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Date: August 26, 2005
Refer to: ER2005-0646

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

SUBJECT: RESPONSE TO THE NOTICE OF DISAPPROVAL FOR THE PUEBLO CANYON AGGREGATE AREA INVESTIGATION WORK PLAN DATED JULY 26, 2005

Dear Mr. Bearzi:

Enclosed are two hard copies with electronic files of Los Alamos National Laboratory's response to the New Mexico Environmental Department's (NMED's) notice of disapproval for the "Pueblo Canyon Aggregate Area Investigation Work Plan." A table cross-referencing NMED's comments and the revisions made to the investigation work plan, including replacement text, tables, and figures, is also provided.

If you have questions, please contact Terry Rust at (505) 665-8843 (trust@lanl.gov) or Robert Enz at (505) 667-7640 (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/jk

Enclosures: 1) Two hard copies with electronic files of the Response to the Notice of Disapproval for "Pueblo Canyon Aggregate Area Investigation Work Plan" (ER2005-0563)

Cy:(w/enc)
P. Reneau, ENV-ECR, MS M992
T. Rust, ENV-ECR, MS M992
S. Wirth, SHAW Environmental
D. Gregory, DOE LASO, MS A316
L. King, EPA Region 6
ENV-ERS File, MS M992
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A. Dorries, ENV-ECR, MS M992
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B. Rich, ADO, MS A104
L. Woodworth, DOE LASO, MS A316
D. Pepe, NMED-OB

Response to the Notice of Disapproval for the Pueblo Canyon Aggregate Area Investigation Work Plan Dated July 26, 2005

LA-UR-05-6235

Response to the Notice of Disapproval for the
Pueblo Canyon Aggregate Area Investigation Work Plan
Dated July 26, 2005
Los Alamos National Laboratory EPA ID No: NM0890010515
HWB-LANL-03-007

INTRODUCTION

This submittal is the response by Los Alamos National Laboratory (LANL) to the "Notice of Disapproval for the Pueblo Canyon Aggregate Area Investigation Work Plan," issued by the New Mexico Environment Department (NMED) Hazardous Waste Bureau (HWB) on July 26, 2005, and received by LANL on July 28, 2005. The "Pueblo Canyon Aggregate Area Investigation Work Plan" was submitted to NMED on May 27, 2005.

To facilitate review of these responses, NMED's comments are included verbatim and are divided into general and specific categories, as presented by NMED. LANL's responses follow NMED comments. This response also contains the following attachments:

- Attachment 1 contains a table that cross-references NMED comments with sections revised in the investigation work plan (hereafter, the work plan).
- Attachment 2 provides the revised sections of the work plan, including revised text, figures, and tables.
- Attachment 3 contains supporting documentation from the work plan that is being resubmitted for clarification purposes.

This response contains data on radioactive materials, including source, special nuclear, and by-product material. The management of these materials is regulated under the Atomic Energy Act and is specifically excluded from regulation under the Resource Conservation and Recovery Act (RCRA) and the New Mexico Hazardous Waste Act. Information on radioactive materials and radionuclides, including the results of sampling and analysis of radioactive constituents, is voluntarily provided to NMED in accordance with U.S. Department of Energy policy.

GENERAL COMMENTS

NMED Comment

1. *The Permittees provided the historical information for the aggregate area as either sections within or appendices to the Work Plan. This is a violation of Section XI.B.13 of the Consent Order. The Permittees are reminded that compliance with the Order is mandatory; noncompliance with any requirement set forth in the Order subjects the Permittees to possible enforcement action(s) as set forth in Section III.U of the Consent Order.*

LANL Response

1. No change has been made to the presentation of the historical information, pursuant to the agreement reached between James Bearzi (NMED-HWB) and David McInroy (LANL) on July 27, 2005, regarding the above comment.

NMED Comment

2. For all proposed borings, the Permittees must continue drilling and sampling if contamination is detected by field screening or other observations. The boreholes must be drilled to a minimum of five feet below the deepest detected contamination.

LANL Response

2. LANL proposed that drilling and sampling continue to a minimum of ten ft below the deepest detected contamination (p. 98, second full paragraph). However, the text in Section 5.5 (second full paragraph) has been changed to indicate that drilling and sampling at all proposed boring will continue to a minimum of five ft below the deepest detected contamination (Attachment 2).

SPECIFIC COMMENTS

NMED Comment

1. Section 1.1 General Site Information, pg. 2:

The Permittees state that "[t]wo AOCs [00-030(k) and 00-034(a)] have NFA approval by DOE." NMED does not acknowledge that AOC 00-030(k) (septic system) and AOC 00-034(a) (landfill, eastern area) were approved for NFA by DOE because NMED does not recognize DOE as an administrative authority for these sites. The investigation activities for AOC 00-030(k) were reported in the VCA Report for Potential Release Sites 0-030(d,k) and C-0-043 dated August 1997 and submitted to NMED on June 14, 2005. NMED has reviewed this report and agrees that AOC 00-030(k) cannot be located and is appropriate for NFA.

The Permittees submitted the NFA Report for Potential Release Sites 0-034(a), 0-034(b), 73-001(b). 73-004(c), and 73-004(d), dated September 1997, to NMED on June 14, 2005. The report states that no field investigations were conducted at the site because it was only used for "the production of cement/concrete materials, and no RCRA solid or hazardous wastes or constituents" were managed at the site. NMED has reviewed this report and agrees that hazardous wastes were not managed at AOC 00-034(a) and is appropriate for NFA.

LANL Response

1. Comment noted.

NMED Comment

2. Sections 2.1.2.1 and 2.2.2.1 Source of Contamination, pgs. 4 and 8:

The Permittees state that the "more recent sludges generated between 1983 and 1991 were subject to permit restrictions and analysis are not expected to have contributed to contamination at SWMU 00-018(b)." It is possible that the Permittees exceeded permit restrictions in the past and, therefore, must evaluate these possible occurrences during this investigation. See specific comment #4.

LANL Response

2. LANL assumes this comment cross-references Specific Comments #4 and #5. Please see responses to Specific Comments #4 and #5.

NMED Comment

3. Section 2.12.2.3 Potential Receptors and Exposure Pathways, pg. 43:

Currently, the site is located on private property. The Permittees have identified commercial workers and occasional site visitors as the only potential human receptors for this site. However, it is reasonable to include residential receptors because the Permittees cannot control or predict the potential future land uses for this property.

LANL Response

3. While it is unlikely that the property will be redeveloped as residential, for comparison purposes, LANL will evaluate potential residential receptors for Solid Waste Management Unit (SWMU) 00-039 to the commercial-worker and occasional site-visitor receptors in the forthcoming investigation report.

   The revised text (p. 43) is provided in Attachment 2.

NMED Comment

4. Section 4.1 Sampling and Analysis for SWMU 00-018(a), Pueblo Canyon Wastewater Treatment Plant, pg. 80:

The Permittees must collect two samples in the westernmost sludge bed to determine possible contamination that could have occurred if effluent exceeded permit limitations. The Permittees must collect one sample of the sludge and one sample of the underlying tuff. Also, see specific comment #2.

LANL Response

4. LANL will sample the westernmost sludge bed at SWMU 00-018(a) to determine possible contamination that could have occurred if effluent exceeded permit limitations. If sludge is present in the westernmost bed, two samples will be collected: one of the sludge material and one at a depth of 1.5–2 ft into the tuff. If no sludge is present, two samples will be collected, one in the surface soil/fill at 0–0.5 ft and one at a depth of 1.5–2 ft into the tuff, and analyzed for target analyte list (TAL) metals, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), pesticides, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.

   Investigation activities at SWMU 00-18(a) will be limited to those that do not interfere with the existing infrastructure or utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

   The revised text (pp. 80–81), Table 4.1-1, and Figure 4.1-1 are provided in Attachment 2.

NMED Comment

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

The Permittees must drill a borehole to investigate potential releases underneath the active sludge drying bed. The Permittees may defer this part of the investigation until the sludge drying bed is no longer active.

LANL Response

5. LANL will investigate potential releases beneath the active sludge drying bed. Target samples depths will be 2–2.5 ft and 5–5.5 ft beneath the active bed. 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.

   Investigation activities at SWMU 00-18(b) will be limited to those that do not interfere with ongoing operations at the site, the existing infrastructure, or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

   The revised text (p. 82) and Table 4.2-1 are provided in Attachment 2.

NMED Comment

6. Section 4.4 Sampling and Analysis for AOC 00-030(eN), Septic System, pg. 83 and Section 4.6 Sampling and Analysis for AOC 00-030(f), Septic System, pg. 85:

The Permittees state that the 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." However, the Permittees did not provide an alternate to structure and soil removal if it is deemed impossible. The Permittees must describe a contingency plan for investigation of these sites.

The Permittees must also explain if the drainline removal at AOC 00-030(eN) includes the inlet pipe that, according to Figure 1.1-6, extends from the tanks to a location south of Canyon Road.

LANL Response

6. LANL is not proposing removing the inlet pipe at Area of Concern (AOC) 00-030(eN). LANL's alternate plan for investigating at AOC 00-030(eN), if structure and soil removal is deemed impracticable, is to sample beneath the current tank locations using one or more angled borehole(s). The depth to the bottom of the tanks is estimated to be approximately 13 ft below ground surface (bgs), corresponding to a tank height of 8 ft beneath 5 ft of fill. The target total depths for samples collected beneath each tank with angled boreholes, if required, will be 15–15.5 ft and 17–17.5 ft bgs. If the tank cannot be removed, LANL proposes trenching upgradient of the tanks to locate the inlet piping and collect samples from the area of the inlet connection(s) to the tanks. Samples will be collected at 6–6.5 ft and 8–8.5 ft bgs at the inlet pipe location and analyzed for TAL metals, VOCs, SVOCs, PCBs, pesticides, americium-241, and radionuclides using gamma spectroscopy. Additionally, all samples will be analyzed for pH, nitrates, cyanide, and perchlorate.

   The revised text (pp. 84–85), Table 4.4-1, and Figure 4.4-1 are provided in Attachment 2.

LANL's alternate plan for investigating AOC 00-030(f), if structure and soil removal is deemed impracticable, is to sample beneath the current tank locations using one or more angled boreholes. The depth to the bottom of the tanks is estimated to be approximately 15 ft bgs, corresponding to a presumed tank height of 8 ft beneath 7 ft of fill and asphalt or concrete. The target total depths for samples collected beneath each tank with angled boreholes, if required, will be 17–17.5 ft and 19–19.5 ft bgs. LANL proposes additional sampling in the area of the inlet pipes, and because the precise location of the inlet is not known, three locations between the adjacent building and the tanks will be sampled using a hand-held auger at 8–8.5 ft and 10–10.5 ft bgs. 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.

Investigation activities at AOC 00-030(eN) and AOC 00-030(f) will be limited to those that do not interfere with current structures, the existing infrastructure, or the utilities and will be contingent upon approval by the current property owners and the conditions of the access agreements.

The revised text (pp. 86–87), Table 4.6-1, and Figure 4.6-1 are provided in Attachment 2.

NMED Comment

7. Section 4.8 Sampling and Analysis for AOC 00-030(j), Septic System, pg. 87:

NMED does not agree with drilling one borehole in a location that may not coincide with the former septic tank. In addition, if the tank has been removed, the sampling media will consist of fill material overlying tuff. Any samples collected of the fill material above the tank will not be representative of a release from the tank. Instead, NMED requires drilling 3-4 boreholes in the vicinity of the presumed tank location and collecting a sample from the fill /tuff interface depth in each borehole.

LANL Response

7. Based on a review of historical information and the results of a 1996 geophysical survey conducted at AOC 00-030(j), LANL has concluded that the septic tank was never installed. However, three additional boreholes will be advanced around the perimeter of the presumed tank location (based on 1947 engineering drawings). Samples will be collected at each of the perimeter locations from two depths, one at the soil/tuff interface and one at 1.5–2 ft into the tuff, and 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.

   Investigation activities at AOC 00-030(j) will be limited to those that do not interfere with current structures, the existing infrastructure, or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements. Previously, the property owners at this site have not allowed intrusive activities.

   The revised text (p. 89), Table 4.8-1, and Figure 4.8-1 are provided in Attachment 2.

NMED Comment

8. Section 4.9 Sampling and Analysis for AOC 00-030(n), Septic System, pg.88:

Sampling performed at a location underneath the inlet pipe detected some metals above background or had elevated detection limits. The Permittees must sample at this location (00-04782) in order to include the inlet pipe as part of the vertical contamination investigation.

LANL Response

8. LANL proposes collecting additional samples at historical location 00-04782 to investigate potential vertical contamination of metals at the inlet pipe at AOC 00-030(n). Samples will be collected at two depths, 2.5–3 ft and 4.5–5 ft bgs, and analyzed for TAL metals.

