D2	Arsenic	0.61		3.98	3.90	-3	-3.3	No
LANL-WR-SS-40	D2	Barium	18.8		127	5200	-108	-5181.2	No
LANL-WR-SS-40	D2	Beryllium	0.22		1.31	150	-1	-149.8	No
LANL-WR-SS-40	D2	Cadmium	0.2		0.40	70	-0.200	-69.8	No
LANL-WR-SS-40	D2	Calcium	684		4400	NP	-3716.000	N/A	No
LANL-WR-SS-40	D2	Chromium	2.60		10.5	100000	-8	-99997.4	No
LANL-WR-SS-40	D2	Cobalt	0.94	B	4.73	4500	-4	-4499.1	No
LANL-WR-SS-40	D2	Copper	9.70		11.2	2800	-2	-2790.3	No
LANL-WR-SS-40	D2	Iron	5120		13800	23000	-8680	-17880.0	No
LANL-WR-SS-40	D2	Lead	15.4		19.7	400	-4	-384.6	No
LANL-WR-SS-40	D2	Magnesium	262	J	2370	NP	-2108	N/A	No
LANL-WR-SS-40	D2	Manganese	140		543	7800	-403	-7660.0	No
LANL-WR-SS-40	D2	Mercury	0.02	B	0.1	23	-0.080	-23.0	No
LANL-WR-SS-40	D2	Nickel	2.80		9.4	1500	-7	-1497.2	No
LANL-WR-SS-40	D2	Sodium	53.5	B	1470	NP	-1417	N/A	No
LANL-WR-SS-40	D2	Vanadium	7.2		19.7	530	-13	-522.8	No
LANL-WR-SS-40	D2	Zinc	40		60.2	23000	-20	-22960.0	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-41	D2	Aluminum	1920	J	15400	74000	-13480	-72080.0	No
LANL-WR-SS-41	D2	Arsenic	0.64		3.98	3.90	-3	-3.3	No
LANL-WR-SS-41	D2	Barium	28.1		127	5200	-99	-5171.9	No
LANL-WR-SS-41	D2	Beryllium	0.42		1.31	150	-1	-149.6	No
LANL-WR-SS-41	D2	Cadmium	0.12		0.40	70	-0.280	-69.9	No
LANL-WR-SS-41	D2	Calcium	1520		4400	NP	-2880.000	N/A	No
LANL-WR-SS-41	D2	Chromium	1.60		10.5	100000	-9	-99998.4	No
LANL-WR-SS-41	D2	Cobalt	0.73	B	4.73	4500	-4	-4499.3	No
LANL-WR-SS-41	D2	Copper	3.60		11.2	2800	-8	-2796.4	No
LANL-WR-SS-41	D2	Iron	3970		13800	23000	-9830	-19030.0	No
LANL-WR-SS-41	D2	Lead	11.3		19.7	400	-8	-388.7	No
LANL-WR-SS-41	D2	Magnesium	511	J	2370	NP	-1859	N/A	No
LANL-WR-SS-41	D2	Manganese	191		543	7800	-352	-7609.0	No
LANL-WR-SS-41	D2	Nickel	1.90		9.4	1500	-7	-1498.1	No
LANL-WR-SS-41	D2	Potassium	362	B	2690	NP	-2328	N/A	No
LANL-WR-SS-41	D2	Selenium	0.18	B	0.3	380	-0.12	-379.8	No
LANL-WR-SS-41	D2	Sodium	94.9	B	1470	NP	-1375	N/A	No
LANL-WR-SS-41	D2	Vanadium	32.5		19.7	530	13	-497.5	No
LANL-WR-SS-41	D2	Zinc	33.6		60.2	23000	-27	-22966.4	No
LANL-WR-SS-42	D2	Aluminum	1420	J	15400	74000	-13980	-72580.0	No
LANL-WR-SS-42	D2	Arsenic	1.0		3.98	3.90	-3	-2.9	No
LANL-WR-SS-42	D2	Barium	30.5		127	5200	-97	-5169.5	No
LANL-WR-SS-42	D2	Beryllium	0.30		1.31	150	-1	-149.7	No
LANL-WR-SS-42	D2	Cadmium	0.16		0.40	70	-0.240	-69.8	No
LANL-WR-SS-42	D2	Calcium	2110		4400	NP	-2290.000	N/A	No
LANL-WR-SS-42	D2	Chromium	5.50		10.5	100000	-5	-99994.5	No
LANL-WR-SS-42	D2	Cobalt	1.70		4.73	4500	-3	-4498.3	No
LANL-WR-SS-42	D2	Copper	8.50		11.2	2800	-3	-2791.5	No
LANL-WR-SS-42	D2	Iron	6680		13800	23000	-7120	-16320.0	No
LANL-WR-SS-42	D2	Lead	22.3		19.7	400	3	-377.7	No
LANL-WR-SS-42	D2	Magnesium	402	J	2370	NP	-1968	N/A	No
LANL-WR-SS-42	D2	Manganese	190		543	7800	-353	-7610.0	No
LANL-WR-SS-42	D2	Nickel	5.00		9.4	1500	-4	-1495.0	No
LANL-WR-SS-42	D2	Potassium	272	B	2690	NP	-2418	N/A	No
LANL-WR-SS-42	D2	Selenium	0.20	B	0.3	380	-0.10	-379.8	No
LANL-WR-SS-42	D2	Sodium	132	B	1470	NP	-1338	N/A	No
LANL-WR-SS-42	D2	Vanadium	14		19.7	530	-6	-516.0	No
LANL-WR-SS-42	D2	Zinc	63		60.2	23000	3	-22937.0	No
LANL-WR-SS-43	D2	Aluminum	2630	J	15400	74000	-12770	-71370.0	No
LANL-WR-SS-43	D2	Arsenic	1.3		3.98	3.90	-3	-2.6	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-43	D2	Barium	45.2		127	5200	-82	-5154.8	No
LANL-WR-SS-43	D2	Beryllium	0.47		1.31	150	-1	-149.5	No
LANL-WR-SS-43	D2	Cadmium	0.58		0.40	70	0.180	-69.4	No
LANL-WR-SS-43	D2	Calcium	2150		4400	NP	-2250.000	N/A	No
LANL-WR-SS-43	D2	Chromium	3.60		10.5	100000	-7	-99996.4	No
LANL-WR-SS-43	D2	Cobalt	1.60		4.73	4500	-3	-4498.4	No
LANL-WR-SS-43	D2	Copper	18.9		11.2	2800	8	-2781.1	No
LANL-WR-SS-43	D2	Iron	6140		13800	23000	-7660	-16860.0	No
LANL-WR-SS-43	D2	Lead	33		19.7	400	13	-367.0	No
LANL-WR-SS-43	D2	Magnesium	647	J	2370	NP	-1723	N/A	No
LANL-WR-SS-43	D2	Manganese	221		543	7800	-322	-7579.0	No
LANL-WR-SS-43	D2	Mercury	0.10		0.1	23	0.0	-22.9	No
LANL-WR-SS-43	D2	Nickel	4.20		9.4	1500	-5	-1495.8	No
LANL-WR-SS-43	D2	Potassium	340	B	2690	NP	-2350	N/A	No
LANL-WR-SS-43	D2	Selenium	0.19	B	0.3	380	-0.11	-379.8	No
LANL-WR-SS-43	D2	Sodium	90.2	B	1470	NP	-1380	N/A	No
LANL-WR-SS-43	D2	Vanadium	8.2		19.7	530	-12	-521.8	No
LANL-WR-SS-43	D2	Zinc	161		60.2	23000	101	-22839.0	No
LANL-WR-SS-44	D2	Aluminum	1480	J	15400	74000	-13920	-72520.0	No
LANL-WR-SS-44	D2	Antimony	0.96	B	0.83	30	0.13	-29.0	No
LANL-WR-SS-44	D2	Arsenic	0.43	B	3.98	3.90	-4	-3.5	No
LANL-WR-SS-44	D2	Barium	27.5		127	5200	-100	-5172.5	No
LANL-WR-SS-44	D2	Beryllium	0.30		1.31	150	-1	-149.7	No
LANL-WR-SS-44	D2	Cadmium	0.21		0.40	70	-0.190	-69.8	No
LANL-WR-SS-44	D2	Calcium	1310		4400	NP	-3090.000	N/A	No
LANL-WR-SS-44	D2	Chromium	3.00		10.5	100000	-8	-99997.0	No
LANL-WR-SS-44	D2	Cobalt	0.96	B	4.73	4500	-4	-4499.0	No
LANL-WR-SS-44	D2	Copper	8.70		11.2	2800	-3	-2791.3	No
LANL-WR-SS-44	D2	Iron	5550		13800	23000	-8250	-17450.0	No
LANL-WR-SS-44	D2	Lead	24.2		19.7	400	5	-375.8	No
LANL-WR-SS-44	D2	Magnesium	432	J	2370	NP	-1938	N/A	No
LANL-WR-SS-44	D2	Manganese	153		543	7800	-390	-7647.0	No
LANL-WR-SS-44	D2	Nickel	4.10		9.4	1500	-5	-1495.9	No
LANL-WR-SS-44	D2	Potassium	208	B	2690	NP	-2482	N/A	No
LANL-WR-SS-44	D2	Sodium	82.7	B	1470	NP	-1387	N/A	No
LANL-WR-SS-44	D2	Vanadium	6.5		19.7	530	-13	-523.5	No
LANL-WR-SS-44	D2	Zinc	83.9		60.2	23000	24	-22916.1	No
LANL-WR-SS-45	D2	Aluminum	3300	J	15400	74000	-12100	-70700.0	No
LANL-WR-SS-45	D2	Antimony	0.45	B	0.83	30	-0.38	-29.6	No
LANL-WR-SS-45	D2	Arsenic	1.3		3.98	3.90	-3	-2.6	No

Table 12. Analytical Data Summary

Sample Id#:	Drainage of Collection	Target Analyte / Target Compound	Concentration: (mg/kg)	Laboratory & Validation Flags	Background Value (mg/kg)	Soil Screening Level (mg/kg)	> or < Background (-) results are < BV	> or < SSL (-) results are < SSL	CoPC (Y/N):
LANL-WR-SS-45	D2	Barium	76.8		127	5200	-50	-5123.2	No
LANL-WR-SS-45	D2	Beryllium	0.58		1.31	150	-1	-149.4	No
LANL-WR-SS-45	D2	Cadmium	3.1		0.40	70	2.700	-66.9	No
LANL-WR-SS-45	D2	Calcium	2340		4400	NP	-2060.000	N/A	No
LANL-WR-SS-45	D2	Chromium	5.40		10.5	100000	-5	-99994.6	No
LANL-WR-SS-45	D2	Cobalt	2.00		4.73	4500	-3	-4498.0	No
LANL-WR-SS-45	D2	Copper	26.0		11.2	2800	15	-2774.0	No
LANL-WR-SS-45	D2	Iron	6390		13800	23000	-7410	-16610.0	No
LANL-WR-SS-45	D2	Lead	63.5		19.7	400	44	-336.5	No
LANL-WR-SS-45	D2	Magnesium	801	J	2370	NP	-1569	N/A	No
LANL-WR-SS-45	D2	Manganese	253		543	7800	-290	-7547.0	No
LANL-WR-SS-45	D2	Mercury	0.24		0.1	23	0.140	-22.8	No
LANL-WR-SS-45	D2	Nickel	5.70		9.4	1500	-4	-1494.3	No
LANL-WR-SS-45	D2	Potassium	599		2690	NP	-2091	N/A	No
LANL-WR-SS-45	D2	Selenium	0.52	B	0.3	380	0.22	-379.5	No
LANL-WR-SS-45	D2	Silver	0.55	B	1.0	380	-0.45	-379.5	No
LANL-WR-SS-45	D2	Sodium	98.7	B	1470	NP	-1371	N/A	No
LANL-WR-SS-45	D2	Vanadium	9.3		19.7	530	-10	-520.7	No
LANL-WR-SS-45	D2	Zinc	197		60.2	23000	137	-22803.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Aluminum	1100	J	15400	74000	-14300	-72900.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Antimony	0.89	BJ	0.83	30	0.06	-29.1	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Arsenic	0.65		3.98	3.90	-3	-3.3	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Barium	18.6		127	5200	-108	-5181.4	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Beryllium	0.20		1.31	150	-1	-149.8	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Cadmium	0.21		0.40	70	-0.190	-69.8	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Calcium	536		4400	NP	-3864.000	N/A	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Chromium	5.30	J	10.5	100000	-5	-99994.7	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Cobalt	1.30		4.73	4500	-3	-4498.7	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Copper	8.40		11.2	2800	-3	-2791.6	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Iron	6120		13800	23000	-7680	-16880.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Lead	34.6	J	19.7	400	15	-365.4	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Magnesium	242	J	2370	NP	-2128	N/A	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Manganese	170		543	7800	-373	-7630.0	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Nickel	7.10	J	9.4	1500	-2	-1492.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Silver	0.059	B	1.0	380	-0.94	-379.9	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Sodium	31.3	B	1470	NP	-1439	N/A	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Vanadium	10.3		19.7	530	-9	-519.7	No
LANL-WR-SS-61	D2 (DUP-SS-32)	Zinc	55.4	J	60.2	23000	-5	-22944.6	No

Appendix E

Preliminary Screening Evaluations of the Ash Debris (SWMU 73-002)

LA-UR-04-4474
July 1999
ER2005-0120

Preliminary Screening Evaluations of the Ash Debris (PRS 73-002) Environmental Restoration Project A Department of Energy Environmental Cleanup Program

Los Alamos
NATIONAL LABORATORY
Los Alamos NM 87545

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Prepared by
Risk Reduction and Environmental Stewardship–Remediation Services

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EXECUTIVE SUMMARY

The purpose of this document is to provide the results of preliminary human health and ecological screening evaluations of the ash debris and the areas surrounding this site, i.e., both lateral to and downgradient from the ash debris. The results of this evaluation are intended to provide a general description and magnitude of the potential risks to human health and the environment as a consequence of exposure to the ash debris. In addition, the evaluation provides a comparison of the potential risks associated with the surrounding areas and a delineation of the extent of the contamination from the ash debris.

The site is comprised of an incinerator building (TA-73-2) and a surface disposal area (referred to as the ash debris). The ash debris is the result of incinerator operations to destroy classified documents and later the burning of municipal trash. The ash debris is located on the southern slope below the rim of Pueblo Canyon and immediately north of the incinerator building. It is essentially a wedge-shaped mass, with maximum dimensions of approximately 150 ft wide and 160 ft long. The thickness of the ash ranges from 0 ft at the edges to greater than 8 ft at several locations. The distance from the lower edge of the ash debris to the bottom of Pueblo Canyon is nearly 400 vertical feet.

Samples have been collected from the ash debris as well as the drainages below the ash debris and the areas on either side of the ash debris. Analytical results from these samples have detected metals, organic chemicals, and radionuclides in all of the areas sampled. The ash debris had 18 metals and six radionuclides detected above background and 33 organic chemicals detected. By comparison, the drainages below the ash debris had four metals detected above background and five organic chemicals detected, while the areas on either side of the ash debris had seven metals detected above background and 14 organic chemicals detected. Radionuclides were not analyzed for in either of these areas, but screening data from the drainages indicated that radioactivity was below background.

A preliminary human health risk-based screening evaluation was conducted on each of the areas sampled to determine the potential hazards and risks to human receptors. The exposure concentrations for each area were compared to risk-based screening values for a residential and a recreational exposure scenario. Based on the preliminary screening evaluation, the ash debris presents a potential for unacceptable risk to human health with respect to noncarcinogenic and carcinogenic risk for residential exposure (Table E-1). Potential risk from radionuclides is also above the dose limit of 15 mrem/yr for residential exposure (Table E-1). By comparison, the recreational exposure results in less potential hazard, risk, and dose for noncarcinogens, carcinogens, and radionuclides to individuals. The potential noncarcinogenic hazard and radionuclide dose are approximately one to two orders of magnitude less than the potential residential hazard, respectively, while the potential carcinogenic risk is approximately 1/3 the residential value (Table E-1). The potential risk of the ash debris to residents and recreational users is an order of magnitude or more compared to the potential risk derived for the drainages and the areas on either side of the ash debris (Table E-1).

TABLE E-1
SUMMARY OF HAZARD INDICES AND RISKS/DOSES FOR THE ASH DEBRIS AND SURROUNDING AREAS

Effects Category	Residential Exposure			Recreational Exposure		
	Ash Debris	Drainages	Lateral	Ash Debris	Drainages	Lateral
Noncarcinogens[a]	24.8	0.2	0.3	2.7	0.03	0.05
Carcinogens[b]	3×10^{-4}	3×10^{-7}	2×10^{-5}	8×10^{-5}	2×10^{-7}	6×10^{-6}
Radionuclides[c]	20	NA[d]	NA	0.7	NA	NA

[a] Values are the unitless hazard indices for each area.
[b] Values are the total incremental lifetime cancer risk for each area.
[c] Value is the total doses in mrem/yr for the ash debris.
[d] NA = not available; radionuclides have not been analyzed for in the drainages and the areas on either side of the ash debris.

A preliminary ecological risk screening evaluation was also conducted on the sampling results for the ash debris, the drainage below the ash debris, and the area on either side of the ash debris in order to determine the potential for adverse ecological impacts. The evaluation compared the exposure concentrations to ecological screening values for nine terrestrial receptors [a plant, the earthworm, deer mouse, vagrant shrew, desert cottontail, American robin, American kestrel (with and without an all meat diet), and the red fox] designed to represent different trophic levels. Based on the observed site conditions and the results of the preliminary screening evaluation, the ash debris does pose a potential for adverse ecological impacts to some or all of the receptors. There has been some release of contamination, primarily inorganic chemicals, into the drainages and areas immediately below or adjacent to the ash debris. However, the hazard index values in the drainages and on either side of the ash debris are an order of magnitude or more below the hazard index values from the ash debris (Table E-2).

The ash debris is exposed and subject to the effects of wind and storm water runoff. The available sampling data collected in and around this site indicates that despite these environmental influences there has been little movement of contaminated material from the ash debris. In addition, the concentrations of contaminants decreases as the distance from the ash debris increases and are below background concentrations or detection limits at the bottom of the Pueblo Canyon where the drainages join the ephemeral stream channel. The number of contaminants detected in these areas is also much less than the number of contaminants detected within the ash debris. The highest concentrations of contaminants in these areas are close to the ash debris, i.e., within approximately 10-ft on either side of the ash debris and within approximately 250 ft below the ash debris. In general, the area of the drainages below PRS and the areas adjacent to the PRS along the canyon walls appears to be representative of a healthy terrestrial ecosystem that is commonly encountered in northern New Mexico and have not been adversely impacted by the ash debris.

TABLE E-2
SUMMARY OF HAZARD INDEX ANALYSES FOR THE ASH DEBRIS AND SURROUNDING AREAS

ECOLOGICAL SCREENING RECEPTORS	HAZARD INDEX VALUES		
	ASH DEBRIS	DRAINAGES	LATERAL AREAS
Plant	1316	51.4	58.8
Earthworm	352	6.1	8.7
Deer Mouse	270	0.9	10.3
Vagrant Shrew	238	0.4	9.1
Desert Cottontail	21	0.3	0.7
Red Fox	6.6	0.04	0.1
Robin	618	40.5	18.4
Kestral	157	16	1.8
Kestral (with an all meat diet)	199	23.9	0.4

INTRODUCTION

Purpose

The purpose of this document is to provide the results of preliminary human health and ecological screening evaluations of the ash debris and the areas surrounding this site, i.e., both lateral to and downgradient from the ash debris. The ash debris is the result of incinerator operations to destroy classified documents and later the burning of municipal trash. This site is of concern because it has been found to contain a number of contaminants at relatively high concentrations that may pose the potential for adverse impacts to human and ecological receptors. In addition, it is located on the southern slope below the rim of Pueblo Canyon and has the potential to be transported by storm water runoff and wind. Its presence within the Pueblo Canyon watershed has also elicited concerns about the introduction of contamination into the surface water system and ultimately migration down the canyon.

The results of this evaluation are intended to provide a general description and magnitude of the potential risks to human health and the environment as a consequence of exposure to the ash debris. In addition, the evaluation provides a comparison of the potential risks associated with the surrounding areas and a delineation of the extent of the contamination from the ash debris.

It should be noted that the results presented here might not be the final estimations of the potential risks associated with this site. Although the overall conclusions may remain the same, the values presented are preliminary and subject to change. Reasons for changes in the estimated values includes, but are not limited to, the following,

- collection of additional data, if necessary, for further characterization of extent,
- in-depth review of data quality to determine the adequacy of available sampling data,
- changes in the toxicity values used to calculate human health reference doses and cancer slope factors,
- modifications in the ecological values as more information is obtained and reviewed,
- changes in the ecological values as the database is finalized and approved by the New Mexico Environment Department, and
- changes in exposure parameters to more representative conditions if a baseline risk assessment is conducted for this site.

