Response to the "Notice of Disapproval for the Investigation Report for Middle Mortandad/Ten Site Aggregate, Revision 1, Los Alamos National Laboratory EPA ID No: NM0890010515, HWB-LANL-05-016," Dated December 12, 2007

INTRODUCTION

To facilitate review of this response, the New Mexico Environment Department's (NMED's) comments are included verbatim. The comments are divided into general and specific categories, as well as subareas of the Middle Mortandad/Ten Site Aggregate, as presented in the notice of disapproval (NOD). Los Alamos National Laboratory's (LANL's or the Laboratory's) responses follow each NMED comment. This response contains data on radioactive materials, including source, special nuclear, and byproduct material. 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 cross-reference table indicates that the total risk for radionuclides is provided in Table 12.0-8 of the IR, but there is no such table in the IR. Table 5.3-1 summarizes the risk screening results but does not include total risk for radionuclides. Nonetheless, in the response to the June 8, 2006 NOD on July 11, 2006, the Permittees committed to providing an equivalent total risk for individual solid waste management units (SWMUs), areas of concern (AOCs) and consolidated units along with total dose for radionuclides. Tables 5.3-1 and F-10.0-1 do not provide equivalent total risk for radionuclides. Interpretation Sections in Appendix F for all subareas provide a risk range for equivalent total risk for radionuclides. The Permittees must provide the total equivalent risk for each site instead of a risk range, as committed to in the June 6, 2006 NOD response.*

LANL Response

1. Tables 5.3-1 and F-10.0-1 have been revised to include equivalent total radionuclide risk for each site for the site decision scenario. In addition, the equivalent total radionuclide risk for each site has been recalculated using U.S. Environmental Protection Agency (EPA) preliminary remediation goals (PRGs) (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml), adjusted from 10^{-6} to 10^{-5} risk rather than the 10^{-6} risk-based values as originally presented. The tables have also been reorganized by subarea rather than by risk scenario.

NMED Comment

2. *In addition to conducting risk evaluations at the subarea level, risk screening evaluations were also conducted for some individual sites in the original 2005 Investigation Report (the Report). The list of chemicals of potential concern (COPCs) identified for those sites in the Report are not same as COPCs identified in the IR. For the sites where no additional work was conducted, there should have been no difference in the risk screening evaluations. Explain why different risk screening evaluations are reported for these sites in the IR, or otherwise resolve the discrepancy.*

LANL Response

2. In the original 2005 investigation report, risk screening was conducted at the subarea level. However, at subareas where potential risk was indicated, individual solid waste management units (SWMUs) or areas of concern (AOCs) were assessed to determine what was driving risk in the subarea. Rather than generating site-specific chemicals of potential concern (COPCs), these preliminary site-specific assessments were conducted using all the COPCs for the subarea. In addition, in the 2005 investigation report, 95% upper confidence limits (UCLs) were not calculated for each SWMU/AOC. Rather, maximum detected concentrations were used as exposure point concentrations (EPCs) to ascertain what was driving the indicated potential risk at the subarea level. In the revised report, site-specific COPC lists were generated, and 95% UCLs were calculated for all sites/COPCs with an adequate number of data points; maximum detected concentrations were used instead of a 95% UCL if not enough data were available to calculate a representative UCL. Finally, the assignment of sampling locations to individual SWMUs/AOCs for the purposes of risk assessment was refined in the revised investigation report.

NMED Comment

3. *The potential for soil contamination to affect groundwater was not adequately addressed in the risk assessment of the IR. The Permittees response to General Comment # 7 in the NOD, dated July 11, 2006, indicated that the fate and transport section would be revised to further discuss the potential for contamination to migrate to groundwater, including the information contained in the two paragraphs following this statement in the NOD response. Although the fate and transport section has been revised, and the two paragraphs in fact are included in the IR; this information is only general information and does not provide a transparent demonstration that migration of contamination from soil to groundwater is not a concern. Inclusion of a site-specific screening of the data is necessary to provide a transparent demonstration, using site data, to demonstrate that contaminant migration is not of concern.*

   In addition, the Permittees indicate in their response that the NMED soil screening levels (SSLs) for the protection of groundwater are based on assumptions that do not apply to the site. The NMED SSLs are intended to serve as a conservative screen to clearly rule out if the migration pathway is significant or not. Therefore, the Permittees should conduct a conservative migration-based screen, much like the health-based screen, by comparing site data to an SSL. The Permittees have the prerogative to adjust the dilution attenuation factor (DAF) to reflect site-conditions. Inclusion of such a presentation will demonstrate using site data, that the migration pathway to groundwater is not significant. This information is necessary to ensure a transparent understanding by the public and for the administrative record.

LANL Response

3. LANL agrees that screening to numeric screening levels would provide a transparent demonstration using site data. However, screening using the referenced dilution attenuation factor (DAF) soil screening levels (SSLs) is not appropriate for demonstrating that contaminant migration is not of concern at LANL. The EPA soil screening guidance (EPA 1996, 059902), which is referenced by and forms the basis of NMED's DAF SSLs (NMED 2006, 092513), states that the DAF SSLs were developed to "identify chemical concentrations in soil that have the potential to contaminate ground water." This objective is not the same as evaluating the potential for contaminants to migrate to groundwater. The DAF SSL model calculations evaluate concentrations in soil that would result in unacceptable concentrations in groundwater based on equilibrium partitioning. The DAF SSL model

does not evaluate transport in vadose zone but assumes that transport through the vadose zone to groundwater has occurred. Therefore, the DAF SSLs do not evaluate potential for migration to groundwater but only evaluate whether the concentration of contaminants in soil could cause water-screening levels to be exceeded, assuming transport to groundwater occurs.

Using the DAF SSLs does not achieve the objective of a simple, transparent screening methodology because they are overly conservative when applied to LANL. The DAF SSLs are typically several orders of magnitude lower than the human health risk-based SSLs for soil. Therefore, it is possible that many chemicals would not pass this screening even though they would pass the human health screening. Additional, more complex analysis using site-specific data is required to demonstrate that the SSLs were overly conservative and that potential transport to groundwater was not a concern.

The EPA soil-screening guidance (EPA 1996, 059902) indicates that the sites with deep water tables or other vadose zone characteristics that can attenuate contaminants are not adequately addressed by the DAF SSLs. EPA guidance states that if chemicals fail this screening, a more detailed screening using site specific data should be performed. The EPA guidance identifies mathematical models that can be used for more detailed screening. Even these models, however, are not suited for conditions at LANL where the vadose zone is thick and the moisture content is low (i.e., unsaturated conditions). Such conditions are better addressed using numerical unsaturated flow models that can account for variations in hydraulic conductivity as a function of moisture content. Application of such models is beyond the scope of a simple, transparent screening exercise.

NMED's comment also notes that LANL has the prerogative to adjust the DAF to reflect site conditions. LANL concurs that the default DAF values of 1 and 20 are conservative for LANL. An evaluation of dilution factors presented in the corrective measures evaluation plan for Material Disposal Area G (LANL 2007, 098608) indicates site-specific DAF values exceeding 100. Adjustment of DAFs, however, only addresses dilution and attenuation that occur in the aquifer between the point where the contaminant enters the aquifer and the exposure point. The DAF does not address vadose-zone phenomena that are very important in mitigating contaminant transport to groundwater at LANL. Therefore, adjustment of the DAFs would not address the fundamental issue of the applicability of these SSLs to sites at LANL.

Given the absence of simple screening levels that can be used as an indication of the potential for contaminant migration to groundwater, LANL believes that the best evidence of migration potential is empirical evidence from sampling that shows such migration is not occurring. Such data are provided by nature and extent sampling that show vertical extent has been defined.

Most releases at the Middle Mortandad/Ten Site Aggregate Area are historical (i.e., they occurred decades ago). The depth to the regional aquifer at the aggregate area is also quite large, on the order of 1000 ft. For migration of contaminants to occur from shallow soil to the regional aquifer in a meaningful time frame (e.g., 100 to 1000 yr), significant vertical migration (e.g., tens to hundreds of feet) should have occurred already. Sampling has shown that this migration has not occurred. The extent of contamination at most sites is bounded vertically in the near surface (i.e., less than 30 ft). Therefore, the assumptions under which the DAF SSLs are calculated of an infinite source and a uniform contamination distribution from the surface to the water table are not met. These data, supported by the other factors presented in the fate and transport section, should be sufficient to demonstrate a very low potential for migration to groundwater.

Besides the limited extent of contamination at depth, the primary factor that is important with respect to the potential for COPCs to migrate to groundwater is the absence of moisture saturation (i.e., the

absence of high levels of moisture in the tuff). Downward migration in the vadose zone is limited by a lack of downward hydraulic gradient as well as by the lack of a source for the continued release of contamination. The very low potential for migration is based on the low availability of moisture, the absence of an active source of contamination, and the relative depth between the detected contamination and groundwater (approximately 1000 ft below ground surface [bgs]). These conditions indicate that use of the DAF screening levels is not appropriate.

The fate and transport section of the risk evaluation has been revised to address the limitations of the DAF SSLs and to explain why a screening evaluation using these SSLs was not performed. The fate and transport section has also been revised to discuss further the use of vertical extent sampling to assess migration potential.

NMED Comment

4. *The IR, including Appendix F, Risk Assessment, requires a thorough quality control (QC) review to ensure that the risk results summarized in the main text for each subarea are reflective of the information in Appendix F. Numerous discrepancies were noted where residential risks were referred to as industrial or recreational risks and the risk results stated as equivalent to a threshold when in fact the results were well below the threshold. Even within Appendix F, inconsistencies were noted in the interpretation of the risks associated with each land use scenario because land use scenarios were identified incorrectly. Discrepancies also exist between the main text of the IR and Appendix F as well as within the risk interpretations included in the text and tables of Appendix F. The risk results must be summarized accurately and consistently throughout the IR in order to support risk management decisions. Specific comments have been generated to address this concern; however, these comments do not address all discrepancies in the IR. As such, the entire document must be reviewed to ensure that all discrepancies are identified and eliminated.*

LANL Response

4. A thorough review of the document has been conducted, and all the errors identified were corrected. The corrections are shown in the redline/strikeout version of revision 2 of the investigation report.

SPECIFIC COMMENTS

NMED Comment

1. ***Executive Summary, Page vii:***

   The second paragraph on Page vii indicates a slightly elevated excess potential cancer risk at AOC 35-018(a) in the Mesa Top Subarea due to elevated concentrations of polycyclic aromatic hydrocarbons (PAHs) located directly beneath the asphalt pavement. Without addressing the risks to potential future workers if the site were redeveloped and the pavement removed, or to utility workers in the event that utility repairs are required, the paragraph concludes that no complete pathways exist for a site worker. The paragraph must specify that there are no current exposure pathways for industrial workers. In addition, an explanation of how future worker exposure to site soils will be prevented and/or controlled is required.

LANL Response

1. Samples collected directly beneath or immediately adjacent to asphalt pavement will likely contain elevated levels of polycyclic aromatic hydrocarbons (PAHs). This result is true in any area with pavement, not just LANL SWMUs. The distribution of elevated PAHs in the Mesa Top Subarea is generally limited to locations in the immediate vicinity of pavement or areas receiving runoff directly from pavement, and only in the shallowest intervals, regardless of whether the nearest SWMU is a surface or subsurface source.

   In addition to AOC 35-018(a), the results from a sample collected from 0.5 to 1.5 ft bgs at location 35-02568 at Consolidated Unit 35-003(j)-99 was determined an excess cancer risk above 10^{-5} from PAHs. Of the three samples that are driving the excess cancer risk at these two sites, two sampling locations are covered by pavement, and one sampling location is adjacent to pavement in an area that receives runoff from the surrounding pavement. All are of limited extent. The pathway for exposure to a worker is incomplete over most of the developed area, particularly if contamination is under the pavement, and exposure is substantially overestimated using the industrial scenario. The one location not covered by pavement is behind a Dumpster in an area used only for trash disposal. Therefore, the exposure conditions at this site under which potential risk to a worker is assessed by the industrial scenario (i.e., 225 d/yr for 25 yr), does not reflect the actual exposure and overestimates the potential risks from PAHs.

   The text has been modified to specify that there are either no exposure pathways or only limited exposure pathways to workers and that potential risk is substantially overestimated when compared to actual exposure conditions. In addition, LANL has several processes in place to protect future workers from exposure to potential site contamination. Both LANL's Excavation Permit process and the Permits and Requirements Identification (PR-ID) process ensure that anyone conducting groundbreaking activities in the vicinity of a SWMU or AOC is notified of any potential risks and that proper controls are put in place to control potential exposures.

NMED Comment

2. ***Section 3.0, Scope of Activities, Page 5:***

   At the top of Page 5, the Permittees acknowledge that preliminary analytical results for confirmation samples collected at SWMU 35-016(p) are available but not validated and are not included in the IR. However, the report continues to present interpretations of these data and concludes that the extent of PAHs and inorganic chemicals has been defined and no additional risk issues will result. The IR should not present interpretations or draw conclusions based on these data unless the data are included in the IR. Further, the IR should indicate when the validated data will be available. This information is needed so that the preliminary conclusions presented in Section 3.0 of the IR can be verified. These same interpretations and conclusions regarding the unvalidated data are also presented in Appendix F, Section SWMU 35-016(p) on Page F-79. NMED received the additional data on September 14, 2007.

LANL Response

2. Per the letter sent to NMED on September 14, 2007, the data had been received at the time the report was submitted but had not been validated. Also, as stated in the letter, the data have now been validated, and the conclusions presented for the sites do not change. The report has been

revised to include the final data for SWMU 35-016(p); no revision to the conclusions and recommendations is necessary.

NMED Comment

3. ***Table 2.0-1, Summary of SWMUs, AOCs, and Consolidated Units in the Middle Mortandad/Ten Site Aggregate, Page 87:***

Two areas of concern (AOCs), (AOC 35-017 and AOC 52-003(b)) were included in the Table 2.0-1 of 2005 Report, but excluded from the Table 2.0-1 of the IR. Include these sites in Table 2.0-1 or add a footnote explaining why these sites were excluded.

LANL Response

3. In 2005, EPA confirmed approval of the no further action (NFA) status of AOCs 35-017 and 52-003(b) (EPA 2005, 088464), thus eliminating the need for any further investigation at these sites pursuant to Section III.A of the Consent Order. Table 2.0-1 has been revised to include the two AOCs and a footnote explaining why the sites are not discussed further in the investigation report.

NMED Comment

4. ***Noncarcinogenic SSLs, Pages 171-172:***

The following discrepancies were noted in the Table:

- *The soil screening level (SSL) reported for fluoride is from U.S. Environmental Protection Agency (EPA) Region 6; the Permittees should have used the NMED SSL of 3670 mg/kg (residential scenario value) instead.*
- *Footnote "f" states that pyrene was used as a surrogate for acenaphthylene and benzo(g,h,i)perylene, but the values reported for acenaphthylene and pyrene are different.*
- *Denote in the table that EPA Region 6 SSLs were used for benzoic acid.*
- *EPA Region 6 values reported for butyl benzyl phthalate are incorrect; correct values are 240 mg/kg for both industrial and residential SSLs.*
- *EPA Region 6 SSLs should have been used for 4-methylphenol (i.e. residential at 310 mg/kg and industrial at 3400 mg/kg) instead of surrogate values.*
- *Provide a source of values reported for methyl-2-pentanone[4-] and isopropyl benzene (used as a surrogate for 4-isopropyltoluene).*

Revise the Table with corrected values.

LANL Response

4. The comments are addressed as follows.

- Table 4.0-1 has been revised to include the NMED residential SSL for fluoride.
- Table 4.0-1 has been revised to present the pyrene SSLs for acenaphthylene.
- Table 4.0-1 has been revised to indicate that the benzoic acid SSLs for industrial and residential are from EPA Region 6.

- Table 4.0-1 has been revised with the correct butylbenzylphthalate SSL (240 mg/kg) from EPA Region 6 for industrial and residential and footnoted accordingly.
- Table 4.0-1 has been revised to include the EPA Region 6 SSLs for 4-methylphenol for industrial and residential, and the 2-chlorophenol recreational SSL is used as a surrogate for the 4-methylphenol recreational SSL.
- Methyl-2-pentanone[4-] is a synonym for methyl isobutyl ketone, and the SSLs are from NMED guidance (NMED 2006, 092513). Isopropylbenzene is another name for cumene, both of which are presented in NMED guidance (NMED 2006, 092513). No footnote is needed for isopropylbenzene because this analyte is presented in NMED guidance as a synonym for cumene in Table A-1. Methyl-2-pentanone[4-] is parenthetically noted to be the same as methyl isobutyl ketone in Table 4.0-1.

In addition, the perchlorate industrial and residential SSLs have been revised to reflect EPA Region 6 values.

NMED Comment

5. Table 5.3-1, Summary of Human Health Risk Screening for Site Decisions, Page 182:

Table 5.3-1 is not appropriate for use to support site decisions because the results are not organized by subarea. To expedite review and site decision-making, this table should be sorted to present the subarea first, followed by the sites within the subarea. In addition, the table contains editorial errors. For example, for sites with a "c" designation, the "c" is displayed as a copyright symbol. Reorganize the table by subarea and correct the editorial errors.

LANL Response

5. Table 5.3-1 (as well as Table F-10.0-1) has been revised to present each site according to subarea as requested, and the editorial errors are corrected (see response to General Comment 1).

NMED Comment

6. Appendix F, Section F-3.3, Conceptual Site Model, Page F-26

Section F-3.3 of Appendix F indicates that surface releases are likely to result in infiltration of contaminants into surface soils and, through cracks in asphalt, into backfill soils and possibly the underlying tuff. However, this section also states "the construction worker is not evaluated for the Mesa Top subarea because the exposure is assumed to be from the surface (0–1 ft)." Furthermore, this section states "if activities at the site change to include construction or other intrusive activities, EP will work with facility management to ensure workers are protected." Because the subsurface soils were not evaluated in a human health risk assessment, a formal land use control must be implemented for this area to prevent future construction worker activities. Alternatively, assess the risk to receptor populations potentially exposed to subsurface soils.

LANL Response

6. It is not necessary to prevent future construction, only to put the appropriate controls in place to ensure worker health and safety if construction is planned. LANL has several processes in place to protect future workers from exposure to potential site contamination. Both LANL's Excavation

Permit process and the PR-ID process ensure that anyone conducting groundbreaking activities in the vicinity of a SWMU or AOC is notified of any potential risks and that proper controls are put in place to minimize potential exposures.

Mesa Top Subarea

NMED Comment

7. ***Section 5.3, Conclusions – Mesa Top Subarea, Page 13:***

The fourth paragraph of Section 5.3 indicates that a risk of 4 x 10^{-5} at AOC 35-018(a) does not pose a potential unacceptable risk to human health because the risk drivers (PAHs) are: 1) located beneath pavement; and 2) the PAHs are not operational releases. The paragraph does not specify whether the 4 x 10^{-5} risk is current or a future risk. Under current conditions it is understood that the PAHs are not available for exposure because they are located below pavement. However, the future risks may be real if the pavement was removed for redevelopment or utility repair. If the PAHs are available for exposure in the future, then the risk is real and above the 1 x 10^{-5} NMED threshold, making the risk unacceptable. Furthermore, a risk cannot be discounted as acceptable because the constituent source is not related to operational releases. Furthermore, the document has demonstrated that PAHs are related to site operations. As acknowledged in the second paragraph on Page 8, Section 5.0, Mesa Top Subarea, the operational history of this area may include a variety of inorganic, organic, and radiological contaminants as a result of past laboratory operations. The operational history includes oil spills which may have contributed a number of organic chemicals, including PAHs. The IR must include accurate lines of evidence to support the claim that a risk of 4 x 10^{-5}, which is above the NMED threshold of 1 x 10^{-5}, is acceptable for future industrial receptors, should the site conditions change. This comment also applies to the bullet at the bottom of Page 46, Section 12.0, Summary of All Subareas/Aggregate.

LANL Response

7. Samples collected directly beneath or immediately adjacent to asphalt pavement will likely contain PAHs at elevated levels. This is true in any area with pavement, not just LANL SWMUs. The distribution of elevated PAHs in the Mesa Top Subarea is generally limited to locations in the immediate vicinity of pavement or areas receiving runoff directly from pavement, and only in the shallowest intervals, regardless of whether the nearest SWMU is a surface or subsurface source. PAH concentrations in deeper samples at AOC 35-018(a) are either not detected or are orders of magnitude lower than the concentrations in the shallow samples. Although text in the report states that the operational history of the Mesa Top Subarea includes oil spills that *may* have resulted in the release of a number of organic chemicals, including PAHs, it does not indicate that every detection of a PAH is related to a release. PAHs are ubiquitous chemicals that are particularly prevalent in and adjacent to paved areas, and the distribution of PAHs in the Mesa Top is consistent with a pavement source. Furthermore, the scope of corrective actions under the Consent Order is releases of contaminants from SWMUs and AOCs. It is not within the scope of LANL's Corrective Actions Program to eliminate or control risks from sources not related to releases from SWMUs and AOCs, particularly those resulting from pavement in developed areas.

In addition to AOC 35-018(a), the results from a sample collected from 0.5 to 1.5 ft bgs at location 35-02568 at Consolidated Unit 35-003(j)-99 indicated an excess cancer risk above 10^{-5} from PAHs. Of the three samples driving the excess cancer risk at these two sites, two sampling locations are covered by pavement and one sampling location is adjacent to pavement in an area that receives

runoff from the surrounding pavement. All are of limited extent. The pathway for exposure to a worker is incomplete over most of the developed area, particularly if contamination is under the pavement, and exposure is substantially overestimated using the industrial scenario. The one location not covered by pavement is behind a Dumpster in an area used only for trash disposal. Therefore, the exposure conditions at this site under which potential risk to a worker is assessed by the industrial scenario (i.e., 225 d/yr for 25 yr) does not reflect the actual exposure and overestimates the potential risks from PAHs.

The text has been modified to specify that there are either no exposure pathways or only limited exposure pathways to workers and that potential risk is substantially overestimated when compared with actual exposure conditions. In addition, LANL has several processes in place to protect future workers from exposure to potential site contamination. Both LANL's Excavation Permit process and the PR-ID process ensure that personnel conducting groundbreaking activities in the vicinity of a SWMU or AOC are notified of any potential risks and that proper controls are put in place to control potential exposures.

NMED Comment

8. Table 5.2-1, Summary of COPCs Identified for Mesa Top Subarea, Page 179:

According to Table D-2.0-5, no radiological chemicals except tritium were detected for SWMU 35-002, but Table 5.2-1 identifies cobalt-60, europium-152, plutonium-238, and tritium as COPCs. Table F-3.4-5 also identifies only tritium as a COPC. Resolve the discrepancies and revise the Table.

LANL Response

8. Tritium was the only radionuclide detected at SWMU 35-002. Table 5.2-1 has been revised to show tritium as the only radionuclide COPC for SWMU 35-002.

NMED Comment

9. Appendix D, Section D-2.1.3, Page D-3:

Correct the typographical error. Selenium, not strontium, was included in the industrial or residential risk screening assessments.

LANL Response

9. The text has been corrected.

NMED Comment

10. Appendix D, Section D-2.2-9, Page D-7:

SWMU 35-003(a)-99: *Benzo(a)anthracene (0-2 ft), 2-butanone (0-1ft), chrysene (0-2 ft), and fluoranthene (0-1 ft) were detected in samples collected from 0-1 ft or from 0-2 ft intervals (see Table D-2.0-6) and should have been included in the evaluation of industrial risk for the site (see Table D-2.2-3). The text erroneously states that no organic chemical COPCs were detected in the*

0-1 ft range so no upper confidence limits (UCLs) were calculated. Revise the text and associated tables in Appendices D and F to include these chemicals.

LANL Response

10. Benzo(a)anthracene, 2-butanone, and chrysene each have one detected concentration below the estimated quantitation limit (EQL) that fell within the depth interval of 0 to 1 ft bgs. Fluoranthene has two detected concentrations below the EQL that fell within the interval of 0 to 1 ft bgs. The text and associated tables in Appendixes D and F have been revised.

NMED Comment

11. Appendix D, Section D-2.3-3, Page D-9:

SWMU 35-003(j)-99: *Antimony, selenium, and silver were not detected in samples collected from 0-10 ft, but the detection values were greater than the background values (Table D-2.0-4). These metals should have been retained as COPCs and included in the residential risk screening evaluations. Revise the text and associated tables in Appendices D and F to include these metals.*

LANL Response

11. Antimony, selenium, and silver, although not detected, had detection limits in excess of background values (BVs) within the depth interval of 0 to 10 ft bgs. The text and applicable tables in Appendices D and F have been revised.

NMED Comment

12. Appendix D, Section D-2.3-3, Page D-9:

SWMU 35-014(f): *Antimony, selenium, and silver were not detected in samples collected from 0-1 ft, but the detection limits were greater than the background values. These metals should have been retained as COPCs and included in the risk screening evaluations. The maximum value of 0.0267 mg/kg is reported for silver, but Table D-2.0-4 does not report any detected values. Resolve the discrepancies and revise the text or table accordingly. Revise the associated screening evaluation tables in Appendix F as well.*

LANL Response

12. SWMU 35-014(f) is discussed in section D-2.9. Antimony was detected above the BV in the 0- to 1-ft interval (6.1 mg/kg) and should have been listed in Table D-2.9-1 as the EPC for this interval and included in the risk screening evaluation in Appendix F. Selenium was not detected above the BV, did not have detection limits above the BV in the 0- to 1-ft interval, and is not a COPC for this depth interval, as indicated in Table D-2.9-1. Silver had detection limits above BV in the 0- to 1-ft interval. The maximum detection limit should have been listed in Table D-2.9-1 as the EPC for this interval and included in the risk screening evaluation in Appendix F. The investigation report has been revised accordingly.

In addition, antimony should have been retained as a COPC for the interval of 0 to10 ft bgs, because it had detection limits above the BV in this interval. The maximum detection limit should

have been listed in Table D-2.9-1 as the EPC for this interval and included in the risk-screening evaluation in Appendix F. The investigation report has been revised accordingly.

The second part of the comment refers to the use of the maximum detected concentration of silver as the EPC for the depth interval of 0 to 10 ft. The value reported in Table D-2.9-1 is the maximum detected concentration (0.0267 mg/kg) for the 0- to 10-ft-depth interval. However, this detected concentration is below the BV for the media in which it occurs (silver BV for Qbt 3 = 1 mg/kg) and, therefore, is not reported in Table D-2.0-4, which contains only detected concentrations and detection limits above BV (or detections, where no BV is available for comparison). This format is used to summarize inorganic and radionuclide data and is consistent with the requirements of the Compliance Order on Consent. This format was discussed with NMED on October 16, 2007, in a meeting regarding the Middle Mortandad/Ten Site investigation report. No revision to the report is necessary.

NMED Comment

13. Appendix D, Section D-2.3-10, Page D-10:

SWMU 35-003(j)-99: *Acenaphthene, anthracene, Aroclor-1254, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenz(a,h)anthracene, dibenzofuran, fluoranthene, fluorine, indeno(1,2,3-cd)pyrene, methylnaphthalene[-2], naphthalene, phenanthrene, pyrene and TPH-DRO were detected at sampling location 35-02568 (0.5-1.5 ft.) and acetone and bis(2-ethylhexyl)phthalate were detected at location 35-02090 (0-1 ft., Table D-2.0-6). The text erroneously states that no organic chemical COPCs were detected in the 0-1 ft range so no upper confidence limits (UCLs) were calculated (see Table D-2.3-3). Revise the text and associated tables in Appendices D and F to include these COPCs in the risk screening evaluations.*

LANL Response

13. The organic chemicals noted in the comment were detected in the 0.5- to 1.5-ft interval at sampling location 35-02568. These data should have been included in the 0- to 1-ft range. Although acetone and bis(2-ethylhexyl)phthalate were erroneously omitted from the text in section D-2.3.10, they were correctly included in Table D-2.3-3. The text in section D-2.3.10 and the associated tables in Appendix F have been revised.

NMED Comment

14. Appendix D, Section D-2.4.4, Page D-11:

SWMU 35-004(a): *The text states that two samples were collected from tuff and analyzed for strontium-90 and tritium, Table D-2.0-5 reports tritium detected in a sample collected from tuff, but Table D-2.0-2 does not indicate that any samples collected from tuff were analyzed for strontium-90 or tritium. Resolve the discrepancy and revise the text or tables accordingly.*

LANL Response

14. Table D-2.0-2 does not have the correct information for SWMU 35-004(a). Samples AAC1153 and AAC1154 were analyzed for isotopic uranium and isotopic plutonium. No uranium isotopes were detected above applicable BVs; no plutonium isotopes were detected. Samples RE35-04-54016

and RE35-04-54017 were analyzed for strontium-90 and tritium. Strontium-90 was not detected; tritium was detected from 9 to 10 ft bgs at 0.0436 pCi/g. Therefore, the text in section D-2.4.4 and Table D-2.0-5 are correct. Table D-2.0-2 has been revised to reflect the correct samples taken at SWMU 35-004(a).

NMED Comment

15. Appendix D, Section D-2.4.4, Page D-11:

SWMU 35-015(a): *Antimony was not detected in any of the samples collected from 0-1 ft, but the detection limits were greater than the background values. Antimony should also have been included in the industrial screening risk evaluation for the site. Revise the Tables in Appendices D and F accordingly.*

LANL Response

15. SWMU 35-015(a) is discussed in section D-2.10, beginning on page D-19. The text in section D-2.10.3 and the associated Appendixes D and F tables have been revised to include the nondetected results above background for antimony from 0 to 1 ft.

NMED Comment

16. Table D-2.0-4, Page D-173:

SWMU 35-009(a): *Clarify if samples 0435-96-0051 and 0435-96-0052 are composite samples; the table reports that samples were collected from 0-8 ft. Note that composite samples are unacceptable for site evaluations. Sampling locations 35-02035, 35-02036, 35-02037, 35-02038, 35-02221, 35-02222, 35-22942, 35-22943, 35-22959 are not depicted on Figures 5.0-4 and F-3.2-9, but are included in Table D-2.0-4. Revise the figures to depict these sampling locations.*

LANL Response

16. The sample-collection logs document that samples 0435-96-0051 and 0435-96-0052 are not composite samples. These samples were collected as part of a voluntary corrective action and were collected from 6 in. below the base of the tank, at approximately 8 ft bgs. Therefore, the depth interval is actually 7.5 to 8.0 ft and not 0 to 8 ft. The database and Tables D-2.0-1, D-2.0-3, D-2.0-4, D-3.0-1, D-3.0-3, and D-3.0-4 have been revised to reflect the 7.5- to 8.0-ft-depth interval. A revised data DVD is also provided.

SWMU 35-009(a) is unique in that the site (as well as the sampling locations) is located both within the Mesa Top Subarea and within the Ten Site Slope Subarea. Figures 5.0-4 and F-3.2-9 present sampling locations for the Mesa Top Subarea only, and the "missing" sampling locations are on the Ten Site Slope (Figures 6.0-3 and F-4.2-3). The sampling locations listed in the comment are presented in Figures 6.0-3 and F-4.2-3 (the Mesa Top locations are not presented here). The potential risks are evaluated in Appendix F using all of the data for both subareas; the industrial scenario is evaluated for the Mesa Top, and the recreational scenario is evaluated for the Ten Site Slope. Figures 5.0-4 and F-3.2-9 have been revised to refer to Figures 6.0-3 and F-4.2-3 for the Ten Site Slope Subarea sampling locations for SWMU 35-009(a).

NMED Comment

17. Table D-2.2-1, Page D-190:

SWMU 35-003(a)-99: *Antimony and silver were not detected in samples collected at 0-1 ft, but the non-detect values were greater than the background values. They were retained as COPCs (page D-5), but are not included as COPCs in Table D-2.2-1. Resolve the discrepancies and revise the tables in Appendices D and F accordingly.*

LANL Response

17. The text in section D-2.2.3 and the associated Appendixes D and F tables have been revised to include the nondetected results above background for antimony and silver from 0 to 1 ft.

NMED Comment

18. Table D-2.2-3, Page D-192:

SWMU 35-003(a)-99: *According to Table D-2.0-6, butanone[2-] was detected at 0-1 ft (at location35-02437), fluoranthene was detected at 0-1 ft (at location 35-02437), but are not listed as COPCs in Table D-2.2-3. Chrysene and benzo(a)anthracene were detected at 0-2 ft depths at location 35-02280. Revise the table to include these chemicals as COPCs and revise associated Appendix F tables.*

LANL Response

18. See response to Specific Comment 10. The appropriate text and tables have been revised.

NMED Comment

19. Table D-2.3-1, Page D-193:

SWMU 35-003(j)-99: *Antimony, selenium and silver were not detected in samples collected from 0-10 ft, but since the non-detect values were greater than the background values, they were retained as COPCs (page D-8). These metals are not listed as COPCs in Table D-2.3-1. Revise the Table and tables in Appendix F to include them in the risk screening evaluations.*

LANL Response

19. See response to Specific Comment 11. The text in section D-2.3.3 and the applicable tables in Appendices D and F have been revised.

NMED Comment

20. Table D-2.3-3, Page D-194:

SWMU 35-003(j)-99: *Organic chemicals detected in samples collected from 0.5-1.5 ft at locations 35-02568 and 35-02569 should have been included in the risk evaluation for the industrial scenario. For example, acenaphthene was detected at 8.9 mg/kg at location 35-02568, but is reported as non-detect in the table. Revise the table to include all detected chemicals in samples collected from 0.5-1.5 ft depth in industrial risk screening evaluations.*

LANL Response

20. See response to Specific Comment 13. The text in section D-2.3.10 and the associated tables in Appendix F have been revised.

NMED Comment

21. Table D-2.5-1, Page D-196:

SWMU 35-004(h): *The Table D-2.5-1 reports 0.875 mg/kg as the maximum detected value for selenium, but Table D-2.0-4 does not report any detected values for selenium. Resolve the discrepancy and revise the appropriate tables in Appendices D and F.*

LANL Response

21. The comment refers to the use of the maximum detected concentration of selenium as the EPC for the depth interval of 0 to 10 ft. The value reported in Table D-2.5-1 is the maximum detected concentration for the depth interval of 0 to 10 ft. However, this detected concentration is below the BV for the media in which it occurs (selenium BV for fill = 1.52 mg/kg); therefore, the value is not reported in Table D-2.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). No revision to the report is necessary.

NMED Comment

22. Table D-2.6-1, Page D-197:

SWMU 35-009(a): *The maximum detected values reported for most of the chemicals in Table D-2.6-1 are different from values reported in Table D-2.0-4. For example, the detection limit for antimony was 1.1 mg/kg for samples collected from 0-1 ft. Antimony was not detected in any of these samples, but the maximum detected value of 0.065 (0-1 ft) and UCL of 0.533 (0-10 ft) is reported for antimony. No detected value is reported for barium for samples collected from 0-1 ft. in Table D-2.0-4, but Table D-2.6-1 lists 38.8 mg/kg as a maximum detected value. Resolve the discrepancies and revise the tables in Appendices D and F accordingly.*

LANL Response

22. The comment refers to the use of the maximum detected concentrations as the EPCs. The values reported in Table D-2.6-1 are the maximum detected concentrations for the given depth interval, if an adequate number of samples is not available to calculate a 95% UCL. However, if these maximum detected concentrations are below the BVs for the media in which they occur, they are not reported in Table D-2.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison).

    The maximum detected concentration of antimony in the depth interval of 0 to 1 ft bgs is used as the EPC because the number of samples is not sufficient to calculate a representative 95% UCL. However, the maximum detected concentration is less than the BV and therefore is not reported in Table D-2.0-4. For the interval of 0 to10 ft bgs, an adequate number of samples (22) is available to calculate a representative 95% UCL, which is presented in Table D-2.6-1. However, this number is a calculated value rather than a sampling result, so it does not appear in Table D-2.0-4.

A 95% UCL has been calculated and is being used as the EPC for barium in revision 2 of the investigation report instead of the maximum detected concentration used as the EPC in revision 1. Tables D-2.6-1 and F-3.4-15 have been revised to include the 95% UCL (84.79 mg/kg) as the EPC for barium.

Although no changes to Table D-2.0-4 are necessary, the EPCs presented in Table D-2.6-1 have been revised based on Specific Comment 23. Samples collected from the interval of 0.43 to 1.41 ft bgs are now included in the data set for the interval of 0 to 1 ft bgs. The inclusion of additional sample(s) may result in a change to the maximum detected concentration and/or provide enough data to calculate 95% UCLs. The text and tables in Appendix D and Appendix F for SWMU 35-009(a) have been revised accordingly.

NMED Comment

23. Table D-2.6-3, Page D-199:

SWMU 35-009(a): *Acetone was detected in sample RE35-04-54855 at 0.112 mg/kg (0.43-1.41 ft), and should have been included in the table. Samples collected from 0.43-1.41 ft should have been included in the industrial risk scenario evaluations. The maximum detected value for Aroclor-1254, Aroclor-1260 and 4-isopropyltoluene should be 0.393 mg/kg, 1.26 mg/kg and 0.0937 mg/kg, respectively, for samples collected from 0.1 ft. Bis(2-ethylexyl)phthalate, di-n-butylphthalate, and toluene were detected in samples collected from 0.43-1.41 ft and should not have been reported as non-detects. Revise the tables in Appendices D and F accordingly.*

LANL Response

23. Applicable text and tables for SWMU 35-009(a) have been revised to include the concentrations from 0.43 to 1.41 ft for these organic COPCs. Concentrations for inorganic and radionuclide COPCs have also been revised for SWMU 35-009(a) as a result of this comment.

NMED Comment

24. Table D-2.9-1, Page D-200:

SWMU 35-014(f): *The detection limits for antimony were greater than the background values; therefore, antimony should have been retained as a COPC for both residential and industrial scenario risk screening evaluations. Silver was not detected but the detection limits were greater than background values. Silver should have therefore been retained as a COPC for samples collected from 0-1 ft depth. There are no reported detected values for silver in Table D-2.0-4, but Table D-2.9-1 reports 0.0267 mg/kg as maximum detected value at 0-10 ft depth. Resolve the discrepancies and revise the tables in Appendices D and F accordingly.*

LANL Response

24. See response to Specific Comment 12. Table D-2.9-1 has been revised to include detection limits above background for antimony and silver.

NMED Comment

25. Table D-2.10-1, Page D-201:

SWMU 35-015(a): *The detection limits for antimony were greater than the background values. Antimony should have been retained as a COPC for samples collected from 0-1 ft depth. There were no detected values reported for selenium and silver in Table D-2.0-4, but maximum values are reported in Table D-2.10-1. Resolve the discrepancies and revise the tables in Appendices D and F accordingly.*

LANL Response

25. See response to Specific Comment 15. The text in section D-2.10.3 and the associated Appendixes D and F tables have been revised to include the nondetected results above background for antimony from 0 to 1 ft.

    The second part of the comment refers to the use of maximum detected concentrations as the EPCs. The values reported in Table D-2.10-1 are the maximum detected concentrations of selenium and silver for the depth interval of 0 to 1 ft bgs. However, these detected concentrations are below the BV for the media in which they occur; therefore, the values are not reported in Table D-2.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison).

    The maximum detected concentration of selenium in the depth interval of 0 to 1 ft bgs is 0.23 mg/kg in a fill sample, which is below the BV of 1.52 mg/kg. However, a 95% UCL has been calculated and is used as the EPC in revision 2 of the investigation report instead of the maximum detected concentration. Table D-2.10-1 and F-3.4-21 have been revised to include the 95% UCL for selenium (0.22 mg/kg).

    The maximum detected concentration of silver in the depth interval of 0 to 1 ft bgs is 0.5 mg/kg in a fill sample. However, the BV for silver in fill is 1 mg/kg. Therefore, this maximum detected concentration does not appear in Table D-2.0-4, and no revision to the report is necessary.

NMED Comment

26. Table D-2.11-1, Page D-203:

SWMU 35-018(a): *The value of 0.04 mg/kg reported in Table D-2.11-1 for mercury is not reported in Table D-2.0-4. Resolve the discrepancy and revise the tables accordingly.*

LANL Response

26. The comment refers to the use of the maximum detected concentration of mercury as the EPC for the depth interval of 0 to 1 ft. The value reported in Table D-2.11-1 is the maximum detected concentration for the depth interval of 0 to 1 ft. However, this detected concentration is below the BV (mercury BV for all media = 0.1 mg/kg); therefore, this value is not reported in Table D-2.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). No revision to the report is necessary.

NMED Comment

27. Table D-2.12-12, Page D-216:

Americium-241 was identified as a COPC for the Mesa Top Subarea in Table D-2.8-1 (page D-83) of the 2005 Report, but is not included in Table D-2.12-12 of the IR. Explain why americium-241 is no longer considered a COPC.

LANL Response

27. Americium-241 was detected in one Mesa Top Subarea sample from 15.5 to 16.5 ft bgs at Consolidated Unit 35-003(a)-99. Therefore, americium-241 is retained as a COPC for the subarea (see Table 5.2-1). However, americium-241 was not detected in the interval of 0 to 5 ft bgs, so there is no EPC for americium-241 and it is not included in Table D-2.12-12. Americium-241 was not included in the ecological risk evaluations for the site.

NMED Comment

28. Table D-2.12-17, Page D-227:

Di-n-octylphthalate was identified as a COPC for the Mesa Top Subarea in Table D-2.12-1 (page D-100) of the 2005 Report, but is not included in Table D-2.12-17 of the IR. Explain why this compound is no longer considered a COPC.

LANL Response

28. Di-n-octylphthalate was detected in one Mesa Top Subarea sample from 12 to 12.5 ft bgs in Consolidated Unit 35-003(a)-99. Therefore, di-n-octylphthalate is retained as a COPC for the subarea (see Table 5.2-1). However, di-n-octylphthalate was not detected in the interval of 0 to 5 ft bgs, so there is no EPC for di-n-octylphthalate and it is not included in Table D-2.12-17. Di-n-octylphthalate was not included in the ecological risk evaluations for the site.

NMED Comment

29. Section F-3.4.3 Uncertainty Analysis, Page F-30:

Section F-3.3 indicates that surface releases are likely to result in infiltration of contaminants into surface soils and, through cracks in asphalt, into backfill soils and possibly the underlying tuff. However, this section also states "the construction worker is not evaluated for the Mesa Top subarea because the exposure is assumed to be from the surface (0–1 ft)." Furthermore, this section states "if activities at the site change to include construction or other intrusive activities, EP will work with facility management to ensure workers are protected." Because the subsurface soils were not evaluated in a human health risk assessment, a formal land use control must be implemented for this area to prevent future construction worker activities. Alternatively, assess the risk to receptor populations potentially exposed to subsurface soils.

LANL Response

29. It is not necessary to prevent future construction, only to put the appropriate controls in place to ensure worker health and safety if construction is planned. LANL has several processes in place to

protect future workers from exposure to potential site contamination. Both LANL's Excavation Permit process and the PR-ID process ensure that anyone conducting groundbreaking activities in the vicinity of a SWMU or AOC is notified about any potential risks and that proper controls are put in place to minimize potential exposures.

NMED Comment

30. Figure F-3.2-2, Mesa Top Area A sampling locations, page F-177:

Sampling locations 35-22922 and 35-22930 are not depicted on the Figure F-3.2-2 as stated in the text (page F-23) instead they are depicted on Figure F-3.2-9. Revise the text accordingly.

LANL Response

30. The correct figure citation is Figure F-3.2-4, "Mesa Top Area C sampling locations." This typographical error has been corrected.

NMED Comment

31. Figure F-3.2-6, Mesa Top Area E sampling locations, page F-181:

Sampling location 35-22958 is not depicted on the Figure F-3.2-6 as indicated in the text (page F-19). Revise the figure accordingly.

LANL Response

31. Sampling location 35-22958 is associated with SWMU 35-002, which is shown in Figure F-3.2-4. The nature and extent of contamination at Consolidated Unit 35-003(a)-99 and SWMU 35-002 are discussed together on page F-19 because the sites are collocated. The text has been revised to cite both figures. Similarly, text in the paragraph describing the nature and extent of inorganic chemicals at Consolidated Unit 35-003(a)-99 and SWMU 35-002 has been revised to cite Figure F-3.2-9 as well as Figure F-3.2-11.

NMED Comment

32. Figure F-3.2-14, Mesa Top Area D radionuclide COPCs detected above background values in all media, page F-189:

Detected values for uranium at sampling location 35-02089 are not depicted on the Figure F-3.2-14. Revise the figure to depict detected values for uranium.

LANL Response

32. Figure F-3.2-14 has been revised to include detected concentrations of uranium above BVs.

NMED Comment

33. Figure F-3.2-18, Mesa Top Area C organic COPCs detected in all media, page F-193:

SWMU 35-003(a)-99: *Aroclor-1260 was detected in samples collected at two depths at location 35-22941 (i.e. 1.49 mg/kg at 4-5 ft, and 0.0253 mg/kg at 14-15 ft.), but is not depicted on the figure. Revise the figure to depict Aroclor-1260 concentrations.*

LANL Response

33. Sampling location 35-22941 is shown in Figure F-3.2-20. The detected concentrations of Aroclor-1260 are correctly shown in this figure. No revision to the report is necessary.

NMED Comment

34. Table F-3.4-4, Screening Evaluation for SWMU 35-002, Carcinogenic COPCS, page F-259:

The non-carcinogenic SSL (NMED 2006) for Aroclor-1260 is 1.12. Aroclor-1260 should also have been included in the screening evaluation of non-carcinogenic risk. For example, for SWMU 35-009(a) Aroclor-1254 and Aroclor-1260 were appropriately included in screening evaluations for both carcinogenic and non-carcinogenic risk.

LANL Response

34. Information for the noncarcinogenic screening evaluation at SWMU 35-002 has been added to Table F-3.4-4 to screen Aroclor-1260 at 0 to 10 ft to the residential SSL of 1.12 mg/kg. Aroclor-1260 was not detected from 0 to 1 ft.

NMED Comment

35. Table F-3.4-6, Screening Evaluation for Consolidated Unit 35-003(a)-99, Noncarcinogenic COPCS, page F-259-260:

Aroclor-1260 was retained as a COPC and should have been included in the non-carcinogenic risk evaluation. Revise the industrial risk evaluation to also include antimony, silver, Butanone[2-], fluoranthene, chrysene and benzo(a)anthracene.

LANL Response

35. Table F-3.4-6 has been revised to include Aroclor-1260. See the response to Specific Comments 10, 17, and 18. All appropriate text and tables have been revised to reflect the additional COPCs.

NMED Comment

36. Table F-3.4-8, Screening Evaluation for Consolidated Unit 35-003(a)-99, Radionuclide COPCS, page F-260-261:

The dose values reported in Table F-3.4-8 are different from the values reported in Table F-3.4-21 of the 2005 Report. There were no detected values for U-234, U-235, and U-238 in samples

collected from 0-1 ft. (Table D-2.0-5), but UCLs are reported. The SSL value for plutonium-239 is 210, not 240 (Table 4.0.3). Resolve the discrepancies and revise the Table accordingly.

LANL Response

36. In the original 2005 investigation report, risk screening was conducted at the subarea level. For subareas where potential risk was indicated, individual SWMUs/AOCs were assessed to determine what was driving risk in the subarea. Rather than generating COPCs for each SWMU/AOC, these preliminary site-specific assessments were conducted using all the COPCs for the subarea. In addition, for the 2005 investigation report, 95% UCLs were not calculated for each SWMU/AOC. Rather, maximum detected concentrations were used as EPCs. For revision 1 of the investigation report, COPCs were identified for each SWMU/AOC, and 95% UCLs were calculated for all sites/COPCs with an adequate number of data points. As a result, the hazard quotients (HQs), hazard indexes (HIs), cancer risks, and doses may have been higher for a site in the 2005 report than in revision 1. In addition, the assignment of sampling locations to individual SWMUs/AOCs for the purposes of risk assessment was refined in revision 1 of the investigation report.

    Uranium-234, -235, and -238 are naturally occurring isotopes of uranium. Table D-2.0-5 shows only those uranium isotopes that exceed the BVs. Although uranium-234, -235, and -238 have been identified as COPCs for Consolidated Unit 35-003(a)-99, they were not detected above BVs in the depth interval of 0 to 1 ft bgs. The 95% UCLs are calculated using all of the uranium data, including those below the BVs and those not detected (see the data DVD).

    Table F-3.4-8 has been revised to show the correct SSL for plutonium-239, and the dose has been recalculated.

NMED Comment

37. Table F-3.5-1, Final ESL Comparison for Mesa-Top Subarea, page F-270:

Arsenic and cadmium were included in the evaluation in the 2005 Report (Table 3.5-1), but are not included in this Report. Revise the risk evaluation and include these metals or explain why they are no longer considered contaminants.

LANL Response

37. The 2005 report mistakenly identified arsenic and cadmium as COPCs for the Mesa Top Subarea. Arsenic concentrations are less than the soil BV, and cadmium concentrations are less than the tuff BV. In addition, arsenic and cadmium concentrations are less than the maximum background concentrations in tuff and soil, respectively, for the Mesa Top Subarea. The maximum concentrations are 3.5 mg/kg for arsenic in tuff and 1.6 mg/kg for cadmium in soil compared with maximum background concentrations of 5 mg/kg for arsenic in tuff and 2.6 mg/kg for cadmium in soil. As a result of this comparison, arsenic and cadmium were not retained as COPCs in revision 1 of the investigation report. No further revisions are necessary.

Ten Site Slope Subarea

NMED Comment

38. Section 6.3, Conclusions – Ten Site Slope Subarea, Page 19:

The first paragraph summarizes the risk and dose results associated with the residential land use scenario. However, the total dose range is referred to, inappropriately, as the industrial dose range. According to Appendix F, Risk Assessment, Section F.4.4.4, Interpretation, the total dose range under the residential scenario is equivalent to a total risk range of 2 x 10^{-5} to 1 x 10^{-4}. Ensure that the conclusions presented in Section 6.3 accurately reflect the information presented in Appendix F. In addition, for consistency between Appendix F and the main report text, ensure that Section 6.3 presents risk ranges from low to high rather than high to low.

LANL Response

38. The total radionuclide risk range in the second paragraph of section 6.3 should be residential, not industrial. The text has been revised and the risk numbers recalculated using EPA PRGs (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml), adjusted to a 10^{-5} risk rather than the 10^{-6} risk-based values originally used. Also, the text has been revised to present the total radionuclide risk ranges from low to high.

NMED Comment

39. Appendix D, Section D-3.1-8, Page D-30:

SWMU 35-004(g)-00: *Plutonium-239 was detected at 0.163 pCi/g in a sample collected from 0-0.59 ft depth (location 35-35-232840, Table D-3.0-5), but the text states that it was not detected in any samples collected from 0-1 ft. Revise the text accordingly.*

LANL Response

39. Plutonium-239 was detected in one sample from 0 to 1 ft and is included in Table D-3.0-5. The text in section D-3.1-8 and Table D-3.1-2 have been revised to include plutonium-239. Table F-4.4-6 has also been revised to include plutonium-239 as a COPC from 0 to 1 ft.

NMED Comment

40. Appendix D, Section D-3.2, Page D-31:

SWMU 35-009(a): *Since this SWMU is co-located in Mesa Top and Ten Site Slope subarea, and the contents of this section are the same as Section 2.6, refer to comments provided earlier under Mesa-Top Subarea for SWMU 35-009(a) and revise the text and associated tables in Appendices D and F.*

LANL Response

40. Comment noted; see responses for Specific Comments 16, 22, and 23.

NMED Comment

41. Appendix D, Section D-3.9.2, Page D-50:

SWMU 35-016(j): *Cadmium was not detected in any of the samples but the detection limits were greater than background values. Cadmium was retained as a COPC in section D-3.9.2, but is not included in Table D-3.9-1. Copper was detected at location 35-22973 (0.03-0.3 ft.), but is not retained as a COPC. Copper should have been retained as a COPC or a discussion should have been included explaining why it is not considered a COPC. Revise the text accordingly.*

LANL Response

41. Cadmium was retained as a COPC and should have been included in Table D-3.9-1; the maximum detection limit above BV is used for the EPC for both 0 to 1 and 0 to 10 ft. The text in section D-3.9-3 and Table D-3.9-1 have been revised. In addition, Table F-4.4-28 has been revised to include cadmium in the risk-screening assessments.

    Copper was detected at 12.6 mg/kg, which is just above maximum background concentration of 12 mg/kg for sediment. Because it was similar to background, it was not retained. The text has been added to section D-3.9.2 to explain why copper is not a COPC.

NMED Comment

42. Appendix D, Section D-3.9.5, Page D-50:

SWMU 35-016(j): *The text states that Pu-239 is a COPC for the site, but Table D-3.0-5 does not report any data for SWMU 35-016(j). Resolve the discrepancy and revise the text or table accordingly.*

LANL Response

42. Plutonium-239 was detected in tuff at 0.077 pCi/g for SWMU 35-016(j). Table D-3.0-5 has been revised accordingly, and no revision to the text is necessary.

NMED Comment

43. Appendix D, Table D-3.0-1- D-3.0-3, Page D-228-238:

Tables D-3.0-1, D-3.0-2 and D-3.0-3 do not report data collected from 0-5 ft as indicated in the captions for these tables. Delete "from 0-5 ft bgs" from the captions, since the samples included in the tables were collected from depths greater than 0-5 ft.

LANL Response

43. The phrase "0–5 ft bgs" has been deleted from the table titles.

NMED Comment

44. Appendix D, Table D-3.0-4, Page D-245:

SWMU 35-016(a)-00: *Barium was identified as a COPC in Sections D-3.6.2 and D-3.6.3, but is not included in the Table. Revise the table to include barium results in the table.*

SWMU 35-016(c)-00: *Barium and cobalt were retained as COPCs in Section D-3.8.4 but are not included in the table. Revise the table to include results of barium and cobalt.*

LANL Response

44. Barium has been added to Table D-3.0-4 for Consolidated Unit 35-016(a)-00; one tuff sample has barium detected above the Qbt 3 BV and maximum background concentration.

Barium was detected above tuff BV in one sample, and cobalt has detection limits above tuff BV in two samples for Consolidated Unit 35-016(c)-00. Barium and cobalt have been added to Table D-3.0-4.

NMED Comment

45. Appendix D, Table D-3.0-5, Page D-249-251:

Sampling locations have been assigned to the wrong sites in the Table D-3.0-5. The sampling locations listed for various sites in Table D-3.0-2 are different from those reported in Table D-3.0-5. See some of the examples given below.

SWMU 35-009(e)-00: *According to Table D-3.0-2, sampling location 35-02079 is not associated with SWMU 35-009(a) as reported, but with SWMU 35-009(e).*

SWMU 35-014(g)-00: *Sampling locations 35-02167 and 35-02572 are not associated with SWMU 35-009(e) as reported, but with SWMU 35-014(g)-00.*

SWMU 35-014(g3): *Sampling locations 35-02183 and 35-02185 are not associated with SWMU 35-014(g)-00 as reported, but with SWMU 35-014(g3).*

SWMU 35-016(a)-00: *Sampling location 35-02080 is associated with SWMU 35-016(a)-00, not with SWMU 35-014(g3), as reported.*

SWMU 35-016(b): *Sampling locations 35-02549 and 35-23207 are not associated with SWMU 35-016(a)-00 as reported, but with SWMU 35-016(b).*

SWMU 35-016(c)-00: *Sampling locations 35-02108 and 35-02396 are not associated with SWMU 35-016(b) as reported, but with SWMU 35-016(c)-00.*

SWMU 35-016(j): *Sampling locations 35-02580 and 35-02572 are associated with SWMU 35-016(j).*

Delete the last row from the table, as the sampling results for location 35-23291 are repeated. The last row is same as the third row from the bottom.

Correct the table so that the sampling locations are assigned to correct sites.

LANL Response

45. Table D-3.0-5 has been revised as follows.

- **SWMU 35-009(e):** The location assignment for sampling location 35-02079 has been corrected. Table D-3.0-5 has been revised.
- **Consolidated Unit 35-014(g)-00:** The location assignments for sampling locations 35-02167 and 35-02572 have been corrected. Table D-3.0-5 has been revised.
- **SWMU 35-014(g3):** The location assignments for sampling locations 35-02183 and 35-02185 have been corrected. Table D-3.0-5 has been revised.
- **Consolidated Unit 35-016(a)-00:** The location assignment for sampling location 35-02080 has been corrected. Table D-3.0-5 has been revised.
- **SWMU 35-016(b):** The location assignments for sampling locations 35-02549 and 35-23207 have been corrected. Table D-3.0-5 has been revised.
- **Consolidated Unit 35-016(c)-00:** The location assignments for sampling locations 35-02108 and 35-02396 have been corrected. Table D-3.0-5 has been revised.
- **SWMU 35-016(j):** The location assignment for sampling location 35-02580 has been corrected. Table D-3.0-5 has been revised. Sampling location 35-02572 goes with Consolidated Unit 35-014(g)-00, not SWMU 35-016(j) (see response to Specific Comment 42).
- The last row from the table has been deleted.

NMED Comment

46. Appendix D, Table D-3.0-5, Page D-250:

SWMU 35-009(e): *Americium-241 was detected at the site according to text in Section D-3.3.5, but is not included in the Table D-3.0-5. Revise the text or tables in Appendices D and F accordingly.*

LANL Response

46. Americium-241 was detected in one tuff sample from 2 to 3 ft. Table D-3.0-5 has been revised to include americium-241. No revisions are necessary to Appendix D text or to Appendix F tables.

NMED Comment

47. Appendix D, Table D-3.1-1, Page D-263:

SWMU 35-004(g)-00: *Maximum detected values reported for copper in Table D-3.1-1 are 5.35 mg/kg (0-1ft) and 7.48 mg/kg (0-10 ft), but Table D-3.0-4 reports no detected values at these depths. Only one detected value of copper at 12.8 mg/kg (19-20 ft) is reported. Resolve the discrepancy. Selenium should have been retained as a COPC because, although it was not detected in any of the samples, the detection limits were above background values. Revise the tables in Appendices D and F accordingly.*

LANL Response

47. The comment refers to the use of the maximum detected concentration of copper as the EPCs for the depth intervals of 0 to 1 ft and 0 to 10 ft. The values reported in Table D-3.1-1 are the maximum detected concentrations for these depth intervals. However, these detected concentrations are below the BVs for the media in which they occur (copper BV for soil = 14.7 mg/kg and copper BV for sediment = 11.2 mg/kg); therefore, the values are not reported in Table D-3.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). No revision to the report is necessary.

    Selenium was not detected but has detection limits above the tuff and sediment BVs. Selenium has been added to Tables D-3.1-1 and F-4.4-4.

NMED Comment

48. Appendix D, Table D-3.1-2, Page D-263:

SWMU 35-004(g)-00: *Uranium-234 and uranium-235 were not detected at 0-1 ft. according to Table D-3.0-5, but Tables D-3.1-2 and F-4.4-6 report maximum detected values of 2.31 and 0.113 pCi/g for uranium-234 and uranium-235, respectively. Resolve the discrepancy and revise the tables accordingly.*

LANL Response

48. The comment refers to the use of the maximum detected concentrations of uranium-234 and -235 as the EPC for the depth interval of 0 to 1 ft. The values reported in Tables D-3.1-2 and F-4.4-6 of revision 1 of the investigation report are the maximum detected concentrations for the depth interval of 0 to 1 ft, which are below the BVs for the media in which they occur (uranium-234 BV for sediment = 2.59 pCi/g and uranium-235 BV for sediment = 0.20 pCi/g). Therefore, the values were not reported in Table D-3.0-5, which contains only detected values above BV (or detections, where no BV is available for comparison). However, 95% UCLs have been calculated and are used as EPCs in revision 2 of the investigation report instead of the maximum detected concentrations. Tables D-3.1-2 and F-4.4-6 have been revised to include the 95% UCLs for uranium-234 and -235 (1.67 and 0.0826 pCi/g, respectively).

NMED Comment

49. Appendix D, Table D-3.3-1, Page D-266:

SWMU 35-009(e): *Selenium is reported at a maximum detected value of 0.966 mg/kg in Tables D-3.3-1 and F-4.4-10, but in Table D-3.0-4 the maximum detected value is reported at 0.553 mg/kg. Resolve the discrepancy and revise the tables accordingly.*

LANL Response

49. The comment refers to the use of the maximum detected concentration of selenium as the EPC for the depth intervals of 0 to 1 ft and 0 to 10 ft. The value reported in Tables D-3.3-1 and F-4.4-10 (0.966 mg/kg) is the maximum detected concentration for the depth intervals of 0 to 1 ft and 0 to 10 ft. However, this detected concentration is below the BV for the media in which it occurs (selenium BV for soil = 1.52 mg/kg); therefore, the value is not reported in Table D-3.0-4, which

presents only detected values and detection limits above BV (or detections, where no BV is available for comparison). The 0.533 mg/kg concentration reported in Table D-3.0-4 is above the BV for the media in which it occurs (selenium BV for sediment = 0.3 mg/kg). No revision to the report is necessary.

NMED Comment

50. Appendix D, Table D-3.3-2, Page D-266:

SWMU 35-009(e): *Detected values reported in Table D-3.0-5 are not the same as reported in Tables D-3.3-2 and F-4.4-12 (i.e., maximum detected value for U-234 (0-1 ft) should be 2.64 mg/kg and not 2.4 mg/kg; tritium should be 0.073 mg/kg (0-10 ft)). There also is no detected value for samples collected from 0-1 ft for U-235 according to table D-3.0-5, although a value of 0.167 is reported. Resolve the discrepancies and revise the tables accordingly.*

LANL Response

50. The comment refers to the use of the maximum detected concentrations as the EPCs. The values reported in Tables D-3.3-2 and F-4.4-12 are the maximum detected concentrations for the given depth interval. However, if these detected concentrations are below the BVs for the media in which they occur, they are not reported in Table D-3.0-5, which contains only detected values above BV/fallout value (FV) (or detections, where no BV/FV is available for comparison).

    The maximum detected concentration for uranium-234 in the depth interval of 0 to 1 ft bgs is 2.4 pCi/g (0.25 to 0.6 ft), whereas in the depth interval of 1 to 2 ft bgs it is 2.64 pCi/g. No revision to the tables is necessary for uranium-234.

    Tritium has been revised to 0.073 pCi/g from 0 to 10 ft. Tables D-3.3-2 and F-4.4-12 have been revised.

    The maximum detected value of uranium-235 in the depth interval of 0 to 1 ft bgs is 0.167 pCi/g in a soil sample. However, the BV for uranium-235 in soil is 0.20 pCi/g. Therefore, this maximum detected value does not appear in Table D-3.0-5, and no revision to the report is necessary.

NMED Comment

51. Appendix D, Table D-3.6-1, Page D-272:

SWMU 35-016(a)-00: *Table D-3.0-4 reports no detected values for selenium but a maximum detected value of 0.424 mg/kg is reported for selenium for samples collected from 0-1 ft is reported in Tables D-3.6-1 and F-4.4-19. Additionally, Tables D-3.6-1 and F-4.4-20 report 4.45 mg/kg for arsenic and Table D-3.0-4 reports 4.41 mg/kg. Revise the tables appropriately.*

LANL Response

51. The comment refers to the use of the maximum detected concentration of selenium as the EPC for the depth interval of 0 to 1 ft. The value reported in Tables D-3.6-1 and F-4.4-19 of revision 1 of the investigation report is the maximum detected concentration for the depth interval of 0 to 1 ft. However, this detected concentration is below the BV for the media in which it occurs (selenium BV for soil = 1.52 mg/kg); therefore, this value was not reported in Table D-3.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for

comparison). In revision 2 of the investigation report, a 95% UCL has been calculated and is used as the EPC instead of the maximum detected concentrations. Tables D-3.6-1 and F-4.4-19 have been revised to include the 95% UCL for selenium (0.36 mg/kg).

The correct maximum arsenic concentration is 4.41 mg/kg. However, a 95% UCL has been calculated for arsenic in revision 2 of the investigation report. Tables D-3.6-1 and F-4.4-20 have been revised to include the 95% UCL as the EPC (3.40 mg/kg).

NMED Comment

52. Appendix D, Table D-3.6-2, Page D-272:

SWMU 35-016(b)-00: *Although selenium was not detected in any of the samples although the detection limits were above the background values. Selenium was retained as a COPC in section D-3.7.1 and D-3.7.2, but is not included in Table D-3.6-2. Revise the table to include selenium.*

LANL Response

52. The table for SWMU 35-016(b) referred to in the comment is Table D-3.7-1, not Table D-3.6-2. Selenium has been added to Tables D-3.7-1 and F-4.4-22, with the maximum detection limits presented as the EPCs.

NMED Comment

53. Appendix D, Table D-3.9-1, Page D-277:

SWMU 35-016(j)-00: *Although cadmium was not detected in any of the samples, but detection limits were greater than background values. It should have been included in the residential risk evaluation. Revise Tables D-3.9-1 and F-4.4-28 accordingly.*

LANL Response

53. See the response to Specific Comment 41 above. Tables D-3.9-1 and F-4.4-28 have been revised accordingly to include cadmium.

NMED Comment

54. Appendix D, Table D-3.9-2, Page D-277:

SWMU 35-016(j)-00: *Plutonium-239 was detected in only one sample (ID # 0435-97-0481), even though two different maximum detected values are reported in Tables D-3.9-1 and F-4.4-30, respectively. Resolve the discrepancy and revise the table accordingly.*

LANL Response

54. See the response to Specific Comment 42 above. The sample collected from depth interval of 0.67 to 1.67 ft should be presented as part of the data set for 0 to 1 ft. Plutonium-239 was detected in tuff at 0.077 pCi/g from 0.67 to 1.67 ft and is presented for AOC 35-016(j) in the revised Table D-3.0-5.

The sample collected from 0.67 to 1.67 ft depth interval is now included as part of the 0 to 1 ft bgs data set. The concentration of plutonium-239 in this sample is 0.077 pCi/g, which is the maximum detected concentration for both the 0 to 1 ft and 0 to 10 ft bgs depth intervals. However, with the additional sample, there are now enough data to calculate a 95% UCL for plutonium-239 (0.067 pCi/g). Tables D-3.9-2 (not Table D-3.9-1, as stated in the comment) and F-4.4-30 have been revised accordingly.

NMED Comment

55. Appendix D, Table D-3.10-10 & D-3.10-11, Page D-289-D291:

As the captions state, tables should report samples collected from 0-5 ft. Samples collected from 9-10 ft, 19-20 ft, and 29-30 ft have been inappropriately included in the tables. Revise the tables accordingly.

LANL Response

55. Samples with depths greater than 0 to 5 ft have been deleted from the tables.

NMED Comment

56. Appendix F, Section F-4.4.1 Screening Levels, Page F-55:

The second paragraph states that the Ten Site Slope Subarea is designated for industrial use. However, the default industrial worker exposure assumptions (8 hour work day for 225 days per year) were not considered realistic for the actual use of the subarea. Therefore, the screening evaluation used recreational scenario soil screening levels (SSLs) which are based on a 1 hour per day exposure for 200 days per year. These are reasonable assumptions for current use; however, if the site could be redeveloped for industrial use, then future industrial risks must be evaluated. Clarify why future industrial use is not a reasonable land use for this subarea. Alternatively, perform an industrial screen to determine if any site restrictions or remedial actions are necessary.

LANL Response

56. Industrial use is not reasonable for the Ten Site Slope Subarea because the site is not conducive to development. The area is a steep slope running from the mesa top to the canyon bottom and cannot support construction of structures and buildings or industrial activities that entail an exposure of 8-h workday for 225 d/yr as presented in NMED and EPA Region 6 SSL development guidance. The industrial parameters NMED and EPA Region 6 use to calculate the industrial SSLs substantially overestimate exposure for an individual in the slope subarea. The recreational scenario has consistently been used to evaluate risk associated with residual contamination remaining on hillside slopes throughout the Laboratory and townsite and remains the most plausible current and future land use. No revision to the report is necessary.

NMED Comment

57. Appendix F, Figure F-4.2-5, Ten Site Slope Area B Inorganic COPCs detected above background values in all media, page F-201:

SWMU 35-016(a)-00: *Sampling location 35-02395 is depicted as a 2004/2005 sampling location, even though it is a 1996 investigation location. Barium has been identified as a COPC in sections D-3.6.2 and D-3.6.3 but is not depicted on the figure. Revise the figure accordingly.*

LANL Response

57. The symbol depicting location 35-02395 has been changed to a "•." Barium is above tuff and sediment BVs and has been added to the map for Consolidated Units 35-016(a)-00 and 35-016(c)-00 and SWMU 35-009(a). The figure has been revised accordingly.

Mortandad Slope Subarea

NMED Comment

58. Appendix D, Section D-4.8, Page D-72:

SWMU 35-016(p): *Some of the data from samples collected in 2007 were not included in the investigation report presumably because the data was not available at the time of submission of the report. The text makes no reference to this, and continues to use an incomplete data set to identify COPCs for the site. Since the data could not be submitted with the report, evaluation of the site should have been deferred until the entire data set was available.*

LANL Response

58. Per the letter sent to NMED on September 14, 2007, the data had been received at the time the report was submitted but had not been validated. Also, as stated in the letter, the data have now been validated and the conclusions presented for the sites do not change. The report has been revised to include the final data for SWMU 35-016(p); no revision to the conclusions and recommendations is necessary.

NMED Comment

59. Appendix D, Section D-4.8-2, Page D-73:

SWMU 35-016(p): *COPCs identified for the site are not the same as chemicals reported as detected in Table D-4.0-4 (e.g., mercury, chromium, copper, lead and zinc). Resolve the discrepancy and revise the text and relevant tables in Appendices D and F.*

LANL Response

59. Based on review of the data representative of site conditions following removal actions, mercury, chromium, copper, and lead were not detected above BVs in the confirmation samples and are no longer retained as COPCs. Arsenic and zinc were detected at concentrations slightly above their respective BVs in one sample each at SWMU 35-016(p) but are not retained as COPCs because they are within the range of background concentrations. Section D-4.8-2, Tables D-4.0-4 and

F-5.4-10, and all other applicable text and tables in Appendixes D and F have been revised to reflect current site conditions at SWMU 35-016(p).

NMED Comment

60. Appendix D, Table D-4.0-4, Page D-318:

SWMU 35-008-00: Beryllium is reported as a COPC in tuff and sediment in Sections D-4.2.2 and D-4.2.3, but is not included in the Table D-4.0-4. Revise the table to include beryllium.

LANL Response

60. Beryllium was detected above BV in a sediment sample and a Qbt 3 sample from location 35-02455. Table D-4.0-4 and Figure F-5.2-4 have been revised to include beryllium.

NMED Comment

61. Appendix D, Table D-4.0-4, Page D-319:

SWMU 35-009(c): *Barium is identified as a COPC in sediment in Sections D-4.3.3 and D-4.3.4, but is not included in the Table D-4.0-4. Revise the table to include barium.*

LANL Response

61. Barium was detected above BV in sediment in samples from locations 35-23182 and 35-23183. Table D-4.0-4 and Figure F-5.2-5 have been revised to include barium.

NMED Comment

62. Appendix D, Table D-4.3-1, Page D-335:

SWMU 35-009(c): *According to Table D-4.0-4 antimony was not detected in any of the samples collected from 0-1 ft., even though a maximum value of 0.137 mg/kg is reported. Maximum detected values reported for cadmium, copper and lead are not the same as those reported in Tables D-4.0-4 and F-5.4-9. Resolve the discrepancies and revise the tables accordingly.*

LANL Response

62. The comment refers to the use of the maximum detected concentrations as the EPCs. The values reported in Tables D-4.3-1 and F-5.4-9 of revision 1 of the investigation report are the maximum detected concentrations for the given depth interval. However, these detected concentrations are below the BVs for the media in which they occur; therefore, the values were not reported in Table D-4.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). In revision 2 of the report, many of the EPCs were changed from maximum detected concentrations to 95% UCLs because additional samples were included in the depth intervals being evaluated.

The maximum detected concentration of antimony in the depth interval of 0 to 1 ft bgs is 0.137 mg/kg in a sediment sample. However, the BV for antimony in sediment is 0.83 mg/kg.

Therefore, this maximum detected concentration does not appear in Table D-4.0-4, and no revision to the report is necessary.

The maximum detected concentration of cadmium in the depth interval of 0 to 1 ft bgs is 0.349 mg/kg in a sediment sample, which is below the BV of 0.4 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for cadmium instead of the maximum detected concentration. Tables D-4.3-1 and F-5.4-9 have been revised to include a 95% UCL of 0.267 mg/kg for cadmium.

The maximum detected concentration of copper in the depth interval of 0 to 1 ft bgs is 11 mg/kg in a soil sample, which is below the BV of 14.7 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for copper instead of the maximum detected concentration. Tables D-4.3-1 and F-5.4-9 have been revised to include a 95% UCL of 9.29 mg/kg for copper.

The maximum detected concentration of lead in the depth interval of 0 to 1 ft bgs is 18.4 mg/kg in a sediment sample, which is below the BV of 19.7 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for lead instead of the maximum detected concentration. Tables D-4.3-1 and F-5.4-9 have been revised to include a 95% UCL of 17.16 mg/kg for lead.

NMED Comment

63. Appendix D, Table D-4.5-1, Page D-337:

SWMU 35-016(f): *Cadmium was not reported as detected in any of the samples (see Table D-4.0-4), even though a maximum detected value of 0.117 mg/kg is reported in Tables D-4.5-1 and F-5.4-12. Resolve the discrepancies and revise the tables.*

LANL Response

63. The comment refers to the use of the maximum detected concentration of cadmium as the EPC for the depth intervals of 0 to 1 ft and 0 to 10 ft. The value reported in Tables D-4.5-1 and F-5.4-12 of revision 1 of the investigation report is the maximum detected concentration for these depth intervals, which is below the BV for the media in which it occurs (cadmium BV for sediment = 0.4 mg/kg). Therefore, this maximum detected concentration was not reported in Table D-4.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for cadmium instead of the maximum detected concentration. Tables D-4.5-1 and F-5.4-12 have been revised to include a 95% UCL of 0.108 mg/kg for cadmium.

NMED Comment

64. Appendix D, Table D-4.8-1, Page D-342:

SWMU 35-016(p): *Copper, lead, mercury, and zinc are not reported as detected in Table D-4.0-4, even though they are reported as COPCs in Tables D-4.8-1. Explain why these metals are identified as COPCs with no detected values or detection limits above background values.*

LANL Response

64. See response to Specific Comment 59. Section D-4.8-2, Tables D-4.0-4, D-4.8-1, and F-5.4-10, and all other applicable text and tables in Appendixes D and F have been revised to reflect current site conditions at SWMU 35-016(p).

NMED Comment

65. Appendix F, Section F-5.2.3, Nature and Extent, page F-75-F-76:

SWMUs 35-009(c) and 35-016(o): *Americium-241, Cesium-137, Plutonium-238, and Plutonium-239 were detected at concentrations of 3.45, 9.83, 1.86, and 4.15 pCi/g, respectively at location 35-23183 (in addition to locations 35-23182 and 35-23187) and should have been included in the text. TPH-DRO was detected at sample location 35-02508 at 0-1ft and 1-2 ft during previous investigations, even though soil was excavated from the area in 2007 and new confirmatory samples were collected in which TPH-DRO was not detected. Data that are no longer relevant should not be included in the discussion. Table D-4.0-6 does not indicate TPH-DRO were detected in samples collected from location 35-02508. Revise the text accordingly.*

LANL Response

65. The discussion of nature and extent for radionuclides and organic chemicals at SWMUs 35-009(c) and 35-016(o) has been revised. The text, tables, and figures have been revised to reflect current site conditions following removal actions. Additionally, all references to preliminary data have been removed. However, no revision to the conclusions and recommendations is necessary.

NMED Comment

66. Appendix F, Section F-5.4.1 Screening Levels, Page F-81:

The second paragraph states that the Mortandad Slope Subarea is designated for industrial use; however, the default industrial worker exposure assumptions (8 hour work day for 225 days per year) were not considered realistic for the actual use of the subarea. Therefore, the screening evaluation used the recreational scenario SSLs, which are based on a 1 hour per day exposure for 200 days per year. These are reasonable assumptions for current use; however, if the site could be redeveloped for industrial use, then future industrial risks must be evaluated. Clarify why future industrial use is not a reasonable land use for this subarea. Alternatively, perform an industrial screen to determine if any site restrictions or remedial actions are necessary.

LANL Response

66. Industrial use is not a reasonable land use for the Mortandad Slope Subarea because the site is not conducive to development. The area is a steep slope running from the mesa top to the canyon bottom and cannot support construction of structures and buildings or industrial activities that would entail an exposure of an 8-h workday for 225 d/yr as presented in the NMED and EPA Region 6 SSL development guidance. The industrial parameters EPA Region 6 and NMED use to calculate industrial SSLs substantially overestimate potential exposure for an individual in the slope subarea. The recreational scenario has consistently been used to evaluate risk associated with residual contamination remaining on hillside slopes throughout the Laboratory and townsite and remains the most plausible current and future land use. No revision to the report is necessary.

NMED Comment

67. Appendix F, Section F-5.2.3, Nature and Extent, page F-83:

SWMU 35-016(p): *Since some of the analytical results were not available at the time of submission of the report, the interpretation of data and conclusions should have been deferred until all of the data was available. NMED has now received and reviewed the remaining data submitted on September 14, 2007 (EP2007-0564) and concurs that no changes to the conclusions and recommendations are necessary.*

LANL Response

67. Comment noted.

NMED Comment

68. Figure F-5.4-2, Mortandad Slope Area B sampling locations, page F-208:

During the remediation activities conducted in 2007, soil was excavated from certain areas. The figure has not been updated to include locations of confirmatory samples, and samples collected from the bench in 2007. In addition, sampling locations that are no longer relevant have not been deleted. Revise the figure to provide current information on the site.

LANL Response

68. The figure showing the Mortandad Slope Area B sampling locations on page F-208 is Figure F-5.2-3. This figure, along with all pertinent text, tables, and figures, has been revised to reflect current site conditions following removal actions at SWMUs 35-016(o) and 35-016(p). Additionally, all references to preliminary data have been removed. However, no revision to the conclusions and recommendations is necessary.

NMED Comment

69. Figure F-5.2-5, Mortandad Slope Area A inorganic COPCs detected above background values in all media, page F-209:

SWMU 35-008-00: *Zinc was detected at two locations (35-23145 & 35-23150), but is not depicted on the figure. Revise the figure to include all detected values.*

LANL Response

69. The figure showing the Mortandad Slope Area A inorganic COPCs on page F-209 is Figure F-5.2-4. Figure F-5.2-4 has been revised to include the zinc concentrations above BV at sampling locations 35-23145 and 35-23150 at Consolidated Unit 35-008-00.

NMED Comment

70. Figure F-5.2-6, Mortandad Slope Area A radionuclide COPCs detected above background values in all media, page F-211:

Sampling locations 35-02250, 35-02453, and 35-02457, where radionuclides were detected, are not depicted on the figure. Revise the figure accordingly.

LANL Response

70. Figure F-5.2-6 has been revised to include the omitted radionuclide detections (or detections above BV/FV).

NMED Comment

71. Figure F-5.2-7, Mortandad Slope Area B radionuclide COPCs detected above background values in all media, page F-212:

SWMU 35-009(c): *Americium-241 was detected at location 35-23183, but is not depicted on the figure. Two different sampling locations are denoted with the same number (i.e., 35-23183). Locations 35-23182 and 35-23187 are from the 2004/2005 sampling event and should have been marked with a red triangle instead of a black dot. Revise the figure accordingly.*

LANL Response

71. Figure F-5.2-7 has been revised to show that americium-241 was detected in two samples from location 35-23183. The duplicate location 35-23183 has been deleted. Several 2004/2005 sampling locations that were erroneously depicted as black dots have been changed to red triangles in Figure F-5.2-7.

NMED Comment

72. Figure F-5.2-9, Mortandad Slope Area B organic COPCs detected in all media, page F-214:

SWMU 35-016(o): *Since soil was excavated from sampling locations 35-02043, -02254, -02255, -02508, -02091 and -02092 in 2007, the results should have been deleted from the figure. Confirmatory samples and additional samples from the bench were collected after the remediation activities were completed. The new sampling locations and results should have therefore been depicted on the figure. Revise the figure accordingly.*

SWMU 35-016(p): *Soil was excavated from sampling locations 35-02095, -02096, and -23188. The results should have been deleted from the figure. Confirmatory samples and additional samples from the bench were collected after the remediation activities were completed, and the new sampling locations and results should have been depicted on the figure. Revise the figure accordingly.*

LANL Response

72. Figure F-5.2-9 has been revised to reflect current site conditions.

NMED Comment

73. Appendix F, Table F-5.4-6, page F-299:

SWMU 35-008-00: *Selenium was identified earlier as a COPC (Section D-4.2.4), but is not included in the risk evaluation. Revise the table accordingly.*

LANL Response

73. Selenium was retained as a COPC because, although not detected, the detection limits exceeded the BVs. Selenium has been included in the risk table using the maximum detection limit as the EPC for each depth interval. Table D-4.2-1 has also been revised to indicate the maximum detection limit as the EPC instead of a 95% UCL.

NMED Comment

74. Appendix F, Table F-5.4-12, page F-302:

SWMU 35-016(f): *Selenium was identified earlier as a COPC (Section D-4.5.3), but is not included in the risk evaluation. Revise the table accordingly.*

LANL Response

74. Selenium was retained as a COPC because, although it was not detected, the detection limits exceeded the BVs. Selenium has been included in the risk table using the maximum detection limit as the EPC for each depth interval. Table D-4.5-1 has also been revised to indicate the maximum detection limit as the EPC instead of a 95% UCL.

Pratt Canyon Subarea

NMED Comment

75. Section 8.3, Conclusions-Pratt Canyon Subarea, page 31:

The third paragraph of Section 8.3 indicates that a hazard index (HI) of 0.1 is less than or equivalent to NMED's target level of 1. This sentence is in error as 0.1 is less than and not equivalent to the target HI of 1. In addition, this paragraph inappropriately states that the total dose range for a "residential user" in the Pratt Canyon Subarea is equivalent to a total risk range of 2×10^{-5} to 5×10^{-5}. This sentence should refer to the total dose range for a "recreational user" and the total risk range should be 2×10^{-6} to 1×10^{-6} (see Page F-106, Section F-6.6.4, Interpretation, second paragraph). The Permittees must ensure that the conclusions presented in Section 8.3 accurately reflect the information presented in Appendix F, Risk Assessment.