   Investigation activities at AOC 00-030(n) will be limited to those that do not interfere with the existing infrastructure or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

   The revised text (pp. 89–90), Table 4.9-1, and Figure 4.9-1 are provided in Attachment 2.

NMED Comment

9. Section 4.12 Sampling and Analysis for SWMU 00-039, Underground Tanks, pg. 90:

The Permittees have identified additional data needs based on historical data that were obtained from a mobile chemical lab during a 1995 investigation. The samples were only analyzed for TPH and VOCs. Given the uncertainty associated with historical mobile chemical laboratory data and NMED's position that mobile laboratory data cannot be used to determine the extent of contamination at a site (or for confirmatory samples following remediation), the Permittees must propose additional investigation of this site. The investigation must include analysis of VOCs, SVOCs, TAL metals, and TPH.

LANL Response

9. During federal ownership of the property at SWMU 00-039 (1945–1968), the site was used for dry-cleaning businesses, and the only potential chemicals of concern related to these operations are organic compounds (VOCs, SVOCs, and total petroleum hydrocarbons [TPH]). LANL proposes the following sample locations and depths to investigate the nature and extent of organic chemical contamination at SWMU 00-039.

   - An angled borehole at historical location 00-04055: The borehole will be advanced eastward towards the central portion of the tetrachloroethene (PCE) plume with a target depth of 50 ft bgs. This target depth corresponds to approximately 25 ft beyond the deepest detected contamination within the PCE plume, as determined in the 1995 RCRA facility investigation (RFI). Samples will be collected at 10-ft intervals and analyzed for VOCs, SVOCs, and TPH.
   - A vertical borehole at historical location 00-04055 (paired with the angled borehole at location 00-04055) to be advanced to 50 ft bgs: Samples will be collected at 10-ft intervals and analyzed for VOCs, SVOCs, and TPH.
   - Two additional vertical boreholes in the western portion of the SWMU and one in the eastern portion of the SWMU: The boreholes will be located to define the depth of potential organic contamination along the perimeter of SWMU 00-039. Samples will be collected at 10-ft intervals to a total depth of 50 ft bgs and analyzed for VOCs, SVOCs, and TPH.

   Investigation activities at SWMU 00-039 will be limited to those that do not interfere with current structures, the existing infrastructure, or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

   The revised text (p. 92), Table 4.12-1, and Figure 4.12-1 are provided in Attachment 2.

NMED Comment

10. Section 4.13 Sampling and Analysis for AOC C-00-043, Manhole (Removed), pg. 91:

Two of the proposed boreholes should be located at the intersection of the manhole and the sewer pipeline to detect possible leaks from pipe joints.

LANL Response

10. Borehole locations have been proposed at the intersection of the manhole and the sewer pipeline, both downgradient and upgradient of the former manhole location. Proposed sample locations New #1 and New #3 will be aligned with the presumed location and direction of the sewer pipeline.

Investigation activities at AOC C-00-043 will be limited to those that do not interfere with the existing infrastructure or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

The revised text (p. 93), Table 4.13-1, and Figure 4.13-1 are provided in Attachment 2.

NMED Comment

11. Section 4.14 Sampling and Analysis for SWMU 31-001, Septic System, pg. 92:

The depth of the former tank is unknown at this location. The Permittees propose collecting samples at three identified depths at this location but do not provide the rationale for these depths. The Permittees must provide this information. Also, see general comment #2.

LANL Response

11. SWMU 31-001 consisted of a septic tank located aboveground on a bench to the north of the mesa top. LANL proposes sampling beneath the former tank position at historical location 00-01003 at three depths: 0–0.5 ft bgs (soil), 1–1.5 ft bgs (soil), and 1.5–2 ft into the tuff. The sample depths correspond to the aboveground configuration of the tank (the work plan proposed sampling depths based on a belowground configuration). Also, please see the response provided for General Comment #2.

Investigation activities at SWMU 31-001 will be limited to those that do not interfere with the existing infrastructure or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

The revised text (p. 93), Table 4.14-1, and Figure 4.14-1 are provided in Attachment 2.

NMED Comment

12. Section 4.15 Sampling and Analysis for Consolidated Unit 45-001-00, Wastewater Treatment Plant – TA-45, pgs. 93-94:

a. South Waste Line Outfall (SWMU 45-001): Location 45-01028 is being resampled at the same depths as previous samples. If the objective is to delineate the extent of previously identified contamination, the Permittees must focus their sampling efforts at deeper sampling intervals.

b. *North Waste Line and Outfall (SWMU 45-001): The Permittees claim that the "[h]istorical analytical results were sufficient to define the vertical and horizontal extent of inorganic chemical and radionuclide contamination" is inaccurate. Many of the sampling locations had inorganic detections either greater than the background level or the detection limits were elevated. The Permittees must determine extent of inorganic contamination at this site.*

c. *Parking Lot (SWMU 45-001): The Permittees must justify resampling the same depths at location 45-01033. In order to meet the data needs identified by the Permittees, the Permittees should collect samples at deeper intervals at this location. The Permittees are resampling at location 45-01029 but did not provide the previously collected data for this location. The Permittees must provide these data and collect samples at this location at deeper intervals to define extent.*

d. *Vertical Decontamination Facility (SWMU 45-002): Plutonium-239 was detected at location 45-01055 (10-12 foot interval) at 0.821 pCi/g. The background/fallout level is 0.05 pCi/g. NMED recommends the Permittees determine the extent of plutonium-239 contamination at this location.*

e. *Sanitary Sewer Emergency Bypass (SWMU 45-004): The Permittees must provide the data for location 45-01068 and justify resampling at the same depths at this location*.

LANL Response

12. For clarification of the historical data used to make sampling decisions at Consolidated Unit 45-001-00, LANL is resubmitting relevant text and tables that present the historical data in Attachment 3.

    a. Sampling at historical location 45-01028 is being proposed because of data gaps in the analytical suites identified in the historical data (the off-site data were from radiological analyses; Table 2.15-1[b] in Attachment 3 summarizes the samples and analyses). The proposed sampling at location 45-01029 is not intended to delineate the extent of previously identified contaminants. LANL proposes sampling at similar depths to those of the historical sampling to collect data on hazardous constituents. LANL also proposes collecting surface and near-surface samples (0–0.5 ft and 1.5–2 ft bgs) to assist in the risk assessments.

    b. LANL will perform subsurface sampling for metals at historical locations within the North Waste Line and the Outfall for which only surface soil data are available and where metals were detected above BVs. The following historical locations will be sampled at 1.5–2 ft into the tuff: locations 45-01034, 45-01044, 45-01045, and 45-01046.

       The revised text (pp. 94–95), Table 4.15-1, and Figure 4.15-1 are provided in Attachment 2.

    c. Sampling at historical locations 45-01029 and 45-01033 is proposed because of data gaps in the analytical suites identified in the historical data (the off-site data were from radiological analyses; Table 2.15-1[b] in Attachment 3 summarizes the samples and analyses). The proposed sampling is not intended to delineate the extent of previously identified contaminants. LANL proposes sampling to collect data on hazardous constituents at surface and near-surface depths (0–0.5 ft bgs, 1–1.5 ft bgs, and 1.5–2 ft into the tuff) because the only potential historical releases were surface spills in the parking lot. The historical screening data from on-site analyses for location 45-01029 showed no detections.

The historical data for samples from location 45-01029 are provided in the work plan as Table C-1.0–12 (off-site analyses of radiological constituents only) and Table C-2.0-7 (on-site analyses for metals, cyanide, and SVOCs).

d. The vertical contamination of plutonium-239 has been defined immediately downgradient of historical location 45-01055. At historical location 45-01056 (approximately 10–15 ft downgradient of location 45-01055), plutonium-239 was detected at the 10–12-ft interval (0.019 pCi/g) but was not detected at the 15–17-ft interval. The radiological data collected adequately define the extent of radiological contamination within the Vehicle Decontamination Facility.

e. Sampling at historical location 45-01068 is proposed because of data gaps in the analytical suites identified in the historical data (the off-site data were from VOC and SVOC analyses; Table 2.15-1[b] in Attachment 3 summarizes the samples and analyses). No on-site analyses were performed for samples at this location. LANL proposes deleting VOCs from the list of analyses at this location because none were detected at this site in the historical analyses.

   The revised text (p. 95) and Table 4.15-1 are provided in Attachment 2.

   The historical data for samples from location 45-01068 are provided in the work plan in Table C-1.0-12 (off-site analyses of VOCs and SVOCs only) and in Figure 2.15-8 (Attachment 3 to this response).

NMED Comment

13. Figure 4.14-1. SWMU 31-001 proposed sampling location and depths, pg. 225:

Based on the figure provided, it is not clear the proposed sampling will occur in the drainage. The Permittees must ensure that the samples are collected from sediment accumulation areas or other areas where contaminants are more likely to be present.

LANL Response

13. Sample locations New #2 and New #3 have been relocated in the drainages. Before sampling, field reconnaissance will be conducted to identify relevant areas of sediment accumulation within the drainages.

    Investigation activities at SWMU 31-001 will be limited to those that do not interfere with the existing infrastructure or the utilities and will be contingent upon approval by the current property owner and the conditions of the access agreements.

    The revised Figure 4.14-1 is provided in Attachment 2.

Attachment 1

NMED NOD / Work Plan Cross-Reference Table

Cross-Reference of NMED NOD Comments and Revisions to Pueblo Canyon Aggregate Area Investigation Work Plan

NMED Comment No.	Portion of Work Plan Referred to in NOD Comment	Page(s) in Original Report[a]	Page(s) in Revised Report	Nature of Work Plan Revision
General Comments				
1	Historical information	n/a[b]	n/a	No revision required
2	Section 5.5, Collection of Tuff Samples	97	98	Text in Section 5.5 modified to indicate sampling will extend five ft beyond deepest detected contamination
Specific Comments				
1	Section 1.1, General Site Information	n/a	n/a	No revision required
2	Section 2.1.2.1, Source of Contamination	n/a	n/a	See responses to Specific Comments #4 and #5
	Section 2.2.2.1, Source of Contamination	n/a	n/a	See responses to Specific Comments #4 and #5
3	Section 2.12.2.3, Potential Receptors and Exposure Pathways	43	43	Text in Section 2.12.2.3 revised to include residential receptors in the human health risk assessment for comparison purposes
4	Section 4.1, Sampling and Analysis for SWMU 00-018(a), Pueblo Canyon Wastewater Treatment Plant	80–81	80–81	Text in Section 4.1 revised to include sampling (full suite) of the westernmost sludge bed Revisions to Table 4.1-1 and Figure 4.1-1 also provided
5	Section 4.2, Sampling and Analysis for AOC 00-018(b), Bayo Canyon Wastewater Treatment Plant (Active)	82	82	Text in Section 4.2 revised to include sampling (full suite) beneath the active sludge bed Revisions to Table 4.2-1 also provided
6	Section 4.4, Sampling and Analysis for AOC 00-030(eN), Septic System	84–85	84–85	Text in Section 4.4 revised to include alternative sampling if structure and soil removal deemed impracticable; sampling (full suite) at the tank inlet also added Revisions to Table 4.4-1 and Figure 4.4-1 also provided
	Section 4.6, Sampling and Analysis for AOC 00-030(f), Septic System	86–87	86–87	Text in Section 4.6 revised to include alternative sampling if structure and soil removal deemed impracticable; sampling (full suite) in the area of the tank inlet also added Revisions to Table 4.6-1 and Figure 4.6-1 also provided
7	Section 4.8, Sampling and Analysis for AOC 00-030(j), Septic System	89	89	Text in Section 4.8 revised to include sampling (full suite) of the perimeter of presumed tank location Revisions to Table 4.8-1 and Figure 4.8-1 also provided
8	Section 4.9, Sampling and Analysis for AOC 00-030(n), Septic System	89–90	89–90	Text in Section 4.9 revised to include sampling for metals beneath the inlet pipe Revisions to Table 4.9-1 and Figure 4.9-1 also provided

NMED Comment No.	Portion of Work Plan Referred to in NOD Comment	Page(s) in Original Report[a]	Page(s) in Revised Report	Nature of Work Plan Revision
9	Section 4.12, Sampling and Analysis for SWMU 00-039, Underground Tanks	92	92	Text in Section 4.12 revised to include additional sampling (VOCs, SVOCs, and TPH) to define extent of organic contamination at the site Revisions to Table 4.12-1 and Figure 4.12-1 also provided
10	Section 4.13, Sampling and Analysis for AOC C-00-043, Manhole (Removed)	93	93	Text in Section 4.13 revised to include sampling at locations more consistent with the presumed locations of the inlet and outlet pipes Revisions to Table 4.13-1 and Figure 4.13-1 also provided
11	Section 4.14, Sampling and Analysis for SWMU 31-001, Septic System	93	93	Text in Section 4.14 revised to reflect changes in sampling depths at historical location 00-01003 based on actual tank setting Revisions to Table 4.14-1 and Figure 4.14-1 also provided
12	Section 4.15, Sampling and Analysis for Consolidated Unit 45-001-00, Wastewater Treatment Plant–TA-45	94–95	94–95	Text in Section 4.15 revised to include sampling for metals at depth in the North Waste Line and Outfall (historical locations 45-01034, 45-01044, 45-01045, and 45-01046); text also revised to remove VOC sampling at the Sanitary Sewer Emergency Bypass (historical location 45-01068) Revisions to Table 4.15-1 and Figure 4.15-1 also provided
13	Figure 4.14-1, SWMU 31-001 proposed sampling location and depths	n/a		No text revision required Figure 4.14-1 revised to show SWMU boundary and downgradient sampling within the drainages

Note: This cross-reference reflects changes to the work plan in response to NMED's comments and the March 1, 2005, Consent Order requirements. Minor editorial changes have not been included in this table.