Ultimately, a final RCRA Facility Investigation (RFI) report, corrective measures study (CMS) report, or similar report will be written to present the potential risks and/or remedial alternatives associated with this potential release site.

Site Description

The site is comprised of an incinerator building and surface disposal area (referred to as the ash debris). The incinerator was located on Department of Energy (DOE) property in a two-story building, TA-73-2, north/northwest of the present Los Alamos County Airport terminal building near the southern slope of Pueblo Canyon. The first floor of the building was referred to as the stoking floor, and the second floor as the charging floor. A six-foot diameter stack was located behind the building. The ash debris is located immediately north of the incinerator building on the south-facing slope of Pueblo Canyon just below the rim. The upper portion of the ash debris is located on DOE property, but the majority of the area is on Los Alamos County property. The potential release site (PRS 73-002) is listed on the HSWA Module VIII, Table A.

The ash debris is essentially wedge-shaped, with its maximum dimensions being approximately 150 ft wide and 160 ft long. The thickness of the ash ranges from 0 ft at the edges to greater than 8 ft at several locations. The distance from the lower edge of the ash debris to the bottom of Pueblo Canyon is nearly 400 vertical feet.

The outfalls from two associated PRSs, 73-004(a) and 73-006, discharged onto the ash disposal area. PRS 73-004(a), a former septic tank that served the incinerator building, was located approximately 10 feet northwest of the incinerator building's northwest corner. An initial RFI was conducted in July 1996, and the septic tank was removed as part of a VCA in August 1996. The inlet and outlet drainlines were removed as part of a second RFI investigation conducted in February 1999. PRS 73-006, the east and west floor drains from the incinerator building, were also investigated as part of the July 1996 RFI. The east drainline could not be located and was assumed to have been previously removed. The west drainline was removed as part of the second RFI conducted in February 1999.

Operational History

The incinerator operated for a short time beginning in 1947. The incinerator's primary purpose was to destroy classified documents from the Laboratory. It was used for this purpose for only about one year because it did not function properly resulting in incomplete combustion. The incinerator was also used to burn municipal trash. In June 1948, The Zia Company acquired the incinerator building, and used it until September 1973. Before 1973, but sometime after incineration had ceased, the building was used by the Los Alamos Dog Obedience Club. The incinerator equipment and stack have been removed, but no information on the removal operation is available. In the recent past, the building was used by Budget Car Rental for equipment storage and is currently used by a sporting goods store for inventory storage.

Historical information indicates no treatment, storage, or disposal of hazardous wastes at the incinerator building. The primary source of potential contamination would have been materials disposed in the garbage that was brought for incineration. There were no known releases from this site except at the associated outfalls and the ash debris. Both outfalls ceased operation prior to the enactment of permitting regulations.

PRELIMINARY DATA REVIEW FOR THE ASH DEBRIS AND SURROUNDING AREAS

A total of seventy samples were collected from the ash debris and the surrounding areas (drainages below the ash debris and areas on either side of the ash debris) (Figure 1). The samples include 51 samples collected from within the ash debris, 15 samples collected from the drainages, and 4 samples collected from either side of the ash debris. These samples were collected during three separate sampling events beginning in 1996 and continuing in 1997 and 1998. Samples were sent to off-site, fixed analytical laboratories and analyzed for some or all of the following: target analyte list (TAL) metals, pesticides/PCBs, semivolatile organic compounds, (SVOCs), volatile organic compounds (VOCs) (1996 and 1997 samples), dioxins and furans (1997 samples only), tritium (1996 only), isotopic plutonium, isotopic uranium, and radionuclides by gamma scan (1998 samples only). A summary of samples collected and what the samples were analyzed for is presented in Table 1.

The data collected have undergone baseline validation according to the ER Project procedures. The results for individual samples were qualified using the ER Project data validation process by assessing QC parameters, such as surrogate recoveries, matrix spike recoveries, internal standards, blank contamination, laboratory duplicate analysis, and detection status. The ER Project data validation process adheres to the Environmental Protection Agency's (EPA) "Contract Laboratory Program National Functional Guidelines for Inorganic Data Review" (EPA 1994, ER ID48639) and "Contract Laboratory Program National Functional Guidelines for Organic Data Review" (EPA 1994, ER ID48640) for data validation and incorporates LANL-specific reason codes for qualifying data. Based on the Laboratory's baseline validation, the data for the ash debris and the surrounding areas as a whole are of good quality and sufficient for decision-making purposes.

Ash Debris Inorganic Data

A comparison of the inorganic sample results to Laboratory background values (BVs) was conducted in order to compare the concentrations detected in the ash debris to uncontaminated soil concentrations. The background comparison was conducted using soil BVs because this is the environmental medium on the surface of the canyon slope surrounding the ash debris and is the medium that has been deposited on the surface of the ash debris. The soil BVs were obtained from "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, ER ID 59730). The analytical and sample preparation methods used in analyzing the samples collected during the RFI were comparable to the methods used to determine the background data set with the following exception. The inorganic data from the PRS were produced by inductively coupled plasma emission spectroscopy (ICPES), which may result in elevated detection limits compared to the background data, which were produced by inductively coupled mass spectroscopy (ICPMS).

The 95% upper confidence limit (UCL) of the arithmetic mean of the analytical results for each inorganic chemical was used in the comparison to soil BVs. This comparison found that UCLs for aluminum, beryllium, magnesium, potassium, and vanadium were below their respective soil BVs, while the other inorganic chemicals were greater than their respective soil BVs. Antimony, arsenic, barium, cadmium, calcium, chromium, cobalt, copper, iron, lead, manganese, mercury, nickel, selenium, silver, sodium, thallium, and zinc are, therefore, retained as chemicals of potential concern (COPCs) and evaluated further by the human health and ecological screening assessments. The results of the background comparison are presented in Table 2 with inorganics greater than BV bolded.

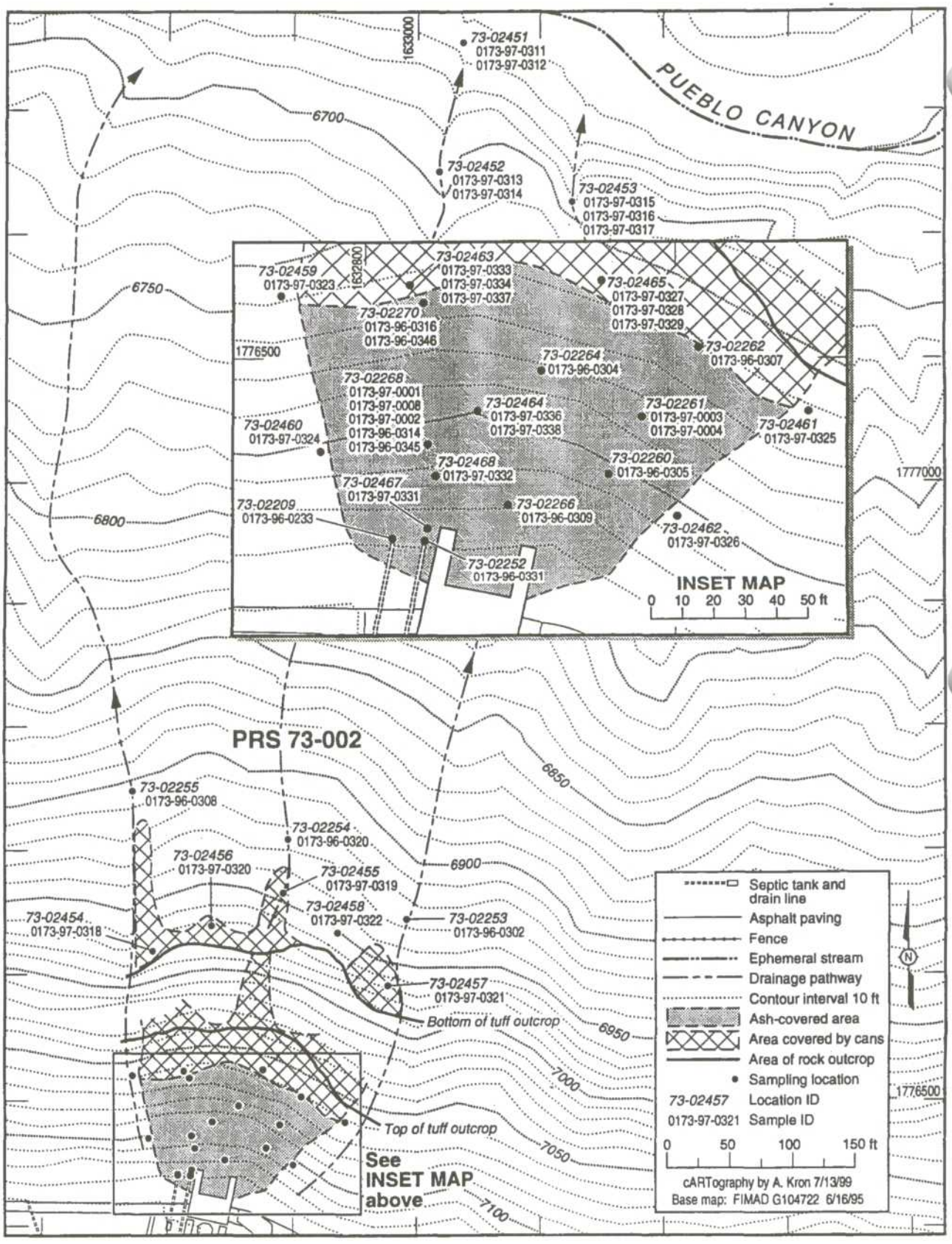

Figure 1. Sampling locations for PRS 73-002.

TABLE 1
SUMMARY OF SAMPLES COLLECTED AT PRS-73-002

LOCATION ID	SAMPLE ID	DEPTH (ft.)	DATE COLL.	MATRIX/LOCATION	VOCs	SVOCs	PEST/ PCBs	HG	METALS	TCLP METALS	DIOXINS/ FURANS	GROSS a,b,g	H3	GSCAN	ISO U	ISO PU
73-02209	0173-96-0233	0.3-0.8	7/1/96	Sdy. soil & ash w/ abund. metal & glass frags. PRS 73-004(a) outfall.	2385	2385	2385	NA	2384	NA	NA	2389	2389	NA	NA	NA
73-02253	0173-96-0302	0-0.5	6/20/96	Crse. snd. & grvl. sed.; slightly damp. East drainage below ash.	2326	2326	2326	2327	2327	NA	NA	2328	2328	NA	NA	NA
73-02264	0173-96-0304	0-1	6/28/96	Ash w/ occ. organic debris and metal & glass frags.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02260	0173-96-0305	0-0.7	6/28/96	Ash w/ org. debris and abund. metal & glass debris.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02262	0173-96-0307	0-1	6/28/96	Mostly metal w/ occ. glass debris; v. little ash.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02255	0173-96-0308	0-0.5	6/20/96	Slty. sndy. sed.; slightly damp. West drainage below ash.	2326	2326	2326	2327	2327	NA	NA	2328	2328	NA	NA	NA
73-02266	0173-96-0309	0-1	6/28/96	Ash w/ org. debris and metal & glass frags.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02268	0173-96-0314	0-1	6/28/96	Ash w/ abund. metal & glass debris.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02270	0173-96-0316	0-1	6/28/96	Metal & glass debris w/ occ. ash.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02254	0173-96-0320	0-0.5	6/20/96	Slty. sndy. sed.; slightly damp. Middle drainage below ash.	2326	2326	2326	2327	2327	NA	NA	2328	2328	NA	NA	NA
73-02252	0173-96-0331	0.1-0.3	6/13/96	Slty. soil & ash w/ fine glass & metal debris. PRS 73-006 outfall.	2286	2286	2286	2287	2287	NA	NA	2288	2288	NA	NA	NA
73-02268	0173-96-0345[b]	0-1	6/28/96	Ash w/ abund. metal & glass debris.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02270	0173-96-0346[b]	0-1	6/28/96	Metal & glass debris w/ occ. ash.	2368	2368	2368	2369	2369	NA	NA	2370	2370	NA	NA	NA
73-02268	0173-97-0001	1.2-2.2	1/2/97	Ash & org. material.	2860	2860	2860	NA	2861	NA	2860	NA	NA	NA	NA	NA
73-02268	0173-97-0002	0.5-1	1/2/97	Ash & debris.	NA	NA	NA	NA	2861	2861	2860	NA	NA	NA	NA	NA
73-02261	0173-97-0003	0.5-1	1/2/97	Ash & debris (slag & glass).	NA	NA	NA	NA	2861	2861	2860	NA	NA	NA	NA	NA
73-02261	0173-97-0004	3.5-4.5	1/2/97	Ash & debris.	2860	2860	2860	NA	2861	NA	2860	NA	NA	NA	NA	NA
73-02268	0173-97-0008[b]	1.2-2.2	1/2/97	Ash & org. material.	2860	2860	2860	NA	2861	NA	2860	NA	NA	NA	NA	NA
73-02451	0173-97-0311	0.1-0.5	10/10/97	Slty. sndy. sed.; slightly damp. Middle drainage @ canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02451	0173-97-0312	0.5-1.0	10/10/97	Slty. sndy. sed.; slightly damp. Middle drainage @ canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02452	0173-97-0313	0.1-0.5	10/10/97	Sndy. slty. sed. w/ occ. tuff frags. Middle drainage near canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02452	0173-97-0314	0.5-1.0	10/10/97	Sndy. slty. sed. w/ occ. tuff frags. Middle drainage near canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02453	0173-97-0315	0.1-0.5	10/10/97	Med. to crse. snd. & pebble sed. East drainage near canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02453	0173-97-0316[b]	0.1-0.5	10/10/97	Med. to crse. snd. & pebble sed. East drainage near canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02453	0173-97-0317	1.5-2.0	10/10/97	Med. to crse. snd. & pebble sed. East drainage near canyon bottom.	NA	NA	NA	NA	3794	NA	3793	NA	NA	NA	NA	NA
73-02454	0173-97-0318	0.1-0.5	10/14/97	[redacted]	NA	3805	NA	NA	3806	NA	3804	NA	NA	NA	NA	NA
73-02455	0173-97-0319	0.1-0.5	10/14/97	[redacted]	NA	3805	NA	NA	3806	NA	3804	NA	NA	NA	NA	NA
73-02456	0173-97-0320	0.1-0.5	10/14/97	[redacted]	NA	3805	NA	NA	3806	NA	3804	NA	NA	NA	NA	NA
73-02457	0173-97-0321	0.1-0.5	10/14/97	[redacted]	NA	3805	NA	NA	3806	NA	3804	NA	NA	NA	NA	NA
73-02458	0173-97-0322	0.1-0.5	10/14/97	[redacted]	NA	3805	NA	NA	3806	NA	3804	NA	NA	NA	NA	NA
73-02459	0173-97-0323	0.1-0.5	10/15/97	[redacted]	NA	3808	NA	NA	3810	NA	NA	NA	NA	NA	NA	NA
73-02460	0173-97-0324	0.1-0.5	10/15/97	[redacted]	NA	3808	NA	NA	3810	NA	3809	NA	NA	NA	NA	NA
73-02461	0173-97-0325	0.1-0.5	10/15/97	[redacted]	NA	3808	NA	NA	3810	NA	3809	NA	NA	NA	NA	NA
73-02462	0173-97-0326	0.1-0.5	10/15/97	[redacted]	NA	3808	NA	NA	3810	NA	NA	NA	NA	NA	NA	NA
73-02465	0173-97-0327	3.2-3.7	10/16/97	Can frags. w/ slight amount of ash and soil.	NA	NA	NA	NA	NA	NA	3821	NA	NA	NA	NA	NA
73-02465	0173-97-0328	4.2-4.5	10/16/97	[redacted]	3820	3820	NA	NA	3822	NA	3821	NA	NA	NA	NA	NA
73-02465	0173-97-0329[d]	4.5-4.8	10/16/97	[redacted]	3820	NA	NA	NA	NA	NA	3821	NA	NA	NA	NA	NA
73-02467	0173-97-0331	0.1-0.5	10/17/97	Ash w/ glass and metal frags.	NA	NA	NA	NA	NA	NA	NA	3826	NA	3826	3826	NA
73-02468	0173-97-0332	0.1-0.5	10/17/97	Ash w/ glass and metal frags.	NA	NA	NA	NA	NA	NA	NA	3826	NA	3826	3826	NA
73-02463	0173-97-0333	3.5-4.0	10/17/97	[redacted]	3823	3823	NA	NA	3825	NA	3824	NA	NA	NA	NA	NA
73-02463	0173-97-0334[d]	4.0-4.3	10/17/97	[redacted]	NA	NA	NA	NA	NA	NA	3824	NA	NA	NA	NA	NA
73-02464	0173-97-0336	7.0-7.5	10/17/97	Ash w/ glass and metal frags.	NA	NA	NA	NA	NA	NA	3824	NA	NA	NA	NA	NA
73-02463	0173-97-0337[b]	3.5-4.0	10/17/97	[redacted]	3823	3823	NA	NA	3825	NA	3824	NA	NA	NA	NA	NA
73-02464	0173-97-0338[b]	7.0-7.5	10/17/97	Ash w/ glass and metal frags.	NA	NA	NA	NA	NA	NA	3824	NA	NA	NA	NA	NA
73-10000	RE73-98-0001	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10000	RE73-98-0002[b]	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10001	RE73-98-0003	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10003	RE73-98-0004	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10004	RE73-98-0005	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10005	RE73-98-0006	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10006	RE73-98-0007	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10007	RE73-98-0008	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10008	RE73-98-0009	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10009	RE73-98-0010	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10010	RE73-98-0011	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10011	RE73-98-0012	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10026	RE73-98-0027	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872

LOCATION ID	SAMPLE ID	DEPTH (ft.)	DATE COLL.	MATRIX/LOCATION	VOCs	SVOCs	PEST/ PCBs	HG	METALS	TCLP METALS	DIOXINS/ FURANS	GROSS a,b,g	H3	GSCAN	ISO U	ISO PU
73-10027	RE73-98-0028	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10028	RE73-98-0029	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10029	RE73-98-0030	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10030	RE73-98-0031	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10031	RE73-98-0032	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10032	RE73-98-0033	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10033	RE73-98-0034	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10034	RE73-98-0035	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10035	RE73-98-0036	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10036	RE73-98-0037	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10037	RE73-98-0038	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10002	RE73-98-0066	0-0.5	10/5/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872
73-10034	RE73-98-0068[b]	0-0.5	10/8/98	Ash and debris.	NA	NA	NA	NA	NA	NA	NA	NA	NA	4872	4872	4872

Notes:

NA = Not analyzed

[b] Duplicate sample

[d] Extract and hold pending results of overlying sample.

= Ash

= Sediment downgradient of ash

= Soil downgradient of ash but possibly below cans

= Soil - lateral extent

= Soil or tuff below cans/ash

TABLE 2
COMPARISON OF INORGANIC CHEMICALS IN THE ASH DEBRIS TO SOIL BACKGROUND VALUES

Analyte	Range of Sample Values (mg/kg)	95% UCL (mg/kg)	Soil BV (mg/kg)
Aluminum	840 – 32000	15086	29200
Antimony	**0.71(U)[a] – 159**	**56.2**	**0.83**
Arsenic	**1.3 – 90**	**47**	**8.17**
Barium	**10 – 6280**	**2132**	**295**
Beryllium	0.21 (J) – 2.9(U)	1.0	1.83
Cadmium	**0.04(U) – 42.9**	**13.2**	**0.4**
Calcium	**270 – 45900**	**24482**	**6120**
Chromium	**1.3 – 133**	**71.9**	**19.3**
Cobalt	**1.0(U) – 37.8**	**18.8**	**8.64**
Copper	**1.1(U) – 6330**	**1962**	**14.7**
Iron	**6.4(U) – 431000**	**139678**	**21500**
Lead	**2.3 – 13100**	**4222**	**22.3**
Magnesium	160 – 6016	2850	4610
Manganese	**95 – 1960**	**1915**	**671**
Mercury	**0.02(U) – 19**	**5.7**	**0.1**
Nickel	**1.7 – 236**	**94.3**	**15.4**
Potassium	290 – 5040	3381	3460
Selenium	**1.0(U) – 4.3**	**1.84**	**1.52**
Silver	**0.15(U) – 448**	**104.1**	**1**
Sodium	**55 – 7760**	**1568**	**915**
Thallium	**0.026(U) – 10.6**	**4.9**	**0.73**
Vanadium	1.1 – 62	19.9	39.6
Zinc	**18 - 7170**	**3052**	**48.8**

[a] The "U" qualifier in parentheses indicates an undetected value.

Ash Debris Radionuclide Data

A comparison of the radionuclide sample results to Laboratory background/fallout values was conducted in order to compare the concentrations detected in the ash debris to uncontaminated soil concentrations. The background comparison was conducted using soil BVs because this is the environmental medium on the surface of the canyon slope surrounding the ash debris and is the medium that has been deposited on the surface of the ash debris. The soil BVs were obtained from "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, ER ID 59730). The analytical and sample preparation methods used in analyzing the samples collected during the RFI were comparable to the methods used to determine the background data set.