LANL Response

75. The text in section 8.3 has been revised to state that the HI of 0.1 is less than the NMED target of 1.0.

Radiological risk is evaluated for individual sites rather than for the entire Pratt Canyon Subarea. SWMUs 35-009(d) and 35-016(m) are evaluated for the residential scenario, and Consolidated

Units 35-003(d)-00 and 35-016(k)-00 are evaluated for the recreational scenario. Therefore, the radiological risk comparison for the residential scenario referred to in NMED's comment should be for SWMUs 35-009(d) and 35-016(m) rather than for the entire Pratt Canyon Subarea. Also, the radiological risk range for the residential scenario for these sites should be 2×10^{-6} to 6×10^{-6} instead of 2×10^{-5} to 5×10^{-5}.

The radiological risk comparison for Consolidated Units 35-003(d)-00 and 35-016(k)-00 was revised for recreational users. The total risk range for the recreational user is 2×10^{-8} to 9×10^{-7}.

The text in sections 8.3 and F-6.4.4 has been revised to incorporate these corrections.

NMED Comment

76. Appendix D, Section D-5.2-3, Page D-87:

Antimony, cadmium, and nickel were retained as COPCs because the detection limits were greater than the background values, but antimony is not included in any of the risk evaluations, nickel and cadmium nor are included in industrial or recreational risk evaluations. Samples collected from 0-10 ft depth range are used for residential risk evaluations not for industrial or recreational risk as stated in the text. Revise the risk evaluations to include antimony, cadmium, and nickel. In the first paragraph it is stated that UCLs were calculated for industrial and residential risk evaluations, but in the second paragraph industrial, recreational and residential risks are mentioned. It is not clear if UCLs were also calculated for recreational risk evaluations. The Permittees must revise the text to clarify their use of UCLs.

LANL Response

76. Antimony was not detected at SWMU 35-009(d) but had detection limits greater than BVs and has been added to Tables D-5.2-1 and F-6.4-7. The text in section D-5.2.3 erroneously stated that cadmium, nickel, and selenium were not detected in the 0- to 10-ft range and has been revised. The revised text also indicates the correct risk scenarios: the Pratt Canyon Subarea was evaluated using the recreational and residential scenarios. The industrial scenario is not appropriate for the Pratt Canyon Subarea and was not evaluated (see response to Specific Comment 84).

NMED Comment

77. Appendix D, Table D-5.0-3, Page D-383:

SWMU 35-003(d)-00: *The results of additional samples collected in 2007 at locations 35-24402 and 35-24405 are not included in the Table D-5.0-3. Clarify if the results were omitted because there were no detections in the samples collected from the same locations, or if the results were excluded from Table D-5.0-6 by mistake.*

LANL Response

77. Table D-5.0-3 shows the samples collected for organic chemical analysis and Table D-5.0-6 shows the detected organic chemicals. The additional samples collected in 2007 at locations 35-24402 and 35-24405 were analyzed only for strontium-90. Therefore, the samples collected in 2007 at locations 35-24402 and 35-24405 and their results are shown in Tables D-5.0-2 and D-5.0-5, respectively. No revision to the report is necessary.

NMED Comment

78. Appendix D, Table D-5.0-4, Page D-385-D-388:

SWMU 35-003(d)-00: *Aluminum, arsenic, barium, lead, nickel, strontium and vanadium were either detected or had detection limits above background values, and are discussed in Section D-5.1-2; they are not included in the Table D-5.0-4. The Permittees must revise the text or table to make them consistent.*

SWMU 35-009(d): *Aluminum, arsenic, barium, beryllium, magnesium, nickel, silver, strontium and vanadium were either detected or had detection limits above background values, and are discussed in Section D-5.2.2, they are not included in the Table D-5.0-4. The Permittees must revise the text or table to make them consistent.*

SWMU 35-016(k)-00: *Lead is retained as a COPC but is not included in the table. Revise the table to include lead in the table.*

LANL Response

78. **Consolidated Unit 35-003(d)-00:** Arsenic, lead, strontium, and vanadium were eliminated as COPCs for Consolidated Unit 35-003(d)-00 and are therefore not included in Table D-5.0-4. Aluminum, barium, and nickel were retained as COPCs for Consolidated Unit 35-003(d)-00 and have been added to Table D-5.0-4.

SWMU 35-009(d): Beryllium, magnesium, silver, strontium, and vanadium were eliminated as COPCs for SWMU 35-009(d) and are therefore not included in Table D-5.0-4. Aluminum, arsenic, barium, and nickel were retained as COPCs for SWMU 35-009(d) and have been added to Table D-5.0-4.

Consolidated Unit 35-016(k)-00: Lead was retained as a COPC for Consolidated Unit 35-016(k)-00 and has been added to Table D-5.0-4.

NMED Comment

79. Appendix D, Table D-5.0-5, Page D-389-D-391:

SWMU 35-009(d): *Cesium-137, plutonium-238 and tritium were retained as COPCs, but the data for SWMU 35-009(d) are not included in the table. Some of the data reported for SWMU 35-003(e), are associated with SWMU 35-009(d) according to table D-5.0-2. Five samples collected from location 35-02012 are associated with SWMU 35-003(d), and not SWMU 35-009(d), at least according to Table D-5.0-2. Make appropriate revisions to the table.*

SWMU 35-016(m): *Uranium-234 was retained as a COPC, but is not included in the table. Resolve this discrepancy and revise the table accordingly.*

LANL Response

79. Table D-5.0-5 incorrectly showed samples associated with SWMU 35-003(e) that are actually for Consolidated Unit 35-003(d)-00 and SWMU 35-009(d). The table has been revised to show the correct sample associations and to include the missing data.

Table D-5.0-5 has also been revised to include detected uranium-234 concentrations above BV.

NMED Comment

80. Appendix D, Table D-5.1-1, Page D-397:

SWMU 35-003(d)-00: *Aluminum, barium, and nickel were not retained as COPCs in Section D-5.1-4, but are included in the Tables D-5.1.1 and F-6.4-4. Resolve the discrepancies and revise the tables accordingly.*

LANL Response

80. Sections D-5.1-2 and D-5.1-4 were revised to state that aluminum, barium, and nickel were retained as COPCs in tuff because they were detected above the BVs and the range of background concentrations. Table D-5.0-4 has been revised to include all detected concentrations above BVs for these inorganic chemicals.

NMED Comment

81. Appendix D, Table D-5.1-2, Page D-398:

SWMU 35-003(d)-00: *Maximum detected values for cobalt-60 and strontium-90 are 0.151 and 52.4 pCi/g, respectively (location ID# MO-00032), not 0.108 and 42.8 pCi/g as reported. Revise the table accordingly.*

LANL Response

81. Table D-5.1-2 has been revised to show 95% UCLs for cobalt-60 and strontium-90 for the 0- to 1-ft interval. The maximum concentrations cited in the comment are correct: 0.151 pCi/g and 52.4 pCi/g for cobalt-60 and strontium-90, respectively. These results are for a sample collected from 0.1- to 1.18-ft depth but are representative of the 0- to 1-ft-depth interval. With the additional sample, there are now enough data to calculate 95% UCLs for cobalt-60 and strontium-90 for the 0- to 1-ft-depth interval. The dose screening in Appendix F has been revised using these 95% UCLs as the EPCs for cobalt-60 (0.14 pCi/g) and strontium-90 (43.19 pCi/g).

NMED Comment

82. Appendix D, Table D-5.2-1, Page D-399:

SWMU 35-009(d): *Antimony should have been retained as a COPC and included in the risk evaluations. Revise tables D-5.2-1 and F-6.4-7 accordingly.*

LANL Response

82. See response to Specific Comment 76. Tables D-5.2-1 and F-6.4-7 have been revised to include antimony as a COPC.

NMED Comment

83. Appendix D, Table D-5.3-1, Page D-400:

SWMU 35-016(k)-00: *Maximum detected values reported for antimony, chromium, and selenium are not the same values as reported in Table D-5.0-4. Revise Tables D-5.3-1, F-6.4-10 and F-6.4-11 accordingly.*

LANL Response

83. The comment refers to the use of maximum detected concentrations as EPCs for the 0- to 1-ft-depth interval. The values reported in Tables D-5.3-1, F-6.4-10, and F-6.4-11 of revision 1 of the investigation report are the maximum detected concentrations for the depth interval of 0 to 1 ft. However, these detected concentrations are below the BVs for the media in which they occur; therefore, these values were not reported in Table D-5.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). In revision 2 of the investigation report, many of the EPCs were changed from maximum detected concentrations to 95% UCLs because additional samples were included in the depth intervals being evaluated.

The maximum detected concentration of antimony in the depth interval of 0 to 1 ft bgs is 0.114 mg/kg in a sediment sample, which is below the of 0.83 mg/kg. Therefore, this maximum detected concentration does not appear in Table D-5.0-4, and no revision to the report is necessary.

The maximum detected concentration of chromium in the depth interval of 0 to 1 ft bgs is 8.74 mg/kg in a sediment sample, which is below the BV of 10.5 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for chromium instead of the maximum detected concentration. Tables D-5.3-1 and F-6.4-11 have been revised to include a 95% UCL of 6.59 mg/kg for chromium.

The maximum detected concentration of selenium in the depth interval of 0 to 1 ft bgs is 0.279 mg/kg in a sediment sample, which is below the BV of 0. 3 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for selenium instead of the maximum detected concentration. Tables D-5.3-1 and F-6.4-10 have been revised to include a 95% UCL of 0.30 mg/kg for selenium.

NMED Comment

84. Appendix F, Section F-6.4.1 Screening Levels, Page F-103:

The second paragraph states that the Pratt Canyon Subarea is designated for industrial use; however, the default industrial worker exposure assumptions (8 hour work day for 225 days per year) were not considered realistic for the actual use of the subarea. Therefore, the screening evaluation used the recreational scenario SSLs, which are based on a 1 hour per day exposure for 200 days per year. These are reasonable assumptions for current use; however, if the site could be redeveloped for industrial use, future industrial risks must be evaluated. Clarify why future industrial use is not a reasonable land use for this subarea. Alternatively, perform an industrial screen to determine if any site restrictions or remedial actions are necessary. Revise the IR to address this issue.

LANL Response

84. Industrial use is not reasonable for the Pratt Canyon Subarea because the site is not conducive to development. The area is a steep slope running from the mesa top to the canyon bottom and cannot support construction of structures and buildings or industrial activities that would entail an exposure of 8-h workday for 225 d/yr as presented in NMED and EPA Region 6 SSL development guidance. The industrial parameters EPA Region 6 and NMED use to calculate the industrial SSLs substantially overestimate exposure for an individual on the slope subarea. The recreational scenario has consistently been used to evaluate risk associated with residual contamination remaining on hillside slopes throughout the Laboratory and townsite and remains the most plausible current and future land use. No revision to the report is necessary.

NMED Comment

85. Figure F-6.2-2, Index Map of Pratt Canyon Area A Sampling Locations, page F-216:

SWMU 35-016(k)-00: *Additional samples were collected in 2007, but the figure has not been updated to depict 2007 sampling locations. Revise all related figures for the Pratt Canyon Subarea to include 2007 sampling locations.*

LANL Response

85. Figure F-6.2-2 and related figures have been revised to include the two 2007 sampling locations at Consolidated Unit 35-016(k)-00 (locations 35-27421 and 35-27422).

Ten Site Canyon Subarea

NMED Comment

86. Section 9.3, Conclusions-Ten Site Canyon Subarea, page 36:

The second paragraph summarizes the residential risks, however, the conclusions do not agree with the results presented on Page F-123 of Appendix F (Risk Assessment), Section F-7.4.4 (Interpretation), first paragraph. The text states that the range of total excess cancer risks for this site is 5 x 10^{-9} to 4 x 10^{-7} (equivalent to the NMED target level of 1 x 10^{-5}) when in fact, the risks are well below the NMED target level of 1 x 10^{-5}. In addition, this paragraph inappropriately states that the total dose range for a "recreational user" is equivalent to a total risk range of 5 x 10^{-5} to 4 x 10^{-6}. This sentence should refer to the total dose range for a "residential user". It should be noted that Appendix F, Section F-7.4.4, Page F-123 also lists this same error; the term "recreational user" in the first paragraph should be replaced with "residential user". Ensure that the conclusions presented in Section 9.3 accurately reflect the information presented in Appendix F. In addition, for consistency between Appendix F and the main report text, ensure that risk ranges are presented from low to high rather than from high to low.

LANL Response

86. The text in sections 9.3 and F-7.4.4 has been revised to correct the errors identified by NMED. In addition, the total radionuclide risk ranges have been revised to 10^{-5} (see the response to General Comment 1).

NMED Comment

87. Appendix D, Table D-6.0-4, Page D-431:

SWMU 35-010(a)-99: *Aluminum and barium were retained as COPCs in Section D-6.1.3, but are not included in the Table D-6.0-4. Revise the table accordingly.*

LANL Response

87. Aluminum was detected above the BV at sampling locations 35-02475 and 35-22990, and barium was detected above the BV at sampling locations 35-02466 and 35-02475. Table D-6.0-4 has been revised accordingly.

NMED Comment

88. Appendix D, Table D-6.1-1, Page D-434:

SWMU 35-010(a)-99: *Maximum detected values reported for chromium, lead, and nickel are not the same values reported in Table D-6.0-4. Resolve the discrepancy and revise the table accordingly. Also revise risk screening evaluation Tables F-7.4-7 and F-7.4-8 accordingly.*

LANL Response

88. The comment refers to the use of maximum detected concentrations as EPCs for the 0- to 1-ft-depth interval. The values reported in Tables D-6.1-1, F-7.4-7, and F-7.4-8 of revision 1 of the investigation report are the maximum detected concentrations for the depth interval of 0 to 1 ft. However, these detected concentrations are below the BVs for the media in which they occur ; therefore, these values were not reported in Table D-6.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). In revision 2 of the investigation report, 95% UCLs have been calculated and are used as EPCs for chromium, lead, and nickel instead of the maximum detected concentrations. Tables D-6.1-1, F-7.4-7, and F-7.4-8 have been revised to include the 95% UCLs for chromium, lead, and nickel (4.76, 6.28, and 3.82 mg/kg, respectively).

NMED Comment

89. Appendix F, Section F-7.4.1 Screening Levels, Page F-120:

The second paragraph states that the Ten Site Canyon Subarea is designated for industrial use; however, the default industrial worker exposure assumptions (8 hour work day for 225 days per year) were not considered realistic for the actual use of the subarea. Therefore, the screening evaluation used the recreational scenario SSLs, which are based on a 1 hour per day exposure for 200 days per year. These are reasonable assumptions for current use; however, if the site could be redeveloped for industrial use, future industrial risks must be evaluated. Clarify why future industrial use is not a reasonable land use for this subarea. Alternatively, perform an industrial screen to determine if any site restrictions or remedial actions are necessary.

LANL Response

89. Future industrial use is not a reasonable land use for the Ten Site Canyon Subarea because the site is not conducive to development. The area is a canyon bottom and is subject to potential flooding. The area would never support industrial activities that would entail an exposure of an 8-h workday for 225 d/yr as presented in the NMED and EPA Region 6 SSL development guidance. The industrial parameters EPA Region 6 and NMED use to calculate industrial SSLs substantially overestimate potential exposure for an individual in the canyon bottom. The recreational scenario has consistently been used to evaluate risk associated with residual contamination remaining on hillside slopes and canyons throughout the Laboratory and townsite and remains the most plausible current and future land use. No revision to the report is necessary.

East Ten Site Slope Subarea

NMED Comment

90. Section 10.3, Conclusions-East Ten Site Slope Subarea, page 41:

The second paragraph presents a summary of the residential risks; however, the presentation does not agree with the results listed in Appendix F (Risk Assessment). The main text discussion states that the total dose range for a residential user is equivalent to a total risk range of 1 x 10^{-4} to 5 x 10^{-6}. However, Appendix F (see Section F.8.4.4 (Interpretation), second paragraph, Page F-146) indicates that this total risk range is associated with an industrial exposure. The residential total dose range should be equivalent to 2 x 10^{-7} to 5 x 10^{-4} which is stated on Page F-146, Section F-8.4.4, first paragraph. However, Section F-8.4.4 later identifies 2 x 10^{-7} to 5 x 10^{-4} as the industrial total risk range. Revise Section 10.3 and Appendix F, Section F-8.4.4 to address these issues.

LANL Response

90. The text in section F-8.4.2 indicates the recreational scenario was evaluated for human health screening when in fact the industrial scenario was evaluated. The first paragraph in section F-8.4.4 presents the total equivalent radionuclide risk for the residential scenario, and the second paragraph presents the industrial scenario. Section 10.3 presents the total equivalent radionuclide risk for the residential scenario, which should be 2×10^{-8} to 5×10^{-5} (see the response to General Comment 1). The text in sections F-8.4.2, F-8.4.4, and 10.3 has been revised accordingly.

NMED Comment

91. Appendix D, Section D-7.4-4, Page D-118:

SWMU 05-005(a)-00: *Cesium-137 was detected at 0.425 mg/kg (sample RE05-04-54777, Table D-7.0-5), it is not identified as a COPC, nor is any explanation provided as to why it is not considered a COPC. Revise the IR to include cesium-137 as a COPC.*

LANL Response

91. Consolidated Unit 05-005(a)-00 lies within the boundaries of Consolidated Unit 05-001(a)-99, and some sampling locations are assigned to both sites. Upon review of the sample assignments for Consolidated Units 05-001(a)-99 and 05-005(a)-00, it was decided that some sampling locations

were incorrectly assigned to both sites. Sampling locations on the slope leading into the canyon to the north should be associated only with Consolidated Unit 05-001(a)-99, not both sites. Sample RE05-04-54777 should be associated with Consolidated Unit 05-001(a)-99, not with Consolidated Unit 05-005(a)-00. Tables D-7.0-2 and D-7.0-5 have been revised to reflect this change. The detected concentration of cesium-137 for this sample (0.425 pCi/g) is at a depth where the FV does not apply, and cesium-137 is retained as a COPC in section D-7.2.4 for Consolidated Unit 05-001(a)-99.

NMED Comment

92. Appendix D, Table D-7.0-1, Page D-455:

AOC 05-001(c): *Two additional samples were collected (6.2-6.7 and 7.0-7.5 ft) at location 05-22894 (page F-137), but are not included in the table. It is not clear if there were no detected concentrations at these depths or the results were left out from Table D-7.0-4 by mistake. Resolve the discrepancies and revise the table accordingly.*

LANL Response

92. Table D-7.0-1 shows the samples collected for inorganic chemical analysis, and Table D-7.0-4 shows detections of inorganic chemicals above BVs. The additional samples collected in 2007 at location 05-22894 were analyzed only for isotopic uranium. Therefore, the samples collected at location 05-22894 in 2007 should have been included in Table D-7.0-2 (samples collected for radionuclide analysis). Table D-7.0-1 has been revised to include these samples. However, no results are above BVs for these samples, so no revision to Table D-7.0-4 is necessary.

NMED Comment

93. Appendix D, Table D-7.0-2, Page D-458:

Additional data collected in 2007 for SWMU 05-001(a)-99 and AOC 05-001(c) has not been added to the table. Revise the table to include additional data.

LANL Response

93. The 2007 samples for Consolidated Unit 05-001(a)-99 were analyzed only for inorganic chemicals, not radionuclides. Therefore, the additional samples are not presented in Table D-7.0-2, and no revision is necessary. Table D-7.0-1 includes the 2007 samples for Consolidated Unit 05-001(a)-99. The 2007 samples did not have any inorganic chemicals above BVs and therefore, the results are not presented in Table D-7.0-4.

See the response to Specific Comment 92. Table D-7.0-2 has been revised to include the 2007 samples collected at AOC 05-001(c).

NMED Comment

94. Appendix D, Table D-7.0-4, Page D-471:

SWMU 05-001(a)-99: *Cadmium and thallium were retained as COPCs in Section D-7.2.3, but are not included in the Table D-7.0-4. Nickel and chromium were detected at 493 mg/kg and 71.1 mg/kg*

(Figure F-8.2-7) at location 05-02056 (19-20 ft), but are not included in the table. Revise Table D-7.0-4 accordingly.

SWMU 05-005(a)-00: *Maximum detected values reported in Table D-7.4-1 for barium, mercury and selenium do not agree with values reported in Table D-7.0-4. Since aluminum was retained as a COPC, it must be included in the table. Revise the table accordingly.*

SWMU 52-002(a): *The Table D-7.0-4 does not include any data for samples collected from 0-1 ft and does not report any detected values for selenium, but Table D-7.5-1 reports 0.881 mg/kg as maximum detected selenium value in samples collected from both 0-1 and 0-10 ft. Resolve the discrepancies and revise the appropriate tables in appendices D and F.*

LANL Response

94. **Consolidated Unit 05-005(a)-00** lies within the boundaries of Consolidated Unit 05-001(a)-99, and some of the sampling locations are assigned to both sites. Upon review of the sample assignments for Consolidated Units 05-001(a)-99 and 05-005(a)-00, it was decided that some of the sampling locations were incorrectly assigned to both sites. Sampling locations on the slope leading into the canyon to the north should be associated only with Consolidated Unit 05-001(a)-99, not both sites. The tables in Appendix D and Appendix F have been revised accordingly.

Consolidated Unit 05-001(a)-99: Cadmium and thallium have been added to Table D-7.0-4. The sample collected at location 05-02056 (19 to 20 ft) with the elevated nickel and chromium concentrations is a quality control sample (i.e., a field duplicate). Field duplicates are not presented in the summary tables and should not be presented in the data figures because they are not used to characterize the sites. The sampling results were not used in the risk-screening assessments for Consolidated Unit 05-001(a)-99. Figure F-8.2-7 has been revised to eliminate the field duplicate results.

Consolidated Unit 05-005(a)-00: The comment refers to the use of maximum detected concentrations as EPCs for the 0- to 1-ft-depth interval. The values reported in Tables D-7.4-1 and F-8.4-12 in revision 1 of the investigation report are the maximum detected concentrations for the depth interval of 0 to 1 ft. However, these detected concentrations are below the BVs for the media in which they occur; therefore, these values were not reported in Table D-7.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). In revision 2 of the investigation report, many of the EPCs were changed from maximum detected concentrations to 95% UCLs because additional samples were included in the depth intervals being evaluated.

The maximum detected concentration of barium in the depth interval of 0 to 1 ft bgs is 80 mg/kg in a soil sample, which is below the BV of 295 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for barium instead of the maximum detected concentration. Tables D-7.4-1 and F-8.4-12 have been revised to include a 95% UCL of 70.2 mg/kg for barium.

The maximum detected concentration of mercury in the depth interval of 0 to 1 ft bgs is 0.0183 mg/kg in a soil sample, which is below the BV of 0.1 mg/kg. In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for mercury instead of the maximum detected concentration. Tables D-7.4-1 and F-8.4-12 have been revised to include a 95% UCL of 0.0185 mg/kg for mercury.

The maximum detected concentration of selenium in the depth interval 0 to 1 ft bgs is 0.621 mg/kg in a soil sample. However, the BV for selenium in soil is 1.52 mg/kg. Therefore, this maximum detected concentration does not appear in Table D-7.0-4, and no revision to the report is necessary.

Aluminum has been added to Table D-7.0-4 as a COPC.

SWMU 52-002(a): The comment refers to the use of the maximum detected concentration of selenium as the EPC for the depth intervals of 0 to 1 ft and 0 to 10 ft. The value reported in Tables D-7.5-1 and F-8.4-15 is the maximum detected concentration for these depth. However, this detected concentration is below the BV for the media in which it occurs (selenium BV for soil = 1.52 mg/kg); therefore, this value is not reported in Table D-7.0-4, which contains only detected values and detection limits above BV (or detections, where no BV is available for comparison). No revision to the report is necessary.

NMED Comment

95. Appendix D, Table D-7.0-5, Page D-480:

SWMU 05-005(a)-00: *The maximum value of 0.507 pCi/g reported for americium-241 in Table D-7.4-2 does not agree with the maximum value reported in Table D-7.0-5.*

SWMU 52-002(a): *The maximum value of 0.506 pCi/g reported for cesium-137 in Table D-7.5-2 does not agree with the maximum value reported in Table D-7.0-5.*

SWMU 52-003(a): *The maximum detected values reported for plutonium-238, -239, and uranium-238 in Table D-7.6-1 are not the same as the maximum values reported in Table D-7.0-5. The maximum values reported for Pu-238, Pu-239 and U-238 should be 0.428, 0.018, and 2.46, and not 0.0277, 0.4281 and 0.182, respectively as reported.*

SWMU 63-001(b): *The maximum detected value reported for U-235 in Table D-7.9-2 does not agree with values reported in Table D-7.0-5. There is no detected value reported for U-235 in samples collected from 0-10 ft depth.*

Resolve the above mentioned discrepancies and revise the appropriate tables in appendices D and F.

LANL Response

95. **Consolidated Unit 05-005(a)-00:** Consolidated Unit 05-005(a)-00 lies within the boundaries of Consolidated Unit 05-001(a)-99, and some of the sampling locations are assigned to both sites. Upon review of the sample assignments for Consolidated Units 05-001(a)-99 and 05-005(a)-00, it was decided that some of the sampling locations were incorrectly assigned to both sites. Sampling locations on the slope leading into the canyon to the north should only be associated with Consolidated Unit 05-001(a)-99, not both sites. Tables D-7.0-1, D-7.0-2, D-7.0-3, D-7.0-4, D-7.0-5, and D-7.0-6 have been revised, and sampling locations 05-23241, 05-23245, and 05-23247 have been assigned to Consolidated Unit 05-001(a)-99, not to Consolidated Unit 05-005(a)-00. The data DVD has also been revised.

Americium-241 is not detected or detected above FV at Consolidated Unit 05-005(a)-00. Tables D-7.4-2 and 7.0-5 have been revised following the reassignment of samples from Consolidated Unit 05-005(a)-00 to Consolidated Unit 05-001(a)-99. Appendix F tables for

Consolidated Unit 05-005(a)-00 have also been revised accordingly. Tables for Consolidated Unit 05-001(a)-99 in Appendix D and Appendix F have also been revised.

SWMU 52-002(a): The comment refers to the use of the maximum detected concentration of cesium-137 as the EPC for the 0- to 1-ft-depth interval. The value reported in Tables D-7.5-2 and F-8.4-17 of revision 1 to the investigation report is the maximum detected concentration for the 0- to 1-ft-depth interval, which is below the FV for the media in which it occurs (cesium-137 FV for soil = 1.65 pCi/g); therefore, this value was not reported in Table D-7.0-5, which contains only detected values above BV/FV (or detections, where no BV/FV is available for comparison). In revision 2 of the investigation report, a 95% UCL has been calculated and is being used as the EPC for cesium-137 instead of the maximum detected concentration. Tables D-7.5-2 and F-8.4-17 have been revised to include a 95% UCL of 0.285 mg/kg for cesium-137.

SWMU 52-003(a): The maximum detected concentrations presented in Table D-7.6-1 for plutonium-238, plutonium-239, and uranium-238 have been revised to 0.428 pCi/g, 0.018 pCi/g, and 2.46 pCi/g, respectively. Table F-8.4-20 has also been revised.

SWMU 63-001(b): No detected concentrations are reported in Table D-7.0-5 for uranium-235 from 0 to 10 ft because the radionuclide was not detected above the Qbt 3 BV (0.09 pCi/g). The maximum detected concentration in Table D-7.9-2 from 0-10 ft should be 0.05 pCi/g, not 0.01 pCi/g. Tables D-7.9-2 and F-8.4-25 have been revised accordingly.

NMED Comment

96. Appendix D, Table D-7.0-6, Page D-485:

SWMU 05-001(a)-99: *Incomplete data are reported for SWMU 05-001(a)-99. Results for only one sample (RE05-04-54762), with detected values for bis(2-ethylhexyl) phthalate and trichlorofluoromethane, are reported in the Table D-7.0-6. However, Sections D-7.2.8 and D-7.2.9 identify many other organic chemicals as COPCs in soil, fill and tuff. Provide the results for all of the data from analyses of all soil, fill and tuff samples collected at SWMU 05-001(a)-99.*

SWMU 05-005(a)-00: *The maximum detected value for trichlorofluoromethane is reported as 0.0042 mg/kg (0-10 ft) in Table D-7.0-6, and as 0.003 in Table D-7.4-3. Resolve the discrepancy and revise the table accordingly.*

LANL Response

96. **Consolidated Unit 05-001(a)-99:** Table D-7.0-6 has been revised to include the additional detected organic chemicals. Consolidated Unit 05-005(a)-00 is within the boundaries of Consolidated Unit 05-001(a)-99, and some of the sampling locations are assigned to both sites. Upon review of the sample assignments for Consolidated Units 05-001(a)-99 and 05-005(a)-00, it was decided that some of the sampling locations were incorrectly assigned to both sites. Sampling locations on the slope leading into the canyon to the north should be associated only with Consolidated Unit 05-001(a)-99, not both sites. Tables in section 7.0 have been revised to present the correct samples with the correct site. In addition, the tables in Appendix F have been revised accordingly.

Consolidated Unit 05-005(a)-00: Originally, the concentration presented in Table D-7.4-3 for trichlorofluoromethane (0.003 mg/kg) was the 95% UCL, not the maximum detected concentration. However, Tables D-7.0-5 and D-7.4-3 have been revised (see response above), and the EPC for

trichlorofluoromethane is now the maximum detected concentration of 0.0042 mg/kg. The tables in Appendix F have also been revised.

NMED Comment

97. Appendix F, Table F-8.4-4, Page F-336:

SWMU 04-001-99: *Pyrene was retained as a COPC in Appendix D (page D-111 and Table D-7.1-3), but was not included in risk screening evaluation. Revise the table to include pyrene.*

LANL Response

97. Table F-8.4-4 has been revised to include pyrene.

NMED Comment

98. Appendix F, Table F-8.4-10, Page F-338:

AOC 05-001(c): *Aluminum and zinc were not retained as COPCs in Appendix D (page D-115 and Table D-7.3-1), but are included in the risk screening evaluation. Resolve the discrepancy and revise the table or text accordingly.*

LANL Response

98. Aluminum and zinc were eliminated as COPCs in Appendix D and should not be included in the risk screening. Table F-8.4-10 has been revised accordingly.

Sigma Mesa Subarea

NMED Comment

99. Section 11.3, Conclusions-Sigma Mesa Subarea, page 46:

The first paragraph provides a summary of the residential risk results; however, the information does not agree with the results presented in Appendix F, Risk Assessment. Section 11.3 states that the total dose for an industrial user is equivalent to a total risk of 1 x 10^{-4} when it should be referring to a residential user. The same error is observed in Appendix F (see Section F.9.4.4, Interpretation, first paragraph, Page F-161), where the total dose for a residential user is referred to as the total dose for an industrial user. Revise Section 11.3 and Appendix F, Section F.9.4.4 to eliminate these errors.

LANL Response

99. Sections 11.3 and F-9.4.4 have been revised to remove the reference to total dose for an industrial user and indicate that the total dose for a residential user is 1×10^{-5} (see the response to General Comment 1).

NMED Comment

100. Section D-8.3.3, Inorganic COPC Summary at SWMU 60-005(a), Page D-135:

Antimony was not detected; the detection limits were greater than the background values in several samples and was therefore retained as a COPC in Section 8.3.1. Antimony should be included in the evaluations of risk for the site. Revise the text and Table D-8.3-1 to include antimony.

LANL Response

100. Table D-8.3-1 has been revised to include antimony as a COPC. Table F-9.4-7 have been revised to include antimony in the risk screening evaluation.

NMED Comment

101. Appendix D, Table D-8.0-5, Page D-520:

SWMU 60-005(a): *The maximum reported value for tritium is 2.688621 and not 0.623037 pCi/g according to Table D-8.0-5. Revise the appropriate tables in appendices D and F to report correct value for tritium.*

LANL Response

101. The tritium result of 2.688621 pCi/g referred to in the comment is for a field duplicate sample collected at location 60-01206. Field duplicates are quality assurance/quality control samples, and the results of field duplicates are not used for site characterization or risk/dose evaluation. Table D-8.0-5 was revised to delete the field duplicate sample. No revisions are necessary to the EPCs (Table D-8.3-2) or risk-screening evaluation (Table F-9.4-9).

NMED Comment

102. Appendix D, Table D-8.1-1, Page D-523:

SWMU 60-004(c): *According to Table D-8.0-5, europium-152 was detected at 0.484 pCi/g (location 60-01200, 1.00-1.50 ft.) and was retained as a COPC (page D-133), but is not included in the table. Revise the Table to include europium-152.*

LANL Response

102. Table D-8.1-1 has been revised to include europium-152. The radiological screening evaluation for AOC 60-004(c) in Appendix F included europium-152, and no further revisions are necessary.

NMED Comment

103. Appendix D, Table D-8.2-2, Page D-523:

SWMU 60-004(e): *According to Table D-8.0-6, maximum values for Aroclor-1254 and Aroclor-1260 (0-1 ft.) are 0.013 and 0.0066 respectively, not 0.005 and 0.0059 mg/kg, respectively. Revise the Table to reflect correct values for Aroclor-1254 and Aroclor-1260.*

LANL Response

103. The Aroclor-1254 result of 0.013 mg/kg and the Aroclor-1260 result of 0.0066 mg/kg referred to in the comment are for a field duplicate sample collected at location 60-23259. Field duplicates are quality assurance/quality control samples, and the results of field duplicates are not used for site characterization or risk evaluation. Table D-8.0-6 has been revised to delete the field duplicate sample. No revisions are necessary to the EPCs (Table D-8.2-2) or risk screening evaluation (Tables F-9.4-5 and F-9.4-6).

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EPA (U.S. Environmental Protection Agency), May 1996. "Soil Screening Guidance: Technical Background Document," EPA/540/R-95/128, Office of Solid Waste and Emergency Response, Washington, D.C. (EPA 1996, 059902)

EPA (U.S. Environmental Protection Agency), January 21, 2005. "EPA's Prior Decisions on SWMU/AOC Sites at Los Alamos National Laboratory (LANL)," U.S. Environmental Protection Agency letter to J. Bearzi (NMED-HRMB) from L.F. King (EPA Federal Facilities Section Chief), Dallas, Texas. (EPA 2005, 088464)

LANL (Los Alamos National Laboratory), October 2007. "Corrective Measures Evaluation Plan for Material Disposal Area G at Technical Area 54, Revision 2," Los Alamos National Laboratory document LA-UR-07-6882, Los Alamos, New Mexico. (LANL 2007, 098608)

NMED (New Mexico Environment Department), June 2006. "Technical Background Document for Development of Soil Screening Levels, Revision 4.0, Volume 1, Tier 1: Soil Screening Guidance Technical Background Document," New Mexico Environment Department, Hazardous Waste Bureau and Ground Water Quality Bureau Voluntary Remediation Program, Santa Fe, New Mexico. (NMED 2006, 092513)

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Investigation Report for the Middle Mortandad/ Ten Site Aggregate, Revision 2

Los Alamos
NATIONAL LABORATORY
EST.1943

Prepared by the Environmental Programs Directorate

Los Alamos National Laboratory, operated by Los Alamos National Security, LLC, for the U.S. Department of Energy under Contract No. DE-AC52-06NA25396, has prepared this document pursuant to the Compliance Order on Consent, signed March 1, 2005. The Compliance Order on Consent contains requirements for the investigation and cleanup, including corrective action, of contamination at Los Alamos National Laboratory. The U.S. government has rights to use, reproduce, and distribute this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

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Investigation Report for the Middle Mortandad/Ten Site Aggregate, Revision 2

February 2008

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EXECUTIVE SUMMARY

Between 1993 and 1998, the Environmental Programs Directorate (formerly the Environmental Restoration Project) at Los Alamos National Laboratory (the Laboratory) conducted characterization activities at Technical Areas (TAs) 04, 05, 35, 52, 60, and 63 within the Middle Mortandad/Ten Site Aggregate to determine the nature and extent of contamination from past activities conducted at these sites. Various corrective actions were also implemented at some sites to remove structures, industrial process and waste lines, and/or contaminated environmental media.

In 2002, a sampling and analysis plan (SAP) was written to identify all the remaining data needs for solid waste management units (SWMUs), areas of concern (AOCs), and consolidated units in the TA-35 portion of the Middle Mortandad/Ten Site Aggregate. In 2004, an addendum to the SAP was prepared to address SWMUs and AOCs from the other TAs within the aggregate. Both of these documents, which were approved by the New Mexico Environment Department (NMED), proposed additional characterization for the purpose of identifying the nature and extent of contamination and potential risk to human health and the environment from the SWMUs, AOCs, and consolidated units within the aggregate. For the purposes of characterization and risk screening, the Middle Mortandad/Ten Site Aggregate was divided into seven subareas. The SAP addressed the Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, and Ten Site Canyon Subareas. The SAP addendum addressed the East Ten Site Slope and Sigma Mesa Subareas.

The sampling and analysis activities detailed in the approved SAP and SAP addendum were conducted during 2004 and 2005. This investigation report, originally submitted in September 2005, evaluates the analytical data for samples collected during the 2004–2005 field effort, as well as those collected from 1993–1998 from all the SWMUs, AOCs, and consolidated units, and described in both the aggregate SAP and SAP addendum. Sampled media include soil, fill, sediment, and tuff from within and around the SWMU/AOC boundaries as well as sediment from downslope of the SWMUs and AOCs.

The 2004–2005 characterization activities, as described in the approved SAP and SAP addendum, were designed to address the remaining data needs for the Middle Mortandad/Ten Site Aggregate. Although the nature and extent of contamination were largely defined, the September 2005 report recommended the collection of additional samples to determine the vertical extent of radionuclides in a portion of the East Ten Site Slope Subarea and polyaromatic hydrocarbons (PAHs) in portions of the Mortandad Slope and Pratt Canyon Subareas. These samples were collected in April–May 2007, and the results are presented in this revised report.

The entire Middle Mortandad/Ten Site Aggregate is currently under Laboratory (institutional) control and is expected to remain so for the foreseeable future. The main use of the aggregate is industrial, with limited recreational use by Laboratory employees in some of the slope and canyon areas. The human health risk-screening assessments use residential, industrial, or recreational land-use scenarios. The risk-screening assessments indicate that no potential unacceptable risk to human health exists. Specifically, the calculated risks are below the target levels established by NMED. In addition, the total doses are less than the U.S. Department of Energy's (DOE's) target dose of 15 mrem/yr.

A slightly elevated excess potential cancer risk existed in the Mortandad Slope Subarea, largely because of elevated concentrations of PAHs at eight sampling locations in a small portion of the subarea. The 2005 report recommended that limited surface soil removal be conducted to reduce the overall concentrations of PAHs within the subarea. This limited remediation was intended to reduce the excess cancer risk as well as to prevent the transport of the contaminants down the slope to more accessible recreational areas or into the main channel of Mortandad Canyon. The soil remediation at SMWUs 35-016(o) and 35-016(p) was completed in April and June 2007, with the removal of

approximately 0.23 yd^3 of PAH-contaminated soil and collection of confirmation samples. Confirmation sampling results indicate that the soil removal achieved approximately 70% to 80% reductions in the maximum concentrations of PAHs at SWMUs 35-016(o) and 35-016(p). Additional sampling at these sites indicated that PAHs have not been transported downslope. Removal of PAH-contaminated soil at one location in SWMU 35-016(p) was completed in June 2007. Confirmation sampling results indicate PAH concentrations are approximately 2 orders of magnitude lower than in the previous samples at that location and inorganic chemical concentrations are below background.

Elevated excess potential cancer risks were calculated for two sites [Consolidated Unit 35-003(j)-99 and AOC 35-018(a)] in the Mesa Top Subarea from elevated concentrations of PAHs located beneath or adjacent to asphalt pavement. However, the pathway for exposure to a worker is incomplete over most of the developed area, particularly if contamination is under the pavement, and exposure is substantially overestimated using the industrial scenario. Therefore, no additional actions are recommended for this subarea.

Ecological risk screening was also conducted for all seven subareas within the Middle Mortandad/Ten Site Aggregate. No potential unacceptable ecological risk was found to exist in any of the subareas.

This revision includes evaluations and risk-screening assessments of individual sites (SWMUs, AOCs, and consolidated units) in addition to the original subarea evaluations in response to a notice of disapproval (NOD) received from NMED in June 2006. Data from samples collected in 2007 have been included in the appropriate site evaluations, and the subarea evaluations have been updated where appropriate to reflect the new data and the outcome of soil remediation. Additional NOD comments have also been addressed in this revision.

In evaluating individual SWMUs, AOCs, and consolidated units with the new data obtained in 2007 and the revised soil screening levels adopted by NMED since 2005, all sites were found to be at or below the NMED target level for excess cancer risk. All SWMUs, AOCs, and consolidated units [except for AOC 35-018(a)] in all seven subareas are at or below NMED target levels or DOE target dose, and they pass risk screening under the residential, industrial, or recreational scenarios. For sites that did not pass residential screening but passed industrial or recreational screening, proposed controls include maintenance of current land use (either industrial or recreational).

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Appendixes

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Appendix B Field Methods

Appendix C Data Quality

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Appendix E Analytical Suites and Results, Chain-of-Custody Forms, and Sample-Collection Logs (on DVDs included with this document)

Appendix F Risk Assessment

Appendix G Surface Water Site Assessments (on CD included with this document)

Appendix H Ecological Scoping Checklists (on CD included with this document)

Appendix I Investigation-Derived Waste Documentation (on CD included with this document)

Appendix J Borehole Logs (on CD included with this document)

1.0 INTRODUCTION

This investigation report describes the characterization activities conducted to complete the investigation into an aggregate of consolidated units, solid waste management units (SWMUs), and areas of concern (AOCs) in Technical Areas (TAs) 04, 05, 35, 52, 60, and 63 at Los Alamos National Laboratory (the Laboratory or LANL) (Figure 1.0-1). The SWMUs and AOCs addressed in this report lie within the Middle Mortandad/Ten Site Canyons Aggregate (hereafter referred to as the aggregate). Figure 1.0-2 identifies the aggregates within the Mortandad Watershed. Although the SWMUs and AOCs had been sampled previously, more data were needed to define the nature and extent of potential contamination, evaluate the potential risk associated with any residual contamination, and evaluate the need for possible additional corrective action(s).

The SWMUs and AOCs addressed in this investigation report occupy a narrow mesa (Ten Site Mesa) and adjacent slopes between Mortandad and Ten Site Canyons, as well as the floor of a small tributary canyon to Ten Site Canyon (informally named Pratt Canyon). Industrial Laboratory operations in the aggregate date back to the mid-1940s and continue to the present day. It is because of the industrial nature of much of the aggregate that previous investigations at this site have found low levels of industrial contaminants at many locations on the mesa top (LANL 2002, 073092). The chemical contaminants and radionuclide at TA-35 include zinc, nickel, copper, cadmium, polyaromatic hydrocarbons (PAHs), and plutonium-239. Commonly detected contaminants at other less industrialized areas within the aggregate include metals and uranium isotopes.

The Environmental Programs Directorate (formerly the Environmental Restoration [ER] Project) evaluated existing data, assessed potential impacts, and defined additional data needs for SWMUs and AOCs at TA-35. This was documented in the sampling and analysis plan (SAP) for the Middle Mortandad/Ten Site Canyons Aggregate (LANL 2002, 073092), hereafter referred to as the aggregate SAP. The data needs for other areas (TA-04, -05, -52, -60, and -63) were addressed in an addendum to the aggregate SAP (LANL 2004, 086540). In cases where a potential release to the environment might have occurred, assessment of existing data focused on defining data needs. Implementation of the aggregate SAP (LANL 2002, 073092) and the SAP addendum (LANL 2004, 086540) was intended to address data needs, allowing for a more complete assessment of the aggregate. The aggregate SAP and the SAP addendum were developed with the participation of the Department of Energy/National Nuclear Security Administration (DOE/NNSA) Office of Los Alamos Site Operations (OLASO) and the New Mexico Environment Department Hazardous Waste Bureau (NMED-HWB). The aggregate SAP was approved by NMED in June 2003 (NMED 2003, 078145). The SAP addendum was approved by NMED in June 2004 (NMED 2004, 087284).

2.0 BACKGROUND

In May of 1992, a Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work plan for Operable Unit (OU) 1129 (LANL 1992, 007666) was submitted to the U.S. Environmental Protection Agency (EPA), the regulatory authority at that time. The OU 1129 work plan was approved by EPA in November 1993 (EPA 1993, 030090). The OU 1129 work plan and a subsequent addendum (LANL 1994, 039932) identified SWMUs and AOCs to be investigated at TA-35, -04, -05, -52, and -63 as well as other TAs not included in this report. Investigation activities for SWMUs and AOCs at TA-60 were defined in the RFI work plan for OU 1114 (LANL 1993, 020947), which was approved by EPA on January 7, 1994 (EPA 1994, 038813).

The OU 1129 and OU 1114 work plans specified numerous investigation activities that were executed as a series of RFIs from 1993 to 1998. Results of those investigations were detailed in various RFI reports and SAPs. The March 2002 aggregate SAP (LANL 2002, 073092, pp. 14–16) summarizes the documents that have been submitted to the regulatory authorities and the history of significant RFI activities at TA-35. The March 2004 SAP addendum (LANL 2004, 086540, pp. 5–6) summarizes documents and correspondence related to investigations of sites at TA-04, -05, -52, -60, and -63. The previous investigations left a number of data needs where the nature and extent of potential contamination were not defined. Investigation activities in 2004–2005 were intended to address the remaining data needs and provide a complete basis for evaluating the sites. An investigation report presenting the results of all investigations up to that time was submitted to NMED in September 2005 (LANL 2005, 091699). The Laboratory received a notice of disapproval (NOD) for the report in June 2006 (NMED 2006, 092534) and submitted a response to NMED on August 14, 2006 (LANL 2006, 093268). This revised report completes the Laboratory's response to the June 2006 NOD and presents the results of the activities recommended in the 2005 report.

For the purpose of evaluating ecological risk, this revised investigation report organizes the SWMUs, AOCs, and consolidated units into seven subareas: Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, Ten Site Canyon, East Ten Site Slope, and Sigma Mesa, as illustrated on Figure 2.0-1. Within each subarea, each SWMU, AOC, and consolidated unit was evaluated individually for nature and extent of contamination and for potential human health risk. The subareas were established by considering one or more of the following criteria:

- Potentially different land use and exposure scenarios for risk—mesa top and adjacent upper portion of the slopes = industrial; middle and lower slopes, canyons = recreational
- Different ecological habitat—slopes/canyons versus the mesa top
- Different contaminant release scenarios—mesa top = subsurface or surface liquid releases that would predominantly percolate to the subsurface; slopes/canyons = surface releases
- Different contaminant transport mechanisms—mesa top = infiltration; mesa top/slopes = runoff; slopes/canyons = runoff and sorbed to sediment
- The adjacent slope or canyon potentially affected by each SWMU or AOC

Table 2.0-1 lists the SWMUs and AOCs included in this investigation report, with a brief description of each and the subarea in which each is included. SWMUs are listed in Module VIII of the Laboratory's Hazardous Waste Facility Permit. The EPA issued Module VIII, which addresses Hazardous and Solid Waste Amendment (HSWA) requirements, in 1990 (EPA 1990, 001585) and modified it on May 19, 1994 (EPA 1994, 044146). The number and location of the SWMUs and AOCs investigated are listed below:

- 21 SWMUs and 5 AOCs in the Mesa Top Subarea (section 5.0);
- 9 SWMUs and 7 AOCs in the Ten Site Slope Subarea (section 6.0);
- 7 SWMUs and 3 AOCs in the Mortandad Slope Subarea (section 7.0);
- 6 SWMUs and 2 AOCs in the Pratt Canyon Subarea (section 8.0);
- 4 SWMUs and 2 AOCs in the Ten Site Canyon Subarea (section 9.0);
- 13 SWMUs and 3 AOCs in the East Ten Site Slope Subarea (section 10.0); and
- 1 SWMU and 2 AOCs in the Sigma Mesa Subarea (section 11.0).

The number of SWMUs and AOCs reflect original, unconsolidated SWMUs and AOCs. Also listed in Table 2.0-1 are consolidated units (multiple SWMUs and/or AOCs that have been combined into single units). Consolidated unit numbers are used in this document; however, to be clear about previous samples collected at each SWMU and AOC, the individual SWMU and AOC numbers are also included.

The following paragraphs present brief overviews of the TAs included in this investigation. More complete descriptions and operational histories can be found in the OU 1129 and OU 1114 work plans (LANL 1992, 007666; LANL 1993, 020947). The aggregate SAP (LANL 2002, 073092) and the SAP addendum (LANL 2004, 086540) provide details of operational history (LANL 2002, 073092, pp. 16–58; LANL 2004, 086540, pp. 6–9), potential releases (LANL 2002, 073092, pp. 104–108; LANL 2004, 086540, pp. 53–54), and results of previous investigations (LANL 2002, 073092, pp. 14–16 and 58–104; LANL 2004, 086540, p. 5 and pp. 14–48). Detailed information regarding the extent of contamination is presented in Appendix F of this report.

TA-04, Alpha Site (East Ten Site Slope Subarea). Former TA-04, also known as Alpha Site (Consolidated Unit 04-001-99), is located on Puye Road and lies within the current boundaries of TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Cañada del Buey. Alpha Site was established in 1944 as a test firing site associated with the Manhattan Project. The firing site was used for small charge implosion studies using the electric method of detonation wave determination. Maximum charges fired were 200 lb. Other documented studies at Alpha Site included smaller tests of methods studying implosion experiments (LANL 1992, 007666; LANL 1994, 039932). In 1985, Alpha Site underwent decontamination and decommissioning (D&D) as part of the Los Alamos Site Characterization Program (LASCP) (NUS Corporation 1990, 012571).

TA-05, Beta Site (East Ten Site Slope Subarea). Beta Site, established in 1944 as an adjunct test firing site to Alpha Site, consists of two small firing sites [SWMUs 05-001(a) and 05-001(b)], the debris from the two firing sites [SWMUs 05-002 and 05-006(h)], and the larger Far Point Site [AOC 05-001(c)]. The two smaller firing sites were used for hydro shots using pin-type implosion diagnostics. Initially, 50- to 600-lb high explosives (HE) shots were fired at these smaller sites; however, no HE was stored at either site (LANL 1992, 007666; LANL 1994, 039932). Far Point was used briefly during 1944 and 1945 for half-scale mockup tests of the Trinity device. Former sanitary waste system SWMU 05-005(a), a French drain associated with former control building TA-05-04, was removed in 1985 during the LASCP cleanup. SWMUs 05-006(b) and 05-006(e) are both areas of soil contamination associated with former TA-05 firing site support structures. Firing activities at Beta Site ceased in 1947. The site was then used to support a variety of projects and experiments including the study of hydrogen fires, animal radiation experiments, and beryllium combustion experiments. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased general operations in 1959 but was used for periodic testing until the 1970s. The site underwent D&D in 1985 as part of the LASCP (NUS Corporation 1990, 012571). TA-05 is currently used as a security buffer zone and contains physical support facilities such as an electrical substation, test wells, several archeological sites, and environmental monitoring and buffer areas.

TA-35 (Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, and Ten Site Canyon Subareas). The original Ten Site laboratory building (TA-35-02) was constructed in 1951. Through the 1970s, the principal activities at TA-35 were associated with developing radioactive lanthanum sources for weapons testing and research involving various radionuclides, particularly plutonium and tritium (LANL 1992, 007666). Wastewater associated with these activities was processed at the TA-35 wastewater treatment facility until 1963, after which time TA-35 industrial wastewater was piped to the Laboratory's centralized wastewater facility at TA-50. In the 1970s, research activities at TA-35 shifted to laser technology, optics,

and nuclear safeguards. These activities continue at TA-35 to the present day. Documented discharges to the environment are associated with the industrial operational activities listed above and with drainlines and outfalls that handled wastewater, stormwater, and cooling water; tanks and structures used to store dielectric oils for the laser facilities; sanitary septic systems; container storage areas; and areas on the mesa top used for debris disposal.

TA-52, Reactor Development Site (East Ten Site Slope Subarea). TA-52 housed the historical UHTREX (Ultra-High-Temperature Reactor Experiment) facility (TA-52-01), which involved the use of high-temperature, gas-cooled reactor technology and the research and development of new fuels. Plans to operate UHTREX with uranium-thorium fuel elements and other fuels with a high yield of fission products did not materialize. UHTREX was used for reactor experiments from 1965 to 1968. Criticality was attained in August 1967, and the reactor operated for about 1 yr (LANL 1992, 007666; LANL 1994, 039932). In 1970, the reactor was shut down and the fuel was removed. In 1989, the contaminated equipment was removed and the building was decontaminated (Salazar and Elder 1992, 012021). Currently, a wide variety of theoretical and computational activities related to nuclear reactor performance and safety occur at TA-52 (LANL 1992, 007666; LANL 1994, 039932).

TA-52-01 had a septic system [SWMU 52-002(a)] for sanitary waste from the building. The septic system includes an inactive 2580-gal. septic tank (TA-52-03) and the associated distribution box (TA-52-04) and tile drainfield. These components were installed in 1965 when TA-52-01 was built. The system is located north of TA-52-01, approximately 30 ft north of Puye Road and 10 ft east of TA-52-02. Overflow from the tank flowed to a 300-ft-long tile drainfield trench that splits west and east near the edge of Ten Site Canyon. The septic system has been inactive since 1992 when sanitary wastelines from TA-52-01 were connected to the TA-46 Sanitary Wastewater System Consolidation (SWSC) Plant.

TA-52-02 was a waste neutralization and pumping facility [AOC 52-003(a)] designed for caustic pretreatment of UHTREX liquid acid wastes to neutralize the wastewater before it was piped via industrial wasteline No. 66 [AOC 52-003(b)] to TA-50, the Laboratory's radioactive liquid waste treatment facility.

TA-60, Sigma Mesa (Sigma Mesa Subarea). TA-60 contains Laboratory support and maintenance operations and contractor service facilities. The Nevada Test Site (NTS) test fabrication facility and test tower lie at the western end of TA-60. Several small inactive experimental areas, including a solar pond and test drill hole and a former recyclable asphalt area (currently the location of an asphalt batch plant under construction), are also located along the middle and eastern end of the mesa. Most of TA-60 consists of undeveloped mesa top. The areas are served by a single gravel road that is secured by a locked gate at the middle of the mesa. The Sigma Mesa Subarea contains one SWMU and two AOCs, located on the south side of the mesa, toward the eastern end. Two of the sites are related: a former empty drum storage area [AOC 60-004(c)] is located within the fenced area of a former surface impoundment [solar pond experiment SWMU 60-005(a)]. The third site is a former outdoor scrap equipment area, AOC 60-004(e). This area contains physical support and infrastructure facilities, including the Test Fabrication Facility and Rack Assembly and the Alignment Complex.

TA-63 (East Ten Site Slope Subarea). TA-63 includes two inactive sanitary septic systems—TA-63-12 [SWMU 63-001(a)] and TA-63-14 [SWMU 63-001(b)]—that formerly served modular office buildings/trailers (TA-63-1, TA-63-3, TA-63-4, TA-63-5, and TA-63-6) before the septic systems were removed from service in 1993, at which point the sanitary wastelines from the buildings were connected to the TA-46 SWSC Plant. The area now designated as TA-63 has undergone several redesignations. It was part of TA-04 during the 1950s and part of TA-00 during the 1960s and 1970s. In 1983, nine structures on the site had TA-00 building designations. The site has also been defined as part of TA-52. The western part of TA-52 was redesignated as TA-63 in 1989. The dates of the redesignations from

TA-04 to TA-00 and from TA-00 to TA-52 are unknown. This area at the Laboratory contains expanding environmental and waste-management functions and facilities.

3.0 SCOPE OF ACTIVITIES

This report discusses investigation activities that took place from 1993 to 2007. The activities included collecting surface and shallow subsurface soil, fill, tuff, and sediment samples during multiple investigation episodes. In addition, deeper samples were collected from boreholes to a maximum depth of 299 ft below ground surface (bgs). The following list is a chronological summary of investigation and remediation activities for sites in the aggregate:

- May 1992—OU 1129 work plan (LANL 1992, 007666) submittal
- July 1993—OU 1114 work plan (LANL 1993, 020947) submittal
- November 1993—OU 1129 work plan approval by EPA
- November 1993 to August 1997—investigation sampling at TA-35 locations (Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, and Ten Site Canyon Subareas)
- January 1994—OU 1114 work plan approval by EPA
- July 1994—investigation sampling at Sigma Mesa Subarea locations
- March to June 1995—investigation sampling at locations in East Ten Site Slope Subarea
- 1994 to 1997—series of voluntary corrective actions (VCAs) at TA-35 sites (LANL 1996, 053783; LANL 1996, 055063; LANL 1996, 054402; Byars 1997, 058737)
- July 1995—OU 1114 work plan addendum (LANL 1995, 057590) submittal
- July 1997 to April 1999—investigation sampling at TA-35 sites in Ten Site Canyon Subarea
- September 2004 to February 2005—investigation sampling at all subareas as directed by the aggregate SAP and SAP addendum
- April 2007 and June 2007—investigation sampling for nature and extent at SWMUs 35-016(o), 35-016(p), 05-001(c), and Consolidated Units 35-003(d)-00, 35-016(k)-00, and 05-001(a)-99; excavation of PAH-contaminated soil at SWMUs 35-016(o) and 35-016(p) and collection of confirmation samples; and excavation of PAH-contaminated soil at one additional location in SWMU 35-016(p), collection of confirmation samples.

Details of previous site investigations and remedial activities, including correspondence and reports previously submitted to NMED, can be found in the aggregate SAP (LANL 2002, 073092, Tables 1.3-1, 2.1-1, 2.1-2, 2.1-3, 2.1-4, and 2.1-6) and in the SAP addendum (LANL 2004, 086540, Tables 1.2-1, 2.1-1, and 2.1-2).

Investigation activities in 2004–2005 included collecting surface and shallow subsurface soil, sediment, and tuff samples; geomorphic characterization of sediments; and surveying sampling locations. A total of 389 samples were collected in 2004–2005 at 67 separate locations within the 7 subareas. Table 3.0-1 presents a crosswalk between the sample borehole (BH), auger hole (AH), and transect (TR) locations required by the aggregate SAP and SAP addendum, and the actual location identification (ID) numbers of the locations sampled between 2004 and 2007. For all years (1993–2007), a total of 1685 samples were collected from 677 locations. In 2007, an additional 74 samples were collected from the Mortandad Slope, Pratt Canyon, and East Ten Site Slope Subareas, and a small quantity of soil (approximately 0.23 yd^3)

was excavated from SWMUs 35-016(o) and 35-016(p). The methods used for collecting and handling samples are summarized in Appendix B, Field Methods. Removal of PAH-contaminated soil at one location (35-23188) in SWMU 35-016(p) was completed in June 2007, and confirmation samples were collected at that location.

Sediment samples were collected in conjunction with geomorphic characterization, which included identifying locations where post-Laboratory (i.e., post-1943) sediment was likely to be present and describing sediment characteristics used to determine the approximate age of the sediment. The geomorphic characterization was intended to identify and select, for sampling, those sediment deposits most likely to have been affected by Laboratory releases, as described in the approved aggregate SAP (LANL 2002, 073092, p. 172). Sediment sampling locations were characterized by digging (by hand) shallow potholes to expose the sediment layering so geomorphic characterization could be completed. The sediment characteristics examined included particle-size distribution, color, layering, rooting density, inclusion of human-made objects or debris, odor, landscape setting, and any other distinguishing features. Geomorphic characterization results are presented in Table 3.0-2. Sediment samples were collected using either a spade-and-scoop method or a 3-in.-diameter stainless-steel bucket auger.

Surface and shallow subsurface soil and tuff samples were collected using either a hand-powered 3-in.-diameter stainless-steel bucket auger or a truck-mounted drill rig. Deeper borehole samples were collected using a truck-mounted drill rig. Where the drill rig was used, samples were collected with a hollow-stem auger enclosing a 2.5-ft-long stainless-steel split-spoon core barrel.

The handling and submission of samples for analyses changed in 1995. Before that change, samples were submitted to the Laboratory's Chemical Science and Technology (CST) Division. Some samples were analyzed by CST Division at on-site laboratories, while others were shipped from CST Division to off-site contract laboratories. Samples analyzed by CST Division were not accompanied by full chain-of-custody and quality assurance/quality control (QA/QC) documentation. For that reason, data from samples analyzed by CST are not considered fully validated and are used only as screening-level data. Samples shipped by CST Division to off-site laboratories and samples shipped by the Laboratory's Sample Management Office (SMO) to off-site laboratories beginning in 1995 have complete chain-of-custody and QA/QC documentation and have been fully validated and qualified. Only fully validated and qualified data were used in this report for the purposes of determining nature and extent, calculating exposure point concentrations (EPCs), and performing human health and ecological risk-screening assessments.

It should be noted that the policy for using legacy data as discussed above was formalized after the aggregate SAP for this investigation (LANL 2002, 073092) was written and approved by NMED (2003, 078145). Therefore, the data sets used in that document are not identical to the data sets included in this investigation report. All screening-level data have been excluded from the final data sets in this report. Discussions of nature and extent in this report (see Appendix F) are based only on fully validated and qualified data (see Appendix C for discussions of data quality); some data included in the aggregate SAP and the SAP addendum are not included in this report. The data have been reviewed to determine whether additional data gaps exist as a result of changes in the data sets. The results of this review are summarized in Appendix D, section D-1.3. No additional data gaps were identified as a result of changes to the data sets or rejected data.

In some cases, individual samples were assigned to more than one SMWU, AOC, or consolidated unit because their locations were within overlapping sites. Therefore, some samples appear in the data tables for more than one site. Data from these samples were used in evaluating each site to which they were assigned.

All sampling locations were surveyed either by traditional surveying methods or by differentially corrected global-positioning system (GPS). The surveyed coordinates for all sampling locations are presented in Table 3.0-3. The survey methods are described in Appendix B.

Investigation-derived waste (IDW) resulting from the 2004–2007 activities consists of less than two 55-gal. drums (less than 0.54 yd^3) of personal protective equipment and miscellaneous materials used during dry decontamination of sampling equipment (e.g., paper towels and nitrile gloves). An additional 0.23 yd^3 of IDW was generated by sampling and remediation activities in 2007. Characterization of the IDW was performed using waste samples and analytical data collected during the investigation, and review of the data indicated that the 2004–2005 IDW was mixed low-level waste. Waste from 2004–2007 activities has been disposed of at an approved off-site treatment, storage, and disposal facility (TSDF). All available waste documentation, including waste characterization strategy forms (WCSFs), WCSF amendments, and waste profile forms, is provided on compact disc (CD) in Appendix I.

4.0 REGULATORY CRITERIA

Investigations and corrective actions at the Laboratory are now subject to the Compliance Order on Consent (hereafter called the Consent Order) entered into on March 1, 2005, by NMED, DOE, the Regents of the University of California, and the State of New Mexico Attorney General. The Consent Order was issued pursuant to the New Mexico Hazardous Waste Act (NMHWA), New Mexico Statutes Annotated (NMSA) 1978, §74-4-10, and the New Mexico Solid Waste Act, NMSA 1978, §74-9-36(D).

The SWMUs and AOCs addressed in this investigation report are potentially contaminated with both hazardous and radioactive components. Under the NMHWA, NMED has authority over cleanup of hazardous wastes and hazardous constituents. DOE has authority over cleanup of radioactive contamination. Radionuclides are regulated under DOE Order 5400.5, “Radiation Protection of the Public and the Environment,” and DOE Order 435.1, “Radioactive Waste Management.”

The human health and ecological screening assessments follow guidance provided by the EPA and NMED. For human health, the industrial and residential soil screening levels (SSLs) (see Tables 4.0-1 and 4.0-2) are taken from NMED guidance (NMED 2006, 092513). Recreational SSLs are taken from Laboratory guidance(LANL 2007, 094496). If screening values are not available from NMED, then EPA Region 6 (EPA 2006, 094321) or EPA Region 9 (http://www.epa.gov/region09/waste/sfund/prg/index.html) values are used. For radionuclides, the screening action levels (SALs) (see Table 4.0-3) are derived according to “Derivation and Use of Radionuclide Screening Action Levels” (LANL 2005, 088493) using RESRAD Version 6.21.

The ecological screening assessment follows guidance provided in the Laboratory’s “Screening Level Ecological Risk Assessment Methods” (LANL 2005, 090032). The evaluation involves the calculation of hazard quotients for all chemicals of potential ecological concern (COPECs) and all appropriate screening receptors (LANL 2005, 090032). Ecological screening levels (ESLs) (see Table 4.0-4) for the receptors were obtained from the Laboratory’s ECORISK Database, Version 2.2 (LANL 2005, 090032).

5.0 MESA TOP SUBAREA

The Mesa Top Subarea consists of 21 SWMUs and 5 AOCs; some of the SWMUs/AOCs have been incorporated into 3 consolidated units. Table 2.0-1 lists the Mesa Top Subarea SWMUs and AOCs, with brief descriptions of each. Figure 5.0-1 shows the entire Mesa Top Subarea. Figures 5.0-2 through 5.0-6 show the SWMUs and AOCs in each of five map areas within the Mesa Top Subarea, with sampling

locations identified. The SWMUs and AOCs in this subarea include components of the former wastewater treatment plant (WWTP), former container storage areas, an area of surface deposition from stack emissions, oil spills, septic tanks, and former oil-handling facilities. Detailed descriptions of the mesa-top SWMUs/AOCs are presented in Appendix B of the aggregate SAP (LANL 2002, 073092).

Operational histories indicate that the Mesa Top Subarea may contain a variety of inorganic, organic, and radiological contaminants as a result of past Laboratory operations. The former TA-35 WWTP is a potential source of residual subsurface contamination at the eastern end of the mesa top. Oil spills may have contributed a number of organic chemicals, including PAHs, phthalates, polychlorinated biphenyls (PCBs), and total petroleum hydrocarbons (TPH). Portions of the mesa top may have received radionuclide contamination, including tritium and plutonium, from building TA-35-02 stack emissions between 1954 and 1979.

The current land use designation for the Mesa Top Subarea is industrial and is expected to remain so for 30 yr or more (LANL 1995, 057224, pp. 87-90).

5.1 Field-Investigation Results—Mesa Top Subarea

5.1.1 Surface Conditions

Surface conditions in the Mesa Top Subarea reflect the industrial nature of TA-35. The majority of the subarea is either covered with buildings or consists of paved roads, parking areas, and sidewalks. Buildings include several large permanent structures, numerous smaller permanent structures, and several transportable buildings. In addition to occupied buildings, numerous transportainers and other portable structures are used for storage at various locations around the subarea. Only limited areas of unpaved ground exist as isolated patches among the buildings and paved areas.

The original vegetation at TA-35 probably consisted of a piñon-juniper woodland (Dick-Peddie 1993, 070062; Foxx et al. 1997, 070061, Figure 3; Koch et al. 1997, 062882). However, before the establishment of the Laboratory, much of the mesa top was cleared for crop land (Foxx et al. 1997, 070061). There are small patches of bare soil or grass that have been landscaped to some extent and patches that contain native and nonnative trees, shrubs, forbs, and grasses. These patches provide limited habitat for invertebrates and small vertebrates (birds and small mammals), particularly those species associated with human habitation and disturbance. The area along the edge of the mesa still retains some portion of the original vegetative cover. This consists primarily of piñon-juniper mixed with some ponderosa pine (Dunham 1992, 031276). Because limited habitat on the mesa top limits the populations inhabiting or foraging on this area, food-web transfer of contaminants on the mesa top is also limited.

Surface water site assessments were performed for the mesa-top SWMUs and AOCs between 1997 and 2004. These assessments use subscores for such site factors as topographic location, slope, evidence of runoff, and evidence of run-on, to arrive at a single score (from 0 to 100) for each site. This score is an indicator of the potential for erosion and sediment transport, with lower scores indicating lower potential for erosion. The SWMUs and AOCs in the Mesa Top Subarea received scores between 3.6 and 50.8, indicating a low to moderate potential for erosion. The surface water site assessments are included with this report as Appendix G (on CD included with this report).

5.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the Mesa Top Subarea. All drilling performed was for the purpose of collecting samples as required by the OU 1129 work plan (LANL 1992, 007666) or the

approved aggregate SAP (LANL 2002, 073092). Thirty boreholes, ranging in depth from 7 to 100 ft bgs, were drilled for sample collection. The borehole logs are provided in Appendix J.

5.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Mesa Top Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and has been further defined using geologic logs from boreholes drilled near the subarea (Longmire et al. 2001, 070103; LANL 2003, 076062).

The predominant rock unit at the surface is unit 3 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick on the mesa top. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30–40 ft thick. The lowest unit encountered is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once in this investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lies the Guaje Member (pumice, approximately 35 ft thick), followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

The subsurface human-made structures in the Mesa Top Subarea include utility lines (electrical, natural gas, water, sewer, and telephone). Utility line locations are shown on Figure 5.0-1. In addition, SWMU 35-001 consists of two sodium coolant storage tanks entombed in concrete (structure TA-35-43). The underground structure contains the two 4-in.-diameter, 125-ft-long tanks, oriented vertically. The structure is located near the edge of the mesa, south of the southeast corner of building TA-35-02, and is clearly marked by a concrete block and metal monument. SWMU 35-001 is administratively complete and is not part of this investigation per the approved aggregate SAP (LANL 2002, 073092, p. 12).

5.1.4 Groundwater Conditions

Groundwater occurs in three distinct modes on the Pajarito Plateau:

1. the deep regional aquifer, the upper surface of which is typically contained within the conglomerates and sandstones of the Puye Formation;
2. intermediate-depth saturated horizons; and
3. the shallow alluvial groundwater found in canyon-bottom alluvium (LANL 1998, 058841).

The top of the regional aquifer at TA-35 is estimated to be at least 1200 ft below the mesa surface. In characterization well R-14, in Ten Site Canyon just to the east of the Mesa Top Subarea, groundwater was encountered at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5). No intermediate-depth or alluvial groundwater is known to exist within the Mesa Top Subarea.

The regional aquifer is the only known aquifer in the Los Alamos area capable of producing a municipal and industrial water supply. The direction of groundwater flow in the regional aquifer is to the east-southeast, toward the Rio Grande. The velocity of groundwater flow ranges from about 20 ft/yr to 250 ft/yr (LANL 1998, 058841, p. 2-7). Details of depths to the regional aquifer, flow directions and rates, and well locations are presented in various Laboratory documents (Purtymun 1995, 045344; LANL 1997, 055622; LANL 2000, 066802).

5.1.5 Surface Water Conditions

No permanent surface water exists in the Mesa Top Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Surface runoff on the mesa top is generally diverted from pavement and building roofs into storm drains that direct the flow to the mesa edge.

5.2 Site Contamination—Mesa Top Subarea

5.2.1 Soil, Rock, and Sediment Sampling

A total of 326 soil, tuff, sediment, and fill samples were collected from 137 locations within the Mesa Top Subarea from 1993 to 2005 and are covered in this investigation report. Sample collection was directed by the OU 1129 RFI work plan (LANL 1992, 007666) for samples collected from 1993 to 1997, and by the March 2002 aggregate SAP (LANL 2002, 073092) for samples collected from 2004 and 2005.

In some cases, samples were collected at sites that were subsequently remediated by excavating material. Thus, some samples were collected from material that has since been removed and disposed of as waste. Because those samples no longer represent site conditions, they were not included in the site assessments reported here. However, the sample data from removed material were used at various times to guide selection of additional sampling locations and analytical suites, and to determine health and safety measures required for protecting workers during remediation and sampling of the site. The samples included in the data review (Appendix D) and the human health and ecological risk-screening assessments (Appendix F) in this report are only those samples that represent material still in place at the site.

The locations of samples included in the Mesa Top Subarea portion of this investigation are identified on Figures 5.0-2 through 5.0-6. To illustrate the sampling locations at a reasonable scale, the Mesa Top Subarea has been subdivided into five mapped areas (A through E). These mapped areas are not evaluated individually for nature and extent of contamination and risk screening; instead, the entire Mesa Top Subarea is evaluated as a whole (for ecological risk), and individual SWMUs, AOCs, and consolidated units are evaluated for nature and extent and human health risk.

Samples were collected using split-spoon core barrels, hand- or power-driven bucket augers, or a spade and scoop, depending upon the depth and the medium being sampled. Samples were field-screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs and, in the case of borehole samples, in borehole logs. Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the Laboratory's SMO for shipment to off-site laboratories for analysis. To document the sample handling, chain-of-custody (COC) forms were completed for all samples (COC forms have been included in Appendix E to this report). Sample analyses were requested as required by the approved aggregate SAP, and samples were analyzed according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of the field methods used are included in Appendix B.

Samples were analyzed for various combinations of semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), PCBs, TPH, pesticides, target analyte list (TAL) metals, anions, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, and strontium-90. The specific analytical suites that apply to each sample collected are listed in tables in Appendix D (Tables D-2.0-1, D-2.0-2, and D-2.0-3). A summary of the analytical methods used is presented in

Appendix C. Also in Appendix C is a discussion of general data quality information and the data qualifiers that were applied as the result of QC sample analyses.

Of the 326 total samples, 135 samples were analyzed for inorganic chemicals, 250 for radionuclides, and 165 for organic chemicals. Of the 326 samples collected, 88 were soil, 144 were tuff, 93 were fill, and 1 was sediment. Sample depths ranged from the surface (0–0.5 ft) to 100 ft bgs.

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

The field screening of samples during the investigation activities reported here was done primarily to monitor health and safety. Field team members had the option, upon consulting with the Laboratory project leader, of adjusting sampling depths or analytical requests if field-screening results indicated unusual conditions or contamination.

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

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

Organic vapor field screening (headspace screening) was performed on selected samples collected during investigation activities. Screening was performed with a photoionization detector (PID). The instruments used were the HNU Model PI-101 or the Organic Vapor Monitor (OVM) 580B with 11.7 electron-volt (eV) lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 parts per million (ppm) isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field-screening results for Mesa Top Subarea samples did not indicate radioactivity substantially elevated above background levels or detected organic vapors. No field-screening results led to a change in sampling locations or depths, and no actions related to health and safety were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample-collection logs, which are included in Appendix E.

5.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For individual SWMUs, AOCs, and consolidated units in the Mesa Top Subarea, analytical results are summarized in Appendix D, and complete data sets are included in Appendix E. Chemicals of potential concern (COPCs) were identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides and on detection status for organic chemicals. Discussions of the identification of COPCs for individual SWMUs, AOCs, and consolidated units are presented in Appendix D, sections D-2.1 through D-2.11. Identification of COPCs for the entire subarea, for the purpose of ecological screening, is based only on data from samples in the 0–5 ft bgs depth range and is discussed in Appendix D, section D-2.12.

Samples collected and analyses requested for each SWMU, AOC, and consolidated unit in the Mesa Top Subarea are presented in Tables D-2.0-1, D-2.0-2, and D-2.0-3. Table 5.2-1 presents the inorganic, radionuclide, and organic COPCs identified for each Mesa Top Subarea SWMU, AOC, and consolidated unit and for the subarea as a whole (0–5 ft bgs). Tables D-2.0-4, D-2.0-5, and D-2.0-6 present the concentrations of inorganic COPCs detected above background values (BVs), radionuclide COPCs detected or detected above BVs or fallout values (FVs), and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-3.2-7 through F-3.2-11). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figures F-3.2-12 through F-3.2-15. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-3.2-16 through F-3.2-20).

Analytical results for the Mesa Top Subarea as a whole are summarized in Appendix D, section D-2.12, and complete data sets are included in Appendix E.

The concentrations of inorganic COPCs detected above BVs are presented in Appendix D for soil and fill (Table D-2.12-2) and for tuff (Table D-2.12-4). Maps of the locations and concentrations of inorganic chemicals above BVs are shown in Appendix F (Figures F-3.2-7 through F-3.2-11).

The concentrations of radionuclide COPCs detected above BVs or FVs are presented in Appendix D for soil and fill (Table D-2.12-7), for tuff (Table D-2.12-9), and for sediment (Table D-2.12-11). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Appendix F (Figures F-3.2-12 through F-3.2-15).

The concentrations of detected organic chemicals are presented in Appendix D for soil and fill (Table D-2.12-14) and in tuff (Table D-2.12-16). Maps of the locations and concentrations of detected organic chemicals are presented in Appendix F (Figures F-3.2-16 through F-3.2-20).

After determining the COPCs for each sampled medium, EPCs were determined for each COPC. A separate EPC was determined for each COPC using all site data (regardless of medium) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0- to 1-ft concentrations were used to assess human health risk under an industrial scenario, the 0- to 5-ft concentrations were used to assess ecological risk, and the 0- to 10-ft concentrations were used to assess human health risk under a residential scenario. In some cases, a COPC was not detected or was below the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The EPCs of all COPCs used for human health risk screening of the Mesa Top Subarea are presented in tables in Appendix D, Sections D-2.1 through D-2.11. The EPCs of all COPCs used for ecological risk screening of the Mesa Top Subarea are presented in Appendix D for inorganic chemicals (Table D-2.12-5), radionuclides (Table D-2.12-12), and organic chemicals (Table D-2.12-17).

Appendix F includes a discussion of the nature and extent of contamination in the Mesa Top Subarea (section F-3.2) and presents calculations and a discussion of human health and ecological risk (sections F-3.4 and F-3.5, respectively).

5.3 Conclusions—Mesa Top Subarea

The results of sample analyses identified a number of inorganic, radionuclide, and organic COPCs in the Mesa Top Subarea. These findings are largely consistent with historical process knowledge and known past releases of contaminants from this industrialized area. The completed investigatory activities have addressed the data needs described in the approved aggregate SAP, and the nature and extent of

contamination for sites in the Mesa Top Subarea have been determined (see Appendix F, section F-3.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: SWMU 35-002, SWMU 35-004(a), SWMU 35-004(h), SWMU 35-011(d), SWMU 35-014(a), and SWMU 35-014(f). The range of HIs for these sites is 0.002 to 1, which is less than or equivalent to the NMED target level of 1.0. The range of total excess cancer risks for these sites is 7×10^{-7} to 7×10^{-6}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.001 to 3.0 mrem/yr, which is less than the DOE's target dose of 15 mrem/yr. The total dose range for a residential scenario is equivalent to a total risk range of 2×10^{-8} to 2×10^{-5} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). Risk screening results are summarized in Table 5.3-1, and in Appendix F, sections F-3.4 and F-3.5.

The following sites do not pose a potential unacceptable risk or dose to human health under an industrial scenario: SWMU 35-009(a), SWMU 35-015(a), and Consolidated Unit 35-003(a)-99. The range of HIs for these sites is 0.02 to 0.3, which is less than the NMED target level of 1.0. The range of total excess cancer risks for these sites is 6×10^{-8} to 2×10^{-6}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.002 to 4.0 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range under the industrial scenario is equivalent to a total risk range of 2×10^{-9} to 4×10^{-5} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). Therefore, the risk-screening assessments indicate the COPCs do not pose a potential unacceptable human health risk or dose under the industrial scenario.

Based on the industrial scenario, Consolidated Unit 35-003(j)-99 and AOC 35-018(a) have HIs of 0.007 and 0.1, respectively, which are less than the NMED target level of 1.0. The total excess cancer risks for these sites are 3×10^{-5} and 8×10^{-5}, respectively, which are slightly above the NMED target level of 1×10^{-5}. The doses for these sites are 0.000001 and 2 mrem/yr, which are less than DOE's target dose of 15 mrem/yr. The total doses under the industrial scenario are equivalent to total risks of 2×10^{-11} and 3×10^{-6}, respectively, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The total excess cancer risks are the result of PAHs from three sampling locations that are located under asphalt or adjacent to and receiving runoff from asphalt. The lateral and vertical extent of these detections are limited, and exposure pathways to a worker are incomplete over most of the developed area. In addition, the one location not covered by pavement is behind a Dumpster in an area used only for trash disposal. Therefore, the exposure conditions at these sites under which potential risks to a worker are assessed by the industrial scenario, (i.e., 225 d per yr for 25 yr) does not reflect the actual exposure and overestimates the potential cancer risks from PAHs.

Based on the ecological screening assessment for the Mesa Top Subarea, 32 COPECs (including 8 COPECs without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for threatened and endangered [T&E] species), the lack of complete exposure pathways, the area of contamination, the relative toxicity of related compounds, and the infrequency of detected concentrations.

Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at any Mesa Top Subarea SMWUs, AOCs, or consolidated units.

6.0 TEN SITE SLOPE SUBAREA

Ten Site Slope is the south-facing slope of Ten Site Canyon. The difference in elevation between the mesa top and the bottom of Ten Site Canyon in this area is about 100 to 120 ft. The slope has a very steep middle section with flatter bench sections above and below, and it is marked by several distinct drainage channels. Figure 6.0-1 outlines the western and eastern portions (Area A and Area B) of the Ten Site Slope Subarea. Figures 6.0-2 and 6.0-3 show the western and eastern portions of the subarea in more detail, with SWMUs/AOCs and sampling locations identified.

The Ten Site Slope Subarea consists of nine SWMUs and seven AOCs. They are outfalls, former container storage areas, inactive septic systems, and areas of stained asphalt/oil spills. The SWMUs/AOCs are related to operations and incidental activities or processes primarily at TA-35-86 (a carbon-dioxide laser building), TA-35-125 (an Antares carbon-dioxide laser building), TA-35-25 (a sodium building), TA-35-67 (a warehouse), and TA-35-02 (a laboratory and office building). The SWMUs/AOCs are either located on, or adjacent to, the north slope of Ten Site Canyon or are outfalls that discharge onto that slope. Table 2.0-1 lists the Ten Site Slope Subarea SWMUs and AOCs, with brief descriptions of each. Detailed descriptions of the SWMUs/AOCs are presented in Appendix B of the aggregate SAP (LANL 2002, 073092).