[a] Revised pages refer to the page numbers in the original work plan, submitted to NMED in May 2005.

[b] n/a = Not applicable.

Attachment 2

Revised Text, Figures, and Tables

Attachment 2 Contents

Text Pages

Figures

Tables

Deleted: 82
Deleted: 83
Deleted: 84
Deleted: 85
Deleted: 86
Deleted: 87
Deleted: 88
Deleted: 89
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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
- Residents (future scenario only)

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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). Residential development at SWMU 00-039 is considered highly unlikely; however, the residential risk scenario is being evaluated for comparison purposes to the results calculated for commercial workers and occasional site visitors.

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).

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 contamination in the newer sludge beds could not be determined from the historical data as only the oldest sludge beds were sampled. Sampling within the newer, westernmost sludge bed is being proposed to address this data need.

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- 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.
- *Sampling of westernmost sludge bed to define the nature and extent of contamination*. Surface soil, sludge (if present), and subsurface tuff sampling will be conducted in the westernmost sludge bed. If no sludge is present, then a sample of the surface soil/fill will be collected at 0 to 0.5 ft bgs. A second sample will be collected 1.5 to 2 ft into the tuff. 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.
- *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)

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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.
- Potential releases from the active drying bed cannot been determined from the historical data. Sampling beneath the active drying bed 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.

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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.
- *Investigation of potential releases from active drying bed.* Samples will be collected from beneath the active drying bed at two target depths: 2 to 2.5 ft and 5 to 5.5 ft beneath the bottom of the bed. 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 from an angled borehole drilled to target the area beneath the active drying bed.

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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.
- If removal of the structures and soil is not possible, then sampling beneath the septic tanks will be conducted using angled boreholes. The depths to the bottom of the tanks are estimated as approximately 13 ft bgs, corresponding to a tank height of 8 ft beneath 5 ft of fill. The target depths for samples collected beneath each tank via angled boreholes, if required, will be 15 to 15.5 ft bgs and 17 to 17.5 ft bgs.
- Potential contamination in the area of the inlet piping could not be determined from the historical data. Sampling in the area of the inlet pipe connection to the tanks is proposed to address this data need. If the tanks cannot be removed, a trench will be excavated upgradient of the tanks to locate the area of the inlet piping.
- 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.

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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.
- *Sampling beneath the former drainlines in the area of the inlet pipe connection to the tanks.* Samples will be collected from the inlet area at 6 to 6.5 ft bgs and 8 to 8.5 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.

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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.
- If removal of the structures and soil is not possible, then sampling beneath the septic tanks will be conducted using angled boreholes. The depths to the bottom of the tanks are estimated as approximately 13 ft bgs, corresponding to a tank height of 8 ft beneath 5 ft of fill. The target depths for samples collected beneath each tank via angled boreholes, if required, will be 17 to 17.5 ft bgs and 19 to 19.5 ft bgs.

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- Potential contamination in the area of the inlet piping cannot be determined from the historical data. Sampling in the area of the inlet pipe connection to the tanks is proposed to address this data need.

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- 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.
- *Sampling in the area of the inlet pipe connection to the tanks.* Because the precise location of the inlet is unknown, samples from three locations between the tanks and adjacent building will be collected at depths of 8 to 8.5 ft bgs and 10 to 10.5 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. 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.

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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.

- *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 ft into tuff. Soil-sampling depth intervals may be adjusted during sampling if the depth to the tuff is less than 5.5 ft. Three samples around the perimeter of the assumed septic tank location (New #2, New #3, and New #4) will be collected at two depths: soil/tuff interface and 1.5 to 2 ft into tuff. 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.
- The vertical extent of contamination has not been determined at the inlet location (location 00-04782) for inorganic chemicals.
- 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.

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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.

- *Sampling in the vicinity of the inlet pipe to define the vertical extent of contamination.* Historical locations 00-04782 and 00-04777 will be sampled at depths of 2.5 ft to 3 ft bgs (soil) and 4.5 ft to 5 ft bgs (soil). The samples will be analyzed for TAL metals. The samples will be collected using a manual or power hand auger.

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- *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

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 organic chemicals related to historical operations 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 contamination of organic chemicals at the central portion of the PCE plume (beneath location 00-04097) and at the western perimeter of the site could not be determined conclusively from the historical data, although the general trend is decreasing organic chemical concentrations, including PCE, with depth across the site. Additional sampling at depth around the perimeter and within the center of the site 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 organic chemical contamination within the center of the site*. The proposed sampling will delineate the vertical extent of organic chemical contamination at SWMU 00-039 within the central portion of the PCE plume identified in the historical investigations. An angled borehole in the eastern portion of the site 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). An angled borehole in the western portion of the site will be drilled from a location adjacent to location 00-04055. The borehole will be advanced eastward toward the central portion of the PCE plume with a target depth of 50 ft bgs. Paired vertical boreholes will be drilled adjacent to both angled boreholes to 50 ft bgs. In all boreholes, samples will be collected at 10-ft intervals and analyzed for VOCs, SVOCs, and TPH.

- *Sampling to define the vertical extent of organic chemical contamination along the western perimeter of the site*. The proposed sampling will delineate the vertical extent of organic chemical contamination at SWMU 00-039 along the western perimeter of the site. Two vertical boreholes will be drilled to 50 ft bgs. In both boreholes, samples will be collected at 10-ft intervals and analyzed for VOCs, SVOCs, and TPH.

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.

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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. Two of the four boreholes will be aligned with the assumed location and direction of the pipeline. 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.

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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 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. 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,

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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 and the vertical extent of inorganic 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 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. Additional sampling is proposed at historical locations for which vertical extent of inorganic contamination could not be determined (locations 45-01034, 45-01044, 45-01045, and 45-01046). Samples will be collected 1.5 ft to 2 ft into the tuff. All samples will be collected using a manual or power hand auger.

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- *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, 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.

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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.

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 five ft beyond the last positive detection. If a positive field-screening result is detected within five ft of the target depth, the borehole will be advanced in 5-ft intervals until no positive field-screening result is detected over a five-ft interval.

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Kleinfelder, March 5, 2004. "Draft Well R-4 Completion Report, Los Alamos National Laboratory, Los Alamos New Mexico, Project No. 37151," prepared for the U.S. Department of Energy and the National Nuclear Security Administration through the U.S. Army Corps of Engineers, Albuquerque, New Mexico. (Kleinfelder 2004, 88033)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1071," Los Alamos National Laboratory document LA-UR-92-0810, Los Alamos, New Mexico. (LANL 1992, 07667)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1079," Los Alamos National Laboratory document LA-UR-92-0850, Los Alamos, New Mexico. (LANL 1992, 07668)

LANL (Los Alamos National Laboratory), September 1994. "RFI Work Plan Addendum, Operable Unit 1071, SWMU 0-039, Former Underground Solvent Storage Tanks," Los Alamos National Laboratory document, Los Alamos, New Mexico. (LANL 1994, 42791)

LANL (Los Alamos National Laboratory), May 1995. "RFI Report for PRSs 31-001," Los Alamos National Laboratory document LA-UR-95-1542, Los Alamos, New Mexico. (LANL 1995, 58085)

LANL (Los Alamos National Laboratory), June 1995. "RFI Report for PRSs 1-002, 45-001, 45-002, 45 003, 45-004, C-45-001," Los Alamos National Laboratory document LA-UR-95-1542, Los Alamos, New Mexico. (LANL 1995, 48856)

LANL (Los Alamos National Laboratory), November 28, 1995, "Response to the Notice of Deficiency (NOD) for the Resource Conservation and Recovery Act Facility Investigation (RFI) Report for Potential Release Site 31-001," Los Alamos National Laboratory letter (EM/ER:95-660) to B. Driscoll (EPA) from J. Cansen (EM/ER) and T. Taylor (DOE), Los Alamos, New Mexico. (LANL 1995, 51499)

LANL (Los Alamos National Laboratory), February 1996. "RFI Report for Potential Release Sites 0-039," Field Unit 1, Environmental Restoration Project. Los Alamos National Laboratory document LA-UR-96-694, Los Alamos, New Mexico. (LANL 1996, 52932)

LANL (Los Alamos National Laboratory), February 1996. "Voluntary Corrective Action Completion Report for Potential Release Sites 21-013(c), 21-013(d), 21-013(e), 31-001, Revision 1," Los Alamos National Laboratory document LA-UR-96-259, Los Alamos, New Mexico. (LANL 1996, 54320)

LANL (Los Alamos National Laboratory), March 1996. "Voluntary Corrective Action Completion Plan for Potential Release Sites 0-30(d,h,I,j,k,n,o,p) Town Site Septic Tank Systems," Los Alamos National Laboratory document LA-UR-96-936, Los Alamos, New Mexico. (LANL 1996, 53799)

LANL (Los Alamos National Laboratory), May 1996. "Voluntary Corrective Action Plan Report for Potential Release Sites at TA-73, 73-004(a) Septic System, 73-004(b) Septic System," Los Alamos National Laboratory document LA-UR-96-2172, Los Alamos, New Mexico. (LANL 1996, 54916)

LANL (Los Alamos National Laboratory), June 1996. "RFI Report for PRSs 0-030(EN, ES, F), Septic Systems Field Unit 1," Los Alamos National Laboratory document LA-UR-96-2135, Los Alamos, New Mexico. (LANL 1996, 56432)

LANL (Los Alamos National Laboratory), September 1996. "VCA Completion Report for PRSs 0-030(h,i,n,o,p), Group 0-3, Septic Tanks," Los Alamos National Laboratory document LA-UR-96-3351, Los Alamos, New Mexico. (LANL 1996, 62416)

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LANL (Los Alamos National Laboratory), September 1996. "Voluntary Corrective Action Completion Report for Potential Release Sites 73-004(a,b), 73-007, C-73-005(a-f)," Los Alamos National Laboratory document LA-UR-96-3350, Los Alamos, New Mexico. (LANL 1996, 59374)

LANL (Los Alamos National Laboratory), December 1996. "Voluntary Corrective Action Plan for PRS C-0-043 Catholic Church Manhole," Los Alamos National Laboratory document LA-UR-97-301, Los Alamos, New Mexico. (LANL 1996, 55103)

LANL (Los Alamos National Laboratory), March 1997. "Performance Assessment and Composite Analysis for Los Alamos National Laboratory Material Disposal Area G," Los Alamos National Laboratory document LA-UR-97-85, Los Alamos, New Mexico. (LANL 1997, 63131)

LANL (Los Alamos National Laboratory), August 1997. "VCA Report for Potential Release Sites 0-30(d,k) and C-0-043," Los Alamos National Laboratory document LA-UR-97-3318, Los Alamos, New Mexico. (LANL 1997, 62542)

LANL (Los Alamos National Laboratory), September 1997. "NFA Report for Potential Release Sites 0-034(a), 0-034(b), 73-001(b), 73-004(c), 73-004(d)," Los Alamos National Laboratory document LA-UR-97-3864, Los Alamos, New Mexico. (LANL 1997, 59367)

LANL (Los Alamos National Laboratory), September 1997. "RFI Report for PRSs 0-18(a,b) Wastewater Treatment Plants," National Laboratory document LA-UR-97-3392, Los Alamos, New Mexico. (LANL 1997, 56614)

LANL (Los Alamos National Laboratory), May 1998. "Hydrogeologic Workplan, Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-01-6511, Los Alamos, New Mexico. (LANL 1998, 59599)

LANL (Los Alamos National Laboratory), September 22, 1998. "Inorganic and Radionuclide Background Data for Soil, Sediments, and Bandelier Tuff at Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-98-4847, Los Alamos, New Mexico. (LANL 1998, 59730)