The 95% UCL of the arithmetic mean of the analytical results for each detected radionuclide was used in the comparison to soil background/fallout values. This comparison found that UCLs for cesium-137, plutonium-238, and tritium were below their soil background/fallout values, while the other detected radionuclides were greater than their soil background/fallout values. As a result, amercium-241, plutonium-239, radium-226, uranium-234, uranium-235, and uranium-238 are retained as COPCs and evaluated further by the human health and ecological screening assessments. The results of the background/fallout comparison are presented in Table 3 and the radionuclides greater than BV are bolded.

TABLE 3
COMPARISON OF RADIONUCLIDES IN THE ASH DEBRIS TO SOIL BACKGROUND/FALLOUT VALUES

Analyte	Range of Sample Values (pCi/g)	95% UCL (pCi/g)	Soil BV (pCi/g)
Amercium-241	**-0.03(U)[a] – 1.33**	**0.16**	**0.013[b]**
Cesium-137	0.07(U) – 1.51	0.49	1.65[b]
Plutonium-238	-0.0017(U) – 0.066	0.005	0.023[b]
Plutonium-239	**0.0022(U) – 2.82**	**1.3**	**0.054[b]**
Radium-226	**0(U) – 11.1**	**5.3**	**2.59**
Tritium	-0.02(U) – 0.15	0.077	0.08[b,c]
Uranium-234	**0.48 – 17.1**	**7.2**	**2.59**
Uranium-235	**0(U) – 0.97**	**0.4**	**0.2**
Uranium-238	**0.5 – 15.9**	**5.2**	**2.29**

[a] The "U" qualifier in parentheses indicates an undetected value.
[b] Value applies to samples collected from 0-6 in.
[c] Value calculated based on 10% moisture.

Ash Debris Organic Data

A number of organic chemicals were detected in the samples collected from the ash debris. These organics included pesticides, PCBs (polychlorinated biphenyls), PAHs (polynuclear aromatic hydrocarbons), other SVOCs, dioxins/furans, and VOCs. All of these chemicals are retained as COPCs and evaluated further by the human health and ecological screening assessments. In addition, three PAHs (anthracene, acenaphthene, and benzo(a)pyrene) are included because other chemicals in this group were detected in the ash debris and these chemicals were detected either in the drainage below the ash debris or in the area next to the ash debris. A summary of the detected organic compounds is provided in Table 4.

TABLE 4
ORGANIC CHEMICALS IN THE ASH DEBRIS

Analyte	Range of Sample Values (mg/kg)	95% UCL (mg/kg)	Number of Detects
Acenaphthene	0.34(U)[a] – 1.8(U)	0.66	0
Anthracene	0.34(U) – 1.8(U)	0.66	0
Aroclor-1254	0.034(U) – 3.7(U)	0.58	6
Benzo(a)anthracene	0.043(J)[b] – 1.8(U)	0.67	3
Benzo(a)pyrene	0.34(U) – 1.8(U)	0.66	0
Benzo(b)fluoranthene	0.076(J) – 1.8(U)	0.67	2
Benzo(k)fluoranthene	0.075(J) – 1.8(U)	0.69	2
beta-BHC	0.0007(U) – 0.18(U)	0.028	1
Bis(2-ethyhexyl)phthalate	0.12(J) – 1.8(U)	0.65	2
alpha-Chlordane	0.0017(U) – 0.18(U)	0.078	1
gamma-Chlordane	0.0017(U) – 0.18(U)	0.029	1
Chrysene	0.047(J) – 1.8(U)	0.75	3
4,4'-DDT	0.0034(U) – 3.9	0.48	8
4,4'-DDE	0.0034(U) – 0.78	0.14	10
4,4'-DDD	0.0034(U) – 1.3	0.83	2
1,2-Dichlorobenzene	0.005(U) – 0.12(J)	0.34	1
1,3-Dichlorobenzene	0.005(U) – 0.12(J)	0.022	1
1,4-Dichlorobenzene	0.005(U) – 0.048	0.012	2

[a] The "U" qualifier in parentheses indicates an undetected value.
[b] The "J" qualifier in parentheses indicates an estimated detected value.

TABLE 4
ORGANIC CHEMICALS IN THE ASH DEBRIS
Continued

Analyte	Range of Sample Values (mg/kg)	95% UCL (mg/kg)	Number of Detects
Di-n-butyl phthalate	0.05(J) – 1.5(U)	0.44	5
Endosulfan I	0.0007(U)[a] – 0.18(U)	0.028	1
Fluoranthene	0.078(J)[b] – 1.5(U)	0.54	2
Dioxins/Furans	0.000003(U) – 0.001443[c]	0.000441[c]	9
4-Isopropyltoluene	0.005(U) – 0.032(U)	0.013	1
2-Methylnaphthalene	0.25(J) – 1.5(U)	0.57	1
Naphthalene	0.34(U) – 1.5(U)	0.5	1
Phenanthrene	0.25(J) – 1.5(U)	0.54	2
Phenol	0.34(U) – 1.5(U)	0.56	1
Pyrene	0.049(J) – 1.8(U)	0.63	2
Tetrachloroethene	0.002(J) – 0.032(U)	0.012	7
1,1,1-Trichloroethane	0.002(U) – 0.032(U)	0.013	15
Trichloroethene	0.002(J) – 0.032(U)	0.012	14
Trichlorofluoromethane	0.005(U) – 0.041	0.016	15
1,3,5-Trimethylbenzene	0.005(U) – 0.01	0.012	1

[a] The "U" qualifier in parentheses indicates an undetected value.
[b] The "J" qualifier in parentheses indicates an estimated detected value.
[c] Values were obtained using the toxicity equivalency factors recommended by EPA for dioxin (see Attachment 1).

Drainage Inorganic Data

A comparison of the inorganic sample results for the drainage leading from the ash debris slope to Laboratory BVs was conducted in order to determine whether there had been a release from the ash debris into the drainage. The background comparison was conducted using soil BVs because the material in the drainages is the same as the surface soil on the canyon slope. The soil BVs were obtained from "Inorganic and Radionuclide Background Data for Soils, Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, ER ID 59730). The analytical and sample preparation methods used in analyzing the samples collected during the RFI were comparable to the methods used to determine the background data set with the following exception. The inorganic data from the drainage were produced by inductively coupled plasma emission spectroscopy (ICPES) with radial view for three samples, which resulted in elevated detection limits for antimony, cadmium, mercury, silver, and thallium compared to the background data, which were produced by inductively coupled mass spectroscopy (ICPMS). The other twelve samples were analyzed by ICPES with axial view, which provides lower detection limits that are comparable to ICPMS results.

The 95% UCL of the arithmetic mean was used for the majority of the inorganic chemicals in the soil BV comparison. However, eight inorganic chemicals (aluminum, calcium, iron, magnesium, potassium, sodium, vanadium, and zinc) were only analyzed in three samples, which are an insufficient number of samples to calculate the 95% UCL. As a result, the background comparison for these metals was conducted using the maximum detected concentration. The comparison found that cadmium, lead, and zinc were detected above their respective BVs, while the other inorganic chemicals were detected below their respective soil BVs (Table 5). Cadmium, lead, and zinc (bolded in Table 5) were retained as COPCs and evaluated further in the human health and ecological screening assessments. Antimony, mercury, silver, and thallium had elevated detection limits above their soil BVs in three samples because as mentioned above the analytical method used did not produce low detection limits. Antimony was not detected in twelve other samples that had detection limits below the soil BV (ICPES with axial view). Mercury and silver were detected in five and one samples, respectively, with low detection limits at

concentrations below the soil BVs, while thallium was detected in two samples with low detection limits at concentrations slightly above the soil BV. These detected concentrations of thallium (0.8 mg/kg and 0.87 mg/kg) were within the range of background values in the data set (0.06 mg/kg to 1 mg/kg) and are not considered to be different from background. Based on this information, antimony, mercury, silver, and thallium are not considered to be different from background despite the detection limits greater than the soil BVs and were not evaluated further in the human health and ecological screening assessments.

TABLE 5
COMPARISON OF INORGANIC CHEMICALS IN THE DRAINAGE TO SOIL BACKGROUND VALUES

Analyte	Range of Sample Values (mg/kg)	95% UCL or Maximum Concentrations (mg/kg)	Soil BV (mg/kg)
Aluminum	1400 – 4400	4400[a]	29200
Antimony	0.21(U)[b] – 12(U)	5.7(U)	0.83
Arsenic	0.79 – 2.5	1.6	8.17
Barium	6.2 – 110	110[a]	295
Beryllium	0.52(U) – 0.62(U)	0.62(U)[a]	1.83
Cadmium	**0.04(U) – 12.2**	**2.3**	**0.4**
Calcium	1300 – 2400	2400[a]	6120
Chromium	1.1 – 4.6	3.1	19.3
Cobalt	0.78 – 9.9	2.9	8.64
Copper	0.4 – 5.4	3.6	14.7
Iron	4400 – 7200	7200[a]	21500
Lead	**8.6 – 168**	**41**	**22.3**
Magnesium	270 – 720	720[a]	4610
Manganese	99.3 – 790	377	671
Mercury	0.02(U) – 0.12(U)	0.06	0.1
Nickel	0.8 – 3.9	3.5	15.4
Potassium	240 – 770	770[a]	3460
Selenium	0.21(U) – 0.25(U)	0.25(U)	1.52
Silver	0.14(U) – 2.5(U)	0.99	1
Sodium	43 – 83	83[a]	915
Thallium	0.53(U) – 1.5(U)	0.92	0.73
Vanadium	3.4 – 7.5	7.5[a]	39.6
Zinc	**42 - 470**	**470[a]**	**48.8**

[a] Values are the maximum detected concentrations or the maximum detection limits for each inorganic.
[b] The "U" qualifier in parentheses indicates an undetected value.

Drainage Radionuclide Data

Gross alpha, gross beta, and gross gamma measurements were collected from the soil in the drainage below the ash debris. The results of the radioactivity screening were below or similar to Laboratory background (Table 6). Tritium was analyzed for in three samples from the drainage and was detected at concentrations below the background/fallout value (Table 6). As a result, additional samples were not analyzed for radionuclides in the drainage. Based on this information, gross alpha, beta, and gamma radiation and tritium are not considered to be different from background and were not evaluated further in the human health and ecological screening assessments.

TABLE 9
ORGANIC CHEMICALS ON EITHER SIDE OF THE ASH DEBRIS[a]

Analyte	Range of Sample Values (mg/kg)	Maximum Detected Concentration (mg/kg)	Number of Detects
Acenaphthene	0.035(J)[b] – 0.78	0.78	2
Anthracene	0.061(J) – 0.41(U)[c]	0.061(J)	1
Benzo(a)anthracene	0.1(J) – 0.41(U)	0.1(J)	1
Benzo(a)pyrene	0.11(J) – 0.41(U)	0.11(J)	1
Benzo(b)fluoranthene	0.21(J) – 0.41(U)	0.21(J)	1
Benzoic acid	0.051(J) – 2.9(U)	0.051(J)	1
Bis(2-ethyhexyl)phthalate	0.05(J) – 0.41(U)	0.05(J)	1
Chrysene	0.11(J) – 0.41(U)	0.11(J)	1
Di-n-butyl phthalate	0.077(J) – 0.41(U)	0.077(J)	1
Fluoranthene	0.24 (J) – 0.41(U)	0.24(J)	1
Dioxins/Furans	0.0000016(J) – 0.000013(J)[d]	0.000013[d]	2[e]
Naphthalene	0.041(J) – 0.41(U)	0.041(J)	1
Phenanthrene	0.21(J) – 0.41(U)	0.21(J)	1
Pyrene	0.32(J) – 0.41(U)	0.32(J)	1

[a] Total of four samples collected; two on each side of the ash debris.
[b] The "J" qualifier in parentheses indicates an estimated detected value.
[c] The "U" qualifier in parentheses indicates an undetected value.
[d] Values were obtained using the toxicity equivalency factors recommended by EPA for dioxin (Attachment 1).
[e] Only two of four samples analyzed for dioxins and furans; one on each side of the ash debris.

Summary

Based on the comparison to background values for inorganic chemicals, several metals have been identified as chemicals of potential concern (COPCs) in the ash debris, the drainages, and the areas on either side of the ash debris. The exposure concentrations for eighteen metals were above their respective soil BVs in the ash debris. By comparison, the exposure concentrations or maximum detected values for four and seven metals, respectively, were above the BVs in the drainages and lateral areas.

The comparison of detected radionuclides in the ash debris to their respective background/fallout values resulted in six radionuclides being identified as COPCs. The exposure concentrations for these radionuclides were above their respective background/fallout values. Radionuclides were not analyzed for in the drainages or on either side of the ash debris. However, screening data from the drainage areas indicated that radioactivity was below Laboratory background levels.

The evaluation of the sampling data identified a number of organic chemicals as COPCs in the ash debris, the drainages, and the areas on either side of the ash debris. There were 33 organic chemicals (semivolatile organics, volatile organics, PCBs/pesticides, and dioxin/furans) detected in the ash debris compared to five and 14 organic chemicals detected in the drainages (semivolatile organic, pesticides, and dioxins/furans) and on either side of the ash debris (semivolatile organics and dioxins/furans), respectively.

PRELIMINARY HUMAN HEALTH SCREENING EVALUATION OF THE ASH DEBRIS AND SURROUNDING AREAS

A preliminary human health screening evaluation was conducted on the sampling results for the ash debris. The screening evaluation was conducted separately for three different areas: the ash

debris, the drainage below the ash debris, and the area on either side of the ash debris. The screening evaluation was conducted by comparing the exposure concentrations of chemicals detected at the site to screening values for each chemical. The screening values were calculated using the most current toxicity information, exposure parameters, and equations. These values are based on either a residential or recreational exposure scenario. The methodology for calculating the residential values for nonradionuclides is presented in Appendix C of the 1998 Installation Work Plan (LANL 1998, ER ID 62060). The residential values for radionuclides were calculated using a computer model (RESRAD) developed by Argonne National Laboratory. The recreational values for nonradionuclides and radionuclides were calculated using the canyons human health risk screening model (LANL 1998, ER ID 62049). These two scenarios were chosen because the residential exposure represents the highest level of potential exposure and provides a conservative estimate of risk, while the recreational exposure is more representative of potential use of the site (i.e., hikers/walkers). The two scenarios differ with respect to their exposure assumptions. For example, the exposure frequency is assumed to be 350 days/yr for the residential setting vs. 75 days/yr for the recreational setting. In addition, an exposure time of 24 hrs/day is implied for the resident, while the exposure time for the trail user is assumed to be 1 hr/day.

A residential scenario is used to evaluate areas where there are occupied residences on or adjacent to a potential release site as well as sites that may be developed as residential areas. Under this land use, present-day risk is expected to result from frequent, repeated contact with contaminated media. The assumptions used account for daily exposure over a long period of time and generally result in the highest potential exposure and risk to an individual. The exposure pathways related to this scenario that are routinely evaluated (and upon which the screening values are based) include incidental ingestion of soil, inhalation of particulates and/or vapors, and dermal contact.

The recreational scenario pertains to individuals that may be exposed as a result of spending a limited amount of time in outdoor activities on or near a potential release site. Under this land use, activities such as hiking, walking, jogging, camping, biking, hunting, and fishing may be addressed. The recreational activity most likely in this situation is the trail user (i.e., hikers and walkers) and is the only use evaluated by the screening evaluation. Other uses may be evaluated by modifying the exposure parameters. For example, the exposure for a jogger may be evaluated by changing the inhalation rate, the exposure time, or the exposure frequency. The exposure pathways related to the recreational scenario that are routinely evaluated (and upon which the screening values are based) are incidental ingestion of soil, inhalation of particulates and/or vapors, and dermal contact.

The chemicals detected at a site were separated by the type of compound and/or general effect that occurs as a result of exposure. The chemical groups, which include noncarcinogens, carcinogens, and radionuclides, are evaluated separately for each area related to the ash debris, i.e., the ash debris slope, the drainages, and the area adjacent to the ash debris. For noncarcinogens, the screening value represents a concentration that would not be expected to be associated with adverse health effects. The ratio of the exposure concentration of a chemical to its screening value (residential or recreational) is the hazard quotient. A hazard quotient above one indicates a potential for toxicity from exposure to that chemical. The summation of all hazard quotients result in a hazard index that provides an overall indication of potential for noncarcinogenic adverse health effects.

For carcinogens, the screening value represents a total excess lifetime cancer risk of 1.0×10^{-6} (one in a million) resulting from exposure. By using a ratio of exposure concentration of a carcinogen to screening value, a probability of induction of cancer (risk) is determined. The acceptable target risk range, as established by the EPA (EPA 1990, ER ID 55594), is one in ten thousand to one in one million (10^{-4} to 10^{-6}) occurrences of excess cancer in a population. An overall excess cancer risk that exceeds 10^{-4} is an indication of potential unacceptable risk.

In order to determine the dose of radiation received by exposure to radionuclides, the exposure concentration in the environment is compared to the screening value of the individual radionuclide. The target dose level used for radionuclide screening value calculations is 10 mrem/yr based on the DOE's annual effective dose rate of 100 mrem/yr from all sources (DOE 1990, ER ID 58980). Further investigation of sites exceeding 10 mrem/yr is consistent with DOE regulatory guidance. Only samples from within the ash debris area have been analyzed for radionuclides.

Ash Debris Area

The data review for the ash debris sampling results identified 18 inorganic chemicals and six radionuclides greater than their respective background/fallout values. Additionally, 33 organic chemicals were detected. These chemicals were identified as noncarcinogens, carcinogens, or radionuclides and compared to their respective screening values.

The comparison of the noncarcinogenic chemicals detected in the ash debris to the residential and recreational screening values is presented in Table 10. Antimony, arsenic, iron, and lead are all greater than their respective residential screening values. The hazard index of 24.8 for the residential setting indicates a potential for adverse health effects, with lead contributing approximately 42% of the HI. In contrast, only lead is greater than its recreational screening value and contributes approximately 78% of the HI. The hazard index of 2.8 would indicate a very low potential for adverse health effects from exposure to these chemicals at these concentrations in the recreational setting. Concentrations greater than screening values are bolded in Table 10.