Operational histories indicate that the Ten Site Slope Subarea may contain a variety of inorganic, organic, and radiological contaminants as a result of Laboratory operations. Oil spills may have contributed a number of organic chemicals, including PAHs, phthalates, PCBs, and TPH. Septic systems are likely to have received both inorganic and organic chemicals from laboratory buildings and, in some cases, may have received radionuclides as well. Outfalls connected to drains inside buildings possibly received undocumented discharges of chemicals in all three categories. Stormwater outfalls may discharge water containing chemicals derived from parking lots and roadways, such as PAHs and metals contained in gasoline, motor oil, other automotive fluids, or asphalt. Some or all of the Ten Site Slope Subarea has probably received radionuclide contamination, including tritium and plutonium, from stack emissions at building TA-35-02 between 1954 and 1979, and uranium from 1950s power reactor discharges. From 1951 until 1975, two sanitary septic systems at TA-35 discharged to the Ten Site Slope Subarea (LANL 1992, 007666). These septic systems were investigated as SWMUs 35-009(a) and 35-009(b). In 1996, corrective actions were completed, including removing each of the septic systems (LANL 1996, 054967; LANL 1996, 055071); therefore, they no longer present a source term for contaminant release and migration.

The current land use designation for the Ten Site Slope Subarea is industrial and is expected to remain so for the next 30 yr or more (LANL 1995, 057224). Although the subarea is designated for industrial use, there are no current industrial activities; however, the slope receives runoff from the industrialized Mesa Top Subarea. Site access is uncontrolled (for Laboratory personnel), but the steep topography of the upper portion of the slope makes recreational or other use unlikely. The lower portions of the slope could be used by hikers or joggers.

The approved aggregate SAP (LANL 2002, 073092) called for geodetic surveying and radiological screening at AOC 35-017 to determine whether radionuclide contamination was present. In January 2005, EPA confirmed that AOC 35-017 had been approved for no further action (NFA) status (EPA 2005, 088464). AOC 35-017 is not discussed further in this report.

6.1 Field-Investigation Results—Ten Site Slope Subarea

6.1.1 Surface Conditions

The Ten Site Slope Subarea consists of a south-facing slope with several deeply incised drainage channels. The slope varies from near-vertical cliffs to slopes of approximately 20%. The surface material consists of mostly thin soils and colluvium over tuff, with abundant sediment in the drainages and in alluvial fans and terraces near the bottom of the slope. Exposed bedrock is common, especially on the upper parts of the slope.

Much of the slope is sparsely vegetated, with higher vegetation density in the drainages. Vegetation consists of piñon pine, juniper, and oak, with an understory community of native grasses and forbs. Ponderosa pines are also present in limited numbers.

Surface water site assessments were performed for the Ten Site Slope SWMUs and AOCs between 1997 and 2004. These assessments use subscores for such site factors as topographic location, slope, evidence of runoff, and evidence of run-on, to arrive at a single score (from 0 to 100) for each site. This score is an indicator of the potential for erosion and sediment transport, with lower scores indicating lower potential for erosion. The SWMUs and AOCs in the Ten Site Slope Subarea received scores between 3.6 and 96, indicating a low to high potential for erosion. The surface water site assessments are included with this report as Appendix G.

6.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the Ten Site Slope Subarea. All drilling performed was for the purpose of collecting samples as required by the approved aggregate SAP (LANL 2002, 073092). Twenty-five boreholes, ranging in depth from 7 ft to 30 ft bgs, were drilled for sample collection. Borehole logs are provided in Appendix J.

6.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Ten Site Slope Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and has been further defined using geologic logs from boreholes drilled near the subarea (LANL 2003, 076062).

The predominant rock unit at the surface is unit 3 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100–150 ft thick on the mesa top. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval. The lowest unit encountered is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once (in the Pratt Canyon Subarea, sample depth of 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lies the Guaje Member (pumice, approximately 35 ft thick), followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

There are no known subsurface human-made structures in the Ten Site Slope Subarea.

6.1.4 Groundwater Conditions

The top of the regional aquifer is approximately 1100–1200 ft bgs in the Ten Site Slope Subarea (see section 5.1.4 for more details about groundwater conditions). Characterization well R-14, located in Ten Site Canyon, a short distance east of the Ten Site Slope Subarea, encountered groundwater at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

6.1.5 Surface Water Conditions

No permanent surface water exists in the Ten Site Slope Subarea. Occasional surface runoff occurs as a result of snowmelt or from seasonal thunderstorms that can produce significant rainfall in short time periods. Surface runoff from the mesa top is also discharged from storm drains at several points along the length of the slope. Surface runoff on the slope is generally concentrated in shallow drainage channels with steep gradients. A narrow well-defined ephemeral channel that drains from west to east in the canyon bottom forms the lower boundary of the Ten Site Slope Subarea (the channel itself is not part of the Ten Site Slope Subarea).

6.2 Site Contamination—Ten Site Slope Subarea

6.2.1 Soil, Rock, and Sediment Sampling

A total of 293 soil, fill, tuff, and sediment samples were collected from 129 locations within the Ten Site Slope Subarea between 1993 and 2004 and are covered in this report. Sample collection was directed by the OU 1129 RFI work plan (LANL 1992, 007666), for samples collected from 1993 to 1998, and by the March 2002 aggregate SAP (LANL 2002, 073092), for samples collected in 2004.

Samples were collected using split-spoon core barrels, hand- or power-driven bucket augers, or a spade and scoop, depending upon the depth and medium being sampled. Samples were field-screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs and, in the case of borehole samples, in borehole logs. Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the SMO for shipment to off-site laboratories for analysis. To document the sample handling, COC forms were completed for all samples (see Appendix E for sample-collection logs and COC forms). Sample analyses were requested as required by the approved aggregate SAP and samples were analyzed according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of the field methods used are included in Appendix B.

Samples were analyzed for various combinations of SVOCs, VOCs, PCBs, pesticides, TPH, TAL metals, cyanide, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, and strontium-90. The specific analytical suites that apply to each sample collected are listed in tables in Appendix D (Tables D-3.0-1, D-3.0-2, and D-3.0-3). A summary of the analytical methods used is presented in Appendix C, which also contains general data quality information.

Of the 293 total samples, 134 samples were analyzed for inorganic chemicals, 245 for radionuclides, and 149 for organic chemicals. Of the 293 samples collected, 85 were soil, 124 were tuff, 32 were fill, and 52 were sediment. Sample depths ranged from the surface to 30 ft bgs.

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

The field screening of samples during the investigation activities reported here was done primarily to monitor health and safety. Field team members had the option, upon consulting with the Laboratory

project leader, of adjusting sampling depths or analytical requests if field-screening results indicated unusual conditions or contamination.

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

Radiological screening instruments were provided by the Laboratory's HSR-4 group, and calibration records can be obtained using the HSR-4 instrument identification numbers recorded in the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the Laboratory's RPP and HSR-4 procedures. Performance-check records are also on file at HSR-4 and are available upon request.

Organic vapor field screening (headspace screening) was performed on selected samples collected during investigation activities. Screening was performed with a PID. The instruments used were the HNU Model PI-101 or the OVM 580B, with 11.7 eV lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field screening of samples did not indicate radioactivity elevated above background levels or detected organic vapors. No field-screening results led to a change in sampling locations or depths, and no actions related to health and safety were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample-collection logs, which are included in Appendix E.

6.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For individual SWMUs, AOCs, and consolidated units in the Ten Site Slope Subarea, the analytical results are summarized in Appendix D, and the complete data sets are included in Appendix E. The COPCs were identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides and on detection status for organic chemicals. Discussions of the identification of COPCs for individual SWMUs, AOCs, and consolidated units are presented in Appendix D, sections D-3.1 through D-3.10. Identification of COPCs for the entire subarea, for the purpose of ecological screening, is based only on data from samples collected in the 0–5 ft bgs depth range and is discussed in Appendix D, section D-3.10.

Samples collected and analyses requested for each SWMU, AOC, and consolidated unit in the Ten Site Slope Subarea are presented in Tables D-3.0-1, D-3.0-2, and D-3.0-3. Table 6.2-1 presents the inorganic, radionuclide, and organic COPCs identified for each Ten Site Slope Subarea SWMU, AOC, and consolidated unit, and for the subarea as a whole (0–5 ft bgs). Tables D-3.0-4, D-3.0-5, and D-3.0-6 present the concentrations of inorganic COPCs detected above BVs, radionuclide COPCs detected or detected above BVs or FVs, and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-4.2-4 and F-4.2-5). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figures F-4.2-6 and F-4.2-7. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-4.2-8 and F-4.2-9.

Analytical results for the Ten Site Slope Subarea as a whole are summarized in Appendix D, section D-3.10, and complete data sets are included in Appendix E. The accompanying tables in

Appendix D present, for each medium (soil/fill, tuff, and sediment), the samples collected and the analyses requested, and the samples with chemicals either detected (for organic chemicals) or detected above BVs or FVs.

The concentrations of inorganic COPCs detected above BVs are presented in Appendix D for soil and fill (Table D-3.10-2), tuff (Table D-3.10-4), and sediment (Table D-3.10-6). Maps of the locations and concentrations are shown in Appendix F (Figures F-4.2-4 and F-4.2-5).

The concentrations of radionuclide COPCs detected above BVs or FVs are presented in Appendix D for soil and fill (Table D-3.10-9), tuff (Table D-3.10-11), and sediment (Table D-3.10-13). Maps of locations and concentrations are located in Appendix F (Figures F-4.2-6 and F-4.2-7).

The concentrations of detected organic COPCs are presented in Appendix D for soil and fill (Table D-3.10-16), tuff (Table D-3.10-18), and sediment (Table D-3.10-20). Maps of locations and concentrations are located in Appendix F (Figures F-4.2-8 and F-4.2-9).

After determining the COPCs for each sampled medium, EPCs were determined for each COPC. A separate EPC was determined for each COPC using all site data (regardless of medium) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0- to 1-ft concentrations were used to assess human health risk under a recreational scenario, the 0- to 5-ft concentrations were used to assess ecological risk, and the 0- to 10-ft concentrations were used to assess human health risk under a residential scenario. In some cases, a COPC was not detected or was below the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The EPCs of all COPCs used for human health risk screening of the Ten Site Slope Subarea sites are presented in tables in Appendix D, sections D-3.1 through D-3.9. The EPCs of all COPCs used for ecological risk screening of the Ten Site Slope Subarea are presented in Appendix D for inorganic chemicals (Table D-3.10-7), radionuclides (Table D-3.10-14), and organic chemicals (Table D-3.10-21).

Appendix F includes a discussion of the nature and extent of contamination in the Ten Site Slope Subarea (section F-4.2.3) and presents calculations and a discussion of human health and ecological risk (sections F-4.4 and F-4.5, respectively).

6.3 Conclusions—Ten Site Slope Subarea

The results of sample analyses identified a number of inorganic, radionuclide, and organic COPCs in the Ten Site Slope Subarea. These findings are largely consistent with historical process knowledge and known past releases of contaminants as well as the relationship of this slope to the adjacent Mesa Top Subarea. The completed investigation activities have addressed the data needs described in the approved aggregate SAP. Although the nature and extent of contamination in the Ten Site Slope Subarea have been determined for most contaminants, detectable concentrations of radionuclides and PCBs were found to persist into the canyon (see Appendix F, section F-4.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: Consolidated Units 35-004(g)-00, 35-014(g)-00, and 35-016(a)-00 and AOC 35-016(b). The range of HIs for these sites is 0.1 to 0.2, which is less than the NMED target level of 1.0. The range of total excess cancer risks for these sites is 1×10^{-8} to 9×10^{-6}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.4 to 2.0 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range under the residential scenario is

equivalent to a total risk range of 2×10^{-6} to, 1×10^{-5} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential unacceptable risk/dose to human health at these sites within the Ten Site Slope Subarea.

The following sites do not pose a potential unacceptable risk or dose to human health under a recreational scenario: Consolidated Unit 35-016(c)-00, SWMUs 35-009(a) and 35-009(e), and AOCs 35-014(g3) and 35-016(j). The range of HIs for these sites is 0.02 to 1, which is less than or equivalent to the NMED target level of 1.0. The range of total excess cancer risks for these sites is 4×10^{-8} to 1×10^{-5}, which is less than or equivalent to the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.003 to 0.1 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range for a recreational user from these sites is equivalent to a total risk range of 1×10^{-9} to 4×10^{-7} based on conversion from dose using RESRAD 6.21. The screening assessments indicate no potential unacceptable risk/dose to human health at these sites within the Ten Site Slope Subarea.

Based on the ecological screening assessment for the Ten Site Slope Subarea, 31 COPECs (including 9 COPECs without ESLs) were identified. All of these COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the area of contamination, the relative toxicity of related compounds, and the infrequency of detected concentrations.

Based on human health and ecological screening assessments, no additional investigation or remediation activities are required at any Ten Site Slope SWMU, AOC, or consolidated unit.

Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at any Ten Site Slope Subarea SWMUs, AOCs, or consolidated units.

7.0 MORTANDAD SLOPE SUBAREA

The Mortandad Slope Subarea is the north-facing slope of Mortandad Canyon. The slope drops steeply from the mesa edge to a broad terrace, followed by a near-vertical drop into the incised main channel of Mortandad Canyon. The slope itself is characterized by less prominent channel incision, increased soil abundance and thickness, and more abundant vegetation than the Ten Site Slope Subarea. The Mortandad Slope Subarea is made up of seven SWMUs and three AOCs, all in TA-35. They are outfalls, former container storage areas, an inactive septic system, a canyon-side disposal area, and oil spills.

Table 2.0-1 lists the Mortandad Slope Subarea SWMUs and AOCs, with brief descriptions of each. Detailed descriptions of the SWMUs and AOCs are presented in Appendix B of the aggregate SAP (LANL 2002, 073092). Figure 7.0-1 shows the entire Mortandad Slope Subarea. Figures 7.0-2 and 7.0-3 show the SWMUs/AOCs in each of two map areas (Areas A and B) within the subarea, with sampling locations identified.

In general, the sites that were to become the SWMUs and AOCs increase in age from east to west as TA-35 facility operations expanded from the eastern end of Ten Site Mesa. The SWMUs and AOCs located in the eastern portion of the subarea (Figure 7.0-3) are the result of activities that took place between 1951 and 1961 and are associated with the Ten Site laboratory (building TA-35-02) and a transportable office building (TA-35-253). Subsequent SWMUs and AOCs to the west (Figure 7.0-2) were established in the mid- to late-1970s as operations were expanded to the Chemical Laser Facility (TA-35-85) and the Target Fabrication Building (TA-35-213).

Operational histories indicate that the Mortandad Slope Subarea may contain a variety of inorganic, organic, and radiological contaminants as a result of past Laboratory operations. Oil spills may have contributed a number of organic chemicals, including PAHs, phthalates, PCBs, and TPH. The septic system is likely to have received both inorganic and organic chemicals from laboratory buildings and may have received radionuclides as well. Outfalls connected to drains inside laboratory buildings possibly received undocumented discharges of chemicals in all three categories. Stormwater outfalls may discharge water containing chemicals derived from parking lots and roadways, such as PAHs and metals contained in gasoline, motor oil, other automotive fluids, or asphalt. Portions of the Mortandad Slope Subarea may have received radionuclide contamination, including tritium and plutonium, from stack emissions at building TA-35-02 between 1954 and 1979 because of the prevailing wind direction, and also from TA-55 stack emissions.

The current land use designation for the north slope of Mortandad Canyon is industrial and is expected to remain so for 30 yr or more (LANL 1995, 057224). Access to Mortandad Canyon on Laboratory property is currently administratively controlled; Laboratory employees use access roads and trails in the canyon and on the bench as hiking and biking trails.

Neighboring Influences on the Mortandad Slope Subarea

Former TA-42, an incinerator site, was located at the north side of what is now TA-55, on the south edge of Effluent Canyon. The incinerator [SWMUs 42-001(a–c)] was designed to burn radionuclide-contaminated wastes generated at the Laboratory. The incinerator was completed in 1951 and operated for a short time in 1951 and 1952. Because of poor performance and operational problems, very little waste was actually incinerated (Harper and Garde 1981, 006286). From 1957 until 1969, the incinerator site was used to store and decontaminate equipment (e.g., dry boxes and vehicles). Because of decontamination activities, the incinerator site was designated as SWMUs 42-002(a) and 42-002(b). In 1969, an unsuccessful attempt was made to reactivate the incinerator to burn uncontaminated classified wastes, but by 1970 all operations had been discontinued and all combustibles were removed from the incinerator building (Harper and Garde 1981, 006286; DOE 1987, 008663). In 1978, the incinerator, including all structures, debris, and contaminated soils, was removed and disposed of at TA-54, Area G.

In 1993, an RFI was conducted for the TA-42 SWMUs and AOCs, and the results were reported in a subsequent RFI report (Pratt et al. 1994, 041204; LANL 1995, 050056). Contaminant concentrations did not exceed SALs; however, many of the sample analyses for metals and radionuclides were performed in mobile laboratories whose detection limits were higher than those of a fixed laboratory and were later deemed unacceptable.

A prominent neighboring influence on the Mortandad Slope Subarea is the TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF), which discharges to Effluent Canyon, a tributary of Mortandad Canyon. The RLWTF has operated since 1963 when operations ceased at the TA-35 WWTP. Radioactive liquid wastes from Laboratory operations have been collected and treated at the RLWTF using classical but effective chemical and physical treatment technologies (LANL 1996, 055688). The TA-50 RLWTF has operated continually, with periodic upgrades made to the treatment process. The discharge has been regulated as National Pollutant Discharge Elimination System (NPDES) Outfall 051 since 1990. The discharge flows a short distance downstream in Mortandad Canyon and infiltrates the alluvium.

The Laboratory has installed numerous wells in the canyon alluvium and the hydrogeologic unit immediately below it and routinely monitors the groundwater and sediment in the canyon. Monitoring data are reported annually in environmental surveillance reports (e.g., LANL 2004, 088421). Evaluation of the

monitoring data has shown that most of the radionuclides (fission products and actinides) discharged are adsorbed to the sediments. To date, the inventory of transuranic radionuclides (about 400 mCi) discharged to the canyon has been shown to be largely contained within Laboratory boundaries (Stoker et al. 1991, 007530).

Because most of the radionuclides are associated with the sediments, three sediment traps were constructed approximately 2 mi downstream from the TA-50 RLWTF outfall in middle Mortandad Canyon, east of the TA-35 boundary. Two sediment traps were constructed in 1976, and a third was constructed in 1980. The sediment traps (SWMU 00-001) dissipate the energy of major runoff events and capture transported sediments, thus eliminating or reducing radionuclide transport downstream. The sediment traps are maintained with visual inspections and periodic reconfiguration. SWMU 00-001 is not included in this investigation report but is part of the investigation of Mortandad Canyon.

An RFI was performed on the current TA-50 RLWTF outfall into Effluent Canyon [SWMU 50-006(d)] (LANL 1992, 007672). Soil samples were collected in nine transect lines perpendicular to the drainage channel beginning approximately 20 ft downstream from the outfall and extending for a distance of approximately 900 ft downstream at intervals of approximately 100 ft. Because SWMU 50-006(d) is located within Mortandad Canyon, additional investigation into this SWMU was deferred until the Mortandad Canyon investigation and is included as part of the work plan for Mortandad Canyon (LANL 1997, 056835).

7.1 Field-Investigation Results—Mortandad Slope Subarea

7.1.1 Surface Conditions

The Mortandad Slope Subarea consists of a north-facing slope with several moderately incised drainage channels. The slope varies from near-vertical cliffs at the upper slope, to slopes of approximately 10% at the base of the slope. A broad bench extends from the base of the slope. At the north side of the bench there is a near-vertical drop of approximately 30–50 ft to the bottom of Mortandad Canyon. The surface material consists of moderately thick soils and colluvium over tuff, with abundant sediment in the drainages and abundant bare tuff on the lower slope.

Vegetation in the Mortandad Slope Subarea is dominated by ponderosa pine, with lesser amounts of piñon pine, juniper, and oak shrubs. The understory consists of various native grasses and forbs. The Mortandad Slope Subarea is considerably more shaded than the Ten Site Slope Subarea from the thicker overstory of large trees.

Surface water site assessments were performed for the Mortandad Slope Subarea SWMUs and AOCs between 1997 and 2004. The SWMUs and AOCs in the Mortandad Slope Subarea received scores between 3.6 and 76.5, indicating a low to moderately high potential for erosion. The surface water site assessments are included with this report as Appendix G.

7.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the Mortandad Slope Subarea.

7.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Mortandad Slope Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and has been further defined using geologic logs from boreholes drilled near the site (e.g., regional well R-14 in Ten Site Canyon).

The predominant rock unit at the surface is unit 3 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick in this area. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval. The lowest unit encountered is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once in this investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lies the Guaje Member (pumice, approximately 35 ft thick), followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

There are no known subsurface human-made structures in the Mortandad Slope Subarea.

7.1.4 Groundwater Conditions

The top of the regional aquifer is approximately 1100–1200 ft bgs in the Mortandad Slope Subarea (see section 5.1.4 for more discussion of groundwater conditions). There is no known perched or alluvial groundwater in the area. Regional well R-14, located in Ten Site Canyon approximately 0.5 mi east-southeast of the Mortandad Slope Subarea, encountered groundwater at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

7.1.5 Surface Water Conditions

No permanent surface water exists in the Mortandad Slope Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff from the mesa top discharges from storm drains at multiple points along the length of the Mortandad Slope Subarea. Surface runoff on the Mortandad Slope Subarea is most likely to occur as channelized flow in steep, moderately incised drainage channels.

7.2 Site Contamination—Mortandad Slope Subarea

7.2.1 Soil, Rock, and Sediment Sampling

A total of 242 soil, fill, tuff, and sediment samples were collected from 111 locations within the Mortandad Slope Subarea between 1994 and 2007 and are covered in this report. Sample collection was directed by the OU 1129 RFI work plan (LANL 1992, 007666) for samples collected from 1994 to 1997, and by the March 2002 aggregate SAP (LANL 2002, 073092) for samples collected in 2004. Additional samples collected in 2007 were proposed in the September 2005 report (LANL 2005, 091699). Removal of PAH-contaminated soil was completed in April 2007, with confirmation samples collected at each location. Removal of PAH-contaminated soil and collection of confirmation samples at one location in SWMU 35-016(p) were completed in June 2007.

Samples were collected using split-spoon core barrels, hand- or power-driven bucket augers, or a spade and scoop, depending upon the depth and medium being sampled. Samples were field-screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs (see Appendix E). Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the SMO for shipment to off-site laboratories for analysis. To document the

sample handling, COC forms were completed for all samples (see Appendix E). Sample analyses were requested as required by the approved aggregate SAP and analyzed according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of the field methods used are included in Appendix B.

Samples were analyzed for various combinations of SVOCs, VOCs, PCBs, pesticides, TPH, TAL metals, anions (including perchlorate), gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, isotopic thorium, tritium, strontium-90, and americium-241. The specific analytical suites that apply to each sample collected are listed in tables in Appendix D (Tables D-4.0-1, D-4.0-2, and D-4.0-3). A summary of analytical methods used is presented in Appendix C. Appendix C also discusses general data-quality information and presents the data qualifiers applied as the result of QC sample analyses.

Of the 242 samples, 139 samples were analyzed for inorganic chemicals, 134 were analyzed for radionuclides, and 172 were analyzed for organic chemicals. Of the 242 samples collected, 76 were soil, 63 were tuff, 9 were fill, and 94 were sediment. Sample depths ranged from the surface (0–0.5 ft) to 20 ft bgs.

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

The field screening of samples during the investigation activities reported here was done primarily to monitor health and safety. Field team members had the option, upon consulting with the Laboratory project leader, of adjusting sampling depths or analytical requests if field-screening results indicated unusual conditions or contamination.

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

Radiological screening instruments were provided by the Laboratory's HSR-4 group, and calibration records can be obtained using the HSR-4 instrument identification numbers recorded in the weekly performance test logs. Weekly performance checks were performed in all radiological field-screening instruments in accordance with the Laboratory's RPP and HSR-4 procedures. Performance-check records are also on file at HSR-4 and are available upon request.

Organic vapor field screening was performed on selected samples collected during investigation activities. Screening was performed with a PID. The instruments used were the HNU Model PI-101 or the OVM 580B, with 11.7 eV lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field screening of samples in the Mortandad Slope Subarea did not indicate radioactivity elevated above background levels or detected organic vapors. No field-screening results led to a change in sampling locations or depths, and no actions related to health and safety were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample-collection logs, which are included in Appendix E.

7.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For individual SWMUs, AOCs, and consolidated units in the Mortandad Slope Subarea, analytical results are summarized in Appendix D, and complete data sets are included in Appendix E. COPCs were

identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides, and on detection status for organic chemicals. Discussions of the identification of COPCs for individual SWMUs, AOCs, and consolidated units are presented in Appendix D, sections D-4.1 through D-4.8. Identification of COPCs for the entire subarea, for the purpose of ecological screening, is based only on data from samples in the 0–5 ft bgs depth range, and is discussed in Appendix D, section D-4.9.

Samples collected and analyses requested for each SWMU, AOC, and consolidated unit in the Mortandad Slope Subarea are presented in Tables D-4.0-1, D-4.0-2, and D-4.0-3. Table 7.2-1 presents the inorganic, radionuclide, and organic COPCs identified for each Mortandad Slope Subarea SWMU, AOC, and consolidated unit, and for the subarea as a whole (0–5 ft bgs). Tables D-4.0-4, D-4.0-5, and D-4.0-6 present the concentrations of inorganic COPCs detected above BVs, radionuclide COPCs detected or detected above BVs or FVs, and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-5.2-4 and F-5.2-5). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figures F-5.2-6 and F-5.2-7. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-5.2-8 and F-5.2-9.

Analytical results for the Mortandad Slope Subarea as a whole are summarized in Appendix D, section D-4.9, and complete data sets are included in Appendix E. The accompanying tables in Appendix D present, for each medium (soil/fill, tuff, and sediment), the samples collected and the analyses requested for each and the samples with chemicals either detected (for organic chemicals) or detected above BVs or FVs.

The concentrations of inorganic COPCs detected above BVs are presented in Appendix D for soil and fill (Table D-4.9-2), tuff (Table D-4.9-4), and sediment (Table D-4.9-6). Maps of the locations and concentrations are shown in Appendix F (Figures F-5.2-4 and F-5.2-5).

The concentrations of radionuclide COPCs detected above BVs or FVs are presented in Appendix D for soil and fill (Table D-4.9-9), tuff (Table D-4.9-11), and sediment (Table D-4.9-13). Maps of locations and concentrations are located in Appendix F (Figures F-5.2-6 and F-5.2-7).

The concentrations of detected organic COPCs are presented in Appendix D for soil and fill (Table D-4.9-16), tuff (Table D-4.9-18), and sediment (Table D-4.9-20). Maps of locations and concentrations are located in Appendix F (Figures F-5.2-8 and F-5.2-9).

After determining the COPCs for each sampled medium, EPCs were determined for each COPC. A separate EPC was determined for each COPC using all site data (regardless of medium) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0- to 1-ft concentrations were used to assess human health risk under a recreational scenario, the 0- to 5-ft concentrations were used to assess ecological risk, and the 0- to 10-ft concentrations were used to assess human health risk under a residential scenario. In some cases, a COPC was not detected or was below the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The EPCs of all COPCs used for human health risk screening of the Mortandad Slope Subarea are presented in tables in Appendix D, sections D-4.1 through D-4.8. The EPCs for all COPCs are presented in Appendix D for inorganic chemicals (Table D-4.9-7), radionuclides (Table D-4.9-14), and organic chemicals (Table D-4.9-21).

Appendix F includes a discussion of the nature and extent of contamination in the Mortandad Slope Subarea (section F-5.2.3) and presents calculations and a discussion of human health and ecological risk (sections F-5.4 and F-5.5, respectively).

7.3 Conclusions—Mortandad Slope Subarea

The results of sample analyses identified a number of inorganic chemical, radionuclide, and organic COPCs in the Mortandad Slope Subarea. These are largely consistent with historical process knowledge and known past releases of contaminants as well as the relationship of this slope to the adjacent Mesa Top Subarea. The completed investigation activities have addressed the data needs described in the approved aggregate SAP. The nature and extent of contamination in the Mortandad Slope Subarea have been determined, with the exception that detectable concentrations of radionuclides and PCBs were found to persist into Mortandad canyon (see Appendix F, section F-5.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: Consolidated Units 35-008-00 and 35-016(i)-00, SWMUs 35-004(b), 35-009(c), 35-016(f), and 35-016(p). The range of HIs for these sites is 0.00008 to 0.7, which is less than the NMED target level of 1.0. The range of total excess cancer risks for these sites is 4×10^{-7} to 5×10^{-6}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 2 to 3 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user in the Mortandad Slope Subarea is equivalent to a total risk range from 5×10^{-6} to 2×10^{-5} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate that there is no potential unacceptable risk/dose to human health at these sites within the Mortandad Slope Subarea. Results of confirmation sampling for PAHs and metals at SWMU 35-016(p) (location ID 35-23188) indicate that concentrations of detected PAHs are more than 2 orders of magnitude lower than in previous samples at that location, and metals are below BVs.

The following site does not pose a potential unacceptable risk or dose to human health under a recreational scenario: SWMU 35-016(o). The HI for this site is 0.1, which is less than or equivalent to the NMED target level of 1.0. The total excess cancer risk for this site is 9×10^{-6}, which is less than the NMED target level of 1×10^{-5}. The dose for this site is 0.4 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose for a recreational user in the Mortandad Slope Subarea is equivalent to a total risk of 1×10^{-6} based on a conversion using RESRAD Version 6.21. The screening assessments indicate no potential unacceptable risk/dose to human health at these sites within the Mortandad Slope Subarea.

Based on the ecological screening assessment for the Mortandad Slope Subarea, 34 COPECs (including 9 COPECs without ESLs) were identified. Most of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and the infrequency of detected concentrations. The remaining COPECs do not present a potential ecological risk to receptors at this subarea.

Based on human health and ecological screening assessments, no additional investigation or remediation activities are required at any Mortandad Slope SWMU, AOC, or consolidated unit.

Based on human health and ecological risk-screening assessments, no additional investigation or remediation activities are required at any Mortandad Slope Subarea SWMUs, AOCs, or consolidated units.

8.0 PRATT CANYON SUBAREA

Pratt Canyon is a tributary of Ten Site Canyon and is located at the east end of Ten Site Mesa. Pratt Canyon heads at the east end of the mesa at the location of the former TA-35 WWTP, several components of which were located within the upper portion of the canyon. The Pratt Canyon Subarea consists of six SWMUs and two AOCs, all within TA-35. These are outfalls, former WWTP components, an inactive septic system, and Pratt Canyon itself, which received planned and unplanned discharges from the WWTP that operated from 1951 to 1963. Table 2.0-1 lists the Pratt Canyon Subarea SWMUs/AOCs with brief descriptions of each. Detailed descriptions of the SWMUs/AOCs are presented in Appendix B of the aggregate SAP (LANL 2002, 073092). Figure 8.0-1 shows the entire Pratt Canyon Subarea. Figures 8.0-2 and 8.0-3 show the SWMUs and AOCs in each of two areas (Area A and Area B) within the subarea, with sampling locations identified.

The Pratt Canyon Subarea SWMUs and AOCs are primarily related to the operation of the TA-35 WWTP. Additional contributors include an inactive septic system leach field, a cooling water outfall, and two stormwater outfalls. Several WWTP structures [SWMUs 35-003(d,e,l,q)], located at the head of Pratt Canyon, were removed during the early to mid-1980s. During this effort, backfill was placed at the head of the canyon to fill the excavations and to prevent erosion of potentially contaminated material present as a result of WWTP discharges. Subsequent runoff events incised the backfill and threatened to reexpose the potentially contaminated horizon. In 1996, the ER Project conducted an interim action (IA) at the location of SWMUs 35-003(d,e,l,q) and in Pratt Canyon. The IA activities included replacing fill in the incised channel, stabilizing the slope using compaction and vegetative matting, and installing a berm that diverts runoff to a riprap-lined drainage located north of the site and common to inactive outfall SWMU 35-016(k) and daylight drainage channel AOC 35-016(l) (LANL 1996, 055809). The action was designed to remove the potential for residual contamination mobilization by insulating the source from surface water exposure.

The current land use designation for Pratt Canyon is industrial and is expected to remain so for 30 yr or more (LANL 1995, 057224). Site access is uncontrolled for Laboratory employees (the general public is excluded). An unpaved road located along the south edge of Pratt Canyon provides limited access from the TA-35 mesa top to an unpaved road in Ten Site Canyon. In addition to providing facility access, these roads are used by Laboratory employees as hiking and biking trails.

Because most of the discharges into Pratt Canyon are related to the former WWTP, the list of potential contaminants expected in the Pratt Canyon Subarea is derived from the operational histories of that facility. Potential radionuclide contaminants include isotopes of plutonium and uranium, barium-140, lanthanum-140, strontium-89, strontium-90, cesium-137, and tritium. Metals and SVOCs are also potential contaminants.

During the first 4 yr of operation, neither the volumes treated and discharged nor the radionuclide contents were routinely recorded in daily operation logs for the treatment plant. Information about the discharges that took place during 1951 and 1952 was obtained from Aeby (1954, 000742). Summaries of discharges from the WWTP are presented in Table 2.1-5 of the aggregate SAP (LANL 2002, 073092, p. 47).

Reports indicate two unplanned releases in which the gross-beta activity exceeded 1 Ci. The first discharge occurred on September 6, 1952, when wastewater containing 1.8 Ci gross-beta activity and approximately 70 mCi of strontium-89 and strontium-90 were released because of a malfunctioning solenoid valve (Aeby 1952, 000741; Aeby 1954, 000742). Another unplanned discharge occurred over the weekend of February 11 and 12, 1956. In this case, a leaking pipe caused 21,200 gal. (80.2 m^3) of water (and a quantity of sludge) to be pumped into the canyon. Based on activities measured earlier that

week, it was estimated that approximately 7 Ci gross-beta activity and 0.7 Ci of strontium-89 and strontium-90 combined were released (Mathews 1954, 055686).

The total gross-beta activity and strontium concentrations discharged in wastewater in 1953 were estimated in documentation by Mathews (1954, 055686) based on the total volume of wastewater (approximately 300,000 gal. [an average of 1150 gal. per working day]) and two samples collected from the concrete holding tanks during February and April of 1954. The discharges of 1954 were thought to be similar in volume and composition to those of 1953 (Keenan 1975, 000845).

All components of the original TA-35 WWTP were removed by 1997 and no longer constitute a contaminant source term.

8.1 Field-Investigation Results—Pratt Canyon Subarea

8.1.1 Surface Conditions

Pratt Canyon drains from west to east, beginning at the east end of the Mesa Top Subarea. The canyon includes steep north-facing and south-facing slopes that adjoin a relatively flat canyon bottom. The canyon bottom contains distinct floodplain terraces above a channel that is moderately incised in the upper portion of the canyon but becomes less well defined in the lower portion of the canyon. The extreme upper part of Pratt Canyon includes an area that was backfilled and modified in 1996 with erosion control features (LANL 1996, 055809).

The vegetation in Pratt Canyon is dominated by ponderosa pine, with an understory of gambel oak, some juniper and fir on the slopes, and willow and native grasses in the floodplain terrace areas. There is a small area of riparian habitat near the confluence with Ten Site Canyon that supports a limited population of cattails.

In 1997, surface water site assessments were performed for the Pratt Canyon SWMUs and AOCs. The SWMUs and AOCs in the Pratt Canyon Subarea received scores between 18.3 and 87, indicating low to high potential for erosion. The surface water site assessments are included with this report as Appendix G.

8.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the Pratt Canyon Subarea. All drilling performed was for the purpose of collecting samples as required by the approved aggregate SAP (LANL 2002, 073092). Thirty boreholes, ranging in depth from 8.6 ft to 299 ft bgs, were drilled for sample collection. Borehole logs are provided in Appendix J.

8.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Pratt Canyon Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and has been further defined using geologic logs from boreholes drilled near the subarea.

The predominant rock unit at the surface is unit 3 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick in Pratt Canyon. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft

thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval. The lowest unit encountered is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once in this investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120 to 180 ft thick. Below the Otowi Member lies the Guaje Member (pumice, approximately 35 ft thick), followed by the Puye Formation and the Cerros del Rio basalts with a combined thickness of at least 680 ft in this area. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

There are no known subsurface human-made structures in the Pratt Canyon Subarea.

8.1.4 Groundwater Conditions

The top of the regional aquifer is approximately 1100 to 1200 ft bgs in the Pratt Canyon Subarea (see section 5.1.4 for more discussion of groundwater conditions). There is no known perched or alluvial groundwater in the area. Regional well R-14, located in Ten Site Canyon approximately 0.2 mi east-southeast of the Pratt Canyon Subarea, encountered groundwater at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

8.1.5 Surface Water Conditions

No permanent surface water exists in the Pratt Canyon Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff from the eastern end of the mesa top discharges from storm drains into the upper part of Pratt Canyon. Surface runoff in the upper part of Pratt Canyon occurs mostly as channelized flow in steep, moderately incised drainage channels. The lower portion of the subarea is a broader canyon with a lower gradient, where surface flow is slower, and some areas exhibit poor drainage and occasional retention of standing water.

8.2 Site Contamination—Pratt Canyon Subarea

8.2.1 Soil, Rock, and Sediment Sampling

A total of 223 soil, fill, tuff, and sediment samples were collected from 72 locations in the Pratt Canyon Subarea between 1994 and 2007 and are covered in this report. Sample collection was directed by the OU 1129 RFI work plan (LANL 1992, 007666) for samples collected from 1994 to 2001 and by the March 2002 aggregate SAP (LANL 2002, 073092) for samples collected in 2004 and 2005. The additional samples collected in 2007 were proposed by the September 2005 version of this report (LANL 2005, 091699).

Samples were collected using split-spoon core barrels, hand- or power-driven bucket augers, or a spade and scoop, depending upon the depth and medium being sampled. Samples were field-screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs (see Appendix E) and, in the case of borehole samples, in borehole logs (see Appendix J). Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the SMO for shipment to off-site laboratories for analysis. To document the sample handling, COC forms were completed for all samples (see Appendix E). Sample analyses were requested as required by the approved aggregate SAP and analyzed according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of the field methods that were used are included in Appendix B.

Samples were analyzed for various combinations of SVOCs, VOCs, PCBs, pesticides, TPH, TAL metals, anions, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, isotopic thorium, tritium, strontium-90, and americium-241. The specific analytical suites that apply to each sample collected are listed in tables in Appendix D (Tables D-5.0-1, D-5.0-2, and D-5.0-3). A summary of analytical methods used is presented in Appendix C. Appendix C also discusses general data quality information.

Of the 223 total samples, 97 samples were analyzed for inorganic chemicals, 198 were analyzed for radionuclides, and 77 were analyzed for organic chemicals. Of the 223 samples collected, 56 were soil, 111 were tuff, 10 were fill, and 46 were sediment. Sample depths ranged from the surface (0–0.5 ft) to 299 ft bgs.

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

The field screening of samples during the investigation activities reported here was done primarily to monitor health and safety. Field team members had the option, upon consulting with the Laboratory project leader, of adjusting sampling depths or analytical requests if field-screening results indicated unusual conditions or contamination.

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

Radiological screening instruments were provided by the Laboratory's HSR-4 group, and calibration records can be obtained using the HSR-4 instrument identification numbers recorded in the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the Laboratory's RPP and HSR-4 procedures. Performance check records are also on file at HSR-4 and are available upon request.

Organic vapor field screening was performed on selected samples collected during investigation activities. Screening was performed with a PID. The instruments used were the HNU Model PI-101 or the OVM 580B, with 11.7 eV lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field screening of samples did not indicate radioactivity substantially elevated above background levels or detected organic vapors. No field-screening results led to a change in sampling locations or depths, and no actions related to health and safety were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample-collection logs, which are included in Appendix E.

8.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For individual SWMUs, AOCs, and consolidated units in the Pratt Canyon Subarea, analytical results are summarized in Appendix D, and complete data sets are included in Appendix E. COPCs were identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides, and on detection status for organic chemicals. Discussions of the identification of COPCs for individual SWMUs, AOCs, and consolidated units are presented in Appendix D, sections D-5.1 through D-5.4.

Samples collected and analyses requested for each SWMU, AOC, and consolidated unit in the Pratt Canyon Subarea are presented in Tables D-5.0-1, D-5.0-2, and D-5.0-3. Table 8.2-1 presents the

inorganic, radionuclide, and organic COPCs identified for each Pratt Canyon Subarea SWMU, AOC, and consolidated unit. Tables D-5.0-4, D-5.0-5, and D-5.0-6 present the concentrations of inorganic COPCs detected above BVs, radionuclide COPCs detected above BVs or FVs, and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-6.2-4 and F-6.2-5). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figures F-6.2-6 and F-6.2-7. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-6.2-8 and F-6.2-9.

Analytical results for the Pratt Canyon Subarea as a whole are summarized in Appendix D, section D-5.5, and complete data sets are included in Appendix E. The accompanying tables in Appendix D present, for each medium (soil/fill, tuff, and sediment), the samples collected and analyses requested for each and the samples with chemicals either detected (for organic chemicals) or detected above BVs or FVs.

The concentrations of inorganic COPCs detected above BVs are presented in Appendix D for soil and tuff (Table D-5.5-2), tuff (Table D-5.5-4), and sediment (Table D-5.5-6). Maps of the locations and concentrations are shown in Appendix F (Figures F-6.2-4 and F-6.2-5).

The concentrations of radionuclide COPCs detected above BVs or FVs are presented in Appendix D for soil and fill (Table D-5.5-9), tuff (Table D-5.5-11), and sediment (Table D-5.5-13). Maps of locations and concentrations are in Appendix F (Figures F-6.2-6 and F-6.2-7).

The concentrations of detected organic COPCs in the Pratt Canyon Subarea are presented in Appendix D for soil and fill (Table D-5.5-16), tuff (Table D-5.5-18), and sediment (Table D-5.5-20) and in Appendix F, Figures F-6.2-8 and F-6.2-9.

After determining the COPCs for each sampled medium, EPCs were determined for each COPC (see Appendix D for a description of the process for calculating 95% UCLs). A separate EPC was determined for each COPC using all site data (regardless of medium) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0- to 1-ft concentrations were used to assess human health risk under a recreational scenario, the 0- to 5-ft concentrations were used to assess ecological risk, and the 0- to 10-ft concentrations were used to assess human health risk under a residential scenario. In some cases, a COPC was not detected or not above the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The EPCs for all COPCs are presented in Appendix D for inorganic chemicals (Table D-5.5-7), radionuclides (Table D-5.5-14), and organic chemicals (Table D-5.5-21).

Appendix F includes a discussion of the nature and extent of contamination in the Pratt Canyon Subarea (section F-6.2.3) and presents calculations and discussion of human health and ecological risk (sections F-6.4 and F-6.5, respectively).

8.3 Conclusions—Pratt Canyon Subarea

The results of sample analyses identified a number of inorganic, radionuclide, and organic COPCs in the Pratt Canyon Subarea. These are largely consistent with historical process knowledge and known past releases of contaminants, as well as the relationship of this slope to the adjacent Mesa Top Subarea. The completed investigation activities have addressed the data needs described in the approved aggregate SAP. The nature and extent of contamination in the Pratt Canyon Subarea have been determined (see Appendix F, section F-6.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: SWMUs 35-009(d) and 35-016(m). The range of HIs for these sites is 0.0006 to 0.4, which is less than the NMED target level of 1.0. The total excess cancer risk for these sites is 1×10^{-5}, which is equivalent to NMED target level of 1×10^{-5}. The range of doses for these sites is 0.3 to 0.9 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user in SWMUs 35-009(d) and 35-016(m) is equivalent to a total risk range from 2×10^{-6} to 6×10^{-6}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate that there is no potential unacceptable risk/dose to human health at these sites within the Pratt Canyon Subarea.

The following sites do not pose a potential unacceptable risk or dose to human health under a recreational scenario: Consolidated Units 35-003(d)-00 and 35-016(k)-00. The HIs for each site is 0.1, which is less than or equivalent to the NMED target level of 1.0. The range of total excess cancer risks for these sites is 8×10^{-7} to 1×10^{-5}, which is less than or equivalent to the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.01 to 0.3 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range for a recreational user in Consolidated Units 35-003(d)-00 and 35-016(k)-00 is equivalent to a total risk range from 2×10^{-8} to 9×10^{-7} based on a conversion using RESRAD 6.21. The screening assessments indicate no potential unacceptable risk/dose to human health at these sites within the Pratt Canyon Subarea.

Based on the ecological screening assessment for the Pratt Canyon Subarea, 27 COPECs (including 9 COPECs without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and the infrequency of detected concentrations.

Based on human health and ecological screening assessments, no additional investigation or remediation activities are required at any Pratt Canyon SWMU, AOC, or consolidated unit.

9.0 TEN SITE CANYON SUBAREA

The Ten Site Canyon Subarea comprises the canyon floor west of Ten Site Canyon and extends east of the confluence with Pratt Canyon. Figure 9.0-1 outlines the entire Ten Site Canyon Subarea. Figures 9.0-2 and 9.0-3 show the SWMUs/AOCs in each of two map areas within the subarea, with sampling locations identified. The Ten Site Canyon Subarea is made up of four SWMUs and two AOCs associated with an inactive sanitary wastewater treatment facility, including three lagoons, a sand filter treatment unit, and an effluent outfall that collectively operated from 1975 to 1992. Table 2.0-1 lists the Ten Site Canyon Subarea SWMUs/AOCs with a brief description of each. Detailed descriptions of the Ten Site Canyon Subarea SWMUs/AOCs are presented in Appendix B of the approved aggregate SAP (LANL 2002, 073092).

The Ten Site Canyon Subarea includes much of the Ten Site Canyon floor extending from the west end of TA-35 to east of the confluence with Pratt Canyon. In addition to receiving potential releases from hillslope SWMUs/AOCs (e.g., Ten Site Slope Subarea) and the Pratt Canyon Subarea, the Ten Site Canyon Subarea is directly associated with components of an inactive sanitary wastewater treatment facility and its discharges. The facility was built in stages: the lagoons [SWMUs 35-010(a,b,c)] were constructed and began operating in 1975, the sand filter beds [SWMU 35-010(d)] and NPDES-permitted outfall EPA-SSS-10S [AOC 35-010(e)] were installed in 1983. Before construction of the sand filter beds, the lagoons discharged via an unpermitted outfall located at the southeast corner of the southeast lagoon

[SWMU 35-010(c)]. The facility ceased operations in 1992, when sanitary waste was redirected to the Laboratory's SWSC facility at TA-46.

The current land use designation of the Ten Site Canyon Subarea is industrial and is expected to remain so for 30 yr or more (LANL 1995, 057224). Site access is uncontrolled (for Laboratory employees; the general public is excluded). An unpaved road provides vehicle access from the unnamed mesa located south of Ten Site Mesa, and the site is accessible by walking from Ten Site Mesa. In addition to providing facility access, the road is used by Laboratory employees as a hiking and biking trail.

Most of the discharges into the Ten Site Canyon Subarea are related to the former sanitary wastewater treatment facility. In addition to sanitary waste, these lagoons are reported to have received small quantities of radionuclides and other chemicals as well as photographic processing wastes from TA-35, TA-48, TA-50, and TA-55 (LANL 1986, 008657; LANL 1990, 007511).

Additional impacts to the Ten Site Canyon Subarea may have come from discharges to Pratt Canyon from the former TA-35 WWTP. Discussion of the Pratt Canyon Subarea is presented in section 8 of this report.

9.1 Field-Investigation Results—Ten Site Canyon Subarea

9.1.1 Surface Conditions

The Ten Site Canyon Subarea is located on a relatively flat bench surface above and to the north of the main channel of Ten Site Canyon (see Figure 9.0-1). Material at the surface consists of alluvial sediment, soils, colluvium, or exposed bedrock tuff. Three human-made lagoons [SWMUs 35-010(a,b,c)] are present in the western portion of the subarea. The lagoons are constructed with earthen berms that consist of fill material including crushed tuff and soil.

Vegetation in the subarea consists of widely scattered ponderosa pine with an understory of grasses, forbs, and shrubs. A single unpaved road leads from the mesa top south of Ten Site Canyon to the north side of the lagoons (Figure 9.0-1).

Surface water site assessments were performed for the Ten Site Canyon SWMUs and AOC in 1997. The SWMUs and AOC in the Ten Site Canyon Subarea received scores between 15.6 and 39.5, indicating low to moderate potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

9.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the Ten Site Canyon Subarea. All drilling performed was for the purposes of collecting samples as required by the approved aggregate SAP (LANL 2002, 073092). Nine boreholes were drilled for sample collection, ranging in depth from 7.5 ft to 50 ft bgs. Borehole logs are provided in Appendix J.

A deep characterization well (well R-14) is located within the Ten Site Canyon Subarea. It is not specifically related to this investigation but provides information about the subsurface lithology of the area. Details of the well, including lithology and subsurface water, is presented in the characterization well R-14 completion report (LANL 2003, 076062).

9.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Ten Site Canyon Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and was further defined using geologic logs from characterization well R-14 (LANL 2003, 076062).

The predominant rock unit at the surface is unit 2 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 2 of the Tshirege Member (Qbt 2) is approximately 80 ft thick in Ten Site Canyon. Below unit 2 are unit 1v of the Tshirege Member (Qbt 1v), and unit 1g of the Tshirege Member (Qbt 1g); the combined thickness of units Qbt 1v and Qbt 1g is 140 ft in well R-14. Below unit 1g is the Cerro Toledo interval, a zone of reworked tuff approximately 24 ft thick. Below the Cerro Toledo interval is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once in this investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); in well R-14 it is 290 ft thick. The base of the Otowi Member includes the Guaje Pumice Bed, approximately 12 ft thick. The Otowi Member is underlain by the Puye Formation and the Cerros del Rio basalts with a combined thickness of over 680 ft. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

There are no known subsurface human-made structures in the Ten Site Canyon Subarea, except for well R-14.

9.1.4 Groundwater Conditions

No groundwater has been found in the Ten Site Canyon Subarea except the regional aquifer. In well R-14, the regional aquifer was encountered at a depth of 1182 ft bgs (LANL 2003, 076062).

9.1.5 Surface Water Conditions

No permanent surface water exists in the Ten Site Canyon Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Precipitation can accumulate in the lagoons at SWMUs 35-010(a,b,c), resulting in occasional and temporary standing water. Surface runoff in the Ten Site Canyon Subarea is most likely to occur as overland sheet flow or as channelized flow in small, shallow drainage channels that drain after short runs into the main Ten Site Canyon drainage channel.

9.2 Site Contamination—Ten Site Canyon Subarea

9.2.1 Soil, Rock, and Sediment Sampling

A total of 120 soil, fill, tuff, and sediment samples were collected from 82 locations in the Ten Site Canyon Subarea between 1994 and 2004 and are included in this investigation report. The collection of the samples was directed by the OU 1129 RFI work plan (LANL 1992, 007666) for samples from 1994 to 1999 and by the March 2002 aggregate SAP (LANL 2002, 073092) for samples collected in 2004 and 2005.

Samples were collected using split-spoon core barrels, hand- or power-driven bucket augers, or a spade and scoop, depending upon the depth and medium being sampled. Samples were field-screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs and, in the case of borehole samples, in borehole logs (see Appendix E for sample-collection logs and Appendix J for borehole logs). Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the SMO for shipment to off-site laboratories for analysis.

To document their handling, COCs were completed for all samples (see Appendix E). Sample analyses were requested as required by the approved aggregate SAP and analyzed according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of field methods used are included in Appendix B.

Of the 120 samples collected in the Ten Site Canyon Subarea, 75 samples were analyzed for inorganic chemicals, 106 were analyzed for radionuclides, and 76 were analyzed for organic chemicals. Of the 120 samples collected, 46 were soil, 42 were tuff, 3 were fill, and 29 were sediment. Sample depths ranged from the surface (0–0.5 ft) to 50 ft bgs.

Samples were analyzed for various combinations of SVOCs, VOCs, PAHs, PCBs, pesticides, TAL metals, anions, cyanide, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, isotopic thorium, tritium, strontium-90, and americium-241. The specific analytical suites for each sample collected are listed in tables in Appendix D (Tables D-6.0-1, D-6.0-2, and D-6.0-3).

A summary of analytical methods used is presented in Appendix C, Data Quality. Appendix C also discusses general data quality information.

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

Field screening of samples during the investigation activities reported here were primarily for health and safety monitoring. Field team members had the option, upon consulting with the Laboratory project leader, of adjusting sampling depths or analytical requests if field-screening results indicated unusual conditions or contamination.

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

Radiological screening instruments were provided by the Laboratory's Radiation Instrumentation and Calibration Team (HSR-4), and calibration records can be obtained using the HSR-4 instrument identification numbers recorded in the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the Laboratory's RPP and HSR-4 procedures. Performance check records are also on file at HSR-4 and are available upon request.

Organic vapor field screening was performed on selected samples collected during investigation activities. Screening was performed with a PID. The instruments used were the HNU Model PI-101 or the OVM 580B, with 11.7 eV lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field-screening results for samples from the Ten Site Canyon Subarea did not indicate radioactivity substantially elevated above background levels or detected organic vapors. No field-screening results led to a change in sampling locations or depths, and no actions related to health and safety were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample-collection logs, which are included in Appendix E.

9.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For individual SWMUs, AOCs, and consolidated units in the Ten Site Canyon Subarea, analytical results are summarized in Appendix D, and complete data sets are included in Appendix E. COPCs were identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides, and on detection status for organic chemicals. Discussions of the identification of COPCs for individual SWMUs, AOCs, and consolidated units are presented in Appendix D, sections D-6.1 through D-6.2.

Samples collected and analyses requested for each SWMU, AOC, and consolidated unit in the Ten Site Canyon Subarea are presented in Tables D-6.0-1, D-6.0-2, and D-6.0-3. Table 9.2-1 presents the inorganic, radionuclide, and organic COPCs identified for each Ten Site Canyon Subarea SWMU, AOC, and consolidated unit. Tables D-6.0-4, D-6.0-5, and D-6.0-6 present the concentrations of inorganic COPCs detected above BVs, radionuclide COPCs detected above BVs or FVs, and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-7.2-4 and F-7.2-5). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figures F-7.2-6 and F-7.2-7. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-7.2-8 and F-7.2-9.

Analytical results for the Ten Site Canyon Subarea as a whole are summarized in Appendix D, section D-6.3, and complete data sets are included electronically in Appendix E. The accompanying tables in Appendix D present, for each medium (soil/fill, tuff, and sediment), the samples collected and analyses requested for each and lists of samples with chemicals either detected (for organic chemicals) or detected above BVs or FVs.

Appendix D presents the concentrations of inorganic COPCs detected above BVs in the Ten Site Canyon Subarea for soil and fill (Table D-6.3-2), tuff (Table D-6.3-4), and sediment (Table D-6.3-6) and in Appendix F (Figures F-7.2-4 and F-7.2-5).

The concentrations of radionuclide COPCs detected above BVs or FVs the Ten Site Canyon Subarea are presented in Appendix D for soil and fill (Table D-6.3-9), tuff (Table D-6.3-11), and sediment (Table D-6.3-13) and in Appendix F, Figures F-7.2-6 and F-7.2-7.

The concentrations of detected organic COPCs in the Ten Site Canyon Subarea are presented in Appendix D for soil and fill (Table D-6.3-16), tuff (Table D-6.3-18), and sediment (Table D-6.3-20) and in Appendix F, Figures F-7.2-8 and F-7.2-9.

After determining the COPCs for each sampled medium, EPCs were determined for each COPC (see Appendix D for a description of the methods used for calculating 95% UCLs). A separate EPC was determined for each COPC using all site data (regardless of medium) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0- to 1-ft concentrations were used to assess human health risk under a recreational scenario, the 0- to 5-ft concentrations were used to assess ecological risk, and the 0- to 10-ft concentrations were used to assess human health risk under a residential scenario. In some cases, a COPC was not detected or not above the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The EPCs for all COPCs are presented in Appendix D for inorganic chemicals (Table D-6.3-7), radionuclides (Table D-6.3-14), and organic chemicals (Table D-6.3-21).

Appendix F includes a discussion of the nature and extent of contamination in the Ten Site Canyon Subarea (section F-7.2.3) and presents calculations and a discussion of human health and ecological risk (sections F-7.4 and F-7.5, respectively).

9.3 Conclusions—Ten Site Canyon Subarea

The results of sample analyses identified a number of inorganic, radionuclide, and organic COPCs in the Ten Site Canyon Subarea. These are largely consistent with historical process knowledge and known past releases of contaminants, as well as the relationship of this slope to the adjacent Mesa Top Subarea. The completed investigation activities have addressed the data needs described in the approved aggregate SAP. The nature and extent of contamination in the Ten Site Canyon Subarea have been determined (see Appendix F, section F-7.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: Consolidated Unit 35-010(a)-99 and AOC C-35-007. The range of HIs for these sites is 0.00005 to 0.7, which is less than the NMED target level of 1.0. The range of total excess cancer risks for these sites is 5×10^{-9} to 4×10^{-7}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.5 to 2 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The dose range for a residential user in Consolidated Unit 35-010(a)-99 and AOC C-35-007 is equivalent to a total risk range from 4×10^{-7} to 5×10^{-6} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential unacceptable risk/dose to human health at these sites within the Ten Site Canyon Subarea.

Based on the ecological screening assessment for the Ten Site Canyon Subarea, 23 COPECs (including 10 COPECs without ESLs) were identified. All COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and the infrequency of detected concentrations.

Based on human health and ecological screening assessments, no additional investigation or remediation activities are required at any Ten Site Canyon SWMU, AOC, or consolidated unit.

10.0 EAST TEN SITE SLOPE SUBAREA

East Ten Site Slope is the south slope (north-facing) of Ten Site Canyon, which extends south and east of Ten Site Mesa. TA-63 is the western-most TA on this finger mesa known as Mesita del Buey. East of and adjacent to TA-63 is TA-52 (including areas that were formerly part of TA-04), bounded to the east by TA-05. Puye Road is centered on this mesa and traverses through TA-63, -52, and -05 from west to east. The difference in elevation from the mesa top to the bottom of Ten Site and Mortandad Canyons in this area is 200–300 ft. The slope has a very steep middle section with flatter bench sections above and below. Figure 10.0-1 outlines the entire East Ten Site Slope Subarea. Figures 10.0-2, 10.0-3, and 10.0-4 show the SWMUs/AOCs in each of three map areas within the subarea, with sampling locations identified.

The East Ten Site Slope Subarea includes 13 SWMUs and 3 AOCs in TA-04, -05, -52, and -63, including surface and canyon-side disposal areas, an outfall, former firing sites, a former wastewater treatment facility, a former French drain, inactive septic systems, and industrial wastelines. Table 2.0-1 lists the East Ten Site Slope Subarea SWMUs and AOCs, with brief descriptions of each. Detailed descriptions of each SWMU/AOC are presented in section 2 and Appendix A of the approved SAP addendum (LANL 2004, 086540). The SWMUs and AOCs are primarily related to (1) operations and processes at former Alpha

(TA-04) and Beta (TA-05) firing sites, and their associated support structures, and (2) the historical UHTREX facility (housed in building TA-52-01) and related wastewater neutralization and septic systems (LANL 1992, 007666; LANL 1994, 039932).

Operational history indicates that, before D&D activities, SWMUs and AOCs in the East Ten Site Slope Subarea contained natural and depleted uranium, beryllium, cadmium, and lead associated with test shots that were exploded at the firing sites.

The current land use designation for the south slope of Ten Site Canyon is industrial and is expected to remain so for 30 yr or more (LANL 1995, 057224). Laboratory employees often use the gravel road that extends along the length of the mesa for recreational activities such as walking or jogging. However, the steep topography of the slope makes recreational or other use by the public unlikely.

Many of the East Ten Site Slope Subarea SWMUs and AOCs have been remediated to some extent and no longer constitute a contaminant source term (Elder et al. 1986, 003089; NUS Corporation 1990, 012571; Salazar and Elder 1992, 012021). The approved SAP addendum (LANL 2004, 086540, p. 66) listed sampling requirements for AOC 52-003(b). In January 2005, EPA confirmed that AOC 52-003(b) had been approved for NFA status (EPA 2005, 088464). AOC 52-003(b) is not addressed further in this report.

10.1 Field-Investigation Results—East Ten Site Slope Subarea

10.1.1 Surface Conditions

The East Ten Site Slope Subarea includes areas of sloping mesa top and steeper north-facing slopes above the incised main channel of Ten Site Canyon. Material at the surface includes shallow soils, minor colluvium, sediment in minor drainages, and exposed bedrock tuff.

Vegetation in the mesa-top areas includes piñon-juniper woodland with broad grassy areas and limited areas of ponderosa pine. The slope areas include more ponderosa pine with an open canopy, and an understory of grasses, forbs, and shrubs, including gambel oak.

Surface water site assessments were performed for the East Ten Site Slope SWMUs and AOCs between 1997 and 2004. The SWMUs and AOCs in the East Ten Site Slope Subarea received scores between 3.6 and 73.5, indicating low to moderately high potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

10.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the East Ten Site Slope Subarea. All drilling performed was for the purposes of collecting samples as required by the approved SAP addendum (LANL 2004, 086540). Thirteen boreholes were drilled for sample collection, ranging in depth from 6 ft to 30 ft bgs. Borehole logs are provided in Appendix J.

10.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the East Ten Site Slope Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and was further defined using geologic logs from characterization well R-14 (LANL 2003, 076062).

The predominant rock unit at the surface is unit 2 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 2 of the Tshirege Member (Qbt 2) is approximately 80 ft thick in Ten Site Canyon. Below unit 2 are unit 1v of the Tshirege Member (Qbt 1v) and unit 1g of the Tshirege Member (Qbt 1g); the combined thickness of units Qbt 1v and Qbt 1g is 140 ft in well R-14. Below unit 1g is the Cerro Toledo interval. Below the Cerro Toledo interval is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once in this investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); in well R-14 it is 290 ft thick. The base of the Otowi Member includes the Guaje Pumice Bed, approximately 12 ft thick. The Otowi Member is underlain by the Puye Formation and the Cerros del Rio basalts with a combined thickness of over 680 ft. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

There are no known subsurface human-made structures in the East Ten Site Slope Subarea, except for water supply well PM-5.

10.1.4 Groundwater Conditions

No groundwater has been confirmed to exist in the East Ten Site Slope Subarea except the regional aquifer. In well R-14, located in the bottom of Ten Site Canyon, the regional aquifer was encountered at a depth of 1182 ft bgs (LANL 2003, 076062). In water supply well PM-5, located on the mesa south of Ten Site Canyon, the regional aquifer is at a depth of at least 1200 ft bgs (Stone et al. 2001, 069830, p. 12).

10.1.5 Surface Water Conditions

No permanent surface water exists in the East Ten Site Slope Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff from the narrow mesa top may contribute minor amounts of flow to surface runoff on the slope. Surface runoff on the East Ten Site slope is most likely to occur as channelized flow in moderately steep, moderately incised drainage channels.

10.2 Site Contamination—East Ten Site Slope Subarea

10.2.1 Soil, Rock, and Sediment Sampling

A total of 328 soil, fill, tuff, and sediment samples were collected from 116 locations in the East Ten Site Slope Subarea in 1995, 2004, and 2007 and are included in this investigation report. The collection of the samples was directed by the RFI work plan for OU 1129 (LANL 1992, 007666) for samples collected in 1995 and by the March 2004 SAP addendum (LANL 2004, 086540) for samples collected in 2004. The additional samples collected in 2007 were proposed in the September 2005 version of this report (LANL 2005, 091699).

Samples were collected either from split-spoon core barrels, hand- or power-driven bucket augers, or with a spade and scoop, depending upon the depth and media being sampled. Samples were field screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs and, in the case of borehole samples, in borehole logs (see Appendix E for sample-collection logs and Appendix J for borehole logs). Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the SMO for shipment to off-site laboratories for analysis. To document their handling, COCs were completed for all samples (see Appendix E). Sample analyses were requested as required by the approved SAP addendum (LANL 2004, 086540) and analyzed

according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of field methods used are included in Appendix B.

Of the 328 samples collected in the East Ten Site Slope Subarea, 221 samples were analyzed for inorganic chemicals, 324 were analyzed for radionuclides, and 119 were analyzed for organic chemicals. Of the 328 samples collected, 106 were soil, 171 were tuff, 48 were fill, and 3 were sediment. Sample depths ranged from the surface (0–0.5 ft) to 60 ft bgs.

Samples were analyzed for various combinations of SVOCs, VOCs, high explosives (HEXP), total organic carbon (TOC), TAL metals, anions, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, strontium-90, and americium-241. The specific analytical suites for each sample collected are listed in tables in Appendix D (Tables D-7.0-1, D-7.0-2, and D-7.0-3).

A summary of analytical methods used is presented in Appendix C, Data Quality. Appendix C also discusses general data quality information and presents the data qualifiers applied as the result of QC sample analyses.

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

Field screening of samples during the investigation activities reported here were primarily for health and safety monitoring. Field team members had the option, upon consulting with the Laboratory project leader, of adjusting sampling depths or analytical requests if field-screening results indicate unusual conditions or contamination.

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

Radiological screening instruments were provided by the Laboratory's HSR-4 group, and calibration records can be obtained using the HSR-4 instrument identification numbers recorded in the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the RPP and HSR-4 procedures. Performance check records are also on file at HSR-4 and are available upon request.

Organic vapor field screening was performed on selected samples collected during investigation activities. Screening was performed with a PID. The instruments used were the HNU Model PI-101 or the OVM 580B, with 11.7 eV lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field-screening results for samples from the East Ten Site Slope Subarea did not indicate radioactivity substantially elevated above background levels, or detected organic vapors. No field-screening results led to a change in sampling locations or depths, and no actions related to were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample-collection logs, which are included in Appendix E.

10.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For individual SWMUs, AOCs, and consolidated units in the East Ten Site Slope Subarea, analytical results are summarized in Appendix D, and complete data sets are included in Appendix E. COPCs were

identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides, and on detection status for organic chemicals. Discussions of the identification of COPCs for individual SWMUs, AOCs, and consolidated units are presented in Appendix D, sections D-7.1 through D-7.9.

Samples collected and analyses requested for each SWMU, AOC, and consolidated unit in the East Ten Site Slope Subarea are presented in Tables D-7.0-1, D-7.0-2, and D-7.0-3. Table 10.2-1 presents the inorganic chemical, radionuclide, and organic COPCs identified for each East Ten Site Slope Subarea SWMU, AOC, and consolidated unit. Tables D-7.0-4, D-7.0-5, and D-7.0-6 present the concentrations of inorganic COPCs detected above BVs radionuclide COPCs detected above BVs or FVs, and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-8.2-5 through F-8.2-7). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figures F-8.2-8 through F-8.2-10. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-8.2-11 through F-8.2-13.

Analytical results for the East Ten Site Slope Subarea as a whole are summarized in Appendix D, section D-7.9, and complete data sets are included in Appendix E. The accompanying tables in Appendix D present, for each medium (soil/fill, tuff, and sediment), the samples collected and analyses requested for each and lists of samples with chemicals either detected (for organic chemicals) or detected above BVs or FVs.

The concentrations of inorganic COPCs detected above BVs in soil, fill, and tuff are presented in Appendix D for soil and fill (Table D-7.9-2) and tuff (Table D-7.9-4) and in Appendix F, Figures F-8.2-5 through F-8.2-7.

The concentrations of radionuclide COPCs detected above BVs or FVs in the East Ten Site Slope Subarea are presented in Appendix D, Tables D-7.9-8 (soil and fill), D-7.9-10 (tuff), and D-7.9-12 (sediment) and in Appendix F, Figures F-8.2-8 through F-8.2-10.

The concentrations of detected organic COPCs in the East Ten Site Slope Subarea are presented in Appendix D for soil and fill (Table D-7.9-15) and tuff (Table D-7.9-17) and in Appendix F, Figures F-8.2-11 through F-8.2-13.

After determining the COPCs for each sampled medium, 95% UCLs were calculated for each COPC (see Appendix D for a description of the methods used for calculation of 95% UCLs). A separate 95% UCL was calculated for each COPC using all site data (regardless of media) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0–1 ft 95% UCLs were used in assessing human health risk under an industrial scenario; the 0–5 ft 95% UCLs were used for assessing ecological risk; and the 0–10 ft 95% UCLs were used in assessing human health risk under a residential scenario. In some cases, a COPC was not detected or was below the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The 95% UCLs for all COPCs in the East Ten Site Slope Subarea are presented in Appendix D for inorganic chemicals (Table D-7.9-6), radionuclides (Table D-7.9-13), and organic chemicals (Table D-7.9-19).

Appendix F includes a discussion of the nature and extent of contamination in the East Ten Site Slope Subarea (section F-8.2.3) and presents calculations and discussion of human health and ecological risk (sections F-8.4 and F-8.5).

10.3 Conclusions—East Ten Site Slope Subarea

The results of sample analyses identified a number of inorganic, radionuclide, and organic COPCs in the East Ten Site Slope Subarea. These are largely consistent with historical process knowledge and known past releases of contaminants. The completed investigation activities have addressed the data needs described in the approved SAP addendum. The nature and extent of contamination in the East Ten Site Slope Subarea have been determined (see Appendix F, section F-8.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: Consolidated Units 04-001-99, 05-001(a)-99 and 05-005(a)-00, SWMUs 52-002(a), 52-003(a), 63-001(a), and 63-001(b), and AOC 05-001(c). The range of HIs for these sites is 0.00005 to 0.7, which is less than the NMED target level of 1.0. The range of total excess cancer risks for these sites is 1×10^{-9} to 5×10^{-7}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 0.03 to 13 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user in the East Ten Site Slope Subarea is equivalent to a total risk range from 2×10^{-8} to 5×10^{-5} based on a comparison with EPA preliminary goals for remediation (http://epa-prgs.ornl.gov/radionuclides/prg_search.shmtl). The screening assessments indicate that there is no potential unacceptable risk/dose to human health at these sites within the East Ten Site Slope Subarea.

Based on the ecological screening assessment for the East Ten Site Slope Subarea, 13 COPECs (including 3 COPECs without ESLs) were identified. The COPECs were eliminated in the uncertainty analysis by considering a number of factors, including background concentrations, the analysis for potential effects to populations (individuals for T&E species), areas of contamination, the relative toxicity of related compounds, and the infrequency of detected concentrations.

Based on human health and ecological screening assessments, no additional investigation or remediation activities are required at any East Ten Site Slope SWMU, AOC, or consolidated unit.

11.0 SIGMA MESA SUBAREA

The Sigma Mesa Subarea (Figure 11.0-1) contains one SWMU and two AOCs, all within TA-60. The SWMU and the AOCs are located on the south side of Sigma Mesa, toward the eastern end. Figures 11.0-2 and 11.0-3 show the SWMU and AOCs in two map areas, with sampling locations identified. Two of the sites are related: a former empty drum storage area [AOC 60-004(c)] is located within the fenced area of a former surface impoundment [solar pond experiment SWMU 60-005(a)]. The third site is a former outdoor scrap equipment area, AOC 60-004(e).

The operational history of Sigma Mesa indicates that there is little potential contamination at these sites. Uses included outdoor storage of materials to be recycled, Laboratory maintenance contractor utility equipment/materials storage, and minor experiments (solar pond evaporation and mud drilling). The contaminants that are potentially present include petroleum hydrocarbons (residual oil from transformers and salvaged underground storage tanks) and cesium-137 at the surface impoundment (a solar evaporation experiment with low-level radioactive liquid).

The current land use designation for Sigma Mesa is industrial and is expected to remain so for 30 yr or more (LANL 1995, 057224). Laboratory employees often use the gravel road that extends the length of the mesa for recreational activities such as walking or jogging. Table 2.0-1 lists the Sigma Mesa Subarea SWMU and AOCs, with brief descriptions of each. Detailed descriptions of the Sigma Mesa Subarea SWMU and AOCs are presented in Appendix A of the approved SAP addendum (LANL 2004, 086540).

One of the three Sigma Mesa Subarea sites, AOC 60-004(e), has been remediated and no longer constitutes a contaminant source term. The empty drums at the site were removed long before the ER Project first collected samples in 1994 (LANL 1996, 052930).

Sigma Mesa lies east of TA-03, between Sandia Canyon to the north and Mortandad Canyon to the south. Each canyon is 200 ft deep. Because most of TA-60 consists of undeveloped mesa top, there are no immediate neighboring influences to the SWMU and AOCs that lie within the Middle Mortandad/Ten Site Aggregate portion of the Mortandad Canyon Watershed.

11.1 Field-Investigation Results—Sigma Mesa Subarea

11.1.1 Surface Conditions

The Sigma Mesa Subarea is located within in the mesa-top area of Sigma Mesa. Material at the surface consists of shallow soils and exposed bedrock tuff.

The dominant plant community on Sigma Mesa consists of mixed piñon-juniper woodland. However, vegetation is relatively sparse in the area of the investigation sites, with scattered patches of grass, forbs, and shrubs.

Surface water site assessments were performed for the Sigma Mesa SWMU and AOCs between 1999 and 2004. The SWMUs and AOCs in the Sigma Mesa Subarea received scores between 15.3 and 32.5, indicating low to moderate potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

11.1.2 Exploratory Drilling or Excavation Investigations

No exploratory drilling or excavation was performed in the Sigma Mesa Subarea. All drilling performed was for the purposes of collecting samples, as required by the approved SAP addendum (LANL 2004, 086540). Three boreholes were drilled to a depth of 10 ft bgs for sample collection. Borehole logs are provided in Appendix J.

11.1.3 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Sigma Mesa Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and was further defined using geologic logs from boreholes drilled near the site (e.g., well R-14). Moreover, the stratigraphy of Sigma Mesa is generally similar to that at Ten Site Mesa (the Mesa Top Subarea).

The predominant rock unit at the surface is unit 3 of the Tshirege Member of the Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick on the mesa top. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-60. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval. The lowest unit encountered is the Otowi Member of the Bandelier Tuff (Qbo). The Otowi Member was encountered only once in this investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lie the Guaje Member (pumice, approximately 35 ft thick), followed by the Puye Formation and the Cerros del Rio basalts with a combined thickness of at least 680 ft in this area. A generalized stratigraphic cross-section is shown in Figure 5.1-1.

There are no known human-made subsurface structures present in the areas of Sigma Mesa under investigation.

11.1.4 Groundwater Conditions

The top of the regional aquifer at Sigma Mesa is estimated to be at least 1200 ft bgs. In characterization well R-14, in Ten Site Canyon to the southeast, groundwater was encountered at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5), and in supply well PM-5, located on the mesa south of Ten Site Canyon, the regional aquifer is at a depth of at least 1200 ft bgs (Stone et al. 2001, 069830, p. 12).

11.1.5 Surface Water Conditions

No permanent surface water exists in the Sigma Mesa Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff in the Sigma Mesa Subarea is most likely to occur as overland sheet flow, with lesser amounts of channelized runoff in narrow, shallow drainage channels or swales.

11.2 Site Contamination—Sigma Mesa Subarea

11.2.1 Soil, Rock, and Sediment Sampling

Sixty-six soil, fill, and tuff samples were collected from 38 locations in the Sigma Mesa Subarea in 1994, 2004, and 2005 and are included in this investigation report. The collection of the samples was directed by the RFI work plan for OU 1129 (LANL 1992, 007666) for samples in 1994, and by the March 2004 SAP addendum (LANL 2004, 086540) for samples in 2004–2005.

Samples were collected either from split-spoon core barrels, hand- or power-driven bucket augers, or with a spade and scoop, depending upon the depth and media being sampled. Samples were field screened for radioactivity and organic vapors. Sample characteristics were recorded in sample-collection logs and, in the case of borehole samples, in borehole logs (see Appendix J for borehole logs and Appendix E for logs). Samples were containerized in the field, stored on ice and/or with preservatives as appropriate, and delivered to the SMO for shipment to off-site laboratories for analysis. To document their handling, COCs were completed for all samples (see Appendix E). Sample analyses were requested as required according to the Laboratory's statement of work for analytical services (LANL 1995, 049738; LANL 2000, 071233). Brief descriptions of field methods used are included in Appendix B.

Of the 66 samples collected in the Sigma Mesa Subarea, 50 were analyzed for inorganic chemicals, 34 were analyzed for radionuclides, and 48 were analyzed for organic chemicals. Of the 66 samples collected, 48 were soil, 11 were tuff, 7 were fill, and none were sediment. Sample depths ranged from the surface (0–0.5 ft) to 10 ft bgs.

Samples were analyzed for various combinations of SVOCs, VOCs, PCBs, pesticides, TAL metals, cyanide, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, tritium, and americium-241. The specific analytical suites for each sample collected are listed in tables in Appendix D (Tables D-8.0-1, D-8.0-2, and D-8.0-3).

A summary of analytical methods used is presented in Appendix C, Data Quality. Appendix C also discusses general data quality information and presents the data qualifiers applied as the result of QC sample analyses.

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

Field screening of samples during the investigation activities reported here were primarily for health and safety monitoring. Field team members had the option, upon consulting with the Laboratory project leader, of adjusting sampling depths or analytical requests if field-screening results indicate unusual conditions or contamination.

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

Radiological screening instruments were provided by the Laboratory's HSR-4 group, and calibration records can be obtained using the HSR-4 instrument identification numbers recorded in the weekly performance test logs. Weekly performance checks were performed on all radiological field-screening instruments in accordance with the Laboratory's RPP and HSR-4 procedures. Performance-check records are also on file at HSR-4 and are available upon request.

Organic vapor field screening was performed on selected samples collected during investigation activities. Screening was performed with a PID. The instruments used were the HNU Model PI-101 or the OVM 580B, with 11.7 eV lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

Field-screening results for samples from the Sigma Mesa Subarea did not indicate radioactivity substantially elevated above background levels or detected organic vapors. No field screening results led to a change in sampling locations or depths, and no actions related to were taken as a result of field screening. The results of radiological and organic vapor field screening of samples were recorded in sample collection logs, which are included in Appendix E.

11.2.3 Soil, Rock, and Sediment Sampling Analytical Results

For the SWMU and AOCs in the Sigma Mesa Subarea, analytical results are summarized in Appendix D, and complete data sets are included in Appendix E. COPCs were identified based on comparisons of site data to background data sets for inorganic chemicals and radionuclides, and on detection status for organic chemicals. Discussions of the identification of COPCs for the SWMU and AOCs are presented in Appendix D, sections D-8.1 through D-8.3.

Samples collected and analyses requested for each SWMU and AOC in the Sigma Mesa Subarea are presented in Tables D-8.0-1, D-8.0-2, and D-8.0-3. Table 11.2-1 presents the inorganic, radionuclide, and organic COPCs identified for each Sigma Mesa Subarea SWMU and AOC. Tables D-8.0-4, D-8.0-5, and D-8.0-6 present the concentrations of inorganic COPCs detected above BVs, radionuclide COPCs detected above BVs or FVs, and detected organic COPCs, respectively. Maps of the locations and concentrations of inorganic COPCs above BVs are shown in Appendix F (Figures F-9.2-4 and F-9.2-5). Maps of the locations and concentrations of radionuclide COPCs above BVs and FVs are presented in Figure F-9.2-6. Maps of the locations and concentrations of detected organic chemicals are presented in Figures F-9.2-7 and F-9.2-8.

Analytical results for the Sigma Mesa Subarea as a whole are summarized in Appendix D, section D-8.4, and complete data sets are included in Appendix E. The accompanying tables in Appendix D present, for

each medium (soil/fill and tuff), the samples collected and analyses requested for each and lists of samples with chemicals either detected (for organic chemicals) or detected above BVs or FVs.

The concentrations of inorganic COPCs detected above BVs in the Sigma Mesa Subarea are presented in Appendix D for soil and fill (Table D-8.4-2) and tuff (Table D-8.4-4) and in Appendix F, Figures F-9.2-4 and F-9.2-5.

The concentrations of radionuclide COPCs detected above BVs or FVs in the Sigma Mesa Subarea are presented in Appendix D for soil and fill (Table D-8.4-7) and tuff (Table D-8.4-9) and in Appendix F, Figure F-9.2-6.

The concentrations of detected organic COPCs in the Sigma Mesa Subarea are presented in Appendix D for soil and fill (Table D-8.4-12) and tuff (Table D-8.4-14) and in Appendix F, Figures F-9.2-7 and F-9.2-8.

After determining the COPCs for each sampled medium, EPCs were determined for each COPC (see Appendix D for a description of the methods used for calculating 95% UCLs). A separate EPC was determined for each COPC using all site data (regardless of medium) from depths of 0–1 ft, 0–5 ft, and 0–10 ft. The 0- to 1-ft concentrations were used to assess human health risk under a recreational scenario, the 0- to 5-ft concentrations were used to assess ecological risk, and the 0- to 10-ft concentrations were used to assess human health risk under a residential scenario. In some cases, a COPC was not detected or was below the BV in one or more of the depth intervals. In those cases, the analyte is not considered a COPC for that depth interval, no EPC is provided, and the analyte is not included in risk-screening calculations under the scenario corresponding to that depth interval. The EPCs for all COPCs are presented in Appendix D for inorganic chemicals (Table D-8.4-5), radionuclides (Table D-8.4-10), and organic chemicals (Table D-8.4-15).

Appendix F includes a discussion of the nature and extent of contamination in the Sigma Mesa Subarea (section F-9.2.3) and presents calculations and a discussion of human health and ecological risk (sections F-9.4 and F-9.5, respectively).

11.3 Conclusions—Sigma Mesa Subarea

The results of sample analyses identified a number of inorganic, radionuclide, and organic COPCs in the Sigma Mesa Subarea. These are largely consistent with historical process knowledge and known past releases of contaminants. The completed investigation activities have addressed the data needs described in the approved SAP addendum. The nature and extent of contamination in the Sigma Mesa Subarea have been determined (see Appendix F, section F-9.2.3).

The following sites do not pose a potential unacceptable risk or dose to human health under a residential scenario: AOCs 60-004(c) and 60-004(e) and SWMU 60-005(a). The range of HIs for these sites is 0.1 to 0.4, which is less than the NMED target level of 1.0. The range of total excess cancer risks for these sites is 1×10^{-7} to 5×10^{-7}, which is less than the NMED target level of 1×10^{-5}. The range of doses for these sites is 2 to 3 mrem/yr, which is less than DOE's target dose of 15 mrem/yr. The total dose for a residential user within the AOCs and SWMU in Sigma Mesa Subarea is equivalent to a total risk of 1×10^{-5} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential unacceptable risk/dose to human health at these sites within the Sigma Mesa Subarea.