LANL (Los Alamos National Laboratory), November 1998. "Sampling and Analysis Plan for SWMU Group 73-2: PRSs 73-003, 73-004(a,b), 73-005, 73-006, 73-007, C-73-005(a,b,c,d,e,f)," Los Alamos National Laboratory document LA-UR-98-4076, Los Alamos, New Mexico. (LANL 1998, 62522)

LANL (Los Alamos National Laboratory), November 1998. "Installation Work Plan for Environmental Restoration Project, Revision 7," Los Alamos National Laboratory document LA-UR-98-4652, Los Alamos, New Mexico. (LANL 1998, 62060)

LANL (Los Alamos National Laboratory), November 1998. "RFI Report for Potential Release Sites 73-001(a, b, c, d) and 73-004(d), (Airport Landfill Areas)," Los Alamos National Laboratory document LA-UR-98-3824, Los Alamos, New Mexico. (LANL 1998, 63070)

LANL (Los Alamos National Laboratory), October 2001. "Supplemental Sampling and Analysis Plan for Potential Release Sites 73-001(a) and 73-001(d)," Los Alamos National Laboratory document LA-UR-01-3987, Los Alamos, New Mexico. (LANL 2001, 71258)

LANL (Los Alamos National Laboratory), September 2002. "Interim Action Completion Report for South Fork of Acid Canyon," Los Alamos National Laboratory document LA-UR-02-5785, Los Alamos, New Mexico. (LANL 2002, 73660)

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LANL (Los Alamos National Laboratory), October 2002. "Voluntary Corrective Measures Plan for Potential Release Sites 73-001(a)-99 and 73-001(b)-99," Los Alamos National Laboratory document LA-UR-02-4433, Los Alamos, New Mexico. (LANL 2002, 74007)

LANL (Los Alamos National Laboratory), December 2002. "Updates to the Radionuclide Screening Action Levels (SALs) Based on RESRAD 6.21," Los Alamos National Laboratory memorandum from R. Mirenda, RRES-R, to the RRES-R Risk Assessment Team, Los Alamos, New Mexico. (LANL 2002, 73705)

LANL (Los Alamos National Laboratory), December 2003. "Los Alamos Canyon and Pueblo Canyon Intermediate and Regional Aquifer Groundwater Work Plan," Los Alamos National Laboratory document LA-UR-03-9191, Los Alamos, New Mexico. (LANL 2003, 82612)

LANL (Los Alamos National Laboratory), January 2004. "Accelerated Corrective Action Work Plan for the Investigation and Remediation of Consolidated Solid Waste Management Unit 19-001-99 (Former TA-19/East Gate Laboratory)," Los Alamos National Laboratory document LA-UR-04-0199 (LANL 2004, 85521)

LANL (Los Alamos National Laboratory), April 2004. "Los Alamos and Pueblo Canyons Investigation Report," Los Alamos National Laboratory document LA-UR-04-2714, Los Alamos, New Mexico. (LANL 2004, 87390)

LANL (Los Alamos National Laboratory), June 2004. "Investigation Work Plan for Solid Waste Management Unit 21-018(a)-99, Material Disposal Area V, at Technical Area 21," Los Alamos National Laboratory document LA-UR-04-3699, Los Alamos, New Mexico. (LANL 2004, 87291)

LANL (Los Alamos National Laboratory), April 22, 2005. "Surface Water Site Assessment for Pueblo Canyon Aggregate Area," Los Alamos, New Mexico. (LANL 2005, 88428)

McDonald, E.V., R.T. Ryti, S.L. Reneau, and D. Carlson, May 2003. "Natural Background Geochemistry of Sediments, Los Alamos National Laboratory," Los Alamos National Laboratory document LA-UR-03-2661, Los Alamos, New Mexico. (McDonald et al. 2003, 76084)

NMED (New Mexico Environment Department, May 2002. "Approval of the Voluntary Corrective Action Completion Report for PRS 00-019, Central Wastewater Treatment Plant," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico. (NMED 2002, 73204)

NMED (New Mexico Environment Department, August 2003. "Approval of Class III Modification to Remove Seven (7) Solid Waste Management Units from the Department of Energy/Los Alamos National Laboratory RCRA permit NM0890010515 (with attachments A/S Tables A and B)," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico (NMED 2003, 79282)

NMED (New Mexico Environment Department, August 2003. "Notice of Approval of Class III Modification, No Further Action for Seven Solid Waste Management Units Los Alamos National Laboratory RCRA Permit NM0890010515 (Intent to Approve)," Hazardous Waste Bureau, New Mexico Environment Department, Santa Fe, New Mexico (NMED 2003, 79282)

NMED (New Mexico Environment Department), February 2004. "Technical Background Document for Development of Soil Screening Levels," Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. (NMED 2004, 85615)

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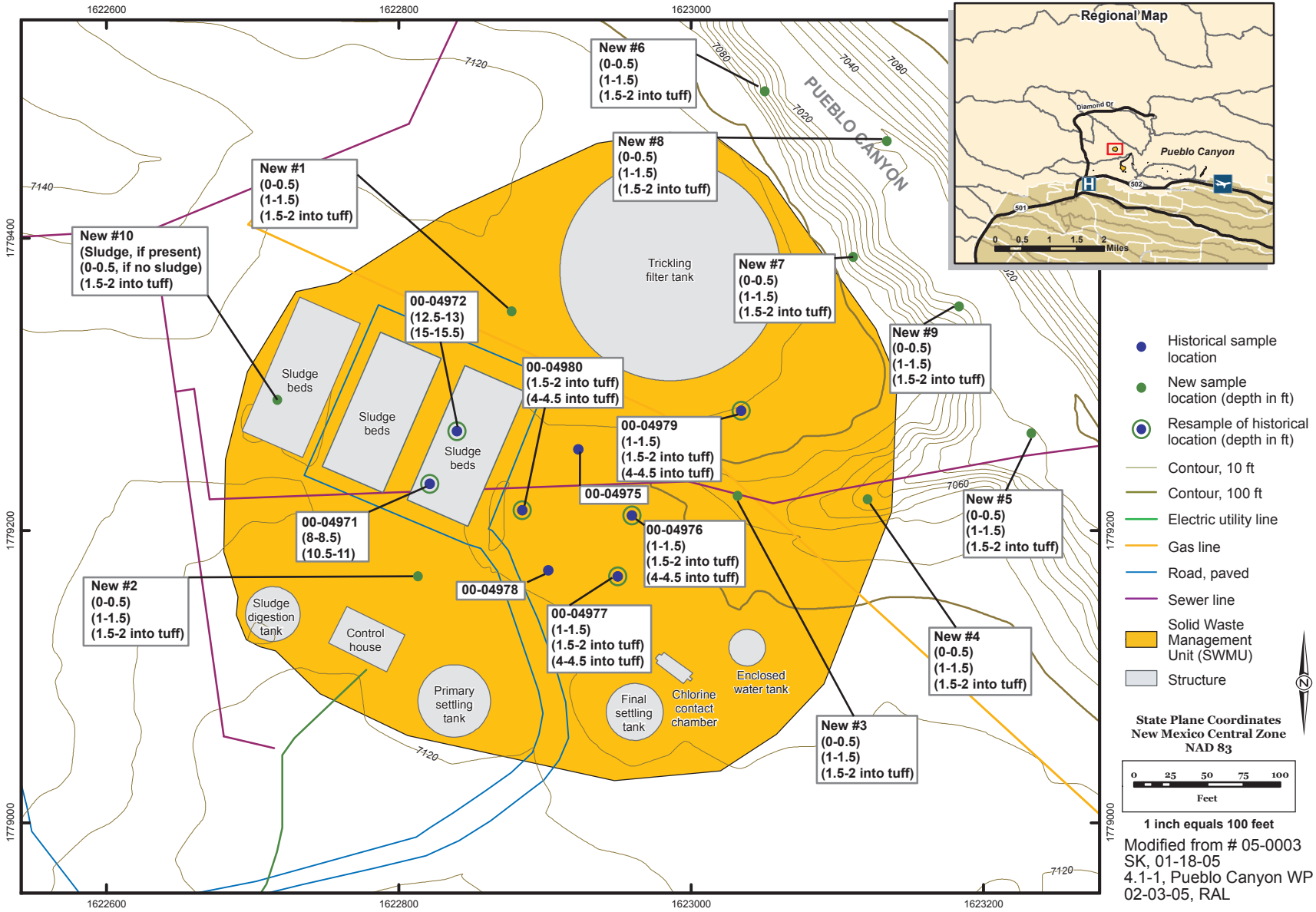