TABLE 10
COMPARISON OF NONCARCINOGENIC COPCs IN THE ASH DEBRIS TO SCREENING VALUES

Analyte	Exposure Concentration (mg/kg)	Residential Screening Value (mg/kg)	Recreational Screening Value (mg/kg)	Residential Hazard Quotient	Recreational Hazard Quotient
Acenaphthene	0.66	2600	32000	0.0003	0.00002
Anthracene	0.66	14000	160000	0.00005	0.000004
Antimony	**56.2**	**30**	890	**1.9**	0.06
Aroclor-1254	0.58	0.97	16	0.6	0.04
Arsenic	**47**	**21**	390	**2.2**	0.1
Barium	2132	5200	150000	0.4	0.01
Cadmium	13.2	37	2200	0.4	0.006
Calcium	24482	NA	NA	NA	NA
Cobalt	18.8	3300	7600	0.006	0.002
Copper	1962	2800	87000	0.07	0.02
1,2-Dichlorobenzene	0.34	370	48000	0.0009	0.000007
1,3-Dichlorobenzene	0.022	41	16000	0.0005	0.000001
Di-n-butyl phthalate	0.44	5500	53000	0.00008	0.000008
Endosulfan I[a]	0.028	330	3200	0.00008	0.000009
Fluoranthene	0.54	200	22000	0.003	0.00002
Iron	**139678**	**22000**	560000	**6.3**	0.2
4-Isopropyltoluene[b]	0.013	160	53000	0.00008	0.0000002
Lead	**4222**	**400**	2000	**10.5**	**2.1**
Manganese	1915	3100	17000	0.6	0.1

[a] There are no screening values for endosulfan I; the values used are for endosulfan.
[b] There are no screening values for isopropyltoluene; the values used are for isopropylbenzene (cumene).
NA = Not available

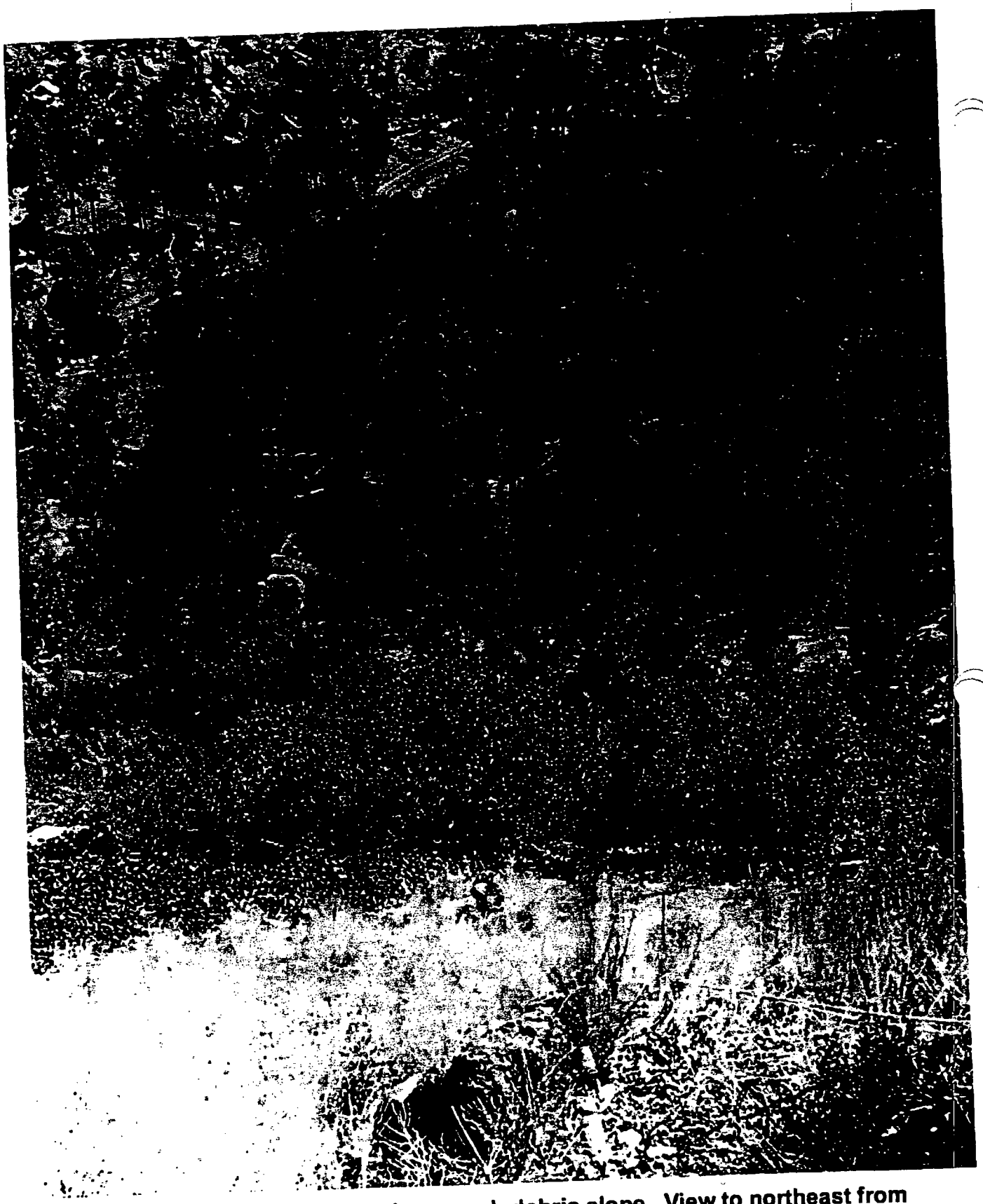

Photo 2: Collecting samples on ash debris slope. View to northeast from top of mesa. Note road at bottom of Pueblo Canyon.

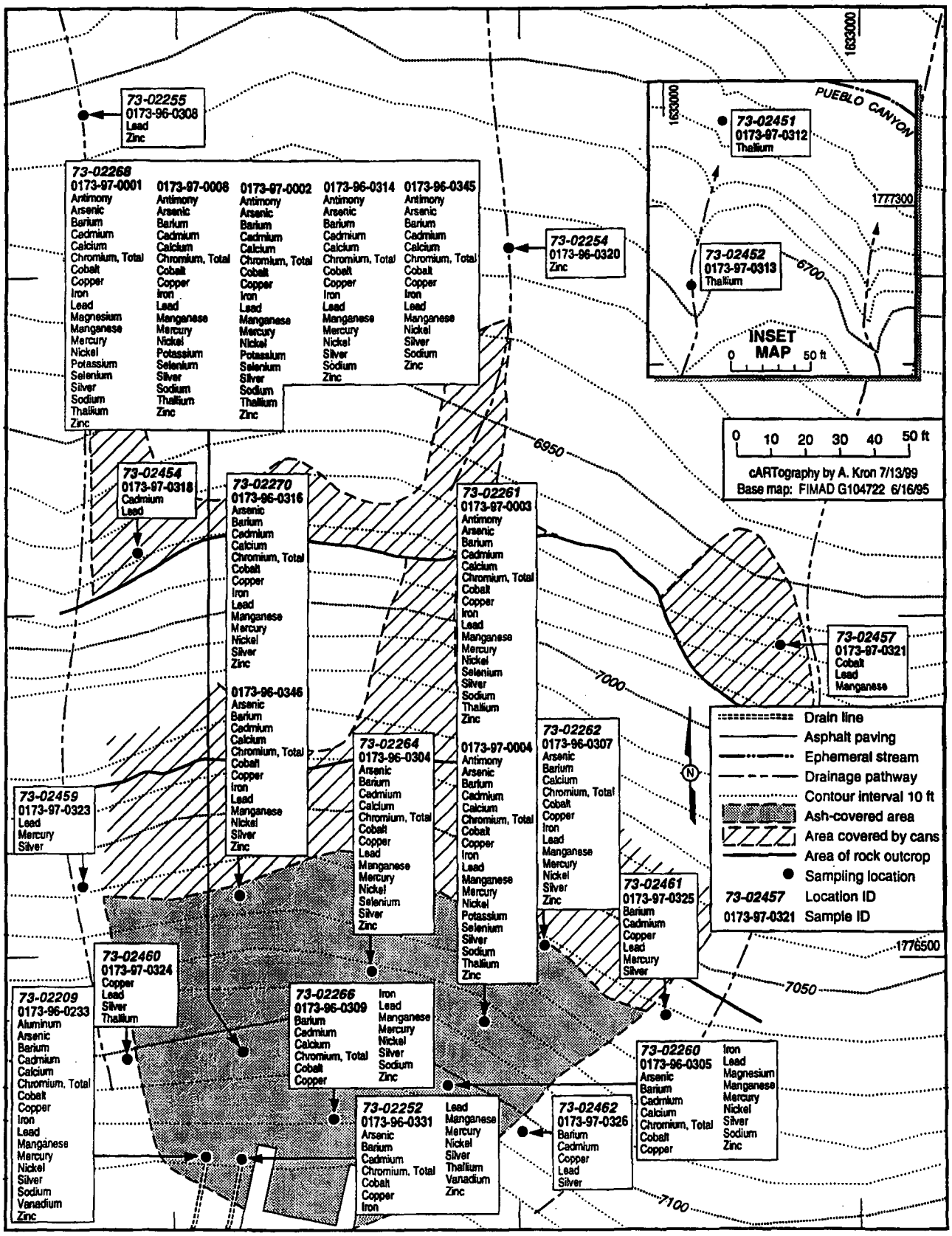

Figure 2. Inorganic chemicals detected at concentrations above BVs.

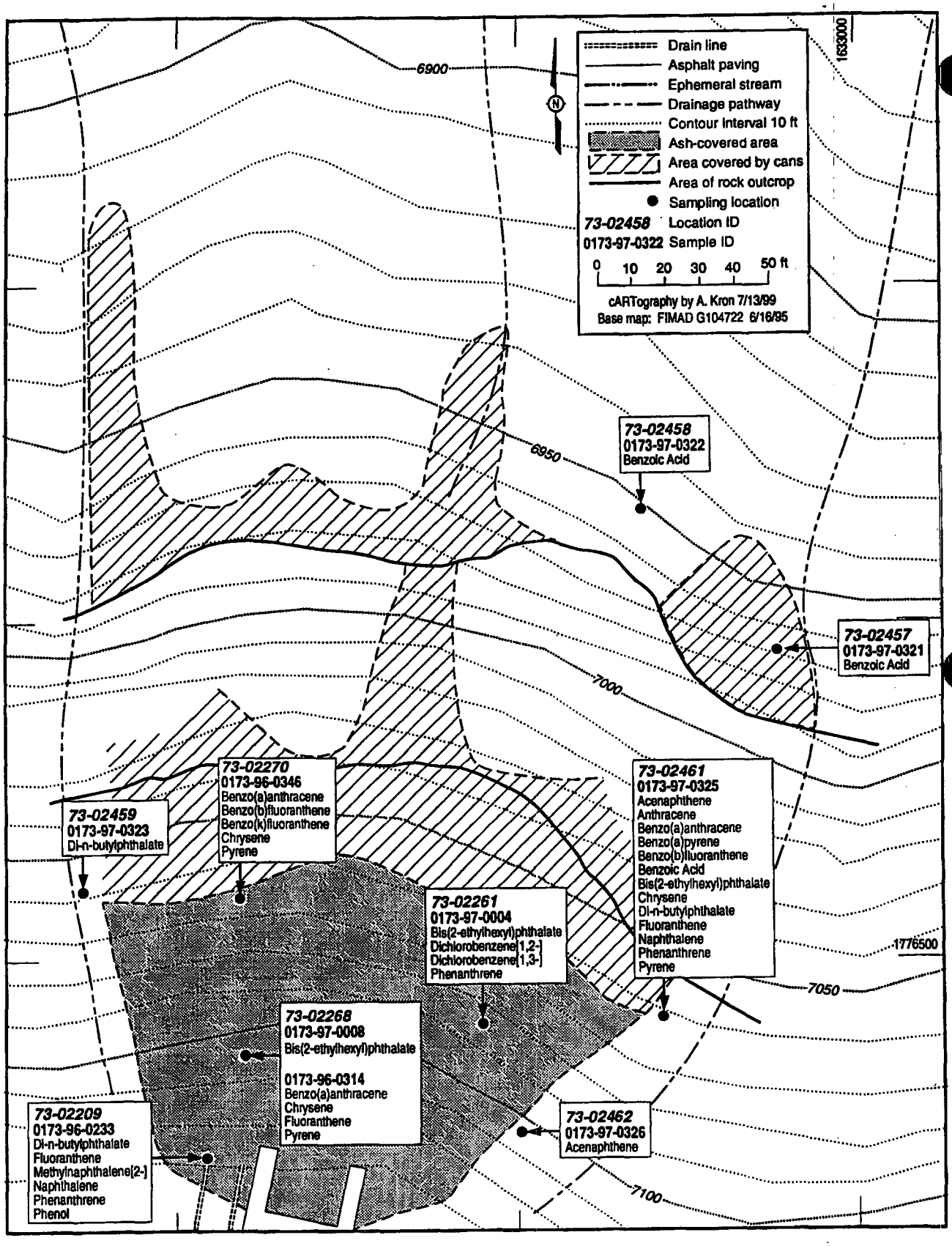

Figure 3. Detected semivolatile organic chemicals.

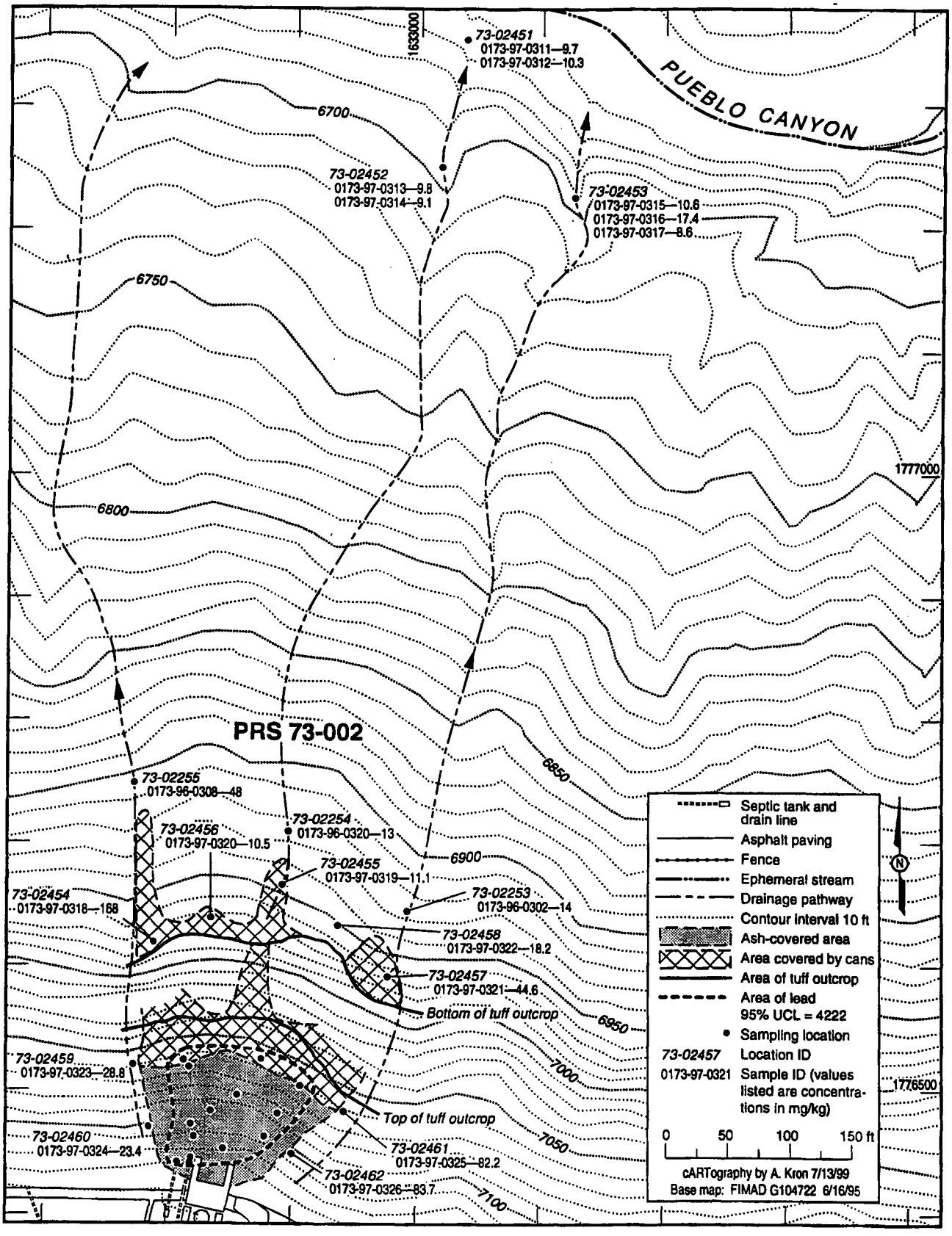

Figure 4. Summary of distribution of lead concentrations at PRS 73-002.

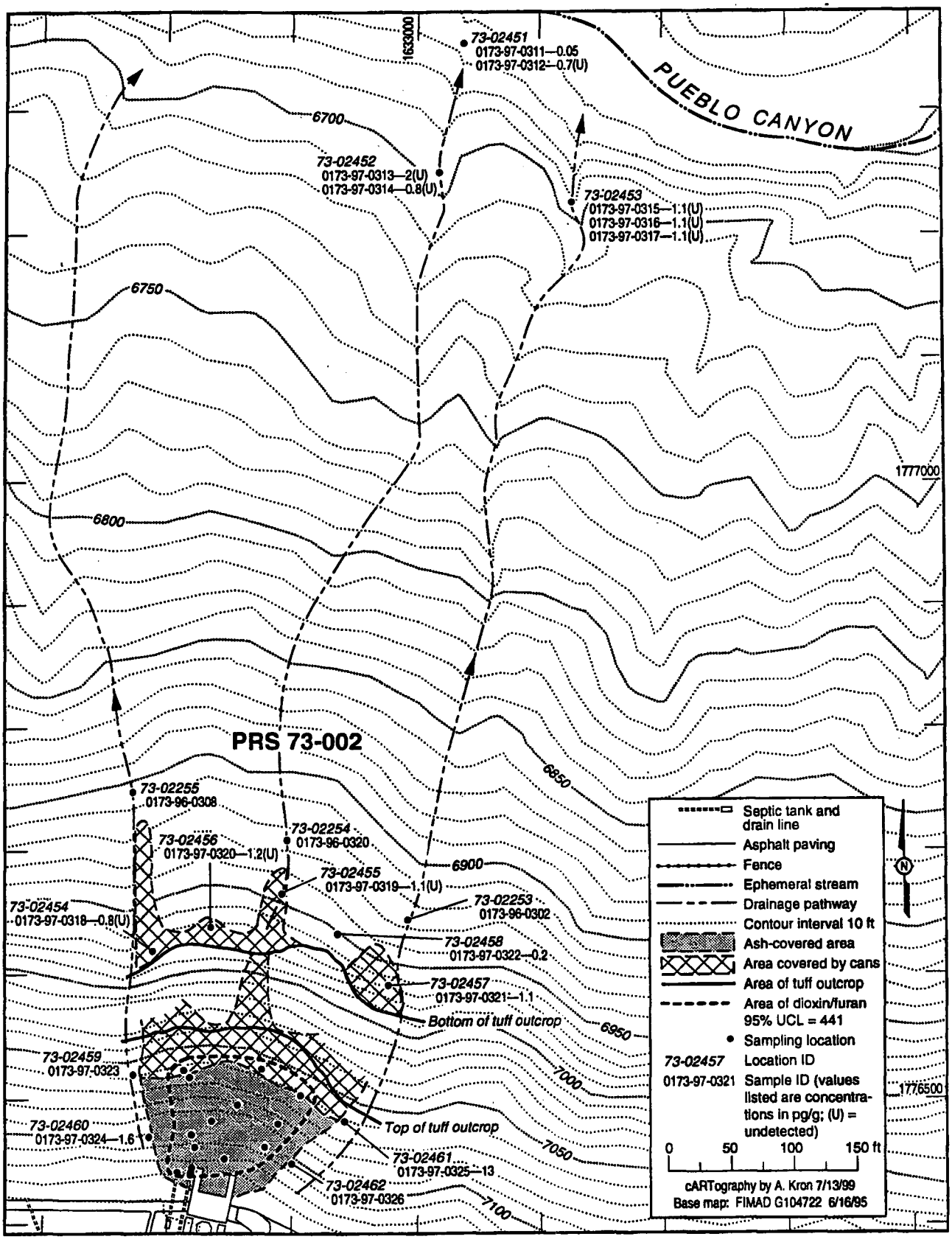

Figure 5. Summary of distribution of dioxin/furan concentrations at PRS 73-002.

PRELIMINARY ECOLOGICAL SCREENING EVALUATION FOR THE ASH DEBRIS AND SURROUNDING AREAS

A preliminary ecological screening evaluation was conducted on the sampling results for the ash debris. A screening evaluation was conducted separately for the ash debris, the drainage below the ash debris, and the area on either side of the ash debris in order to determine the potential for adverse ecological impacts. The purpose of the ecological screening evaluation is to identify chemicals of potential ecological concern (COPECs). The evaluation involves the calculation of hazard quotients (HQs) and hazard indices (HIs) for all chemicals of potential concern (COPCs) identified in the data review for all appropriate screening receptors as described in Kelly et al. (1998, ER ID 57916). The HQ analysis is based on the exposure concentration for each COPC and is calculated by dividing these values by the soil ESLs for nine screening receptors. The screening receptors for which ESLs have been derived include a plant, the earthworm, deer mouse, vagrant shrew, desert cottontail, American robin, American kestrel (with and without an all meat diet), and the red fox. The ESLs for these receptors were based on similar species and derived from an experimentally determined no observed adverse effect levels (NOAELs), lowest observed adverse effect levels (LOAELs), or lethal doses to 50% of the population (LD50s). The rationale for these receptors and the derivation of ESLs are based on the approach presented in Kelly et al. (1998, ER ID 57916) and LANL (1998, ER ID Package 186).

The screening evaluation involves an initial comparison of the exposure concentration for a chemical to the minimum ecological screening level (ESL) to obtain a maximum HQ for the chemical. If the maximum HQ resulting from this comparison is 0.1 or greater, a more detailed HI analysis is conducted for that chemical to determine if the potential for adverse ecological impacts exists and the overall contribution of the chemical to the HI for each receptor. A HI is the sum of HQs across contaminants with like effects for a given screening receptor. The chemicals resulting in a HQ greater than 1.0 or contribute more than 0.1 to a HI greater than 1.0 are identified as COPECs and are considered to be an indicator of potential adverse impacts. The analysis is designed to be conservative (i.e., some assumptions may not represent actual conditions) in order to minimize the possibility of eliminating an analyte that may pose a potential ecological risk.

Ash Debris Area

Table 18 presents a comparison of the exposure concentrations for the COPCs identified in the ash debris to the minimum soil ESL for each analyte. Calcium, iron, and sodium do not have ESLs for comparison. However, the comparison to soil BVs for these three inorganic chemicals indicates that the exposure concentrations are within a factor of 6.5 or less and that a comparison to the maximum background concentration in the respective background data sets indicates that the exposure concentrations are within a factor of 3.9 or less. Therefore, any potential adverse ecological effects are minimal and these three inorganic chemicals are not evaluated further. Because the HQs for all of the other inorganic COPCs are greater than 1.0, these chemicals are considered to be COPECs (bolded in Table 18) and are further evaluated in a HI analysis (Table 19).