Based on the ecological screening assessment for the Sigma Mesa Subarea, 10 COPECs (including 2 COPECs without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis

by considering a number of factors including background concentrations, the relative toxicity of related compounds, and the infrequency of detected concentrations.

Based on human health and ecological screening assessments, no additional investigation or remediation activities are required at any Sigma Mesa SWMU.

12.0 SUMMARY OF ALL SUBAREAS/AGGREGATE

The data review (Appendix D) and risk-screening assessments (Appendix F) indicate that the vertical extent of contamination has been determined for all SWMUs and AOCs presented in this report. In several of the subareas (Ten Site Slope, Mortandad Slope, Pratt Canyon, Ten Site Canyon, and East Ten Site Slope), measurable concentrations of a few contaminants, primarily radionuclides, persist downslope into canyons. In these cases, the lateral extent of contamination will be determined during the ongoing Mortandad Canyon investigations being conducted by the Laboratory.

The pattern of COPCs identified in the Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, and Ten Site Canyon Subareas is generally consistent with the known operational history of sites at TA-35. Most of the known industrial and research activities at TA-35 took place at sites within the Mesa Top Subarea, which is situated topographically above the other four subareas. The COPCs identified in each of the downslope subareas are similar to those identified for the Mesa Top Subarea. Direct discharge to outfalls on the Ten Site and Mortandad slopes may have resulted in the few COPCs that were identified in the downslope subareas but not in the Mesa Top Subarea. The East Ten Site Slope Subarea and the Sigma Mesa Subarea are separated physically from the TA-35 subareas and also have different operational histories. These differences are reflected in the COPCs identified; both the East Ten Site Slope and Sigma Mesa Subareas have fewer identified COPCs. Tables 5.2-1, 6.2-1, 7.2-1, 8.2-1, 9.2-1, 10.2-1, and 11.2-1 present summaries of the COPCs identified for each SWMU, AOC, and consolidated unit in the seven subareas of the Middle Mortandad/Ten Site Aggregate, as well as the COPCs identified for each subarea as a whole.

Table 5.3-1 presents a summary of the human health screening assessments under residential, industrial, and recreational scenarios for sites in each subarea. The results indicate that no potential unacceptable human health or ecological risk exists in any of the seven subareas, with the following exception.

- Excess cancer risks (up to 8×10^{-5}) exist from elevated concentrations of PAHs beneath or adjacent to asphalt at AOC 35-018(a) and Consolidated Unit 35-003(j)-99 within the Mesa Top Subarea. Because the source of the PAHs is probably the asphalt and given the current site conditions and use, the potential risks are substantially overestimated by the industrial scenario.

Table 12.0-1 summarizes the results of the investigation for each SWMU and AOC in the aggregate, indicating whether nature and extent are determined, whether corrective action is needed, and whether each site is complete with or without controls.

13.0 RECOMMENDATIONS

The determination of site status, in part, is based on the results of the risk-screening assessments. Depending upon the decision scenario used, the sites were identified as corrective action complete either with or without controls. The residential scenario is the only scenario under which corrective action complete without controls is applicable; that is, no additional corrective actions or conditions are necessary. The other decision scenarios (industrial, construction worker, and recreational) result in

corrective action complete with controls; that is, some type of institutional controls must be in place to ensure that the land use remains consistent with site cleanup levels.

Thirty SWMUs, AOCs, and consolidated units have been identified as posing no potential unacceptable risk or dose to human health under the residential scenario and as requiring no further remediation or investigation. In addition, ecological risk screening determined that none of the seven subareas poses a potential unacceptable risk to the environment. The Laboratory is requesting a Certificate of Completion from NMED for those sites identified as "complete without controls" in Table 12.0-1. The current and reasonably foreseeable future land use for all of these sites is either industrial or recreational. However, because these sites pose no unacceptable risk to human health under the residential scenario and no risk to the environment, neither site controls nor future actions are necessary.

Twelve SWMUs, AOCs, and consolidated units have been found not to pose potential unacceptable risks or doses to human health under an industrial or a recreational scenario. These sites have also been determined to pose no potential unacceptable risk to the environment. The Laboratory is requesting a Certificate of Completion from NMED for those sites identified as "complete with controls" in Table 12.0-1. The current and reasonably foreseeable future land use is industrial or recreational. Based on the results of the human health risk-screening assessments, controls are required to restrict residential use of the property. The Laboratory intends to retain ownership of the property indefinitely and will continue to restrict the property to industrial or recreational use only. For AOC 35-018(a) and Consolidated Unit 35-003(j)-99, the potential unacceptable risks under the industrial scenario are from PAHs in paved areas. The controls required for AOC 35-018(a) and Consolidated Unit 35-003(j)-99 include continuation of the current land use (i.e., industrial) and maintenance of current site conditions. The Laboratory has several processes in place to ensure that work conducted within a SWMU boundary is performed with the appropriate controls to protect future workers from exposure to potential contamination.

14.0 REFERENCES AND MAP DATA SOURCES

14.1 References

The following list includes all documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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14.2 Map Data Sources

`er_location_ids_pnt`
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`ksl_fences_arc`
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`fwo_electric_arc`
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Dirt Road Arcs; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; Development Edition of 06 January 2005.

Former Structures of TA-35, Ten Site; Los Alamos National Laboratory, ENV Remediation Services Project, ER2005-0051; Legacy Data; 1:2,500 Scale Data; 24 December 2001.

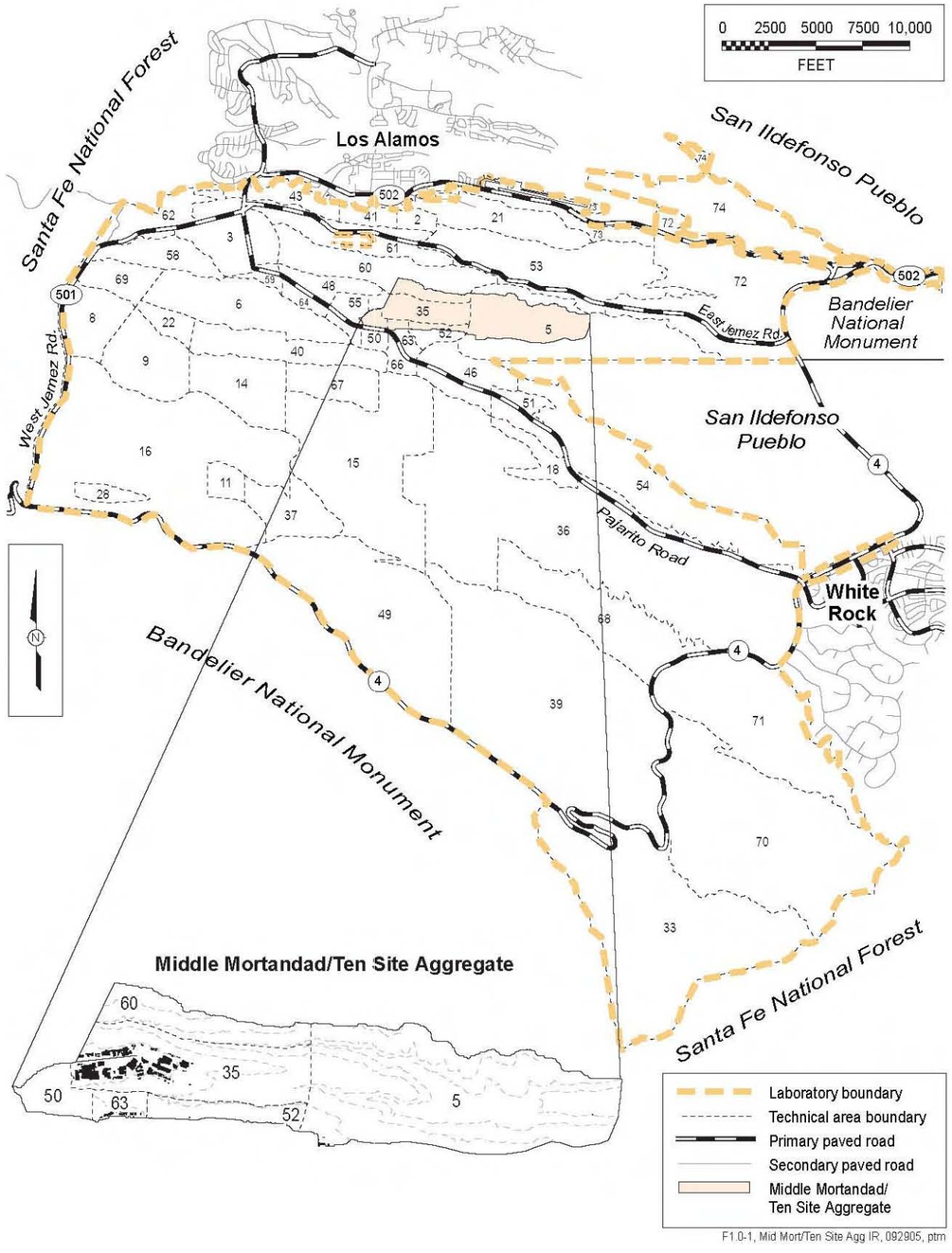


Figure 1.0-1 Location of Middle Mortandad/Ten Site Aggregate with respect to Laboratory TAs

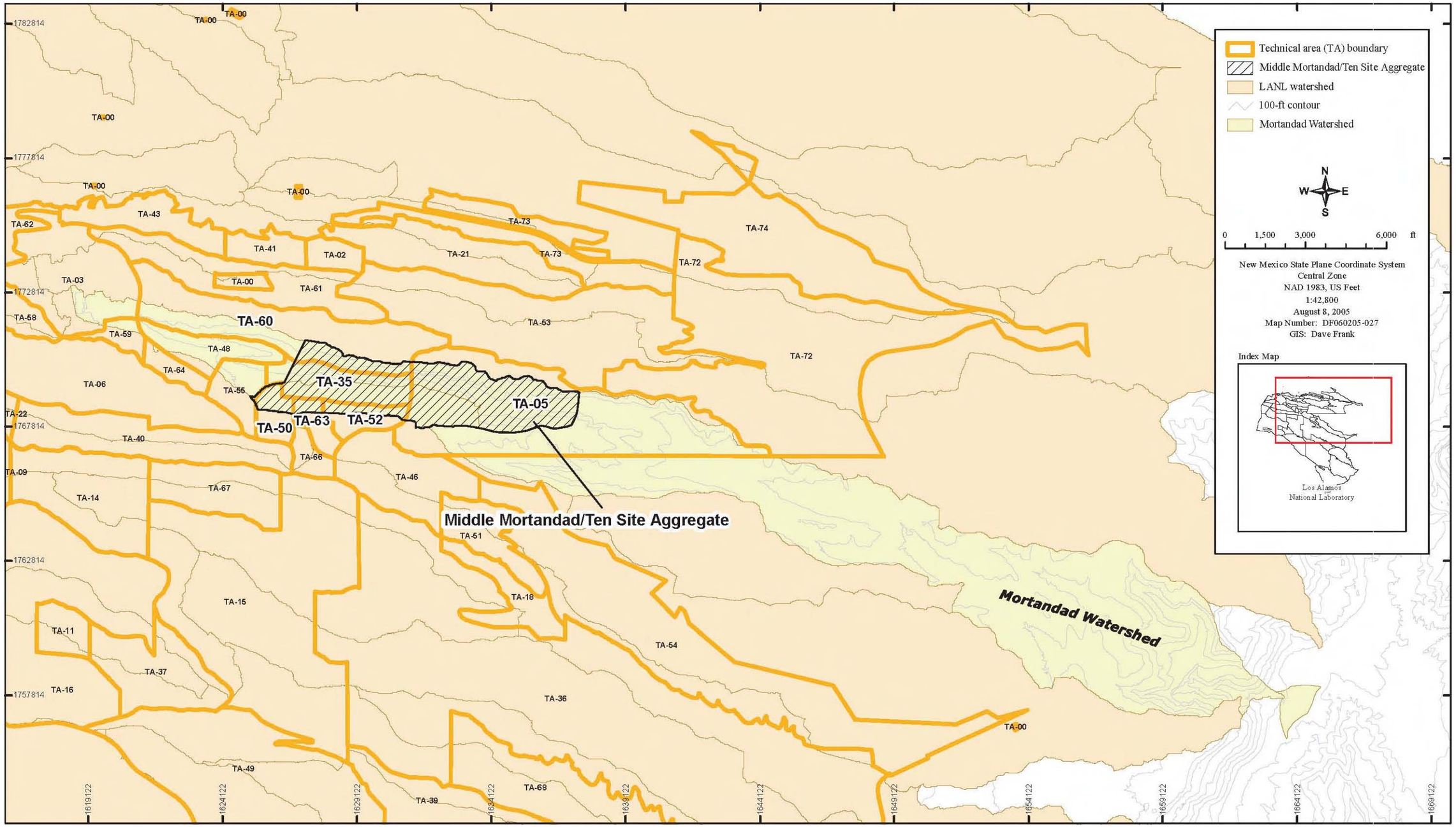


Figure 1.0-2 Middle Mortandad/Ten Site Aggregate

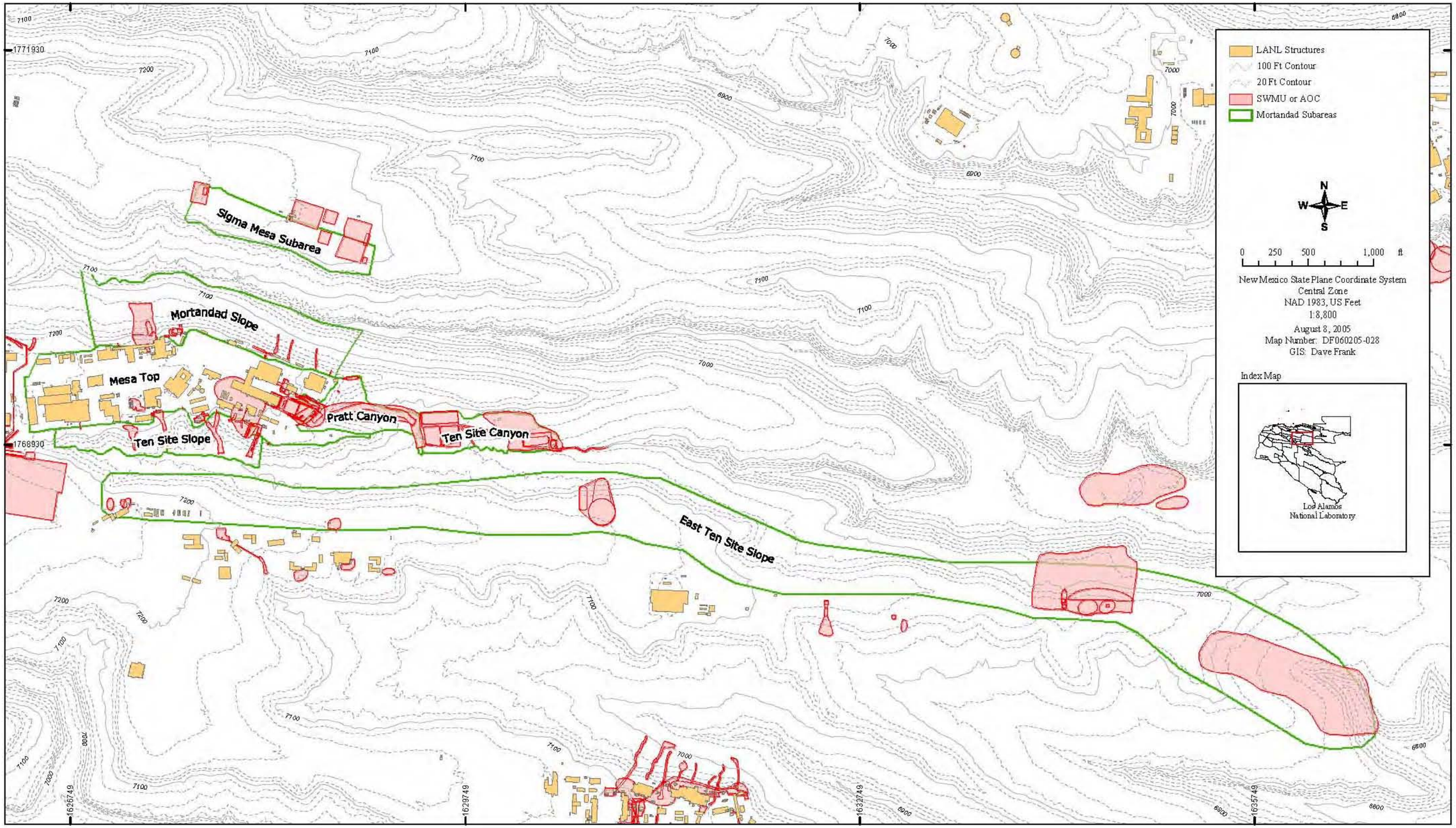


Figure 2.0-1 Subareas of the Middle Mortandad/Ten Site Aggregate

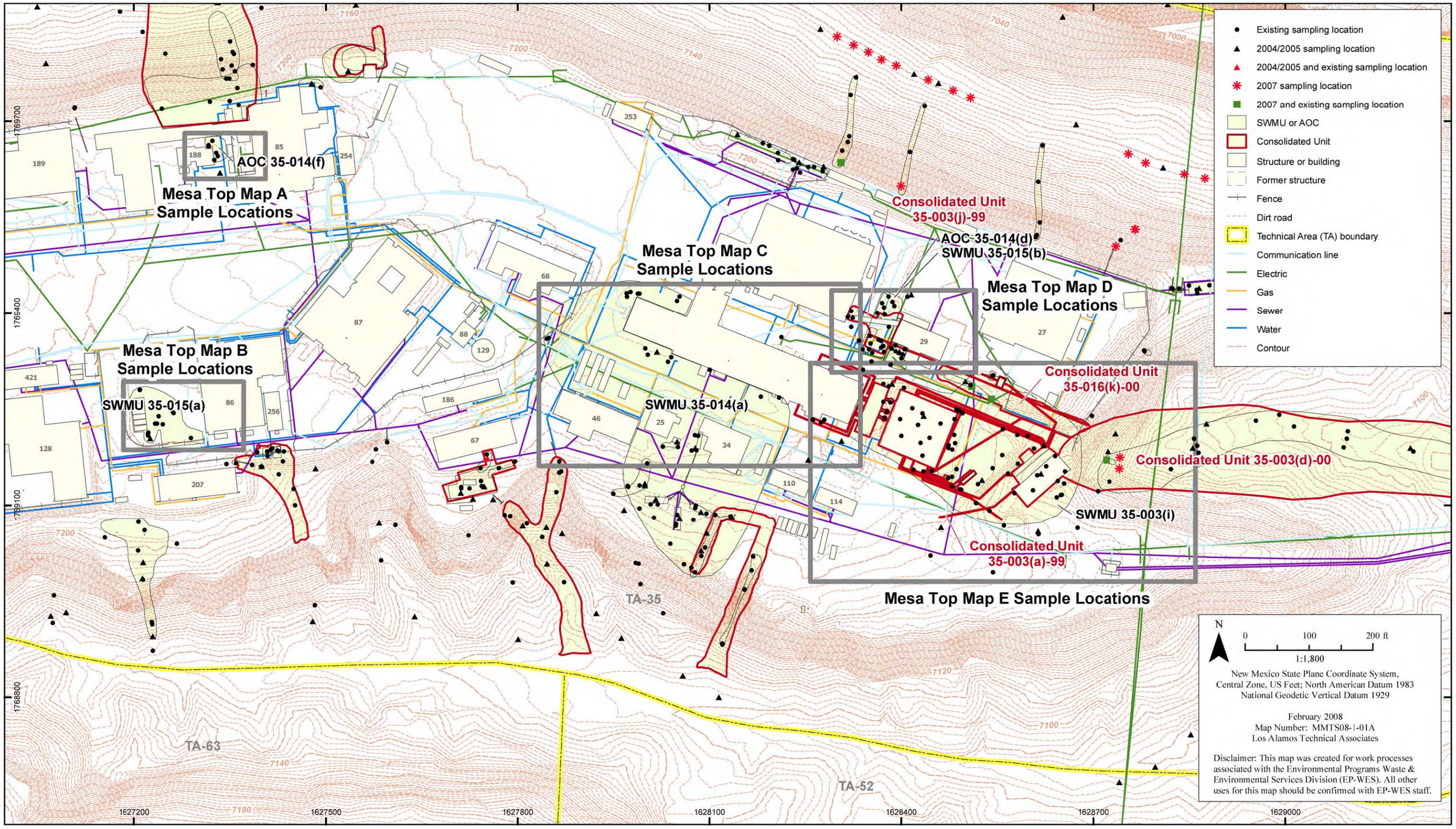


Figure 5.0-1 Index map of the Mesa Top Subarea



Figure 5.0-2 Mesa Top Area A sampling locations

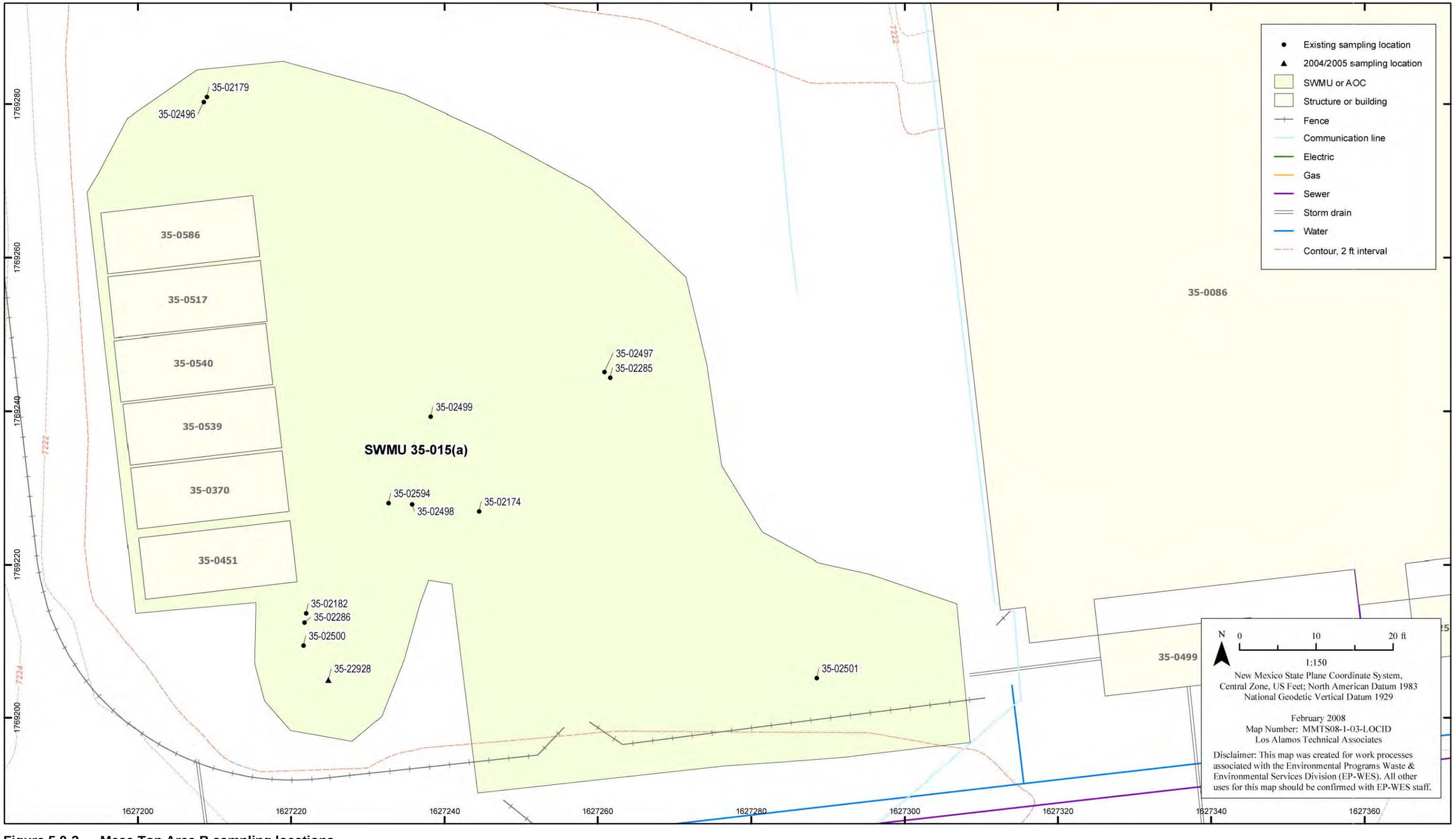


Figure 5.0-3 Mesa Top Area B sampling locations

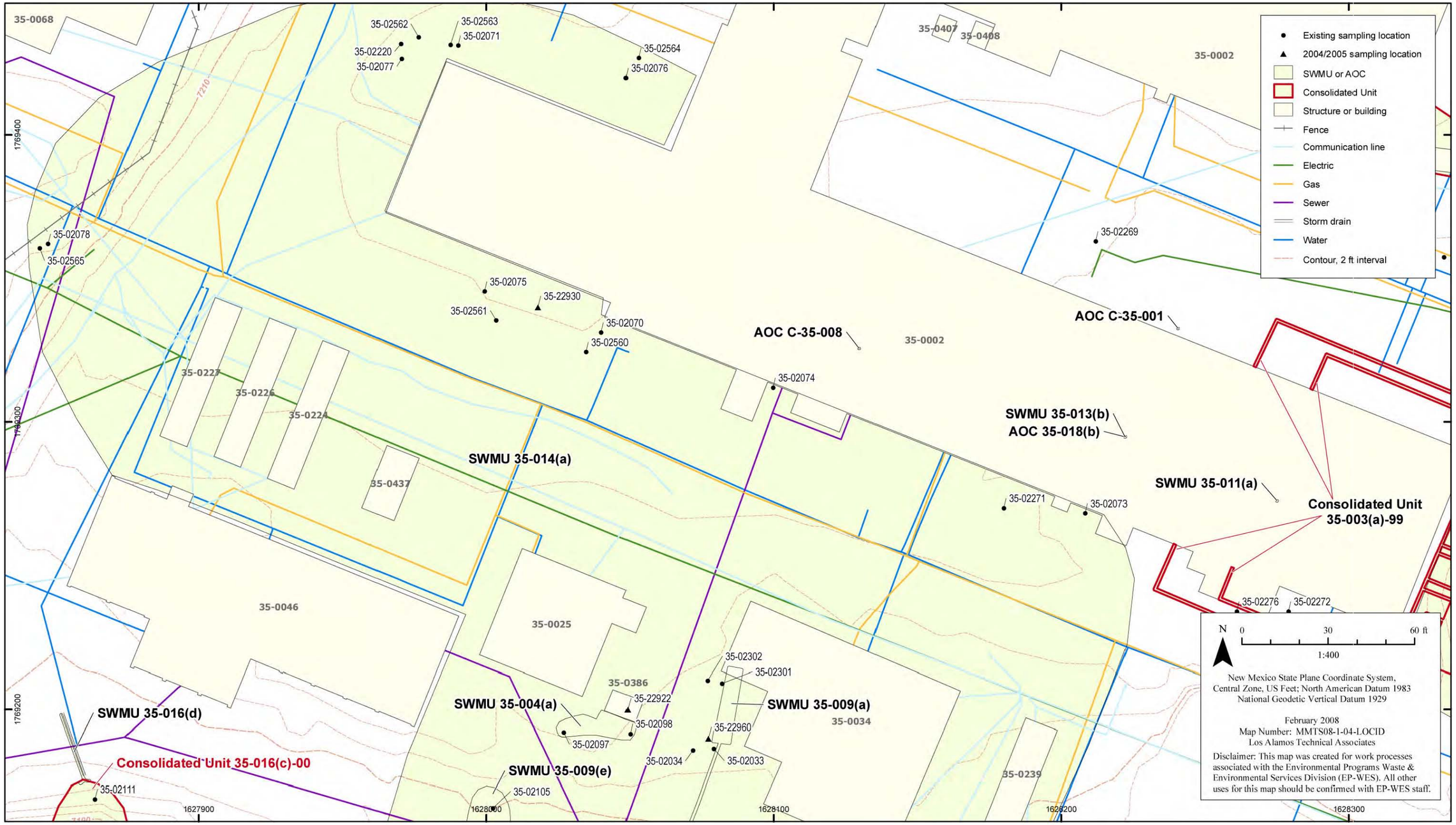


Figure 5.0-4 Mesa Top Area C sampling locations

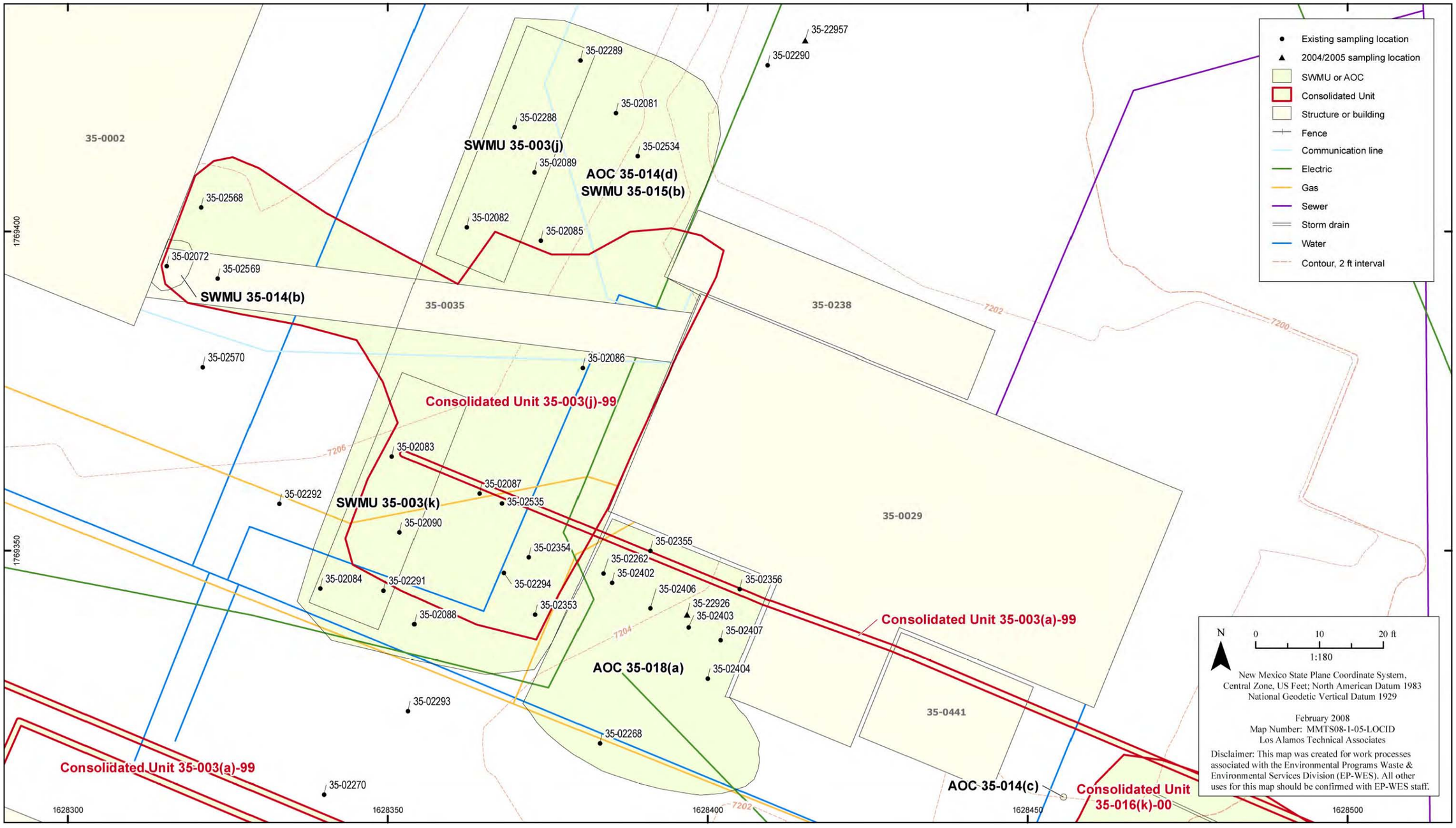


Figure 5.0-5 Mesa Top Area D sampling locations

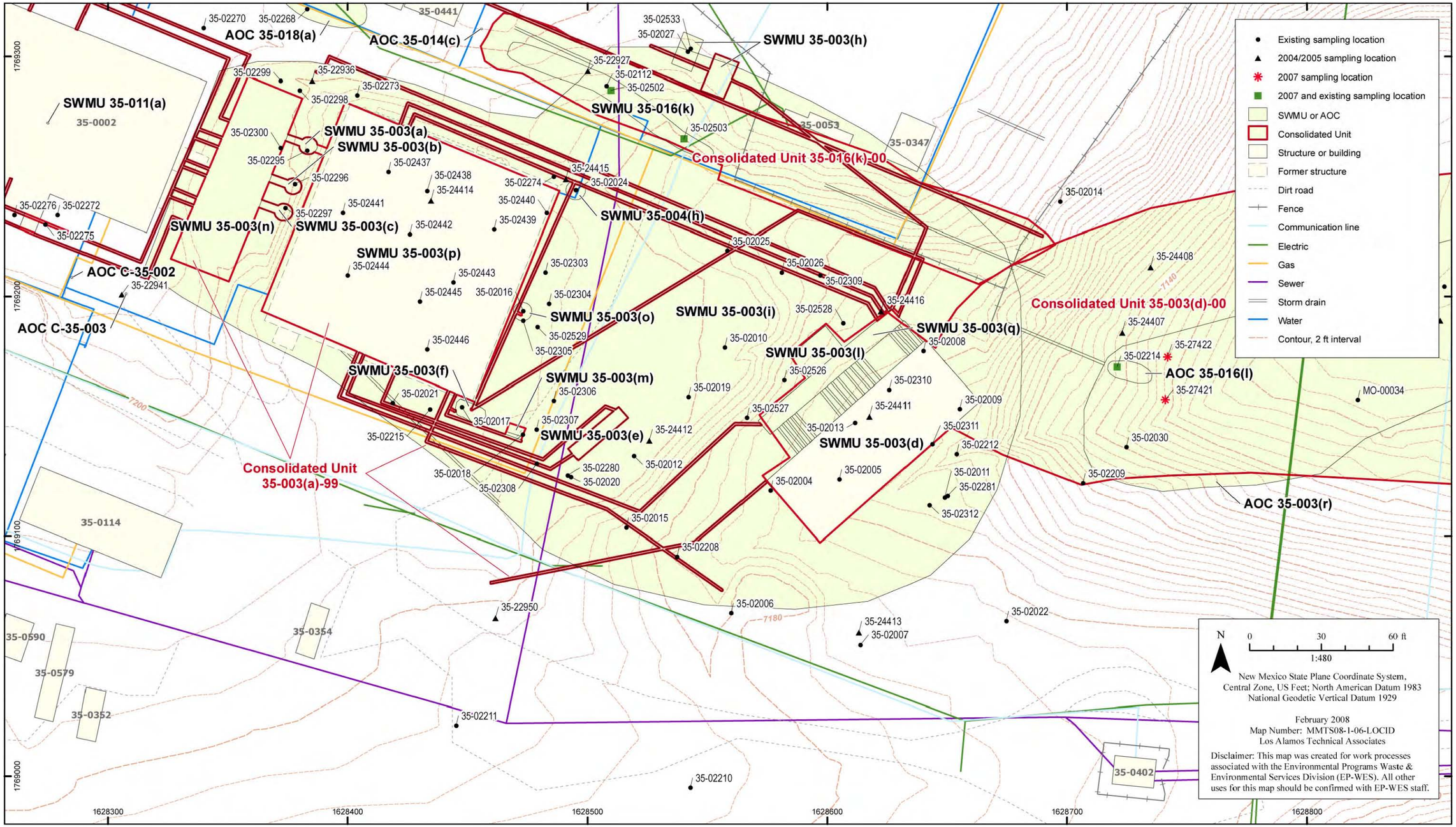


Figure 5.0-6 Mesa Top Area E sampling locations

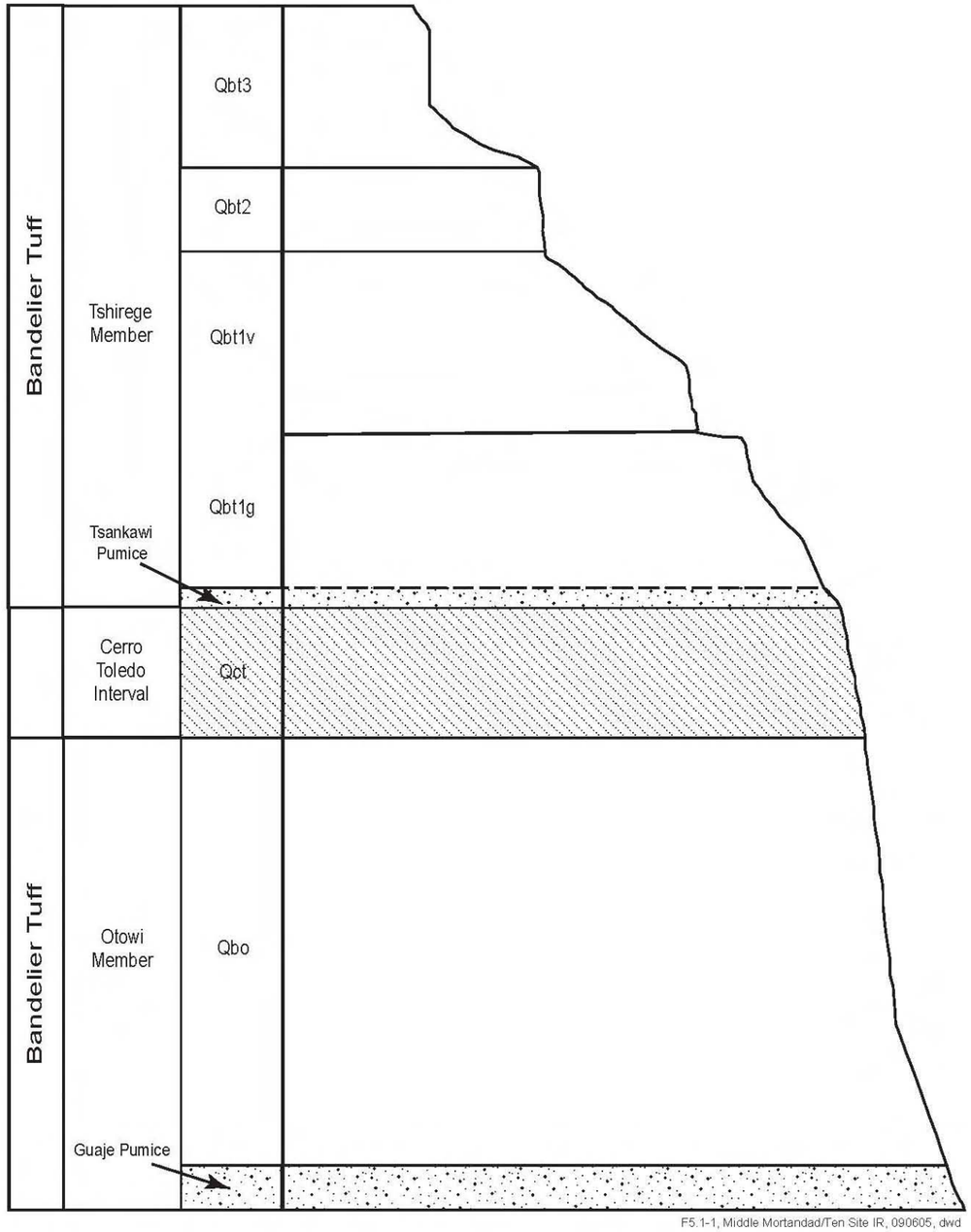


Figure 5.1-1 Generalized stratigraphy of Bandelier Tuff in the Middle Mortandad/Ten Site Aggregate