Figure 4.1-1. SWMU 00-018(a) proposed sampling locations and depths

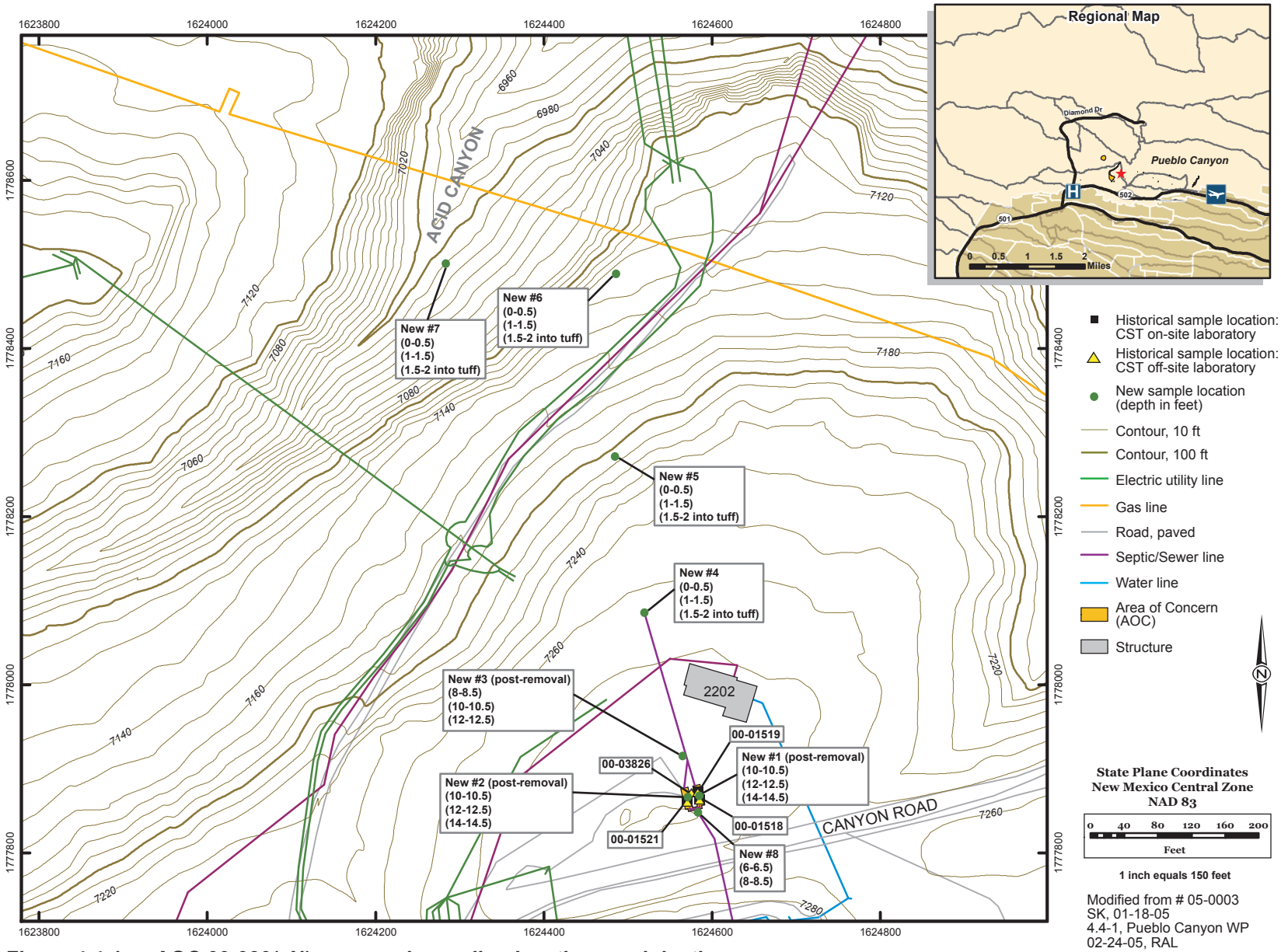


Figure 4.4-1. AOC 00-030(eN) proposed sampling locations and depths

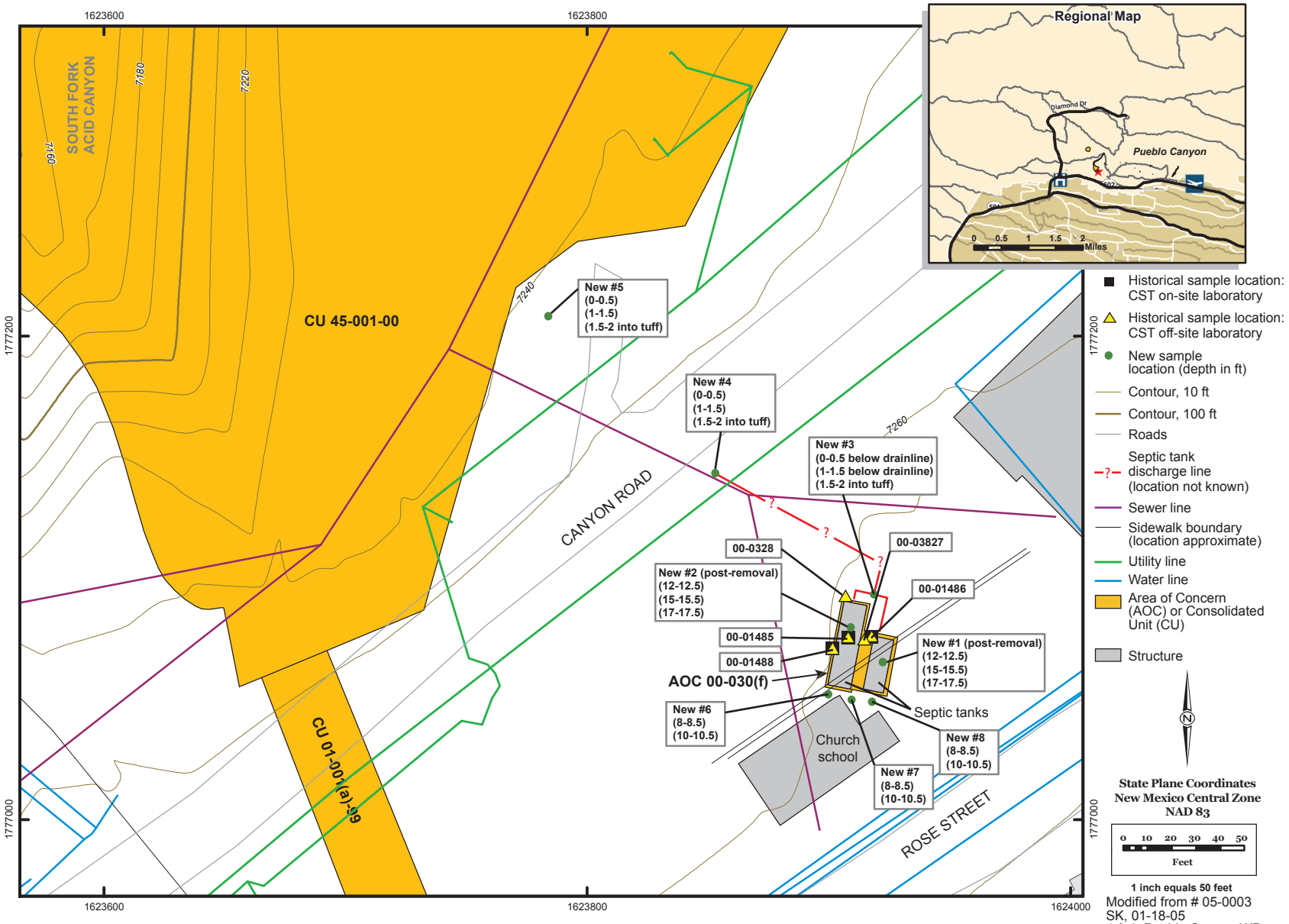


Figure 4.6-1. AOC 00-030(f) proposed sampling locations and depths

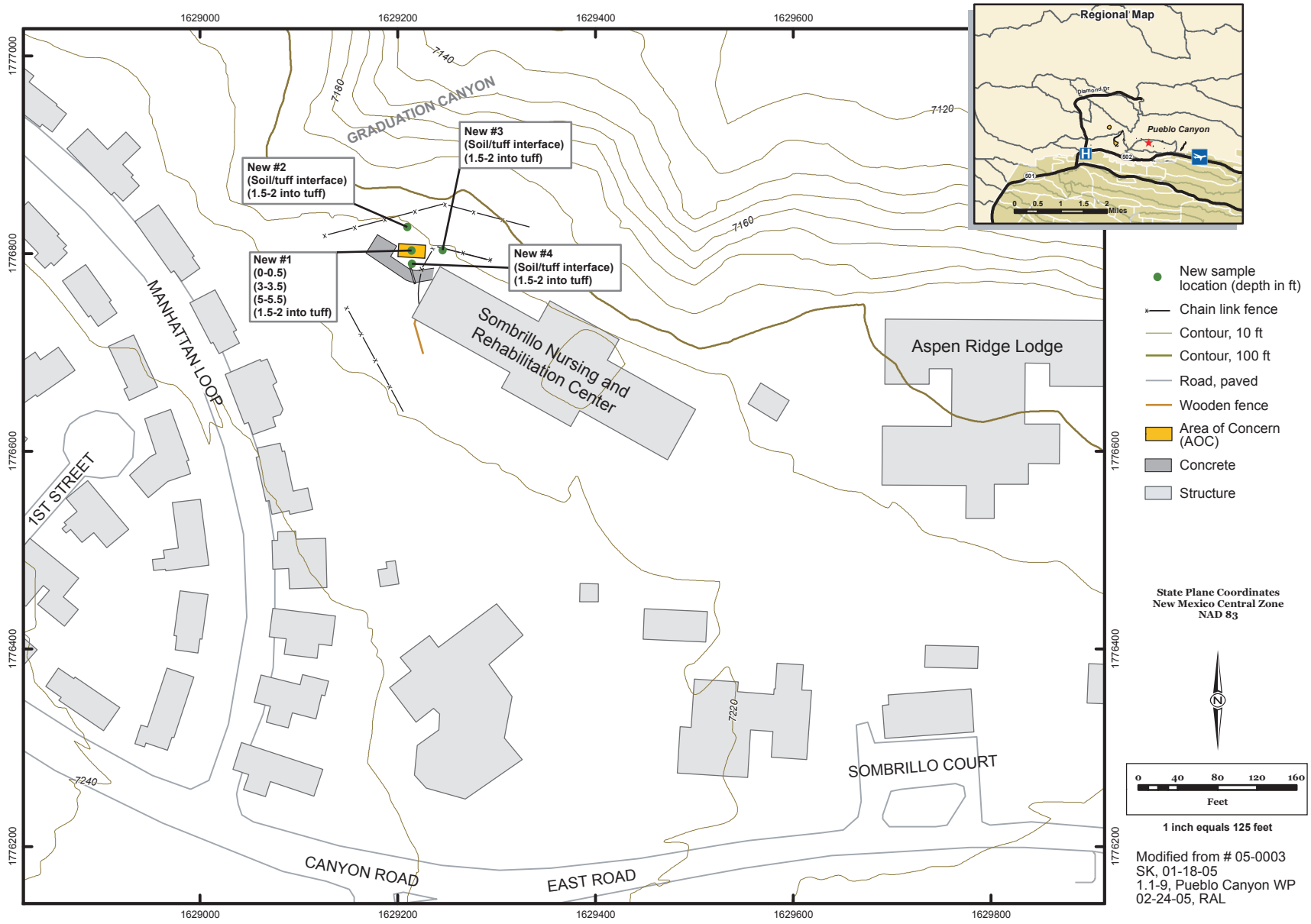
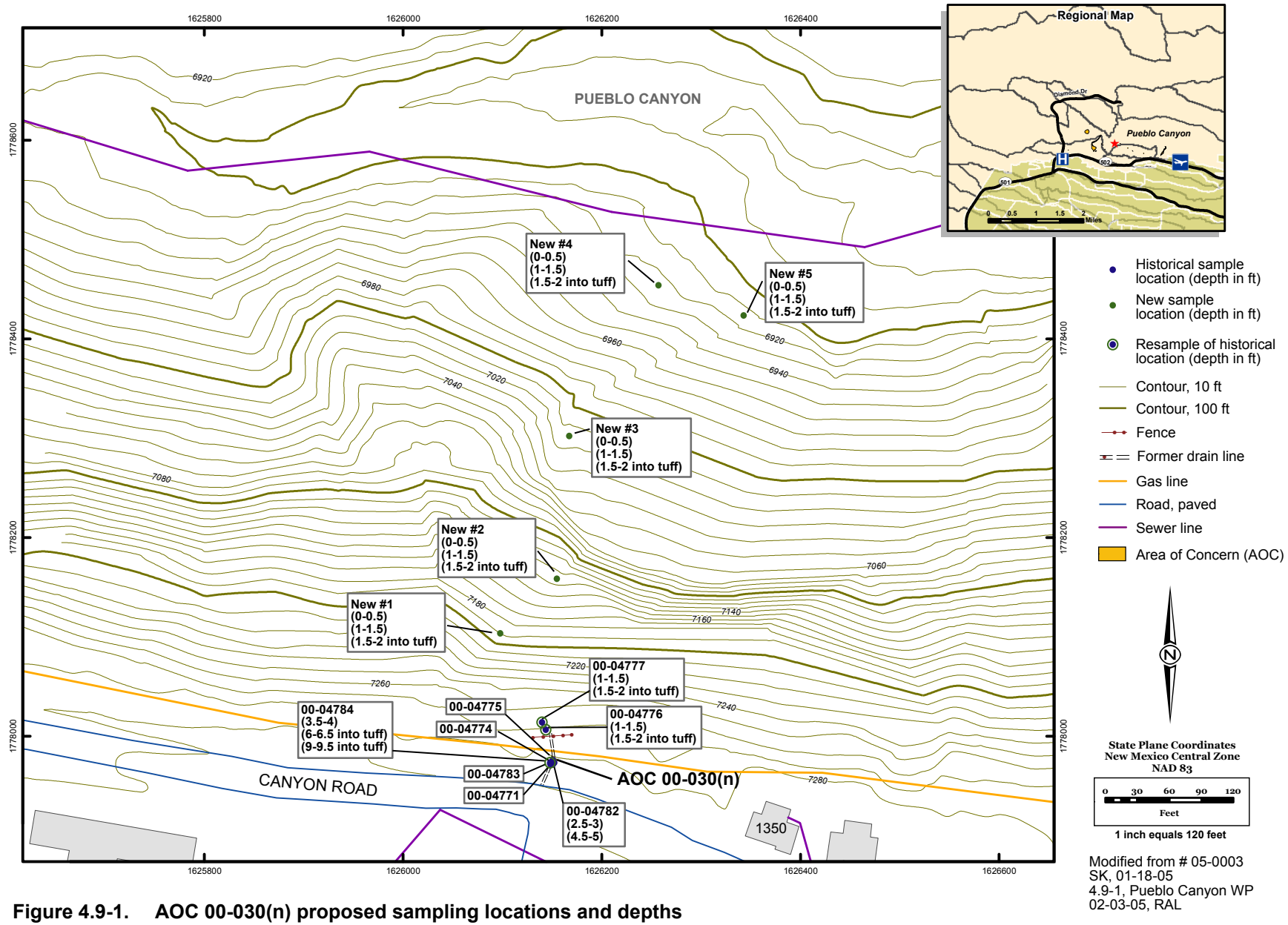