The maximum HQs for the PAHs are less than 1.0, except for naphthalene (HQ=3.3), with four PAH HQs of 0.1 or more. These five PAHs (acenaphthene, benzo(a)anthracene, benzo(a)pyrene, chrysene, and naphthalene) are considered COPECs and are further evaluated in a HI analysis (Table 19). The other six PAHs have HQs of 0.01 or less and not evaluated further. Bis(2-ethylhexyl)phthalate, di-n-butyl phthalate, aroclor-1254, 4,4'-DDT, and 4,4'-DDE also have HQs greater than 1.0 and are considered COPECs (Table 19). The other detected organics (phenol, beta-BHC, alpha-chlordane, gamma-chlordane, endosulfan I, 1,4-dichlorobenzene, tetrachloroethene, 1,1,1-trichloroethane, and trichloroethene) have maximum HQs of 0.02 or less and are not considered to be COPECs. Seven detected organic chemicals (4,4'-DDD, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 4-isopropyltoluene, trichlorofluoromethane, 1,3,5-trimethylbenzene, and dioxins/furans) do not currently have ESLs in the database and cannot be

evaluated for the potential to pose adverse ecological effects. Five of these chemicals were detected in only one or two samples, while trichlorofluoromethane and dioxins/furans were detected in 15 and 9 samples, respectively. Based on the HQ analysis, ten organic chemicals are identified as COPECs (bolded in Table 18) and are evaluated further (Table 19).

The maximum HQs for amercium-241 and plutonium-239 are less than 0.1 and are not evaluated further (Table 18). The maximum HQs for radium-226, uranium-234, uranium-235, and uranium-238 are approximately 1.0 or greater (bolded in Table 18). These radionuclides are considered to be COPECs and are further evaluated in a HI analysis (Table 19).

TABLE 18
COMPARISON OF EXPOSURE CONCENTRATIONS WITH MINIMUM ESLs FOR THE ASH DEBRIS

Analyte	Exposure Concentrations[a]	BVs	Minimum ESL	Receptor	HQ[c]
Nonradionuclide Chemicals (mg/kg)					
Antimony	**56.2**	**0.83**	**0.5**	**Plant**	**112.4**
Arsenic	**47**	**8.17**	**1.2**	**Shrew**	**40.8**
Barium	**2132**	**295**	**40.1**	**Robin**	**53.2**
Cadmium	**13.2**	**0.4**	**1.0**	**Plant**	**13.2**
Calcium	24482	6120	-	-	4.0[b]
Chromium	**71.9**	**19.3**	**3.1**	**Plant**	**23.2**
Cobalt	**18.8**	**8.64**	**0.39**	**Robin**	**48.7**
Copper	**1962**	**14.7**	**13**	**Earthworm**	**150.9**
Iron	139,678	21500	No ESLs	-	6.5[b]
Lead	**4222**	**22.3**	**20**	**Plant**	**211.1**
Manganese	**1915**	**671**	**50**	**Plant**	**38.3**
Mercury	**5.7**	**0.1**	**0.05**	**Earthworm**	**114**
Nickel	**94.3**	**15.4**	**20**	**Plant**	**4.7**
Selenium	**1.84**	**1.52**	**0.5**	**Plant**	**3.7**
Silver	**104.1**	**1.0**	**0.2**	**Plant**	**520.5**
Sodium	1568	915	No ESLs	-	1.7[b]
Thallium	**4.9**	**0.73**	**0.068**	**Shrew**	**72.3**
Zinc	**3052**	**48.8**	**10**	**Plant**	**305.2**
Acenaphthene	**0.66**	**NA**	**2.5**	**Plant**	**0.3**
Anthracene	0.66	NA	443	Deer mouse	0.001
Benzo(a)anthracene	**0.67**	**NA**	**6.7**	**Shrew**	**0.1**
Benzo(a)pyrene	**0.66**	**NA**	**3.8**	**Shrew**	**0.2**
Benzo(b)fluoranthene	0.67	NA	15	Shrew	0.04
Benzo(k)fluoranthene	0.69	NA	26.9	Shrew	0.03
Chrysene	**0.75**	**NA**	**6.7**	**Shrew**	**0.1**
Fluoranthene	0.54	NA	52.6	Shrew	0.01
2-Methylnaphthalene	0.57	NA	11	Deer mouse	0.05
Naphthalene	**0.5**	**NA**	**0.15**	**Robin**	**3.3**
Phenanthrene	0.54	NA	228	Deer mouse	0.002
Pyrene	0.63	NA	31.6	Shrew	0.02
Bis(2-ethylhexyl)phthalate	**0.65**	**NA**	**0.24**	**Kestral (all meat diet)**	**2.7**
Di-n-butyl phthalate	**0.44**	**NA**	**0.1**	**Robin**	**4.4**
Phenol	0.56	NA	7.9	Plant	0.07
Aroclor-1254	**0.58**	**NA**	**0.14**	**Robin**	**4.1**

[a] Exposure concentrations are the 95% UCL of the arithmetic mean.
[b] The HQ is the ratio of the exposure concentration to the ESL.

TABLE 18
COMPARISON OF EXPOSURE CONCENTRATIONS WITH MINIMUM ESLs FOR THE ASH DEBRIS
Continued

Analyte	Exposure Concentrations[a]	BVs	Minimum ESL	Receptor	HQ[c]
Nonradionuclide Chemicals (mg/kg)					
beta-BHC	0.028	NA	1.8	Deer mouse	0.02
alpha-Chlordane	0.078	NA	1.7	Robin	0.05
gamma-Chlordane	0.029	NA	1.7	Robin	0.02
4,4'-DDT	**0.48**	**NA**	**0.0021**	**Robin**	**228.6**
4,4'-DDE	**0.14**	**NA**	**0.0017**	**Robin**	**82.4**
4,4'-DDD	0.83	NA	No ESLs	-	-
Endosulfan I	0.028	NA	0.68	Deer mouse	0.04
1,2-Dichlorobenzene	0.34	NA	No ESLs	-	-
1,3-Dichlorobenzene	0.022	NA	No ESLs	-	-
1,4-Dichlorobenzene	0.012	NA	12.8	Earthworm	0.0009
4-Isopropyltoluene	0.013	NA	No ESLs	-	-
Tetrachloroethene	0.012	NA	4.9	Deer mouse	0.002
1,1,1-Trichloroethane	0.013	NA	3200	Deer mouse	0.000004
Trichloroethene	0.012	NA	2.5	Deer mouse	0.005
Trichlorofluoromethane	0.016	NA	No ESLs	-	-
1,3,5-Trimethylbenzene	0.012	NA	No ESLs	-	-
Dioxins/Furans	0.000441	NA	No ESLs	-	-
Radionuclide Chemicals (pCi/g)					
Amercium-241	0.16	0.013	87.4	Earthworm	0.002
Plutonium-239	1.3	0.054	32.8	Plant	0.04
Radium-226	**5.3**	**2.59**	**0.16**	**Robin**	**33.1**
Uranium-234	**7.2**	**2.59**	**0.29**	**Robin**	**24.8**
Uranium-235	**0.4**	**0.2**	**0.32**	**Robin**	**1.3**
Uranium-238	**5.2**	**2.29**	**0.33**	**Robin**	**15.7**

[a] Exposure concentrations are the 95% UCL of the arithmetic mean.
[b] The HQ is the ratio of the exposure concentration to the ESL.

The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that radionuclides have a common toxicological effect and that nonradionuclides could have a common toxicological effect. Although it is likely that this assumption is incorrect, especially for nonradionuclides, the COPCs are grouped together in the comparison to ESLs. The HIs for nonradionuclide chemicals are greater than 1.0 for all of the receptors The HIs are driven primarily by the inorganic COPECs i.e., antimony, arsenic, barium, copper, lead, mercury, silver, thallium, and zinc, for the plant, earthworm, and mammalian receptors. The HIs are driven by inorganic COPECs, i.e., barium, cobalt, lead, silver, and zinc, as well as pesticides, i.e., DDT and DDE, for the avian receptors. The PAH HQs are 0.3 or less, except for naphthalene, and do not greatly influence the HI for any receptor. Similarly, the HQs for phthalates [bis(2-ethylhexyl)phthalate and di-n-butyl phthalate] are less than 0.1 for the mammalian receptors and approximately 4.0 or less for the avian receptors. These two groups of chemicals contribute only about 1% or less to the HI for a given receptor and do not present a potential for adverse ecological impacts to the receptors.

TABLE 19
HAZARD INDEX ANALYSIS FOR THE ASH DEBRIS

Analyte	HQ Plant	HQ Earthworm	HQ Mouse	HQ Shrew	HQ Cottontail	HQ Robin	HQ Kestrel	HQ Kestrel (all meat diet)	HQ Red Fox
Nonradionuclide Chemicals									
Antimony	112.4	-	55.1	48.9	3.6	-	-	-	0.6
Arsenic	4.7	6.9	39.8	40.9	0.9	4.7	0.5	0.02	0.5
Barium	2.1	-	49.2	45.6	2.6	53.2	5.3	0.2	0.6
Cadmium	13.2	1.3	1.6	0.9	0.3	3.0	0.3	0.02	0.02
Chromium	23.2	-	0.0005	0.0006	0.00006	7.8	0.6	0.2	0.00004
Cobalt	7.5		13.4	10.3	1.4	48.7	5.0	0.5	0.3
Copper	19.6	150.9	18.2	5.8	5.0	6.7	0.6	0.1	0.3
Lead	211.1	42.2	8.9	7.3	2.2	72.3	4.4	2.2	0.7
Manganese	38.3	-	7.2	0.9	2.4	0.4	0.04	0.004	0.03
Mercury	0.2	114	0.09	0.05	0.02	6.6	0.8	0.3	0.005
Nickel	4.7	0.9	0.1	0.1	0.02	0.3	0.03	0.003	0.003
Selenium	3.7	0.2	1.4	1.0	0.004	2.2	0.2	0.05	0.05
Silver	520.5	-	0.7	0.2	0.2	49.8	4.4	0.7	0.009
Thallium	49	-	68.4	72.3	0.7	-	-	-	2.1
Zinc	305.2	35.9	3.5	0.8	1.0	39.7	5.1	3.5	0.2
Acenaphthene	0.3	-	0.002	0.002	0.00008	-	-	-	0.00002
Benzo(a)anthracene	0.04	-	0.1	0.1	0.0006	-	-	-	0.02
Benzo(a)pyrene	-	-	0.2	0.2	0.0008	-	-	-	0.07
Chrysene	-	-	0.1	0.1	0.0007	-	-	-	0.02
Naphthalene	-	-	0.02	0.02	0.002	3.3	0.3	0.008	0.0001
Bis(2-ethylhexyl)phthalate	-	-	0.01	0.01	0.00003	0.8	1.4	2.7	0.07
Di-n-butyl phthalate	0.002	-	0.0002	0.0002	0.000003	4.4	0.4	0.03	0.000003
Aroclor-1254	0.06	-	2.2	2.2	1.1	4.1	0.7	0.6	0.8
4,4'-DDT	-	-	0.2	0.2	0.0007	226.4	80.2	114.3	0.2
4,4'-DDE	-	-	0.004	0.004	0.00001	84.3	45.6	73.7	0.007
Hazard Index	**1316**	**352**	**270**	**238**	**21**	**618**	**157**	**199**	**6.6**
Radionuclide Chemicals									
Radium-226	0.0006	0.1	6.8	7.0	0.1	33.1	3.3	0.1	0.09
Uranium-234	0.00002	0.07	0.05	0.05	0.0005	24.7	2.5	0.1	0.0006
Uranium-235	0.000002	0.004	0.003	0.003	0.00003	1.3	0.1	0.005	0.00004
Uranium-238	0.0002	0.05	0.03	0.03	0.002	15.7	1.6	0.06	0.002
Hazard Index	**0.0008**	**0.2**	**6.9**	**7.1**	**0.1**	**74.8**	**7.5**	**0.3**	**0.09**

The HIs for radionuclides are greater than 1.0 for the deer mouse, shrew, robin, and kestral and less than 1.0 for the plant, earthworm, cottontail, kestral with a 100% meat diet, and the red fox. The HIs are driven by radium-226 for the mouse and shrew and by radium-226, uranium-234, and uranium-238 for the robin and kestral. The most sensitive receptor to the radionuclides is the robin with a HI approximately an order of magnitude greater than the next most sensitive receptor. Uranium-235 has HQs of approximately 1.0 or less and contributes approximately 2% or less to the HI for a given receptor. Therefore, this radionuclide does not present a potential for adverse ecological impacts to the receptors.

Threatened and endangered (T&E) species are potential receptors for exposure to contaminants in this portion of Pueblo Canyon. The Laboratory's Ecology Group (ESH-20) intersected the PRS location information from FIMAD with T&E species habitat using the geographical information system (GIS) databases to determine the likelihood of the presence of T&E species in this area. The T&E review of this portion of Pueblo Canyon found that this PRS is within the core area for foraging and nesting habitat for the Mexican spotted owl and the American peregrine falcon. No other T&E species are potentially impacted by the contamination from this PRS. The ecological screening receptor that serves as a surrogate for the owl and falcon in the calculation of screening values is the kestrel with a 100% meat diet. The maximum HQs for this receptor are 114.3 and 73.7 for 4,4'-DDT and 4,4'-DDE, respectively, which contributes almost 95% of the HI. The other HQs are 3.5 or less with many of the HQs being less than 1.0. Based on this analysis, there may be a potential for adverse ecological impacts to T&E species from the pesticides. The radionuclide HI for this receptor is 0.3 indicating that there is no potential for adverse ecological impacts from radionuclides to T&E species at this site.

The relatively high HQ and HI values for the nonradionuclide COPECs to a majority of the receptors suggest that there is a potential for adverse ecological impacts. A visit to the site supports this assumption in that the area of the ash debris is largely unvegetated at the top portion of the site and vegetated in the lower portion by a woody shrub that is different from the natural vegetation in the surrounding area (dominated by ponderosa pine and shrub oak) (Photos 2 and 3). This may be due as much to the nature of the material as to the contamination present in the ash. The ash is much darker in color, heavier and more compacted, and coarser in texture than the native soils. The fact that some vegetation has begun to colonize the area indicates that the ecosystem may be slowly recovering from the contamination and that the ash debris is becoming more stabilized over time. There is also a general absence of other receptors, most notably burrowing animals such as gophers. Despite the high concentrations of several chemicals in the area, the concentrations appear to be localized to the ash debris disposal area, which is approximately 0.5 acres. The wildlife receptors generally have similar or larger home ranges than the area encompassed by the contamination. The home range for the short-tailed shrew (assumed to be similar for the vagrant shrew) is approximately ½ - 1 acre and the deer mouse is approximately ½ - 3 acres, according to Burt and Grossenheider (1976, ER ID 59097). The adult American robin has a home range of approximately 0.4 acres for supporting nestlings and approximately 2.0 acres for fledglings (EPA 1993, ER ID 59109). The other wildlife receptors (including T&E species) have larger home ranges. As a result, exposure to the elevated concentrations of COPECs may be infrequent. In addition, the lack of foraging and nesting habitat would decrease the exposure and probably results in avoidance of the area by receptors. The area surrounding the site as well as the canyon slope up canyon and down canyon from the ash debris provides excellent habitat for most receptors, including T&E species. Therefore, the small area of contamination encompassed by the ash debris is probably insignificant with respect to the quality and amount of habitat available to receptors.

Drainage Areas Below the Ash Debris

Table 20 presents a comparison of the exposure concentrations for the COPCs identified in the drainages to the minimum terrestrial ESL for each analyte. Three inorganic chemicals, five organic chemicals, and no radionuclides are included in this comparison (Table 18). The maximum HQs for cadmium, lead, zinc, DDT, and DDE are greater than 1.0, while the HQs for benzoic acid and alpha-chlordane are less than 0.1. Therefore, the three inorganic chemicals and two pesticides are identified as COPECs (bolded in Table 20) and are further evaluated in a HI analysis (Table 21). Dioxins/furans do not have ESLs for comparisons and cannot be evaluated for the potential to pose adverse ecological effects.

TABLE 20
COMPARISON OF EXPOSURE CONCENTRATIONS WITH MINIMUM ESLs FOR THE DRAINAGE BELOW THE ASH DEBRIS

Analyte	Exposure Concentrations	BVs	Minimum ESL	Receptor	HQ
Nonradionuclide Chemicals (mg/kg)					
Cadmium	**2.3[a]**	**0.4**	**1.0**	**Plant**	**2.3**
Lead	**41[a]**	**22.3**	**20**	**Plant**	**2.1**
Zinc	**470**	**48.8**	**10**	**Plant**	**47**
Benzoic acid	0.092	NA	8.36	Deer mouse	0.01
alpha-Chlordane	0.0035	NA	1.7	Robin	0.002
4,4'-DDT	**0.034**	**NA**	**0.0021**	**Robin**	**16.2**
4,4'-DDE	**0.029**	**NA**	**0.0017**	**Robin**	**17.0**
Dioxins/Furans	0.0000012[a]	NA	No ESLs	-	-

[a] Values are 95% UCLs.

TABLE 21
HAZARD INDEX ANALYSIS FOR THE DRAINAGES BELOW THE ASH DEBRIS

Analyte	HQ Plant	HQ Earthworm	HQ Mouse	HQ Shrew	HQ Cottontail	HQ Robin	HQ Kestrel	HQ Kestrel (all meat diet)	HQ Red Fox
Cadmium	2.3	0.2	0.3	0.2	0.05	0.5	0.05	0.003	0.003
Lead	2.1	0.4	0.09	0.07	0.02	0.7	0.04	0.02	0.007
Zinc	47	5.5	0.5	0.1	0.2	6.1	0.8	0.5	0.02
4,4'-DDT	-	-	0.01	0.01	0.00005	16.2	5.7	8.1	0.01
4,4'-DDE	-	-	0.0008	0.0008	0.000003	17.0	9.4	15.3	0.002
Hazard Index	**51.4**	**6.1**	**0.9**	**0.4**	**0.3**	**40.5**	**16.0**	**23.9**	**0.04**

The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. The HIs for nonradionuclide chemicals are greater than 1.0 for the plant, earthworm, robin, kestral, and the kestral with 100% met diet and less than 1.0 for the deer mouse, shrew, cottontail, and red fox. The HIs are driven primarily by the inorganic COPECs, in particular zinc, for the plant and earthworm, and by the pesticides, DDT and DDE, for the avian receptors.

The T&E species are potential receptors for exposure to contaminants in this portion of Pueblo Canyon. As previously described, the T&E review of this portion of Pueblo Canyon found that this PRS is within the core area for foraging and nesting habitat for the Mexican spotted owl and the American peregrine falcon. No other T&E species are potentially impacted by the contamination from this PRS. The ecological screening receptor that serves as a surrogate for the owl and falcon in the calculation of screening values is the kestrel with a 100% meat diet. The maximum HQs for this receptor are 8.1 and 15.3 for 4,4'-DDT and 4,4'-DDE, respectively, which

contributes almost 98% of the HI. The HQs for the other receptors are 0.5 or less. Based on this analysis, there is some potential for adverse ecological impacts to T&E species from the pesticides.

The relatively low HQ and HI values for the nonradionuclide COPECs to the receptors suggest that there is little or no potential for adverse ecological impacts. A visit to the site supports this assumption in that the area in the drainages and below the ash debris is well vegetated with natural vegetation (dominated by ponderosa pine and shrub oak) and provides excellent habitat for most receptors, including T&E species (Photos 2 and 3). The wildlife receptors have relatively large home ranges as described above, resulting in infrequent or no exposure to the elevated concentrations of COPECs. In addition, the surrounding area in the canyon as well as the canyon slope upcanyon and downcanyon from the ash debris appears to represent a healthy terrestrial ecosystem. Therefore, the small area of contamination in the upper portion of the drainages is probably insignificant with respect to the overall quality and amount of habitat available to receptors.

Areas on Either Side of the Ash Debris

Table 22 presents a comparison of the maximum detected concentrations for the COPCs identified in the area on either side of the ash debris to the minimum terrestrial ESL for each analyte. Five inorganic chemicals, fourteen organic chemicals, and no radionuclides are included in this comparison (Table 18). The maximum HQs for barium, copper, lead, mercury, and silver are greater than 1.0, while the HQs for acenaphthene, naphthalene, bis(2-ethylhexyl)phthalate, and di-n-butyl phthalate are greater than 0.1. Therefore, five inorganic chemicals and four organic chemicals are identified as COPECs (bolded in Table 22) and are further evaluated in a HI analysis (Table 23). The other organic chemicals, except for dioxins/furans, had maximum HQs less than 0.1 and are not evaluated further. Dioxins/furans do not have ESLs for comparisons and cannot be evaluated for the potential to pose adverse ecological effects.