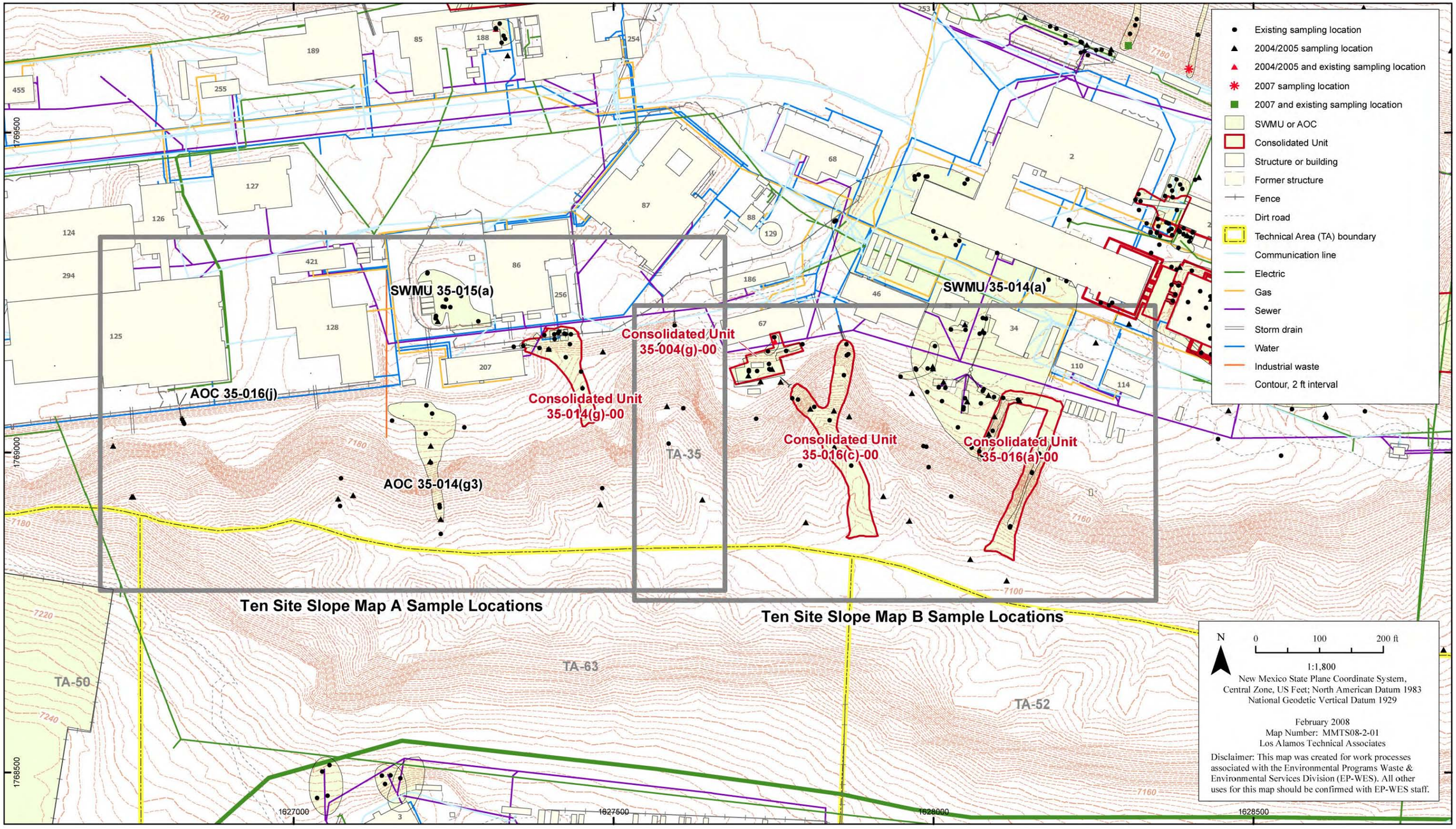


Figure 6.0-1 Index map of the Ten Site Slope Subarea

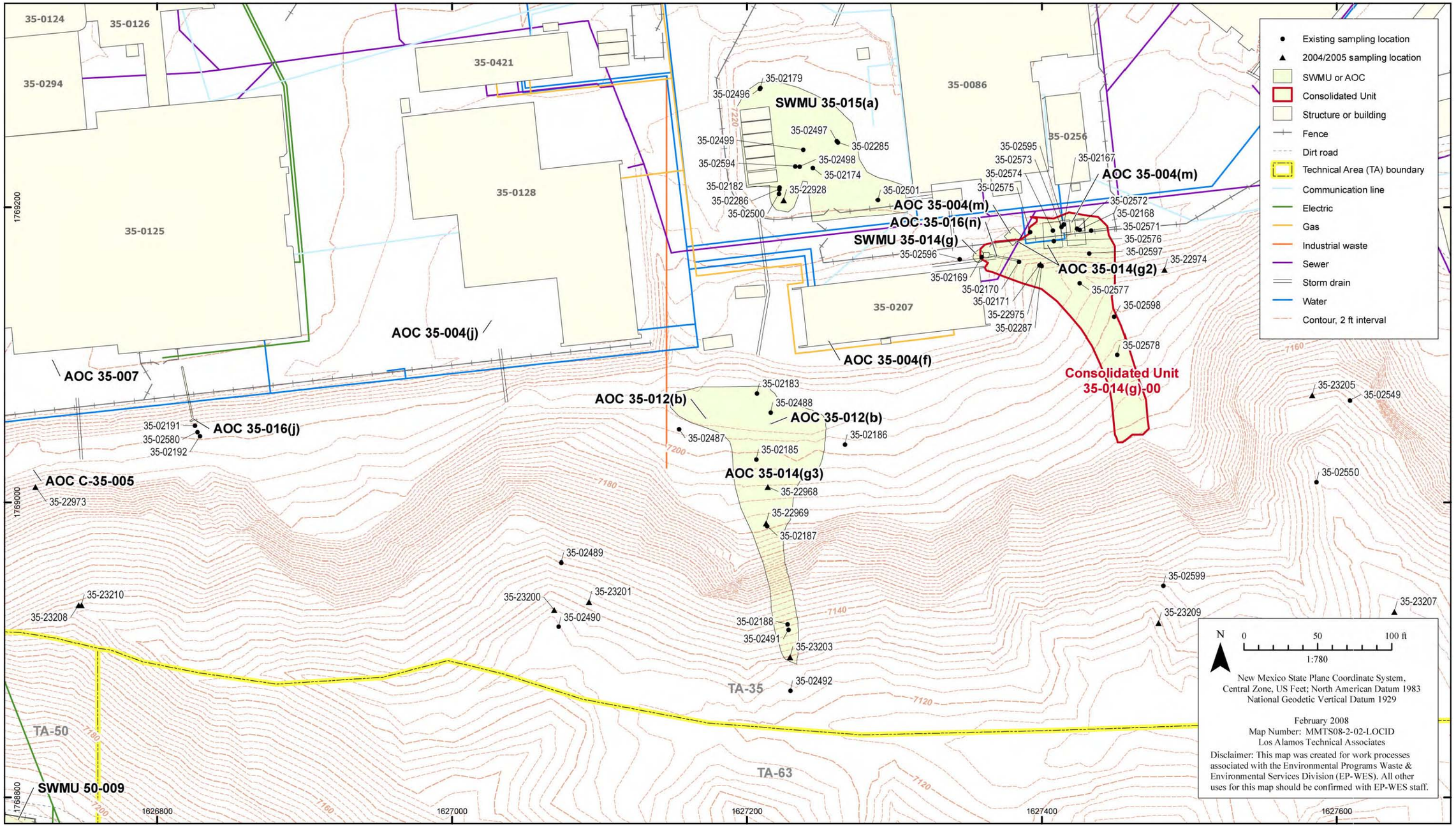


Figure 6.0-2 Ten Site Slope Area A sampling locations

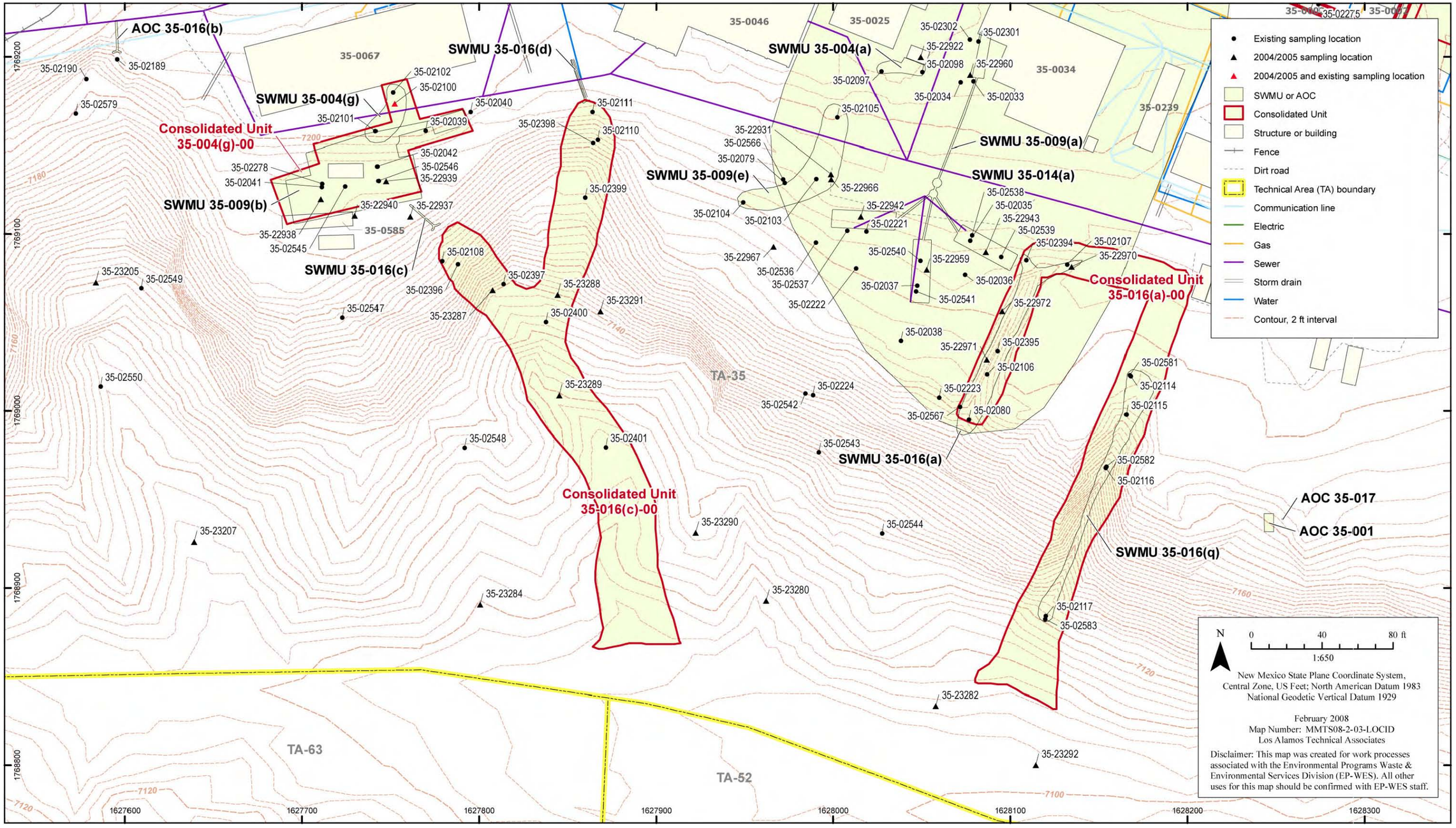


Figure 6.0-3 Ten Site Slope Area B sampling locations

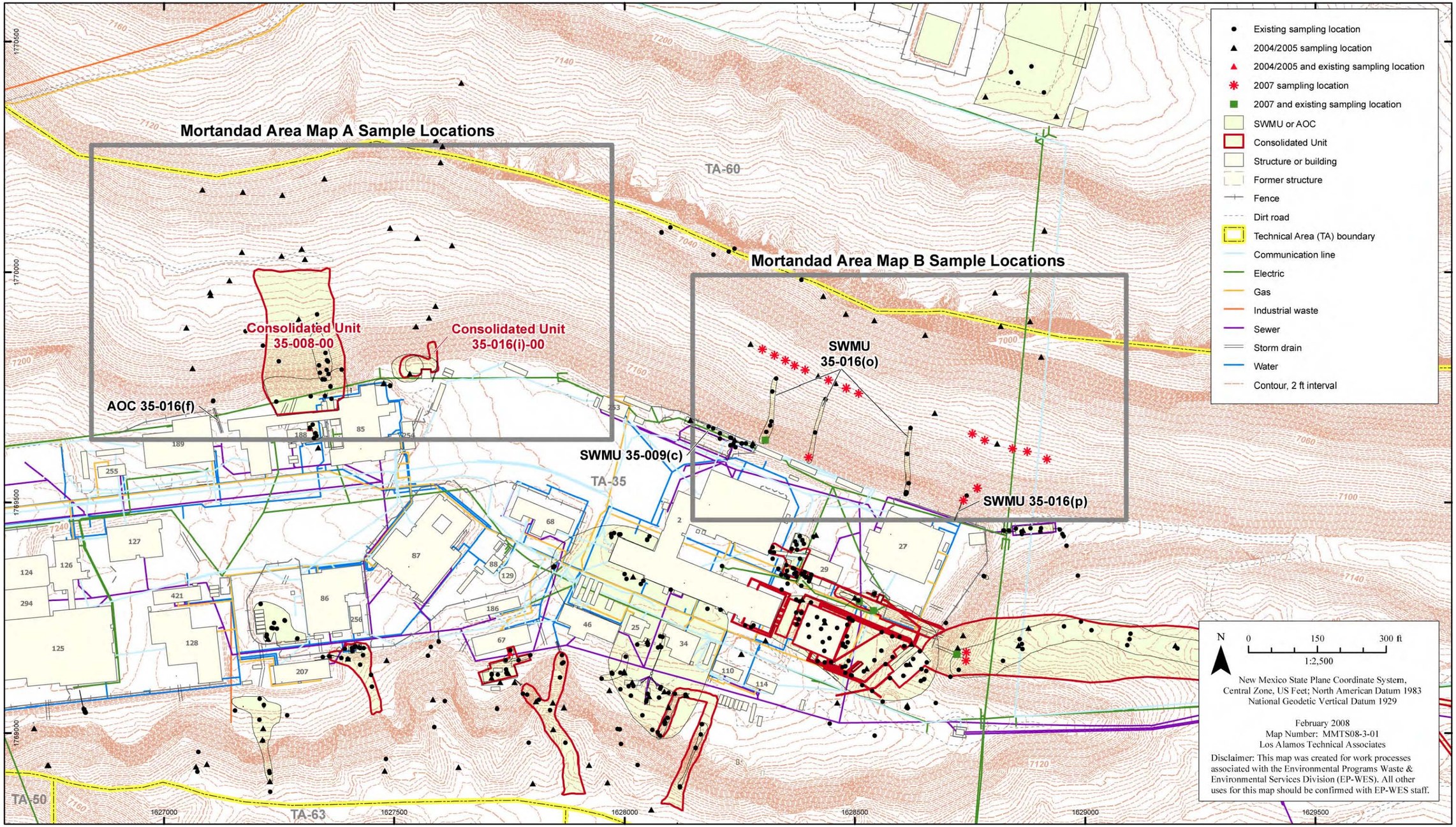


Figure 7.0-1 Index map of the Mortandad Slope Subarea

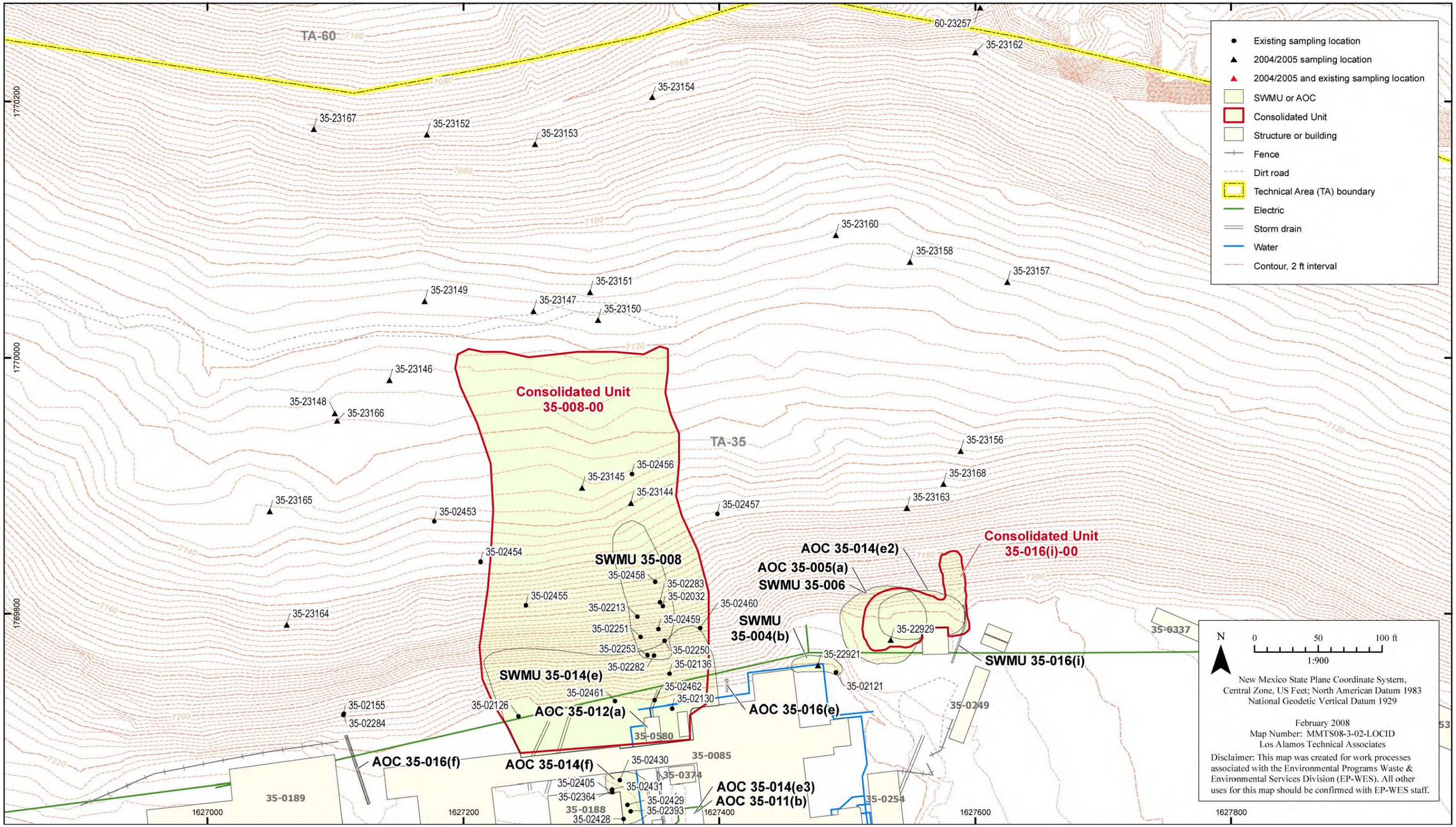


Figure 7.0-2 Mortandad Slope Area A sampling locations

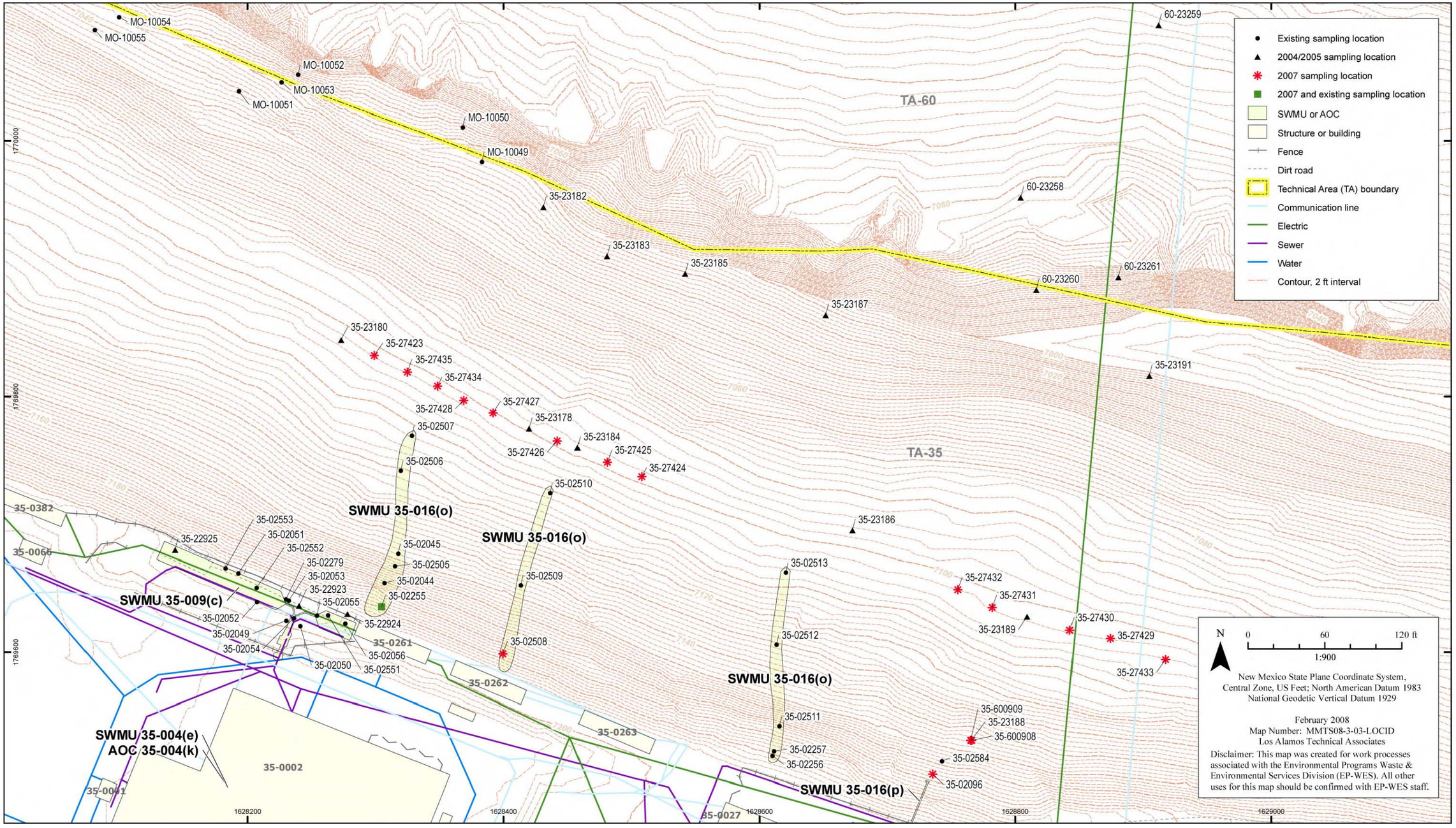


Figure 7.0-3 Mortandad Slope Area B sampling locations

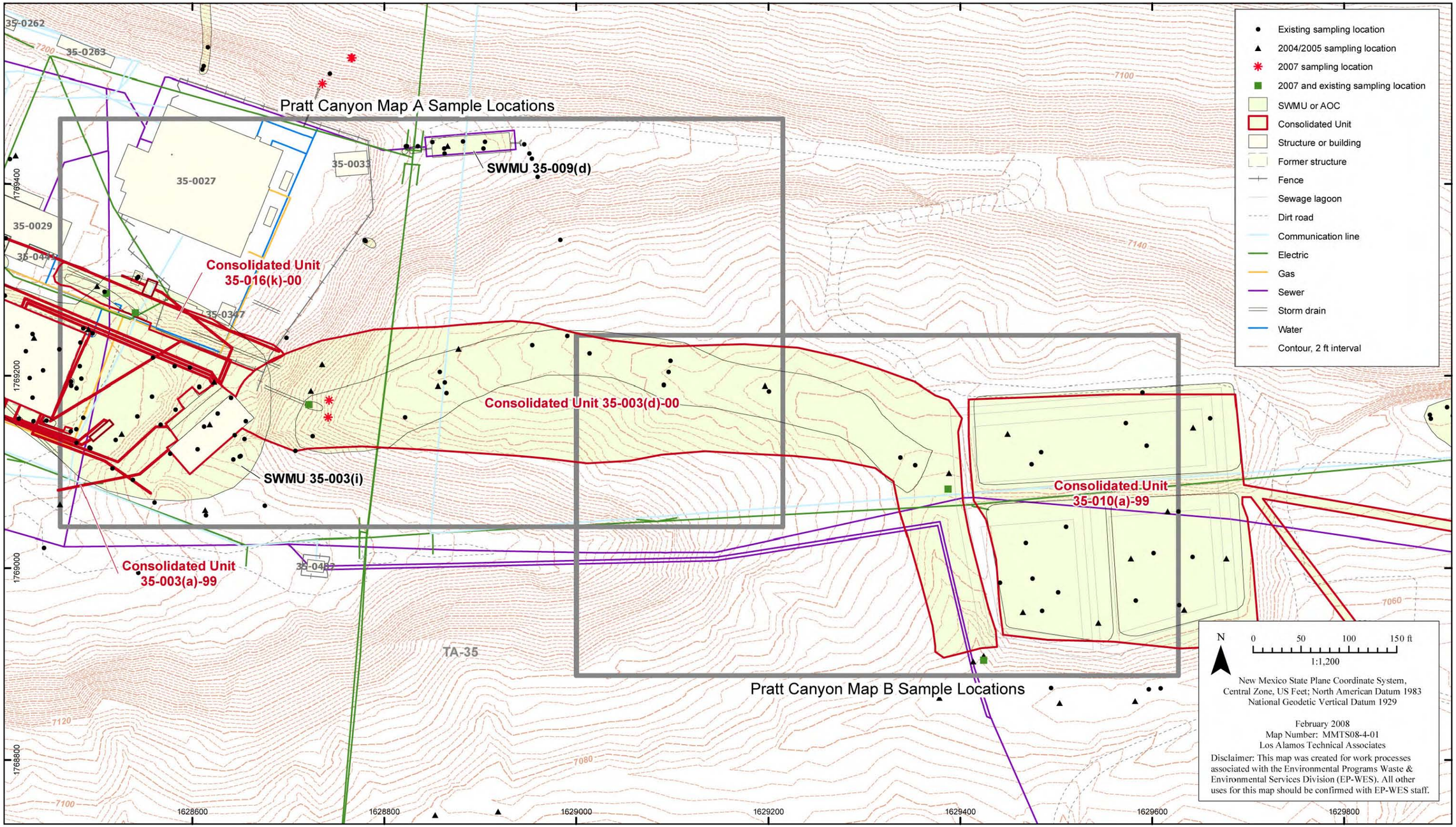


Figure 8.0-1 Index map of the Pratt Canyon Subarea

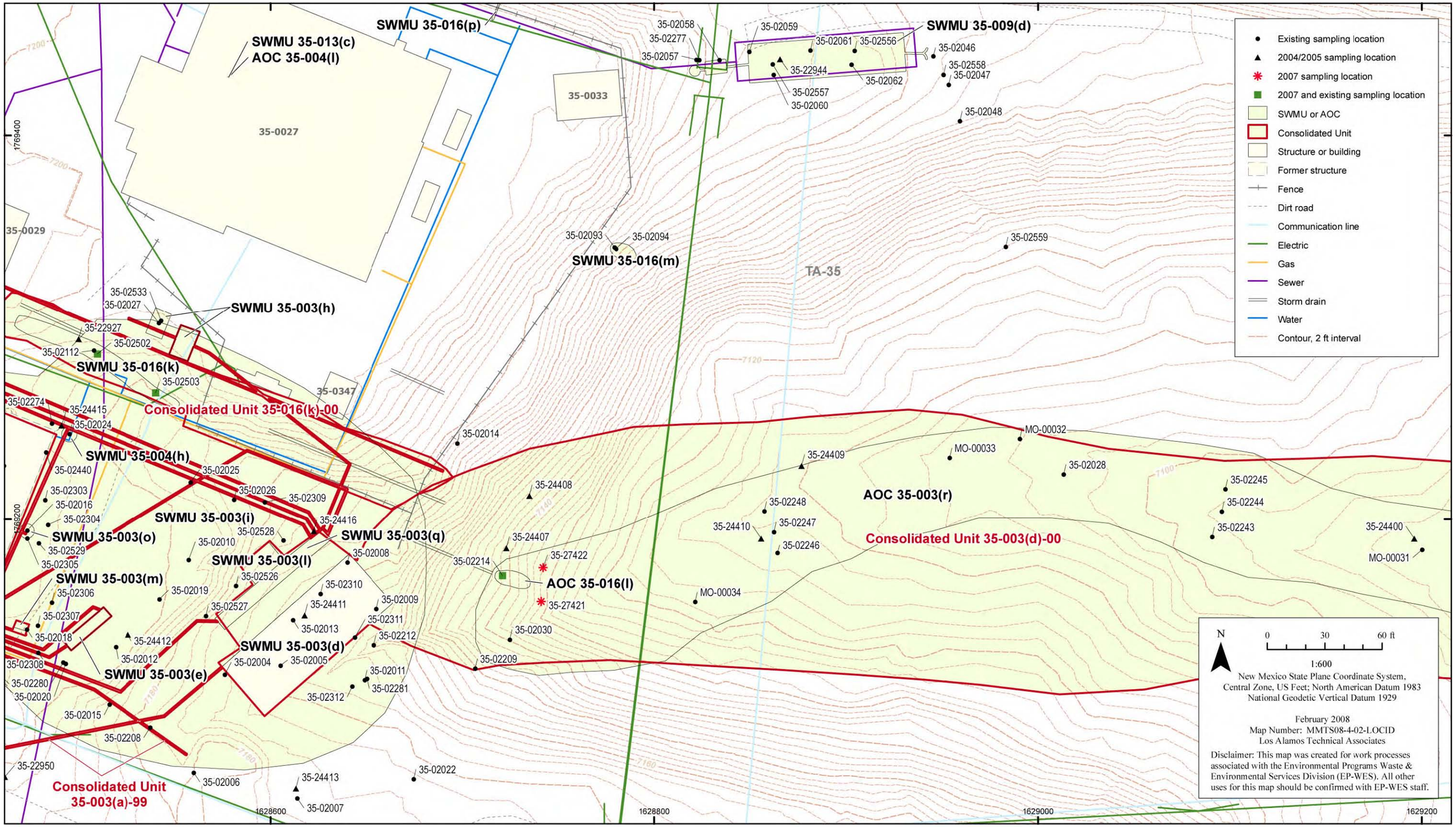


Figure 8.0-2 Pratt Canyon Area A sampling locations

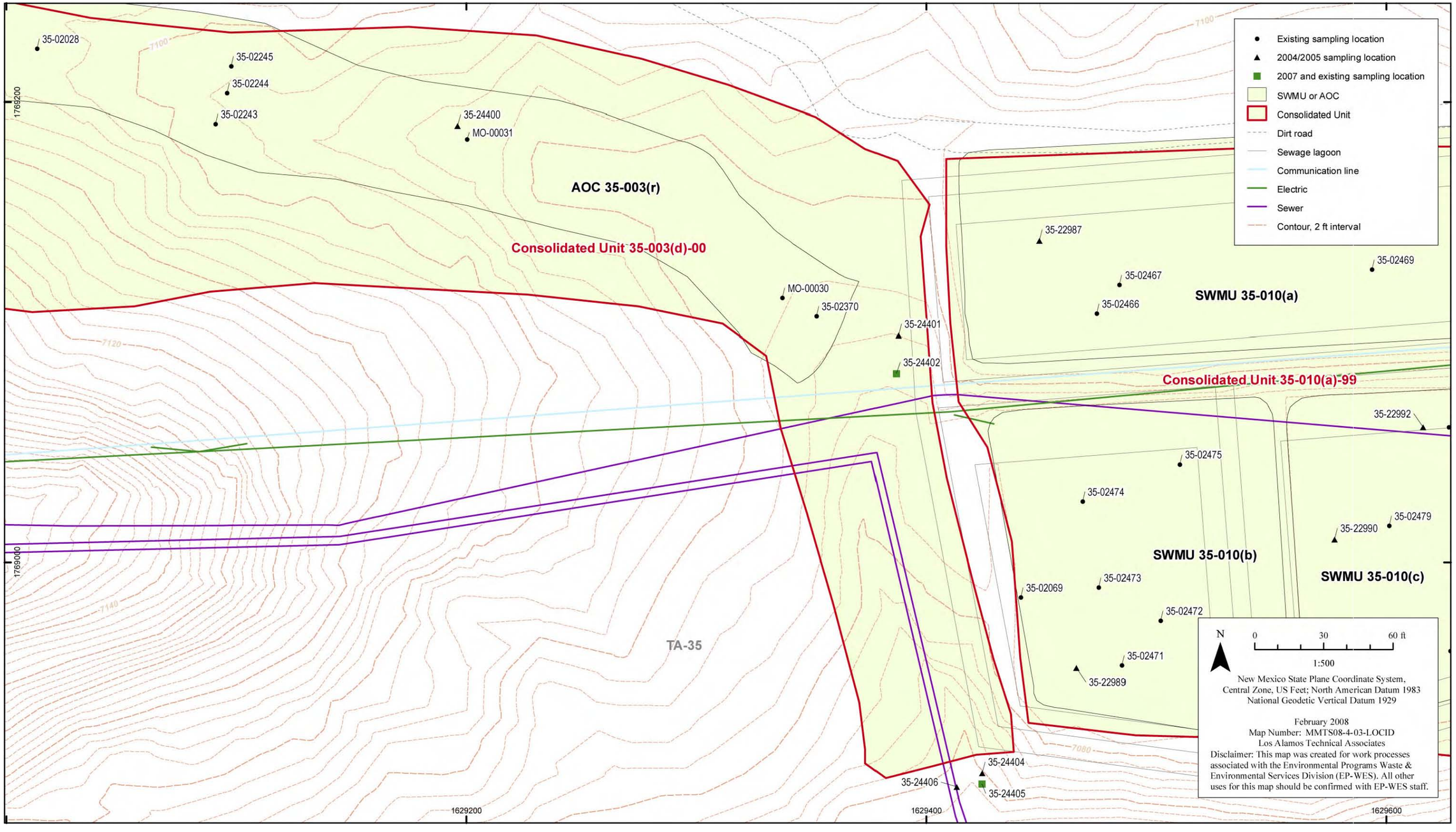


Figure 8.0-3 Pratt Canyon Area B sampling locations

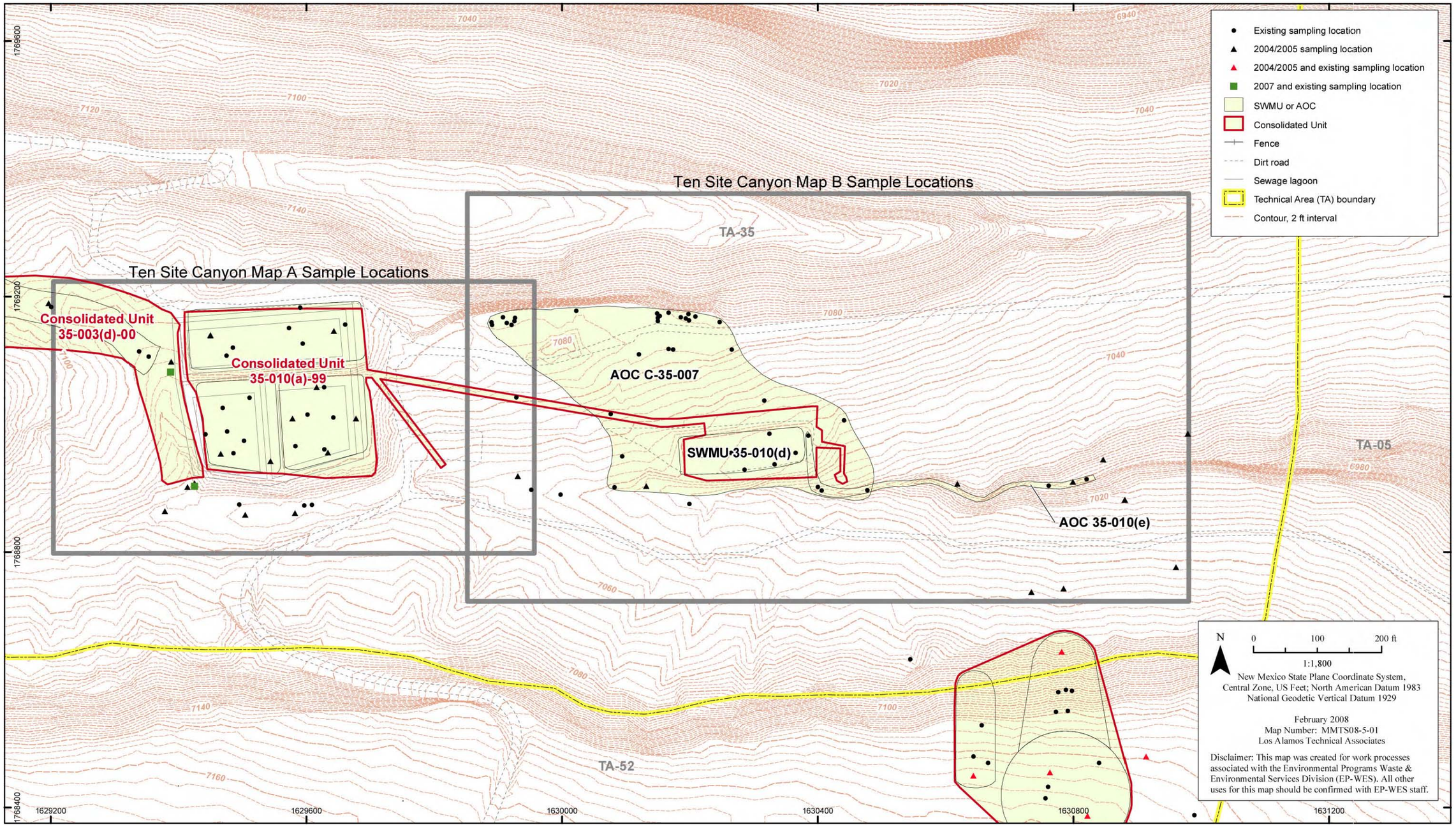


Figure 9.0-1 Index map of the Ten Site Canyon Subarea

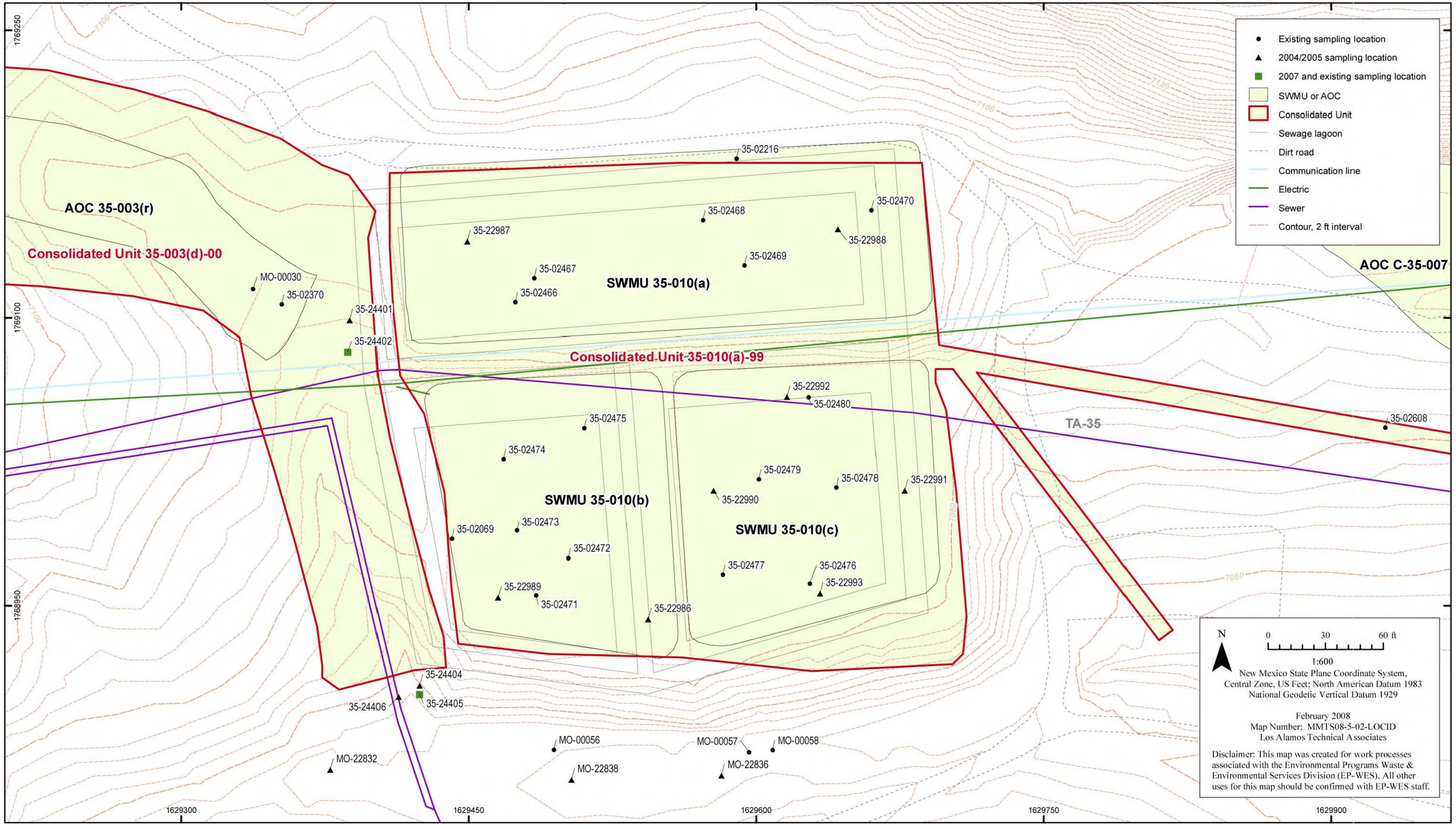


Figure 9.0-2 Ten Site Canyon Area A sampling locations

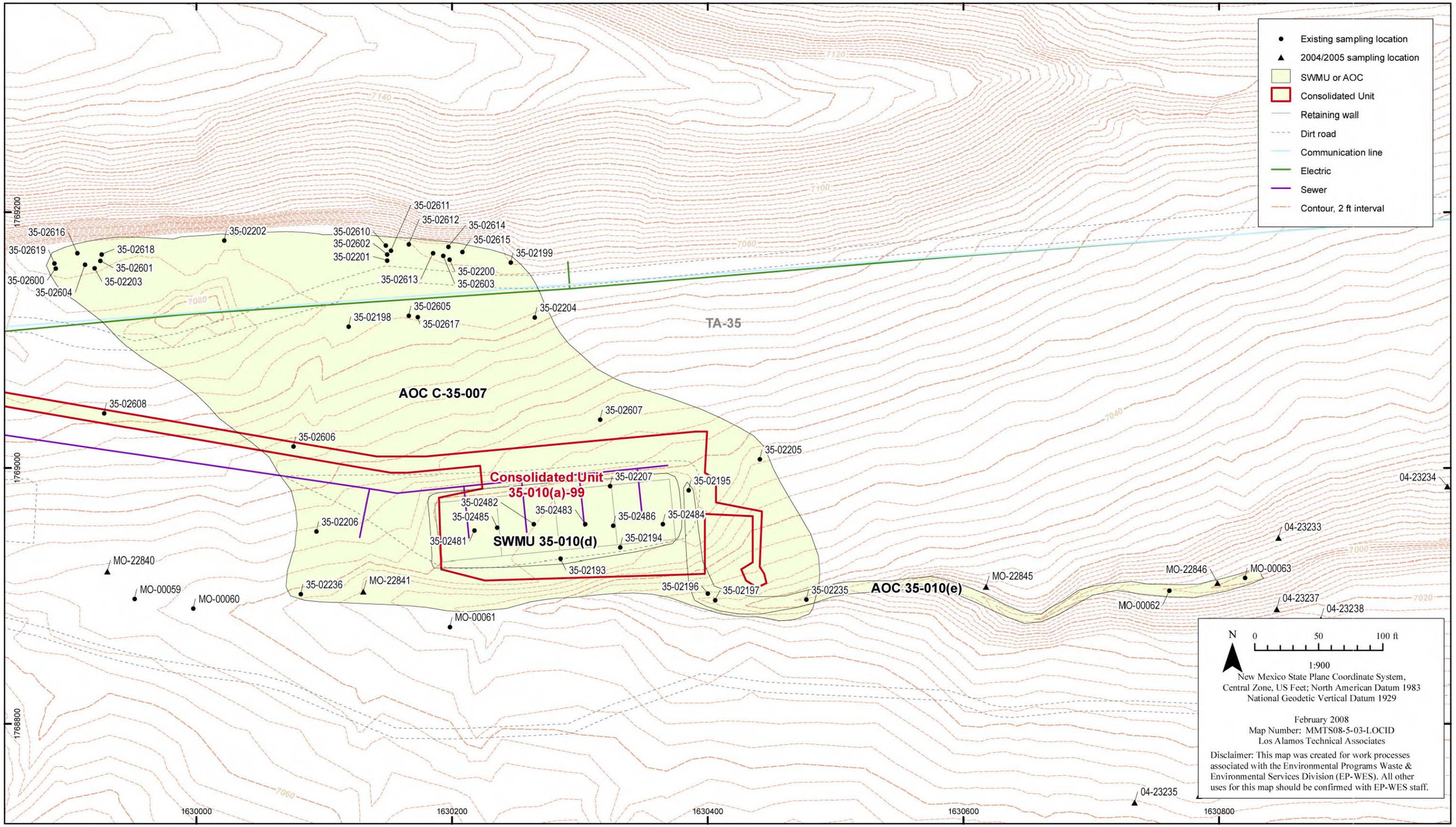


Figure 9.0-3 Ten Site Canyon Area B sampling locations

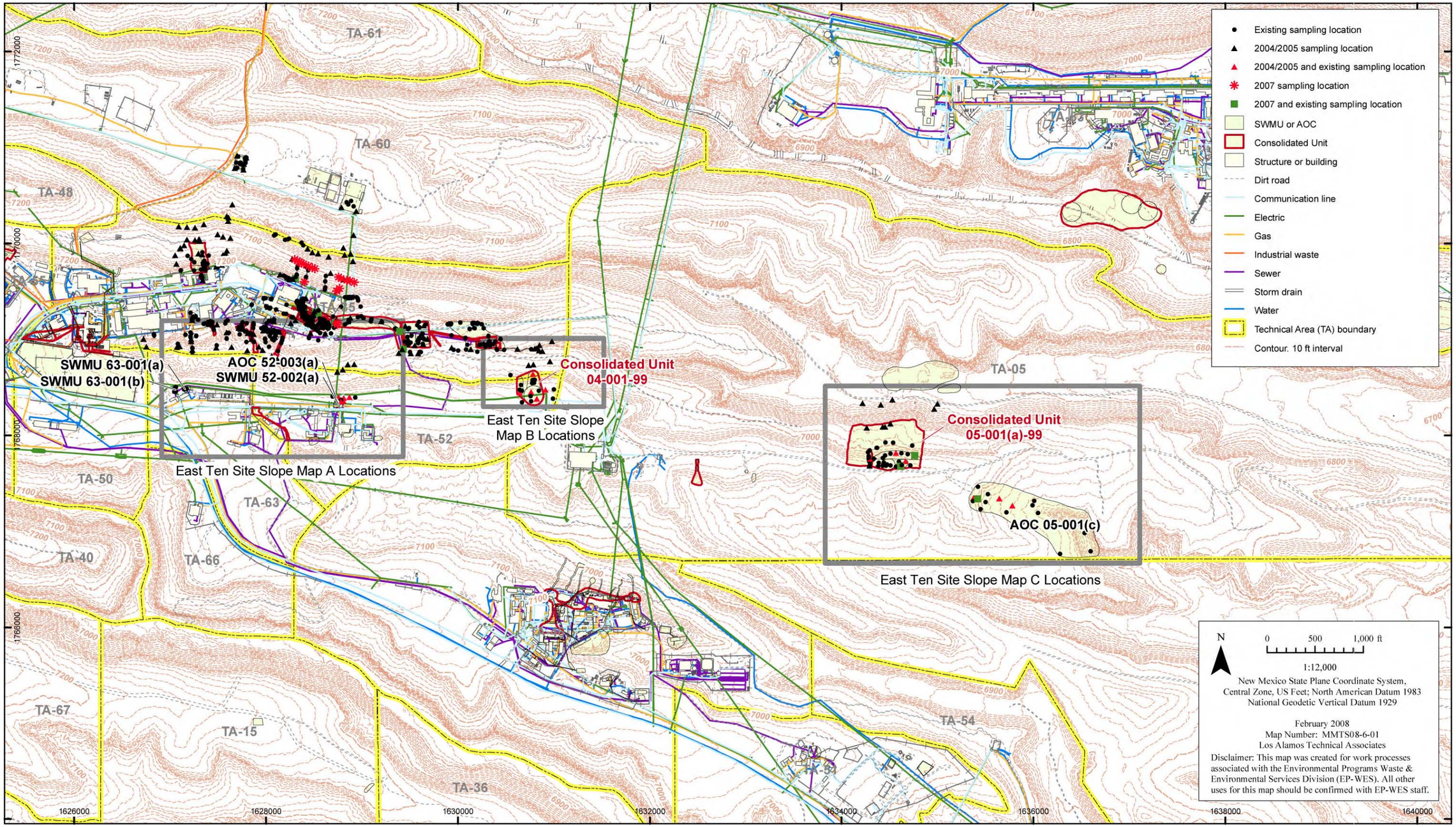


Figure 10.0-1 Index map of the East Ten Site Slope Subarea

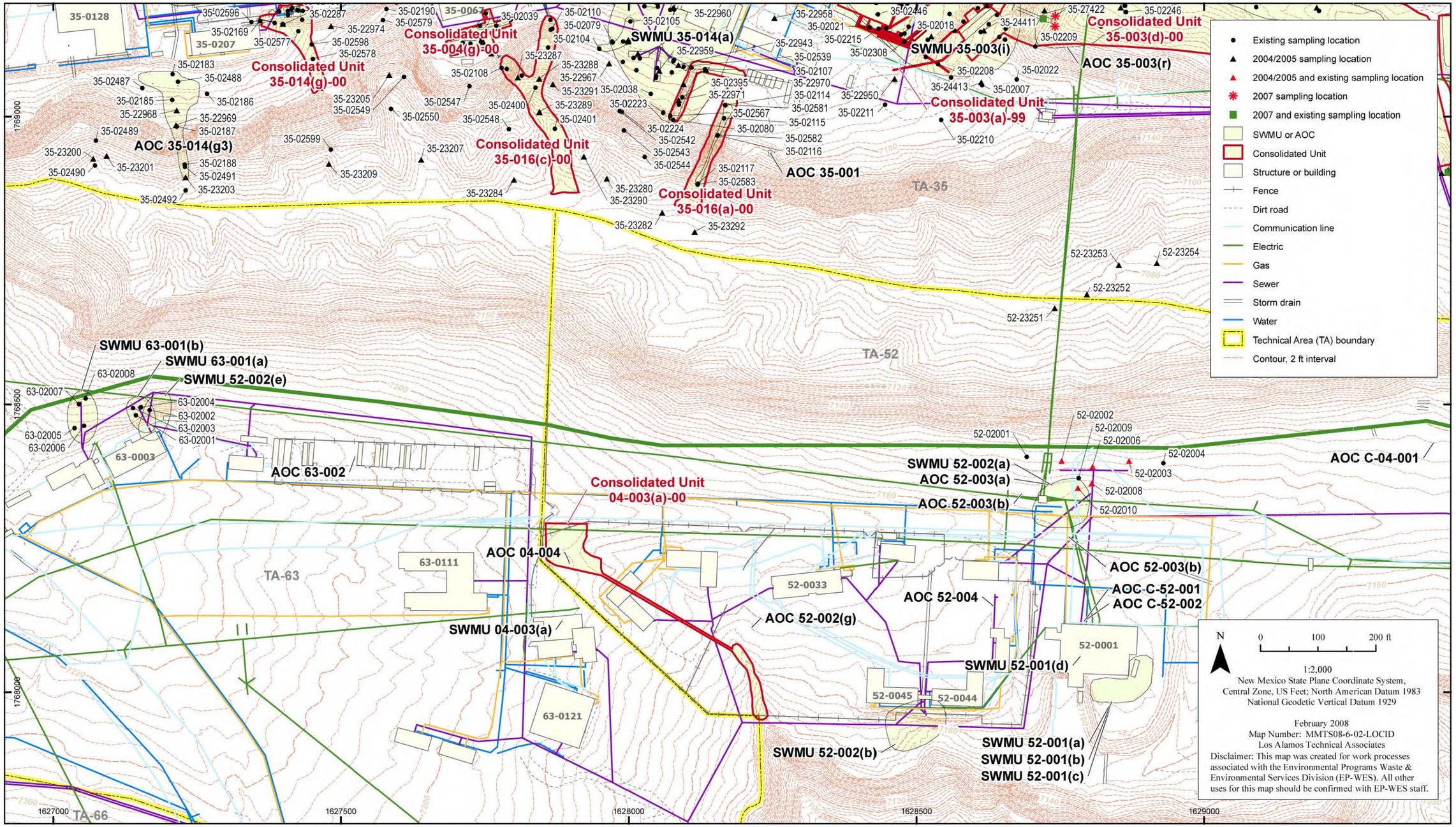


Figure 10.0-2 East Ten Site Slope Area A sampling locations

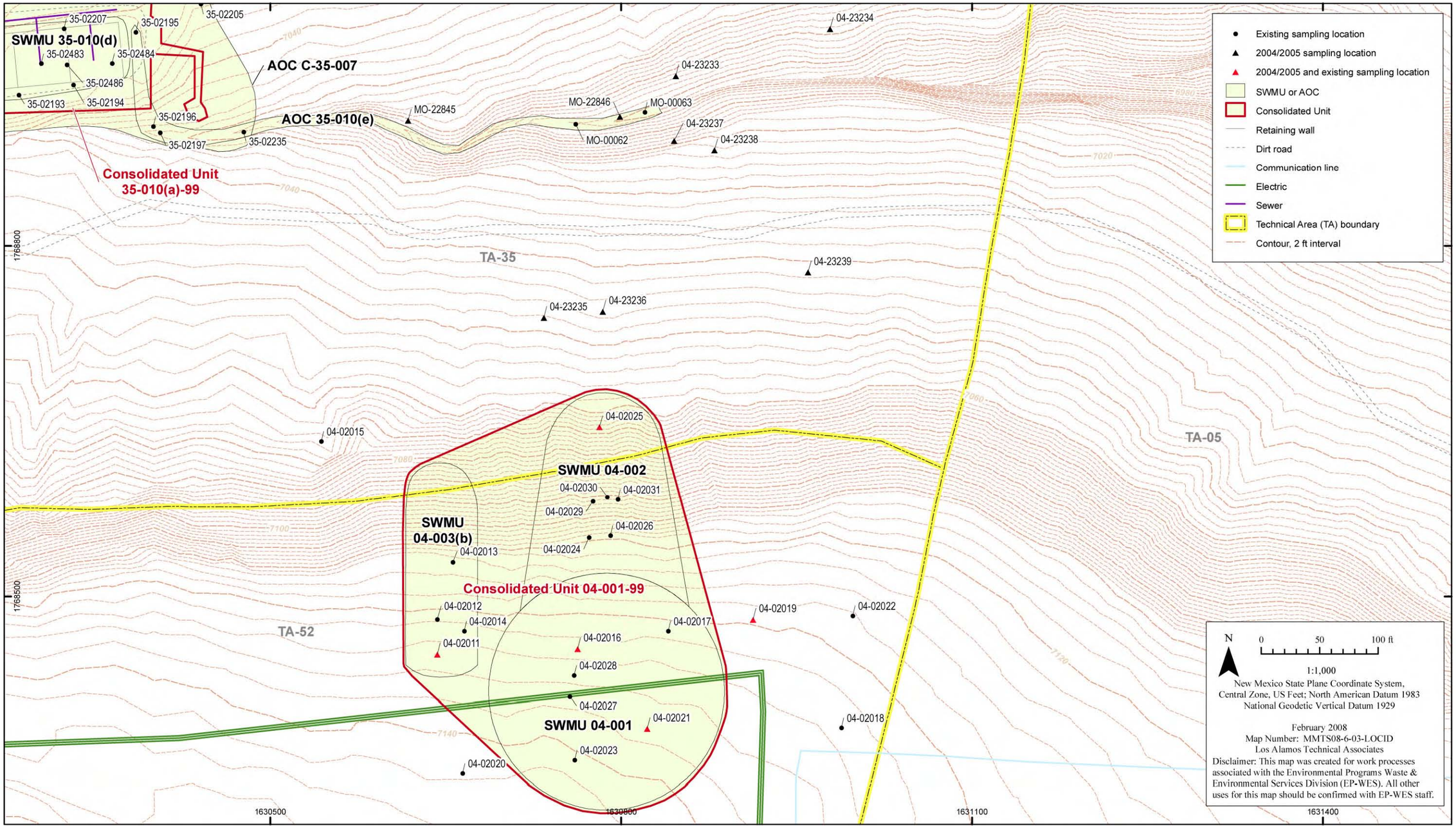


Figure 10.0-3 East Ten Site Slope Area B sampling locations

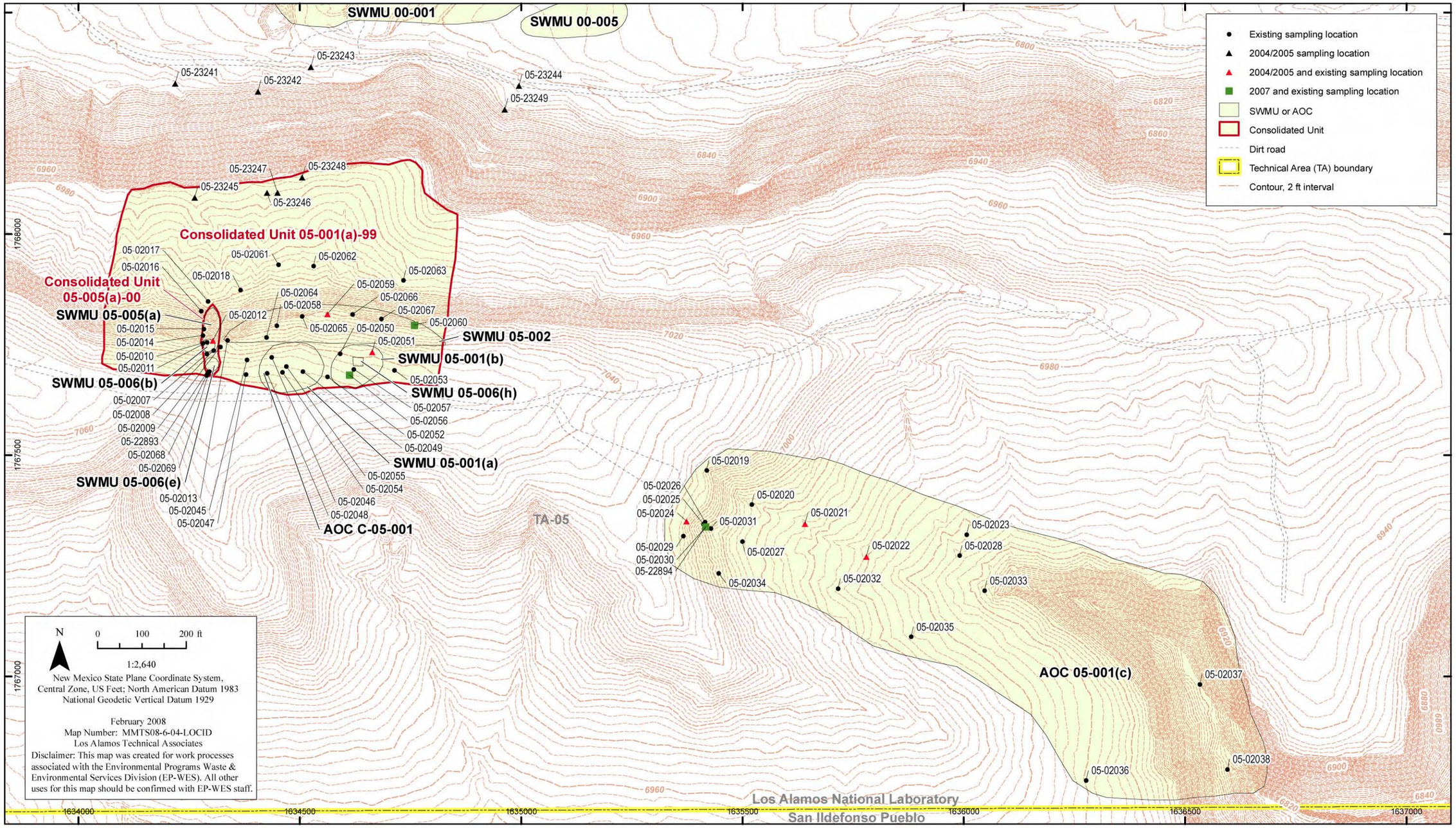


Figure 10.0-4 East Ten Site Slope Area C sampling locations

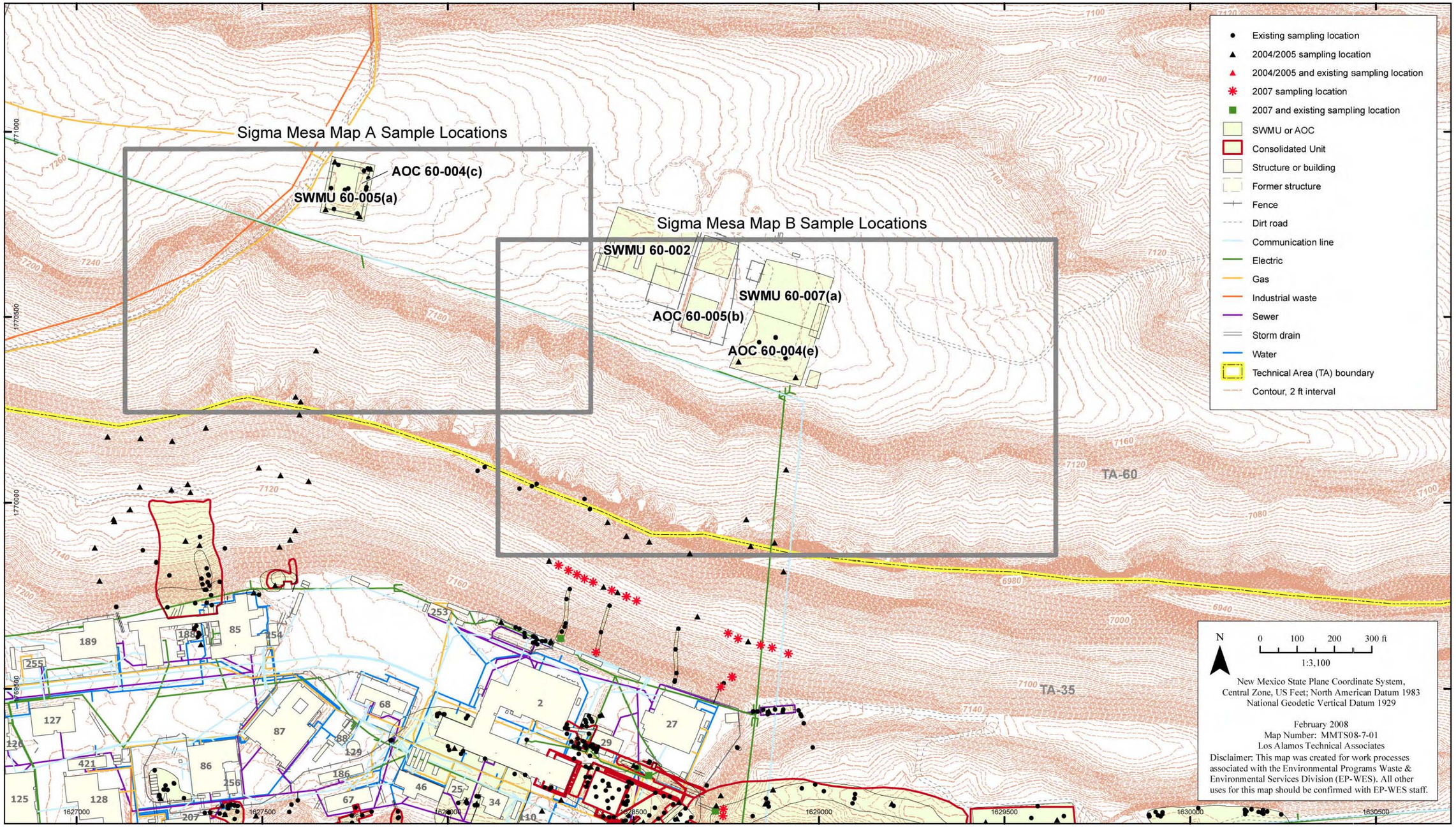


Figure 11.0-1 Index map of the Sigma Mesa Subarea

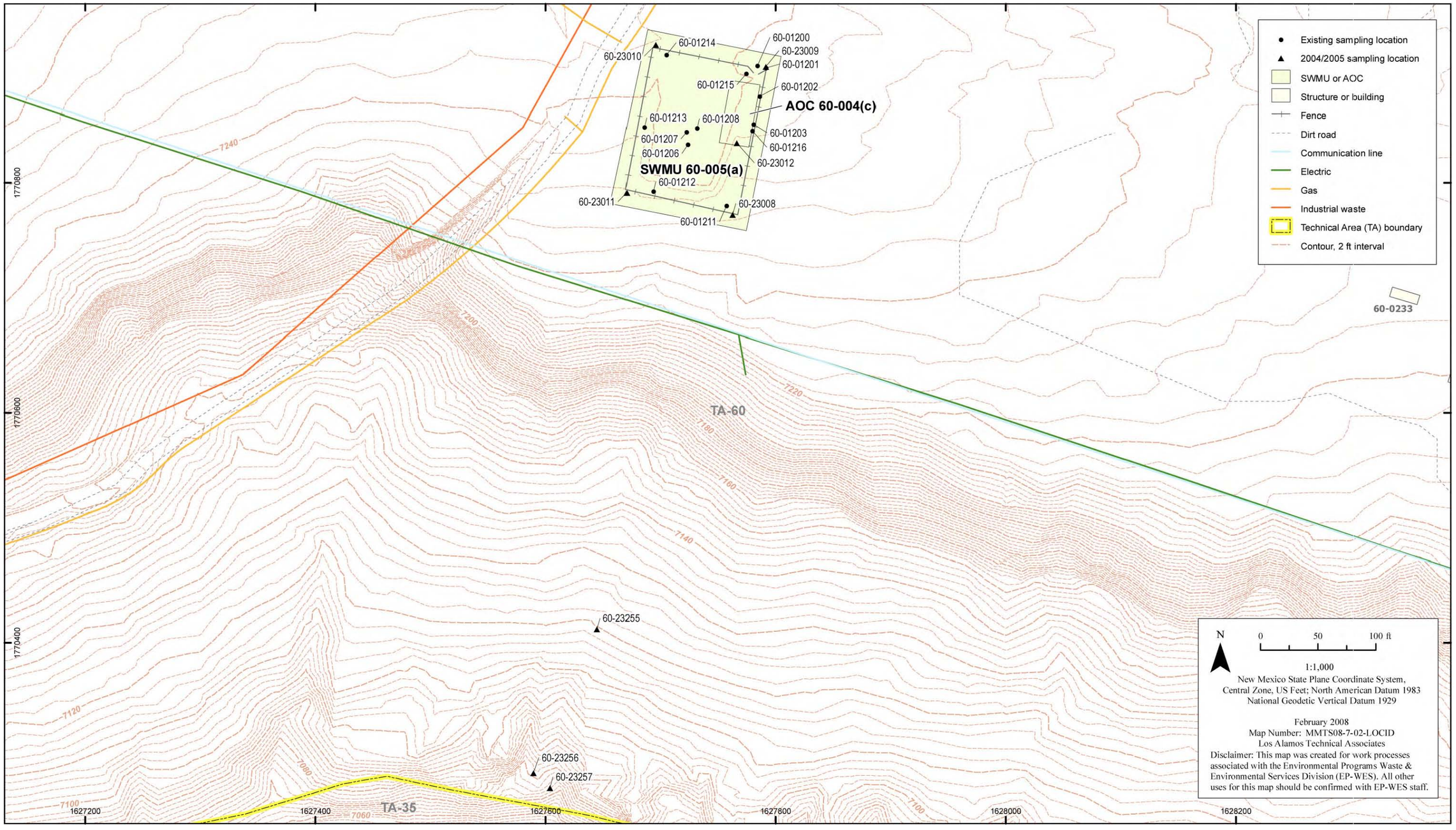


Figure 11.0-2 Sigma Mesa Area A sampling locations

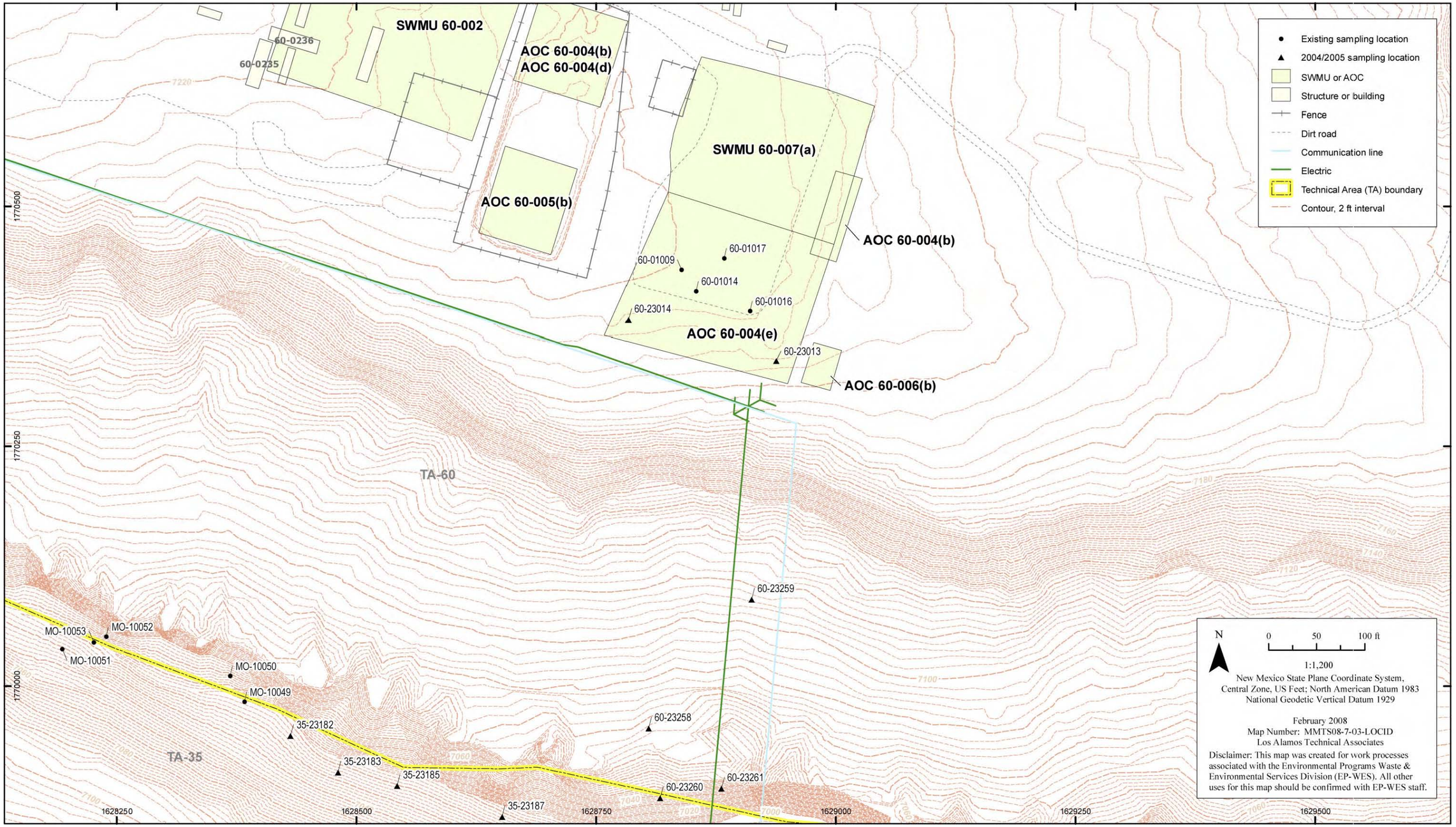


Figure 11.0-3 Sigma Mesa Area B sampling locations

Table 2.0-1
Summary of SWMUs, AOCs, and Consolidated Units in the Middle Mortandad/Ten Site Aggregate

Consolidated Unit	SWMU or AOC	Description	Subarea	Technical Area
04-001-99	SWMU 04-001	Firing site	East Ten Site Slope	04
	SWMU 04-002	Surface disposal	East Ten Site Slope	04
	SWMU 04-003(b)	Outfall	East Ten Site Slope	04
05-001(a)-99	SWMU 05-001(a)	Former firing site	East Ten Site Slope	05
	SWMU 05-001(b)	Former firing site	East Ten Site Slope	05
	SWMU 05-002	Canyon-side disposal	East Ten Site Slope	05
	SWMU 05-006(h)	Soil contamination	East Ten Site Slope	05
n/a[a]	AOC 05-001(c)	Former firing site	East Ten Site Slope	05
05-005(a)-00	SWMU 05-005(a)	Former French drain	East Ten Site Slope	05
	SWMU 05-006(b)	Soil contamination	East Ten Site Slope	05
	SWMU 05-006(e)	Soil contamination	East Ten Site Slope	05
n/a	SWMU 35-002	Material disposal area (MDA) X	Mesa Top	35
35-003(a)-99	SWMU 35-003(a)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(b)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(c)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(e)	Waste water treatment facility	Pratt Canyon	35
	SWMU 35-003(f)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(g)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(h)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(m)	Waste water treatment facility	Mesa Top	35
	AOC 35-003(misc)	Industrial Waste lines	Mesa Top	35
	SWMU 35-003(n)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(o)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(p)	Waste water treatment facility	Mesa Top	35
35-003(d)-00	SWMU 35-003(d)	Waste water treatment facility	Pratt Canyon	35
	SWMU 35-003(l)	Waste water treatment facility	Pratt Canyon	35
	SWMU 35-003(q)	Waste water treatment facility	Mesa Top	35
	AOC 35-003(r)	Outfall	Pratt Canyon	35
n/a	SWMU 35-004(a)	Storage areas	Mesa Top	35
n/a	SWMU 35-004(b)	Storage areas	Mortandad Slope	35
n/a	SWMU 35-004(h)	Container storage area	Mesa Top	35
35-003(j)-99	SWMU 35-003(j)	Waste water treatment facility	Mesa Top	35
	SWMU 35-003(k)	Waste water treatment facility	Mesa Top	35
	SWMU 35-014(b)	Leaking drum	Mesa Top	35
	AOC 35-014(d)	Operational release	Mesa Top	35
	SWMU 35-015(b)	Waste oil treatment	Mesa Top	35

Table 2.0-1 (continued)

Consolidated Unit	SWMU or AOC	Description	Subarea	Technical Area
35-004(g)-00	SWMU 35-004(g)	Container storage area	Ten Site Slope	35
	SWMU 35-009(b)	Septic system	Ten Site Slope	35
35-008-00	SWMU 35-008	Surface disposal and landfill	Mortandad Slope	35
	SWMU 35-014(e)	Oil spill	Mortandad Slope	35
n/a	SWMU 35-009(a)	Septic system	Ten Site Slope and Mesa Top	35
n/a	SWMU 35-009(c)	Septic system	Mortandad Slope	35
n/a	SWMU 35-009(d)	Septic system	Pratt Canyon	35
n/a	SWMU 35-009(e)	Septic system	Ten Site Slope	35
35-010(a)-99	SWMU 35-010(a)	Sanitary lagoon	Ten Site Canyon	35
	SWMU 35-010(b)	Sanitary lagoon	Ten Site Canyon	35
	SWMU 35-010(c)	Sanitary lagoon	Ten Site Canyon	35
	SWMU 35-010(d)	Sand filters	Ten Site Canyon	35
	AOC 35-010(e)	Release from sand filter	Ten Site Canyon	35
n/a	AOC 35-011(d)	Underground storage tank	Mesa Top	35
n/a	SWMU 35-014(a)	Operational release	Mesa Top	35
n/a	AOC 35-014(f)	Soil contamination	Mesa Top	35
35-014(g)-00	SWMU 35-014(g)	Soil contamination	Ten Site Slope	35
	AOC 35-004(m)	Container storage area	Ten Site Slope	35
	AOC 35-014(g2)	Soil contamination	Ten Site Slope	35
	AOC 35-016(n)	Storm drain	Ten Site Slope	35
n/a	AOC 35-014(g3)	Soil contamination	Ten Site Slope	35
n/a	SWMU 35-015(a)	Soil contamination	Mesa Top	35
35-016(a)-00	SWMU 35-016(a)	Drains and outfalls	Ten Site Slope	35
	SWMU 35-016(q)	Drains and outfalls	Ten Site Slope	35
n/a	AOC 35-016(b)	Outfall	Ten Site Slope	35
35-016(c)-00	SWMU 35-016(c)	Outfall	Ten Site Slope	35
	SWMU 35-016(d)	Outfall	Ten Site Slope	35
n/a	AOC 35-016(e)	Outfall	Mortandad Slope	35
n/a	AOC 35-016(f)	Storm drain	Mortandad Slope	35
35-016(i)-00	AOC 35-014(e2)	Oil spill	Mortandad Slope	35
	SWMU 35-016(i)	Drains and outfalls	Mortandad Slope	35
n/a	AOC 35-016(j)	Storm drain	Ten Site Slope	35
35-016(k)-00	SWMU 35-016(k)	Drains and outfalls	Pratt Canyon	35
	AOC 35-016(l)	Storm drain	Pratt Canyon	35
n/a	SWMU 35-016(m)	Drains and outfalls	Pratt Canyon	35
n/a	SWMU 35-016(o)	Drains and outfalls	Mortandad Slope	35
n/a	SWMU 35-016(p)	Outfall	Mortandad Slope	35

Table 2.0-1 (continued)

Consolidated Unit	SWMU or AOC	Description	Subarea	Technical Area
n/a	AOC 35-017[b]	Soil contamination	Ten Site Slope	35
n/a	AOC 35-018(a)	Transformer	Mesa Top	35
n/a	AOC C-35-007	Soil contamination	Ten Site Canyon	35
n/a	SWMU 52-002(a)	Septic system	East Ten Site Slope	52
n/a	AOC 52-003(a)	Waste treatment facility	East Ten Site Slope	52
n/a	AOC 52-003(b)[b]	Industrial waste line	East Ten Site Slope	52
n/a	AOC 60-004(c)	Storage area	Sigma Mesa	60
n/a	AOC 60-004(e)	Storage area	Sigma Mesa	60
n/a	SWMU 60-005(a)	Surface impoundment	Sigma Mesa	60
n/a	SWMU 63-001(a)	Septic system	East Ten Site Slope	63
n/a	SWMU 63-001(b)	Septic system	East Ten Site Slope	63

[a] n/a = Not applicable; the SWMU or AOC has not been consolidated.

[b] Approved by EPA for NFA status (EPA 2005, 088464); site is not discussed further in this report.

Table 3.0-1
Crosswalk of Proposed and Sampled Locations

SAP/Addendum Subarea	SWMU/AOC	SAP Proposed Type/ Location	Sampled Location ID	Report Unit
East Ten Site Slope	04-002	TR1	04-23233	04-001-99
East Ten Site Slope	04-002	TR2	04-23234	04-001-99
East Ten Site Slope	04-002	TR3	04-23235	04-001-99
East Ten Site Slope	04-002	TR4	04-23236	04-001-99
East Ten Site Slope	04-002	TR5	04-23237	04-001-99
East Ten Site Slope	04-002	TR6	04-23238	04-001-99
East Ten Site Slope	04-002	TR7	04-23239	04-001-99
East Ten Site Slope	04-003(b)	AH1	04-02025	04-001-99
East Ten Site Slope	04-003(b)	AH2	04-02011	04-001-99
East Ten Site Slope	04-003(b)	AH3	04-02016	04-001-99
East Ten Site Slope	04-003(b)	AH4	04-02019	04-001-99
East Ten Site Slope	04-003(b)	AH5	04-02021	04-001-99
East Ten Site Slope	05-001(a,b)	AH10	05-02051	05-001(a)-99
East Ten Site Slope	05-001(a,b)	AH8	05-02059	05-001(a)-99
East Ten Site Slope	05-001(a,b)	AH9	05-02060	05-001(a)-99
East Ten Site Slope	05-001(a,b)	2007 samples*	05-02056	05-001(a)-99
East Ten Site Slope	05-001(c)	AH11	05-02024	05-001(c)
East Ten Site Slope	05-001(c)	AH12	05-22894	05-001(c)
East Ten Site Slope	05-001(c)	AH13	05-02021	05-001(c)
East Ten Site Slope	05-001(c)	AH14	05-02022	05-001(c)
East Ten Site Slope	05-002	TR10	05-23243	05-002
East Ten Site Slope	05-002	TR11	05-23244	05-002
East Ten Site Slope	05-002	TR13	05-23246	05-002
East Ten Site Slope	05-002	TR14	05-23247	05-002
East Ten Site Slope	05-002	TR15	05-23248	05-002
East Ten Site Slope	05-002	TR16	05-23249	05-002
East Ten Site Slope	05-002	TR9	05-23242	05-002
East Ten Site Slope	05-005(a)	TR12	05-23245	05-005(a)-00
East Ten Site Slope	05-005(a)	TR8	05-23241	05-005(a)-00
East Ten Site Slope	05-006(b,e)	AH6	05-22893	05-005(a)-00
East Ten Site Slope	05-006(b,e)	AH7	05-02012	05-005(a)-00
East Ten Site Slope	52-002(a)	BH1	52-02002	52-002(a)
East Ten Site Slope	52-002(a)	BH2	52-02006	52-002(a)
East Ten Site Slope	52-002(a)	BH3	52-02003	52-002(a)
East Ten Site Slope	52-002(a)	BH4	52-02008	52-002(a)
East Ten Site Slope	52-002(a)	TR17	52-23251	52-002(a)

Table 3.0-1 (continued)

SAP/Addendum Subarea	SWMU/AOC	SAP Proposed Type/ Location	Sampled Location ID	Report Unit
East Ten Site Slope	52-002(a)	TR18	52-23252	52-002(a)
East Ten Site Slope	52-002(a)	TR19	52-23253	52-002(a)
East Ten Site Slope	52-002(a)	TR20	52-23254	52-002(a)
East Ten Site Slope	52-003(a)	BH5	52-02010	52-003(a)
Mesa Top	35-002	BH9	35-24415	35-004(h)
Mesa Top	35-003(a)-99	BH4	35-22936	35-003(a)-99
Mesa Top	35-003(a)-99	BH6	35-24414	35-003(a)-99
Mesa Top	35-003(a)-99	BH7	35-22950	35-003(a)-99
Mesa Top	35-003(a)-99	TR1	35-24416	35-003(a)-99
Mesa Top	35-003(a)-99, 35-002	BH5	35-22941	35-003(a)-99, 35-002
Mesa Top	35-003(j)-99	BH3	35-22957	35-003(j)-99
Mesa Top	35-004(a)	AH4	35-22922	35-004(a)
Mesa Top	35-004(h)	BH8	35-22957	35-004(h)
Mesa Top	35-009(a)	BH2	35-22960	35-009(a)
Mesa Top	35-011(d)	BH1	35-22961	35-011(d)
Mesa Top	35-014(a)	AH3	35-22930	35-014(a)
Mesa Top	35-014(f)	AH2	35-02364	35-014(f)
Mesa Top	35-015(a)	AH1	35-22928	35-015(a)
Mesa Top	35-018(a)	AH5	35-22926	35-018(a)
Mortandad Slope	35-004(b)	AH1	35-22921	35-004(b)
Mortandad Slope	35-009(c) and 35-016(o)	AH3	35-22925	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	AH4	35-22923	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	AH5	35-22924	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	TR18	35-23178	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	TR18	35-23179	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	TR19	35-23180	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	TR19	35-23181	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	TR20	35-23183	35-009(c) and 35-016(o)
Mortandad Slope	35-009(c) and 35-016(o)	TR21	35-23182	35-009(c) and 35-016(o)
Mortandad Slope	35-014(e1)	TR10	35-23153	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR11	35-23154	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR11	35-23155	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR4	35-23144	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR5	35-23145	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR6	35-23150	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR6	35-23151	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR7	35-23146	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR7	35-23147	35-008-00, 35-016(e)

Table 3.0-1 (continued)

SAP/Addendum Subarea	SWMU/AOC	SAP Proposed Type/ Location	Sampled Location ID	Report Unit
Mortandad Slope	35-014(e1)	TR8	35-23148	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR8	35-23149	35-008-00, 35-016(e)
Mortandad Slope	35-014(e1)	TR9	35-23152	35-008-00, 35-016(e)
Mortandad Slope	35-014(e2)	AH2	35-22929	35-016(i)-00
Mortandad Slope	35-014(e2)	TR12	35-23156	35-016(i)-00
Mortandad Slope	35-014(e2)	TR13	35-23163	35-016(i)-00
Mortandad Slope	35-014(e2)	TR14	35-23157	35-016(i)-00
Mortandad Slope	35-014(e2)	TR15	35-23158	35-016(i)-00
Mortandad Slope	35-014(e2)	TR15	35-23159	35-016(i)-00
Mortandad Slope	35-014(e2)	TR16	35-23160	35-016(i)-00
Mortandad Slope	35-014(e2)	TR16	35-23161	35-016(i)-00
Mortandad Slope	35-014(e2)	TR17	35-23162	35-016(i)-00
Mortandad Slope	35-016(f)	TR1	35-23164	35-016(f)
Mortandad Slope	35-016(f)	TR2	35-23165	35-016(f)
Mortandad Slope	35-016(f)	TR2	35-23166	35-016(f)
Mortandad Slope	35-016(f)	TR3	35-23167	35-016(f)
Mortandad Slope	35-016(o)	2007 samples	35-27423	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-02043	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-02091	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-02092	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-02254	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-02255	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-02508	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-27424	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-27425	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-27426	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-27428	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-27434	35-016(o)
Mortandad Slope	35-016(o)	2007 samples	35-27435	35-016(o)
Mortandad Slope	35-016(o)	TR22	35-23184	35-016(o)
Mortandad Slope	35-016(o)	TR23	35-23185	35-016(o)
Mortandad Slope	35-016(o)	TR24	35-23186	35-016(o)
Mortandad Slope	35-016(o)	TR25	35-23187	35-016(o)
Mortandad Slope	35-016(p)	TR26	35-23188	35-016(p)
Mortandad Slope	35-016(p)	TR27	35-23189	35-016(p)
Mortandad Slope	35-016(p)	TR27	35-23190	35-016(p)
Mortandad Slope	35-016(p)	TR28	35-23191	35-016(p)
Mortandad Slope	35-016(p)	2007 samples	35-02095	35-016(p)

Table 3.0-1 (continued)

SAP/Addendum Subarea	SWMU/AOC	SAP Proposed Type/ Location	Sampled Location ID	Report Unit
Mortandad Slope	35-016(p)	2007 samples	35-02096	35-016(p)
Mortandad Slope	35-016(p)	2007 samples	35-27429	35-016(p)
Mortandad Slope	35-016(p)	2007 samples	35-27430	35-016(p)
Mortandad Slope	35-016(p)	2007 samples	35-27431	35-016(p)
Mortandad Slope	35-016(p)	2007 samples	35-27432	35-016(p)
Mortandad Slope	35-016(p)	2007 samples	35-27433	35-016(p)
Pratt Canyon	35-003(d,l,q)	BH1	35-24411	35-003(d)-00
Pratt Canyon	35-003(d,l,q)	BH2	35-24412	35-003(d)-00
Pratt Canyon	35-003(d,l,q)	BH3	35-24413	35-003(d)-00
Pratt Canyon	35-003(r)	BH4	35-24410	35-003(d)-00
Pratt Canyon	35-003(r)	BH5	35-24400	35-003(d)-00
Pratt Canyon	35-003(r)	TR3	35-24401	35-003(d)-00
Pratt Canyon	35-003(r)	TR3	35-24402	35-003(d)-00
Pratt Canyon	35-003(r)	TR4	35-24404	35-003(d)-00
Pratt Canyon	35-003(r)	TR4	35-24405	35-003(d)-00
Pratt Canyon	35-003(r)	TR4	35-24406	35-003(d)-00
Pratt Canyon	35-009(d)	BH6	35-22944	35-009(d)
Pratt Canyon	35-016(k,l)	AH1	35-22927	35-016(k)-00
Pratt Canyon	35-016(k,l)	TR1	35-24407	35-016(k)-00
Pratt Canyon	35-016(k,l)	TR1	35-24408	35-016(k)-00
Pratt Canyon	35-016(k,l)	2007 samples	35-02214	35-016(k)-00
Pratt Canyon	35-016(k,l)	2007 samples	35-02502	35-016(k)-00
Pratt Canyon	35-016(k,l)	2007 samples	35-02503	35-016(k)-00
Pratt Canyon	35-016(k,l)	2007 samples	35-27421	35-016(k)-00
Pratt Canyon	35-016(k,l)	2007 samples	35-27422	35-016(k)-00
Pratt Canyon	35-016(m)	TR2	35-24409	35-016(m)
Sigma Mesa	60-004(e)	AH20	60-23014	60-004(e)
Sigma Mesa	60-004(e)	AH21	60-23013	60-004(e)
Sigma Mesa	60-004(e)	TR39	60-23258	60-004(e)
Sigma Mesa	60-004(e)	TR40	60-23259	60-004(e)
Sigma Mesa	60-004(e)	TR41	60-23260	60-004(e)
Sigma Mesa	60-004(e)	TR42	60-23261	60-004(e)
Sigma Mesa	60-005(a)	AH15	60-23010	60-005(a)
Sigma Mesa	60-005(a)	AH16	60-23009	60-005(a)
Sigma Mesa	60-005(a)	AH17	60-23012	60-005(a)
Sigma Mesa	60-005(a)	AH18	60-23011	60-005(a)
Sigma Mesa	60-005(a)	AH19	60-23008	60-005(a)
Sigma Mesa	60-005(a)	TR36	60-23255	60-005(a)

Table 3.0-1 (continued)

SAP/Addendum Subarea	SWMU/AOC	SAP Proposed Type/ Location	Sampled Location ID	Report Unit
Sigma Mesa	60-005(a)	TR37	60-23256	60-005(a)
Sigma Mesa	60-005(a)	TR38	60-23257	60-005(a)
Ten Site Canyon	35-010(a)	AH1	35-22987	35-010(a)-99
Ten Site Canyon	35-010(a)	AH2	35-22988	35-010(a)-99
Ten Site Canyon	35-010(b)	AH3	35-22989	35-010(a)-99
Ten Site Canyon	35-010(b)	AH4	35-22986	35-010(a)-99
Ten Site Canyon	35-010(c)	AH5	35-22990	35-010(a)-99
Ten Site Canyon	35-010(c)	AH6	35-22991	35-010(a)-99
Ten Site Canyon	35-010(c)	AH7	35-22992	35-010(a)-99
Ten Site Canyon	35-010(c)	AH8	35-22993	35-010(a)-99
Ten Site Slope	35-009(a)	BH5	35-22942	35-009(a)
Ten Site Slope	35-009(a)	BH6	35-22959	35-009(a)
Ten Site Slope	35-009(a)	BH7	35-22943	35-009(a)
Ten Site Slope	35-009(a)	TR18	35-23280	35-009(a)
Ten Site Slope	35-009(a)	TR18	35-23281	35-009(a)
Ten Site Slope	35-009(a)	TR19	35-23282	35-009(a)
Ten Site Slope	35-009(a)	TR19	35-23283	35-009(a)
Ten Site Slope	35-009(b), 35-004(g)	AH1	35-02100	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	BH1	35-22938	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	BH2	35-22939	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	BH3	35-22940	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	BH4	35-22937	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	TR11	35-23284	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	TR11	35-23285	35-004(g)-00
Ten Site Slope	35-009(b), 35-004(g)	TR11	35-23286	35-004(g)-00
Ten Site Slope	35-009(e)	TR16	35-22931	35-009(e)
Ten Site Slope	35-009(e)	TR16	35-22966	35-009(e)
Ten Site Slope	35-009(e)	TR17	35-22967	35-009(e)
Ten Site Slope	35-014(g3)	TR3	35-23200	35-014(g3)
Ten Site Slope	35-014(g3)	TR4	35-22968	35-014(g3)
Ten Site Slope	35-014(g3)	TR4	35-22969	35-014(g3)
Ten Site Slope	35-014(g3)	TR5	35-23201	35-014(g3)
Ten Site Slope	35-014(g3)	TR5	35-23202	35-014(g3)
Ten Site Slope	35-014(g3)	TR6	35-23203	35-014(g3)
Ten Site Slope	35-014(g3)	TR6	35-23204	35-014(g3)
Ten Site Slope	35-016(a)	TR20	35-22970	35-016(a)-00
Ten Site Slope	35-016(a)	TR21	35-22971	35-016(a)-00
Ten Site Slope	35-016(a)	TR21	35-22972	35-016(a)-00

Table 3.0-1 (continued)

SAP/Addendum Subarea	SWMU/AOC	SAP Proposed Type/ Location	Sampled Location ID	Report Unit
Ten Site Slope	35-016(b)	TR10	35-23207	35-016(b)
Ten Site Slope	35-016(b)	TR9	35-23205	35-016(b)
Ten Site Slope	35-016(b)	TR9	35-23206	35-016(b)
Ten Site Slope	35-016(c,d)	TR12	35-23287	35-016(c)-00
Ten Site Slope	35-016(c,d)	TR13	35-23288	35-016(c)-00
Ten Site Slope	35-016(c,d)	TR14	35-23290	35-016(c)-00
Ten Site Slope	35-016(c,d)	TR15	35-23291	35-016(c)-00
Ten Site Slope	35-016(j)	TR1	35-22973	35-016(j)
Ten Site Slope	35-016(j)	TR2	35-23208	35-016(j)
Ten Site Slope	35-016(n), 35-004(m), 35-014(g1,g2)	TR7	35-22974	35-014(g)-00
Ten Site Slope	35-016(n), 35-004(m), 35-014(g1,g2)	TR7	35-22975	35-014(g)-00
Ten Site Slope	35-016(n), 35-004(m), 35-014(g1,g2)	TR8	35-23209	35-014(g)-00
Ten Site Slope	35-016(q)	TR22	35-23292	35-016(a)-00
Ten Site Slope	35-016(q)	TR22	35-23293	35-016(a)-00
Ten Site Slope	35-016(q)	TR22	35-23294	35-016(a)-00

*2007 samples collected as directed in 2005 report, NOD, and NOD response.

Table 3.0-2
Geomorphic Characterization Results

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR1 (Mortandad Slope)	11/2/2004	35-23164	0–2	Coarse-sandy gravel; abundant pine needles, oak leaves; on N-facing slope below outfall; post-Lab age (SED[b]); location chosen above confluence with similar drainage to west to avoid influence of that drainage.	none	rad NDA[c], VOC[d] 0 ppm
			2–15	Silty fine to coarse sand, poorly sorted; abundant partially decomposed leaves; common fine roots; very dark grayish brown (10YR 3/2); post-Lab age (SED)	RE35-04-54601	rad NDA, VOC 0 ppm
			15–28	Clayey, silty, fine to medium sand, few granules; few medium roots; strong brown (7.5YR 4/4); possible pre-Lab age (SED)	RE35-04-54602	rad NDA, VOC 0 ppm
			28+	Bedrock	none	rad NDA, VOC 0 ppm
TR2 (Pratt Canyon)	2/28/2005	35-24409	0–33	Fine-sandy, clayey silt with lenses of medium to coarse sand, few granules; very few fine roots; dark yellowish brown (10YR 4/4); plastic debris; post-Lab age	RE35-05-58342	alpha .36 dpm[e], beta 4.0k dpm
			33–65	Silty medium to coarse sand matrix with abundant cobbles; few fine roots; matrix = brown (10YR 4/3); possible post-Lab age	RE35-05-58343	alpha .41 dpm, beta 1.9k dpm
			65	Stream channel bottom	none	rad NDA, VOC 0 ppm
TR4 (Pratt Canyon)	2/27/2005	35-24407	0–30	Fine-sandy, silty clay; very few fine roots; styrofoam and plastic debris in layer; probable overbank deposit just above main drainage channel below largest quantity of rip-rap; in pocket between rip-rap blocks; post-Lab age	RE35-05-58336	alpha 27 dpm, beta .691k dpm, PID[f] 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR4 (Pratt Canyon), continued			30–42	Gravelly medium to very coarse sand in channel; no roots; oak leaves on surface; very dark grayish brown (10YR 3/2); post-Lab age	RE35-05-58337	rad NDA, VOC 0 ppm
		35-24408	0–17	Clayey, silty, fine to medium sand, few granules; few fine and medium roots; very dark grayish brown (10YR 3/2); minor styrofoam and other debris in layer; post-Lab age	RE35-05-58339	rad NDA, VOC 0 ppm
TR6 (Mortandad Slope)	11/8/2004	35-23153	0–16	Plant litter	none	rad NDA, VOC 0 ppm
			16–40	Clayey, silty, fine to medium sand, few granules; common medium roots; very dark brown (10YR 2/2); abundant charcoal; possible pre-Lab age (ALLH[9]); very weak subangular blocky structure	RE35-04-54579	rad NDA, VOC 0 ppm
			40–75	Silty very fine sand; few granules; light brownish gray (10YR 6/2); abundant medium and large roots (ALLH)	RE35-04-54580	rad NDA, VOC 0 ppm
			75+	Bedrock	none	rad NDA, VOC 0 ppm
TR7 (Ten Site Slope)	11/19/2004	35-23207	0–12	Fine to very coarse sand, common granules; grayish brown (10YR 5/2); no roots; post-Lab age (recent) SED; lab debris within layer	RE35-04-54683 (collected 12/14/04)	rad NDA, VOC 0 ppm
			12–32	Silty clay; few pockets of very fine sandy, silty clay; very dark grayish brown (10YR 3/2); common medium and large roots; probable re-worked soil, possible pre-Lab age (SED)	RE35-04-54684 (collected 12/14/04)	rad NDA, VOC 0 ppm
			32+	Silty fine sand, well sorted; few granules; brown (10YR 5/3); few medium roots; probable pre-Lab age (SED)	RE35-04-54685 (collected 12/14/04); collected from 90-105 cm	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR8 (Mortandad Slope)	11/8/2004	35-23154	1–18	Silty, clayey, medium to fine sand; very dark brown (10YR 2/2); common fine roots; faint ~petroleum odor; post-Lab age (SED)	RE35-04-54581	rad NDA, VOC 0 ppm
			18–45	Clayey, silty, fine to very fine sand, well-sorted, few granules; brown (7.5YR 4/3); common medium and large roots; possible pre-Lab age (SED)	none	rad NDA, VOC 0 ppm
			45–75	Silty, clayey, fine to very fine sand, well-sorted, few granules; brown (7.5YR 4/3); few medium roots; possible pre-Lab age (SED)	RE35-04-54582	rad NDA, VOC 0 ppm
			75–90	Fine-sandy clay; brown (7.5YR 4/3); no roots; wet; probable pre-Lab age (SED)	none	rad NDA, VOC 0 ppm
			90+	Bedrock	none	rad NDA, VOC 0 ppm
TR9 (Ten Site Slope)	12/15/2004	35-23284	0–18	Clayey, silty, fine to very fine sand; few granules; dark grayish brown (10YR 4/2); common fine roots; styrofoam, yellow paint chips within layer; post-Lab age (SED)	RE35-04-54867	rad NDA, VOC 0 ppm
			18–50	Clayey, silty, fine to medium sand; few granules and pebbles; dark grayish brown (10YR 4/2); common medium and few large roots; possible pre-Lab age (SED)	RE35-04-54868 (collected from 40-50 cm)	rad NDA, VOC 0 ppm
			50+	Bedrock	none	rad NDA, VOC 0 ppm
TR10 (Mortandad Slope)	11/4/2004	35-23156	0–18	Silty, very coarse sand; dark brown (7.5YR 3/2); no roots; post-Lab age (SED); wet	RE35-04-54585	rad NDA, VOC 0 ppm
			18+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR10 (Mortandad Slope) continued		35-23168	0–15	Silty, clayey, fine to medium sand; dark brown (7.5YR 3/2); common medium and large roots; possible post-Lab age (SED)	RE35-04-54611	rad NDA, VOC 0 ppm
			15+	Bedrock	none	rad NDA, VOC 0 ppm
TR11 (Ten Site Slope)	9/14/04	35-23287	0–3	Predom. fine to VFS[h] with some silt, scattered granules; light grayish brown; leaf litter on surface; south-facing slope (~30%), in drainage (poorly defined); under oak shrubs; post-Lab in age; abundant debris on surface throughout drainage.	RE35-04-54873 (SED)	rad NDA, VOC 0 ppm
			3–27	Weak soil, fine to VFS, weak structure, slightly darker color than above; larger and more abundant roots; few scattered cobbles of tuff; probable pre-Lab age.	RE35-04-54874 (ALLH)	rad NDA, VOC 0 ppm
			27+	Bedrock	none	rad NDA, VOC 0 ppm
TR12 (Mortandad Slope)	11/4/2004	35-23163	0–10	Clayey, silty, fine to med. sand, few granules; dark grayish brown (10 YR 4/2); few medium and fine roots; definite post-Lab age, styrofoam and other debris within layer (SED)	RE35-04-54599	rad NDA, VOC 0 ppm
			10–26	Silty fine sand, no granules; brown (10YR 4/3); common medium roots; no debris observed; possible pre-Lab age (SED)	RE35-04-54600	rad NDA, VOC 0 ppm
			26+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR13 (Ten Site Slope)	9/14/04	35-23288	0–2	Location above confluence with TR11 drainage; predom. coarse to VCS[i] with minor silt, scattered granules and pebbles; young sediment, definitely post-Lab age; light grayish brown	RE35-04-54875 (SED)	rad NDA, VOC 0 ppm
			2–6	Med. to coarse sand, minor granules and pebbles, pockets of clay-rich material surrounding tuff fragments; med. to dark brown; possible pre-Lab age.	RE35-04-54876 (SED)	rad NDA, VOC 0 ppm
			6+	Bedrock	none	rad NDA, VOC 0 ppm
	9/15/04	35-23289	0–4	Coarse to VCS with some silt, few granules; light grayish brown; post-Lab age; in relatively flat part of drainage, but above canyon bottom; mt. mahogany, pine, oak near drainage, little or no veg. in drainage.	RE35-04-54877 (SED)	rad NDA, VOC 0 ppm
			4–11	Coarse to VCS with silt and more granules than above; moist; roots present; post-Lab age; in channel	none	rad NDA, VOC 0 ppm
			11–23	Fine; overbank or floodplain deposit; upper two layers are cut and fill into this layer, with a sharp contact; this layer also extends up bank; fine to VFS and silt; very few granules; light brown; possible post-Lab	RE35-04-54878 (SED)	rad NDA, VOC 0 ppm
			23+	Bedrock	none	rad NDA, VOC 0 ppm
TR14 (Mortandad Slope)	11/4/2004	35-23157	0–2	Pine needle mat	none	rad NDA, VOC 0 ppm
			2–17	Silty, medium to coarse sand; very dark grayish brown (10YR 4/2); few fine roots, mainly at base of layer; post-Lab age (SED)	RE35-04-54587	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR14 (Mortandad Slope) continued			17–28	Silty, fine to medium sand with few coarse sand grains; few fine and large roots; brown (7.5YR 4/2); possible post-Lab age (SED)	RE35-04-54588	rad NDA, VOC 0 ppm
			28+	Bedrock	none	rad NDA, VOC 0 ppm
TR15 (Ten Site Slope)	12/15/2004	35-23290	0–15	Medium to very coarse sand with minor silt; common granules; dark grayish brown (10YR 4/2); very few fine roots; debris within layer; pine needles at base of layer; post-Lab age (SED)	RE35-04-54879	rad NDA, VOC 0 ppm
			15–70+	Fine-sandy, silty clay, few tuff fragments; very dark grayish brown (10YR 3/2); few medium roots; reworked soil or terrace deposit; possible pre-Lab age (SED)	RE35-04-54880 (collected from 60-70 cm)	rad NDA, VOC 0 ppm
TR16 (Mortandad Slope)	11/4/2004	35-23158	0–3	Silty, fine to medium sand; dark brown (7.5YR 3/2); no roots; probable post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			3–9	Clayey, silty, fine to medium sand; brown (7.5YR 4/2); few fine roots; minor charcoal; contains lenses of coarse sand; possible post-Lab age (SED)	RE35-04-54589	rad NDA, VOC 0 ppm
			9–15	Silty, fine to coarse sand; dark grayish brown (10YR 4/2); common medium roots; possible post-Lab age (SED)	RE35-04-54590	rad NDA, VOC 0 ppm
			15+	Bedrock	none	rad NDA, VOC 0 ppm
TR17 (Ten Site Slope)	12/15/2004	35-23291	0–14	Clayey, silty, coarse to medium sand; few granules; very dark grayish brown (10YR 3/2); common fine roots, few medium roots; probable post-Lab age (SED); few cobbles	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR17 (Ten Site Slope), continued			14–26	Fine-sandy, clayey silt; dark grayish brown (10YR 4/2); common medium and fine roots; possible post-Lab age (SED); few cobbles	RE35-04-54881	rad NDA, VOC 0 ppm
			26–38	Silty, medium to coarse sand; brown (7.5YR 4/2); common medium roots, several large roots; probable pre-Lab age (SED); few cobbles	RE35-04-54882	rad NDA, VOC 0 ppm
			38+	Bedrock (slightly weathered tuff)	none	rad NDA, VOC 0 ppm
TR18 (Mortandad Slope)	11/5/2004	35-23160	0–12	Silty, medium to very coarse sand; few granules; common fine and few medium roots; dark brown (7.5YR 3/2); post-Lab age (SED); wavy lower boundary	RE35-04-54593	rad NDA, VOC 0 ppm
			12–29	Clayey, silty, medium to coarse sand with pockets of silty, clayey, fine to medium sand; common medium and large roots; brown (7.5YR 4/2); pockets are yellowish brown (10YR 5/4); possible post-Lab age (SED)	RE35-04-54594	rad NDA, VOC 0 ppm
			29+	Bedrock	none	rad NDA, VOC 0 ppm
TR19 (Ten Site Slope)	9/10/04	35-22966	0–15	Young sediment; coarse to very coarse sand with abundant granules and few pebbles; scattered small pockets of more clay-rich material; very few roots; abundant leaf litter on surface; under oak and pinon.	RE35-04-54155 (SED)	rad NDA, VOC 2 ppm
			15+	Bedrock	none	rad NDA, VOC 0 ppm
		35-22931	0–8	Very fine to fine sand with scattered granules, abundant plant debris; post-Lab age; medium brownish gray.	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR19 (Ten Site Slope) continued			8–18	Buried soil; fine sandy loam, medium brownish gray; weak to moderate subangular blocky structure, crumbles easily; pre-Lab age.	RE35-04-54052 (ALLH)	rad NDA, VOC 9 ppm peak
			18+	Bedrock	none	rad NDA, VOC 0 ppm
TR20 (Mortandad Slope)	11/8/2004	35-23162	0–23	Medium to very coarse sand, very minor silt, few granules and pebbles; very dark grayish brown (10YR 3/2); common to abundant medium and fine roots; debris (plastic bag, rubber sheet) within layer; definite post-Lab age (SED)	RE35-04-54597	rad NDA, VOC 0 ppm
			23–35	Medium to very coarse sand, poorly sorted, few granules, more light-colored grains; brown (10YR 4/3); fewer fine and medium roots, few large roots; flakes of bright yellow paint throughout; definite post-Lab age (SED)	RE35-04-54598	rad NDA, VOC 0 ppm
			35–140	Medium to very coarse sand, minor silt, few granules; few medium roots; very dark grayish brown (10YR 3/2); no paint flakes; probable pre-Lab age; large roots at top of layer (SED)	none	rad NDA, VOC 0 ppm
			140+	Bedrock	none	rad NDA, VOC 0 ppm
TR21 (Ten Site Slope)	9/10/04	35-22967	0–13	Predom. very fine to fine sand with scattered granules; light brownish gray, abundant leaf litter and roots; possible post-Lab age.	RE35-04-54157 (SED)	rad NDA, VOC 3 ppm peak
			13–33	As above, but with moderate soil structure, significantly fewer roots, slightly darker color with hint of orange-red; probable buried soil horizon, pre-Lab in age.	RE35-04-54158 (ALLH), RE35-04-54040 (duplicate)	rad NDA, VOC 1 ppm peak