Figure 4.8-1. AOC 00-030(j) proposed sampling locations and depths



Modified from # 05-0003
SK, 01-18-05
4.9-1, Pueblo Canyon WP
02-03-05, RAL

Figure 4.9-1. AOC 00-030(n) proposed sampling locations and depths

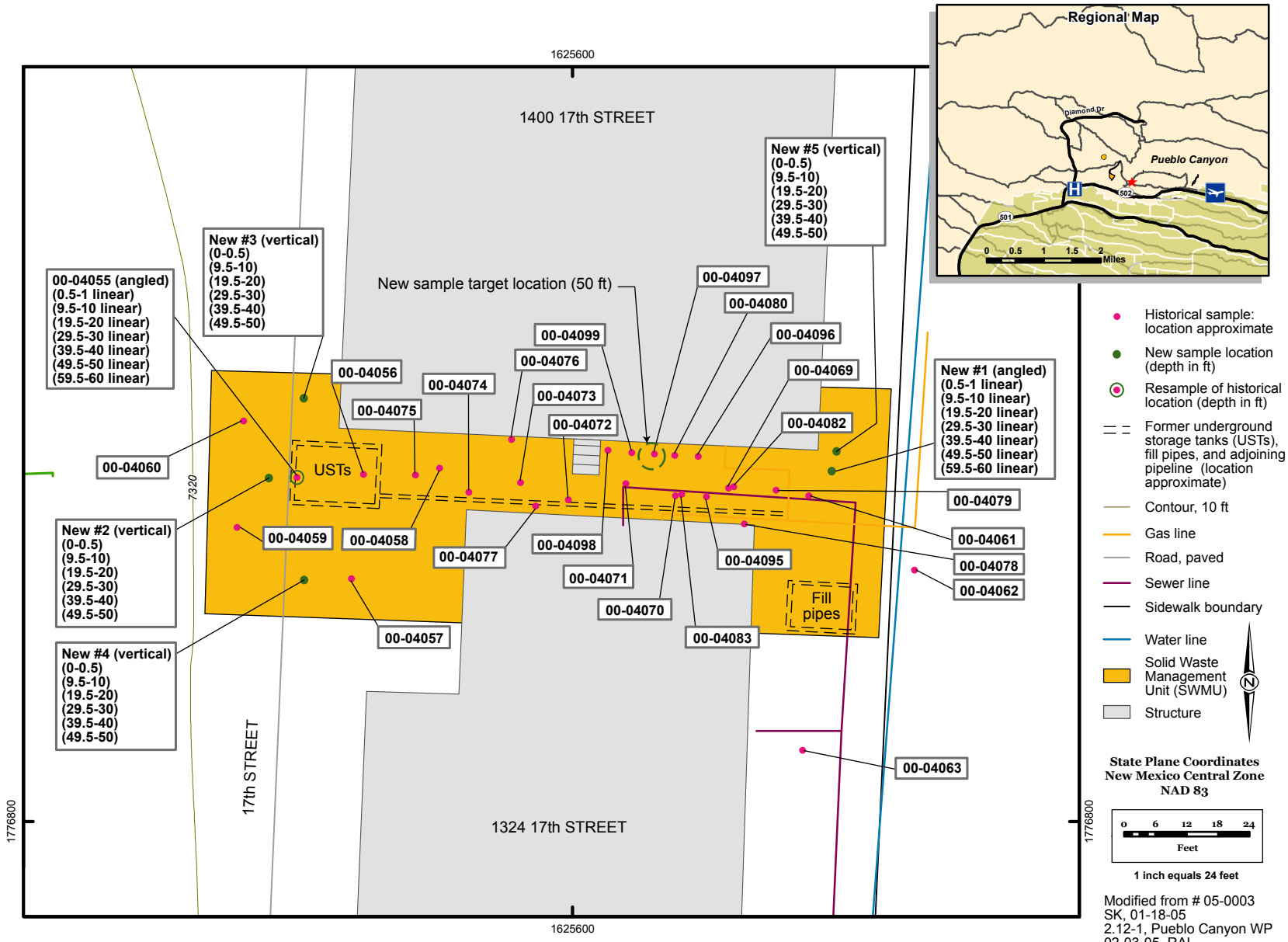


Figure 4.12-1. SWMU 00-039 proposed sampling locations and depths

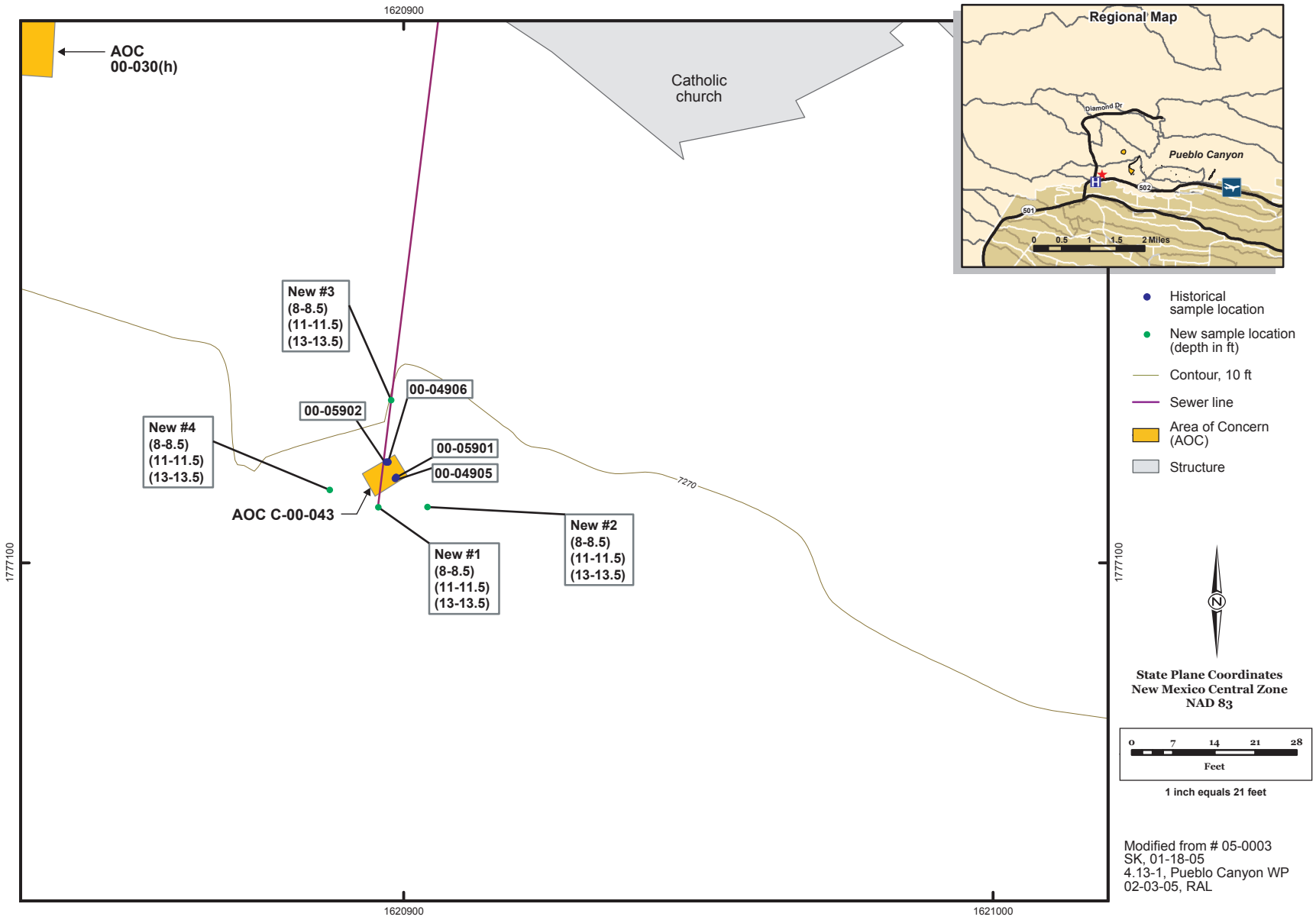


Figure 4.13-1. AOC C-00-043 proposed sampling locations and depths

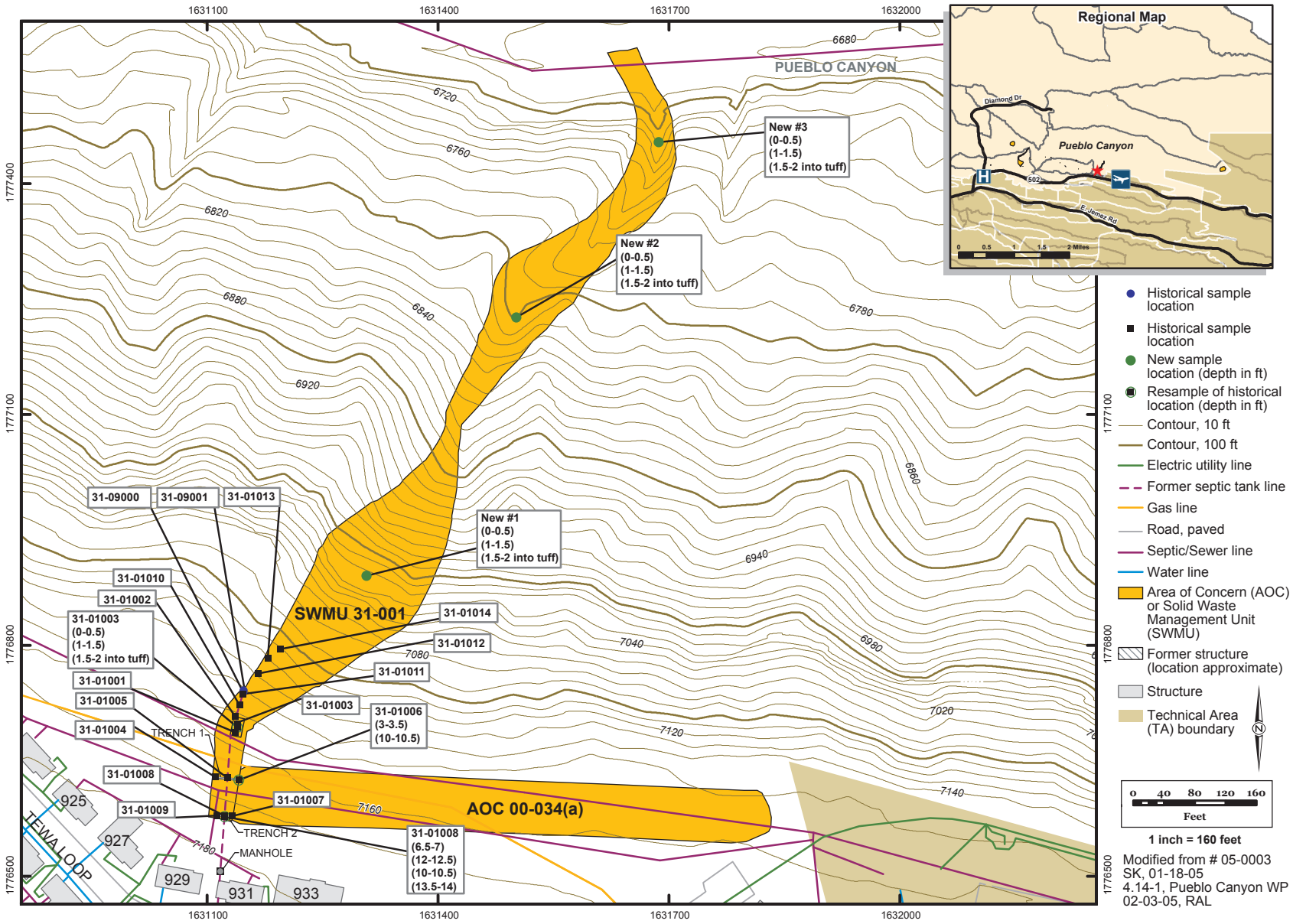


Figure 4.14-1. SWMU 31-001 proposed sampling locations and depths

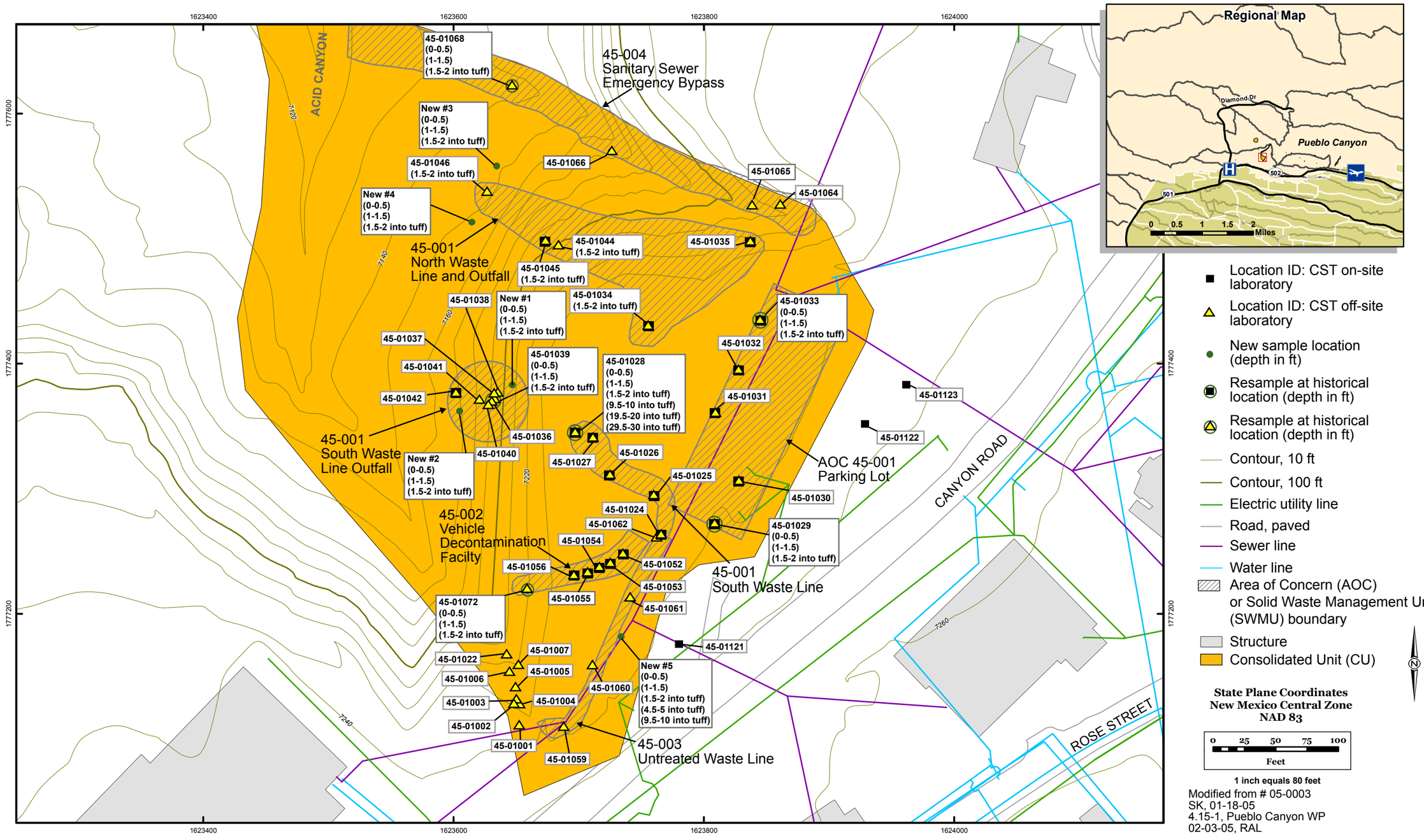


Figure 4.15-1. Consolidated Unit 45-001-00 [excluding Consolidated Unit 01-002(b)-00] proposed sampling locations and depths