TABLE 22
COMPARISON OF EXPOSURE CONCENTRATIONS WITH MINIMUM ESLs FOR THE AREA ON EITHER SIDE OF THE ASH DEBRIS

Analyte	Exposure Concentrations	BVs	Minimum ESL	Receptor	HQ[c]
Barium	**415**	**295**	**40.1**	**Robin**	**10.3**
Copper	**40.2**	**14.7**	**13**	**Earthworm**	**3.1**
Lead	**83.7**	**22.3**	**20**	**Plant**	**4.2**
Mercury	**0.24**	**0.1**	**0.05**	**Earthworm**	**4.8**
Silver	**10.7**	**1.0**	**0.2**	**Plant**	**53.5**
Acenaphthene	**0.78**	**NA**	**2.5**	**Plant**	**0.3**
Anthracene	0.061(J)	NA	443	Deer mouse	0.0001
Benzo(a)anthracene	0.1(J)	NA	6.7	Shrew	0.01
Benzo(a)pyrene	0.11(J)	NA	3.8	Shrew	0.03
Benzo(b)fluoranthene	0.21(J)	NA	15	Shrew	0.01
Chrysene	0.11(J)	NA	6.7	Shrew	0.02
Fluoranthene	0.24(J)	NA	52.6	Shrew	0.005
Naphthalene	**0.041(J)**	**NA**	**0.15**	**Robin**	**0.3**
Phrenanthrene	0.21(J)	NA	228	Deer mouse	0.0009
Pyrene	0.32(J)	NA	31.6	Shrew	0.01
Bis(2-ethylhexyl)phthalate	**0.05(J)**	**NA**	**0.24**	**Kestral (all meat diet)**	**0.2**
Di-n-butyl phthalate	**0.077(J)**	**NA**	**0.1**	**Robin**	**0.8**
Benzoic acid	0.051(J)	NA	8.36	Deer mouse	0.006
Dioxins/Furans	0.000013	NA	-	-	-

TABLE 23
HAZARD INDEX ANALYSIS FOR THE AREA ON EITHER SIDE OF THE ASH DEBRIS

Analyte	HQ Plant	HQ Earthworm	HQ Mouse	HQ Shrew	HQ Cottontail	HQ Robin	HQ Kestrel	HQ Kestrel (all meat diet)	HQ Red Fox
Barium	0.4	-	9.6	8.9	0.5	10.3	1.0	0.04	0.1
Copper	0.4	3.1	0.4	0.1	0.1	0.1	0.01	0.002	0.006
Lead	4.2	0.8	0.2	0.1	0.04	1.4	0.09	0.04	0.01
Mercury	0.007	4.8	0.004	0.002	0.0007	0.3	0.03	0.01	0.0002
Silver	53.5	-	0.08	0.02	0.02	5.1	0.5	0.08	0.0009
Acenaphthene	0.3	-	0.002	0.002	0.00009	-	-	-	0.00002
Naphthalene	-	-	0.002	0.002	0.0001	0.3	0.03	0.0007	0.00001
Bis(2-ethylhexyl)phthalate	-	-	0.0008	0.0008	0.000003	0.07	0.1	0.2	0.006
Di-n-butyl phthalate	-	-	0.00003	0.00003	0.0000005	0.8	0.08	0.005	0.0000005
Hazard Index	**58.8**	**8.7**	**10.3**	**9.1**	**0.7**	**18.4**	**1.8**	**0.4**	**0.1**

The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. The HIs for nonradionuclide chemicals are greater than 1.0 for the plant, earthworm, deer mouse, shrew, robin, and kestral and less than 1.0 for the cottontail, kestral with a 100% meat diet, and the red fox. The HIs are driven primarily by the inorganic COPECs, in particular barium and silver, for all but the earthworm, which is driven by copper and mercury. The organic COPECs do not contribute more than 11% to the HIs that are greater than 1.0 and do not present a potential for adverse ecological impacts to the receptors.

The T&E species are potential receptors for exposure to contaminants in this portion of Pueblo Canyon. As previously described, the T&E review of this portion of Pueblo Canyon found that this PRS is within the core area for foraging and nesting habitat for the Mexican spotted owl and the American peregrine falcon. No other T&E species are potentially impacted by the contamination from this PRS. The ecological screening receptor that serves as a surrogate for the owl and falcon in the calculation of screening values is the kestrel with a 100% meat diet. The maximum HQ for this receptor is 0.2 for bis(2-ethyhexyl)phthalate, which contributes 50% of the HI. The HI for the surrogate receptor is 0.4 indicating that there is a no potential for adverse ecological impacts to T&E species outside of the ash debris.

The relatively low HQ and HI values for the nonradionuclide COPECs to the receptors suggest that there is little or no potential for adverse ecological impacts. A visit to the site supports this assumption in that the areas on either side of the ash debris is well vegetated with natural vegetation (dominated by ponderosa pine and shrub oak) and provides excellent habitat for most receptors, including T&E species (Photos 2 and 3). The wildlife receptors have relatively large home ranges as described above, resulting in infrequent or no exposure to the elevated concentrations of COPECs in the areas adjacent to the ash debris. In addition, the surrounding area in the canyon as well as the canyon slope up canyon and downcanyon from the ash debris appears to represent a healthy terrestrial ecosystem. Therefore, the area of contamination appears limited primarily to the ash debris with a small area on either side having elevated concentrations. These lateral areas do not present a potential for adverse ecological impacts as evidenced by the vegetation present. As a result, the canyon slope as a whole is not affected by the ash debris and provides excellent habitat for receptors.

Summary

A comparison of the data from the ash debris to the data for the areas surrounding this site resulted in marked differences in the number of COPECs and the HQ/HI values. In the drainages, only three inorganic chemicals, five organic chemicals, and no radionuclides were included in the ESL comparisons compared to 18 inorganic chemicals, 33 organic chemicals, and six radionuclides in the ash debris analysis (Table 18). Overall, the HI values in the drainages are an order of magnitude or more below the HI values from the ash debris (Table 24). For example, the plant HIs are 1315 and 51.4 for the ash debris versus the drainages and the robin HIs are 618 and 40.5 for the ash debris versus the drainages (Table 24). In addition, the maximum HQs for each COPEC were derived from samples collected in the upper portion of the drainages (approximately 100 to 250 ft below the ash debris). Despite the elevated concentrations of several chemicals in the drainages, the concentrations are markedly less than that detected in the ash debris and appears to be localized to the drainage area just below the ash debris.

Comparable differences were also found in the areas on either side of the ash debris. For these areas, five inorganic chemicals, fourteen organic chemicals, and no radionuclides were included in the ESL comparisons versus 18 inorganic chemicals, 33 organic chemicals, and six radionuclides in the ash debris analysis (Table 18). Overall, the HI values in the areas on either side of the ash debris are an order of magnitude or more below the HI values from the ash debris (Table 24). For example, the plant HIs are 1315 and 58.8 for the ash debris versus the sides of the ash debris and the robin HIs are 618 and 18.4 for the ash debris versus the sides of the ash debris (Table 24). Despite the elevated concentrations of several chemicals in these areas, the concentrations are markedly less than that detected in the ash debris and so to is the potential for adverse ecological impacts. It is assumed that as the distance from the ash debris increased on

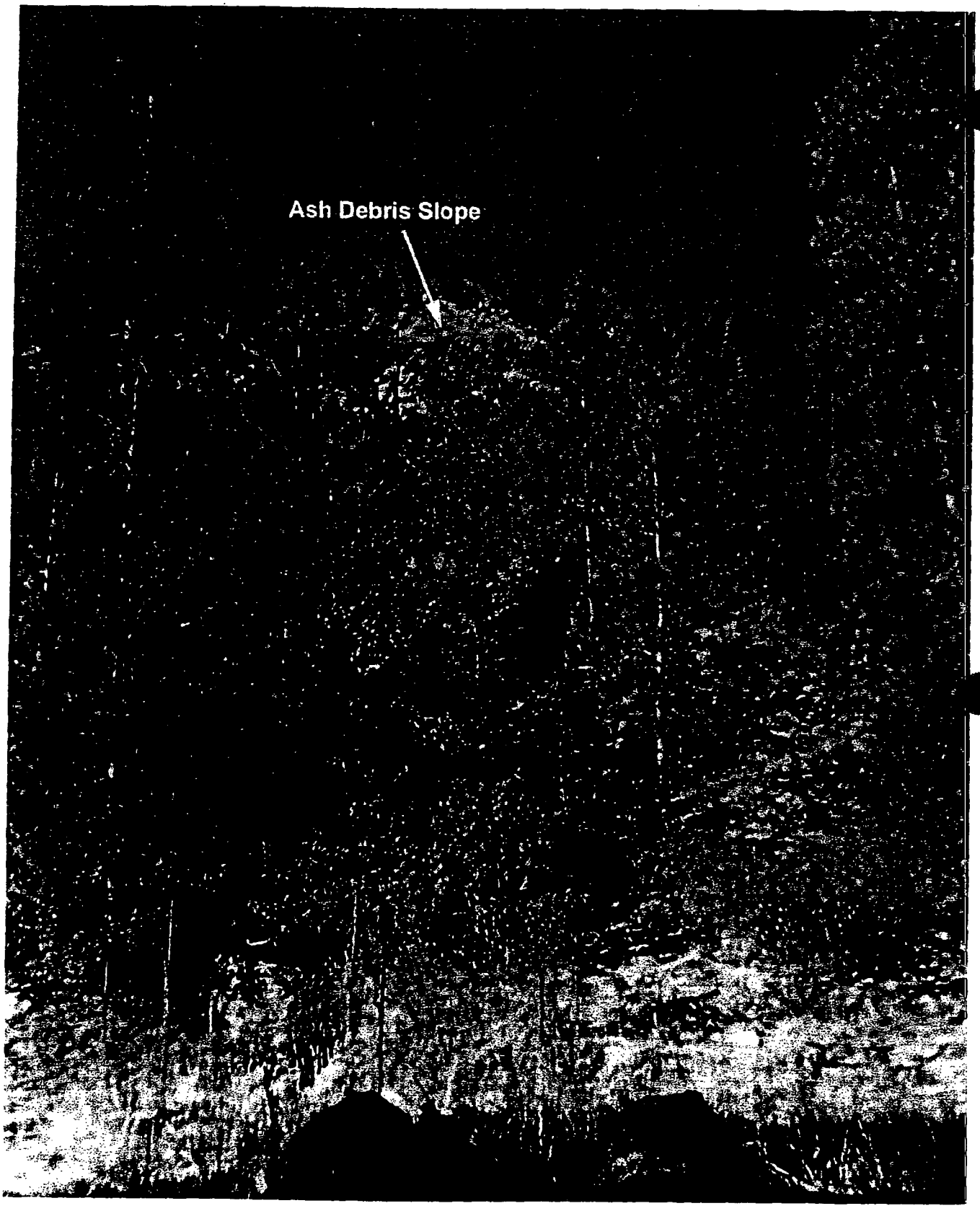

Photo 3: View to south from bottom of Pueblo Canyon.

either side of the site, the concentrations of contaminants would decrease as seen in the drainages.

Based on the observations made during the site visit conducted in conjunction with the completion of the ecological scoping checklist (Attachment 2), the ash debris is vastly different in composition as well as vegetation from the surrounding area (Photos 1, 2, and 3). Based on the site conditions and the preliminary evaluations presented here, the ash debris does pose a potential for adverse ecological impacts to some or all of the receptors. There has been some release of contamination, primarily inorganic chemicals, into the drainages and areas immediately below or adjacent to the ash debris. However, the concentrations of contaminants decreases to below background concentrations or detection limits as the distance from the ash debris increases (Figures 4 and 5). The exceptions to this are zinc, DDT, and DDE, which have not been analyzed in samples collected further down the drainages. In general, the area of the drainages below PRS and the areas adjacent to the PRS along the canyon walls appears to be representative of a healthy terrestrial ecosystem that is commonly encountered in northern New Mexico and have not been adversely impacted by the ash debris (Photo 3).

TABLE 24
SUMMARY OF HAZARD INDEX ANALYSES FOR THE ASH DEBRIS AND SURROUNDING AREAS

ECOLOGICAL SCREENING RECEPTORS	HAZARD INDEX VALUES		
	ASH DEBRIS	DRAINAGES	LATERAL AREAS
Plant	1316	51.4	58.8
Earthworm	352	6.1	8.7
Deer Mouse	270	0.9	10.3
Vagrant Shrew	238	0.4	9.1
Desert Cottontail	21	0.3	0.7
Red Fox	6.6	0.04	0.1
Robin	618	40.5	18.4
Kestral	157	16	1.8
Kestral (with an all meat diet)	199	23.9	0.4

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ATTACHMENT 1

TOXICITY EQUIVALENCY FACTORS

THE US EPA TEF VALUES

The polychlorinated dibenzodioxins (CDDs) include 75 individual compounds, and the polychlorinated dibenzofurans (CDFs) include 135 individual compounds. These individual compounds are technically referred to as congeners. Only 7 of the 75 congeners of CDDs are thought to have dioxin-like toxicity; these are ones with chlorine substitutions in, at least, the 2,3,7,and 8 positions. Only 10 of the 135 possible congeners of CDFs are thought to have dioxin-like toxicity; these also are ones with substitutions in the 2,3,7, and 8 positions. There are 209 PCB congeners, of which only 13 are thought to have dioxin-like toxicity. These are PCBs with 4 or more chlorines with just 1 or no substitution in the ortho position. These compounds are sometimes referred to as coplanar, meaning that they can assume a flat configuration with rings in the same plane. These 30 dioxin-like compounds are often found in complex mixtures. For risk assessment purposes, a toxicity equivalency procedure was developed to describe the cumulative toxicity of these mixtures. This procedure involves assigning individual toxicity equivalency factors (TEFs) to the CDD, CDF, and PCB congeners. These TEF values have had international endorsement (U.S. EPA, 1989; Ahlborg, et.al., 1994). 2,3,7,8-TCDD is assigned a TEF of 1.0. All other congeners have lower TEF values ranging from 0.5 to 0.00001. Generally accepted TEF values for CDD/Fs and PCBs are shown in Table 1. Calculating the toxic equivalency (TEQ) of a mixture involves multiplying the concentration of individual congeners by their respective TEF. The sum of the TEQ concentrations for the individual congeners is the TEQ concentration for the mixture.

Of the 419 dioxin, furan, and PCB congeners, only these 30 are considered to have dioxin like toxicity. The following table lists the Toxic Equivalency Factors, or TEFs, of these congeners.

I. DIOXINs	
2,3,7,8-TCDD	1.0
1,2,3,7,8-PeCDD	0.5
1,2,3,4,7,8-HxCDD	0.1
1,2,3,6,7,8-HxCDD	0.1
1,2,3,7,8,9-HxCDD	0.1
1,2,3,4,6,7,8-HpCDD	0.01
1,2,3,4,6,7,8,9-OCDD	0.001
II. FURANs	
2,3,7,8-TCDF	0.1
1,2,3,7,8-PeCDF	0.05
2,3,4,7,8-PeCDF	0.5
1,2,3,4,7,8-HxCDF	0.1
1,2,3,6,7,8-HxCDF	0.1
1,2,3,7,8,9-HxCDF	

2,3,4,6,7,8-HxCDF	0.1
1,2,3,4,6,7,8-HpCDF	0.1
1,2,3,4,7,8,9-HpCDF	0.01
1,2,3,4,6,7,8,9-OCDF	0.01
	0.001
III. PCBs	
3,3',4,4'-TeCB (PCB 77)	
2,3,3',4,4'-PeCB (PCB 105)	
2,3,4,4',5-PeCB (PCB 114)	
2,3',4,4',5-PeCB (PCB 118)	
2',3,4,4',5-PeCB (PCB 123)	0.0005
3,3',4,4',5-PeCB (PCB 126)	0.0001
2,3,3',4,4',5-HxCB (PCB 156)	0.0005
2,3,3',4,4',5'-HxCB (PCB 157)	0.0001
2,3',4,4',5,5'-HxCB (PCB 167)	0.0001
3,3',4,4',5,5'-HxCB (PCB 169)	0.1
2,2',3,3',4,4',5-HpCB (PCB	0.0005
170)	0.0005
2,2',3,4,4',5,5'-HpCB (PCB	0.00001
180)	0.01
2,3,3',4,4',5,5'-HpCB (PCB	0.0001
189)	0.00001
	0.0001

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BACK TO DIOXIN HOMEPAGE

Last Revised: February 10, 1998
URL: http://www.epa.gov/ncea/dchem.htm

ATTACHMENT 2

ECOLOGICAL SCOPING CHECKLIST

ECOLOGICAL SCOPING CHECKLIST

PART A—SCOPING MEETING DOCUMENTATION

Site ID	PRS 73-002
Form of site releases (solid, liquid, vapor). Describe all relevant known or suspected mechanisms of release (spills, dumping, material disposal, outfall, explosive testing, etc.) and describe potential areas of release. Reference locations on a map as appropriate.	The primary release from this PRS would be the solid waste in the form of the ash from the incinerator disposed of on the canyon slope in back of the incinerator building. A secondary release would have been the liquid waste from the septic tank and wash water discharged via the drain lines that were discharged from outfalls along the rim of the slope above the ash debris pile [PRSs 73-004(a) and 73-006]. The area of release was the canyon slope in back of the incinerator building to the bench located approximately 200 ft below the rim of the canyon.
List of Primary Impacted Media (Indicate all that apply.)	Surface soil – XX – The impacted medium was all surface soil because the incinerator ash was dumped onto the slope and the outfalls discharged at the surface. Surface water/sediment – X – Surface water runoff may have transported ash down the canyon slope and accumulated as sediment below the ash debris pile. Subsurface – Groundwater – Other, explain –
FIMAD vegetation class based on Arcview vegetation coverage (Indicate all that apply.)	Water – Bare Ground/Unvegetated – XX - The area between the building and canyon slope is bare ground and unvegetated due to the disturbance of the area from past and current activities. Spruce/fir/aspen/mixed conifer – Ponderosa pine – XX - The area along the canyon slope on either side of the outfalls is ponderosa pine habitat with shrub oak and woody ground cover. Piñon juniper/juniper savannah – Grassland/shrubland – Developed – XX – Incinerator building is the primary structure and the point from which these PRSs originate.
Is T&E Habitat Present? If applicable, list species known or suspected to use the site for breeding or foraging.	The PRS is entirely within an area of Mexican spotted owl nesting habitat and within an area in which the spotted owl can be conservatively assumed to forage at a medium frequency. It is also in the vicinity of potential peregrine falcon nesting habitat, approximately 1600 ft away, and within an area in which the peregrine falcon can be conservatively assumed to forage at a relatively high frequency. The PRS is within an area in which the bald eagle is conservatively assumed to forage at a relatively low frequency.
Provide list, of Neighboring/ Contiguous/ Upgradient sites, includes a brief summary of COPCs and the form of releases for relevant sites and reference a map as appropriate. (Use this information to evaluate the need to aggregate sites for screening.)	PRS 73-004(b) was a septic tank that received wash water from the steam cleaning facility at PRS 73-003 and had an outfall that terminated in Pueblo Canyon approximately 40-50 ft west of 73-002. The septic tank and associated lines have been removed. The other PRSs in the area are 73-004(a) a septic tank and outfall and 73-006 drainlines from the incinerator building. The outfalls for 73-004(a) and 73-006 terminate within the boundaries of the ash debris pile. Therefore, the outfall areas for these two PRSs should be aggregated with PRS 73-002 and addressed together.
Surface Water Erosion Potential Information Summarize information from SOP 2.01, including the run-off subscore (maximum of 46); terminal point of surface water transport; slope; and surface water runon sources.	PRS 73-002 has an Erosion Matrix Score of 56. The run-off score is 25.5 (visible evidence of runoff (5.0), bench setting (9.5) and rill erosion (11) and the run-on score was 7.0 (structures adversely affecting run-on). The score also reflects the site is within a bench of the canyon (4.0), the ground cover is 25-75% (6.5), and the slope is >30% (13). The terminal point of surface water is the bench on the north-facing slope within Pueblo Canyon.

PART B—SITE VISIT DOCUMENTATION

Site ID	PRS 73-002
Date of Site Visit	5/19/99
Site Visit Conducted by	Richard Mirenda and Steve Calhoun

Receptor Information:

Estimate cover	Relative vegetative cover (high, medium, low, none) = none to medium; not much vegetation in the area between the incinerator building and canyon slope. The upper part of the ash debris slope has little or no vegetation. As one goes further down the slope there is an increase in vegetation in the form of low shrubs that cover the lower part of the slope to the bench. Relative wetland cover (high, medium, low, none) = none Relative structures/asphalt, etc. cover (high, medium, low, none) = low; incinerator building is primary structure and there are cement walkways in the area between the building and the canyon slope.
Field notes on the FIMAD vegetation class to assist in ground-truthing the Arcview information	The area is listed as developed, with the canyon being predominantly ponderosa pine habitat. The PRS is bare ground on the upper 1/5 of the canyon slope and well vegetated with scattered shrubs and grasses along the lower 4/5 of the slope. The vegetation that has established itself on the ash debris pile is different from the native vegetation that is present on either side and in the canyon below this area.
Field notes on T&E Habitat, if applicable. Consider the need for a site visit by a T&E subject matter expert to support the use of the site by T&E receptors.	Pueblo Canyon is within the core area for nesting and foraging for the peregrine falcon and Mexican spotted owl. Habitat for these species may be adequate for these birds. Habitat surveys have not found any nests for the peregrine falcon in the vicinity of the airport.
Are ecological receptors present at the site? (yes/no/uncertain) Describe the general types of receptors present at the site (terrestrial and aquatic), and make notes on the quality of habitat present at the site.	Yes. There is available habitat in the area adjacent to the site. There are scattered grasses, shrubs, and trees at the site. Pueblo Canyon does provide excellent habitat for a variety of terrestrial ecological receptors, including, bird, mouse, and shrew. No aquatic ecological receptors are present anywhere in the area of the PRS.