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR21 (Ten Site Slope) continued			33+	Bedrock	none	rad NDA, VOC 0 ppm
TR22 (Ten Site Slope)	12/17/2004	35-23280	0–13	Medium to coarse sand; dark grayish brown (10YR 4/2); SED	none	rad NDA, VOC 0 ppm
			13–43	Clayey, silty, fine to medium sand; dark grayish brown (10YR 4/2); common very fine roots (SED)	RE35-04-54855	rad NDA, VOC 0 ppm
			43–56	Silty, fine to very fine sand; dark grayish brown (10YR 4/2); SED	RE35-04-54856	rad NDA, VOC 0 ppm
			56+	Bedrock	none	rad NDA, VOC 0 ppm
TR23 (Mortandad Slope)	11/10/2004	35-23178	0–2	Silty fine sand; few granules; very dark grayish brown (10YR 3/2); very few fine roots; post-Lab age (SED); debris on surface	none	rad NDA, VOC 0 ppm
			2–8	Clayey, silty, very fine sand; common fine roots; grayish brown (10YR 5/2); post-Lab age (SED); well sorted	RE35-04-54623	rad NDA, VOC 0 ppm
			8–20	Clayey, silty, fine to medium sand; few medium roots; dark grayish brown (10YR 4/2); possible post-Lab age (SED)	RE35-04-54624	rad NDA, VOC 0 ppm
			20–28	Weathered tuff with infilling of silty, medium to fine sand, common granules; gray (10YR 5/1); probable pre-Lab age	none	rad NDA, VOC 0 ppm
			28+	Bedrock	none	rad NDA, VOC 0 ppm
TR24 (Ten Site Slope)	12/17/2004	35-23282	0–19	Silty, fine to medium sand; dark grayish brown (10YR 4/2); common fine roots (SED)	RE35-04-54861	rad NDA, VOC 0 ppm
			19–40	Clayey, silty very fine sand; grayish brown (10YR 5/2); SED	RE35-04-54862	rad NDA, VOC 0 ppm
			40+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR25 (Mortandad Slope)	11/10/2004	35-23180	0–6	Silty fine to medium sand; thin layer of coarse sand on surface, ~2 cm plant litter; brown (10YR 4/3); few fine roots; post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			6–12	Clayey, silty, very fine sand; no granules; common fine and medium roots; brown (10YR 5/3); faint laminated appearance; post-Lab age (SED)	RE35-04-54627	rad NDA, VOC 0 ppm
			12–29	Silty, coarse to medium sand, common granules; brown (7.5YR 4/3); abundant medium roots; few tuff clasts (~2 cm diameter); probable post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			29–36	Clayey, silty, fine to very fine sand; brown (7.5YR 4/2); less common medium roots; possible post-Lab age (SED)	RE35-04-54628	rad NDA, VOC 0 ppm
			36+	Bedrock	none	rad NDA, VOC 0 ppm
TR26 (Ten Site Slope)	10/29/04	35-23208	0–6	Gravelly, silty, coarse to very coarse sand; medium brown; abundant plant litter; post-Lab age.	RE35-04-54586	rad NDA, VOC 0 ppm
			6–8	Silty, clayey, medium to fine sand; dark brown; possible post-Lab age.	none	rad NDA, VOC 0 ppm
		35-23210	0–3	Gravelly, silty, coarse to very coarse sand; medium brown; definite post-Lab age (synthetic mesh debris at base of layer); abundant plant litter.	none	rad NDA, VOC 0 ppm
			3–20	Silty medium to fine sand (minor clay); intermixed zones of coarser sand; medium brown; few medium roots; possible post-Lab age.	RE35-04-54690	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR27 (Mortandad Slope)	11/2/2004	35-23165	0–4	Pine needles; this location among numerous Ponderosa pines, NNE facing slope (~4% slope).	none	rad NDA, VOC 0 ppm
			4–12	Silty, fine to medium sand, well sorted; few fine and medium roots; brown (7.5YR 4/2); possible post-Lab age (SED)	RE35-04-54603	rad NDA, VOC 0 ppm
			12–37	Clayey, silty, medium to coarse sand with common granules; poorly sorted; brown (10YR 5/3); possible pre-Lab age (SED); common medium and large roots	RE53-04-54604	rad NDA, VOC 0 ppm
			37+	Bedrock	none	rad NDA, VOC 0 ppm
		35-23166	0–3	Pine needles	none	rad NDA, VOC 0 ppm
			3–12	Silty, clayey, fine to medium sand, few granules; few medium roots; dark brown (7.5YR 3/2); probable post-Lab age (SED); large cobbles (~10-15 cm)	RE35-04-54605	rad NDA, VOC 0 ppm
	11/2/2004	35-23166	12–27	Clayey, silty, medium to coarse sand, few granules; abundant medium and large roots; very dark grayish brown (10YR 3/2) with pockets of (10YR 6/1); probable post-Lab age (SED); large (2-4 cm) charcoal fragments in layer; large cobbles (~10-15 cm)	RE35-04-54606	rad NDA, VOC 0 ppm
			27+	Bedrock	none	rad NDA, VOC 0 ppm
TR28 (Ten Site Slope)	9/30/04	35-22970	0–5	Fine to very fine sandy silt, medium grayish brown; sampling and analysis plan called for 1 location, 2 depths, but material too shallow (bedrock at 5 cm), so only 1 depth collected	RE35-04-54163 (SED)	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR28 (Ten Site Slope), continued			5+	Bedrock	none	rad NDA, VOC 0 ppm
TR29 (Mortandad Slope)	11/10/2004	35-23183	0–29	Silty, clayey, medium to fine sand; very dark grayish brown (10YR 3/2); common fine and medium roots; few granules and pebbles; ~10 cm plant litter overlies sediment; post-Lab age (SED)	RE35-04-54633	rad NDA, VOC 0 ppm
			29–45	Silty, clayey, fine to very fine sand; very dark grayish brown (10YR 3/2); abundant fine and medium roots; possible post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			45–60+	Silty very fine sand; dark grayish brown (10YR 4/2); well-sorted, no granules; few fine and medium roots; possible pre-Lab age (SED)	RE35-04-54634	rad NDA, VOC 0 ppm
TR30 (Ten Site Slope)	9/13/04	35-22971	0–18	Loose, predom. very coarse sand, gravel, cobbles (tuff); abundant plant debris, including pine needles, oak leaves; post-Lab age.	RE35-04-54166 (SED)	rad NDA, VOC 0 ppm
			18–28	Old soil; sandy-silty clay loam, dark reddish brown, weak structure; definite pre-Lab age.	RE35-04-54165 (ALLH)	rad NDA, VOC 0 ppm
			28+	Bedrock	none	rad NDA, VOC 0 ppm
	9/13/04	35-22972	0–25	Fine sandy clay loam soil, dark brown, moist; pre-Lab in age.	RE35-04-54167 (ALLH)	rad NDA, VOC 0 ppm
			25–61	Medium sandy clay loam soil, medium reddish brown, moist; pre-Lab age.	RE35-04-54168 (ALLH)	rad NDA, VOC 0 ppm
			61+	Bedrock	none	rad NDA, VOC 0 ppm
	10/29/04	35-22973	0–1	Loose debris; pine needles, pine cones, leaves, minor dark brown coarse sand; very recent deposit, definite post-Lab	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR30 (Ten Site Slope) continued			1–9	Silty, medium to coarse sand; medium brown; post-Lab age; very few fine roots	RE35-04-54169	rad NDA, VOC 0 ppm
			9–30	Silty, clayey, medium sand; dark brown (10YR 3/3); common fine and medium roots; possible post-Lab age.	RE35-04-54170	rad NDA, VOC 0 ppm
			30+	Bedrock	none	rad NDA, VOC 0 ppm
TR31 (Mortandad Slope)	11/10/2004	35-23182	0–18	~40 cm plant litter overlies sediment; clayey, silty, medium to coarse sand; dark grayish brown (10YR 4/2); abundant fine and medium roots; probable post-Lab age (SED); common granules	RE35-04-54631	rad NDA, VOC 0 ppm
			18–37	Silty, fine to very fine sand; brown (7.5YR 4/2); common fine and medium roots; scattered granules of white tuff; possible post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			37+	Older sediment/terrace deposit/soil; root zone of older trees; silty fine sand; very dark grayish brown (10YR 4/2); abundant medium and large roots; probable pre-Lab age (SED)	RE35-04-54632 (sample depth 37-47 cm)	rad NDA, VOC 0 ppm
TR32 (Ten Site Slope)	12/17/2004	35-23292	0–24	Clayey, silty, medium to coarse sand, some granules; brown (7.5YR 5/4); SED	RE35-04-54883	rad NDA, VOC 0 ppm
			24–48	Medium to very fine sand, granules; light brownish gray (10YR 6/2); SED	RE35-04-54884	rad NDA, VOC 0 ppm
			48–62	Weathered tuff	RE35-04-54885	rad NDA, VOC 0 ppm
			62+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR33 (Mortandad Slope)	11/10/2004	35-23184	0–10	Silty, medium to coarse sand, few granules and cobbles; dark brown (7.5YR 3/2); common fine roots; thin layer of very coarse sand on surface, ~2 cm pine needle cover; post-Lab age (SED)	RE35-04-54635	rad NDA, VOC 0 ppm
			10–24	Matrix of silty, coarse to very coarse sand, few granules, abundant pebbles up to 6 cm diameter; brown (7.5YR 4/2); common fine and medium roots; probable post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			24–37	Clayey, silty, medium to fine sand, few granules and pebbles up to ~3 cm diameter; dark brown (7.5YR 3/2); possible pre-Lab age (SED)	RE35-04-54636	rad NDA, VOC 0 ppm
			37+	Bedrock	none	rad NDA, VOC 0 ppm
TR34 (Mortandad Slope)	11/10/2004	35-23185	0–9	Clayey, silty, medium to fine sand; dark brown (10YR 3/3); common fine roots; post-Lab age (SED); ~2 cm plant litter overlies the sediment	RE35-04-54637	rad NDA, VOC 0 ppm
			9–21	Clayey, silty, medium to very coarse sand, common granules, tuff clasts (~2-3 cm diameter); brown (10YR 5/3); few fine and medium roots, mainly at bottom of layer; post-Lab age (SED)	RE35-04-54638	rad NDA, VOC 0 ppm
			21+	Weathered tuff	none	rad NDA, VOC 0 ppm
TR35 (Mortandad Slope)	11/9/2004	35-23186	0–3	Silty coarse sand, ~50% plant litter; dark brown (10YR 3/3); few fine roots; post-Lab age (SED)	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR35 (Mortandad Slope) continued			3–10	Silty, clayey, gravelly coarse sand; very dark grayish brown (10YR 3/2); pockets of clayey, silty, fine sand, brown (7.5YR 4/3); common medium roots; post-Lab age (SED)	RE35-04-54639	rad NDA, VOC 0 ppm
			10–15	Fine-sandy, silty clay, few granules; common medium and large roots; dark grayish brown (10YR 4/2); possible pre-Lab age (SED)	RE35-04-54640	rad NDA, VOC 0 ppm
			15+	Bedrock	none	rad NDA, VOC 0 ppm
TR36 (Mortandad Slope)	11/17/2004	35-23187	0–5	Very organic layer (leaves, needles, cones) with minor component of silty very fine sand; lenses of medium sand; very dark brown (10YR 2/2)	none	rad NDA, VOC 0 ppm
			5–20	Clayey, silty, very fine sand; dark grayish brown (10YR 4/2); common fine and medium roots; some decomposing wood (not roots); post-Lab age (SED)	RE35-04-54641	rad NDA, VOC 0 ppm
			20–46	Silty very fine sand, few granules; very dark grayish brown (10YR 3/2); more abundant medium and fine roots, no large roots; probable post-Lab age (SED)	RE35-04-54642	rad NDA, VOC 0 ppm
			46+	Bedrock	none	rad NDA, VOC 0 ppm
TR37 (Mortandad Slope)	11/9/2004	35-23188	0–9	Silty, gravelly, very coarse sand; abundant organic matter; very dark brown (10YR 2/2); common fine and medium roots; debris within layer; definite post-Lab age (SED)	RE35-04-54643	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR37 (Mortandad Slope) continued			9–18	Clayey, silty, very coarse sand; common granules, some gravel; very dark brown (10YR 2/2); abundant organic matter; post-Lab age (SED); abundant debris within layer	RE35-04-54644	rad NDA, VOC 0 ppm
			18+	Bedrock and/or tree trunk	none	rad NDA, VOC 0 ppm
TR38 (Mortandad Slope)	11/9/2004	35-23189	0–7	Silty fine sand, few granules; common fine roots; brown (7.5YR 4/2); post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			7–15	Bimodal particle size distribution: silty, very fine sand with medium to coarse sand as secondary mode; common fine and few medium roots; post-Lab age (SED); grayish brown (10YR 5/2)	RE35-04-54645	rad NDA, VOC 0 ppm
			15–26	Very fine-sandy silt, few granules; common medium and few large roots; fine laminations; probable post-Lab age (SED); light brown (7.5YR 6/3)	RE35-04-54646, RE35-04-54651 (duplicate)	rad NDA, VOC 0 ppm
			26–39	Medium to coarse-sandy silt; few granules; pinkish gray (7.5YR 6/2); common medium roots; possible post-Lab (SED)	none	rad NDA, VOC 0 ppm
			39+	Bedrock	none	rad NDA, VOC 0 ppm
TR39 (Mortandad Slope)	11/17/2004	35-23191	0–12	Silty fine sand; very dark brown (10YR 2/2); abundant fine roots; oak leaves covering surface; post-Lab age (SED)	RE35-04-54649	rad NDA, VOC 0 ppm
			12–42	Silty, medium to coarse sand, few granules; poorly sorted; dark grayish brown (10YR 4/2); abundant medium and fine, few large roots; possible post-Lab age (SED)	RE35-04-54650	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR39 (Mortandad Slope) continued			42+	Bedrock (weathered tuff)	none	rad NDA, VOC 0 ppm
TR40 (Ten Site Slope)	11/19/2004	35-23200	0–20	Silty, medium to very coarse sand, few granules, few cobbles (~6 cm); very dark grayish brown (10YR 3/2); few fine roots; pebbles and cobbles on surface; post-Lab age (SED)	RE35-04-54669	rad NDA, VOC 0 ppm
			20–41	Silty, clayey, medium to very coarse sand, no granules or coarser; very dark grayish brown (10YR 3/2); few large roots, common fine roots; asphalt chunk, old tape within layer; post-Lab age (SED)	RE35-04-54670	rad NDA, VOC 0 ppm
			41+	Bedrock	none	rad NDA, VOC 0 ppm
TR41 (Mortandad Slope)	11/8/2004	35-23167	0–8	Silty, fine to very coarse sand; few granules and pebbles; very dark grayish brown (10YR 3/2); common fine and medium roots; probable post-Lab age (SED); some bioturbation (burrows)	RE35-04-54607	rad NDA, VOC 0 ppm
			8–14	Clayey, silty, medium to fine sand; few fine and medium roots; brown (10YR 5/3); possible pre-Lab age (SED)	RE35-04-54608	rad NDA, VOC 0 ppm
			14+	Bedrock	none	rad NDA, VOC 0 ppm
TR42 (Pratt Canyon)	2/28/2005	35-24401	0–13	Medium to coarse sandy clay with common granules; few fine roots; dark grayish brown (10YR 4/2); animal burrow (~5 cm diameter); SED; probable unit C1b	RE35-05-58306	alpha 39 dpm beta 1.3k dpm PID 0 ppm
			13–31	Fine to medium sandy clay with few granules; brown (10YR 4/3); very few fine roots; SED; probable unit C2	RE35-05-58307	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR42 (Pratt Canyon) continued			31+	Tuff (bedrock)	none	rad NDA, VOC 0 ppm
		35-24402	0–25	Silty, clayey fine to very fine sand with lenses of clayey, silty medium to coarse sand; few granules; dark brown (7.5YR 3/3); common medium and fine roots; SED; probable unit C1	RE35-05-58311	alpha 17 dpm beta 2.2k dpm PID 0 ppm
			25–39	Silty clay; very well sorted (no granules or larger); very few fine roots; brown (10YR 4/3); SED; probable unit C1ct	RE35-05-58312	alpha .31 dpm beta 2.7k dpm PID 0 ppm
			39–59	Clayey fine sand; few granules; no roots; brown (10YR 4/3); SED	none	rad NDA, VOC 0 ppm
			59–67	Clayey, silty, medium to fine sand; very few granules; no roots; very dark grayish brown (10YR 3/2); SED; probable unit C3	RE35-05-58313	alpha .55 dpm beta 2.1k dpm PID 0 ppm
TR43 (Ten Site Slope)	10/26/04	35-22968	0–7	Silty medium to fine sand; few granules of very weathered tuff; medium reddish brown; few medium roots; post-Lab sediment; petroleum odor noted at this location.	RE35-04-54159	rad NDA, VOC 0 ppm
			7–13	Clayey, silty, fine to very fine sand; few granules; laminated appearance; gray color with orange zones; possible post-Lab age	RE35-04-54160 (depth on SCL is 7-28 cm; 13-24 cm layer not collected)	rad NDA, VOC 0 ppm
			13–24	Coarse sand (quartz and sanidine grains), loose; in pockets within finer layer; possible post-Lab sediment	none	rad NDA, VOC 0 ppm
			24–28	Clayey, silty, fine to very fine sand; few granules; less laminated appearance than in 7-13 cm layer; gray color; possibly same material as 7-13 cm; possible post-Lab age	RE35-04-54160 (depth on SCL is 7-28 cm; 13-24 cm layer not collected)	rad NDA, VOC 0 ppm
			28+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR43 (Ten Site Slope) continued	10/26/04	35-22969	0–10	Silty very fine sand, few granules; medium brown; few fine roots; post-Lab sediment (SED); petroleum odor noted at this location.	none	rad NDA, VOC 0 ppm
			10–19	Very fine sandy silt; medium brown; more abundant fine and very fine roots; possible post-Lab age (SED)	RE35-04-54161	rad NDA, VOC 0 ppm
			19–30	Clayey, silty, fine to very fine sand; light gray with orange zones; few medium roots; possible post-Lab age, possible reworked soil; (SED)	RE35-04-54162	rad NDA, VOC 0 ppm
			30+	Bedrock	none	rad NDA, VOC 0 ppm
TR44 (Mortandad Slope)	11/3/2004	35-23144	0–17	Silty, clayey, fine to very fine sand; no granules; dark brown (7.5YR 3/2); probable post-Lab age (SED); few fine and medium roots	RE35-04-54561	rad NDA, VOC 0 ppm
			17–29	Silty, medium to coarse sand; no granules; brown (7.5YR 4/3); few fine and medium roots; possible post-Lab age (SED)	RE35-04-54562	rad NDA, VOC 0 ppm
			29–40	Clayey, silty, medium sand; possible soil, probable pre-Lab age; few medium and large roots; very dark grayish brown (10YR 3/2)	none	rad NDA, VOC 0 ppm
			40+	Bedrock	none	rad NDA, VOC 0 ppm
TR45 (Pratt Canyon)	2/28/2005	35-24404	0–25	Coarse-sandy clay; cobbles interspersed in matrix; common fine and medium roots; very dark grayish brown (10YR 3/2); large root at bottom of layer; post-Lab age; probable unit C1	RE35-05-58321	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR45 (Pratt Canyon) continued			25–39	Fine-sandy, silty clay; no granules; dark brown (7.5YR 3/2); few fine roots (large root at top); probably unit C1ct	RE35-05-58322	rad NDA, VOC 0 ppm
			39+	Tuff (bedrock)	none	rad NDA, VOC 0 ppm
		35-24405	0–28	Gravelly, clayey, silty coarse to very coarse sand; common cobbles (~60 mm); common fine roots; very dark grayish brown (10YR 3/2); post-Lab age; probable unit C1b	RE35-05-58326	rad NDA, VOC 0 ppm
			28–59	Gravelly, silty, fine to medium sand matrix among larger cobbles (larger than unit above); common medium roots; probable post-Lab age; probable unit C2	RE35-05-58327	rad NDA, VOC 0 ppm
			59+	Tuff (bedrock)	none	rad NDA, VOC 0 ppm
		35-24406	0–18	Clayey, silty, medium to fine sand; very dark grayish brown (10YR 3/2); abundant fine roots; common granules; probable unit C3	RE35-05-58331	rad NDA, VOC 0 ppm
			18+	Tuff (bedrock)	none	rad NDA, VOC 0 ppm
TR46 (Ten Site Slope)	11/19/2004	35-23201	0–14	Medium to very fine sand, few pebbles; brown (10YR 4/3); common fine roots; post-Lab age (SED)	RE35-04-54671	rad NDA, VOC 0 ppm
			14–27	Weathered tuff, medium to very fine sand; grayish brown (10YR 5/2); common medium roots; probable pre-Lab age (SED)	RE35-04-54672	rad NDA, VOC 0 ppm
			27+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR47 (Mortandad Slope)	11/3/2004	35-23145	0–5	Silty fine sand, well sorted; thin layer of coarse sand on surface only; no roots; very dark brown (10YR 2/2); post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			5–14	Silty, coarse to very coarse sand, loose; few granules; few fine and medium roots; dark grayish brown (10YR 4/2); post-Lab age (SED); flecks of paint in layer	none	rad NDA, VOC 0 ppm
			14–24	Silty, fine to medium sand, well sorted, no granules; few medium roots; dark brown (7.5YR 3/2); possible post-Lab age (SED)	RE35-04-54563, RE35-04-54609 (duplicate)	rad NDA, VOC 0 ppm
			24–32	Silty, fine to medium sand, well sorted, no granules; few medium roots; brown (7.5YR 4/2); possible pre-Lab age (SED)	RE35-04-54564	rad NDA, VOC 0 ppm
			32+	Bedrock	none	rad NDA, VOC 0 ppm
TR48 (Ten Site Slope)	11/19/2004	35-23203	0–6	Silty, coarse to fine sand, few granules; thin layer of very coarse sand and leaves on surface; dark grayish brown (10YR 4/2); few fine roots; post-Lab age (SED)	RE35-04-54675	rad NDA, VOC 0 ppm
			6–15	Silty, very fine to medium sand; few medium and fine roots; few granules; brown (10YR 4/3); blue paint flakes (few) within layer; post-Lab age (SED)	RE35-04-54676	rad NDA, VOC 0 ppm
			15+	Bedrock	none	rad NDA, VOC 0 ppm
TR49 (Mortandad Slope)	11/3/2004	35-23150	0–7	Clayey, silty, medium to coarse sand, few granules; post-Lab age (SED); pine needle cover on surface; very few medium roots; dark brown (7.5YR 3/2)	RE35-04-54573	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR49 (Mortandad Slope) continued			7–17	Silty, clayey, coarse to very coarse sand; common granules and pebbles; few medium roots; dark brown (7.5YR 3/2); possible post-Lab age (SED)	RE35-04-54574	rad NDA, VOC 0 ppm
			17+	Bedrock	none	rad NDA, VOC 0 ppm
	11/3/2004	35-23151	0–13	Silty, medium to coarse sand; wavy lower boundary; pine needle cover, few fine roots; dark brown (7.5YR 3/2); definite post-Lab age (SED)	RE35-04-54575	rad NDA, VOC 0 ppm
			13–25	Silty, clayey, medium to coarse sand; common fine and medium roots; dark brown (10YR3/3); pull-tab within layer, definite post-Lab age (SED)	RE35-04-54576	rad NDA, VOC 0 ppm
			25+	Bedrock	none	rad NDA, VOC 0 ppm
TR50 (Ten Site Slope)	10/26/04	35-22974	0–2	Very fine sandy silt; dark brown; abundant organic matter (decomposing leaves, etc.); few fine roots; definite post-Lab age; (ALLH)	none	rad NDA, VOC 0 ppm
			2–7	Silty clay with minor fine sand; medium brown; common medium roots; man-made debris at top of and within layer; probable reworked soil, definite post-Lab age (ALLH)	RE35-04-54171	rad NDA, VOC 0 ppm
			7–12	Silty fine sandy clay; medium reddish brown; common large roots; green tape fragments within layer; post-Lab age, probable reworked soil (ALLH)	RE35-04-54172	rad NDA, VOC 0 ppm
			12+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR50 (Ten Site Slope) continued	10/26/04	35-22975	0–11	Very fine sandy silt; dark brown; abundant organic matter, fine roots; styrofoam and other debris within layer; definite post-Lab age, probable reworked soil (ALLH)	RE35-04-54173	rad NDA, VOC 0 ppm
			11–26	Clayey, fine-sandy silt; medium reddish brown; common medium and coarse roots; debris at top of layer; possible post-Lab age, probable reworked soil (ALLH)	RE35-04-54174	rad NDA, VOC 0 ppm
			26–36	Silty clay with very minor fine sand; dark brown; possible pre-Lab age, possible reworked soil (ALLH)	none	rad NDA, VOC 0 ppm
			36+	Bedrock	none	rad NDA, VOC 0 ppm
TR51 (Mortandad Slope)	11/3/2004	35-23146	0–9	Silty, coarse to very coarse sand, poorly sorted; post-Lab age (SED); grayish brown (10YR 5/2); no roots	RE35-04-54565	rad NDA, VOC 0 ppm
			9–21	Clayey, silty, fine sand; very dark grayish brown (10YR 3/2); common medium and large roots; possible post-Lab age (SED)	RE35-04-54566	rad NDA, VOC 0 ppm
			21+	Bedrock	none	rad NDA, VOC 0 ppm
	11/3/2004	35-23147	0–11	Silty fine to medium sand; few granules; common fine roots; very dark grayish brown (10YR 3/2); probable post-Lab age (SED)	RE35-04-54567	rad NDA, VOC 0 ppm
			11–21	Silty, medium to very coarse sand; minor clay; brown (10YR 4/3); possible pre-Lab age (SED); common medium and large roots	RE35-04-54568	rad NDA, VOC 0 ppm
			21+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR52 (Ten Site Slope)	11/19/2004	35-23209	0–10	Silty, fine to medium sand, few granules; brown (10YR 4/3); few fine roots; post-Lab age (SED)	RE35-04-54688	rad NDA, VOC 0 ppm
			10–22	Medium to very coarse sand, few granules; brown (7.5YR 4/3); common medium roots; probable post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			22–37	Sitly, medium to fine sand, few granules, some very weathered tuff; brown (7.5YR 4/2); few medium and large roots; possible pre-Lab age (SED)	RE35-04-54689	rad NDA, VOC 0 ppm
			37+	Bedrock	none	rad NDA, VOC 0 ppm
TR53 (Mortandad Slope)	11/4/2004	35-23148	0–7	Silty, fine to medium sand, few granules; thin layer of coarse sand on surface; few fine roots; very dark grayish brown (10YR 3/2); post-Lab age (SED)	none	rad NDA, VOC 0 ppm
			7–21	Clayey (minor), silty, med to coarse sand; few medium and fine roots; dark brown (10YR 3/3); probable post-Lab age (SED)	RE35-04-54569	rad NDA, VOC 0 ppm
			21–37	Silty, clayey, medium to coarse sand; few granules; common medium and large roots; dark brown (7.5 YR 3/2); possible pre-Lab age (SED)	RE35-04-54570	rad NDA, VOC 0 ppm
			37+	Bedrock	none	rad NDA, VOC 0 ppm
	11/4/2004	35-23149	0–14	Clayey, silty, medium to coarse sand; few fine roots; very dark grayish brown (10YR 3/2); post-Lab age (SED)	RE35-04-54571	rad NDA, VOC 0 ppm
			14–38	Silty, clayey, medium to coarse sand; abundant medium and large roots; very dark grayish brown (10YR 3/2); probably pre-Lab age (SED)	RE35-04-54572	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR53 (Mortandad Slope) continued			38+	Bedrock	none	rad NDA, VOC 0 ppm
TR54 (Mortandad Slope)	11/8/2004	35-23152	0–10	Silty, fine to very fine sand (~2 cm plant litter on surface), few granules; very dark brown (10YR 2/2); abundant fine roots; possible pre-Lab age (SED)	RE35-04-54577	rad NDA, VOC 0 ppm
			10–21	Silty, coarse to very coarse sand; very dark grayish brown (10YR 3/2); common fine and few medium roots; no structure; possible pre-Lab age (SED)	none	rad NDA, VOC 0 ppm
			21–30	Silty, fine to very fine sand; dark brown (7.5YR 3/2); common medium and few large roots; probable pre-Lab age (SED); no structure	RE35-04-54578	rad NDA, VOC 0 ppm
			30–43	Silty, fine to very coarse sand; common granules; grayish brown (10YR 5/2); very loose graines; common medium and few large roots; probable pre-Lab age (SED)	none	rad NDA, VOC 0 ppm
			43–57	Silty very fine sand, few granules; dark grayish brown (10YR 4/2); few medium and large roots; probable pre-Lab age (SED)	none	rad NDA, VOC 0 ppm
			57+	Bedrock	none	rad NDA, VOC 0 ppm
TR55 (Ten Site Slope)	11/19/2004	35-23205	0–9	Silty, clayey, fine to medium sand; dark brown (7.5YR 3/2); few fine roots; few granules and pebbles; probable post-Lab age (SED)	RE35-04-54679 (collected 12/14/04), RE35-04-54691 (duplicate)	rad NDA, VOC 0 ppm
	11/19/2004	35-23205	9–20	Silty, clayey, fine to very fine sand; brown (7.5YR 4/2); common medium roots; possible pre-Lab age (SED)	RE35-04-54680 (collected 12/14/04)	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR55 (Ten Site Slope) continued			20+	Bedrock	none	rad NDA, VOC 0 ppm
TR56 (East Ten Site Slope)	10/4/2004	04-23233	0–3	Post lab. Surficial plant litter. Predominately fine to very fine sand with secondary component of silt and scattered granules. A few tuff cobbles.	RE04-04-54741	rad NDA, VOC 0 ppm
TR56 (East Ten Site Slope), continued			3–17	Predominately fine to very fine sand with a significant coarse to very coarse sand component. Abundant fine to medium roots. Likely post-Lab. Resting against a ~50-year old fir tree.	RE04-04-54742	rad NDA, VOC 0 ppm
			17+	Decomposing tree (lower location)	none	rad NDA, VOC 0 ppm
TR57 (East Ten Site Slope)	10/4/2004	04-23234	0–4	Predominately high organic very fine to fine sand with highly abundant litter.	RE04-04-54743	rad NDA, VOC 0 ppm
			0–17	Mixed fine to very coarse sand. Poorly sorted. Scattered granules and pebbles.	RE04-04-54744	rad NDA, VOC 0 ppm
			17+	Bedrock	none	rad NDA, VOC 0 ppm
TR58 (East Ten Site Slope)	10/4/2004	04-23235	0–4	Loose medium to very coarse sand, gravel and pebbles. Very young sand lobe. Post-Lab. Post-Cerro Grande, may contain ash	RE04-04-54745	rad NDA, VOC 0 ppm
			4–7	Fine to medium sand with apparent disseminated ash, charcoal fragments, and wire	none	rad NDA, VOC 0 ppm
			7–21	Slightly orange weak structure. Very fine to fine sand and scattered granules.	RE04-04-54746, RE04-04-54757 (duplicate)	rad NDA, VOC 0 ppm
			21+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR59 (East Ten Site Slope)	10/4/2004	04-23236	0–1	Ash	RE04-04-54760	rad NDA, VOC 0 ppm
			1–5	Poorly sorted predominately fine to very coarse sand, scattered granules. Young (post-1942). Wire at base of contact. Light gray color.	RE04-04-54747	rad NDA, VOC 0 ppm
			5–12	Fine to very-fine-sand with scattered coarse sand to granules. Slight orange color. Likely pre-Lab.	RE04-04-54748	rad NDA, VOC 0 ppm
			12+	Bedrock	none	rad NDA, VOC 0 ppm
TR60 (East Ten Site Slope)	10/4/2004	04-23237	0–4	Poorly sorted very fine to very coarse sand plus granules. Loose. Post-Lab.	RE04-04-54749	rad NDA, VOC 0 ppm
TR60 (East Ten Site Slope), continued			4–20	Silty very fine to fine sand with scattered very coarse sand and granules. Slightly orange. Possible pre-Lab. Local lenses lack coarse fraction (fine to very-fine)	RE04-04-54750	rad NDA, VOC 0 ppm
			20+	Bedrock	none	rad NDA, VOC 0 ppm
TR61 (East Ten Site Slope)	10/4/2004	04-23238	0–3	Silty very-fine-sand, scattered medium and coarse; surface has scattered phenocrysts (quartz and sanidine), likely post-Lab.	RE04-04-54751	rad NDA, VOC 0 ppm
			3–11	Fine sand, scattered granules; slight orange color, splotchy; color may indicate reworked older soil.	RE04-04-54752	rad NDA, VOC 0 ppm
			11+	Bedrock	none	rad NDA, VOC 0 ppm
TR62 (East Ten Site Slope)	10/4/2004	04-23239	0–2	Very-coarse sand to fine-sand. Loose stratified lenses. Contains needle litter. Post-1942. Distinctive ash at base.	RE04-04-54756	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR62 (East Ten Site Slope) continued			2–6	Very-fine to fine-sand, scattered very-coarse sand and granules; slight orange color, likely due to reworking of older soils. Inferred post-1942.	RE04-04-54753	rad NDA, VOC 0 ppm
	10/4/2004	04-23239	6–21	Poorly sorted silty very fine sand to very coarse sand and granules. Light gray and splotchy orange. Slightly indurated.	RE04-04-54754	rad NDA, VOC 0 ppm
			21+	Bedrock	none	rad NDA, VOC 0 ppm
TR63 (East Ten Site Slope)	9/27/2004	05-23241	0–5	Dark brown fine to very-fine sand with disseminated ash and charcoal fragment. Post-Lab.	none	rad NDA, VOC 0 ppm
			5–11	Fine to very-fine sand with scattered granules. Angular tuff cobles and pebbles. Probable finely disseminated ash along roots.	RE05-04-54762, RE05-04-54782 (duplicate)	rad NDA, VOC 0 ppm
			11–17	Dark fine sand with some medium sand. Pre-Lab.	RE05-04-54763	rad NDA, VOC 0 ppm
			17–20+	Light brown fine sand with scattered pumice or tuff granules. Rinsate followed.	none	rad NDA, VOC 0 ppm
TR64 (East Ten Site Slope)	9/24/2004	05-23242	0–2	Loose fine to very coarse sand. Possibly contains some disseminated ash.	none	rad NDA, VOC 0 ppm
			2–10	Fine sand with minor disseminated coarse sand. Moderately indurated. Probably post-1942.	RE05-04-54764	rad NDA, VOC 0 ppm
			10–15	Moderately indurated fine to medium sand. Medium brown to slight orange.	RE05-04-54765	rad NDA, VOC 0 ppm
			15+	Deeply weathered tuff.	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR65 (East Ten Site Slope)	9/22/2004	05-23243	0–7	Coarse to very-fine sand with abundant ash. Dark color. Definitely post-Lab.	none	rad NDA, VOC 0 ppm
			7–32	Granular coarse sandy fine to very fine sand. No ash. Common medium to coarse roots. Very weak medium to subangular blocky peds.	RE05-04-54766	rad NDA, VOC 0 ppm
			32–62+	Scattered tuff cobbles. Few roots. Likely pre-Lab. No peds.	RE05-04-54767	rad NDA, VOC 0 ppm
TR66 (East Ten Site Slope)	9/22/2004	05-23244	0–19	Stratified silty fine to very-fine sand with lenses of coarse to very coarse sand and granules. Some fine roots. Light brown very weak medium to subangular blocky peds. Dark fingers of sediment in upper 2 cm. Possible ash. Non-stratified.	RE05-04-54768	rad NDA, VOC 0 ppm
			19–30	Silty fine to very-fine sand with common granules. Few small charcoal fragments. Very weak medium to sub-angular to blocky peds. Some fine roots.	none	rad NDA, VOC 0 ppm
			30–50+	Abundant coarse to very coarse sand. Medium roots. Weak medium to large subangular peds. Minor charcoal. Pre-Lab. Animal bioturbation.	RE05-04-54769	rad NDA, VOC 0 ppm
TR67 (East Ten Site Slope)	9/28/2004	05-23245	0–10.5	Coarse to medium sand with secondary fine to very-fine sand and minor gravel. Roots. Upper cm contains significant ash component. Post-Lab exotics.	RE05-04-54770	rad NDA, VOC 0 ppm
			10.5–20	Decomposing roots. Minor weathered tuff. Weak peds. Fine-sand to silt with secondary medium sand.	RE05-04-54771	rad NDA, VOC 0 ppm
			20+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR68 (East Ten Site Slope)	9/28/2004	05-23246	0–6	Black. Bimodal size medium sand to granules/fine sand to silt. Post Cerro Grande fire. Very ash and charcoal rich with some ash burned in place, other ash transported.	RE05-04-54772	rad NDA, VOC 0 ppm
			6–14	Light brown. Minor weak peds. Gravel-sized tuff. Fine sand to silty medium to coarse sand. Post-1942.	RE05-04-54773	rad NDA, VOC 0 ppm
			14+	Bedrock	none	rad NDA, VOC 0 ppm
TR69 (East Ten Site Slope)	10/14/2004	05-23247	0–7	No ash. Sparse charcoal. Fine sand to silty medium sand. Post-Lab. No roots.	RE05-04-54774	rad NDA, VOC 0 ppm
			7–16	Peds. Light gray. Coarse to medium sandy fine to very-fine sand. Minor tuff gravel and granules. Some medium roots.	RE05-04-54775	rad NDA, VOC 0 ppm
			16+	Fractured bedrock	none	rad NDA, VOC 0 ppm
TR70 (East Ten Site Slope)	10/14/2004	05-23248	0–8.5	No ash. Very minor charcoal. Fine sand with secondary coarse sand. Post-Lab exotics. Light brown.	none	rad NDA, VOC 0 ppm
			8.5–15	Medium brown. Fine to very fine sand with some coarse sand.	none	rad NDA, VOC 0 ppm
			15+	Refusal.	none	rad NDA, VOC 0 ppm
TR71 (East Ten Site Slope)	9/22/2004	05-23249	0–12	Loose. Very minor charcoal. Coarse sandy medium to fine sand with scattered pumice granules. Light brown-gray. Many fine to medium roots. Post-Lab.	RE05-04-54778	rad NDA, VOC 0 ppm
			12–20	Coarse sandy fine to very-fine sand. Scattered pumice granules. Some large roots. Possibly post-Lab. Minor charcoal from burned roots.	RE05-04-54779	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR71 (East Ten Site Slope) continued			20–34	Medium light brown-gray. Coarse sandy fine to very-fine sand with reworked pumice granules. Common medium roots.	none	rad NDA, VOC 0 ppm
			34+	Bedrock	none	rad NDA, VOC 0 ppm
TR72 (East Ten Site Slope)	10/12/04	52-23251	0–3	Ash with some mixed silty very fine to fine sand.	none	rad NDA, VOC 0 ppm
			3–10	Orange silty very-fine sand. Scattered minor coarse sand.	RE52-04-54787	rad NDA, VOC 0 ppm
TR72 (East Ten Site Slope continued)			10–23	Medium to coarse sand. Scattered very-fine sand.	RE52-04-54788	rad NDA, VOC 0 ppm
	10/12/04	52-23251	23–27.5	Very-fine to fine sand.	none	rad NDA, VOC 0 ppm
			27.5+.	Refusal.	none	rad NDA, VOC 0 ppm
TR73 (East Ten Site Slope)	10/12/2004	52-23252	0–4	Medium very-coarse sand with interstitial ash.	none	rad NDA, VOC 0 ppm
			4–13	Light-medium orange. Fine to medium sand with scattered very-coarse sand and granules.	RE52-04-54789	rad NDA, VOC 0 ppm
			13–24	Light brown to medium orange. Very-fine to fine sand with minor scattered very-coarse sand. Some orange mottling. Angular pebbles. Likely pre-Lab.	RE52-04-54790, RE52-04-54795 (duplicate)	rad NDA, VOC 0 ppm
			24.5+	Bedrock	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR74 (East Ten Site Slope)	10/7/2004	52-23253	0–3	Dark brown. Ash and charcoal rich. Organic matter. Very-fine sand to silt. Post Cerro Grande fire.	RE52-04-54796	rad NDA, VOC 0 ppm
			3–21	Light brown. Bioturbation from small roots. Very minor old reworked charcoal. Very-fine to fine sand with common very-coarse to coarse sand in lenses.	RE52-04-54791	rad NDA, VOC 0 ppm
			21–38	Many medium roots. Medium brown. Fine sandy medium to very-coarse sand. Bioturbated.	RE52-04-54792	rad NDA, VOC 0 ppm
			38+	Bedrock	none	rad NDA, VOC 0 ppm
TR75 (East Ten Site Slope)	10/12/2004	52-23254	0–5	Ash. Locally contains less than 1 cm of post-fire fines.	RE52-04-54797	rad NDA, VOC 0 ppm
			5–13	Slightly orange peds. Coarse to very-coarse sand with minor scattered granules and fine sand.	RE52-04-54793	rad NDA, VOC 0 ppm
			13–21	Dark fine sand with lenses of coarse to very-coarse sand and granules.	RE52-04-54794	rad NDA, VOC 0 ppm
			21+	Tuff boulder	none	rad NDA, VOC 0 ppm
TR76 (Sigma Mesa)	10/6/2004	60-23255	0–8	Silt + very fine sand with secondary component of fine sand. Minor small roots.	RE60-04-54800	rad NDA, VOC 0 ppm
			8–12	Medium to coarse sand with secondary fine sand and minor granules. Some medium roots.	none	rad NDA, VOC 0 ppm
			12–24	Some reddish color. Loose peds. Poorly sorted fine to coarse sand.	none	rad NDA, VOC 0 ppm
			24–38	Fine to very fine sand	RE60-04-54801	rad NDA, VOC 0 ppm
			38–50	Medium sand; 50+ cm = tuff rubble	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR77 (Sigma Mesa)	10/6/2004	60-23256		Not described yet. Initial site is in floodplain zone. Raise above lowest cliff.	none	rad NDA, VOC 0 ppm
			0–8	Fine sand to medium sand and organics.	RE60-04-54802	rad NDA, VOC 0 ppm
			8–26	Coarse sand. 26+ cm = tuff.	RE60-04-54803	rad NDA, VOC 0 ppm
TR78 (Sigma Mesa)	10/6/2004	60-23257	0–21	Fine to medium sand with minor pebbles and cobbles. Medium roots.	RE60-04-54804	rad NDA, VOC 0 ppm
			21–34	Fine to very-fine sand with minor medium sand. Some medium roots.	RE60-04-54805	rad NDA, VOC 0 ppm
			34–42	Fine sand to silt with minor very coarse sand. Dark brown.	none	rad NDA, VOC 0 ppm
			42+	Bedrock	none	rad NDA, VOC 0 ppm
TR79 (Sigma Mesa)	10/6/2004	60-23258	0–1	Organic debris and forest litter.	none	rad NDA, VOC 0 ppm
			1–10	Fine to very-fine sand with organics. Light brown to gray.	RE60-04-54806	rad NDA, VOC 0 ppm
			10–20	Medium to very coarse sand with secondary fine sand. Heavily bioturbated. Medium brown. Litter layer at depth.	none	rad NDA, VOC 0 ppm
	10/6/2004	60-23258	20–31	Light gray. Very fine sand with secondary coarse sand to granules.	RE60-04-54807	rad NDA, VOC 0 ppm
			31–36	Medium to coarse sand with secondary fine sand. Medium gray.	none	rad NDA, VOC 0 ppm
			36+	Bedrock	none	rad NDA, VOC 0 ppm
TR80 (Sigma Mesa)	10/6/2004	60-23259	sub-cm.	Coarse sand lobe and exotics.	none	rad NDA, VOC 0 ppm
			0–3	Ash-rich. Black. Organics. Post-Cerro Grande fines.	RE60-04-54815	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR80 (Sigma Mesa), continued			3–9	Coarse to medium sand with secondary very-fine sand component. Significant percentage of lenses.	RE60-04-54808	rad NDA, VOC 0 ppm
			9–21	Silt to very-fine sand with very minor medium sand. Many small roots. Buff- light tan.	RE60-04-54809, RE60-04-54814 (duplicate)	rad NDA, VOC 0 ppm
			21+	Bedrock	none	rad NDA, VOC 0 ppm
TR81 (Sigma Mesa)	10/6/2004	60-23260	0–4	Organic litter and charcoal. Many fine roots.	none	rad NDA, VOC 0 ppm
			4–11	Very fine to medium sand.	RE60-04-54810	rad NDA, VOC 0 ppm
			11–20	Light brown. Very fine to medium sand with minor coarse sand. Bioturbated by small roots. Very weak small peds.	RE60-04-54811	rad NDA, VOC 0 ppm
			20–24	Angular weak peds. Fine sand with secondary very minor coarse sand. Tan to light brown-gray.	none	rad NDA, VOC 0 ppm
			24+	Cobbles and refusal	none	rad NDA, VOC 0 ppm

Table 3.0-2 (continued)

Transect	Date[a]	Location ID	Depth (cm)	Description	Sample(s) Collected	Screening Results
TR82 (Sigma Mesa)	10/6/2004	60-23261	0–12	Fine to very-fine sand with secondary minor coarse sand.	RE60-04-54812	rad NDA, VOC 0 ppm
			12–23	Bimodal coarse and very fine sand. Medium brown. Bioturbated from roots.	none	rad NDA, VOC 0 ppm
			23–38	Light brown. Coarse to medium sand with some silt.	RE60-04-54813	rad NDA, VOC 0 ppm
			38+	Bedrock	none	rad NDA, VOC 0 ppm

[a] Date of sample description and collection, unless otherwise noted in the "Sample(s) Collected" column.

[b] SED = Sediment.

[c] NDA = No detectable activity.

[d] VOC = Volatile organic compound.

[e] dpm = Disintegrations per minute.

[f] PID = Photoionization detector.

[g] ALLH = All horizons.

[h] VFS = Very fine sand.

[i] VCS = Very coarse sand.

Table 3.0-3
Surveyed Coordinates for All Sampling Locations

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAA3797	35-02070	Mesa Top	11/16/1993	1628040	1769331.2
AAA3798	35-02070	Mesa Top	11/16/1993	1628040	1769331.2
AAA3799	35-02070	Mesa Top	11/16/1993	1628040	1769331.2
AAA3800	35-02071	Mesa Top	11/16/1993	1627990.2	1769431.2
AAA3817	35-02071	Mesa Top	11/16/1993	1627990.2	1769431.2
AAA3818	35-02071	Mesa Top	11/16/1993	1627990.2	1769431.2
AAA3819	35-02072	Mesa Top	11/16/1993	1628315.4	1769394.6
AAA3820	35-02072	Mesa Top	11/16/1993	1628315.4	1769394.6
AAA3821	35-02072	Mesa Top	11/16/1993	1628315.4	1769394.6
AAA3826	35-02079	Ten Site Slope	11/19/1993	1627972.5	1769129.2
AAA3827	35-02079	Ten Site Slope	11/19/1993	1627972.5	1769129.2
AAA3828	35-02079	Ten Site Slope	11/19/1993	1627972.5	1769129.2
AAA4445	35-02080	Ten Site Slope	11/19/1993	1628076.6	1768995.2
AAA4446	35-02080	Ten Site Slope	11/19/1993	1628076.6	1768995.2
AAA4447	35-02080	Ten Site Slope	11/19/1993	1628076.6	1768995.2
AAA6341	35-02076	Mesa Top	11/19/1993	1628048.6	1769419.9
AAA6342	35-02076	Mesa Top	11/18/1993	1628048.6	1769419.9
AAA6343	35-02076	Mesa Top	11/19/1993	1628048.6	1769419.9
AAA6344	35-02077	Mesa Top	11/18/1993	1627970.5	1769426.5
AAA6347	35-02078	Mesa Top	11/19/1993	1627847.7	1769362.1
AAA6348	35-02078	Mesa Top	11/19/1993	1627847.7	1769362.1
AAA6349	35-02078	Mesa Top	11/19/1993	1627847.7	1769362.1
AAA6353	35-02073	Mesa Top	11/17/1993	1628208.3	1769268.2
AAA6354	35-02073	Mesa Top	11/17/1993	1628208.3	1769268.2
AAA6355	35-02073	Mesa Top	11/17/1993	1628208.3	1769268.2
AAA6356	35-02074	Mesa Top	11/17/1993	1628099.8	1769312
AAA6357	35-02074	Mesa Top	11/17/1993	1628099.8	1769312
AAA6358	35-02074	Mesa Top	11/17/1993	1628099.8	1769312
AAA6359	35-02075	Mesa Top	11/17/1993	1627999.4	1769345.5
AAA6360	35-02075	Mesa Top	11/17/1993	1627999.4	1769345.5
AAA6361	35-02075	Mesa Top	11/17/1993	1627999.4	1769345.5
AAA6366	35-02081	Mesa Top	12/1/1993	1628385.6	1769418.6
AAA6367	35-02082	Mesa Top	12/1/1993	1628362.3	1769400.7
AAA6368	35-02083	Mesa Top	11/30/1993	1628350.6	1769364.8
AAA6369	35-02220	Mesa Top	11/30/1993	1627970.3	1769431.7
AAA6370	35-02220	Mesa Top	11/30/1993	1627970.3	1769431.7
AAA6371	35-02220	Mesa Top	11/30/1993	1627970.3	1769431.7

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAA6373	35-02084	Mesa Top	11/30/1993	1628339.4	1769344.1
AAA6374	35-02085	Mesa Top	12/1/1993	1628373.9	1769398.6
AAA6375	35-02086	Mesa Top	11/30/1993	1628380.4	1769378.7
AAA6376	35-02087	Mesa Top	11/30/1993	1628364.3	1769359
AAA6377	35-02088	Mesa Top	11/30/1993	1628354.1	1769338.5
AAA6381	35-02035	Ten Site Slope	12/9/1993	1628077.264	1769096.37
AAA6382	35-02035	Ten Site Slope	12/9/1993	1628077.264	1769096.37
AAA6383	35-02035	Ten Site Slope	12/9/1993	1628077.264	1769096.37
AAA6384	35-02035	Ten Site Slope	12/9/1993	1628077.264	1769096.37
AAA6385	35-02089	Mesa Top	12/1/1993	1628372.9	1769409.3
AAA6386	35-02089	Mesa Top	12/1/1993	1628372.9	1769409.3
AAA6387	35-02089	Mesa Top	12/1/1993	1628372.9	1769409.3
AAA6388	35-02089	Mesa Top	12/1/1993	1628372.9	1769409.3
AAA6389	35-02089	Mesa Top	12/1/1993	1628372.9	1769409.3
AAA6390	35-02089	Mesa Top	12/1/1993	1628372.9	1769409.3
AAA6391	35-02090	Mesa Top	12/1/1993	1628351.8	1769352.9
AAA6392	35-02090	Mesa Top	12/1/1993	1628351.8	1769352.9
AAA6393	35-02090	Mesa Top	12/1/1993	1628351.8	1769352.9
AAA6394	35-02090	Mesa Top	12/1/1993	1628351.8	1769352.9
AAA6395	35-02090	Mesa Top	12/1/1993	1628351.8	1769352.9
AAA6397	35-02090	Mesa Top	12/1/1993	1628351.8	1769352.9
AAA6401	35-02036	Ten Site Slope	12/9/1993	1628074.292	1769077.163
AAA6402	35-02036	Ten Site Slope	12/9/1993	1628074.292	1769077.163
AAA6403	35-02036	Ten Site Slope	12/9/1993	1628074.292	1769077.163
AAA6404	35-02036	Ten Site Slope	12/9/1993	1628074.292	1769077.163
AAA6409	35-02039	Ten Site Slope	1/19/1994	1627769.581	1769158.389
AAA6410	35-02039	Ten Site Slope	1/19/1994	1627769.581	1769158.389
AAA6411	35-02039	Ten Site Slope	1/19/1994	1627769.581	1769158.389
AAA6412	35-02040	Ten Site Slope	1/19/1994	1627795.056	1769169.055
AAA6413	35-02040	Ten Site Slope	1/19/1994	1627795.056	1769169.055
AAA6414	35-02040	Ten Site Slope	1/19/1994	1627795.056	1769169.055
AAA6417	35-02033	Mesa Top	1/18/1994	1628079.061	1769186.429
AAA6418	35-02033	Mesa Top	1/18/1994	1628079.061	1769186.429
AAA6419	35-02033	Mesa Top	1/18/1994	1628079.061	1769186.429
AAA6420	35-02034	Mesa Top	1/18/1994	1628071.892	1769185.847
AAA6421	35-02034	Mesa Top	1/18/1994	1628071.892	1769185.847
AAA6422	35-02034	Mesa Top	1/18/1994	1628071.892	1769185.847
AAA6429	35-02037	Ten Site Slope	12/9/1993	1628047.207	1769071.031
AAA6430	35-02037	Ten Site Slope	12/9/1993	1628047.207	1769071.031

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAA6431	35-02037	Ten Site Slope	12/9/1993	1628047.207	1769071.031
AAA6432	35-02037	Ten Site Slope	12/9/1993	1628047.207	1769071.031
AAA6437	35-02038	Ten Site Slope	12/10/1993	1628038.041	1769039.679
AAA6438	35-02038	Ten Site Slope	12/10/1993	1628038.041	1769039.679
AAA6439	35-02038	Ten Site Slope	12/10/1993	1628038.041	1769039.679
AAA6440	35-02038	Ten Site Slope	12/10/1993	1628038.041	1769039.679
AAA6441	35-02221	Ten Site Slope	12/10/1993	1628018.708	1769101.6
AAA6442	35-02221	Ten Site Slope	12/10/1993	1628018.708	1769101.6
AAA6443	35-02221	Ten Site Slope	12/10/1993	1628018.708	1769101.6
AAA6444	35-02221	Ten Site Slope	12/10/1993	1628018.708	1769101.6
AAA6446	35-02222	Ten Site Slope	12/10/1993	1628012.971	1769080.762
AAA6447	35-02222	Ten Site Slope	12/10/1993	1628012.971	1769080.762
AAA6448	35-02222	Ten Site Slope	12/10/1993	1628012.971	1769080.762
AAA6449	35-02222	Ten Site Slope	12/10/1993	1628012.971	1769080.762
AAA6453	35-02223	Ten Site Slope	1/19/1994	1628059.783	1769007.598
AAA6454	35-02224	Ten Site Slope	1/19/1994	1627988.519	1769009.029
AAA6461	35-02041	Ten Site Slope	1/20/1994	1627711.168	1769126.717
AAA6462	35-02041	Ten Site Slope	1/20/1994	1627711.168	1769126.717
AAA6463	35-02041	Ten Site Slope	1/20/1994	1627711.168	1769126.717
AAA6464	35-02042	Ten Site Slope	1/20/1994	1627742.294	1769138.282
AAA6465	35-02042	Ten Site Slope	1/20/1994	1627742.294	1769138.282
AAA6466	35-02042	Ten Site Slope	1/20/1994	1627742.294	1769138.282
AAA6467	35-02042	Ten Site Slope	1/20/1994	1627742.294	1769138.282
AAA6474	35-02041	Ten Site Slope	1/20/1994	1627711.168	1769126.717
AAA6480	35-02055	Mortandad Slope	1/24/1994	1628253.867	1769628.776
AAA6481	35-02055	Mortandad Slope	1/24/1994	1628253.867	1769628.776
AAA6482	35-02055	Mortandad Slope	1/24/1994	1628253.867	1769628.776
AAA6483	35-02055	Mortandad Slope	1/24/1994	1628253.867	1769628.776
AAA6484	35-02056	Mortandad Slope	1/24/1994	1628276.122	1769622.555
AAA6485	35-02056	Mortandad Slope	1/24/1994	1628276.122	1769622.555
AAA6486	35-02056	Mortandad Slope	1/24/1994	1628276.122	1769622.555
AAA6487	35-02056	Mortandad Slope	1/24/1994	1628276.122	1769622.555
AAA6490	35-02044	Mortandad Slope	1/25/1994	1628306.905	1769654.286
AAA6491	35-02045	Mortandad Slope	1/25/1994	1628317.606	1769677.053
AAA6495	35-02049	Mortandad Slope	1/25/1994	1628229.849	1769624.693
AAA6496	35-02049	Mortandad Slope	1/25/1994	1628229.849	1769624.693
AAA6497	35-02049	Mortandad Slope	1/25/1994	1628229.849	1769624.693
AAA6498	35-02050	Mortandad Slope	1/25/1994	1628240.979	1769620.447
AAA6499	35-02050	Mortandad Slope	1/25/1994	1628240.979	1769620.447

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAA6500	35-02050	Mortandad Slope	1/25/1994	1628240.979	1769620.447
AAA6504	35-02059	Pratt Canyon	2/2/1994	1628849.429	1769443.788
AAA6508	35-02053	Mortandad Slope	1/26/1994	1628231.8	1769640.533
AAA6510	35-02053	Mortandad Slope	1/26/1994	1628231.8	1769640.533
AAA6511	35-02053	Mortandad Slope	1/26/1994	1628231.8	1769640.533
AAA6512	35-02053	Mortandad Slope	1/26/1994	1628231.8	1769640.533
AAA6513	35-02054	Mortandad Slope	1/26/1994	1628235.784	1769626.899
AAA6514	35-02054	Mortandad Slope	1/26/1994	1628235.784	1769626.899
AAA6515	35-02054	Mortandad Slope	1/26/1994	1628235.784	1769626.899
AAA6516	35-02054	Mortandad Slope	1/26/1994	1628235.784	1769626.899
AAA6517	35-02059	Pratt Canyon	2/2/1994	1628849.429	1769443.788
AAA6518	35-02059	Pratt Canyon	2/2/1994	1628849.429	1769443.788
AAA6519	35-02059	Pratt Canyon	2/2/1994	1628849.429	1769443.788
AAA6520	35-02060	Pratt Canyon	2/2/1994	1628862.232	1769431.732
AAA6525	35-02051	Mortandad Slope	1/27/1994	1628192.585	1769661.93
AAA6526	35-02051	Mortandad Slope	1/27/1994	1628192.585	1769661.93
AAA6527	35-02051	Mortandad Slope	1/27/1994	1628192.585	1769661.93
AAA6528	35-02051	Mortandad Slope	1/27/1994	1628192.585	1769661.93
AAA6529	35-02052	Mortandad Slope	1/27/1994	1628206.952	1769639.612
AAA6530	35-02052	Mortandad Slope	1/27/1994	1628206.952	1769639.612
AAA6531	35-02052	Mortandad Slope	1/27/1994	1628206.952	1769639.612
AAA6532	35-02052	Mortandad Slope	1/27/1994	1628206.952	1769639.612
AAA6534	35-02060	Pratt Canyon	2/2/1994	1628862.232	1769431.732
AAA6535	35-02060	Pratt Canyon	2/2/1994	1628862.232	1769431.732
AAA6536	35-02060	Pratt Canyon	2/2/1994	1628862.232	1769431.732
AAA6537	35-02017	Mesa Top	3/15/1994	1628447.559	1769153.969
AAA6538	35-02017	Mesa Top	3/15/1994	1628447.559	1769153.969
AAA6539	35-02017	Mesa Top	3/15/1994	1628447.559	1769153.969
AAA6540	35-02017	Mesa Top	3/15/1994	1628447.559	1769153.969
AAA6541	35-02046	Pratt Canyon	2/3/1994	1628945.415	1769441.514
AAA6542	35-02047	Pratt Canyon	2/3/1994	1628953.387	1769426.683
AAA6543	35-02048	Pratt Canyon	2/3/1994	1628959.359	1769407.385
AAA6547	35-02061	Pratt Canyon	2/3/1994	1628881.327	1769444.489
AAA6548	35-02061	Pratt Canyon	2/3/1994	1628881.327	1769444.489
AAA6549	35-02061	Pratt Canyon	2/3/1994	1628881.327	1769444.489
AAA6551	35-02061	Pratt Canyon	2/3/1994	1628881.327	1769444.489
AAA6552	35-02062	Pratt Canyon	2/3/1994	1628902.613	1769437.131
AAA6553	35-02062	Pratt Canyon	2/3/1994	1628902.613	1769437.131
AAA6554	35-02062	Pratt Canyon	2/3/1994	1628902.613	1769437.131

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAA6555	35-02062	Pratt Canyon	2/3/1994	1628902.613	1769437.131
AAA6564	35-02057	Pratt Canyon	2/4/1994	1628822.01	1769439.623
AAA6565	35-02057	Pratt Canyon	2/4/1994	1628822.01	1769439.623
AAA6566	35-02057	Pratt Canyon	2/4/1994	1628822.01	1769439.623
AAA6567	35-02058	Pratt Canyon	2/10/1994	1628834.04	1769439.385
AAA6568	35-02058	Pratt Canyon	2/10/1994	1628834.04	1769439.385
AAA6569	35-02058	Pratt Canyon	2/10/1994	1628834.04	1769439.385
AAA6574	35-02021	Mesa Top	3/15/1994	1628418.844	1769155.763
AAA6575	35-02021	Mesa Top	3/15/1994	1628418.844	1769155.763
AAA6581	35-02016	Mesa Top	3/16/1994	1628473.216	1769194.069
AAA6589	35-02016	Mesa Top	3/16/1994	1628473.216	1769194.069
AAA6590	35-02016	Mesa Top	3/16/1994	1628473.216	1769194.069
AAA6601	35-02024	Mesa Top	3/21/1994	1628495.212	1769244.458
AAA6602	35-02024	Mesa Top	3/21/1994	1628495.212	1769244.458
AAA6603	35-02024	Mesa Top	3/21/1994	1628495.212	1769244.458
AAA6604	35-02024	Mesa Top	3/21/1994	1628495.212	1769244.458
AAA6605	35-02027	Mesa Top	3/22/1994	1628541.842	1769302.232
AAA6606	35-02027	Mesa Top	3/22/1994	1628541.842	1769302.232
AAA6608	35-02027	Mesa Top	3/22/1994	1628541.842	1769302.232
AAA6609	35-02027	Mesa Top	3/22/1994	1628541.842	1769302.232
AAA6613	35-02025	Mesa Top	3/24/1994	1628558.437	1769219.257
AAA6614	35-02025	Mesa Top	3/24/1994	1628558.437	1769219.257
AAA6615	35-02025	Mesa Top	3/24/1994	1628558.437	1769219.257
AAA6616	35-02025	Mesa Top	3/24/1994	1628558.437	1769219.257
AAA6617	35-02026	Mesa Top	4/19/1994	1628580.958	1769210.226
AAA6618	35-02026	Mesa Top	4/19/1994	1628580.958	1769210.226
AAA6619	35-02026	Mesa Top	4/19/1994	1628580.958	1769210.226
AAA6620	35-02026	Mesa Top	4/19/1994	1628580.958	1769210.226
AAA6621	35-02019	Pratt Canyon	3/24/1994	1628542.13	1769158.293
AAA6622	35-02019	Pratt Canyon	3/24/1994	1628542.13	1769158.293
AAA6623	35-02019	Pratt Canyon	3/24/1994	1628542.13	1769158.293
AAA6624	35-02019	Pratt Canyon	3/24/1994	1628542.13	1769158.293
AAA6625	35-02020	Mesa Top	3/30/1994	1628493.144	1769124.804
AAA6626	35-02020	Mesa Top	3/30/1994	1628493.144	1769124.804
AAA6627	35-02020	Mesa Top	3/30/1994	1628493.144	1769124.804
AAA6628	35-02020	Mesa Top	3/30/1994	1628493.144	1769124.804
AAA6633	35-02018	Mesa Top	3/28/1994	1628473.053	1769142.586
AAA6634	35-02018	Mesa Top	3/28/1994	1628473.053	1769142.586
AAA6635	35-02018	Mesa Top	3/28/1994	1628473.053	1769142.586

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAA6637	35-02022	Pratt Canyon	4/7/1994	1628674.692	1769064.79
AAA6638	35-02022	Pratt Canyon	4/7/1994	1628674.692	1769064.79
AAA6639	35-02022	Pratt Canyon	4/7/1994	1628674.692	1769064.79
AAA6640	35-02022	Pratt Canyon	4/7/1994	1628674.692	1769064.79
AAB0949	35-02015	Mesa Top	4/25/1994	1628516.125	1769103.728
AAB0950	35-02015	Mesa Top	4/25/1994	1628516.125	1769103.728
AAB0951	35-02015	Mesa Top	4/25/1994	1628516.125	1769103.728
AAB0952	35-02015	Mesa Top	4/25/1994	1628516.125	1769103.728
AAB0961	35-02010	Pratt Canyon	3/31/1994	1628557.311	1769178.79
AAB0962	35-02010	Pratt Canyon	3/31/1994	1628557.311	1769178.79
AAB0963	35-02010	Pratt Canyon	3/31/1994	1628557.311	1769178.79
AAB0964	35-02010	Pratt Canyon	4/1/1994	1628557.311	1769178.79
AAB0965	35-02010	Pratt Canyon	4/1/1994	1628557.311	1769178.79
AAB0969	35-02012	Mesa Top	4/1/1994	1628519.395	1769133.571
AAB0970	35-02012	Mesa Top	4/1/1994	1628519.395	1769133.571
AAB0971	35-02012	Mesa Top	4/1/1994	1628519.395	1769133.571
AAB0972	35-02012	Mesa Top	4/1/1994	1628519.395	1769133.571
AAB0973	35-02012	Mesa Top	4/5/1994	1628519.395	1769133.571
AAB0977	35-02009	Pratt Canyon	4/12/1994	1628655.255	1769153.243
AAB0978	35-02009	Pratt Canyon	4/12/1994	1628655.255	1769153.243
AAB0979	35-02009	Pratt Canyon	4/13/1994	1628655.255	1769153.243
AAB0980	35-02009	Pratt Canyon	4/13/1994	1628655.255	1769153.243
AAB0981	35-02013	Pratt Canyon	4/19/1994	1628611.684	1769147.483
AAB0982	35-02013	Pratt Canyon	4/19/1994	1628611.684	1769147.483
AAB0984	35-02013	Pratt Canyon	4/20/1994	1628611.684	1769147.483
AAB0985	35-02013	Pratt Canyon	4/20/1994	1628611.684	1769147.483
AAB0986	35-02013	Pratt Canyon	4/20/1994	1628611.684	1769147.483
AAB0989	35-02005	Pratt Canyon	4/21/1994	1628605.134	1769123.831
AAB0990	35-02005	Pratt Canyon	4/21/1994	1628605.134	1769123.831
AAB0991	35-02005	Pratt Canyon	4/21/1994	1628605.134	1769123.831
AAB0992	35-02005	Pratt Canyon	4/22/1994	1628605.134	1769123.831
AAB0993	35-02004	Pratt Canyon	4/25/1994	1628576.232	1769119.231
AAB0994	35-02004	Pratt Canyon	4/25/1994	1628576.232	1769119.231
AAB0995	35-02004	Pratt Canyon	4/25/1994	1628576.232	1769119.231
AAB0996	35-02004	Pratt Canyon	4/26/1994	1628576.232	1769119.231
AAB0997	35-02006	Pratt Canyon	4/29/1994	1628560.008	1769068.171
AAB0998	35-02006	Pratt Canyon	4/29/1994	1628560.008	1769068.171
AAB0999	35-02006	Pratt Canyon	4/29/1994	1628560.008	1769068.171
AAB1000	35-02006	Pratt Canyon	5/2/1994	1628560.008	1769068.171

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAB1001	35-02011	Pratt Canyon	4/26/1994	1628649.001	1769116.305
AAB1002	35-02011	Pratt Canyon	4/26/1994	1628649.001	1769116.305
AAB1003	35-02011	Pratt Canyon	4/26/1994	1628649.001	1769116.305
AAB1004	35-02011	Pratt Canyon	4/28/1994	1628649.001	1769116.305
AAB1005	35-02011	Pratt Canyon	4/28/1994	1628649.001	1769116.305
AAB1009	35-02215	Mesa Top	3/30/1994	1628434.186	1769153.081
AAB1011	35-02215	Mesa Top	3/30/1994	1628434.186	1769153.081
AAB1012	35-02215	Mesa Top	3/30/1994	1628434.186	1769153.081
AAB1013	35-02215	Mesa Top	3/30/1994	1628434.186	1769153.081
AAB1020	35-02014	Mesa Top	5/3/1994	1628697.283	1769239.71
AAB1024	35-02208	Pratt Canyon	5/3/1994	1628537.327	1769091.667
AAB1028	35-02209	Pratt Canyon	5/3/1994	1628706.604	1769122.267
AAB1033	35-02008	Pratt Canyon	4/14/1994	1628640.033	1769177.404
AAB1034	35-02008	Pratt Canyon	4/15/1994	1628640.033	1769177.404
AAB1035	35-02008	Pratt Canyon	4/15/1994	1628640.033	1769177.404
AAB1036	35-02008	Pratt Canyon	4/15/1994	1628640.033	1769177.404
AAB1037	35-02007	Pratt Canyon	4/6/1994	1628613.871	1769054.827
AAB1038	35-02007	Pratt Canyon	4/6/1994	1628613.871	1769054.827
AAB1039	35-02007	Pratt Canyon	4/6/1994	1628613.871	1769054.827
AAB1040	35-02007	Pratt Canyon	4/6/1994	1628613.871	1769054.827
AAB1042	35-02210	Mesa Top	5/3/1994	1628542.946	1768995.267
AAB1043	35-02211	Mesa Top	5/3/1994	1628445.136	1769021.263
AAB1044	35-02212	Pratt Canyon	5/3/1994	1628653.901	1769134.438
AAB1457	35-02004	Pratt Canyon	4/25/1994	1628576.232	1769119.231
AAB1458	35-02005	Pratt Canyon	4/21/1994	1628605.134	1769123.831
AAB1459	35-02006	Pratt Canyon	4/28/1994	1628560.008	1769068.171
AAB1460	35-02008	Pratt Canyon	4/14/1994	1628640.033	1769177.404
AAB1509	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1510	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1511	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1512	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1513	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1514	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1515	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1516	35-02069	Ten Site Canyon	5/19/1994	1629441.13	1768984.92
AAB1517	35-02216	Ten Site Canyon	5/23/1994	1629589.63	1769183.23
AAB1518	35-02216	Ten Site Canyon	5/23/1994	1629589.63	1769183.23
AAB1519	35-02216	Ten Site Canyon	5/23/1994	1629589.63	1769183.23
AAB1520	35-02216	Ten Site Canyon	5/23/1994	1629589.63	1769183.23

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAB1521	35-02216	Ten Site Canyon	5/23/1994	1629589.63	1769183.23
AAB1523	35-02216	Ten Site Canyon	5/23/1994	1629589.63	1769183.23
AAB1524	35-02216	Ten Site Canyon	5/24/1994	1629589.63	1769183.23
AAB1525	35-02216	Ten Site Canyon	5/24/1994	1629589.63	1769183.23
AAB4217	35-02243	Pratt Canyon	6/15/1994	1629090.84	1769190.84
AAB4218	35-02243	Pratt Canyon	6/15/1994	1629090.84	1769190.84
AAB4219	35-02243	Pratt Canyon	6/15/1994	1629090.84	1769190.84
AAB4220	35-02244	Pratt Canyon	6/15/1994	1629095.81	1769204.11
AAB4221	35-02244	Pratt Canyon	6/15/1994	1629095.81	1769204.11
AAB4222	35-02244	Pratt Canyon	6/15/1994	1629095.81	1769204.11
AAB4223	35-02245	Pratt Canyon	6/15/1994	1629097.63	1769215.82
AAB4225	35-02245	Pratt Canyon	6/15/1994	1629097.63	1769215.82
AAB4226	35-02245	Pratt Canyon	6/15/1994	1629097.63	1769215.82
AAB4227	35-02246	Pratt Canyon	6/15/1994	1628864.14	1769182.43
AAB4228	35-02246	Pratt Canyon	6/15/1994	1628864.14	1769182.43
AAB4229	35-02246	Pratt Canyon	6/15/1994	1628864.14	1769182.43
AAB4233	35-02247	Pratt Canyon	6/16/1994	1628862.39	1769193.33
AAB4234	35-02247	Pratt Canyon	6/16/1994	1628862.39	1769193.33
AAB4235	35-02247	Pratt Canyon	6/16/1994	1628862.39	1769193.33
AAB4236	35-02248	Pratt Canyon	6/16/1994	1628857.24	1769204.32
AAB4238	35-02248	Pratt Canyon	6/16/1994	1628857.24	1769204.32
AAB4239	35-02248	Pratt Canyon	6/16/1994	1628857.24	1769204.32
AAB4240	35-02030	Pratt Canyon	6/16/1994	1628724.74	1769137.4
AAB4245	35-02093	Pratt Canyon	10/27/1994	1628779.2	1769341.82
AAB4246	35-02094	Pratt Canyon	10/27/1994	1628780.17	1769340.93
AAB4247	35-02094	Pratt Canyon	10/27/1994	1628780.17	1769340.93
AAB4248	35-02094	Pratt Canyon	10/27/1994	1628780.17	1769340.93
AAB4257	35-02254	Mortandad Slope	10/26/1994	1628304.17	1769632.4
AAB4258	35-02255	Mortandad Slope	10/26/1994	1628304.75	1769635.72
AAB4259	35-02255	Mortandad Slope	10/26/1994	1628304.75	1769635.72
AAB4260	35-02255	Mortandad Slope	10/26/1994	1628304.75	1769635.72
AAB4261	35-02256	Mortandad Slope	10/27/1994	1628610.02	1769519.38
AAB4262	35-02257	Mortandad Slope	10/27/1994	1628611.33	1769522.79
AAB4263	35-02257	Mortandad Slope	10/27/1994	1628611.33	1769522.79
AAB4264	35-02257	Mortandad Slope	10/27/1994	1628611.33	1769522.79
AAB4269	35-02032	Mortandad Slope	6/24/1994	1627355.67	1769805.99
AAB4270	35-02032	Mortandad Slope	6/24/1994	1627355.67	1769805.99
AAB4271	35-02032	Mortandad Slope	6/24/1994	1627355.67	1769805.99
AAB4272	35-02213	Mortandad Slope	6/24/1994	1627335.69	1769797.93

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAB4274	35-02213	Mortandad Slope	6/24/1994	1627335.69	1769797.93
AAB4275	35-02213	Mortandad Slope	6/24/1994	1627335.69	1769797.93
AAB4276	35-02250	Mortandad Slope	6/23/1994	1627356.97	1769778.84
AAB4277	35-02250	Mortandad Slope	6/23/1994	1627356.97	1769778.84
AAB4278	35-02250	Mortandad Slope	6/23/1994	1627356.97	1769778.84
AAB4282	35-02028	Pratt Canyon	10/31/1994	1629013.26	1769223.5
AAB4283	35-02028	Pratt Canyon	10/31/1994	1629013.26	1769223.5
AAB4284	35-02028	Pratt Canyon	10/31/1994	1629013.26	1769223.5
AAB4285	35-02028	Pratt Canyon	10/31/1994	1629013.26	1769223.5
AAB5769	60-01000	Sigma Mesa	7/12/1994	1628800.88	1770675.73
AAB5775	60-01014	Sigma Mesa	7/8/1994	1628853.95	1770411.88
AAB5787	60-01009	Sigma Mesa	7/6/1994	1628838.74	1770434
AAB5788	60-01014	Sigma Mesa	7/6/1994	1628853.95	1770411.88
AAB5789	60-01014	Sigma Mesa	7/6/1994	1628853.95	1770411.88
AAB5790	60-01016	Sigma Mesa	7/6/1994	1628910.33	1770391.18
AAB5793	60-01017	Sigma Mesa	7/7/1994	1628883.4	1770446.25
AAB5794	60-01019	Sigma Mesa	7/7/1994	1628855.71	1770574.2
AAB5796	60-01021	Sigma Mesa	7/7/1994	1628922.54	1770569.81
AAB5799	60-01024	Sigma Mesa	7/7/1994	1628916.16	1770578.17
AAB5801	60-01025	Sigma Mesa	7/7/1994	1628837.05	1770551.15
AAB5803	60-01024	Sigma Mesa	7/7/1994	1628916.16	1770578.17
AAB5804	60-01019	Sigma Mesa	7/7/1994	1628855.71	1770574.2
AAB5805	60-01208	Sigma Mesa	7/13/1994	1627731.62	1770847.67
AAB5806	60-01026	Sigma Mesa	7/7/1994	1628875.59	1770592.01
AAB5807	60-01206	Sigma Mesa	7/13/1994	1627723.56	1770833.46
AAB5821	60-01200	Sigma Mesa	7/8/1994	1627784.17	1770901.8
AAB5822	60-01201	Sigma Mesa	7/8/1994	1627791.51	1770899.95
AAB5823	60-01200	Sigma Mesa	7/8/1994	1627784.17	1770901.8
AAB5824	60-01201	Sigma Mesa	7/8/1994	1627791.51	1770899.95
AAB5827	60-01202	Sigma Mesa	7/8/1994	1627786.01	1770875.02
AAB5828	60-01203	Sigma Mesa	7/8/1994	1627780.84	1770851
AAB5829	60-01202	Sigma Mesa	7/8/1994	1627786.01	1770875.02
AAB5830	60-01203	Sigma Mesa	7/8/1994	1627780.84	1770851
AAB5835	60-01206	Sigma Mesa	7/13/1994	1627723.56	1770833.46
AAB5836	60-01207	Sigma Mesa	7/13/1994	1627722.43	1770844.15
AAB5844	60-01211	Sigma Mesa	7/8/1994	1627756.98	1770780.12
AAB5845	60-01212	Sigma Mesa	7/8/1994	1627693.36	1770792.58
AAB5846	60-01213	Sigma Mesa	7/8/1994	1627685.62	1770848.47
AAB5847	60-01214	Sigma Mesa	7/8/1994	1627704.88	1770911.26

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAB5848	60-01215	Sigma Mesa	7/8/1994	1627774.33	1770894.72
AAB5849	60-01216	Sigma Mesa	7/8/1994	1627779.69	1770845.34
AAB5850	60-01211	Sigma Mesa	7/8/1994	1627756.98	1770780.12
AAB5851	60-01212	Sigma Mesa	7/8/1994	1627693.36	1770792.58
AAB5852	60-01213	Sigma Mesa	7/8/1994	1627685.62	1770848.47
AAB5853	60-01214	Sigma Mesa	7/8/1994	1627704.88	1770911.26
AAB5854	60-01215	Sigma Mesa	7/8/1994	1627774.33	1770894.72
AAB5855	60-01216	Sigma Mesa	7/8/1994	1627779.69	1770845.34
AAB5875	60-01003	Sigma Mesa	7/12/1994	1628811.72	1770673.33
AAC1133	35-02112	Pratt Canyon	2/27/1995	1628507.87	1769287.96
AAC1137	35-02114	Ten Site Slope	3/1/1995	1628167.85	1769019.72
AAC1138	35-02114	Ten Site Slope	3/1/1995	1628167.85	1769019.72
AAC1139	35-02114	Ten Site Slope	3/1/1995	1628167.85	1769019.72
AAC1140	35-02214	Pratt Canyon	2/27/1995	1628720.9	1769170.67
AAC1141	35-02106	Ten Site Slope	3/1/1995	1628086.76	1769020.75
AAC1142	35-02107	Ten Site Slope	3/1/1995	1628132.15	1769082.97
AAC1144	35-02107	Ten Site Slope	3/1/1995	1628132.15	1769082.97
AAC1146	35-02115	Ten Site Slope	3/1/1995	1628165.44	1768998.08
AAC1147	35-02116	Ten Site Slope	3/1/1995	1628153.89	1768968.11
AAC1148	35-02117	Ten Site Slope	3/1/1995	1628119.98	1768884.33
AAC1153	35-02097	Mesa Top	3/3/1995	1628026.99	1769192.03
AAC1154	35-02098	Mesa Top	3/3/1995	1628050.07	1769191.56
AAC1158	35-02103	Ten Site Slope	3/3/1995	1627990.41	1769131.25
AAC1159	35-02104	Ten Site Slope	3/3/1995	1627948.99	1769118.19
AAC1160	35-02105	Ten Site Slope	3/3/1995	1628002.29	1769165.88
AAC1162	35-02105	Ten Site Slope	3/3/1995	1628002.29	1769165.88
AAC1165	35-02108	Ten Site Slope	3/6/1995	1627779.07	1769084.92
AAC1169	35-02110	Ten Site Slope	3/6/1995	1627867.02	1769153.37
AAC1171	35-02111	Ten Site Slope	3/6/1995	1627864.04	1769169
AAC1173	35-02111	Ten Site Slope	3/6/1995	1627864.04	1769169
AAC1177	35-02100	Ten Site Slope	3/6/1995	1627752.12	1769173.79
AAC1178	35-02101	Ten Site Slope	3/6/1995	1627741.23	1769158.12
AAC1179	35-02102	Ten Site Slope	3/6/1995	1627751.14	1769180
AAC1208	35-02155	Mortandad Slope	3/14/1995	1627106	1769721
AAC1209	35-02155	Mortandad Slope	3/14/1995	1627106	1769721
AAC1227	35-02126	Mortandad Slope	3/15/1995	1627243	1769720
AAC1240	35-02130	Mortandad Slope	3/15/1995	1627363	1769726
AAC1259	35-02136	Mortandad Slope	3/20/1995	1627361	1769753
AAC1288	35-02121	Mortandad Slope	3/27/1995	1627491	1769754

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
AAC3331	35-02174	Mesa Top	3/7/1995	1627244.53	1769226.95
AAC3336	35-02179	Mesa Top	3/7/1995	1627209.03	1769280.95
AAC3344	35-02182	Mesa Top	3/7/1995	1627221.95	1769213.69
AAC3346	35-02182	Mesa Top	3/7/1995	1627221.95	1769213.69
XAAB4219	35-02028	Pratt Canyon	11/1/1994	1629013.26	1769223.5
XAAB4229	35-02028	Pratt Canyon	11/2/1994	1629013.26	1769223.5
XAAB4239	35-02028	Pratt Canyon	11/3/1994	1629013.26	1769223.5
XAAB4257	35-02251	Mortandad Slope	6/24/1994	1627338.12	1769781.76
XAAB4258	35-02251	Mortandad Slope	6/24/1994	1627338.12	1769781.76
XAAB4259	35-02251	Mortandad Slope	6/24/1994	1627338.12	1769781.76
XAAB4263	35-02253	Mortandad Slope	6/23/1994	1627343.82	1769767.5
XAAB4273	35-02028	Pratt Canyon	11/7/1994	1629013.26	1769223.5
0404-95-0002	04-02014	East Ten Site Slope	6/1/1995	1630665.738	1768470.423
0404-95-0004	04-02015	East Ten Site Slope	6/1/1995	1630543.706	1768632.876
0404-95-0005	04-02016	East Ten Site Slope	6/1/1995	1630762.788	1768455.189
0404-95-0006	04-02017	East Ten Site Slope	6/1/1995	1630840.239	1768470.287
0404-95-0007	04-02018	East Ten Site Slope	6/1/1995	1630988.46	1768388.172
0404-95-0008	04-02019	East Ten Site Slope	6/1/1995	1630912.824	1768480.151
0404-95-0009	04-02020	East Ten Site Slope	6/1/1995	1630664.562	1768349.235
0404-95-0010	04-02021	East Ten Site Slope	6/1/1995	1630822.199	1768387.227
0404-95-0012	04-02022	East Ten Site Slope	6/1/1995	1630998.077	1768483.42
0404-95-0013	04-02023	East Ten Site Slope	6/1/1995	1630760.343	1768360.606
0404-95-0017	04-02024	East Ten Site Slope	6/2/1995	1630772.627	1768550.534
0404-95-0020	04-02025	East Ten Site Slope	6/2/1995	1630781.542	1768645.005
0404-95-0021	04-02026	East Ten Site Slope	6/2/1995	1630790.905	1768551.977
0404-95-0022	04-02029	East Ten Site Slope	6/2/1995	1630775.88	1768581.466
0404-95-0024	04-02029	East Ten Site Slope	6/2/1995	1630775.88	1768581.466
0404-95-0025	04-02029	East Ten Site Slope	6/2/1995	1630775.88	1768581.466
0404-95-0026	04-02030	East Ten Site Slope	6/2/1995	1630787.987	1768584.992
0404-95-0027	04-02030	East Ten Site Slope	6/2/1995	1630787.987	1768584.992
0404-95-0028	04-02030	East Ten Site Slope	6/2/1995	1630787.987	1768584.992
0404-95-0029	04-02031	East Ten Site Slope	6/2/1995	1630797.318	1768583.188
0404-95-0030	04-02031	East Ten Site Slope	6/2/1995	1630797.318	1768583.188
0404-95-0032	04-02031	East Ten Site Slope	6/2/1995	1630797.318	1768583.188
0404-95-0034	04-02027	East Ten Site Slope	6/16/1995	1630756.174	1768414.691
0404-95-0036	04-02027	East Ten Site Slope	6/16/1995	1630756.174	1768414.691
0404-95-0038	04-02027	East Ten Site Slope	6/16/1995	1630756.174	1768414.691
0404-95-0039	04-02027	East Ten Site Slope	6/16/1995	1630756.174	1768414.691
0404-95-0040	04-02028	East Ten Site Slope	6/16/1995	1630759.892	1768432.672

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0404-95-0043	04-02028	East Ten Site Slope	6/16/1995	1630759.892	1768432.672
0404-95-0046	04-02028	East Ten Site Slope	6/16/1995	1630759.892	1768432.672
0404-95-0047	04-02028	East Ten Site Slope	6/16/1995	1630759.892	1768432.672
0404-95-0094	04-02011	East Ten Site Slope	6/26/1995	1630642.739	1768450.423
0404-95-0095	04-02011	East Ten Site Slope	6/26/1995	1630642.739	1768450.423
0404-95-0096	04-02011	East Ten Site Slope	6/26/1995	1630642.739	1768450.423
0404-95-0099	04-02012	East Ten Site Slope	6/26/1995	1630642.743	1768480.526
0404-95-0100	04-02012	East Ten Site Slope	6/26/1995	1630642.743	1768480.526
0404-95-0102	04-02012	East Ten Site Slope	6/26/1995	1630642.743	1768480.526
0404-95-0105	04-02013	East Ten Site Slope	6/26/1995	1630656.074	1768529.197
0404-95-0107	04-02013	East Ten Site Slope	6/26/1995	1630656.074	1768529.197
0404-95-0108	04-02013	East Ten Site Slope	6/26/1995	1630656.074	1768529.197
0405-95-0002	05-02009	East Ten Site Slope	6/23/1995	1634319.91	1767745.04
0405-95-0003	05-02009	East Ten Site Slope	6/23/1995	1634319.91	1767745.04
0405-95-0006	05-02009	East Ten Site Slope	6/23/1995	1634319.91	1767745.04
0405-95-0007	05-02010	East Ten Site Slope	6/23/1995	1634280.85	1767752.77
0405-95-0010	05-02010	East Ten Site Slope	6/23/1995	1634280.85	1767752.77
0405-95-0011	05-02010	East Ten Site Slope	3/23/1995	1634280.85	1767752.77
0405-95-0013	05-02011	East Ten Site Slope	6/23/1995	1634290.19	1767754.95
0405-95-0014	05-02011	East Ten Site Slope	6/23/1995	1634290.19	1767754.95
0405-95-0015	05-02011	East Ten Site Slope	6/23/1995	1634290.19	1767754.95
0405-95-0018	05-02012	East Ten Site Slope	6/23/1995	1634303.44	1767758.56
0405-95-0020	05-02012	East Ten Site Slope	6/23/1995	1634303.44	1767758.56
0405-95-0021	05-02012	East Ten Site Slope	6/23/1995	1634303.44	1767758.56
0405-95-0023	05-02013	East Ten Site Slope	6/23/1995	1634336.26	1767759.31
0405-95-0026	05-02013	East Ten Site Slope	6/23/1995	1634336.26	1767759.31
0405-95-0027	05-02013	East Ten Site Slope	6/23/1995	1634336.26	1767759.31
0405-95-0029	05-02014	East Ten Site Slope	6/23/1995	1634280.6	1767770.13
0405-95-0030	05-02015	East Ten Site Slope	6/23/1995	1634282.5	1767785.2
0405-95-0031	05-02016	East Ten Site Slope	6/23/1995	1634276.64	1767825.32
0405-95-0033	05-02017	East Ten Site Slope	6/23/1995	1634292.71	1767847.58
0405-95-0034	05-02018	East Ten Site Slope	6/23/1995	1634365.7	1767873.36
0405-95-0058	05-02050	East Ten Site Slope	6/20/1995	1634591.12	1767728.94
0405-95-0059	05-02051	East Ten Site Slope	6/20/1995	1634663.4	1767732.71
0405-95-0060	05-02052	East Ten Site Slope	6/20/1995	1634562.06	1767677.11
0405-95-0061	05-02053	East Ten Site Slope	6/20/1995	1634713.34	1767691.63
0405-95-0062	05-02054	East Ten Site Slope	6/20/1995	1634460.35	1767687.8
0405-95-0064	05-02054	East Ten Site Slope	6/20/1995	1634460.35	1767687.8
0405-95-0066	05-02054	East Ten Site Slope	6/20/1995	1634460.35	1767687.8

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0405-95-0068	05-02054	East Ten Site Slope	6/20/1995	1634460.35	1767687.8
0405-95-0069	05-02055	East Ten Site Slope	6/20/1995	1634469.3	1767700.55
0405-95-0070	05-02055	East Ten Site Slope	6/20/1995	1634469.3	1767700.55
0405-95-0071	05-02055	East Ten Site Slope	6/20/1995	1634469.3	1767700.55
0405-95-0072	05-02055	East Ten Site Slope	6/20/1995	1634469.3	1767700.55
0405-95-0073	05-02056	East Ten Site Slope	6/20/1995	1634612.31	1767681.03
0405-95-0074	05-02056	East Ten Site Slope	6/20/1995	1634612.31	1767681.03
0405-95-0076	05-02056	East Ten Site Slope	6/20/1995	1634612.31	1767681.03
0405-95-0077	05-02056	East Ten Site Slope	6/20/1995	1634612.31	1767681.03
0405-95-0079	05-02057	East Ten Site Slope	6/20/1995	1634621.9	1767694.1
0405-95-0081	05-02057	East Ten Site Slope	6/20/1995	1634621.9	1767694.1
0405-95-0082	05-02057	East Ten Site Slope	6/20/1995	1634621.9	1767694.1
0405-95-0083	05-02057	East Ten Site Slope	6/20/1995	1634621.9	1767694.1
0405-95-0085	05-02045	East Ten Site Slope	6/21/1995	1634380.57	1767715.09
0405-95-0087	05-02046	East Ten Site Slope	6/21/1995	1634435.92	1767721.6
0405-95-0089	05-02047	East Ten Site Slope	6/21/1995	1634378.25	1767682.33
0405-95-0092	05-02048	East Ten Site Slope	6/21/1995	1634426.08	1767685.17
0405-95-0094	05-02049	East Ten Site Slope	6/21/1995	1634506.42	1767689.33
0405-95-0192	05-02058	East Ten Site Slope	6/22/1995	1634447.55	1767792.74
0405-95-0194	05-02059	East Ten Site Slope	6/22/1995	1634562.1	1767818.43
0405-95-0196	05-02060	East Ten Site Slope	6/22/1995	1634758.88	1767793
0405-95-0197	05-02061	East Ten Site Slope	6/22/1995	1634451.36	1767930.48
0405-95-0198	05-02062	East Ten Site Slope	6/22/1995	1634530.68	1767927.48
0405-95-0199	05-02063	East Ten Site Slope	6/22/1995	1634733.75	1767895.05
0405-95-0201	05-02064	East Ten Site Slope	6/22/1995	1634424.1	1767765.95
0405-95-0202	05-02064	East Ten Site Slope	6/22/1995	1634424.1	1767765.95
0405-95-0203	05-02064	East Ten Site Slope	6/22/1995	1634424.1	1767765.95
0405-95-0204	05-02065	East Ten Site Slope	6/22/1995	1634504.78	1767813.96
0405-95-0205	05-02065	East Ten Site Slope	6/22/1995	1634504.78	1767813.96
0405-95-0206	05-02065	East Ten Site Slope	6/22/1995	1634504.78	1767813.96
0405-95-0207	05-02066	East Ten Site Slope	6/22/1995	1634618.52	1767818.11
0405-95-0209	05-02066	East Ten Site Slope	6/22/1995	1634618.52	1767818.11
0405-95-0210	05-02066	East Ten Site Slope	6/22/1995	1634618.52	1767818.11
0405-95-0211	05-02067	East Ten Site Slope	6/22/1995	1634684.38	1767807.69
0405-95-0212	05-02067	East Ten Site Slope	6/22/1995	1634684.38	1767807.69
0405-95-0214	05-02067	East Ten Site Slope	6/22/1995	1634684.38	1767807.69
0405-95-0217	05-02007	East Ten Site Slope	6/28/1995	1634289.44	1767728.56
0405-95-0219	05-02007	East Ten Site Slope	6/28/1995	1634289.44	1767728.56
0405-95-0221	05-02007	East Ten Site Slope	6/28/1995	1634289.44	1767728.56

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0405-95-0224	05-02008	East Ten Site Slope	6/28/1995	1634305.02	1767736.54
0405-95-0225	05-02008	East Ten Site Slope	6/28/1995	1634305.02	1767736.54
0405-95-0226	05-02008	East Ten Site Slope	6/28/1995	1634305.02	1767736.54
0405-95-0228	05-02068	East Ten Site Slope	6/28/1995	1634289.54	1767680.14
0405-95-0230	05-02069	East Ten Site Slope	6/28/1995	1634295.56	1767689.24
0405-95-0232	05-02026	East Ten Site Slope	6/29/1995	1635415.26	1767349.71
0405-95-0234	05-02026	East Ten Site Slope	6/29/1995	1635415.26	1767349.71
0405-95-0235	05-02026	East Ten Site Slope	6/29/1995	1635415.26	1767349.71
0405-95-0237	05-02027	East Ten Site Slope	6/29/1995	1635499.25	1767305.23
0405-95-0238	05-02027	East Ten Site Slope	6/29/1995	1635499.25	1767305.23
0405-95-0239	05-02027	East Ten Site Slope	6/29/1995	1635499.25	1767305.23
0405-95-0240	05-02028	East Ten Site Slope	6/29/1995	1635990.55	1767274.07
0405-95-0241	05-02029	East Ten Site Slope	6/29/1995	1635365.88	1767317.54
0405-95-0243	05-02030	East Ten Site Slope	6/29/1995	1635416.06	1767336.55
0405-95-0244	05-02030	East Ten Site Slope	6/29/1995	1635416.06	1767336.55
0405-95-0245	05-02030	East Ten Site Slope	6/29/1995	1635416.06	1767336.55
0405-95-0247	05-02031	East Ten Site Slope	6/29/1995	1635428.71	1767334.95
0405-95-0248	05-02031	East Ten Site Slope	6/29/1995	1635428.71	1767334.95
0405-95-0249	05-02031	East Ten Site Slope	6/29/1995	1635428.71	1767334.95
0405-95-0253	05-02019	East Ten Site Slope	6/29/1995	1635418.52	1767466.1
0405-95-0254	05-02020	East Ten Site Slope	6/29/1995	1635521.01	1767389.21
0405-95-0256	05-02021	East Ten Site Slope	6/29/1995	1635640.75	1767344.87
0405-95-0258	05-02022	East Ten Site Slope	6/29/1995	1635779.44	1767270.76
0405-95-0259	05-02023	East Ten Site Slope	6/29/1995	1636006.59	1767321.12
0405-95-0260	05-02024	East Ten Site Slope	6/29/1995	1635373.62	1767351.17
0405-95-0261	05-02025	East Ten Site Slope	6/29/1995	1635411.39	1767344.15
0405-95-0263	05-02032	East Ten Site Slope	6/29/1995	1635716.15	1767199.37
0405-95-0264	05-02033	East Ten Site Slope	6/29/1995	1636046.84	1767194.74
0405-95-0266	05-02034	East Ten Site Slope	6/29/1995	1635445.74	1767233.27
0405-95-0267	05-02035	East Ten Site Slope	6/29/1995	1635881.24	1767090.17
0405-95-0268	05-02036	East Ten Site Slope	6/29/1995	1636276.44	1766767.37
0405-95-0269	05-02037	East Ten Site Slope	6/29/1995	1636533	1766983
0405-95-0270	05-02038	East Ten Site Slope	6/29/1995	1636595	1766792
0435-95-0002	35-02189	Ten Site Slope	4/18/1995	1627595.56	1769198.77
0435-95-0005	35-02190	Ten Site Slope	4/18/1995	1627578.11	1769187.62
0435-95-0009	35-02190	Ten Site Slope	4/18/1995	1627578.11	1769187.62
0435-95-0011	35-02167	Ten Site Slope	4/12/1995	1627414.96	1769188.71
0435-95-0013	35-02168	Ten Site Slope	4/12/1995	1627425.52	1769184.9
0435-95-0015	35-02168	Ten Site Slope	4/12/1995	1627425.52	1769184.9