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

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 (#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
New (#10)	West sludge bed	Sampling to determine if effluent exceeded permit limitations	Sludge (if present) 0–0.5 (if no sludge) 1.5–2 (into tuff)	Sludge 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	—

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 (#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	—
New (#10)	West sludge bed	Sampling to determine if effluent exceeded permit limitations	Sludge (if present) 0–0.5 (if no sludge) 1.5–2 (into tuff)	Sludge 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
New (#4)	Beneath active drying bed	Investigate potential releases from current operations	2–2.5 (beneath bed) 5–5.5 (beneath bed)	Unknown Unknown	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 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
New (#4)	Beneath active drying bed	Investigate potential releases from current operations	2–2.5 (beneath bed) 5–5.5 (beneath bed)	Unknown Unknown	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
New (#8)	Inlet pipe	Sampling to define nature and extent of potential contamination at the tank inlet	6–6.5 8–8.5	Unknown Unknown	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 12–12.5 14–14.5	Tuff Tuff Tuff	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
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
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
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
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
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
New (#8)	Inlet pipe	Sampling to define nature and extent of potential contamination at the tank inlet	6–6.5 8–8.5	Unknown Unknown	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 15–15.5 17–17.5	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 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	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	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	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	X X X
New (#6)	Inlet pipe area, between adjacent building and tanks	Sampling to define nature and extent of potential contamination at the area of the inlet pipe	8–8.5 10–10.5	Unknown Unknown	X X	X X	X X	X X	X X	
New (#7)	Inlet pipe area, between adjacent building and tanks	Sampling to define nature and extent of potential contamination at the area of the inlet pipe	8–8.5 10–10.5	Unknown Unknown	X X	X X	X X	X X	X X	
New (#8)	Inlet pipe area, between adjacent building and tanks	Sampling to define nature and extent of potential contamination at the area of the inlet pipe	8–8.5 10–10.5	Unknown Unknown	X X	X X	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
New (#6)	Inlet pipe area, between adjacent building and tanks	Sampling to define nature and extent of potential contamination at the area of the inlet pipe	8–8.5 10–10.5	Unknown Unknown	X X	X X	X X	X X	X X
New (#7)	Inlet pipe area, between adjacent building and tanks	Sampling to define nature and extent of potential contamination at the area of the inlet pipe	8–8.5 10–10.5	Unknown Unknown	X X	X X	X X	X X	X X
New (#8)	Inlet pipe area, between adjacent building and tanks	Sampling to define nature and extent of potential contamination at the area of the inlet pipe	8–8.5 10–10.5	Unknown Unknown	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 3–3.5 5–5.5 1.5–2 (into tuff)	Soil Soil Soil Tuff	X X X X	X X X X	X X X X	X X X X	X X X X
New (#2)	North of surveyed septic tank location	Sampling to define nature and extent of contamination outside of septic tank	Soil/tuff interface 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X
New (#3)	East of surveyed septic tank location	Sampling to define nature and extent of contamination outside of septic tank	Soil/tuff interface 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X
New (#4)	South of surveyed septic tank location	Sampling to define nature and extent of contamination outside of septic tank	Soil/tuff interface 1.5–2 (into tuff)	Soil Tuff	X X	X X	X 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 3–3.5 5–5.5 1.5–2 (into tuff)	Soil Soil Soil Tuff	x x x x	x x x x	x x x x	x x x x	x x x x
New (#2)	North of surveyed septic tank location	Sampling to define nature and extent of contamination outside of septic tank	Soil/tuff interface 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X
New (#3)	East of surveyed septic tank location	Sampling to define nature and extent of contamination outside of septic tank	Soil/tuff interface 1.5–2 (into tuff)	Soil Tuff	X X	X X	X X	X X	X X
New (#4)	South of surveyed septic tank location	Sampling to define nature and extent of contamination outside of septic tank	Soil/tuff interface 1.5–2 (into tuff)	Soil Tuff	X X	X X	X 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
00-04782	Inlet pipe	Sampling of historical location to define vertical extent of contamination; metals detected above background in soil	2.5–3 4.5–5	Soil Soil	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

Table 4.9-1 (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)	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
00-04782	Inlet pipe	Sampling of historical location to define vertical extent of contamination; metals detected above background in soil	2.5–3 4.5–5	Soil Soil	— —	— —	— —	— —	— —	— —
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

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)
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 4.12-1
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)	TPH (EPA Method 1664)
00-04055	Angled borehole to westward direction with a target depth of 50 ft bgs	Sampling to define vertical extent of organic chemicals beneath plume area	0.5–1 (linear) 9.5–10 (linear) 19.5–20 (linear) 29.5–30 (linear) 39.5–40 (linear) 49.5–50 (linear) 59.5–60 (linear)	Soil Soil Tuff 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
New (#1)	Angled borehole with a target depth of 50 ft bgs beneath historical sample location 00-04097	Sampling to define vertical extent of organic chemicals beneath assumed source area	0.5–1 (linear) 9.5–10 (linear) 19.5–20 (linear) 29.5–30 (linear) 39.5–40 (linear) 49.5–50 (linear) 59.5–60 (linear)	Soil Soil Tuff 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
New (#2)	Vertical borehole paired with angled borehole at historical sample location 00-04055	Sampling to define vertical extent of organic chemicals	0–0.5 9.5–10 19.5–20 29.5–30 39.5–40 49.5–50	Soil Soil Tuff Tuff Tuff Tuff	—	—	—	—	—	X X X X X X	X X X X X X	—	—	—	X X X X X X

Table 4.12-1 (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)	SVOCs (SW-846 8270C)	PCBs (SW-846 8082)	Gamma Spectroscopy (EPA Method 901.1)	Pesticides (SW-846 8081A)	TPH (EPA Method 1664)
New (#3)	Vertical borehole in northwest area of site	Sampling to define vertical extent of organic chemicals	0–0.5 9.5–10 19.5–20 29.5–30 39.5–40 49.5–50	Soil Soil Tuff Tuff Tuff Tuff	—	—	—	—	—	X X X X X X	X X X X X X	—	—	—	X X X X X X
New (#4)	Vertical borehole in southwest area of site	Sampling to define vertical extent of organic chemicals	0–0.5 9.5–10 19.5–20 29.5–30 39.5–40 49.5–50	Soil Soil Tuff Tuff Tuff Tuff	—	—	—	—	—	X X X X X X	X X X X X X	—	—	—	X X X X X X
New (#5)	Vertical borehole paired with angled borehole at New (#1)	Sampling to define vertical extent of organic chemicals	0–0.5 9.5–10 19.5–20 29.5–30 39.5–40 49.5–50	Soil Soil Tuff Tuff Tuff 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 4.13-1
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, aligned with assumed location of inlet pipe	Sampling of location to define vertical extent of contamination	8–8.5 11–11.5 13–13.5	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
New (#2)	Adjacent to former manhole	Sampling of location to define lateral and vertical extent of contamination	8–8.5 11–11.5 13–13.5	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
New (#3)	Adjacent to former manhole, aligned with assumed location of outlet pipe	Sampling of location to define lateral and vertical extent of contamination	8–8.5 11–11.5 13–13.5	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
New (#4)	Adjacent to former manhole	Sampling of location to define lateral and vertical extent of contamination	8–8.5 11–11.5 13–13.5	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

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	0–0.5 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
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	0–0.5 1–1.5 1.5–2 (into tuff)	Soil Soil Tuff	X X X	X X X	X X X	—*	X X X
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)
45-01034	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—*	—	—	—	X	—
45-01044	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—*	—	—	—	X	—
45-01045	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—*	—	—	—	X	—
45-01046	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—*	—	—	—	X	—
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

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 (#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
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

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)
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 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)
45-01034	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—	—	—	—	—
45-01044	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—	—	—	—	—
45-01045	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—	—	—	—	—
45-01046	North Waste Line and Outfall, SWMU 45-001	Sampling to define vertical extent of metals within the North Waste Line and Outfall area	1.5–2 (into tuff)	Tuff	—	—	—	—	—
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	—

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)
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	—	—
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	—	—

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)
45-01072	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.