Contaminant Transport Information:

Surface water transport Field notes on the erosion potential, including a discussion of the terminal point of surface water transport (if applicable).	The terminal point of surface water transport is the bench located approximately 150 ft down the slope in Pueblo Canyon. The runoff in the area of the PRS is primarily rill flow but there are a few vaguely distinct run-off channels where the outfalls used to be. In addition, there is an asphalt drainage ditch that channels run-off from the airport parking lot approximately 10-15 ft west of the incinerator building.
Are there any off-site transport pathways (surface water, air, or groundwater)? (yes/no/uncertain) Provide explanation	Yes. Surface water is the primary off-site transport pathway. There is run-off from the mesa top onto the north-facing slope of Pueblo Canyon. There may be some off-site transport via the air pathway but this is minimal especially on the north-facing slope. Trees and the incinerator building shelter the mesa top area. The slope is vegetated and the nature of the ash on this slope is such that wind erosion is minimal. There is no off-site transport via ground water because ground water is not near the mesa top and there is no hydraulic driver for the subsurface contamination to reach alluvial, perched, or the main aquifer.

Interim action needed to limit off-site transport? **(yes/no/uncertain)** **Provide explanation/ recommendation to project lead for IA SMDP.**	**No. The north-facing slope of Pueblo Canyon below the mesa edge has become vegetated by some woody ground cover. As a result, the slope is stabilized and the erosion potential is minimal. The run-off from the mesa top terminates at the bench approximately 150 ft below. This acts as a natural barrier to further off-site transport.**

Ecological Effects Information:

Physical Disturbance **(Provide list of major types of disturbances, including erosion and construction activities, review historical aerial photos where appropriate.)**	**The area has been disturbed by the sampling activities that have occurred over the last year or so. Also, underground electrical and telephone lines have been installed across the mesa top in back of the incinerator building. A dirt road runs east-west over in the general area where the drain lines and septic tank line were located. These activities are largely responsible for the lack of vegetation on the mesa top behind the incinerator building. The canyon slope has been disturbed by the disposal of the incinerator ash as well as the tin cans that have accumulated along the bench in the canyon.**
Are there obvious ecological effects? **(yes/no/uncertain)** **Provide explanation and apparent cause (e.g., contamination, physical disturbance, other).**	**Yes. The relative lack of and change in the vegetation in this portion of the canyon slope is the most obvious ecological effect. In addition, there are numerous rusted tin cans along the bench below the ash debris pile.**
Interim action needed to limit apparent ecological effects? **(yes/no/uncertain)** **Provide explanation and recommendations to mitigate apparent exposure pathways to project lead for IA SMDP.**	**No. This area is within an active industrial/commercial facility (Los Alamos Airport). Investigations in the area are continuing and activities along the dirt road are ongoing.**

No Exposure/Transport Pathways:

If there are no complete exposure pathways to ecological receptors onsite and no transport pathways to offsite receptors, the remainder of the checklist should not be completed. Stop here and provide additional explanation/justification for proposing an ecological No Further Action recommendation (if needed). At a minimum, the potential for future transport should include likelihood that future construction activities could make contamination more available for exposure or transport. **Not applicable.**

Adequacy of Site Characterization:

Do existing or proposed data provide information on the nature, rate and extent of contamination? (yes/no/uncertain) Provide explanation (Consider if the maximum value was captured by existing sample data.)	No. Samples have been collected from the surface and subsurface of the ash debris pile so that the nature of the contamination from this PRS is clearly defined. In addition, samples have been collected from the drainages leading from the bench to the floor of Pueblo Canyon. This sampling has delineated the general extent of the contamination originating from the PRS. However, some of the drainages have not been sampled sufficiently to depict extent and some have not been analyzed for all of the analytes detected in the ash.
Do existing or proposed data for the site address potential transport pathways of site contamination? (yes/no/uncertain) Provide explanation (Consider if other sites should aggregated to characterize potential ecological risk.)	Yes. See comment above.

Additional Field Notes:

Provide additional field notes on the site setting and potential ecological receptors.

The outfall areas for PRSs 73-004(a) and 73-006 will be addressed as part of the investigation of PRS 73-002 (ash debris pile) because the discharges from these PRSs are commingled with the as debris pile.

PART C—ECOLOGICAL PATHWAYS CONCEPTUAL EXPOSURE MODEL

Question A:

Could soil contaminants reach receptors via vapors?

- **Volatility of the hazardous substance (volatile chemicals generally have Henry's Law constant $>10^{-5}$ atm-me/mol and molecular weight <200 g/mol).**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Volatile organic compounds have been detected in the ash debris pile but at very low concentrations (approximately 0.02 mg/kg or less). At these low levels vapors are a concern.

Question B:

Could the soil contaminants reach receptors through fugitive dust carried in air?

- **Soil contamination would have to be on the actual surface of the soil to become available for dust.**

- **In the case of dust exposures to burrowing animals, the contamination would have to occur in the depth interval where these burrows occur.**

Answer (likely/unlikely/uncertain): Likely

Provide explanation: The incinerator ash is on the surface of the canyon slope. This area is exposed to the elements and subject to transport as particulates or dust by the wind. However, the ash is a heavy solidified substance that probably makes this pathway unlikely or minor. There is no evidence of burrowing on this slope.

Question C:

Can contaminated soil be transported to aquatic ecological communities (use SOP 2.01 run-off score and terminal point of surface water runoff to help answer this question)?

- **If the SOP 2.01 run-off score* for each PRS included in the site is equal to zero, this suggests that erosion at the site is not a transport pathway. (* note that the runoff score is not the entire erosion potential score, rather it is a subtotal of this score with a maximum value of 46 points).**

- **If erosion is a transport pathway, evaluate the terminal point to see if aquatic receptors could be affected by contamination from this site.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: The runoff score for this site is 25.5 indicating a good possibility of transport of materials via surface water runoff. However, the slope is relatively stable and there are no aquatic communities located in Pueblo Canyon in the vicinity of the drainage from the ash debris slope.

Question D:

Is contaminated groundwater potentially available to biological receptors through seeps or springs or shallow groundwater?

Known or suspected presence of contaminants in groundwater.

- **The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.**

- **Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).**

- **Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: The main aquifer is approximately 1100 ft beneath the mesa top making it unlikely that contaminants from this PRS would reach the aquifer. There are no known seeps or springs in the vicinity of the PRS so the presence of shallow alluvial or perched aquifers so near the canyon appears unlikely.

Question E:

Is infiltration/percolation from contaminated subsurface material a viable transport and exposure pathway?

- **Suspected ability of contaminants to migrate to groundwater.**
- **The potential for contaminants to migrate via groundwater and discharge into habitats and/or surface waters.**
- **Contaminants may be taken up by terrestrial and rooted aquatic plants whose roots are in contact with groundwater present within the root zone (~1 m depth).**
- **Terrestrial wildlife receptors generally will not contact groundwater unless it is discharged to the surface.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: The main aquifer is approximately 1100 ft beneath the mesa top making it unlikely that contaminants from these PRSs would reach the aquifer. There are no known seeps or springs in the vicinity of the PRSs. Also, there is no hydraulic driver to facilitate the movement of contaminants to the ground water.

Question F:

Might erosion or mass wasting events be a potential release mechanism for contaminants from subsurface materials or perched aquifers to the surface?

- **This question is only applicable to release sites located on or near the mesa edge.**
- **Consider the erodability of surficial material and the geologic processes of canyon/mesa edges.**

Answer (likely/unlikely/uncertain): Unlikely

Provide explanation: Because the ash debris pile is located on the canyon slope, mass wasting can be considered a potential, though unlikely, release mechanism. The area is stabilized by vegetation and does not appear to have experienced any massive erosion over the years.

Question G:

Could airborne contaminants interact with receptors through respiration of vapors?

- **Contaminants must be present as volatiles in the air.**
- **Consider the importance of inhalation of vapors for burrowing animals.**
- **Foliar uptake of organic vapors is typically not a significant exposure pathway.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 1

Terrestrial Animals: 1

Provide explanation: The concentration of volatiles in the ash is relatively low (generally 0.02 mg/kg or less). Because of the low levels and the nature of the site, any vapors that may be released are rapidly dispersed. There is no evidence of burrowing activity in the ash debris pile.

Question H:

Could airborne contaminants interact with plants through deposition of particulates or with animals through inhalation of fugitive dust?

- **Contaminants must be present as particulates in the air or as dust for this exposure pathway to be complete.**
- **Exposure via inhalation of fugitive dust is particularly applicable to ground-dwelling species that would be exposed to dust disturbed by their foraging or burrowing activities or by wind movement.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 2

Terrestrial Animals: 2

Provide explanation: Contamination is at or near the surface of the ash debris pile and subject to transport via the wind. However, the ash is a heavy, solidified material that is probably not easily dispersed by wind activity. There is also no evidence of burrowing activity by receptors within the ash debris pile.

Question I:

Could contaminants interact with plants through root uptake or rain splash from surficial soils?

- Contaminants in bulk soil may partition into soil solution, making them available to roots.
- Exposure of terrestrial plants to contaminants present in particulates deposited on leaf and stem surfaces by rain striking contaminated soils (i.e., rain splash).

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 3

Provide explanation: Currently, vegetative cover ranges from little or no vegetation near the mesa top to moderate cover on the lower part of the slope. Because the vegetation consists of grasses and low shrubs, there is the potential for rain splash. The roots of the plants are also in contact with the contamination present in the ash and available for uptake.

Question J:

Could contaminants interact with receptors through food web transport from surficial soils?

- The chemicals may bioaccumulate in animals.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: There are a number of potential bioaccumulators present in the ash debris pile.

Question K:

Could contaminants interact with receptors via incidental ingestion of surficial soils?

- **Incidental ingestion of contaminated soil could occur while animals grub for food resident in the soil, feed on plant matter covered with contaminated soil or while grooming themselves clean of soil.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 3

Provide explanation: The contaminants are at or near the surface and available to receptors via incidental ingestion.

Question L:

Could contaminants interact with receptors through dermal contact with surficial soils?

- **Significant exposure via dermal contact would generally be limited to organic contaminants that are lipophilic and can cross epidermal barriers.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 2

Provide explanation: Some of the contaminants are lipophilic and can cross the epidermal barrier if exposure would occur.

Question M:

Could contaminants interact with plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma emitting radionuclides.
- Burial of contamination attenuates radiological exposure.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: No gamma emitting radionuclides were detected in the ash debris pile.

Question N:

Could contaminants interact with plants through direct uptake from water and sediment or sediment rain splash?

- Contaminants may be taken-up by terrestrial plants whose roots are in contact with surface waters.
- Terrestrial plants may be exposed to particulates deposited on leaf and stem surfaces by rain striking contaminated sediments (i.e., rain splash) in an area that is only periodically inundated with water.
- Contaminants in sediment may partition into soil solution, making them available to roots.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 1

Provide explanation: There are no surface water systems at or near the PRS. The stream channel in the floor of Pueblo Canyon is ephemeral and rarely inundated with water.

Question O:

Could contaminants interact with receptors through food web transport from water and sediment?

- The chemicals may bioconcentrate in food items.
- Animals may ingest contaminated food items.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 1

Provide explanation: There are no surface water systems at or near the PRS. The stream channel in the floor of Pueblo Canyon is ephemeral and rarely inundated with water.

Question P:

Could contaminants interact with receptors via ingestion of water and suspended sediments?

- If sediments are present in an area that is only periodically inundated with water, terrestrial receptors may incidentally ingest sediments.
- Terrestrial receptors may ingest water-borne contaminants if contaminated surface waters are used as a drinking water source.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 1

Provide explanation: There are no surface water systems at or near the PRS. The stream channel in the floor of Pueblo Canyon is ephemeral and rarely inundated with water.

Question Q:

Could contaminants interact with receptors through dermal contact with water and sediment?

- **If sediments are present in an area that is only periodically inundated with water, terrestrial species may be dermally exposed during dry periods.**

- **Terrestrial organisms may be dermally exposed to water-borne contaminants as a result of wading or swimming in contaminated waters.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Animals: 1

Provide explanation: There are no surface water systems at or near the PRS. The stream channel in the floor of Pueblo Canyon is ephemeral and rarely inundated with water.

Question R:

Could contaminants interact with plants or animals through external irradiation?

- **External irradiation effects are most relevant for gamma emitting radionuclides.**

- **Burial of contamination attenuates radiological exposure.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Terrestrial Plants: 0

Terrestrial Animals: 0

Provide explanation: There are no surface water systems at or near the PRS. The stream channel in the floor of Pueblo Canyon is ephemeral and rarely inundated with water. No gamma-emitting radionuclides were detected in the ash debris pile.

Question S:

Could contaminants bioconcentrate in free floating aquatic, attached aquatic plants, or emergent vegetation?

- **Aquatic plants are in direct contact with water.**
- **Contaminants in sediment may partition into pore water, making them available to submerged roots.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Plants/Emergent Vegetation: 0

Provide explanation: There are no aquatic communities located at or near the site or in Pueblo Canyon below the drainage from the PRS.

Question T:

Could contaminants bioconcentrate in sedimentary or water column organisms?

- **Aquatic receptors may actively or incidentally ingest sediment while foraging.**
- **Aquatic receptors may be directly exposed to contaminated sediments or may be exposed to contaminants through osmotic exchange, respiration, or ventilation of sediment pore waters.**
- **Aquatic receptors may be exposed through osmotic exchange, respiration, or ventilation of surface waters.**

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There are no aquatic communities located at or near the site or in Pueblo Canyon below the drainage from the PRS.

Question U:

Could contaminants bioaccumulate in sedimentary or water column organisms?

- Lipophillic organic contaminants and some metals may concentrate in an organism's tissues
- Ingestion of contaminated food items may result in contaminant bioaccumulation through the food web.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

Aquatic Animals: 0

Provide explanation: There are no aquatic communities located at or near the site or in Pueblo Canyon below the drainage from the PRS.

Question V:

Could contaminants interact with aquatic plants or animals through external irradiation?

- External irradiation effects are most relevant for gamma emitting radionuclides.
- The water column acts to absorb radiation, thus external irradiation is typically more important for sediment dwelling organisms.

Provide quantification of exposure pathway (0=no pathway, 1=unlikely pathway, 2=minor pathway, 3=major pathway):

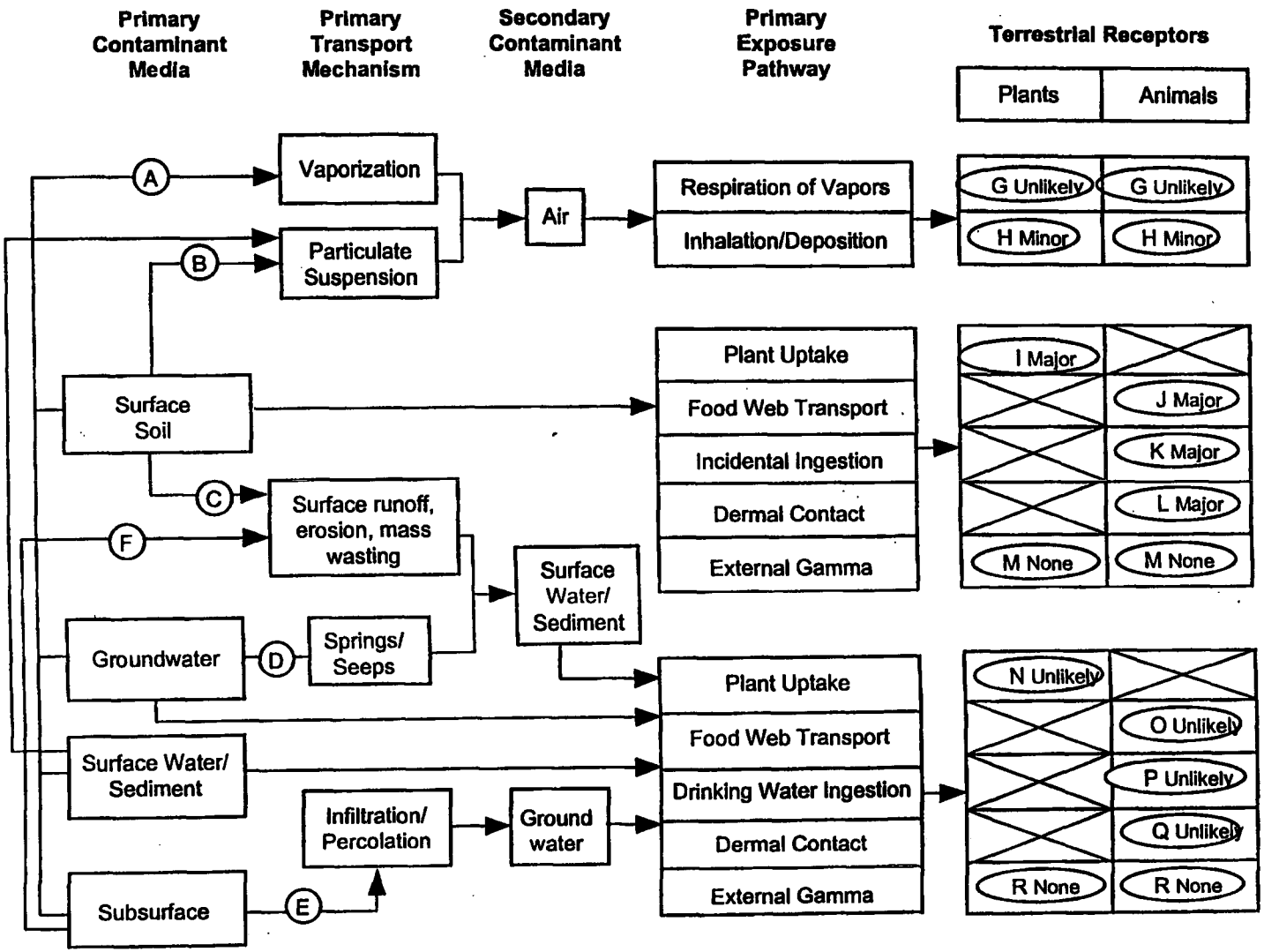
Aquatic Plants: 0

Aquatic Animals: 0

Provide explanation: There are no aquatic communities located at or near the site or in Pueblo Canyon below the drainage from the PRS. No gamma-emitting radionuclides were detected in the ash debris pile.