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-95-0019	35-02168	Ten Site Slope	4/12/1995	1627425.52	1769184.9
0435-95-0021	35-02169	Ten Site Slope	4/12/1995	1627359.04	1769166.57
0435-95-0023	35-02170	Ten Site Slope	4/12/1995	1627384.4	1769163.24
0435-95-0028	35-02171	Ten Site Slope	4/12/1995	1627398.32	1769160.91
0435-95-0030	35-02171	Ten Site Slope	4/12/1995	1627398.32	1769160.91
0435-95-0033	35-02183	Ten Site Slope	4/14/1995	1627206.7	1769074.32
0435-95-0040	35-02185	Ten Site Slope	4/14/1995	1627206.19	1769029.38
0435-95-0043	35-02185	Ten Site Slope	4/14/1995	1627206.19	1769029.38
0435-95-0045	35-02186	Ten Site Slope	4/14/1995	1627266.43	1769039.65
0435-95-0048	35-02187	Ten Site Slope	4/14/1995	1627213.7	1768983.98
0435-95-0050	35-02187	Ten Site Slope	4/14/1995	1627213.7	1768983.98
0435-95-0052	35-02188	Ten Site Slope	4/17/1995	1627227.56	1768917.84
0435-95-0054	35-02188	Ten Site Slope	4/17/1995	1627227.56	1768917.84
0435-95-0056	35-02191	Ten Site Slope	4/18/1995	1626825.51	1769052.29
0435-95-0060	35-02192	Ten Site Slope	4/18/1995	1626828.89	1769045.15
0435-95-0063	35-02192	Ten Site Slope	4/18/1995	1626828.89	1769045.15
0435-95-0091	35-02198	Ten Site Canyon	4/24/1995	1630119.255	1769110.467
0435-95-0093	35-02199	Ten Site Canyon	4/24/1995	1630246.066	1769160.739
0435-95-0094	35-02200	Ten Site Canyon	4/24/1995	1630197.916	1769162.985
0435-95-0095	35-02201	Ten Site Canyon	4/24/1995	1630148.979	1769162.228
0435-95-0096	35-02202	Ten Site Canyon	4/24/1995	1630021.722	1769178.158
0435-95-0097	35-02203	Ten Site Canyon	4/24/1995	1629920.468	1769156.238
0435-95-0098	35-02204	Ten Site Canyon	4/24/1995	1630264.779	1769117.83
0435-95-0099	35-02205	Ten Site Canyon	4/24/1995	1630440.711	1769006.949
0435-95-0101	35-02206	Ten Site Canyon	4/24/1995	1630094.012	1768950.607
0435-95-0103	35-02207	Ten Site Canyon	4/24/1995	1630323.745	1768986.02
0435-95-0106	35-02235	Ten Site Canyon	4/24/1995	1630477.235	1768897.565
0435-95-0108	35-02236	Ten Site Canyon	4/24/1995	1630081.86	1768901.786
0435-95-0112	35-02193	Ten Site Canyon	4/24/1995	1630285.142	1768929.337
0435-95-0113	35-02193	Ten Site Canyon	4/24/1995	1630285.142	1768929.337
0435-95-0115	35-02193	Ten Site Canyon	4/24/1995	1630285.142	1768929.337
0435-95-0118	35-02194	Ten Site Canyon	4/24/1995	1630331.686	1768937.923
0435-95-0120	35-02194	Ten Site Canyon	4/24/1995	1630331.686	1768937.923
0435-95-0122	35-02194	Ten Site Canyon	4/24/1995	1630331.686	1768937.923
0435-95-0123	35-02195	Ten Site Canyon	4/24/1995	1630384.952	1768982.841
0435-95-0124	35-02196	Ten Site Canyon	4/24/1995	1630399.976	1768902.227
0435-95-0127	35-02197	Ten Site Canyon	4/24/1995	1630405.875	1768897.079
0435-95-0128	35-02197	Ten Site Canyon	4/24/1995	1630405.875	1768897.079
0435-95-0129	35-02197	Ten Site Canyon	4/24/1995	1630405.875	1768897.079

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-95-0140	35-02262	Mesa Top	10/7/1995	1628383.64	1769346.48
0435-95-0162	35-02268	Mesa Top	10/7/1995	1628383.08	1769319.94
0435-95-0165	35-02268	Mesa Top	10/7/1995	1628383.08	1769319.94
0435-95-0168	35-02269	Mesa Top	11/30/1995	1628212	1769363
0435-95-0191	35-02277	Pratt Canyon	12/7/1995	1628823.5	1769439.38
0435-95-0192	35-02277	Pratt Canyon	12/7/1995	1628823.5	1769439.38
0435-95-0194	35-02279	Mortandad Slope	12/7/1995	1628229.63	1769641.44
0435-95-0194	35-02279	Pratt Canyon	12/7/1995	1628229.63	1769641.44
0435-95-0195	35-02280	Mesa Top	12/8/1995	1628491.91	1769125.44
0435-95-0196	35-02281	Pratt Canyon	12/8/1995	1628650.14	1769116.91
0435-95-0197	35-02278	Ten Site Slope	12/8/1995	1627711.25	1769128.59
0435-95-0198	35-02285	Mesa Top	12/8/1995	1627261.64	1769244.42
0435-95-0199	35-02286	Mesa Top	12/8/1995	1627221.78	1769212.51
0435-95-0200	35-02286	Mesa Top	12/8/1995	1627221.78	1769212.51
0435-95-0201	35-02287	Ten Site Slope	12/8/1995	1627399.66	1769160.55
0435-95-0202	35-02282	Mortandad Slope	12/11/1995	1627348.67	1769767.31
0435-95-0203	35-02282	Mortandad Slope	12/11/1995	1627348.67	1769767.31
0435-95-0204	35-02283	Mortandad Slope	12/11/1995	1627353.52	1769809.09
0435-95-0205	35-02284	Mortandad Slope	12/11/1995	1627106.38	1769721.98
0435-95-0206	35-02028	Pratt Canyon	12/8/1995	1629013.26	1769223.5
0435-95-0208	35-02028	Pratt Canyon	12/8/1995	1629013.26	1769223.5
0435-95-0209	35-02028	Pratt Canyon	12/8/1995	1629013.26	1769223.5
0435-95-0211	35-02288	Mesa Top	12/18/1995	1628369.78	1769416.42
0435-95-0212	35-02288	Mesa Top	12/18/1995	1628369.78	1769416.42
0435-95-0213	35-02288	Mesa Top	12/18/1995	1628369.78	1769416.42
0435-95-0214	35-02288	Mesa Top	12/18/1995	1628369.78	1769416.42
0435-95-0215	35-02289	Mesa Top	12/18/1995	1628380.02	1769426.89
0435-95-0216	35-02289	Mesa Top	12/18/1995	1628380.02	1769426.89
0435-95-0217	35-02289	Mesa Top	12/18/1995	1628380.02	1769426.89
0435-95-0218	35-02289	Mesa Top	12/18/1995	1628380.02	1769426.89
0435-95-0219	35-02291	Mesa Top	12/18/1995	1628349.27	1769343.78
0435-95-0220	35-02291	Mesa Top	12/18/1995	1628349.27	1769343.78
0435-95-0221	35-02291	Mesa Top	12/18/1995	1628349.27	1769343.78
0435-95-0222	35-02291	Mesa Top	12/18/1995	1628349.27	1769343.78
0435-95-0223	35-02292	Mesa Top	12/18/1995	1628332.97	1769357.42
0435-95-0224	35-02292	Mesa Top	12/18/1995	1628332.97	1769357.42
0435-95-0226	35-02292	Mesa Top	12/18/1995	1628332.97	1769357.42
0435-95-0227	35-02293	Mesa Top	12/18/1995	1628353.12	1769324.95
0435-95-0228	35-02293	Mesa Top	12/18/1995	1628353.12	1769324.95

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-95-0229	35-02293	Mesa Top	12/18/1995	1628353.12	1769324.95
0435-95-0230	35-02293	Mesa Top	12/18/1995	1628353.12	1769324.95
0435-95-0231	35-02290	Mesa Top	12/19/1995	1628409.3	1769426.14
0435-95-0232	35-02290	Mesa Top	12/19/1995	1628409.3	1769426.14
0435-95-0233	35-02290	Mesa Top	12/19/1995	1628409.3	1769426.14
0435-95-0234	35-02294	Mesa Top	12/19/1995	1628368.1	1769346.57
0435-95-0235	35-02294	Mesa Top	12/19/1995	1628368.1	1769346.57
0435-95-0236	35-02294	Mesa Top	12/19/1995	1628368.1	1769346.57
0435-96-0003	35-02270	Mesa Top	5/1/1996	1628340	1769312
0435-96-0006	35-02271	Mesa Top	1/22/1996	1628180	1769270
0435-96-0010	35-02272	Mesa Top	8/15/1996	1628279	1769234
0435-96-0013	35-02273	Mesa Top	10/14/1996	1628404	1769284
0435-96-0016	35-02274	Mesa Top	10/23/1996	1628486	1769250
0435-96-0019	35-02275	Mesa Top	5/1/1996	1628274	1769230
0435-96-0022	35-02276	Mesa Top	4/15/1996	1628261	1769234
0435-96-0030	35-02295	Mesa Top	8/28/1996	1628383	1769261
0435-96-0031	35-02295	Mesa Top	8/28/1996	1628383	1769261
0435-96-0034	35-02296	Mesa Top	9/24/1996	1628378	1769247
0435-96-0035	35-02296	Mesa Top	9/24/1996	1628378	1769247
0435-96-0038	35-02297	Mesa Top	9/24/1996	1628374	1769237
0435-96-0039	35-02297	Mesa Top	9/24/1996	1628374	1769237
0435-96-0042	35-02298	Mesa Top	12/18/1996	1628380	1769286
0435-96-0043	35-02298	Mesa Top	12/18/1996	1628380	1769286
0435-96-0045	35-02299	Mesa Top	12/18/1996	1628372	1769290
0435-96-0046	35-02299	Mesa Top	12/18/1996	1628372	1769290
0435-96-0049	35-02300	Mesa Top	12/18/1996	1628372	1769262
0435-96-0050	35-02300	Mesa Top	12/18/1996	1628372	1769262
0435-96-0051	35-02301	Mesa Top	4/15/1996	1628082	1769209
0435-96-0052	35-02302	Mesa Top	4/15/1996	1628077	1769210
0435-96-0054	35-02394	Ten Site Slope	6/5/1996	1628108.94	1769085.44
0435-96-0055	35-02394	Ten Site Slope	6/5/1996	1628108.94	1769085.44
0435-96-0056	35-02395	Ten Site Slope	6/5/1996	1628092.8	1769033.91
0435-96-0057	35-02395	Ten Site Slope	6/5/1996	1628092.8	1769033.91
0435-96-0058	35-02396	Ten Site Slope	6/5/1996	1627787.88	1769083.09
0435-96-0059	35-02396	Ten Site Slope	6/5/1996	1627787.88	1769083.09
0435-96-0060	35-02397	Ten Site Slope	6/5/1996	1627813.7	1769071.82
0435-96-0061	35-02397	Ten Site Slope	6/5/1996	1627813.7	1769071.82
0435-96-0062	35-02398	Ten Site Slope	6/5/1996	1627864.41	1769151.55
0435-96-0063	35-02398	Ten Site Slope	6/5/1996	1627864.41	1769151.55

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-96-0064	35-02399	Ten Site Slope	6/5/1996	1627859.84	1769120.74
0435-96-0065	35-02399	Ten Site Slope	6/5/1996	1627859.84	1769120.74
0435-96-0067	35-02400	Ten Site Slope	6/5/1996	1627837.71	1769050.43
0435-96-0068	35-02400	Ten Site Slope	6/5/1996	1627837.71	1769050.43
0435-96-0069	35-02401	Ten Site Slope	6/5/1996	1627871.52	1768979.71
0435-96-0070	35-02401	Ten Site Slope	6/5/1996	1627871.52	1768979.71
0435-96-0077	35-02364	Mesa Top	6/7/1996	1627316.02	1769661.84
0435-96-0078	35-02364	Mesa Top	6/7/1996	1627316.02	1769661.84
0435-96-0079	35-02393	Mesa Top	6/7/1996	1627330.51	1769646.05
0435-96-0081	35-02393	Mesa Top	6/7/1996	1627330.51	1769646.05
0435-96-0083	35-02353	Mesa Top	6/19/1996	1628373	1769340
0435-96-0084	35-02354	Mesa Top	6/19/1996	1628372	1769349
0435-96-0085	35-02355	Mesa Top	6/19/1996	1628391	1769350
0435-96-0086	35-02356	Mesa Top	6/19/1996	1628405	1769344
0435-96-0093	35-02402	Mesa Top	7/25/1996	1628385	1769345
0435-96-0094	35-02403	Mesa Top	7/25/1996	1628397	1769338
0435-96-0095	35-02404	Mesa Top	7/25/1996	1628400	1769330
0435-96-0096	35-02405	Mesa Top	7/25/1996	1627316	1769661
0435-96-0097	35-02406	Mesa Top	8/5/1996	1628391	1769341
0435-96-0098	35-02407	Mesa Top	8/5/1996	1628402	1769336
0435-96-0143	35-02428	Mesa Top	8/29/1996	1627325	1769640
0435-96-0144	35-02429	Mesa Top	8/29/1996	1627328	1769651
0435-96-0145	35-02430	Mesa Top	8/29/1996	1627322	1769670
0435-96-0146	35-02431	Mesa Top	8/29/1996	1627316	1769663
0435-96-0153	35-02437	Mesa Top	10/2/1996	1628417	1769252
0435-96-0154	35-02437	Mesa Top	10/2/1996	1628417	1769252
0435-96-0156	35-02438	Mesa Top	10/2/1996	1628433	1769244
0435-96-0157	35-02438	Mesa Top	10/2/1996	1628433	1769244
0435-96-0158	35-02439	Mesa Top	10/2/1996	1628461	1769228
0435-96-0159	35-02439	Mesa Top	10/3/1996	1628461	1769228
0435-96-0160	35-02440	Mesa Top	10/3/1996	1628483	1769235
0435-96-0161	35-02440	Mesa Top	10/3/1996	1628483	1769235
0435-96-0162	35-02441	Mesa Top	10/3/1996	1628398	1769235
0435-96-0163	35-02441	Mesa Top	10/3/1996	1628398	1769235
0435-96-0165	35-02442	Mesa Top	10/3/1996	1628426	1769226
0435-96-0166	35-02442	Mesa Top	10/3/1996	1628426	1769226
0435-96-0167	35-02443	Mesa Top	10/3/1996	1628444	1769206
0435-96-0168	35-02443	Mesa Top	10/3/1996	1628444	1769206
0435-96-0169	35-02444	Mesa Top	10/3/1996	1628400	1769209

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-96-0170	35-02444	Mesa Top	10/3/1996	1628400	1769209
0435-96-0171	35-02445	Mesa Top	10/3/1996	1628430	1769198
0435-96-0172	35-02445	Mesa Top	10/3/1996	1628430	1769198
0435-96-0173	35-02446	Mesa Top	10/3/1996	1628433	1769178
0435-96-0174	35-02446	Mesa Top	10/3/1996	1628433	1769178
0435-97-0001	35-02303	Mesa Top	4/16/1997	1628482.5	1769210.15
0435-97-0002	35-02303	Mesa Top	4/16/1997	1628482.5	1769210.15
0435-97-0004	35-02303	Mesa Top	4/16/1997	1628482.5	1769210.15
0435-97-0005	35-02303	Mesa Top	4/16/1997	1628482.5	1769210.15
0435-97-0007	35-02304	Mesa Top	4/16/1997	1628483.99	1769197.12
0435-97-0008	35-02304	Mesa Top	4/16/1997	1628483.99	1769197.12
0435-97-0009	35-02304	Mesa Top	4/16/1997	1628483.99	1769197.12
0435-97-0010	35-02304	Mesa Top	4/16/1997	1628483.99	1769197.12
0435-97-0012	35-02305	Mesa Top	4/17/1997	1628473.22	1769190.01
0435-97-0013	35-02305	Mesa Top	4/17/1997	1628473.22	1769190.01
0435-97-0014	35-02305	Mesa Top	4/17/1997	1628473.22	1769190.01
0435-97-0015	35-02305	Mesa Top	4/17/1997	1628473.22	1769190.01
0435-97-0016	35-02305	Mesa Top	4/17/1997	1628473.22	1769190.01
0435-97-0017	35-02529	Mesa Top	4/18/1997	1628479.15	1769187.41
0435-97-0018	35-02529	Mesa Top	4/18/1997	1628479.15	1769187.41
0435-97-0019	35-02529	Mesa Top	4/18/1997	1628479.15	1769187.41
0435-97-0020	35-02529	Mesa Top	4/21/1997	1628479.15	1769187.41
0435-97-0021	35-02529	Mesa Top	4/18/1997	1628479.15	1769187.41
0435-97-0022	35-02307	Mesa Top	4/18/1997	1628478.76	1769144.69
0435-97-0023	35-02307	Mesa Top	4/18/1997	1628478.76	1769144.69
0435-97-0025	35-02307	Mesa Top	4/18/1997	1628478.76	1769144.69
0435-97-0026	35-02307	Mesa Top	4/18/1997	1628478.76	1769144.69
0435-97-0027	35-02307	Mesa Top	4/21/1997	1628478.76	1769144.69
0435-97-0028	35-02308	Mesa Top	4/22/1997	1628478.89	1769130.41
0435-97-0029	35-02308	Mesa Top	4/22/1997	1628478.89	1769130.41
0435-97-0030	35-02308	Mesa Top	4/22/1997	1628478.89	1769130.41
0435-97-0031	35-02308	Mesa Top	4/22/1997	1628478.89	1769130.41
0435-97-0033	35-02306	Mesa Top	4/21/1997	1628486.03	1769156.7
0435-97-0034	35-02306	Mesa Top	4/21/1997	1628486.03	1769156.7
0435-97-0035	35-02306	Mesa Top	4/21/1997	1628486.03	1769156.7
0435-97-0036	35-02306	Mesa Top	4/21/1997	1628486.03	1769156.7
0435-97-0038	35-02309	Mesa Top	4/22/1997	1628597.08	1769208.94
0435-97-0039	35-02309	Mesa Top	4/22/1997	1628597.08	1769208.94
0435-97-0040	35-02309	Mesa Top	4/22/1997	1628597.08	1769208.94

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0043	35-02310	Pratt Canyon	4/28/1997	1628625.95	1769161.18
0435-97-0044	35-02310	Pratt Canyon	4/28/1997	1628625.95	1769161.18
0435-97-0046	35-02310	Pratt Canyon	4/28/1997	1628625.95	1769161.18
0435-97-0047	35-02310	Pratt Canyon	4/28/1997	1628625.95	1769161.18
0435-97-0049	35-02311	Pratt Canyon	4/28/1997	1628643.81	1769138.57
0435-97-0050	35-02311	Pratt Canyon	4/28/1997	1628643.81	1769138.57
0435-97-0051	35-02311	Pratt Canyon	4/28/1997	1628643.81	1769138.57
0435-97-0052	35-02311	Pratt Canyon	4/28/1997	1628643.81	1769138.57
0435-97-0054	35-02312	Pratt Canyon	4/29/1997	1628642.5	1769113.02
0435-97-0055	35-02312	Pratt Canyon	4/29/1997	1628642.5	1769113.02
0435-97-0056	35-02312	Pratt Canyon	4/29/1997	1628642.5	1769113.02
0435-97-0057	35-02312	Pratt Canyon	4/29/1997	1628642.5	1769113.02
0435-97-0059	35-02526	Pratt Canyon	4/23/1997	1628581.97	1769165.26
0435-97-0060	35-02526	Pratt Canyon	4/23/1997	1628581.97	1769165.26
0435-97-0061	35-02526	Pratt Canyon	4/23/1997	1628581.97	1769165.26
0435-97-0062	35-02526	Pratt Canyon	4/23/1997	1628581.97	1769165.26
0435-97-0064	35-02527	Pratt Canyon	4/28/1997	1628566.36	1769149.66
0435-97-0065	35-02527	Pratt Canyon	4/28/1997	1628566.36	1769149.66
0435-97-0066	35-02527	Pratt Canyon	4/28/1997	1628566.36	1769149.66
0435-97-0067	35-02527	Pratt Canyon	4/28/1997	1628566.36	1769149.66
0435-97-0069	35-02528	Pratt Canyon	4/23/1997	1628606.73	1769188.99
0435-97-0071	35-02528	Pratt Canyon	4/23/1997	1628606.73	1769188.99
0435-97-0072	35-02528	Pratt Canyon	4/23/1997	1628606.73	1769188.99
0435-97-0073	35-02528	Pratt Canyon	4/23/1997	1628606.73	1769188.99
0435-97-0075	35-02370	Pratt Canyon	4/30/1997	1629352.37	1769107.07
0435-97-0076	35-02370	Pratt Canyon	4/30/1997	1629352.37	1769107.07
0435-97-0077	35-02370	Pratt Canyon	4/30/1997	1629352.37	1769107.07
0435-97-0078	35-02370	Pratt Canyon	4/30/1997	1629352.37	1769107.07
0435-97-0080	35-02370	Pratt Canyon	4/30/1997	1629352.37	1769107.07
0435-97-0104	35-02496	Mesa Top	6/26/1997	1627208.588	1769280.269
0435-97-0105	35-02496	Mesa Top	6/26/1997	1627208.588	1769280.269
0435-97-0107	35-02497	Mesa Top	6/26/1997	1627260.889	1769245.153
0435-97-0108	35-02497	Mesa Top	6/26/1997	1627260.889	1769245.153
0435-97-0112	35-02498	Mesa Top	6/26/1997	1627235.752	1769227.851
0435-97-0113	35-02498	Mesa Top	6/26/1997	1627235.752	1769227.851
0435-97-0115	35-02499	Mesa Top	6/27/1997	1627238.197	1769239.315
0435-97-0116	35-02499	Mesa Top	6/27/1997	1627238.197	1769239.315
0435-97-0117	35-02499	Mesa Top	6/27/1997	1627238.197	1769239.315
0435-97-0119	35-02500	Mesa Top	6/27/1997	1627221.644	1769209.479

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0121	35-02500	Mesa Top	6/27/1997	1627221.644	1769209.479
0435-97-0122	35-02501	Mesa Top	6/27/1997	1627288.574	1769205.224
0435-97-0123	35-02501	Mesa Top	6/27/1997	1627288.574	1769205.224
0435-97-0125	35-02502	Pratt Canyon	7/8/1997	1628509.726	1769286.057
0435-97-0126	35-02502	Pratt Canyon	7/8/1997	1628509.726	1769286.057
0435-97-0129	35-02503	Pratt Canyon	7/8/1997	1628540.206	1769265.926
0435-97-0131	35-02503	Pratt Canyon	7/8/1997	1628540.206	1769265.926
0435-97-0133	35-02481	Ten Site Canyon	7/8/1997	1630217.58	1768951.321
0435-97-0134	35-02481	Ten Site Canyon	7/8/1997	1630217.58	1768951.321
0435-97-0135	35-02482	Ten Site Canyon	7/1/1997	1630264.142	1768956.208
0435-97-0136	35-02482	Ten Site Canyon	7/1/1997	1630264.142	1768956.208
0435-97-0138	35-02483	Ten Site Canyon	7/1/1997	1630304.26	1768956.255
0435-97-0139	35-02483	Ten Site Canyon	7/1/1997	1630304.26	1768956.255
0435-97-0140	35-02484	Ten Site Canyon	7/1/1997	1630364.705	1768956.197
0435-97-0141	35-02484	Ten Site Canyon	7/1/1997	1630364.705	1768956.197
0435-97-0142	35-02485	Ten Site Canyon	7/8/1997	1630235.163	1768953.552
0435-97-0143	35-02486	Ten Site Canyon	7/1/1997	1630326.273	1768955.084
0435-97-0144	35-02505	Mortandad Slope	7/7/1997	1628315.102	1769667.659
0435-97-0145	35-02505	Mortandad Slope	7/7/1997	1628315.102	1769667.659
0435-97-0150	35-02509	Mortandad Slope	7/7/1997	1628413.402	1769652.54
0435-97-0151	35-02509	Mortandad Slope	7/7/1997	1628413.402	1769652.54
0435-97-0154	35-02506	Mortandad Slope	7/9/1997	1628319.691	1769742.044
0435-97-0156	35-02506	Mortandad Slope	7/9/1997	1628319.691	1769742.044
0435-97-0158	35-02507	Mortandad Slope	7/9/1997	1628328.445	1769769.506
0435-97-0159	35-02507	Mortandad Slope	7/9/1997	1628328.445	1769769.506
0435-97-0161	35-02510	Mortandad Slope	7/9/1997	1628436.299	1769724.653
0435-97-0162	35-02510	Mortandad Slope	7/9/1997	1628436.299	1769724.653
0435-97-0164	35-02511	Mortandad Slope	7/7/1997	1628615.59	1769542.469
0435-97-0165	35-02511	Mortandad Slope	7/7/1997	1628615.59	1769542.469
0435-97-0167	35-02512	Mortandad Slope	7/7/1997	1628613.119	1769606.105
0435-97-0168	35-02512	Mortandad Slope	7/7/1997	1628613.119	1769606.105
0435-97-0170	35-02513	Mortandad Slope	7/7/1997	1628620.4	1769662.619
0435-97-0171	35-02513	Mortandad Slope	7/7/1997	1628620.4	1769662.619
0435-97-0173	35-02487	Ten Site Slope	7/11/1997	1627153.794	1769050.022
0435-97-0174	35-02487	Ten Site Slope	7/11/1997	1627153.794	1769050.022
0435-97-0176	35-02488	Ten Site Slope	7/11/1997	1627215.918	1769061.298
0435-97-0178	35-02488	Ten Site Slope	7/11/1997	1627215.918	1769061.298
0435-97-0181	35-02489	Ten Site Slope	7/11/1997	1627074.037	1768959.495
0435-97-0182	35-02489	Ten Site Slope	7/11/1997	1627074.037	1768959.495

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0183	35-02489	Ten Site Slope	7/11/1997	1627074.037	1768959.495
0435-97-0184	35-02490	Ten Site Slope	7/11/1997	1627072.248	1768916.151
0435-97-0185	35-02490	Ten Site Slope	7/11/1997	1627072.248	1768916.151
0435-97-0187	35-02491	Ten Site Slope	7/11/1997	1627228.155	1768914.058
0435-97-0188	35-02491	Ten Site Slope	7/11/1997	1627228.155	1768914.058
0435-97-0189	35-02491	Ten Site Slope	7/11/1997	1627228.155	1768914.058
0435-97-0190	35-02492	Ten Site Slope	7/11/1997	1627229.326	1768872.742
0435-97-0191	35-02492	Ten Site Slope	7/11/1997	1627229.326	1768872.742
0435-97-0193	35-02453	Mortandad Slope	7/10/1997	1627176.967	1769872.167
0435-97-0194	35-02453	Mortandad Slope	7/10/1997	1627176.967	1769872.167
0435-97-0195	35-02453	Mortandad Slope	7/10/1997	1627176.967	1769872.167
0435-97-0198	35-02454	Mortandad Slope	7/10/1997	1627213.34	1769840.585
0435-97-0199	35-02454	Mortandad Slope	7/10/1997	1627213.34	1769840.585
0435-97-0200	35-02454	Mortandad Slope	7/10/1997	1627213.34	1769840.585
0435-97-0201	35-02455	Mortandad Slope	7/10/1997	1627248.706	1769806.578
0435-97-0202	35-02455	Mortandad Slope	7/10/1997	1627248.706	1769806.578
0435-97-0203	35-02455	Mortandad Slope	7/10/1997	1627248.706	1769806.578
0435-97-0204	35-02456	Mortandad Slope	7/9/1997	1627331.406	1769909.09
0435-97-0205	35-02456	Mortandad Slope	7/9/1997	1627331.406	1769909.09
0435-97-0206	35-02456	Mortandad Slope	7/9/1997	1627331.406	1769909.09
0435-97-0208	35-02457	Mortandad Slope	7/9/1997	1627398.59	1769877.787
0435-97-0209	35-02457	Mortandad Slope	7/9/1997	1627398.59	1769877.787
0435-97-0210	35-02457	Mortandad Slope	7/9/1997	1627398.59	1769877.787
0435-97-0211	35-02458	Mortandad Slope	7/9/1997	1627349.728	1769825.194
0435-97-0212	35-02458	Mortandad Slope	7/9/1997	1627349.728	1769825.194
0435-97-0213	35-02458	Mortandad Slope	7/9/1997	1627349.728	1769825.194
0435-97-0214	35-02459	Mortandad Slope	7/10/1997	1627352.328	1769788.025
0435-97-0215	35-02459	Mortandad Slope	7/10/1997	1627352.328	1769788.025
0435-97-0216	35-02459	Mortandad Slope	7/10/1997	1627352.328	1769788.025
0435-97-0217	35-02460	Mortandad Slope	7/10/1997	1627384.914	1769788.761
0435-97-0218	35-02460	Mortandad Slope	7/10/1997	1627384.914	1769788.761
0435-97-0221	35-02461	Mortandad Slope	7/10/1997	1627318.17	1769731.571
0435-97-0222	35-02462	Mortandad Slope	7/10/1997	1627349.351	1769732.208
0435-97-0226	35-02466	Ten Site Canyon	7/15/1997	1629474.282	1769108.257
0435-97-0229	35-02467	Ten Site Canyon	7/15/1997	1629484.097	1769120.758
0435-97-0232	35-02468	Ten Site Canyon	7/15/1997	1629572.145	1769151.139
0435-97-0235	35-02469	Ten Site Canyon	7/15/1997	1629593.771	1769127.41
0435-97-0238	35-02470	Ten Site Canyon	7/15/1997	1629660.108	1769156.306
0435-97-0242	35-02471	Ten Site Canyon	7/16/1997	1629485.138	1768955.37

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0245	35-02472	Ten Site Canyon	7/16/1997	1629501.943	1768974.846
0435-97-0249	35-02473	Ten Site Canyon	7/16/1997	1629475.092	1768989.244
0435-97-0253	35-02474	Ten Site Canyon	7/16/1997	1629468.045	1769026.496
0435-97-0257	35-02475	Ten Site Canyon	7/16/1997	1629510.237	1769042.689
0435-97-0260	35-02476	Ten Site Canyon	7/17/1997	1629628.016	1768961.53
0435-97-0263	35-02477	Ten Site Canyon	7/17/1997	1629582.41	1768966.256
0435-97-0266	35-02478	Ten Site Canyon	7/17/1997	1629641.726	1769011.66
0435-97-0270	35-02479	Ten Site Canyon	7/17/1997	1629601.31	1769015.944
0435-97-0273	35-02480	Ten Site Canyon	7/17/1997	1629627.241	1769058.851
0435-97-0274	35-02506	Mortandad Slope	7/18/1997	1628319.691	1769742.044
0435-97-0276	35-02594	Mesa Top	7/18/1997	1627232.674	1769228.048
0435-97-0277	35-02594	Mesa Top	7/18/1997	1627232.674	1769228.048
0435-97-0278	35-02594	Mesa Top	7/18/1997	1627232.674	1769228.048
0435-97-0279	35-02584	Mortandad Slope	7/29/1997	1628742.626	1769514.911
0435-97-0283	35-02584	Mortandad Slope	7/29/1997	1628742.626	1769514.911
0435-97-0284	35-02536	Ten Site Slope	7/30/1997	1627990.214	1769095.288
0435-97-0286	35-02536	Ten Site Slope	7/30/1997	1627990.214	1769095.288
0435-97-0287	35-02536	Ten Site Slope	7/30/1997	1627990.214	1769095.288
0435-97-0289	35-02536	Ten Site Slope	7/30/1997	1627990.214	1769095.288
0435-97-0290	35-02536	Ten Site Slope	7/30/1997	1627990.214	1769095.288
0435-97-0291	35-02537	Ten Site Slope	7/30/1997	1628007.962	1769101.992
0435-97-0292	35-02537	Ten Site Slope	7/30/1997	1628007.962	1769101.992
0435-97-0293	35-02537	Ten Site Slope	7/30/1997	1628007.962	1769101.992
0435-97-0294	35-02537	Ten Site Slope	7/30/1997	1628007.962	1769101.992
0435-97-0295	35-02540	Ten Site Slope	7/30/1997	1628049.092	1769085.127
0435-97-0297	35-02540	Ten Site Slope	7/30/1997	1628049.092	1769085.127
0435-97-0298	35-02540	Ten Site Slope	7/30/1997	1628049.092	1769085.127
0435-97-0299	35-02540	Ten Site Slope	7/30/1997	1628049.092	1769085.127
0435-97-0300	35-02540	Ten Site Slope	7/30/1997	1628049.092	1769085.127
0435-97-0301	35-02538	Ten Site Slope	7/31/1997	1628078.359	1769099.607
0435-97-0303	35-02538	Ten Site Slope	7/31/1997	1628078.359	1769099.607
0435-97-0305	35-02538	Ten Site Slope	7/31/1997	1628078.359	1769099.607
0435-97-0306	35-02538	Ten Site Slope	7/31/1997	1628078.359	1769099.607
0435-97-0307	35-02538	Ten Site Slope	7/31/1997	1628078.359	1769099.607
0435-97-0308	35-02539	Ten Site Slope	7/31/1997	1628094.806	1769087.238
0435-97-0310	35-02539	Ten Site Slope	7/31/1997	1628094.806	1769087.238
0435-97-0311	35-02539	Ten Site Slope	7/31/1997	1628094.806	1769087.238
0435-97-0312	35-02541	Ten Site Slope	7/31/1997	1628046.542	1769067.823
0435-97-0314	35-02541	Ten Site Slope	7/31/1997	1628046.542	1769067.823

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0315	35-02541	Ten Site Slope	7/31/1997	1628046.542	1769067.823
0435-97-0316	35-02542	Ten Site Slope	8/11/1997	1627984.231	1769009.887
0435-97-0317	35-02542	Ten Site Slope	8/11/1997	1627984.231	1769009.887
0435-97-0319	35-02542	Ten Site Slope	8/11/1997	1627984.231	1769009.887
0435-97-0320	35-02543	Ten Site Slope	8/11/1997	1627991.816	1768976.872
0435-97-0321	35-02543	Ten Site Slope	8/11/1997	1627991.816	1768976.872
0435-97-0323	35-02543	Ten Site Slope	8/11/1997	1627991.816	1768976.872
0435-97-0324	35-02544	Ten Site Slope	8/11/1997	1628027.369	1768931.111
0435-97-0325	35-02544	Ten Site Slope	8/11/1997	1628027.369	1768931.111
0435-97-0327	35-02544	Ten Site Slope	8/11/1997	1628027.369	1768931.111
0435-97-0329	35-02545	Ten Site Slope	7/31/1997	1627724.208	1769127.063
0435-97-0330	35-02545	Ten Site Slope	7/31/1997	1627724.208	1769127.063
0435-97-0331	35-02545	Ten Site Slope	7/31/1997	1627724.208	1769127.063
0435-97-0332	35-02545	Ten Site Slope	7/31/1997	1627724.208	1769127.063
0435-97-0333	35-02546	Ten Site Slope	7/31/1997	1627743.018	1769130.281
0435-97-0334	35-02546	Ten Site Slope	7/31/1997	1627743.018	1769130.281
0435-97-0335	35-02546	Ten Site Slope	7/31/1997	1627743.018	1769130.281
0435-97-0337	35-02546	Ten Site Slope	7/31/1997	1627743.018	1769130.281
0435-97-0338	35-02547	Ten Site Slope	8/11/1997	1627722.728	1769052.993
0435-97-0341	35-02547	Ten Site Slope	8/11/1997	1627722.728	1769052.993
0435-97-0342	35-02548	Ten Site Slope	8/11/1997	1627791.651	1768979.514
0435-97-0345	35-02548	Ten Site Slope	8/11/1997	1627791.651	1768979.514
0435-97-0346	35-02549	Ten Site Slope	8/12/1997	1627608.864	1769069.533
0435-97-0349	35-02549	Ten Site Slope	8/12/1997	1627608.864	1769069.533
0435-97-0350	35-02550	Ten Site Slope	8/12/1997	1627586.113	1769013.973
0435-97-0353	35-02550	Ten Site Slope	8/12/1997	1627586.113	1769013.973
0435-97-0355	35-02551	Mortandad Slope	8/1/1997	1628262.609	1769629.082
0435-97-0356	35-02551	Mortandad Slope	8/1/1997	1628262.609	1769629.082
0435-97-0357	35-02551	Mortandad Slope	8/1/1997	1628262.609	1769629.082
0435-97-0358	35-02551	Mortandad Slope	8/1/1997	1628262.609	1769629.082
0435-97-0359	35-02552	Mortandad Slope	8/1/1997	1628206.514	1769650.66
0435-97-0360	35-02552	Mortandad Slope	8/1/1997	1628206.514	1769650.66
0435-97-0362	35-02552	Mortandad Slope	8/1/1997	1628206.514	1769650.66
0435-97-0363	35-02552	Mortandad Slope	8/1/1997	1628206.514	1769650.66
0435-97-0364	35-02553	Mortandad Slope	8/1/1997	1628182.659	1769665.829
0435-97-0365	35-02553	Mortandad Slope	8/1/1997	1628182.659	1769665.829
0435-97-0366	35-02553	Mortandad Slope	8/1/1997	1628182.659	1769665.829
0435-97-0367	35-02553	Mortandad Slope	8/1/1997	1628182.659	1769665.829
0435-97-0377	35-02534	Mesa Top	8/4/1997	1628388.967	1769411.859

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0379	35-02534	Mesa Top	8/4/1997	1628388.967	1769411.859
0435-97-0380	35-02534	Mesa Top	8/4/1997	1628388.967	1769411.859
0435-97-0381	35-02534	Mesa Top	8/4/1997	1628388.967	1769411.859
0435-97-0382	35-02535	Mesa Top	8/4/1997	1628367.782	1769357.46
0435-97-0383	35-02535	Mesa Top	8/4/1997	1628367.782	1769357.46
0435-97-0384	35-02535	Mesa Top	8/4/1997	1628367.782	1769357.46
0435-97-0385	35-02535	Mesa Top	8/4/1997	1628367.782	1769357.46
0435-97-0386	35-02533	Mesa Top	8/1/1997	1628543.014	1769303.428
0435-97-0387	35-02533	Mesa Top	8/1/1997	1628543.014	1769303.428
0435-97-0389	35-02533	Mesa Top	8/1/1997	1628543.014	1769303.428
0435-97-0390	35-02533	Mesa Top	8/1/1997	1628543.014	1769303.428
0435-97-0391	35-02556	Pratt Canyon	8/4/1997	1628904.303	1769444.339
0435-97-0392	35-02556	Pratt Canyon	8/4/1997	1628904.303	1769444.339
0435-97-0393	35-02556	Pratt Canyon	8/4/1997	1628904.303	1769444.339
0435-97-0394	35-02556	Pratt Canyon	8/4/1997	1628904.303	1769444.339
0435-97-0395	35-02557	Pratt Canyon	8/4/1997	1628861.619	1769437.257
0435-97-0397	35-02557	Pratt Canyon	8/4/1997	1628861.619	1769437.257
0435-97-0398	35-02557	Pratt Canyon	8/4/1997	1628861.619	1769437.257
0435-97-0399	35-02557	Pratt Canyon	8/4/1997	1628861.619	1769437.257
0435-97-0400	35-02558	Pratt Canyon	8/6/1997	1628950.817	1769431.846
0435-97-0403	35-02558	Pratt Canyon	8/6/1997	1628950.817	1769431.846
0435-97-0404	35-02559	Pratt Canyon	8/6/1997	1628983.085	1769342.103
0435-97-0406	35-02559	Pratt Canyon	8/6/1997	1628983.085	1769342.103
0435-97-0407	35-02559	Pratt Canyon	8/6/1997	1628983.085	1769342.103
0435-97-0408	35-02560	Mesa Top	8/7/1997	1628034.806	1769324.408
0435-97-0409	35-02560	Mesa Top	8/7/1997	1628034.806	1769324.408
0435-97-0410	35-02560	Mesa Top	8/7/1997	1628034.806	1769324.408
0435-97-0411	35-02561	Mesa Top	8/7/1997	1628003.44	1769335.38
0435-97-0412	35-02561	Mesa Top	8/7/1997	1628003.44	1769335.38
0435-97-0413	35-02561	Mesa Top	8/7/1997	1628003.44	1769335.38
0435-97-0414	35-02562	Mesa Top	8/7/1997	1627976.416	1769434.071
0435-97-0415	35-02562	Mesa Top	8/7/1997	1627976.416	1769434.071
0435-97-0416	35-02562	Mesa Top	8/7/1997	1627976.416	1769434.071
0435-97-0417	35-02563	Mesa Top	8/7/1997	1627987.508	1769431.384
0435-97-0418	35-02563	Mesa Top	8/7/1997	1627987.508	1769431.384
0435-97-0419	35-02563	Mesa Top	8/7/1997	1627987.508	1769431.384
0435-97-0420	35-02564	Mesa Top	8/7/1997	1628053	1769426.835
0435-97-0422	35-02564	Mesa Top	8/7/1997	1628053	1769426.835
0435-97-0423	35-02564	Mesa Top	8/7/1997	1628053	1769426.835

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0425	35-02565	Mesa Top	8/7/1997	1627844.813	1769360.512
0435-97-0426	35-02565	Mesa Top	8/7/1997	1627844.813	1769360.512
0435-97-0427	35-02565	Mesa Top	8/7/1997	1627844.813	1769360.512
0435-97-0428	35-02566	Ten Site Slope	8/7/1997	1627971.679	1769131.057
0435-97-0429	35-02566	Ten Site Slope	8/7/1997	1627971.679	1769131.057
0435-97-0430	35-02566	Ten Site Slope	8/7/1997	1627971.679	1769131.057
0435-97-0431	35-02567	Ten Site Slope	8/7/1997	1628071.496	1769002.315
0435-97-0432	35-02567	Ten Site Slope	8/7/1997	1628071.496	1769002.315
0435-97-0433	35-02567	Ten Site Slope	8/7/1997	1628071.496	1769002.315
0435-97-0434	35-02568	Mesa Top	8/6/1997	1628320.801	1769403.807
0435-97-0435	35-02568	Mesa Top	8/6/1997	1628320.801	1769403.807
0435-97-0436	35-02568	Mesa Top	8/6/1997	1628320.801	1769403.807
0435-97-0438	35-02569	Mesa Top	8/6/1997	1628323.359	1769392.666
0435-97-0439	35-02569	Mesa Top	8/6/1997	1628323.359	1769392.666
0435-97-0440	35-02569	Mesa Top	8/6/1997	1628323.359	1769392.666
0435-97-0441	35-02570	Mesa Top	8/6/1997	1628321.032	1769378.802
0435-97-0442	35-02570	Mesa Top	8/6/1997	1628321.032	1769378.802
0435-97-0443	35-02570	Mesa Top	8/6/1997	1628321.032	1769378.802
0435-97-0444	35-02571	Ten Site Slope	8/13/1997	1627433.43	1769184.43
0435-97-0445	35-02571	Ten Site Slope	8/13/1997	1627433.43	1769184.43
0435-97-0446	35-02571	Ten Site Slope	8/13/1997	1627433.43	1769184.43
0435-97-0447	35-02572	Ten Site Slope	8/13/1997	1627423.718	1769185.819
0435-97-0448	35-02572	Ten Site Slope	8/13/1997	1627423.718	1769185.819
0435-97-0449	35-02572	Ten Site Slope	8/13/1997	1627423.718	1769185.819
0435-97-0450	35-02573	Ten Site Slope	8/13/1997	1627413.265	1769186.826
0435-97-0452	35-02573	Ten Site Slope	8/13/1997	1627413.265	1769186.826
0435-97-0453	35-02573	Ten Site Slope	8/13/1997	1627413.265	1769186.826
0435-97-0454	35-02574	Ten Site Slope	8/13/1997	1627407.426	1769184.559
0435-97-0455	35-02574	Ten Site Slope	8/13/1997	1627407.426	1769184.559
0435-97-0456	35-02574	Ten Site Slope	8/13/1997	1627407.426	1769184.559
0435-97-0457	35-02575	Ten Site Slope	8/13/1997	1627392.042	1769183.517
0435-97-0458	35-02575	Ten Site Slope	8/13/1997	1627392.042	1769183.517
0435-97-0459	35-02575	Ten Site Slope	8/13/1997	1627392.042	1769183.517
0435-97-0460	35-02576	Ten Site Slope	8/13/1997	1627407.929	1769177.328
0435-97-0461	35-02576	Ten Site Slope	8/13/1997	1627407.929	1769177.328
0435-97-0462	35-02576	Ten Site Slope	8/13/1997	1627407.929	1769177.328
0435-97-0463	35-02577	Ten Site Slope	8/12/1997	1627425.446	1769148.729
0435-97-0466	35-02577	Ten Site Slope	8/12/1997	1627425.446	1769148.729
0435-97-0467	35-02578	Ten Site Slope	8/12/1997	1627451.184	1769100.349

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0435-97-0471	35-02578	Ten Site Slope	8/12/1997	1627451.184	1769100.349
0435-97-0472	35-02579	Ten Site Slope	8/12/1997	1627572.155	1769168.126
0435-97-0475	35-02579	Ten Site Slope	8/12/1997	1627572.155	1769168.126
0435-97-0477	35-02580	Ten Site Slope	8/14/1997	1626827.261	1769047.944
0435-97-0481	35-02580	Ten Site Slope	8/14/1997	1626827.261	1769047.944
0435-97-0482	35-02581	Ten Site Slope	8/11/1997	1628167.318	1769020.294
0435-97-0483	35-02581	Ten Site Slope	8/11/1997	1628167.318	1769020.294
0435-97-0485	35-02581	Ten Site Slope	8/11/1997	1628167.318	1769020.294
0435-97-0486	35-02582	Ten Site Slope	8/11/1997	1628154.256	1768968.849
0435-97-0490	35-02582	Ten Site Slope	8/11/1997	1628154.256	1768968.849
0435-97-0491	35-02583	Ten Site Slope	8/11/1997	1628119.684	1768882.524
0435-97-0494	35-02583	Ten Site Slope	8/11/1997	1628119.684	1768882.524
0435-97-0495	35-02595	Ten Site Slope	8/13/1997	1627414.798	1769188.561
0452-95-0002	52-02001	East Ten Site Slope	6/13/1995	1628691.58	1768409.76
0452-95-0003	52-02001	East Ten Site Slope	6/13/1995	1628691.58	1768409.76
0452-95-0004	52-02001	East Ten Site Slope	6/13/1995	1628691.58	1768409.76
0452-95-0005	52-02001	East Ten Site Slope	6/13/1995	1628691.58	1768409.76
0452-95-0009	52-02002	East Ten Site Slope	6/13/1995	1628753.11	1768402.45
0452-95-0011	52-02002	East Ten Site Slope	6/13/1995	1628753.11	1768402.45
0452-95-0015	52-02002	East Ten Site Slope	6/13/1995	1628753.11	1768402.45
0452-95-0017	52-02002	East Ten Site Slope	6/13/1995	1628753.11	1768402.45
0452-95-0021	52-02003	East Ten Site Slope	6/15/1995	1628869.55	1768402.64
0452-95-0022	52-02003	East Ten Site Slope	6/15/1995	1628869.55	1768402.64
0452-95-0023	52-02003	East Ten Site Slope	6/15/1995	1628869.55	1768402.64
0452-95-0027	52-02003	East Ten Site Slope	6/15/1995	1628869.55	1768402.64
0452-95-0030	52-02004	East Ten Site Slope	6/15/1995	1628929.07	1768398.84
0452-95-0032	52-02004	East Ten Site Slope	6/15/1995	1628929.07	1768398.84
0452-95-0033	52-02004	East Ten Site Slope	6/15/1995	1628929.07	1768398.84
0452-95-0034	52-02004	East Ten Site Slope	6/15/1995	1628929.07	1768398.84
0452-95-0039	52-02006	East Ten Site Slope	6/13/1995	1628807.08	1768392.77
0452-95-0040	52-02006	East Ten Site Slope	6/13/1995	1628807.08	1768392.77
0452-95-0044	52-02006	East Ten Site Slope	6/13/1995	1628807.08	1768392.77
0452-95-0045	52-02006	East Ten Site Slope	6/13/1995	1628807.08	1768392.77
0452-95-0047	52-02008	East Ten Site Slope	6/14/1995	1628804.95	1768363.3
0452-95-0048	52-02008	East Ten Site Slope	6/14/1995	1628804.95	1768363.3
0452-95-0051	52-02008	East Ten Site Slope	6/14/1995	1628804.95	1768363.3
0452-95-0052	52-02008	East Ten Site Slope	6/14/1995	1628804.95	1768363.3
0452-95-0054	52-02009	East Ten Site Slope	6/14/1995	1628782.19	1768372.36
0452-95-0055	52-02009	East Ten Site Slope	6/14/1995	1628782.19	1768372.36

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0452-95-0057	52-02009	East Ten Site Slope	6/14/1995	1628782.19	1768372.36
0452-95-0059	52-02009	East Ten Site Slope	6/14/1995	1628782.19	1768372.36
0452-95-0063	52-02010	East Ten Site Slope	6/14/1995	1628781.23	1768355.3
0452-95-0064	52-02010	East Ten Site Slope	6/14/1995	1628781.23	1768355.3
0452-95-0065	52-02010	East Ten Site Slope	6/14/1995	1628781.23	1768355.3
0452-95-0067	52-02010	East Ten Site Slope	6/14/1995	1628781.23	1768355.3
0463-95-0002	63-02001	East Ten Site Slope	6/5/1995	1627142.726	1768481.979
0463-95-0006	63-02001	East Ten Site Slope	6/5/1995	1627142.726	1768481.979
0463-95-0007	63-02001	East Ten Site Slope	6/5/1995	1627142.726	1768481.979
0463-95-0009	63-02002	East Ten Site Slope	6/5/1995	1627166.857	1768490.959
0463-95-0012	63-02002	East Ten Site Slope	6/5/1995	1627166.857	1768490.959
0463-95-0013	63-02002	East Ten Site Slope	6/5/1995	1627166.857	1768490.959
0463-95-0018	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0019	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0021	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0024	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0025	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0026	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0028	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0031	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0033	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0034	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0038	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0040	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0041	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0042	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0045	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0048	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0049	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0050	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0051	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0052	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0054	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0055	63-02004	East Ten Site Slope	6/7/1995	1627151.612	1768495.722
0463-95-0059	63-02005	East Ten Site Slope	6/8/1995	1627036.513	1768459.815
0463-95-0061	63-02005	East Ten Site Slope	6/8/1995	1627036.513	1768459.815
0463-95-0062	63-02005	East Ten Site Slope	6/8/1995	1627036.513	1768459.815
0463-95-0065	63-02005	East Ten Site Slope	6/8/1995	1627036.513	1768459.815
0463-95-0066	63-02006	East Ten Site Slope	6/8/1995	1627053.15	1768463.656

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
0463-95-0070	63-02006	East Ten Site Slope	6/8/1995	1627053.15	1768463.656
0463-95-0074	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0078	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0079	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0081	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0082	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0083	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0084	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0085	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0087	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0091	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0092	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0093	63-02007	East Ten Site Slope	6/9/1995	1627044.452	1768501.701
0463-95-0096	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0097	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0099	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0101	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0102	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0103	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0107	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0108	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0110	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0111	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0112	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0114	63-02008	East Ten Site Slope	6/12/1995	1627055.886	1768511.329
0463-95-0116	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
0463-95-0118	63-02003	East Ten Site Slope	6/6/1995	1627137.851	1768495.105
CAMO-01-0025	MO-00031	Pratt Canyon	7/26/2001	1629200.207	1769184.215
CAMO-01-0067	MO-10049	Mortandad Slope	7/30/2001	1628383	1769984
CAMO-01-0069	MO-10054	Mortandad Slope	7/30/2001	1628099	1770097
CAMO-01-0070	MO-10055	Mortandad Slope	7/30/2001	1628080	1770087
CAMO-01-0097	MO-10050	Mortandad Slope	7/30/2001	1628368	1770011
CAMO-01-0098	MO-10051	Mortandad Slope	7/30/2001	1628193	1770039
CAMO-01-0099	MO-10051	Mortandad Slope	7/30/2001	1628193	1770039
CAMO-01-0100	MO-10052	Mortandad Slope	7/30/2001	1628239	1770052
CAMO-01-0101	MO-10053	Mortandad Slope	7/30/2001	1628226	1770046
CAMO-01-0102	MO-10054	Mortandad Slope	7/30/2001	1628099	1770097
CAMO-01-0103	MO-10054	Mortandad Slope	7/30/2001	1628099	1770097
CAMO-01-0104	MO-10054	Mortandad Slope	7/30/2001	1628099	1770097

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
CAMO-01-0105	MO-10054	Mortandad Slope	7/30/2001	1628099	1770097
CAMO-01-0106	MO-10055	Mortandad Slope	7/30/2001	1628080	1770087
CAMO-01-0107	MO-10055	Mortandad Slope	7/30/2001	1628080	1770087
CAMO-01-0289	MO-10049	Mortandad Slope	9/7/2001	1628383	1769984
CAMO-01-0290	MO-10050	Mortandad Slope	9/7/2001	1628368	1770011
CAMO-01-0291	MO-10055	Mortandad Slope	9/7/2001	1628080	1770087
CAMO-04-53379	MO-22832	Ten Site Canyon	6/22/2004	1629377.756	1768864.327
CAMO-04-53383	MO-22836	Ten Site Canyon	6/22/2004	1629581.756	1768861.229
CAMO-04-53384	MO-22836	Ten Site Canyon	6/22/2004	1629581.756	1768861.229
CAMO-04-53385	MO-22838	Ten Site Canyon	6/22/2004	1629503.614	1768859.148
CAMO-04-53386	MO-22838	Ten Site Canyon	6/22/2004	1629503.614	1768859.148
CAMO-04-53387	MO-22840	Ten Site Canyon	6/22/2004	1629930.561	1768919.442
CAMO-04-53388	MO-22841	Ten Site Canyon	6/22/2004	1630130.828	1768903.769
CAMO-04-53389	MO-22841	Ten Site Canyon	6/22/2004	1630130.828	1768903.769
CAMO-04-53390	MO-22841	Ten Site Canyon	6/22/2004	1630130.828	1768903.769
CAMO-04-53391	MO-22845	Ten Site Canyon	6/22/2004	1630617.877	1768907.431
CAMO-04-53392	MO-22845	Ten Site Canyon	6/22/2004	1630617.877	1768907.431
CAMO-04-53393	MO-22846	Ten Site Canyon	6/22/2004	1630798.965	1768910.634
CAMO-98-0037	MO-00030	Pratt Canyon	9/15/1998	1629337.413	1769115.094
CAMO-98-0038	MO-00031	Pratt Canyon	9/15/1998	1629200.207	1769184.215
CAMO-98-0039	MO-00031	Pratt Canyon	9/15/1998	1629200.207	1769184.215
CAMO-98-0040	MO-00032	Pratt Canyon	9/15/1998	1628990.528	1769241.911
CAMO-98-0041	MO-00032	Pratt Canyon	9/15/1998	1628990.528	1769241.911
CAMO-98-0042	MO-00032	Pratt Canyon	9/15/1998	1628990.528	1769241.911
CAMO-98-0043	MO-00033	Pratt Canyon	9/15/1998	1628953.91	1769232.093
CAMO-98-0044	MO-00033	Pratt Canyon	9/15/1998	1628953.91	1769232.093
CAMO-98-0045	MO-00034	Pratt Canyon	9/15/1998	1628821.273	1769157.031
CAMO-99-0034	MO-00056	Ten Site Canyon	5/17/1999	1629494.36	1768874.83
CAMO-99-0035	MO-00056	Ten Site Canyon	5/17/1999	1629494.36	1768874.83
CAMO-99-0036	MO-00057	Ten Site Canyon	5/17/1999	1629596.104	1768873.355
CAMO-99-0037	MO-00058	Ten Site Canyon	5/17/1999	1629608.425	1768874.535
CAMO-99-0038	MO-00059	Ten Site Canyon	5/18/1999	1629951.539	1768898.029
CAMO-99-0039	MO-00060	Ten Site Canyon	5/18/1999	1629997.447	1768890.46
CAMO-99-0040	MO-00060	Ten Site Canyon	5/18/1999	1629997.447	1768890.46
CAMO-99-0041	MO-00061	Ten Site Canyon	5/18/1999	1630198.183	1768876.14
CAMO-99-0042	MO-00062	Ten Site Canyon	5/18/1999	1630761.203	1768904.419
CAMO-99-0043	MO-00063	Ten Site Canyon	5/18/1999	1630820.317	1768914.61
CAMO-99-0044	MO-00063	Ten Site Canyon	5/18/1999	1630820.317	1768914.61
RE04-04-53863	04-02025	East Ten Site Slope	10/12/2004	1630781.542	1768645.005

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE04-04-53864	04-02025	East Ten Site Slope	10/12/2004	1630781.542	1768645.005
RE04-04-53865	04-02011	East Ten Site Slope	10/12/2004	1630642.739	1768450.423
RE04-04-53866	04-02011	East Ten Site Slope	10/12/2004	1630642.739	1768450.423
RE04-04-53867	04-02016	East Ten Site Slope	10/12/2004	1630762.788	1768455.189
RE04-04-53868	04-02016	East Ten Site Slope	10/12/2004	1630762.788	1768455.189
RE04-04-53869	04-02019	East Ten Site Slope	10/6/2004	1630912.824	1768480.151
RE04-04-53870	04-02019	East Ten Site Slope	10/6/2004	1630912.824	1768480.151
RE04-04-53871	04-02019	East Ten Site Slope	10/6/2004	1630912.824	1768480.151
RE04-04-53872	04-02021	East Ten Site Slope	10/6/2004	1630822.199	1768387.227
RE04-04-53873	04-02021	East Ten Site Slope	10/6/2004	1630822.199	1768387.227
RE04-04-54741	04-23233	East Ten Site Slope	10/4/2004	1630846.722	1768945.457
RE04-04-54742	04-23233	East Ten Site Slope	10/4/2004	1630846.722	1768945.457
RE04-04-54743	04-23234	East Ten Site Slope	10/4/2004	1630978.748	1768985.816
RE04-04-54744	04-23234	East Ten Site Slope	10/4/2004	1630978.748	1768985.816
RE04-04-54745	04-23235	East Ten Site Slope	10/4/2004	1630733.951	1768738.438
RE04-04-54746	04-23235	East Ten Site Slope	10/4/2004	1630733.951	1768738.438
RE04-04-54747	04-23236	East Ten Site Slope	10/4/2004	1630784.324	1768743.821
RE04-04-54748	04-23236	East Ten Site Slope	10/4/2004	1630784.324	1768743.821
RE04-04-54749	04-23237	East Ten Site Slope	10/4/2004	1630845.25	1768890.007
RE04-04-54750	04-23237	East Ten Site Slope	10/4/2004	1630845.25	1768890.007
RE04-04-54751	04-23238	East Ten Site Slope	10/4/2004	1630879.862	1768881.949
RE04-04-54752	04-23238	East Ten Site Slope	10/4/2004	1630879.862	1768881.949
RE04-04-54753	04-23239	East Ten Site Slope	10/4/2004	1630959.795	1768777.245
RE04-04-54754	04-23239	East Ten Site Slope	10/4/2004	1630959.795	1768777.245
RE04-04-54756	04-23239	East Ten Site Slope	10/4/2004	1630959.795	1768777.245
RE04-04-54760	04-23236	East Ten Site Slope	10/4/2004	1630784.324	1768743.821
RE05-04-53886	05-02059	East Ten Site Slope	10/13/2004	1634562.1	1767818.43
RE05-04-53887	05-02059	East Ten Site Slope	10/13/2004	1634562.1	1767818.43
RE05-04-53888	05-02060	East Ten Site Slope	10/14/2004	1634758.88	1767793
RE05-04-53889	05-02060	East Ten Site Slope	10/14/2004	1634758.88	1767793
RE05-04-53890	05-02051	East Ten Site Slope	10/13/2004	1634663.4	1767732.71
RE05-04-53891	05-02051	East Ten Site Slope	10/13/2004	1634663.4	1767732.71
RE05-04-53892	05-22893	East Ten Site Slope	10/14/2004	1634291.269	1767687.216
RE05-04-53893	05-22893	East Ten Site Slope	10/14/2004	1634291.269	1767687.216
RE05-04-53894	05-02012	East Ten Site Slope	10/14/2004	1634303.44	1767758.56
RE05-04-53895	05-02012	East Ten Site Slope	10/14/2004	1634303.44	1767758.56
RE05-04-53896	05-02024	East Ten Site Slope	10/21/2004	1635373.62	1767351.17
RE05-04-53897	05-02024	East Ten Site Slope	10/21/2004	1635373.62	1767351.17
RE05-04-53898	05-22894	East Ten Site Slope	10/22/2004	1635416.92	1767338.62

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE05-04-53899	05-22894	East Ten Site Slope	10/22/2004	1635416.92	1767338.62
RE05-04-53900	05-02021	East Ten Site Slope	10/21/2004	1635640.75	1767344.87
RE05-04-53901	05-02021	East Ten Site Slope	10/21/2004	1635640.75	1767344.87
RE05-04-53902	05-02022	East Ten Site Slope	10/21/2004	1635779.44	1767270.76
RE05-04-53903	05-02022	East Ten Site Slope	10/21/2004	1635779.44	1767270.76
RE05-04-54762	05-23241	East Ten Site Slope	9/27/2004	1634218.479	1768340.577
RE05-04-54763	05-23241	East Ten Site Slope	9/27/2004	1634218.479	1768340.577
RE05-04-54764	05-23242	East Ten Site Slope	9/24/2004	1634405.166	1768322.073
RE05-04-54765	05-23242	East Ten Site Slope	9/24/2004	1634405.166	1768322.073
RE05-04-54766	05-23243	East Ten Site Slope	9/22/2004	1634525.13	1768377.678
RE05-04-54767	05-23243	East Ten Site Slope	9/22/2004	1634525.13	1768377.678
RE05-04-54768	05-23244	East Ten Site Slope	9/22/2004	1634994.866	1768334.794
RE05-04-54769	05-23244	East Ten Site Slope	9/22/2004	1634994.866	1768334.794
RE05-04-54770	05-23245	East Ten Site Slope	9/28/2004	1634262.675	1768082.556
RE05-04-54771	05-23245	East Ten Site Slope	9/28/2004	1634262.675	1768082.556
RE05-04-54772	05-23246	East Ten Site Slope	9/28/2004	1634426.124	1768094.148
RE05-04-54773	05-23246	East Ten Site Slope	9/28/2004	1634426.124	1768094.148
RE05-04-54774	05-23247	East Ten Site Slope	9/27/2004	1634449.195	1768093.832
RE05-04-54775	05-23247	East Ten Site Slope	9/27/2004	1634449.195	1768093.832
RE05-04-54776	05-23248	East Ten Site Slope	9/27/2004	1634505.401	1768128.355
RE05-04-54777	05-23248	East Ten Site Slope	9/27/2004	1634505.401	1768128.355
RE05-04-54778	05-23249	East Ten Site Slope	9/22/2004	1634962.858	1768281.414
RE05-04-54779	05-23249	East Ten Site Slope	9/22/2004	1634962.858	1768281.414
RE05-07-579	05-02060	East Ten Site Slope	5/2/2007	1634758.88	1767793
RE05-07-580	05-02060	East Ten Site Slope	5/2/2007	1634758.88	1767793
RE05-07-581	05-02060	East Ten Site Slope	5/2/2007	1634758.88	1767793
RE05-07-75243	05-22894	East Ten Site Slope	4/4/2007	1635416.92	1767338.62
RE05-07-75244	05-22894	East Ten Site Slope	4/4/2007	1635416.92	1767338.62
RE05-07-75247	05-02056	East Ten Site Slope	4/9/2007	1634612.31	1767681.03
RE05-07-75248	05-02056	East Ten Site Slope	4/9/2007	1634612.31	1767681.03
RE35-04-54014	35-22921	Mortandad Slope	10/4/2004	1627476.99	1769759.7
RE35-04-54015	35-22921	Mortandad Slope	10/4/2004	1627476.99	1769759.7
RE35-04-54016	35-22922	Mesa Top	9/8/2004	1628049.26	1769200
RE35-04-54017	35-22922	Mesa Top	9/8/2004	1628049.26	1769200
RE35-04-54018	35-22923	Mortandad Slope	9/20/2004	1628239.75	1769636.5
RE35-04-54019	35-22923	Mortandad Slope	9/20/2004	1628239.75	1769636.5
RE35-04-54020	35-22923	Mortandad Slope	9/20/2004	1628239.75	1769636.5
RE35-04-54021	35-22924	Mortandad Slope	9/20/2004	1628277.82	1769630
RE35-04-54022	35-22924	Mortandad Slope	9/20/2004	1628277.82	1769630

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-04-54023	35-22924	Mortandad Slope	9/20/2004	1628277.82	1769630
RE35-04-54024	35-22925	Mortandad Slope	9/20/2004	1628143.07	1769680
RE35-04-54025	35-22925	Mortandad Slope	9/20/2004	1628143.07	1769680
RE35-04-54026	35-22925	Mortandad Slope	9/20/2004	1628143.07	1769680
RE35-04-54027	35-22926	Mesa Top	9/21/2004	1628396.73	1769340
RE35-04-54028	35-22927	Pratt Canyon	10/4/2004	1628499.96	1769294
RE35-04-54029	35-22927	Pratt Canyon	10/4/2004	1628499.96	1769294
RE35-04-54030	35-02100	Ten Site Slope	9/14/2004	1627752.12	1769173.79
RE35-04-54031	35-22928	Mesa Top	9/16/2004	1627224.89	1769205
RE35-04-54032	35-22928	Mesa Top	9/16/2004	1627224.89	1769205
RE35-04-54033	35-22929	Mortandad Slope	9/17/2004	1627534.13	1769779.5
RE35-04-54034	35-22929	Mortandad Slope	9/17/2004	1627534.13	1769779.5
RE35-04-54035	35-22929	Mortandad Slope	9/17/2004	1627534.13	1769779.5
RE35-04-54036	35-02364	Mesa Top	9/15/2004	1627316.02	1769661.84
RE35-04-54037	35-02364	Mesa Top	9/15/2004	1627316.02	1769661.84
RE35-04-54038	35-22930	Mesa Top	9/16/2004	1628017.95	1769340
RE35-04-54039	35-22930	Mesa Top	9/16/2004	1628017.95	1769340
RE35-04-54052	35-22931	Ten Site Slope	9/10/2004	1627998.69	1769134.084
RE35-04-54061	35-22936	Mesa Top	9/23/2004	1628385.16	1769290
RE35-04-54062	35-22936	Mesa Top	9/24/2004	1628385.16	1769290
RE35-04-54063	35-22937	Ten Site Slope	9/14/2004	1627760.97	1769110
RE35-04-54064	35-22937	Ten Site Slope	9/14/2004	1627760.97	1769110
RE35-04-54065	35-22937	Ten Site Slope	9/14/2004	1627760.97	1769110
RE35-04-54066	35-22938	Ten Site Slope	9/13/2004	1627710.61	1769120
RE35-04-54067	35-22938	Ten Site Slope	9/13/2004	1627710.61	1769120
RE35-04-54068	35-22938	Ten Site Slope	9/13/2004	1627710.61	1769120
RE35-04-54069	35-22939	Ten Site Slope	9/10/2004	1627747.28	1769130
RE35-04-54070	35-22939	Ten Site Slope	9/10/2004	1627747.28	1769130
RE35-04-54071	35-22939	Ten Site Slope	9/10/2004	1627747.28	1769130
RE35-04-54072	35-22940	Ten Site Slope	9/13/2004	1627729.61	1769110.498
RE35-04-54073	35-22940	Ten Site Slope	9/13/2004	1627729.61	1769110.498
RE35-04-54074	35-22940	Ten Site Slope	9/13/2004	1627729.61	1769110.498
RE35-04-54075	35-22941	Mesa Top	9/22/2004	1628305.734	1769201.025
RE35-04-54076	35-22941	Mesa Top	9/22/2004	1628305.734	1769201.025
RE35-04-54077	35-22941	Mesa Top	9/22/2004	1628305.734	1769201.025
RE35-04-54078	35-22942	Ten Site Slope	9/9/2004	1628015.68	1769110
RE35-04-54079	35-22942	Ten Site Slope	9/9/2004	1628015.68	1769110
RE35-04-54080	35-22942	Ten Site Slope	9/9/2004	1628015.68	1769110
RE35-04-54081	35-22943	Ten Site Slope	9/8/2004	1628086.03	1769090

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-04-54082	35-22943	Ten Site Slope	9/8/2004	1628086.03	1769090
RE35-04-54083	35-22943	Ten Site Slope	9/8/2004	1628086.03	1769090
RE35-04-54084	35-22944	Pratt Canyon	9/24/2004	1628865.41	1769440
RE35-04-54085	35-22944	Pratt Canyon	9/24/2004	1628865.41	1769440
RE35-04-54086	35-22944	Pratt Canyon	9/24/2004	1628865.41	1769440
RE35-04-54106	35-22950	Mesa Top	9/23/2004	1628461.61	1769066
RE35-04-54107	35-22950	Mesa Top	9/23/2004	1628461.61	1769066
RE35-04-54108	35-22950	Mesa Top	9/23/2004	1628461.61	1769066
RE35-04-54124	35-22957	Mesa Top	9/21/2004	1628415.21	1769430
RE35-04-54125	35-22957	Mesa Top	9/21/2004	1628415.21	1769430
RE35-04-54126	35-22958	Mesa Top	9/22/2004	1628253.57	1769171.43
RE35-04-54127	35-22958	Mesa Top	9/22/2004	1628253.57	1769171.43
RE35-04-54128	35-22958	Mesa Top	9/22/2004	1628253.57	1769171.43
RE35-04-54129	35-22958	Mesa Top	9/22/2004	1628253.57	1769171.43
RE35-04-54130	35-22959	Ten Site Slope	9/9/2004	1628052.7	1769080
RE35-04-54131	35-22959	Ten Site Slope	9/9/2004	1628052.7	1769080
RE35-04-54132	35-22959	Ten Site Slope	9/9/2004	1628052.7	1769080
RE35-04-54133	35-22960	Mesa Top	9/7/2004	1628077.28	1769190
RE35-04-54134	35-22960	Mesa Top	9/7/2004	1628077.28	1769190
RE35-04-54135	35-22960	Mesa Top	9/7/2004	1628077.28	1769190
RE35-04-54136	35-22961	Mesa Top	9/15/2004	1627334.22	1769620
RE35-04-54137	35-22961	Mesa Top	9/15/2004	1627334.22	1769620
RE35-04-54138	35-22961	Mesa Top	9/15/2004	1627334.22	1769620
RE35-04-54155	35-22966	Ten Site Slope	9/10/2004	1627998.968	1769131.187
RE35-04-54157	35-22967	Ten Site Slope	9/10/2004	1627966.232	1769092.953
RE35-04-54158	35-22967	Ten Site Slope	9/10/2004	1627966.232	1769092.953
RE35-04-54159	35-22968	Ten Site Slope	10/26/2004	1627214.062	1769010.8
RE35-04-54160	35-22968	Ten Site Slope	10/26/2004	1627214.062	1769010.8
RE35-04-54161	35-22969	Ten Site Slope	10/26/2004	1627212.965	1768986.025
RE35-04-54162	35-22969	Ten Site Slope	10/26/2004	1627212.965	1768986.025
RE35-04-54163	35-22970	Ten Site Slope	9/13/2004	1628134.6	1769081.574
RE35-04-54165	35-22971	Ten Site Slope	9/13/2004	1628086.59	1769029.07
RE35-04-54166	35-22971	Ten Site Slope	9/13/2004	1628086.59	1769029.07
RE35-04-54167	35-22972	Ten Site Slope	9/13/2004	1628095.348	1769056.622
RE35-04-54168	35-22972	Ten Site Slope	9/13/2004	1628095.348	1769056.622
RE35-04-54169	35-22973	Ten Site Slope	10/29/2004	1626717.53	1769010.81
RE35-04-54170	35-22973	Ten Site Slope	10/29/2004	1626717.53	1769010.81
RE35-04-54171	35-22974	Ten Site Slope	10/26/2004	1627482.964	1769157.838
RE35-04-54172	35-22974	Ten Site Slope	10/26/2004	1627482.964	1769157.838

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-04-54173	35-22975	Ten Site Slope	10/26/2004	1627398.994	1769161.525
RE35-04-54174	35-22975	Ten Site Slope	10/26/2004	1627398.994	1769161.525
RE35-04-54216	35-22986	Ten Site Canyon	9/30/2004	1629543.49	1768942.96
RE35-04-54219	35-22987	Ten Site Canyon	9/29/2004	1629449.14	1769140
RE35-04-54222	35-22988	Ten Site Canyon	9/29/2004	1629642.63	1769146.46
RE35-04-54225	35-22989	Ten Site Canyon	9/30/2004	1629465.31	1768954.24
RE35-04-54226	35-22990	Ten Site Canyon	9/28/2004	1629577.63	1769010
RE35-04-54227	35-22990	Ten Site Canyon	9/28/2004	1629577.63	1769010
RE35-04-54228	35-22991	Ten Site Canyon	9/28/2004	1629677.35	1769010
RE35-04-54229	35-22991	Ten Site Canyon	9/28/2004	1629677.35	1769010
RE35-04-54231	35-22992	Ten Site Canyon	9/28/2004	1629616.01	1769058.9
RE35-04-54232	35-22992	Ten Site Canyon	9/28/2004	1629616.01	1769058.9
RE35-04-54234	35-22993	Ten Site Canyon	9/27/2004	1629633.29	1768956.5
RE35-04-54235	35-22993	Ten Site Canyon	9/27/2004	1629633.29	1768956.5
RE35-04-54561	35-23144	Mortandad Slope	11/3/2004	1627330.732	1769886.324
RE35-04-54562	35-23144	Mortandad Slope	11/3/2004	1627330.732	1769886.324
RE35-04-54563	35-23145	Mortandad Slope	11/3/2004	1627292.398	1769898.446
RE35-04-54564	35-23145	Mortandad Slope	11/3/2004	1627292.398	1769898.446
RE35-04-54565	35-23146	Mortandad Slope	11/4/2004	1627142.265	1769982.597
RE35-04-54566	35-23146	Mortandad Slope	11/4/2004	1627142.265	1769982.597
RE35-04-54567	35-23147	Mortandad Slope	11/4/2004	1627254.845	1770036.303
RE35-04-54568	35-23147	Mortandad Slope	11/4/2004	1627254.845	1770036.303
RE35-04-54569	35-23148	Mortandad Slope	11/4/2004	1627099.543	1769956.7
RE35-04-54570	35-23148	Mortandad Slope	11/4/2004	1627099.543	1769956.7
RE35-04-54571	35-23149	Mortandad Slope	11/4/2004	1627169.528	1770044.162
RE35-04-54572	35-23149	Mortandad Slope	11/4/2004	1627169.528	1770044.162
RE35-04-54573	35-23150	Mortandad Slope	11/3/2004	1627305.064	1770029.325
RE35-04-54574	35-23150	Mortandad Slope	11/3/2004	1627305.064	1770029.325
RE35-04-54575	35-23151	Mortandad Slope	11/5/2004	1627298.636	1770051.23
RE35-04-54576	35-23151	Mortandad Slope	11/5/2004	1627298.636	1770051.23
RE35-04-54577	35-23152	Mortandad Slope	11/8/2004	1627171.3	1770174.532
RE35-04-54578	35-23152	Mortandad Slope	11/8/2004	1627171.3	1770174.532
RE35-04-54579	35-23153	Mortandad Slope	11/8/2004	1627256.081	1770167.04
RE35-04-54580	35-23153	Mortandad Slope	11/8/2004	1627256.081	1770167.04
RE35-04-54581	35-23154	Mortandad Slope	11/8/2004	1627347.535	1770203.596
RE35-04-54582	35-23154	Mortandad Slope	11/8/2004	1627347.535	1770203.596
RE35-04-54585	35-23156	Mortandad Slope	11/4/2004	1627588.49	1769927.12
RE35-04-54587	35-23157	Mortandad Slope	11/5/2004	1627625.074	1770059.084
RE35-04-54588	35-23157	Mortandad Slope	11/5/2004	1627625.074	1770059.084

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-04-54589	35-23158	Mortandad Slope	11/5/2004	1627548.842	1770074.957
RE35-04-54590	35-23158	Mortandad Slope	11/5/2004	1627548.842	1770074.957
RE35-04-54593	35-23160	Mortandad Slope	11/5/2004	1627490.925	1770095.815
RE35-04-54594	35-23160	Mortandad Slope	11/5/2004	1627490.925	1770095.815
RE35-04-54597	35-23162	Mortandad Slope	11/8/2004	1627600.131	1770238.586
RE35-04-54598	35-23162	Mortandad Slope	11/8/2004	1627600.131	1770238.586
RE35-04-54599	35-23163	Mortandad Slope	11/4/2004	1627546.42	1769882.322
RE35-04-54600	35-23163	Mortandad Slope	11/4/2004	1627546.42	1769882.322
RE35-04-54601	35-23164	Mortandad Slope	11/2/2004	1627061.754	1769791.336
RE35-04-54602	35-23164	Mortandad Slope	11/2/2004	1627061.754	1769791.336
RE35-04-54603	35-23165	Mortandad Slope	11/2/2004	1627048.34	1769879.796
RE35-04-54604	35-23165	Mortandad Slope	11/2/2004	1627048.34	1769879.796
RE35-04-54605	35-23166	Mortandad Slope	11/2/2004	1627101.161	1769950.806
RE35-04-54606	35-23166	Mortandad Slope	11/2/2004	1627101.161	1769950.806
RE35-04-54607	35-23167	Mortandad Slope	11/8/2004	1627082.88	1770178.772
RE35-04-54608	35-23167	Mortandad Slope	11/8/2004	1627082.88	1770178.772
RE35-04-54611	35-23168	Mortandad Slope	11/4/2004	1627574.952	1769901.236
RE35-04-54623	35-23178	Mortandad Slope	11/10/2004	1628420.012	1769775.04
RE35-04-54624	35-23178	Mortandad Slope	11/10/2004	1628420.012	1769775.04
RE35-04-54627	35-23180	Mortandad Slope	11/10/2004	1628272.85	1769844.687
RE35-04-54628	35-23180	Mortandad Slope	11/10/2004	1628272.85	1769844.687
RE35-04-54631	35-23182	Mortandad Slope	11/10/2004	1628431.136	1769948.327
RE35-04-54632	35-23182	Mortandad Slope	11/10/2004	1628431.136	1769948.327
RE35-04-54633	35-23183	Mortandad Slope	11/17/2004	1627139.638	1770039.602
RE35-04-54634	35-23183	Mortandad Slope	11/17/2004	1627139.638	1770039.602
RE35-04-54635	35-23184	Mortandad Slope	11/10/2004	1628457.572	1769760.208
RE35-04-54636	35-23184	Mortandad Slope	11/10/2004	1628457.572	1769760.208
RE35-04-54637	35-23185	Mortandad Slope	11/17/2004	1628541.965	1769896.046
RE35-04-54638	35-23185	Mortandad Slope	11/17/2004	1628541.965	1769896.046
RE35-04-54639	35-23186	Mortandad Slope	11/9/2004	1628672.676	1769695.239
RE35-04-54640	35-23186	Mortandad Slope	11/9/2004	1628672.676	1769695.239
RE35-04-54641	35-23187	Mortandad Slope	11/18/2004	1628651.697	1769863.685
RE35-04-54642	35-23187	Mortandad Slope	11/18/2004	1628651.697	1769863.685
RE35-04-54645	35-23189	Mortandad Slope	11/9/2004	1628809.272	1769628.103
RE35-04-54646	35-23189	Mortandad Slope	11/9/2004	1628809.272	1769628.103
RE35-04-54649	35-23191	Mortandad Slope	11/18/2004	1628904.721	1769816.37
RE35-04-54650	35-23191	Mortandad Slope	11/18/2004	1628904.721	1769816.37
RE35-04-54669	35-23200	Ten Site Slope	11/19/2004	1627069.282	1768927.502
RE35-04-54670	35-23200	Ten Site Slope	11/19/2004	1627069.282	1768927.502

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-04-54671	35-23201	Ten Site Slope	11/19/2004	1627092.897	1768932.862
RE35-04-54672	35-23201	Ten Site Slope	11/19/2004	1627092.897	1768932.862
RE35-04-54675	35-23203	Ten Site Slope	11/19/2004	1627229.278	1768895.461
RE35-04-54676	35-23203	Ten Site Slope	11/19/2004	1627229.278	1768895.461
RE35-04-54679	35-23205	Ten Site Slope	12/14/2004	1627583.386	1769072.843
RE35-04-54680	35-23205	Ten Site Slope	12/14/2004	1627583.386	1769072.843
RE35-04-54683	35-23207	Ten Site Slope	12/14/2004	1627638.838	1768926.221
RE35-04-54684	35-23207	Ten Site Slope	12/14/2004	1627638.838	1768926.221
RE35-04-54685	35-23207	Ten Site Slope	12/14/2004	1627638.838	1768926.221
RE35-04-54686	35-23208	Ten Site Slope	10/29/2004	1626746.73	1768930.681
RE35-04-54688	35-23209	Ten Site Slope	11/19/2004	1627478.825	1768918.708
RE35-04-54689	35-23209	Ten Site Slope	11/19/2004	1627478.825	1768918.708
RE35-04-54690	35-23210	Ten Site Slope	10/29/2004	1626748.73	1768930.681
RE35-04-54855	35-23280	Ten Site Slope	12/17/2004	1627962.098	1768892.967
RE35-04-54856	35-23280	Ten Site Slope	12/17/2004	1627962.098	1768892.967
RE35-04-54861	35-23282	Ten Site Slope	12/17/2004	1628057.799	1768833.585
RE35-04-54862	35-23282	Ten Site Slope	12/17/2004	1628057.799	1768833.585
RE35-04-54867	35-23284	Ten Site Slope	12/15/2004	1627800.435	1768890.794
RE35-04-54868	35-23284	Ten Site Slope	12/15/2004	1627800.435	1768890.794
RE35-04-54873	35-23287	Ten Site Slope	9/14/2004	1627807.453	1769068.449
RE35-04-54874	35-23287	Ten Site Slope	9/14/2004	1627807.453	1769068.449
RE35-04-54875	35-23288	Ten Site Slope	9/14/2004	1627844.297	1769065.823
RE35-04-54876	35-23288	Ten Site Slope	9/14/2004	1627844.297	1769065.823
RE35-04-54877	35-23289	Ten Site Slope	9/15/2004	1627845.174	1769008.939
RE35-04-54878	35-23289	Ten Site Slope	9/15/2004	1627845.174	1769008.939
RE35-04-54879	35-23290	Ten Site Slope	12/15/2004	1627922.18	1768931.38
RE35-04-54880	35-23290	Ten Site Slope	12/15/2004	1627922.18	1768931.38
RE35-04-54881	35-23291	Ten Site Slope	12/15/2004	1627868.6	1769056.43
RE35-04-54882	35-23291	Ten Site Slope	12/15/2004	1627868.6	1769056.43
RE35-04-54883	35-23292	Ten Site Slope	12/17/2004	1628114.337	1768800.231
RE35-04-54884	35-23292	Ten Site Slope	12/17/2004	1628114.337	1768800.231
RE35-04-54885	35-23292	Ten Site Slope	12/17/2004	1628114.337	1768800.231
RE35-05-58304	35-24400	Pratt Canyon	2/23/2005	1629196.12	1769190
RE35-05-58305	35-24400	Pratt Canyon	2/23/2005	1629196.12	1769190
RE35-05-58306	35-24401	Pratt Canyon	2/28/2005	1629387.899	1769098.848
RE35-05-58307	35-24401	Pratt Canyon	2/28/2005	1629387.899	1769098.848
RE35-05-58311	35-24402	Pratt Canyon	2/28/2005	1629386.935	1769082.242
RE35-05-58312	35-24402	Pratt Canyon	2/28/2005	1629386.935	1769082.242
RE35-05-58313	35-24402	Pratt Canyon	2/28/2005	1629386.935	1769082.242