Attachment 3

Resubmitted Figures and Tables

Attachment 3 Contents

Figures

Tables

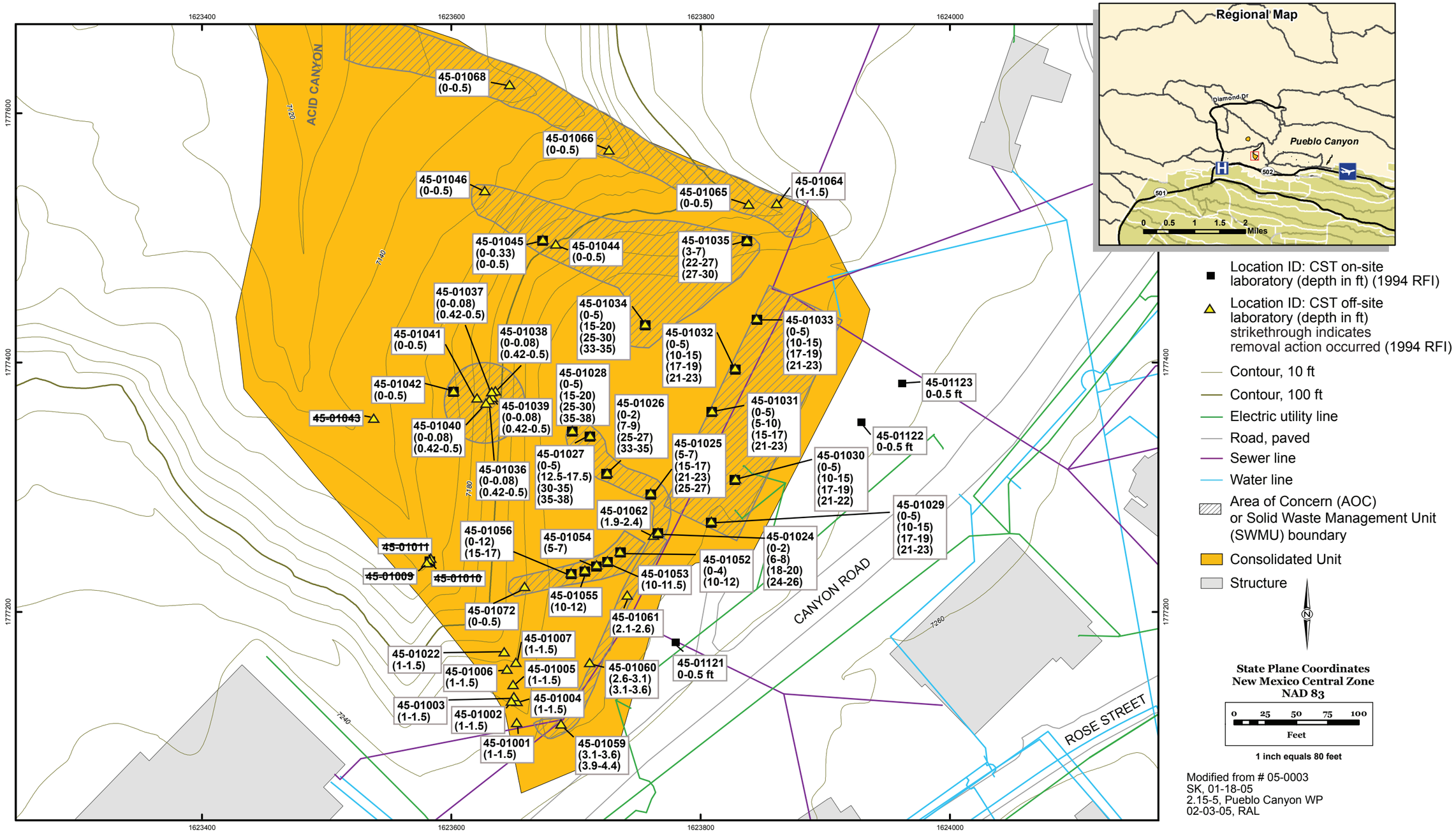


Figure 2.15-5. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] and depths

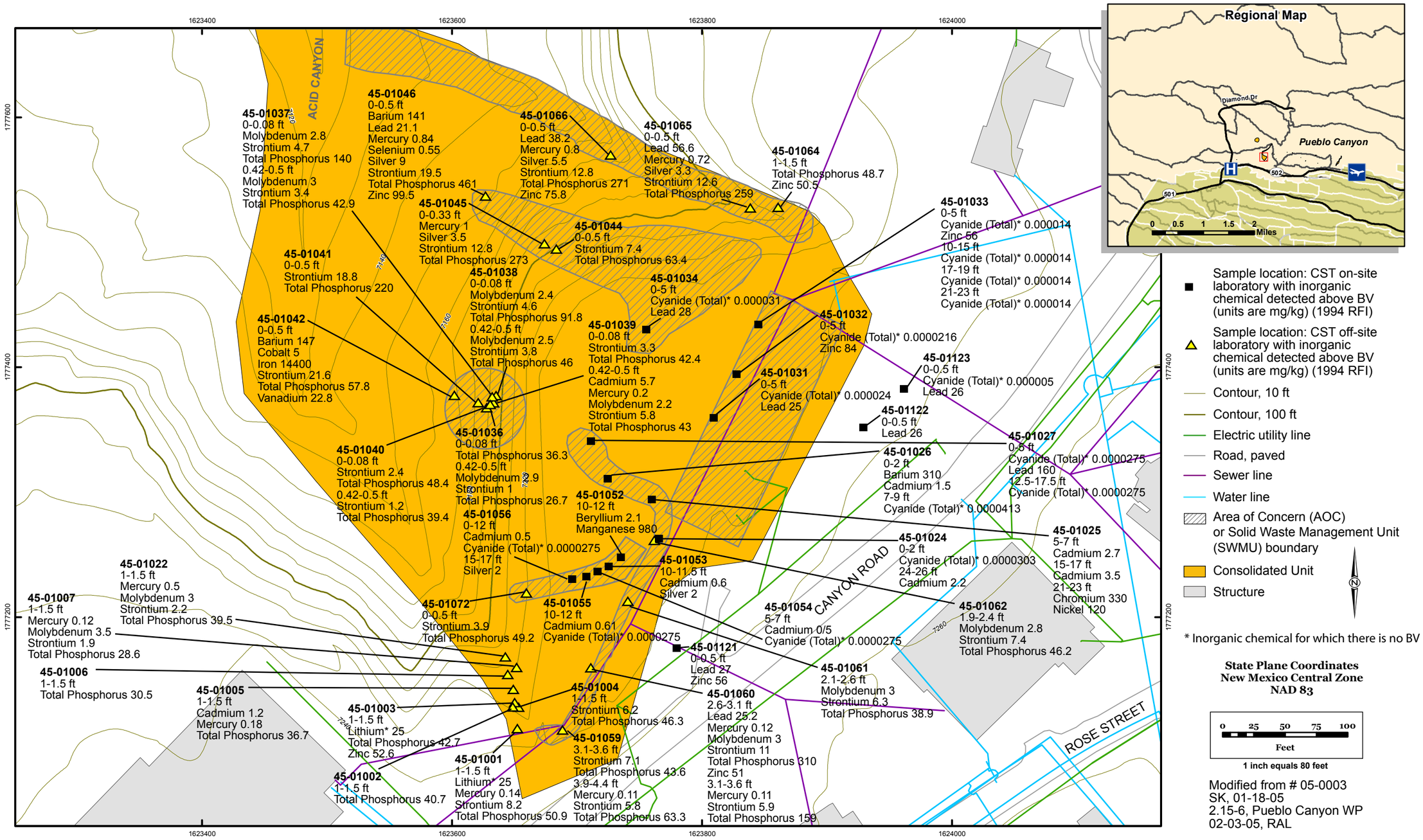


Figure 2.15-6. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] with inorganic chemicals detected above BVs

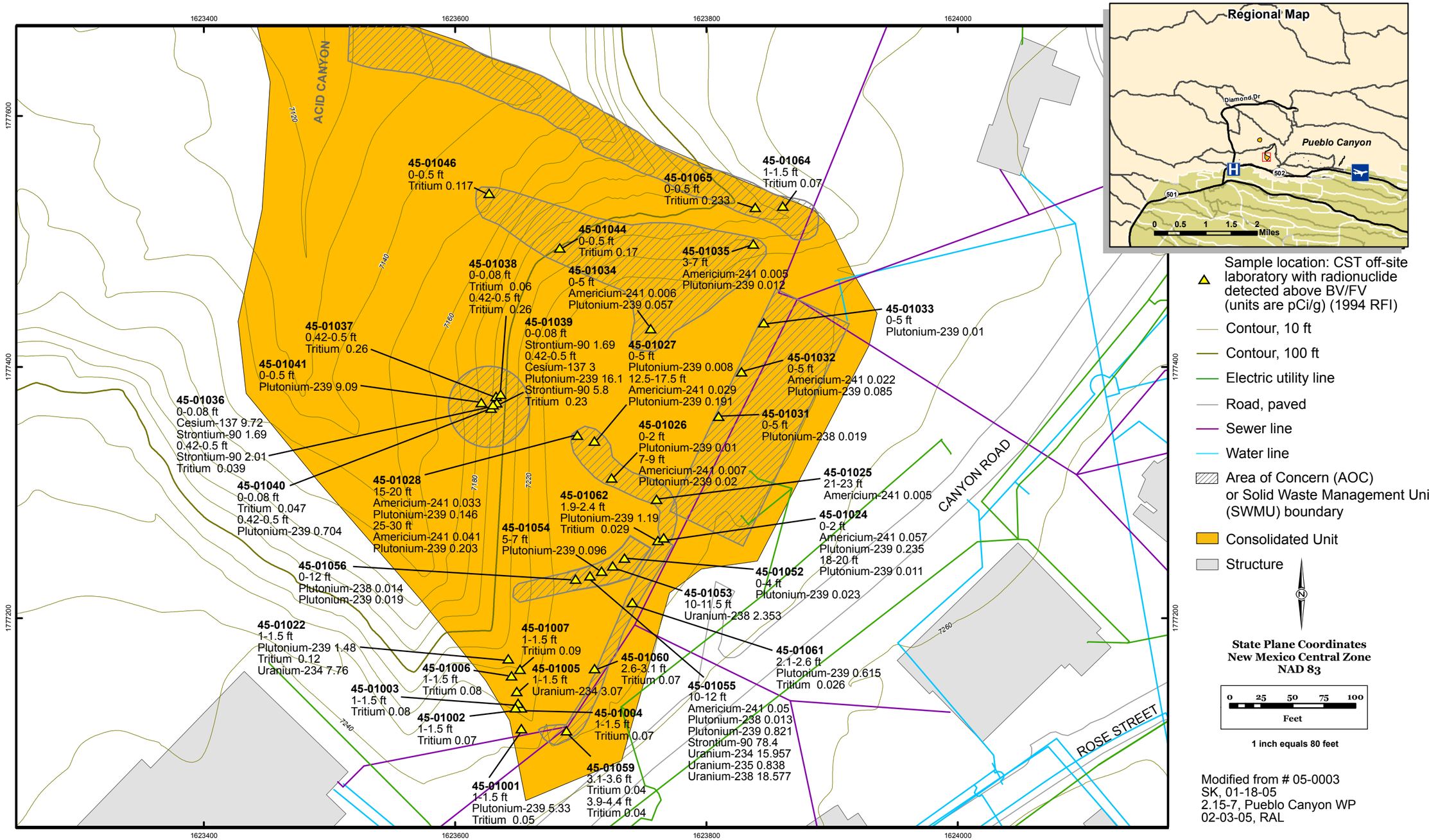


Figure 2.15-7. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] with radionuclides detected above BVs/FVs

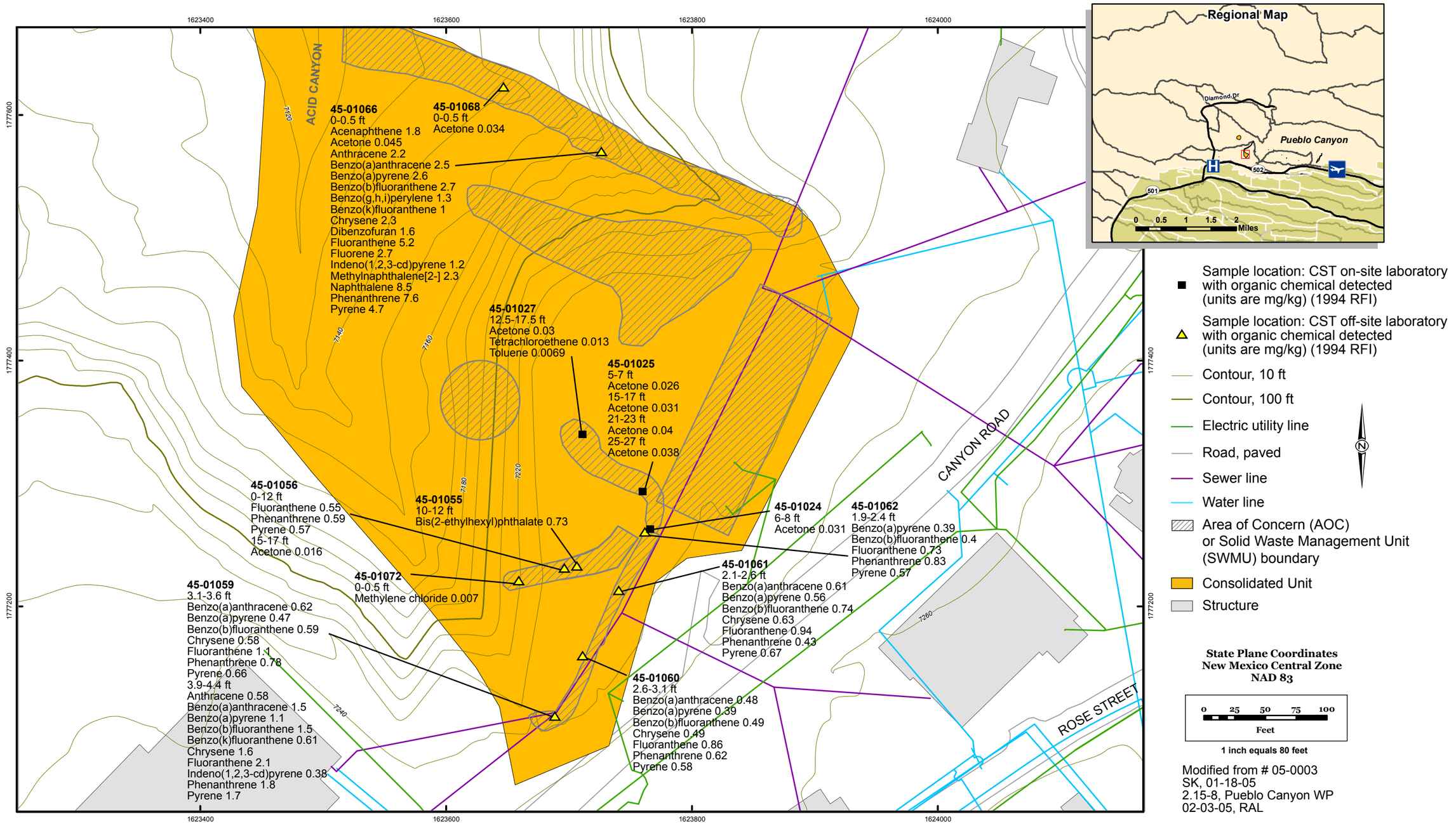


Figure 2.15-8. Consolidated Unit 45-001-00 historical sampling locations [excluding Consolidated Unit 01-002(b)-00] with organic chemicals detected

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	Americium-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 2.15-2b
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 2.15-3b

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 2.15-4b

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.