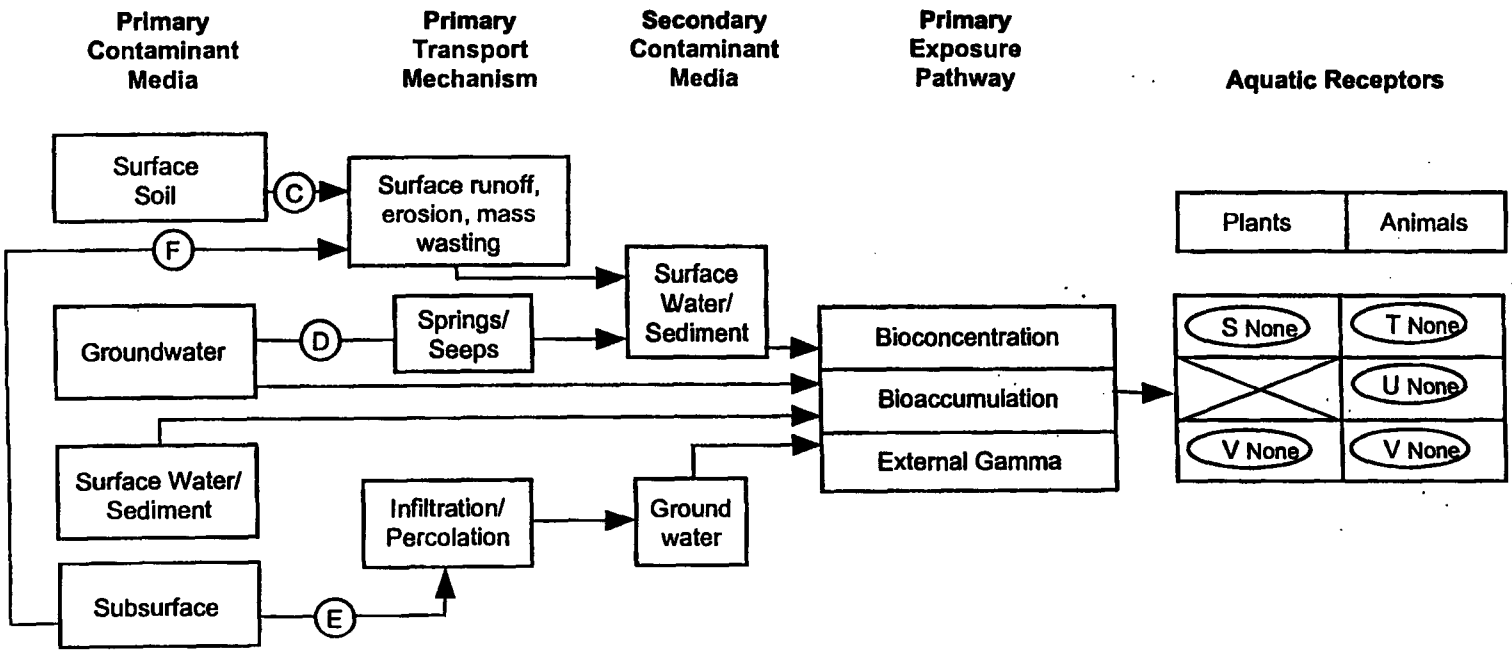
Ecological Scoping Checklist
Terrestrial Receptors
Ecological Pathways Conceptual Exposure Model

NOTE:
Letters in circles refer to questions on the Scoping Checklist



Ecological Scoping Checklist
Aquatic Receptors
Ecological Pathways Conceptual Exposure Model

NOTE:
Letters in circles refer to questions on the Scoping Checklist



Signatures and certifications:

Checklist completed by (provide name, organization and phone number):

Name (printed): Richard Mirenda, Ph.D.
Name (signature):
Organization: MK/PMC
Phone number: (505)662-1329

Date completed: **6/1/99**

Verification by a member of ER Project Ecological Risk Task Team (provide name, organization and phone number):

Name (printed):
Name (signature):
Organization:
Phone number:

Appendix F

Management Plan for Investigation-Derived Waste

This appendix describes how investigation-derived waste (IDW) generated during the investigation and limited structure removal at sites that make up the Pueblo Canyon aggregate area at Los Alamos National Laboratory (the Laboratory) will be managed. IDW is waste generated during field-investigation activities, and it may include, but is not limited to, drill cuttings; contaminated soil; tank structures, lines, and debris; purge water; contaminated personal protective equipment (PPE), sampling supplies, and plastic; fluids from the decontamination of PPE and sampling equipment; and all other waste potentially contacting contaminants.

Certain field-investigation activities may also displace environmental media, which are defined as naturally occurring materials indigenous to the environment, including groundwater, surface water, surface and subsurface soil, rock, bedrock, and gravel. In most cases, environmental media are not subject to Resource Conservation and Recovery Act (RCRA) regulation because they do not meet the definition of solid waste (i.e., they are not discarded, abandoned, recycled, or inherently waste-like). According to the U.S. Environmental Protection Agency (EPA) area of contamination policy, environmental media are not considered to be waste (and, therefore, not IDW) if they are returned to their points of origin (EPA 1996, 82288). EPA guidance indicates that moving hazardous waste from an area of contamination into a drum, followed by replacing it in the area of contamination, does not constitute "land disposal" for RCRA purposes (Wehling 1991, 87382). Therefore, nonhazardous media will be returned to their points of origin. The Laboratory does not expect any environmental media or IDW generated under this investigation to be characterized as hazardous waste. IDW generated during the investigation of Pueblo Canyon aggregate area sites will be managed in a manner that protects human health and the environment, complies with applicable regulatory requirements, and adheres to the Laboratory waste-minimization goals.

All IDW generated during the Pueblo Canyon aggregate area sites field-investigation activities will also be managed in accordance with applicable Environmental Stewardship–Environmental Characterization and Remediation (ENV-ERS) standard operating procedures (SOPs). These SOPs incorporate the requirements of all applicable EPA and New Mexico Environment Department (NMED) regulations, U.S. Department of Energy (DOE) orders, and Laboratory Implementation Requirements (LIRs). The ENV-ECR SOPs applicable to the characterization and management of IDW are

- SOP-01.06, Management of Environmental Restoration Project Waste, and
- SOP-01.10, Waste Characterization.

These SOPs are among the SOPs applicable to the investigation of Pueblo Canyon aggregate area sites and are available at http://erproject.lanl.gov/documents/procedures.html.

Investigation activities will be conducted in a manner that minimizes the generation of waste by implementing the requirements of the ENV-Environmental Remediation and Surveillance (ENV-ERS) portion of the "2004 Pollution Prevention Roadmap" (LANL 2004, 88465). The roadmap is updated annually to meet a requirement of Module VIII of the Laboratory's Hazardous Waste Facility Permit, which was issued by the EPA on May 23, 1990, and modified on May 19, 1994 (EPA 1990, 01585; EPA 1994, 44146).

The waste streams that will be generated and managed during the field investigation at the Pueblo Canyon aggregate area sites are described below.

Drill cuttings. This waste stream will consist of cuttings from boreholes to be drilled at Pueblo Canyon aggregate area sites. Drill cuttings will be collected and placed in containers at the point of generation (*i.e., at the drill rig*). The drill cuttings waste stream will be characterized using analytical results from core samples and augmented by direct sampling of the containerized cuttings, if needed. Contaminants of

concern potentially include radionuclides, inorganic metals, semivolatile organic compounds (SVOCs), pesticides, and volatile organic compounds (VOCs). The maximum detected concentrations of radionuclides will be compared with background/fallout values. If the maximum concentrations are above background/fallout values, the drill cuttings will be designated as low-level radioactive waste. Maximum concentrations of toxicity characteristic leaching procedure (TCLP) constituents will be compared with 20 times the TCLP regulatory level. If concentrations are less than 20 times the regulatory level, the drill cuttings will be designated nonhazardous waste by characteristic. If concentrations exceed 20 times the regulatory level, the drill cuttings will be sampled and analyzed using the TCLP to determine if it is hazardous waste by characteristic. Potential listed hazardous waste will be evaluated based on the knowledge of the processes that generated the waste. Based on the results of previous investigations, the Laboratory expects these drill cuttings to be designated as nonhazardous waste that will either be used for cover material at Technical Area (TA) 54 or be disposed of at the Waste Management Landfill in Rio Rancho, New Mexico.

Tank structures, lines, and debris. Waste from the demolition and removal of septic tanks will consist of concrete reinforced with steel rebar and vitrified clay pipe (VCP) or steel pipe. Waste will be placed in 20 yd^3 rolloff containers and secured at the site before it is shipped to Area G, TA-54. Contaminants of concern potentially include radionuclides, inorganic metals, SVOCs, pesticides, and VOCs. The maximum detected concentrations of radionuclides will be compared with background/fallout values. If maximum concentrations are above background/fallout values, the wastes will be designated as low-level radioactive waste. Maximum concentrations of TCLP constituents will be compared with 20 times the TCLP regulatory level. If concentrations are less than 20 times the regulatory level, the waste will be designated nonhazardous by characteristic. If concentrations exceed 20 times the regulatory level, the waste will be sampled and analyzed using the TCLP to determine if it is hazardous by characteristic. Based on the results of previous investigations, the Laboratory expects these wastes to be designated as nonhazardous waste to be disposed of at the Waste Management Landfill in Rio Rancho, New Mexico.

Tank content soils. Tank contents will likely consist of a soil material. Soil will be placed in 20 yd^3 rolloff containers and secured at the site before it is shipped to Area G, TA-54. Contaminants of concern potentially include radionuclides, inorganic metals, SVOCs, pesticides, and VOCs. The maximum detected concentrations of radionuclides will be compared with background/fallout values. If maximum concentrations are above background/fallout values, the soils will be designated as low-level radioactive waste. Maximum concentrations of TCLP constituents will be compared with 20 times the TCLP regulatory level. If concentrations are less than 20 times the regulatory level, the soil will be designated nonhazardous by characteristic. If concentrations exceed 20 times the regulatory level, the waste will be sampled and analyzed using the TCLP to determine if it is hazardous by characteristic. Based on the results of previous investigations, the Laboratory expects these wastes to be designated as nonhazardous waste that will either be used for cover material at TA-54 or be disposed of at the Waste Management Landfill in Rio Rancho, New Mexico.

Spent PPE. This waste stream will consist of PPE that has "contacted" contaminated environmental media (e.g., core and/or drill cuttings) and cannot be decontaminated. The bulk of this waste stream will consist of protective clothing such as coveralls, gloves, shoe covers, and (if required) respirator cartridges. Spent PPE will be collected in containers at personnel decontamination stations. Characterization of this waste stream will be performed through acceptable knowledge (AK) of the waste materials, the methods of generation, and the levels of contamination observed in the environmental media. The Laboratory expects spent PPE to be designated as nonhazardous waste that will be disposed of at the Waste Management Landfill in Rio Rancho, New Mexico.

Disposable sampling supplies. This waste stream will consist of all equipment and materials needed for collecting samples that come into direct contact with contaminated environmental media and cannot be decontaminated. This waste stream also includes wastes associated with dry decontamination activities and will consist primarily of paper and plastic items collected in bags at the sampling location and transferred to accumulation drums. Characterization of this waste stream will be performed through AK of the waste materials, the methods of generation, and the levels of contamination observed in the environmental media. The Laboratory expects disposable sampling supplies to be designated as nonhazardous waste that will be disposed of at the Waste Management Landfill in Rio Rancho, New Mexico.

Decontamination fluids. This waste stream will consist of liquid wastes from decontamination activities (e.g., decontamination solutions and rinse waters). Following waste-minimization practices, the Laboratory employs dry decontamination methods to the extent possible. If dry decontamination cannot be performed, liquid decontamination wastes will be collected in containers at the point of generation and transferred to accumulation drums. Small amounts (less than 6 gal. per day) of nonhazardous decontamination fluid may be discharged directly on-site provided these discharges are unlikely to generate leachate that will move directly or indirectly into groundwater and provided that New Mexico Water Quality Control Commission (WQCC) groundwater protection standards are met. Decontamination fluids meeting these conditions may be disposed of by discharge to the ground without submitting a Notice of Intent (NOI). Otherwise, the decontamination fluids waste stream will be accumulated in drums and characterized using analytical results from direct sampling of the containerized waste. The Laboratory expects that decontamination fluids would be designated as nonhazardous liquid waste that would be sent to the Radioactive Liquid Waste Treatment Facility at TA-50 for treatment and disposal. Volumes of decontamination fluid are expected to be less than 6 gal. per day.

All wastes will be managed in accordance with applicable state, federal, DOE, and Laboratory requirements. Waste streams, expected waste types, estimated waste volumes, and other data are listed in Table F-1. Table F-2 presents an estimated waste volume per solid waste management unit (SWMU).

All waste drums and containers (roll-off bins) will remain on-site until analytical results have been received and a waste characterization has been completed.

Before the start of field-investigation activities, a Waste Characterization Strategy Form (WCSF) will be prepared and approved per the requirements in the current revision of SOP-01.10. The WCSF will provide detailed information about IDW characterization, management, containerization, and potential volume generation for each SWMU.

IDW characterization will be achieved through existing data and/or documentation, direct sampling of the IDW, or sampling of the media being investigated (e.g., surface soil, subsurface soil, etc.). If sampling is necessary, it will be described in a sampling and analysis plan that will be developed in conjunction with the WCSF.

Some wastes will be characterized on the basis of AK rather than direct analysis. AK will consist of the results of analyzing the environmental media associated with each waste stream. For example, spent PPE and disposable sampling supplies that have potentially come in contact with contaminated media will be characterized based on the results of analyzing samples of that media. Similarly, borehole cuttings will be characterized by the analytical results of the core samples from that borehole. If decontamination fluids are to be sent off-site for disposal, they will be sampled to demonstrate compliance with the waste acceptance criteria of the receiving facility. If the quantity of fluid generated is less than 6 gal. per day, it may be discharged to the ground in accordance with the existing NOI (Puglisi 1996, 87472).

The selection of waste containers will be based on the appropriate U.S. Department of Transportation (DOT) requirements, and on the type and amount of IDW that is anticipated to be generated. Immediately following containerization, each waste container will be individually labeled according to the waste classification, item identification number, radioactivity (if applicable), and date of generation. Waste containers will be managed in clearly marked and appropriately constructed waste accumulation areas. Waste accumulation area postings, regulated storage duration, and inspection requirements will be based on IDW type and classification. Container and storage requirements will be detailed in the WCSF, based on requirements outlined in the most recent versions of LIR 404-00-03, Hazardous and Mixed Waste Requirements; LIR 404-00-04, Managing Solid Waste; LIR 404-00-05, Managing Radioactive Waste; and LIR 405-10-01, Packaging and Transportation. Before any waste is generated, the WCSF will be approved by the process detailed in SOP-01.10, Waste Characterization.

Transportation of IDW will comply with appropriate DOT requirements. Depending upon waste classification, disposal of solid IDW will take place either on-site at TA-54 Area G or at an approved off-site disposal facility. Liquid IDW may be processed at the TA-50 Radioactive Liquid Waste Treatment Facility or at the TA-46 Sanitary Wastewater Systems Plant. Hazardous and/or mixed waste may be transported to, and stored at, TA-54 Area L before off-site disposal. Transportation and disposal requirements will be detailed in the WCSF and approved before waste is generated.

REFERENCES

The following list includes the documents cited in this appendix. Parenthetical information following each reference provides the author, publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the ENV-ERS Program Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the ENV-ERS Program reference sets titled "Reference Set for OU 1071" and "Reference Set for OU 1079."

Copies of the reference sets are maintained at the NMED Hazardous Waste Bureau; the DOE Los Alamos Site Office; U.S. EPA, Region 6; and the ENV-ERS Program. The sets were developed to ensure that the administrative authority (AA) has all material needed to review this document, and they are updated periodically as needed. Documents previously submitted to the AA are not included.

EPA (US Environmental Protection Agency), April 10, 1990. "Module VIII of RCRA Permit No. NM0890010515, EPA Region 6, issued to Los Alamos National Laboratory, Los Alamos, New Mexico, effective May 23, 1990," EPA Region 6, Hazardous Waste Management Division, Dallas, Texas. (EPA 1990, 01585)

EPA (US Environmental Protection Agency), April 19, 1994. "Module VIII of RCRA Permit No. NM0890010515, EPA Region 6, new requirements issued to Los Alamos National Laboratory, Los Alamos, New Mexico, effective May 19, 1994," EPA Region 6, Hazardous Waste Management Division, Dallas, Texas. (EPA 1994, 44146)

EPA (US Environmental Protection Agency), March 1996. "Use of the Area of Contamination (AOC) Concept During RCRA Cleanups," U.S. Environmental Protection Agency memorandum from M. Shapiro, Director, Office of Solid Waste, and S. Luftig, Director, Office of Emergency, Washington, D.C. (EPA 1996, 82288)

LANL (Los Alamos National Laboratory), December 2004. "2004 Pollution Prevention Roadmap," Los Alamos National Laboratory document LA-UR-04-8973, Los Alamos, New Mexico. (LANL 2004, 88465)

Puglisi, A., February 13, 1996. "No Discharge Plan Required for Disposal of Sampling Tool Decontamination Rinse Water," Los Alamos National Laboratory memorandum (ESH-18/WQ&H-96-0057) from A. Puglisi (ESH-18), Los Alamos, New Mexico. (LANL 1996, 87472)

Shaw Environmental & Infrastructure, Inc., April 2005. "Calculation of Generated Waste Volumes, Pueblo Canyon Aggregate Area SWMU/AOC," prepared by Shaw Environmental & Infrastructure, Inc., for Los Alamos National Laboratory, Los Alamos, New Mexico. (Shaw 2005, 88492)

Wehling, C., April 16, 1991. "LDR Applicability for Investigation Derived Waste," U.S. Environmental Protection Agency memorandum to S. Golian, Chief, Remedial Guidance Section, from C. Wehling, Solid Waste and Emergency Response Division, Washington, D.C. (Wehling 1991, 87382)

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Table F-1
Summary of Estimated IDW Generation and Management

Waste Stream	Expected Waste Type	Estimated Volume	Characterization Method	On-Site Management	Expected Disposition
Drill cuttings	Solid waste, nonhazardous, nonradioactive	40 yd^3	Analytical results from waste samples and core samples	Accumulation in 55-gal. drums, covered roll-off containers, or cubic-yard soft-sided containers	LANL, TA-54, Area G (cover material) or Waste Management Landfill in Rio Rancho, NM
Tank structures, lines, and debris	Solid waste, nonhazardous, nonradioactive	166 yd^3	Analytical results from waste samples	Accumulation in covered roll-off containers	Waste Management Landfill in Rio Rancho, NM
Tanks content soil	Solid waste, nonhazardous, nonradioactive	242 yd^3	Analytical results from waste samples	Accumulation in covered roll-off containers	LANL, TA-54, Area G
Spent PPE and disposable sampling supplies	Solid waste, nonhazardous, nonradioactive	37 yd^3	AK	Accumulation in 55-gal. drums	Waste Management Landfill in Rio Rancho, NM
Decontamination fluids	Liquid waste, nonhazardous	To be determined	AK	Discharge to ground	Discharge to ground

Table F-2
Estimated IDW and Generation for Individual Pueblo Canyon Aggregate Area Sites

Pueblo Canyon Aggregate Area SWMU/AOC	Waste Stream					
	Drill Cuttings (solid waste, nonhazardous, nonradioactive, ft³)	Tank Structures and Debris (solid waste, nonhazardous, nonradioactive, ft³)	Tank Contents (soil) (solid waste, nonhazardous, nonradioactive, ft³)	Spent PPE and Disposable Sampling Supplies (solid waste, nonhazardous, nonradioactive, ft³)	Decontamination Fluids (<6 gal./day) (liquid waste, nonhazardous, gal.)	Decontamination Fluids (>6 gal./day) (liquid waste, gal.)
SWMU 00-018(a), Pueblo Canyon WWTP	56.1	n/a*	n/a	80.0	3.5	n/a
AOC 00-018(b), Bayo Canyon WWTP	0.6	n/a	n/a	40.2	0.5	n/a
AOC 00-030(d), Septic Tank	94.1	n/a	n/a	60.8	4.0	n/a
AOC 00-030(eN), Septic Tank	89.9	2056	2944	65.2	3.5	n/a
AOC 00-030(eS), Septic Tank	32.4	n/a	n/a	53.5	1.8	n/a
AOC 00-030(f), Septic Tank	88.4	2416	3584	54.9	3.3	n/a
AOC 00-030(h), Septic Tank	47.8	n/a	n/a	59.4	2.6	n/a
AOC 00-030(j), Septic Tank	0.6	n/a	n/a	34.4	0.4	n/a
AOC 00-030(n), Septic Tank	25.2	n/a	n/a	59.4	1.9	n/a
AOC 00-030(o), Septic Tank	112.7	n/a	n/a	69.7	4.4	n/a
AOC 00-030(p), Septic Tank	40.9	n/a	n/a	50.5	1.9	n/a
SWMU 00-039, Underground Tanks	150.5	n/a	n/a	38.8	4.8	n/a
AOC 00-043, Manhole (Removed)	135.5	n/a	n/a	60.8	4.3	n/a
SWMU 31-001, Septic System	83.4	n/a	n/a	62.3	3.1	n/a
Consolidated Unit 45-001-00						
Consolidated Unit 01-002(b)-00, Outfall TA-01, Inactive	0.0	n/a	n/a	0.0	0	n/a
SWMU 45-001, Wastewater Treatment Facility, Inactive	76.3	n/a	n/a	53.5	3.2	n/a
SWMU 45-002, Vehicle Decontamination Facility, Inactive	0.2	n/a	n/a	34.4	0.2	n/a
SWMU 45-003, Waste Lines, Inactive	25.1	n/a	n/a	38.8	0.8	n/a
SWMU 45-004, Sanitary Sewer Outfall, Inactive	0.2	n/a	n/a	34.4	0.2	n/a
AOC C-45-001, Parking Lot of Former Treatment Plant	0.4	n/a	n/a	37.3	0.3	n/a

Source: Shaw 2005, 88492.

*n/a = Not applicable.

TARGET PAGE

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RECORD TYPE: Map

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SUBJECT: Plate 2.18-3, consolidated unit 73-002-99 historical sampling locations with radionuclides detected greater than background values/fallout values.

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SUBJECT:
Plate 2 18.-2 Consolidated Unit 73-003-99 historical sampling locations with inorganic Chemicals detected greater than background values. Modified # 05-0003

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SYMBOL: LA-UR-05-2366

SUBJECT:
Plate 2.18-1 Consolidated unit 73-002-99 historical sampling locations and depths. Modified from # 05-0063 sk 01-18-05 2-18-01 Pueblo Canyon WP 02-03-05 RAI

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Plate 2.16-2 Drainage map with approximate primary locations of debris depicted in drainage A, B, C, and D2

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Plate 2.16-1. Sampling locations for drainages A, B, C, and D2

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