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-05-58321	35-24404	Pratt Canyon	2/28/2005	1629424.265	1768908.324
RE35-05-58322	35-24404	Pratt Canyon	2/28/2005	1629424.265	1768908.324
RE35-05-58326	35-24405	Pratt Canyon	2/28/2005	1629424.238	1768903.648
RE35-05-58327	35-24405	Pratt Canyon	2/28/2005	1629424.238	1768903.648
RE35-05-58331	35-24406	Pratt Canyon	2/28/2005	1629413.225	1768902.439
RE35-05-58336	35-24407	Pratt Canyon	2/27/2005	1628722.915	1769184.991
RE35-05-58337	35-24407	Pratt Canyon	2/27/2005	1628722.915	1769184.991
RE35-05-58339	35-24408	Pratt Canyon	2/27/2005	1628734.826	1769212.34
RE35-05-58342	35-24409	Pratt Canyon	2/28/2005	1628876.729	1769228.052
RE35-05-58343	35-24409	Pratt Canyon	2/28/2005	1628876.729	1769228.052
RE35-05-58345	35-24410	Pratt Canyon	2/28/2005	1628855.57	1769190
RE35-05-58346	35-24410	Pratt Canyon	2/28/2005	1628855.57	1769190
RE35-05-58347	35-24411	Pratt Canyon	2/26/2005	1628617.63	1769150
RE35-05-58348	35-24411	Pratt Canyon	2/26/2005	1628617.63	1769150
RE35-05-58349	35-24411	Pratt Canyon	2/26/2005	1628617.63	1769150
RE35-05-58350	35-24411	Pratt Canyon	2/26/2005	1628617.63	1769150
RE35-05-58351	35-24411	Pratt Canyon	2/26/2005	1628617.63	1769150
RE35-05-58352	35-24412	Pratt Canyon	2/26/2005	1628525.77	1769140
RE35-05-58353	35-24412	Pratt Canyon	2/26/2005	1628525.77	1769140
RE35-05-58354	35-24412	Pratt Canyon	2/27/2005	1628525.77	1769140
RE35-05-58355	35-24413	Pratt Canyon	2/24/2005	1628613.19	1769060
RE35-05-58356	35-24413	Pratt Canyon	2/24/2005	1628613.19	1769060
RE35-05-58357	35-24413	Pratt Canyon	2/25/2005	1628613.19	1769060
RE35-05-58364	35-24414	Mesa Top	2/27/2005	1628434.6	1769240
RE35-05-58365	35-24414	Mesa Top	2/27/2005	1628434.6	1769240
RE35-05-58366	35-24414	Mesa Top	2/27/2005	1628434.6	1769240
RE35-05-58367	35-24415	Mesa Top	2/27/2005	1628491	1769249
RE35-05-58368	35-24415	Mesa Top	2/27/2005	1628491	1769249
RE35-05-58369	35-24415	Mesa Top	2/27/2005	1628491	1769249
RE35-05-58370	35-24416	Mesa Top	2/25/2005	1628622.48	1769193.88
RE35-05-58371	35-24416	Mesa Top	2/25/2005	1628622.48	1769193.88
RE35-07-4022	35-600908	Mortandad Slope	6/27/2007	1628765.499	1769532.239
RE35-07-4023	35-23188	Mortandad Slope	6/27/2007	1628765.499	1769531.239
RE35-07-4028	35-600909	Mortandad Slope	6/27/2007	1628765.499	1769530.239
RE35-07-75172	35-02043	Mortandad Slope	4/10/2007	1628296.319	1769636.831
RE35-07-75173	35-02043	Mortandad Slope	4/10/2007	1628296.319	1769636.831
RE35-07-75174	35-02255	Mortandad Slope	4/10/2007	1628304.75	1769635.72
RE35-07-75175	35-02255	Mortandad Slope	4/10/2007	1628304.75	1769635.72
RE35-07-75176	35-02254	Mortandad Slope	4/10/2007	1628304.17	1769632.4

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-07-75177	35-02254	Mortandad Slope	4/10/2007	1628304.17	1769632.4
RE35-07-75178	35-02508	Mortandad Slope	4/11/2007	1628399.458	1769598.795
RE35-07-75179	35-02508	Mortandad Slope	4/11/2007	1628399.458	1769598.795
RE35-07-75180	35-02091	Mortandad Slope	4/11/2007	1628399.05	1769586.53
RE35-07-75181	35-02091	Mortandad Slope	4/11/2007	1628399.05	1769586.53
RE35-07-75182	35-02092	Mortandad Slope	4/11/2007	1628400.01	1769588.63
RE35-07-75183	35-02092	Mortandad Slope	4/11/2007	1628400.01	1769588.63
RE35-07-75184	35-02095	Mortandad Slope	4/16/2007	1628732.09	1769500.25
RE35-07-75185	35-02095	Mortandad Slope	4/16/2007	1628732.09	1769500.25
RE35-07-75186	35-02096	Mortandad Slope	4/16/2007	1628735.15	1769504.69
RE35-07-75187	35-02096	Mortandad Slope	4/16/2007	1628735.15	1769504.69
RE35-07-75188	35-02096	Mortandad Slope	4/16/2007	1628735.15	1769504.69
RE35-07-75189	35-02095	Mortandad Slope	4/16/2007	1628732.09	1769500.25
RE35-07-75194	35-27421	Pratt Canyon	4/3/2007	1628741.007	1769157.11
RE35-07-75195	35-27421	Pratt Canyon	4/3/2007	1628741.007	1769157.11
RE35-07-75196	35-27422	Pratt Canyon	4/3/2007	1628741.938	1769174.804
RE35-07-75197	35-27422	Pratt Canyon	4/3/2007	1628741.938	1769174.804
RE35-07-75198	35-27423	Mortandad Slope	4/16/2007	1628298.817	1769832.471
RE35-07-75199	35-27423	Mortandad Slope	4/16/2007	1628298.817	1769832.471
RE35-07-75200	35-27424	Mortandad Slope	4/16/2007	1628508.06	1769737.341
RE35-07-75201	35-27424	Mortandad Slope	4/16/2007	1628508.06	1769737.341
RE35-07-75202	35-27425	Mortandad Slope	4/16/2007	1628481.054	1769748.517
RE35-07-75203	35-27425	Mortandad Slope	4/16/2007	1628481.054	1769748.517
RE35-07-75204	35-27426	Mortandad Slope	4/16/2007	1628441.941	1769765.279
RE35-07-75205	35-27426	Mortandad Slope	4/16/2007	1628441.941	1769765.279
RE35-07-75206	35-27427	Mortandad Slope	4/16/2007	1628391.583	1769787.27
RE35-07-75207	35-27427	Mortandad Slope	4/16/2007	1628391.583	1769787.27
RE35-07-75208	35-27428	Mortandad Slope	4/16/2007	1628368.66	1769797.084
RE35-07-75209	35-27428	Mortandad Slope	4/16/2007	1628368.66	1769797.084
RE35-07-75210	35-27429	Mortandad Slope	4/16/2007	1628874.183	1769610.837
RE35-07-75211	35-27429	Mortandad Slope	4/16/2007	1628874.183	1769610.837
RE35-07-75212	35-27430	Mortandad Slope	4/16/2007	1628842.521	1769617.355
RE35-07-75213	35-27430	Mortandad Slope	4/16/2007	1628842.521	1769617.355
RE35-07-75214	35-27431	Mortandad Slope	4/16/2007	1628781.99	1769635.049
RE35-07-75215	35-27431	Mortandad Slope	4/16/2007	1628781.99	1769635.049
RE35-07-75216	35-27432	Mortandad Slope	4/16/2007	1628754.983	1769649.018
RE35-07-75217	35-27432	Mortandad Slope	4/16/2007	1628754.983	1769649.018
RE35-07-75218	35-27433	Mortandad Slope	4/16/2007	1628917.638	1769594.197
RE35-07-75219	35-27433	Mortandad Slope	4/16/2007	1628917.638	1769594.197

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-07-75224	35-02214	Pratt Canyon	4/6/2007	1628720.9	1769170.67
RE35-07-75225	35-02214	Pratt Canyon	4/6/2007	1628720.9	1769170.67
RE35-07-75226	35-27434	Mortandad Slope	4/16/2007	1628348.173	1769808.259
RE35-07-75227	35-27434	Mortandad Slope	4/16/2007	1628348.173	1769808.259
RE35-07-75228	35-27435	Mortandad Slope	4/16/2007	1628324.892	1769819.434
RE35-07-75229	35-27435	Mortandad Slope	4/16/2007	1628324.892	1769819.434
RE35-07-75230	35-24402	Pratt Canyon	4/3/2007	1629386.935	1769082.242
RE35-07-75231	35-24402	Pratt Canyon	4/3/2007	1629386.935	1769082.242
RE35-07-75232	35-24405	Pratt Canyon	4/3/2007	1629424.238	1768903.648
RE35-07-75233	35-24405	Pratt Canyon	4/3/2007	1629424.238	1768903.648
RE35-07-75242	35-02255	Mortandad Slope	4/10/2007	1628304.75	1769635.72
RE35-07-75602	35-27427	Mortandad Slope	4/16/2007	1628391.583	1769787.27
RE35-07-75603	35-27425	Mortandad Slope	4/16/2007	1628481.054	1769748.517
RE35-07-75604	35-02508	Mortandad Slope	4/11/2007	1628399.458	1769598.795
RE35-07-75605	35-02092	Mortandad Slope	4/11/2007	1628400.01	1769588.63
RE35-07-75609	35-27429	Mortandad Slope	4/16/2007	1628874.183	1769610.837
RE35-07-76427	35-02503	Pratt Canyon	4/6/2007	1628540.206	1769265.926
RE35-07-76428	35-02503	Pratt Canyon	4/6/2007	1628540.206	1769265.926
RE35-07-76429	35-02502	Pratt Canyon	4/6/2007	1628509.726	1769286.057
RE35-07-76430	35-02502	Pratt Canyon	4/6/2007	1628509.726	1769286.057
RE35-98-0001	35-02204	Ten Site Canyon	6/19/1998	1630264.779	1769117.83
RE35-98-0002	35-02600	Ten Site Canyon	6/18/1998	1629890	1769156
RE35-98-0003	35-02601	Ten Site Canyon	6/18/1998	1629925	1769162
RE35-98-0004	35-02602	Ten Site Canyon	6/18/1998	1630149	1769167
RE35-98-0005	35-02603	Ten Site Canyon	6/18/1998	1630193	1769166
RE35-98-0006	35-02604	Ten Site Canyon	6/18/1998	1629913	1769159
RE35-98-0007	35-02605	Ten Site Canyon	6/18/1998	1630166	1769119
RE35-98-0008	35-02606	Ten Site Canyon	6/19/1998	1630076	1769017
RE35-98-0009	35-02607	Ten Site Canyon	6/19/1998	1630316	1769038
RE35-98-0010	35-02608	Ten Site Canyon	6/18/1998	1629928	1769043
RE35-98-0011	35-02608	Ten Site Canyon	6/18/1998	1629928	1769043
RE35-98-0012	35-02610	Ten Site Canyon	6/18/1998	1630148	1769174
RE35-98-0013	35-02611	Ten Site Canyon	6/18/1998	1630152	1769170
RE35-98-0014	35-02612	Ten Site Canyon	6/18/1998	1630166	1769175
RE35-98-0015	35-02613	Ten Site Canyon	6/18/1998	1630185	1769168
RE35-98-0016	35-02614	Ten Site Canyon	6/18/1998	1630197	1769173
RE35-98-0017	35-02615	Ten Site Canyon	6/18/1998	1630208	1769169
RE35-98-0018	35-02616	Ten Site Canyon	6/18/1998	1629907	1769168
RE35-98-0019	35-02617	Ten Site Canyon	6/18/1998	1630173	1769118

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE35-98-0020	35-02618	Ten Site Canyon	6/18/1998	1629926	1769167
RE35-98-0021	35-02619	Ten Site Canyon	6/18/1998	1629889	1769160
RE35-98-0024	35-02169	Ten Site Slope	6/19/1998	1627359.04	1769166.57
RE35-98-0028	35-02596	Ten Site Slope	6/29/1998	1627344	1769165
RE35-98-0029	35-02596	Ten Site Slope	6/29/1998	1627344	1769165
RE35-98-0030	35-02596	Ten Site Slope	6/29/1998	1627344	1769165
RE35-98-0031	35-02596	Ten Site Slope	6/29/1998	1627344	1769165
RE35-98-0032	35-02597	Ten Site Slope	6/29/1998	1627432	1769169
RE35-98-0036	35-02598	Ten Site Slope	6/29/1998	1627449	1769126
RE35-98-0040	35-02599	Ten Site Slope	6/29/1998	1627482	1768944
RE52-04-53995	52-02002	East Ten Site Slope	10/8/2004	1628753.11	1768402.45
RE52-04-53996	52-02002	East Ten Site Slope	10/8/2004	1628753.11	1768402.45
RE52-04-53997	52-02002	East Ten Site Slope	10/8/2004	1628753.11	1768402.45
RE52-04-53998	52-02002	East Ten Site Slope	10/8/2004	1628753.11	1768402.45
RE52-04-53999	52-02006	East Ten Site Slope	10/7/2004	1628807.08	1768392.77
RE52-04-54000	52-02006	East Ten Site Slope	10/7/2004	1628807.08	1768392.77
RE52-04-54001	52-02006	East Ten Site Slope	10/7/2004	1628807.08	1768392.77
RE52-04-54002	52-02006	East Ten Site Slope	10/7/2004	1628807.08	1768392.77
RE52-04-54003	52-02003	East Ten Site Slope	10/6/2004	1628869.55	1768402.64
RE52-04-54004	52-02003	East Ten Site Slope	10/6/2004	1628869.55	1768402.64
RE52-04-54005	52-02003	East Ten Site Slope	10/6/2004	1628869.55	1768402.64
RE52-04-54006	52-02003	East Ten Site Slope	10/6/2004	1628869.55	1768402.64
RE52-04-54007	52-02008	East Ten Site Slope	10/7/2004	1628804.95	1768363.3
RE52-04-54008	52-02008	East Ten Site Slope	10/7/2004	1628804.95	1768363.3
RE52-04-54009	52-02008	East Ten Site Slope	10/7/2004	1628804.95	1768363.3
RE52-04-54010	52-02008	East Ten Site Slope	10/7/2004	1628804.95	1768363.3
RE52-04-54011	52-02010	East Ten Site Slope	10/8/2004	1628781.23	1768355.3
RE52-04-54012	52-02010	East Ten Site Slope	10/8/2004	1628781.23	1768355.3
RE52-04-54013	52-02010	East Ten Site Slope	10/8/2004	1628781.23	1768355.3
RE52-04-54787	52-23251	East Ten Site Slope	10/12/2004	1628740.985	1768667.877
RE52-04-54788	52-23251	East Ten Site Slope	10/12/2004	1628740.985	1768667.877
RE52-04-54789	52-23252	East Ten Site Slope	10/12/2004	1628797.061	1768691.763
RE52-04-54790	52-23252	East Ten Site Slope	10/12/2004	1628797.061	1768691.763
RE52-04-54791	52-23253	East Ten Site Slope	10/12/2004	1628852.39	1768742.412
RE52-04-54792	52-23253	East Ten Site Slope	10/12/2004	1628852.39	1768742.412
RE52-04-54793	52-23254	East Ten Site Slope	10/12/2004	1628917.943	1768746.165
RE52-04-54794	52-23254	East Ten Site Slope	10/12/2004	1628917.943	1768746.165
RE52-04-54796	52-23253	East Ten Site Slope	10/12/2004	1628852.39	1768742.412
RE52-04-54797	52-23254	East Ten Site Slope	10/12/2004	1628917.943	1768746.165

Table 3.0-3 (continued)

Sample ID	Location ID	Subarea	Collection Date	Easting (ft)	Northing (ft)
RE60-04-54260	60-23008	Sigma Mesa	10/15/2004	1627762.485	1770772.352
RE60-04-54261	60-23008	Sigma Mesa	10/15/2004	1627762.485	1770772.352
RE60-04-54262	60-23009	Sigma Mesa	10/15/2004	1627791.246	1770900.818
RE60-04-54263	60-23009	Sigma Mesa	10/15/2004	1627791.246	1770900.818
RE60-04-54264	60-23010	Sigma Mesa	10/15/2004	1627695.376	1770919.992
RE60-04-54265	60-23010	Sigma Mesa	10/15/2004	1627695.376	1770919.992
RE60-04-54266	60-23011	Sigma Mesa	10/15/2004	1627670.45	1770791.526
RE60-04-54267	60-23011	Sigma Mesa	10/15/2004	1627670.45	1770791.526
RE60-04-54268	60-23012	Sigma Mesa	2/15/2005	1627766.01	1770834.85
RE60-04-54269	60-23012	Sigma Mesa	2/15/2005	1627766.01	1770834.85
RE60-04-54270	60-23013	Sigma Mesa	10/18/2004	1628937.83	1770339.504
RE60-04-54271	60-23013	Sigma Mesa	10/18/2004	1628937.83	1770339.504
RE60-04-54272	60-23014	Sigma Mesa	10/18/2004	1628783.441	1770381.836
RE60-04-54273	60-23014	Sigma Mesa	10/18/2004	1628783.441	1770381.836
RE60-04-54800	60-23255	Sigma Mesa	10/6/2004	1627644.635	1770411.886
RE60-04-54801	60-23255	Sigma Mesa	10/6/2004	1627644.635	1770411.886
RE60-04-54802	60-23256	Sigma Mesa	10/6/2004	1627589.313	1770286.588
RE60-04-54803	60-23256	Sigma Mesa	10/6/2004	1627589.313	1770286.588
RE60-04-54804	60-23257	Sigma Mesa	10/6/2004	1627603.674	1770273.536
RE60-04-54805	60-23257	Sigma Mesa	10/6/2004	1627603.674	1770273.536
RE60-04-54806	60-23258	Sigma Mesa	10/6/2004	1628804.384	1769955.994
RE60-04-54807	60-23258	Sigma Mesa	10/6/2004	1628804.384	1769955.994
RE60-04-54808	60-23259	Sigma Mesa	10/6/2004	1628912.059	1770090.679
RE60-04-54809	60-23259	Sigma Mesa	10/6/2004	1628912.059	1770090.679
RE60-04-54810	60-23260	Sigma Mesa	10/6/2004	1628816.55	1769883.383
RE60-04-54811	60-23260	Sigma Mesa	10/6/2004	1628816.55	1769883.383
RE60-04-54812	60-23261	Sigma Mesa	10/6/2004	1628880.447	1769893.442
RE60-04-54813	60-23261	Sigma Mesa	10/6/2004	1628880.447	1769893.442
RE60-04-54815	60-23259	Sigma Mesa	10/6/2004	1628912.059	1770090.679

Table 4.0-1
Noncarcinogenic SSLs

Analyte	Industrial SSL[a] (mg/kg)	Recreational SSL[b] (mg/kg)	Residential SSL[a] (mg/kg)
Aluminum	1.00E+05[c]	1.00E+05[c]	7.78E+04
Antimony	454	317	31.3
Barium	1.00E+05[c]	1.00E+05[c]	1.56E+04
Beryllium	2250	1580	156
Boron	1.00E+05[c]	1.00E+05[c]	1.56E+04
Cadmium	564	392	39
Cobalt	2.05E+04	1.57E+04	1520
Copper	4.54E+04	3.17E+04	3130
Fluoride	4.10E+04	3670 [a]	3670
Lead	800	560	400
Lithium	2.3E+04[d]	1600[d]	1600[d]
Mercury	340[d]	238	23 [d]
Molybdenum	5680	3960	391
Nickel	2.27E+04	1.58E+04	1560
Nitrate	1.00E+05[c]	1.00E+05[c]	1.00E+05[c]
Nitrite	1.00E+05[c]	7.92E+04	7820
Selenium	5680	3960	391
Silver	5680	3960	391
Strontium	1.00E+05[c]	1.00E+05[c]	4.69E+04
Thallium	74.9	52.3	5.16
Titanium[e]	1.00E+05[c]	1.00E+05[c]	1.00E+05[c]
Vanadium	1140	792	78.2
Zinc	1.00E+05[c]	1.00E+05[c]	2.35E+04
Acenaphthene	3.35E+04	4.75E+04	3730
Acenaphthylene[f]	3.09E+04	2.38E+04	2290
Acetone	1.00E+05[c]	1.00E+05[c]	2.81E+04
Aroclor-1254	12[d]	6.65	1.12
Aroclor-1260	none	15.8	1.12
Anthracene	1.00E+05[c]	1.00E+05[c]	2.20E+04
Benzo(g,h,i)perylene[f]	3.09E+04	2.38E+04	2290
Benzoic acid	1.00E+05[c,d]	1.00E+05[c]	1.00E+05[c,d]
Butanone(2-)	4.87E+04	4.87E+04[c]	3.18E+04
Butylbenzene[sec-]	60.6[c]	60.6[c]	60.6[c]
Butyl benzyl phthalate	240[c,d]	7.97E+04	240[c,d]
Chloroaniline[4-]	2700[d]	240[c,d]	240[d]
4-Chloro-3-methylphenol[g]	885	2750	166
Dibenzofuran	1620	1580	142
Dichloroethene(1,1-)	777	5050	206
Dichloroethene[cis-1,2-]	300	1750	76.5
Diethylphthalate	1.00E+05[c]	1.00E+05[c]	4.89E+04
Dimethyl phthalate	1.00E+05[c]	1.00E+05[c]	1.00E+05[c]

Table 4.0-1 (continued)

Analyte	Industrial SSL[a] (mg/kg)	Recreational SSL[b] (mg/kg)	Residential SSL[a] (mg/kg)
Di-n-butyl phthalate	6.84E+04	3.99E+04	6110
Di-n-octyl phthalate	2.70E+04[d]	1.59E+04	2400[d]
Endosulfan I[h]	4100	2390	367
Endosulfan II[h]	4100	2390	367
Endrin	205	120	18.3
Ethylbenzene	128[c]	128[c]	128[c]
Fluoranthene	2.44E+04	1.39E+04	2290
Fluorene	2.65E+04	3.17E+04	2660
Hexanone(2-)[i]	4.87E+04	4.89E+04[c]	3.18E+04
Isopropyltoluene(4-)[j]	389[c]	389[c]	271
Methoxychlor(4,4'-)	3400[d]	1650	310[d]
Methyl-2-pentanone[4-] (methyl isobutyl ketone)	7010[c]	6.03E+04	5510
Methylnaphthalene(2-)[k]	300	3170	79.5
Methylphenol(4-)	3400[d]	2750[g]	310[d]
Naphthalene	300	1.58E+04	79.5
Perchlorate	790[d]	55[d]	55[d]
Phenanthrene	2.05E+04	1.20E+04	1830
Phenol	1.00E+05[c]	1.00E+05[c]	1.83E+04
Pyrene	3.09E+04	2.38E+04	2290
Styrene	100[c]	100[c]	100[c]
Toluene	252[c]	252[c]	252[c]
Trichloro-1,2,2-trifluoroethane[1,1,2-]	3280[c]	3280[c]	3280[c]
Trichlorofluoromethane	983[c]	983[c]	588
Trimethylbenzene(1,2,4-)	213	1520	58.1
Trimethylbenzene(1,3,5-)	69.2[c]	69.2[c]	24.8
Xylene[1,2-]	99.5[c]	99.5[c]	99.5[c]
Xylene[1,3-]+Xylene[1,4-]	82[c]	82[c]	82[c]
Xylene (total)	82[c]	82[c]	82[c]

[a] Values from NMED 2006 (092513).

[b] Values from LANL 2007 (094496).

[c] Maximum value or saturated value.

[d] Values from EPA Region 6 (EPA 2006, 094321).

[e] Value from EPA Region 9 (http://www.epa.gov/region09/waste/sfund/prg/index.html).

[f] Pyrene used as a surrogate for acenaphthylene and benzo(g,h,i)perylene.

[g] 2-Chlorophenol used as a surrogate for 4-chloro-3-methylphenol for all SSLs and 4-methylphenol for recreational SSL only.

[h] Endosulfan used as a surrogate for Endosulfan I and Endosulfan II.

[i] 2-Butanone used as a surrogate.

[j] Isopropylbenzene used as a surrogate.

[k] Naphthalene used as a surrogate for industrial and residential.

Table 4.0-2
Carcinogenic SSLs

Analyte	Industrial SSL[a] (mg/kg)	Recreational SSL[b] (mg/kg)	Residential SSL[a] (mg/kg)
Arsenic	17.7	27.7	3.9
Chromium	5000[c]	2.57E+05	2100[c]
Aldrin	1.12	1.49	0.284
Aniline	3400[c]	850[c]	850[c]
Aroclor-1242	8.26	10.5	2.2[c]
Aroclor 1248	8.26	10.5	2.2[c]
Aroclor 1254	8.26	10.5	2.2[c]
Aroclor 1260	8.26	10.5	2.2[c]
Benzene	25.8	224	10.3
Benzo(a)anthracene	23.4	30.1	6.21
Benzo(a)pyrene	2.34	3.01	0.621
Benzo(b)fluoranthene	23.4	30.1	6.21
Benzo(k)fluoranthene	234	301	62.1
BHC(alpha-)	3.99	6.05	0.902
BHC(beta-)	14	21.2	3.16
BHC(gamma-)	19.3	29.3	4.37
Bis(2-ethylhexyl)phthalate	1370	1830	347
Chrysene	2310	3010	615
DDD(4,4'-)	111	173	24.4
DDE(4,4'-)	78.1	122	17.2
DDT(4,4'-)	78.1	122	17.2
Dibenz(a,h)anthracene	2.34	3.01	0.621
Dieldrin	1.20	1.60	0.304
Indeno(1,2,3-cd)pyrene	23.4	30.1	6.21
Methylene Chloride	490	3300	182
Pentachlorophenol	100	117	29.8
Tetrachloroethene	31.6	266	12.5
Trichloroethene	1.56	15.1	0.638

[a] Values from NMED 2006 (092513).

[b] Values from LANL 2007 (094496).

[c] EPA Region 6 (EPA 2006, 094321).

Table 4.0-3
Radionuclide SALs

Analyte	Industrial SAL (pCi/g)	Recreational SAL (pCi/g)	Residential SAL (pCi/g)
Americium-241	180	280	30
Cesium-134	9.7	87	2.4
Cesium-137	23	210	5.6
Cobalt-60	5.1	46	1.3
Europium-152	11	100	2.9
Plutonium-238	240	330	37
Plutonium-239	210	300	33
Ruthenium-106	83	740	20
Strontium-90	1900	5600	5.7
Thorium-228	9.8	77	2.3
Tritium	4.40E+05	5.10E+06	750
Uranium-234	1.50E+03	3.20E+03	170
Uranium-235	87	520	17
Uranium-238	430	2100	86

Note: Values from LANL 2007 (094496).

Table 4.0-4
Ecological Screening Levels

Analyte	Red Fox	Carnivorous Kestral	Omnivorous Kestral	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Aluminum	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Antimony	45	—*	—	—	—	—	2.9	0.26	0.48	78	5.00E-02
Arsenic	810	1.10E+03	160	42	26	18	160	15	32	6.8	18
Barium	4.10E+04	3.70E+04	1.10E+04	820	930	1.00E+03	3.30E+03	1.30E+03	1.80E+03	330	110
Beryllium	420	—	—	—	—	—	170	18	56	40	2.5
Boron	2.10E+04	1.40E+03	56	2	3.2	7.5	77	120	56	—	36
Cadmium	510	580	2.0	4.4	0.54	0.29	9.9	0.27	0.51	140	32
Chromium (total)	3.00E+04	3.70E+04	7.70E+03	1.90E+03	1.10E+03	830	1.30E+04	750	1.90E+03	2.3	2.40
Cobalt	5.40E+03	3.50E+03	930	1.70E+02	120	96	1.80E+03	160	400	—	13.00
Copper	3.50E+03	1.20E+03	88	28	16	11	250	34	59	13	10
Fluoride	4.60E+03	1.00E+03	210.00	210	54	31	3.50E+03	120	240	—	—
Lead	3.70E+03	810	120	21	16	14	370	72	120	1700	120
Manganese	3.50E+04	2.90E+05	1.10E+05	4.60E+03	6.40E+03	1.00E+04	1.70E+03	1.30E+03	1.20E+03	—	50
Mercury (inorganic)	46	0.28	8.20E-02	0.07	2.20E-02	1.30E-02	22	1.7	3	0.05	34
Nickel	3.10E+04	9.50E+03	530	530	120	70	1.20E+04	250	530	100.00	20
Selenium	110	140	8.5	1.5	1.3	1.1	3	0.92	1.1	7.70	0.1
Silver	1.30E+04	2.20E+03	52	30	11	7.2	490	44	77	—	0.05
Strontium (stable)	1.90E+04	—	—	—	—	—	110	660	96	—	—
Thallium	2.80E+00	7.50E+01	6.60E+00	9.2	1.6	0.9	2.8	3.20E-02	6.80E-02	—	0.10
Titanium	7.30E+03	—	—	—	—	—	5.90E+03	72	150	—	—
Vanadium	3.30E+03	170	84	8.9	7.6	6.7	1.50E+03	140	480	—	2.50E-02

Table 4.0-4 (continued)

Analyte	Red Fox	Carnivorous Kestral	Omnivorous Kestral	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Zinc	1.00E+04	1.40E+03	180	200	48	27	3.00E+03	160	290	190	10
Acenaphthene	6.20E+03	—	—	—	—	—	490	120	160	—	0.25
Acenaphthylene	5.20E+03	—	—	—	—	—	500	120	160	—	—
Acetone	2.90E+03	3.00E+04	1.20E+03	7.5	14	170	1.4	15	1.2	—	—
Anthracene	5.80E+03	—	—	—	—	—	1.10E+03	210	310	—	—
Aroclor-1242	16	1.40	0.26	1.0	7.90E-02	4.10E-02	30	0.38	0.76	—	—
Aroclor-1248	7.50E-02	0.34	0.20	1.0	7.90E-02	4.10E-02	0.59	7.20E-03	1.40E-02	—	—
Aroclor-1254	0.15	0.22	0.17	1.3	8.00E-02	4.10E-02	52	0.44	0.88	—	160
Aroclor-1260	0.14	4.60	3.70	46	1.7	0.88	3.00E+03	10	20	—	—
Benzene	7.60E+03	—	—	—	—	—	35	47	24	—	—
Benzo(a)anthracene	45	—	—	—	—	—	6.2	3	3.4	—	18.00
Benzo(a)pyrene	68	—	—	—	—	—	50	9.6	15	—	—
Benzo(b)fluoranthene	250	—	—	—	—	—	130	38	52	—	18.00
Benzo(g,h,i)perylene	94	—	—	—	—	—	540	24	47	—	—
Benzo(k)fluoranthene	400	—	—	—	—	—	350	62	100	—	—
Benzoic Acid	350	—	—	—	—	—	4.2	1.0	1.3	—	—
BHC[beta-]	15	650	96	80	24	14	3.4	0.27	0.46	—	—
BHC[gamma-]	0.56	10	1.4	1.1	0.36	0.21	0.12	9.40E-03	1.60E-02	—	0.10
Bis(2-ethylhexyl)phthalate	1.2	3.30E-02	4.50E-02	20	4.00E-02	2.00E-02	2.70E+03	0.59	1.1	—	—
Butanone[2-]	4.20E+05	—	—	—	—	—	420	2.60E+03	360	—	—
Butyl Benzyl Phthalate	1.90E+03	—	—	—	—	—	2.30E+03	90	160	—	—
Chrysene	46	—	—	—	—	—	6.5	2.4	3.1	—	—
DDE[4,4'-]	14	5.50E-02	6.20E-02	1.0	3.90E-02	1.90E-02	680	4.1	8.1	—	—

Table 4.0-4 (continued)

Analyte	Red Fox	Carnivorous Kestral	Omnivorous Kestral	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
DDT[4,4'-]	1.4	1.0	1.0	24	0.6	0.3	99	0.34	0.68	—	3.70
Dibenzofuran	—	—	—	—	—	—	—	—	—	—	6.10
Dibenzo(a,h)anthracene	54	—	—	—	—	—	95	12	22	—	—
Dichloroethene[1,1-]	2.90E+03	—	—	—	—	—	40	11	14	—	—
Dichloroethene[cis/trans-1,2-]	7.10E+03	—	—	—	—	—	58	23	25	—	—
Dimethyl Phthalate	2.40E+04	—	—	—	—	—	67	97	46	10	—
Di-n-butyl phthalate	5.00E+03	0.24	6.80E-02	0.39	2.10E-02	1.10E-02	1.60E+04	180	370	—	160
Di-n-octylphthalate	16	—	—	—	—	—	1.60E+04	1.1	2.2	—	—
Dieldrin	5.80E-02	0.12	6.30E-02	0.35	2.30E-02	1.20E-02	0.33	4.50E-03	8.80E-03	—	10.00
Endosulfan	35	1.10E+03	280	15	22	40	0.97	1	0.64	—	—
Endrin	0.41	2.00E-02	8.20E-03	4.90E-02	2.80E-03	1.40E-03	2	2.30E-02	4.60E-02	—	3.40E-03
Fluoranthene	360	—	—	—	—	—	260	22	38	38	—
Fluorene	9.30E+03	—	—	—	—	—	1.10E+03	250	340	4.1	—
Indeno(1,2,3-cd)pryene	2.70E+02	—	—	—	—	—	590	62	110	—	—
Methoxychlor[4,4']	87	250	100	110	32	18	80	5	9.1	—	—
Methylnaphthalene[2-]	130	—	—	—	—	—	16	2.5	3.8	—	—
Methylene Chloride	1.70E+03	—	—	—	—	—	3.4	9	2.6	—	1.60E+03
Naphthalene	42	6.30E+03	1.10E+03	37	61	170	0.45	0.96	0.34	—	1.0
Pentachlorophenol	13	5	2	31	0.72	0.36	170	0.81	1.6	31	5
Phenanthrene	290	—	—	—	—	—	59	10	15	34	—
Phenol	1.70E+04	—	—	—	—	—	43	550	38	1.8	0.79
Pyrene	360	—	—	—	—	—	110	22	32	18	—
Tetrachloroethene	31	—	—	—	—	—	8.8	0.18	0.36	—	10

Table 4.0-4 (continued)

Analyte	Red Fox	Carnivorous Kestral	Omnivorous Kestral	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Toluene	3.10E+03	—	—	—	—	—	61	23	25	—	200
Trichlorobenzene[1,2,4-]	12	—	—	—	—	—	11	0.27	0.51	1.2	—
Trichloroethane[1,1,1-]	5.00E+04	—	—	—	—	—	1.80E+03	260	400	—	—
Trichloroethene	6.40E+03	—	—	—	—	—	170	42	55	—	—
Xylene (total)	130	3.20E+03	280	90	56	41	7	1.4	2	—	100
Americium-241	2.60E+04	6.20E+04	3.50E+04	1.30E+04	4.00E+03	4.00E+03	3.20E+04	3.10E+04	3.20E+04	44	2.10E+04
Cesium-134	320	1.30E+03	1.70E+03	1.90E+03	1.70E+03	1.70E+03	1.00E+03	1.10E+03	1.10E+03	7.70E+02	1.10E+03
Cesium-137	680	2.90E+03	3.70E+03	4.20E+03	3.70E+03	3.80E+03	2.30E+03	2.40E+03	2.40E+03	1.70E+03	2.30E+03
Cobalt-60	700	1.50E+03	1.50E+03	1.50E+03	1.50E+03	1.50E+03	7.60E+02	7.60E+02	7.60E+02	550	750
Europium-152	500	1.00E+03	1.00E+03	1.00E+03	9.70E+02	9.70E+02	5.30E+02	5.20E+02	5.30E+02	380	5.20E+02
Plutonium-238	3.00E+04	1.30E+05	3.20E+04	8.30E+03	2.10E+03	2.00E+03	1.20E+05	9.20E+04	1.10E+05	4.40E+01	1.10E+05
Plutonium-239	3.30E+04	1.60E+05	3.40E+04	8.60E+03	2.10E+03	2.10E+03	1.70E+05	1.10E+05	1.50E+05	47	1.60E+05
Strontium-90	560	1900	2400	600	930	1500	1300	1700	1700	1200	1300
Thorium-228	820	1.60E+03	1.60E+03	1.50E+03	1.30E+03	1.30E+03	830	830	830	43	810
Tritium	1.90E+05	5.80E+05	6.30E+05	3.00E+05	4.40E+05	6.00E+05	2.30E+05	3.40E+05	3.30E+05	4.80E+04	3.60E+04
Uranium-234	4.50E+04	1.90E+05	1.20E+05	4.80E+04	1.40E+04	1.40E+04	9.60E+04	9.40E+04	9.10E+04	51	1.40E+04
Uranium-235	4.80E+03	1.00E+04	1.00E+04	9.00E+03	6.40E+03	6.40E+03	5.10E+03	5.10E+03	5.10E+03	55	4.00E+03
Uranium-238	2.00E+03	4.20E+03	4.10E+03	3.90E+03	3.40E+03	3.40E+03	2.10E+03	2.10E+03	2.10E+03	55	1.80E+03

Note: Units are mg/kg for chemicals and pCi/g for radionuclides.

*— = Not available.

Table 5.2-1
Summary of COPCs Identified for Mesa Top Subarea

COPC	SWMU/AOC/Consolidated Unit											
	35-002	35-003(a)-99	35-003(j)-99	35-004(a)	35-004(h)	35-009(a)	35-011(d)	35-014(a)	35-014(f)	35-015(a)	35-018(a)	Subarea
Inorganic Chemicals												
Aluminum	—[a]	—	—	—	—	●[b]	—	—	—	—	—	—
Antimony	—	●	●	—	—	●	—	—	●	●	—	●[c]
Barium	—	●	●	—	—	●	—	—	—	—	—	●
Boron	—	●	—	—	—	—	—	—	—	—	—	●
Bromide	—	●	—	—	—	—	—	—	—	—	—	—
Cadmium	—	—	—	—	—	●	—	—	—	—	—	—
Chromium	—	●	—	—	—	●	—	—	●	●	—	●
Cobalt	—	—	—	—	—	●	—	—	—	—	—	—
Copper	—	●	—	—	—	●	—	—	—	—	—	●
Fluoride	—	●	—	—	—	—	—	—	—	—	—	●
Lead	—	●	●	—	—	●	—	—	—	—	—	●
Lithium	—	—	—	—	—	●	—	—	—	—	—	—
Mercury	—	●	●	—	—	●	—	—	—	—	●	●
Nickel	—	●	●	—	—	●	—	—	●	●	—	●
Selenium	●	●	●	●	●	●	●	—	●	●	—	●
Silver	—	●	●	—	—	●	—	—	●	●	—	●
Thallium	—	●	—	—	—	—	—	—	—	—	—	●
Titanium	—	●	—	—	—	—	—	—	—	—	—	●
Zinc	—	●	—	—	—	●	—	—	—	—	—	●
Radionuclides												
Americium-241	—	●	—	—	—	—	—	—	—	—	—	—
Cesium-137	—	●	—	—	—	—	—	●	—	—	—	●
Cobalt-60	—	●	—	—	—	—	—	●	—	—	—	●
Europium-152	—	●	—	—	—	—	—	●	—	●	—	●
Plutonium-238	—	●	—	—	—	●	—	—	—	—	—	●
Plutonium-239	—	●	●	—	—	●	—	●	—	●	—	●
Strontium-90	—	●	—	—	—	●	—	—	—	—	—	●
Tritium	●	●	—	●	●	●	—	●	—	—	●	●
Uranium-234	—	●	●	—	—	●	—	●	—	—	—	●
Uranium-235	—	●	●	—	—	●	—	●	—	—	—	●
Uranium-238	—	●	●	—	—	●	—	●	—	—	—	●

Table 5.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit											
	35-002	35-003(a)-99	35-003(j)-99	35-004(a)	35-004(h)	35-009(a)	35-011(d)	35-014(a)	35-014(f)	35-015(a)	35-018(a)	Subarea
Organic Chemicals												
Acenaphthene	—	—	●	—	—	—	—	—	—	—	●	●
Acetone	—	●	●	—	—	●	●	—	●	●	—	●
Anthracene	—	●	●	—	—	—	—	—	—	●	●	●
Aroclor-1242	—	—	—	—	—	●	—	—	—	—	—	—
Aroclor-1248	—	—	●	—	—	—	—	—	—	—	—	●
Aroclor-1254	—	—	●	—	—	●	—	—	—	—	—	●
Aroclor-1260	●	●	●	—	—	●	—	—	—	—	●	●
Benzo(a)anthracene	—	●	●	—	—	—	—	—	—	●	●	●
Benzo(a)pyrene	—	●	●	—	—	—	—	—	—	●	●	●
Benzo(b)fluoranthene	—	●	●	—	—	—	—	—	—	●	●	●
Benzo(g,h,i)perylene	—	—	●	—	—	—	—	—	—	—	●	●
Benzo(k)fluoranthene	—	—	●	—	—	—	—	—	—	●	●	●
Bis(2-ethylhexyl)phthalate	—	●	●	—	—	●	—	—	●	●	●	●
Butanone[2-]	—	●	●	—	—	—	—	—	—	●	—	●
Butylbenzene[sec-]	—	—	●	—	—	—	—	—	—	—	—	●
Chrysene	—	●	●	—	—	—	—	—	—	●	●	●
DDE[4,4'-]	—	—	—	—	—	●	—	—	—	—	—	—
DDT[4,4'-]	—	—	—	—	—	—	—	—	—	●	—	●
Dibenz(a,h)anthracene	—	—	●	—	—	—	—	—	—	—	—	●
Dibenzofuran	—	—	●	—	—	—	—	—	—	—	●	●
Dichloroethene[1,1]	—	—	—	—	—	●	—	—	—	—	—	—
Dichloroethene[cis-1,2-]	—	—	—	—	—	—	—	—	●	—	—	●
Diethylphthalate	—	—	—	—	—	●	—	—	—	—	—	—
Dimethyl Phthalate	—	—	—	—	—	—	—	—	—	●	—	●
Di-n-butylphthalate	—	—	●	—	—	●	—	—	—	—	—	●
Di-n-octylphthalate	—	●	—	—	—	—	—	—	—	—	—	—
Ethylbenzene	—	—	●	—	—	—	—	—	—	—	—	●
Fluoranthene	—	●	●	—	—	—	—	—	—	●	●	●
Fluorene	—	—	●	—	—	—	—	—	—	—	●	●
Hexanone[2-]	—	●	●	—	—	—	—	—	—	●	—	●
Indeno(1,2,3-cd)pyrene	—	●	●	—	—	—	—	—	—	—	●	●
Isopropyltoluene[4-]	—	—	●	—	—	●	—	—	—	—	—	●
Methyl-2-pentanone[4-]	—	—	●	—	—	—	—	—	—	●	—	●
Methylene Chloride	—	●	●	—	—	—	—	—	—	—	—	●

Table 5.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit											
	35-002	35-003(a)-99	35-003(j)-99	35-004(a)	35-004(h)	35-009(a)	35-011(d)	35-014(a)	35-014(f)	35-015(a)	35-018(a)	Subarea
Methylnaphthalene[2-]	—	—	●	—	—	—	—	—	—	—	●	●
Naphthalene	—	—	●	—	—	—	—	—	—	—	●	●
Phenanthrene	—	●	●	—	—	—	—	—	—	●	●	●
Phenol	—	—	●	—	—	—	—	—	—	—	—	●
Pyrene	—	●	●	—	—	●	—	—	—	●	●	●
Tetrachloroethene	—	—	●	—	—	—	—	—	●	●	—	●
Toluene	—	—	●	—	—	●	—	—	●	●	—	●
TPH-DRO	—	—	●	—	—	—	●	—	●	●	—	●
Trichloro-1,2,2-trifluoroethane[1,1,2-]	—	—	●	—	—	—	—	—	—	●	—	●
Trichloroethene	—	●	●	—	—	—	—	—	●	—	—	●
Trichlorofluoromethane	—	●	●	—	—	—	—	—	—	●	—	●
Trimethylbenzene[1,2,4-]	—	—	●	—	—	—	—	—	—	—	—	●
Trimethylbenzene[1,3,5-]	—	—	●	—	—	—	—	—	—	—	—	●
Xylene (total)	—	—	●	—	—	—	—	—	—	●	—	●
Xylene[1,2-]	—	—	—	—	—	—	—	—	—	●	—	●
Xylene[1,3-]+Xylene[1,4-]	—	—	—	—	—	—	—	—	—	●	—	●

[a] — = Analyte is not a COPC.

[b] ● = Analyte is a COPC.

[c] Subarea COPCs based on data from 0–5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

Table 5.3-1
Summary of Human Health Risk Screening for Site Decisions

Subarea/Site	Decision Scenario	HI	Cancer Risk	Dose (mrem/yr)	Total Equivalent Radionuclide Risk
Mesa Top Subarea					
SWMU 35-002	Residential	1	7×10^{-6}	0.002	4×10^{-8}
SWMU 35-004(a)	Residential	—*	—	0.001	2×10^{-8}
SWMU 35-004(h)	Residential	0.002	—	0.005	1×10^{-7}
SWMU 35-014(a)	Residential	—	—	3	2×10^{-5}
AOC 35-014(f)	Residential	0.01	2×10^{-7}	—	—
Consolidated Unit 35-003(a)-99	Industrial	0.06	3×10^{-7}	4	4×10^{-5}
Consolidated Unit 35-003(j)-99	Industrial	0.1	8×10^{-5}	0.2	3×10^{-6}
SWMU 35-009(a)	Industrial	0.3	2×10^{-6}	0.2	2×10^{-6}
SWMU 35-015(a)	Industrial	0.02	6×10^{-8}	0.002	2×10^{-9}
AOC 35-018(a)	Industrial	0.007	3×10^{-5}	1×10^{-6}	2×10^{-11}
Ten Site Slope Subarea					
Consolidated Unit 35-004(g)-00	Residential	0.1	7×10^{-7}	2	1×10^{-5}
Consolidated Unit 35-014(g)-00	Residential	0.2	4×10^{-6}	2	7×10^{-6}
Consolidated Unit 35-016(a)-00	Residential	0.1	9×10^{-6}	0.5	2×10^{-6}
AOC 35-016(b)	Residential	0.2	1×10^{-8}	0.4	2×10^{-6}
SWMU 35-009(a)	Recreational	0.3	2×10^{-6}	0.1	1×10^{-7}
SWMU 35-009(e)	Recreational	1	1×10^{-5}	0.1	3×10^{-7}
AOC 35-014(g3)	Recreational	0.002	7×10^{-6}	0.05	2×10^{-7}
Consolidated Unit 35-016(c)-00	Recreational	0.06	4×10^{-8}	0.1	4×10^{-7}
AOC 35-016(j)	Recreational	0.002	6×10^{-6}	0.003	1×10^{-9}
Mortandad Slope Subarea					
SWMU 35-004(b)	Residential	0.00008	4×10^{-7}	—	—
Consolidated Unit 35-008-00	Residential	0.7	9×10^{-7}	3	2×10^{-5}
SWMU 35-009(c)	Residential	0.3	5×10^{-6}	2	5×10^{-6}
AOC 35-016(f)	Residential	0.02	8×10^{-7}	—	—
Consolidated Unit 35-016(i)-00	Residential	0.2	4×10^{-6}	—	—
SWMU 35-016(p)	Residential	0.002	1×10^{-6}	2	1×10^{-5}
SWMU 35-016(o)	Recreational	0.1	9×10^{-6}	0.4	1×10^{-6}
Pratt Canyon Subarea					
SWMU 35-009(d)	Residential	0.4	1×10^{-5}	0.3	2×10^{-6}
SWMU 35-016(m)	Residential	0.0006	—	0.9	6×10^{-6}
Consolidated Unit 35-003(d)-00	Recreational	0.1	8×10^{-7}	0.3	9×10^{-7}
Consolidated Unit 35-016(k)-00	Recreational	0.1	1×10^{-5}	0.01	2×10^{-8}

Table 5.3-1 (continued)

Subarea/Site	Decision Scenario	HI	Cancer Risk	Dose (mrem/yr)	Total Equivalent Radionuclide Risk
Ten Site Canyon Subarea					
AOC C-35-007	Residential	0.00005	5×10^{-9}	0.5	4×10^{-7}
Consolidated Unit 35-010(a)-99	Residential	0.7	4×10^{-7}	2	5×10^{-6}
East Ten Site Slope Subarea					
Consolidated Unit 04-001-99	Residential	0.03	5×10^{-7}	13	5×10^{-5}
Consolidated Unit 05-001(a)-99	Residential	0.7	6×10^{-9}	4	3×10^{-5}
AOC 05-001(c)	Residential	0.3	—	2	1×10^{-5}
Consolidated Unit 05-005(a)-00	Residential	0.2	3×10^{-9}	0.8	3×10^{-6}
SWMU 52-002(a)	Residential	0.01	7×10^{-9}	2	9×10^{-6}
SWMU 52-003(a)	Residential	0.00005	1×10^{-9}	0.6	3×10^{-6}
SWMU 63-001(a)	Residential	0.004	—	0.03	2×10^{-8}
SWMU 63-001(b)	Residential	0.004	5×10^{-9}	0.04	2×10^{-7}
Sigma Mesa Subarea					
SWMU 60-004(c)	Residential	—	—	3	1×10^{-5}
SWMU 60-004(e)	Residential	0.1	5×10^{-7}	—	—
SWMU 60-005(a)	Residential	0.4	1×10^{-7}	2	1×10^{-5}

*— = COPCs not detected or not collected.

Table 6.2-1
Summary of COPCs Identified for Ten Site Slope Subarea

COPC	SWMU/AOC/Consolidated Unit									
	35-004(g)-00	35-009(a)	35-009(e)	35-014(g3)	35-014(g)-00	35-016(a)-00	35-016(b)	35-016(c)-00	35-016(j)	Subarea
Inorganic Chemicals										
Aluminum	—[a]	●[b]	—	—	—	—	—	—	—	—
Antimony	—	●	—	●	●	—	—	●	—	●[c]
Arsenic	—	—	—	—	—	●	—	—	—	—
Barium	—	●	—	—	—	●	—	●	—	—
Cadmium	—	●	—	—	—	●	●	●	●	●
Chromium	—	●	—	—	—	●	—	●	—	●
Cobalt	—	●	—	—	—	—	—	●	—	—
Copper	●	●	●	—	●	●	●	●	—	●
Lead	—	●	●	—	●	●	●	●	—	●
Lithium	—	●	—	—	—	—	—	—	—	●
Mercury	—	●	●	●	●	—	—	●	—	●
Nickel	—	●	—	—	—	●	—	●	—	●
Selenium	●	●	●	●	●	●	●	●	●	●
Silver	—	●	●	—	●	—	●	—	—	●
Thallium	—	—	—	—	●	—	—	—	—	—
Zinc	—	●	●	●	●	●	●	●	—	●
Radionuclides										
Americium-241	—	—	●	—	—	—	—	—	—	●
Cesium-137	—	—	●	●	—	—	—	●	—	●
Europium-152	●	—	—	●	●	—	—	●	—	●
Plutonium-238	●	●	●	●	—	—	●	●	—	●
Plutonium-239	●	●	●	—	●	●	—	●	●	●
Strontium-90	—	●	—	—	—	—	—	—	—	—
Tritium	—	●	●	—	—	●	—	—	—	●
Uranium-234	●	●	●	—	●	●	●	—	—	●
Uranium-235	●	●	●	—	●	●	●	—	—	●
Uranium-238	●	●	●	—	—	—	●	●	—	●
Organic Chemicals										
Acenaphthene	—	—	—	●	—	●	●	—	●	●
Acenaphthylene	—	—	—	●	—	—	—	—	—	●
Acetone	—	●	●	●	●	●	—	●	—	●
Aldrin	—	—	—	●	—	—	—	—	—	●
Anthracene	—	—	—	●	—	●	—	●	—	●

Table 6.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit									
	35-004(g)-00	35-009(a)	35-009(e)	35-014(g3)	35-014(g)-00	35-016(a)-00	35-016(b)	35-016(c)-00	35-016(j)	Subarea
Aroclor-1242	—	●	—	—	—	—	—	—	—	—
Aroclor-1254	●	●	●	—	—	●	—	—	—	●
Aroclor-1260	●	●	●	—	—	●	—	—	●	●
Benzo(a)anthracene	—	—	—	●	●	—	—	●	●	●
Benzo(a)pyrene	—	—	—	●	●	●	—	●	●	●
Benzo(b)fluoranthene	—	—	—	●	●	●	—	●	●	●
Benzo(g,h,i)perylene	—	—	●	●	●	—	—	●	●	●
Benzo(k)fluoranthene	—	—	—	●	●	●	—	●	●	●
Benzoic acid	—	—	—	●	●	—	—	—	●	●
Bis(2-ethylhexyl)phthalate	—	●	—	●	●	●	●	—	●	●
Butanone[2-]	—	—	—	●	●	—	—	—	—	●
Butylbenzylphthalate	—	—	—	—	—	—	●	●	—	●
Chloro-3-methylphenol[4-]	—	—	—	●	—	—	—	—	—	●
Chrysene	—	—	—	●	●	●	●	●	●	●
DDD[4,4'-]	—	—	—	●	—	—	—	—	—	●
DDE[4,4'-]	—	●	—	—	—	—	—	—	—	●
DDT[4,4'-]	—	—	—	●	—	—	—	—	—	●
Dibenz(a,h)anthracene	—	—	—	●	—	—	—	●	—	●
Dibenzofuran	—	—	—	●	—	●	—	—	—	●
Dichloroethene[1,1-]	—	●	—	●	—	●	—	●	—	●
Dieldrin	—	—	—	●	—	—	—	—	—	●
Diethylphthalate	—	●	—	●	—	—	—	—	—	●
Di-n-butylphthalate	—	●	—	●	●	●	—	—	—	●
Di-n-octylphthalate	—	—	—	—	●	—	—	—	—	●
Endosulfan I	—	—	—	●	—	—	—	—	—	●
Endrin	—	—	—	●	—	—	—	—	—	●
Ethylbenzene	—	—	—	●	—	—	—	—	—	●
Fluoranthene	●	—	—	●	●	●	●	●	●	●
Fluorene	—	—	—	●	—	●	●	—	—	●
Indeno(1,2,3-cd)pyrene	—	—	—	●	—	—	—	●	●	●
Isopropyltoluene[4-]	—	●	—	●	●	●	—	●	—	●
Methylnaphthalene[2-]	—	—	—	●	—	—	—	—	●	●
Naphthalene	—	—	—	●	—	●	—	—	—	●
Phenanthrene	—	—	—	●	●	●	●	●	●	●
Phenol	—	—	—	●	—	—	—	—	—	●

Table 6.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit									
	35-004(g)-00	35-009(a)	35-009(e)	35-014(g3)	35-014(g)-00	35-016(a)-00	35-016(b)	35-016(c)-00	35-016(j)	Subarea
Pyrene	●	●	●	●	●	●	●	●	●	●
Styrene	—	—	—	●	—	—	—	●	—	●
Tetrachloroethene	—	—	—	●	—	—	—	—	—	●
Toluene	—	●	—	●	●	●	—	●	—	●
TPH-DRO	—	—	—	●	●	—	—	—	—	●
Trichloro-1,2,2-trifluoroethane[1,1,2-]	—	—	—	●	—	—	—	—	—	●
Trichloroethene	—	—	—	●	—	—	—	—	—	●

[a] — = Analyte is not a COPC.

[b] ● = Analyte is a COPC.

[c] Subarea COPCs based on data from 0-5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

Table 7.2-1
Summary of COPCs Identified for Mortandad Slope Subarea

COPC	SWMU/AOC/Consolidated Unit								
	35-004(b)	35-008-00	35-009(c)	35-016(e)	35-016(f)	35-016(i)-00	35-016(o)	35-016(p)	Subarea
Inorganic Chemicals									
Aluminum	—[a]	●[b]	—	—	—	—	—	—	—
Antimony	—	●	●	●	—	—	●	—	●[c]
Barium	—	—	●	—	—	—	●	—	●
Beryllium	—	●	—	●	—	—	—	—	—
Bromide	—	—	—	—	—	—	—	—	●
Cadmium	—	●	●	●	●	●	●	—	—
Chromium	—	●	—	●	—	●	●	—	●
Copper	—	●	●	●	—	—	●	—	●
Fluoride	—	—	—	—	—	—	—	—	●
Lead	—	—	●	—	—	—	●	—	—
Lithium	—	—	●	—	—	—	—	—	●
Mercury	—	—	—	—	—	●	●	—	●
Nickel	—	●	—	●	—	—	●	—	●
Perchlorate	—	—	—	—	—	—	—	—	●
Selenium	—	●	●	●	●	●	●	●	●
Thallium	—	●	—	●	—	—	●	—	●
Zinc	—	●	●	●	—	—	●	—	●
Radionuclides									
Americium-241	—	●	●	●	—	—	●	—	●
Cesium-137	—	●	●	●	—	—	●	●	●
Cobalt-60	—	—	—	—	—	—	●	—	●
Plutonium-238	—	●	●	●	—	—	●	—	●
Plutonium-239	—	●	●	●	—	—	●	—	●
Ruthenium-106	—	●	—	●	—	—	—	—	●
Strontium-90	—	—	—	—	—	—	—	—	●
Tritium	—	—	●	—	—	—	●	—	●
Uranium-234	—	●	●	●	—	—	●	—	●
Uranium-235	—	●	—	●	—	—	●	—	●
Uranium-238	—	●	●	●	—	—	●	—	●
Organic Chemicals									
Acenaphthene	—	—	—	—	—	●	●	●	●
Acetone	●	—	—	—	—	—	—	—	●
Aniline	—	—	—	—	—	—	●	—	●

Table 7.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit								
	35-004(b)	35-008-00	35-009(c)	35-016(e)	35-016(f)	35-016(i)-00	35-016(o)	35-016(p)	Subarea
Anthracene	—	●	●	●	—	●	●	●	●
Aroclor-1242	—	—	●	—	—	—	—	—	●
Aroclor-1254	—	—	●	—	●	●	●	—	●
Aroclor-1260	—	—	●	—	●	●	●	—	●
Benzo(a)anthracene	—	—	—	—	●	●	●	●	●
Benzo(a)pyrene	●	—	●	—	●	●	●	●	●
Benzo(b)fluoranthene	●	—	●	—	●	●	●	●	●
Benzo(g,h,i)perylene	—	—	—	—	—	●	●	●	●
Benzo(k)fluoranthene	—	●	●	●	●	●	●	—	●
Benzoic acid	—	●	—	●	●	●	●	●	●
Bis(2-ethylhexyl)phthalate	—	●	●	●	●	●	●	—	●
Chloroaniline[4-]	—	—	—	—	—	—	●	—	●
Chrysene	—	●	●	●	●	●	●	●	●
DDE[4,4'-]	—	—	●	—	—	—	●	—	●
DDT[4,4'-]	—	—	●	—	—	—	●	—	●
Dibenz(a,h)anthracene	—	—	—	—	—	—	●	—	●
Dibenzofuran	—	—	—	—	—	—	●	—	●
Di-n-butylphthalate	—	●	—	●	●	—	●	—	●
Fluoranthene	●	●	●	●	●	●	●	●	●
Fluorene	—	—	●	—	●	●	●	●	●
Indeno(1,2,3-cd)pyrene	—	—	—	—	—	●	●	●	●
Isopropyltoluene[4-]	●	—	—	—	—	—	—	—	●
Methylene Chloride	●	—	—	—	—	—	—	—	●
Methylnaphthalene[2-]	—	—	—	—	—	—	●	—	●
Naphthalene	—	—	—	—	—	—	●	●	●
Pentachlorophenol	—	—	—	—	—	—	●	—	●
Phenanthrene	●	●	●	●	●	●	●	●	●
Phenol	—	●	—	●	—	—	●	—	●
Pyrene	●	●	●	●	●	●	●	●	●
Toluene	—	●	—	●	—	—	—	—	●
TPH-DRO	—	●	—	●	—	●	●	—	●
Trichlorofluoromethane	—	●	—	●	—	—	—	—	●

[a] — = Analyte is not a COPC.

[b] ● = Analyte is a COPC.

[c] Subarea COPCs based on data from 0-5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

Table 8.2-1
Summary of COPCs Identified for Pratt Canyon Subarea

COPC	SWMU/AOC/Consolidated Unit				
	35-003(d)-00	35-009(d)	35-016(k)-00	35-016(m)	Subarea
Inorganic Chemicals					
Aluminum	●[a]	●	—[b]	—	—
Antimony	●	●	●	—	●[c]
Arsenic	—	●	—	—	—
Barium	●	●	—	—	—
Boron	●	—	—	—	●
Bromide	●	—	—	—	●
Cadmium	●	●	—	—	●
Chromium	—	—	●	—	●
Copper	●	—	●	—	●
Fluoride	●	—	—	—	●
Lead	—	—	●	—	—
Lithium	●	●	—	—	●
Mercury	●	—	●	—	●
Molybdenum	●	—	—	—	—
Nickel	●	●	—	—	—
Oxalate	—	—	—	—	●
Perchlorate	—	—	—	—	●
Selenium	●	●	●	●	●
Thallium	●	—	—	—	●
Titanium	●	—	—	—	●
Zinc	●	—	●	—	●
Radionuclides					
Americium-241	●	—	—	—	●
Cesium-137	●	●	—	—	●
Cobalt-60	●	—	—	—	●
Plutonium-238	●	●	—	—	●
Plutonium-239	●	—	●	—	●
Strontium-90	●	—	●	—	●
Thorium-228	●	—	—	—	●
Tritium	●	●	—	—	●
Uranium-234	—	—	—	●	—
Uranium-235	●	—	—	—	—
Uranium-238	—	—	—	●	—
Organic Chemicals					
Acenaphthene	●	—	●	—	●

Table 8.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit				
	35-003(d)-00	35-009(d)	35-016(k)-00	35-016(m)	Subarea
Acenaphthylene	—	—	●	—	●
Acetone	—	●	●	—	●
Anthracene	●	—	●	—	●
Aroclor-1254	●	—	●	—	●
Aroclor-1260	●	—	●	—	●
Benzo(a)anthracene	●	—	●	—	●
Benzo(a)pyrene	●	—	●	—	●
Benzo(b)fluoranthene	●	—	●	—	●
Benzo(g,h,i)perylene	●	—	●	—	●
Benzo(k)fluoranthene	●	—	●	—	●
Benzoic acid	●	—	—	●	●
Bis(2-ethylhexyl)phthalate	●	—	●	—	●
Chrysene	●	—	●	—	●
DDT[4,4'-]	—	—	—	—	●
Dibenz(a,h)anthracene	—	—	●	—	●
Dibenzofuran	—	—	●	—	●
Dieldrin	●	—	—	—	●
Diethylphthalate	—	—	—	●	●
Di-n-butylphthalate	●	—	—	—	—
Di-n-octylphthalate	●	—	—	—	—
Endosulfan II	●	—	—	—	●
Fluoranthene	●	—	●	●	●
Fluorene	●	—	●	—	●
Indeno(1,2,3-cd)pyrene	●	—	●	—	●
Methylnaphthalene[2-]	—	—	●	—	●
Methylphenol[4-]	—	—	●	—	●
Naphthalene	—	—	●	—	●
Phenanthrene	●	—	●	●	●
Pyrene	●	—	●	●	●
TPH-DRO	—	—	●	—	●
Trichloro-1,2,2-trifluoroethane[1,1,2-]	—	—	●	—	●
Trichlorofluoromethane	—	—	●	—	●

[a] ● = Analyte is a COPC

[b] — = Analyte is not a COPC.

[c] Subarea COPCs based on data from 0-5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

Table 9.2-1
Summary of COPCs Identified for Ten Site Canyon Subarea

COPC	SWMU/AOC/Consolidated Unit		
	35-010(a)-99	C-35-007	Subarea
Inorganic Chemicals			
Aluminum	●[a]	—[b]	—
Antimony	●	—	●[c]
Barium	●	—	—
Cadmium	●	—	—
Chloride	—	—	●
Chromium	●	—	●
Copper	—	—	●
Fluoride	—	—	●
Lead	●	—	●
Lithium	●	—	—
Mercury	●	—	●
Nickel	●	—	●
Nitrate	—	—	●
Nitrite	—	—	●
Phosphorous	—	—	●
Selenium	●	—	●
Silver	●	—	●
Sulfate	—	—	●
Thallium	●	—	—
Radionuclides			
Americium-241	—	—	●
Cesium-134	—	—	●
Europium-152	●	—	●
Plutonium-238	●	●	●
Plutonium-239	●	●	●
Ruthenium-106	●	—	●
Strontium-90	●	—	●
Tritium	●	—	●
Uranium-235	—	—	●
Organic Chemicals			
Acetone	—	—	●
Anthracene	—	—	●
Aroclor-1254	—	—	●

Table 9.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit		
	35-010(a)-99	C-35-007	Subarea
Aroclor-1260	●	—	●
Benzene	—	—	●
Benzo(a)anthracene	—	—	●
Benzo(a)pyrene	—	—	●
Benzo(b)fluoranthene	—	—	●
Benzo(g,h,i)perylene	—	—	●
Benzo(k)fluoranthene	—	—	●
Benzoic acid	—	●	●
Bis(2-ethylhexyl)phthalate	●	●	●
2-butanone	—	—	●
Chrysene	—	—	●
Dibenz(a,h)anthracene	—	—	●
Di-n-butylphthalate	●	●	●
Fluoranthene	—	—	●
Indeno(1,2,3-cd)pyrene	—	—	●
4-isopropyltoluene	—	—	●
4-methyl-2-pentanone	—	—	●
Phenanthrene	—	—	●
Pyrene	—	—	●
Toluene	●	—	●
Trichloroethene	—	—	●
Trichlorofluoromethane	—	—	●
1,2,4-trimethylbenzene	—	—	●
Xylene (total)	●	—	●

[a] ● = Analyte is a COPC.

[b] — = Analyte is not a COPC.

[c] Subarea COPCs based on data from 0–5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

Table 10.2-1
Summary of COPCs Identified for East Ten Site Slope Subarea

COPC	SWMU/AOC/Consolidated Unit								
	04-001-99	05-001(a)-99	05-001(c)	05-005(a)-00	52-002(a)	52-003(a)	63-001(a)	63-001(b)	Subarea[a]
Inorganic Chemicals									
Aluminum	—[b]	●[c]	—	●	—	—	—	—	—
Antimony	●	—	●	—	—	—	●	—	—
Barium	—	●	●	●	—	—	—	—	●
Boron	—	—	—	—	—	—	●	—	—
Cadmium	—	●	—	—	—	—	—	—	●
Copper	●	●	●	●	—	—	—	—	●
Lead	—	●	●	●	—	—	—	—	●
Lithium	—	—	—	—	●	—	●	●	●
Mercury	—	●	—	●	—	—	—	—	●
Molybdenum	—	—	—	—	●	—	—	●	●
Nickel	—	●	—	—	—	—	—	—	—
Nitrate	—	—	—	—	●	—	●	●	●
Nitrite	—	—	—	—	●	—	●	●	●
Selenium	●	●	●	●	●	●	—	—	●
Silver	—	●	—	—	—	—	—	—	—
Thallium	—	●	—	—	—	—	—	—	—
Zinc	—	●	—	—	—	—	—	—	●
Radionuclides									
Americium-241	●	●	—	●	●	—	—	—	●
Cesium-137	●	●	—	—	●	—	—	—	●
Europium-152	●	—	—	—	—	—	—	—	●
Plutonium-238	●	●	●	●	●	●	●	●	●
Plutonium-239	●	●	●	●	●	●	●	—	●
Tritium	—	—	—	—	●	●	—	—	—
Uranium-234	●	●	●	●	—	—	—	—	●
Uranium-235	●	●	●	●	—	—	—	●	●
Uranium-238	●	●	●	●	●	●	—	—	●
Organic Chemicals									
Acetone	●	●	—	●	—	●	—	—	●
Benzoic acid	●	●	—	—	●	—	—	—	●
Bis(2-ethylhexyl)phthalate	●	●	—	●	●	●	—	●	●
Chrysene	—	●	—	●	—	—	—	—	●

Table 10.2-1 (continued)

COPC	SWMU/AOC/Consolidated Unit								
	04-001-99	05-001(a)-99	05-001(c)	05-005(a)-00	52-002(a)	52-003(a)	63-001(a)	63-001(b)	Subarea [a]
Dichloroethene[1,1-]	●	—	—	—	—	—	—	—	●
Di-n-butylphthalate	●	—	—	—	●	●	●	●	●
Fluoranthene	●	●	—	●	—	—	—	—	●
Methylene Chloride	●	●	—	●	●	●	—	—	●
Pyrene	●	●	—	●	—	—	—	—	●
Toluene	—	●	—	●	—	—	—	—	●
Trichlorofluoromethane	—	●	—	●	—	—	—	—	●
Xylene (total)	—	—	—	—	—	—	●	—	●

[a] Subarea COPCs based on data from 0–5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

[b] — = Analyte is not a COPC.

[c] ● = Analyte is a COPC.

Table 11.2-1
Summary of COPCs Identified for Sigma Mesa Subarea

COPC	SWMU/AOC/Consolidated Unit			
	60-004(c)	60-004(e)	60-005(a)	Subarea
Inorganic Chemicals				
Antimony	—[a]	—	●[b]	●[c]
Barium	—	●	—	●
Chromium	—	●	●	●
Selenium	—	●	●	●
Thallium	—	●	●	●
Radionuclides				
Cesium-137	●	—	●	●
Cobalt-60	—	—	●	●
Europium-152	●	—	●	●
Plutonium-238	●	—	—	—
Plutonium-239	—	—	●	●
Tritium	—	—	●	●
Organic Chemicals				
Acetone	—	●	—	●
Aniline	—	—	●	●
Aroclor-1254	—	●	—	●
Aroclor-1260	—	●	—	●
Benzoic acid	—	—	●	●
Bis(2-ethylhexyl)phthalate	—	●	●	●
Butanone[2-]	—	●	—	—
Butylbenzylphthalate	—	—	●	—
Fluoranthene	—	●	●	●
Fluorene	—	—	●	●
Hexanone[2-]	—	●	—	—
Isopropyltoluene[4-]	—	●	—	●
Methyl-2-pentanone[4-]	—	●	—	—
Pyrene	—	●	●	●
Toluene	—	●	—	●
Xylene (total)	—	●	—	—

[a] — = Analyte is not a COPC.

[b] ● = Analyte is a COPC.

[c] Subarea COPCs based on data from 0–5 ft bgs only, and only applicable to ecological screening. Site COPCs may not be included as subarea COPCs if not analyzed or not detected from 0–1 or 0–10 ft bgs.

Table 12.0-1
Summary of Investigations for SWMUs and AOCs in the Middle Mortandad/Ten Site Aggregate

Consolidated Unit Number	SWMU or AOC Number	Subarea	Nature and Extent Determined?	Additional Activities Recommended?	Complete Without Controls	Complete With Controls[b]
04-001-99	SWMU 04-001	East Ten Site Slope	Yes	No	Yes	No
	SWMU 04-002	East Ten Site Slope				
	SWMU 04-003(b)	East Ten Site Slope				
05-001(a)-99	SWMU 05-001(a)	East Ten Site Slope	Yes	No	Yes	No
	SWMU 05-001(b)	East Ten Site Slope				
	SWMU 05-002	East Ten Site Slope				
	SWMU 05-006(h)	East Ten Site Slope				
n/a[a]	AOC 05-001(c)	East Ten Site Slope	Yes	No	Yes	No
05-005(a)-00	SWMU 05-005(a)	East Ten Site Slope	Yes	No	Yes	No
	SWMU 05-006(b)	East Ten Site Slope				
	SWMU 05-006(e)	East Ten Site Slope				
n/a	SWMU 35-002	Mesa Top	Yes	No	Yes	No
35-003(a)-99	SWMU 35-003(a)	Mesa Top	Yes	No	No	Yes
	SWMU 35-003(b)	Mesa Top				
	SWMU 35-003(c)	Mesa Top				
	SWMU 35-003(e)	Pratt Canyon				
	SWMU 35-003(f)	Mesa Top				
	SWMU 35-003(g)	Mesa Top				
	SWMU 35-003(h)	Mesa Top				
	SWMU 35-003(m)	Mesa Top				
	AOC 35-003(misc)	Mesa Top				
	SWMU 35-003(n)	Mesa Top				
	SWMU 35-003(o)	Mesa Top				
	SWMU 35-003(p)	Mesa Top				
35-003(d)-00	SWMU 35-003(d)	Pratt Canyon	Yes	No	No	Yes
	SWMU 35-003(l)	Pratt Canyon				
	SWMU 35-003(q)	Mesa Top				
	AOC 35-003(r)	Pratt Canyon				
n/a	SWMU 35-004(a)	Mesa Top	Yes	No	Yes	No
n/a	SWMU 35-004(b)	Mortandad Slope	Yes	No	Yes	No
n/a	SWMU 35-004(h)	Mesa Top	Yes	No	Yes	No
35-003(j)-99	SWMU 35-003(j)	Mesa Top	Yes	No	No	Yes
	SWMU 35-003(k)	Mesa Top				
	SWMU 35-014(b)	Mesa Top				
	AOC 35-014(d)	Mesa Top				
	SWMU 35-014(b)	Mesa Top				

Table 12.0-1 (continued)

Consolidated Unit Number	SWMU or AOC Number	Subarea	Nature and Extent Determined?	Additional Activities Recommended?	Complete Without Controls	Complete With Controls[b]
35-004(g)-00	SWMU 35-004(g)	Ten Site Slope	Yes	No	Yes	No
	SWMU 35-009(b)	Ten Site Slope				
35-008-00	SWMU 35-008	Mortandad Slope	Yes	No	Yes	No
	SWMU 35-014(e)	Mortandad Slope				
n/a	AOC 35-016(e)	Mortandad Slope	Yes	No	Yes	No
n/a	SWMU 35-009(a)	Ten Site Slope, Mesa Top	Yes	No	No	Yes
n/a	SWMU 35-009(c)	Mortandad Slope	Yes	No	Yes	No
n/a	SWMU 35-009(d)	Pratt Canyon	Yes	No	Yes	No
n/a	SWMU 35-009(e)	Ten Site Slope	Yes	No	No	Yes
35-010(a)-99	SWMU 35-010(a)	Ten Site Canyon	Yes	No	Yes	No
	SWMU 35-010(b)	Ten Site Canyon				
	SWMU 35-010(c)	Ten Site Canyon				
	SWMU 35-010(d)	Ten Site Canyon				
	AOC 35-010(e)	Ten Site Canyon				
n/a	AOC 35-011(d)	Mesa Top	Yes	No	Yes	No
n/a	SWMU 35-014(a)	Mesa Top	Yes	No	Yes	No
n/a	AOC 35-014(f)	Mesa Top	Yes	No	Yes	No
35-014(g)-00	SWMU 35-014(g)	Ten Site Slope	Yes	No	Yes	No
	AOC 35-004(m)	Ten Site Slope				
	AOC 35-014(g2)	Ten Site Slope				
	AOC 35-016(n)	Ten Site Slope				
n/a	AOC 35-014(g3)	Ten Site Slope	Yes	No	No	Yes
n/a	SWMU 35-015(a)	Mesa Top	Yes	No	No	Yes
35-016(a)-00	SWMU 35-016(a)	Ten Site Slope	Yes	No	Yes	No
	SWMU 35-016(q)	Ten Site Slope				
n/a	AOC 35-016(b)	Ten Site Slope	Yes	No	Yes	No
35-016(c)-00	SWMU 35-016(c)	Ten Site Slope	Yes	No	No	Yes
	SWMU 35-016(d)	Ten Site Slope				
n/a	AOC 35-016(f)	Mortandad Slope	Yes	No	Yes	No
35-016(i)-00	AOC 35-014(e2)	Mortandad Slope	Yes	No	Yes	No
	SWMU 35-016(i)	Mortandad Slope				
n/a	AOC 35-016(j)	Ten Site Slope	Yes	No	No	Yes
35-016(k)-00	SWMU 35-016(k)	Pratt Canyon	Yes	No	No	Yes
	AOC 35-016(l)	Pratt Canyon				
n/a	SWMU 35-016(m)	Pratt Canyon	Yes	No	Yes	No
n/a	SWMU 35-016(o)	Mortandad Slope	Yes	No	Yes	No
n/a	SWMU 35-016(p)	Mortandad Slope	Yes	No	Yes	No

Table 12.0-1 (continued)

Consolidated Unit Number	SWMU or AOC Number	Subarea	Nature and Extent Determined?	Additional Activities Recommended?	Complete Without Controls	Complete With Controls[b]
n/a	AOC 35-018(a)	Mesa Top	Yes	No	No	Yes
n/a	AOC C-35-007	Ten Site Canyon	Yes	No	Yes	No
n/a	SWMU 52-002(a)	East Ten Site Slope	Yes	No	Yes	No
n/a	AOC 52-003(a)	East Ten Site Slope	Yes	No	Yes	No
n/a	AOC 60-004(c)	Sigma Mesa	Yes	No	Yes	No
n/a	AOC 60-004(e)	Sigma Mesa	Yes	No	Yes	No
n/a	SWMU 60-005(a)	Sigma Mesa	Yes	No	Yes	No
n/a	SWMU 63-001(a)	East Ten Site Slope	Yes	No	Yes	No
n/a	SWMU 63-001(b)	East Ten Site Slope	Yes	No	Yes	No

[a] n/a = Not applicable; the SWMU or AOC in that row has not been consolidated.

[b] Yes indicates risk/dose is acceptable for industrial or recreational use.

Appendix A

Acronyms and Abbreviations, Glossary, Metric Conversion Table, and Data Qualifier Definitions

A-1.0 ACRONYMS AND ABBREVIATIONS

AEC	Atomic Energy Commission
AES	atomic emission spectroscopy
AH	auger hole
ALLH	all horizons
AOC	area of concern
AUF	area-use factor
bgs	below ground surface
BH	borehole
BHC	benzene hexachloride
BMP	best management practice
BV	background value
CCB	continuing-calibration blank
CCV	continuing-calibration verification
CD	compact disc
COC	chain of custody
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CRDL	contract-required detection limit
CST	Chemical Science and Technology (a Laboratory division)
CVAA	cold vapor atomic absorption
D&D	decontamination and decommissioning
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	p,p'-dichlorodiphenyltrichloroethane
DER	duplicate error ratio
DL	detection limit
DOE	Department of Energy (U.S.)
DOT	Department of Transportation
dpm	disintegrations per minute
EDL	estimated detection limit
Eh	oxidation-reduction potential
EPA	Environmental Protection Agency (U.S.)

EQL	estimated quantitation limit
ER	environmental restoration
ERDB	environmental restoration database
ESL	ecological screening level
eV	electron-volt
FV	fallout value
FY	fiscal year
GFAA	graphite furnace atomic absorption
GM	Geiger-Mueller
GPS	global positioning system
ha	hectare
HASL	Health & Safety Laboratory
HE	high explosive(s)
HEXP	high explosives
HI	hazard index
HQ	hazard quotient
HSR	Health, Safety, and Radiation Protection (a Laboratory division)
HSWA	Hazardous and Solid Waste Amendments
HWB	Hazardous Waste Bureau (the New Mexico Environment Department)
HWFP	Hazardous Waste Facility Permit
IA	interim action
ICB	initial-calibration blank
ICPES	inductively coupled plasma emission spectroscopy
ICPMS	inductively coupled plasma mass spectroscopy
ICV	initial-calibration verification
ID	identification
i.d.	inside diameter
IDW	investigation-derived waste
K_{ow}	octanol/water partition coefficient
LANL	Los Alamos National Laboratory
LASCP	Los Alamos Site Characterization Program
LCS	laboratory control sample\
LRO	lubricant range organics
MCAL	mobile chemical analytical laboratory

MDA	material disposal area
MS	matrix spike
NDA	no detectable activity
NFA	no further action
NMED	New Mexico Environment Department
NMEID	New Mexico Environmental Improvement Division (now NMED)
NMHWA	New Mexico Hazardous Waste Act
NMSA	New Mexico Statutes Annotated
NNSA	National Nuclear Security Administration
NOAEL	no observed adverse effect level
NOD	notice of disapproval
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OLASO	Office of Los Alamos Site Operations
OSHA	Occupational Safety and Health Administration
OU	operable unit
OVM	organic vapor monitor
PAH	polycyclic aromatic hydrocarbon
PAUF	population area-use factor
PCB	polychlorinated biphenyl
PEST	pesticide
pH	potential of hydrogen
PID	photoionization detector
PPE	personal protective equipment
ppm	parts per million
QA	quality assurance
QAPP	quality assurance project plan
Qbo	Quaternary Otowi Member of the Bandelier Tuff
Qbt	Quaternary Tshirege Member of the Bandelier Tuff
Qbt1	Quaternary Units 1g and 1v of the Tshirege Member of the Bandelier Tuff
Qbt2	Quaternary Unit 2 [also Units 3 and 4] of the Tshirege Member of the Bandelier Tuff
QC	quality control
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician

RFI	RCRA facility investigation
RLWTF	radioactive liquid waste treatment facility
RPD	relative percent difference
RPP	Radiation Protection Program
RRES	Risk Reduction and Environmental Stewardship (a Laboratory division)
SAL	screening action level
SAP	sampling and analysis plan
SD	standard deviation
SED	sediment
SMO	Sample Management Office
SOP	standard operating procedure
SOW	statement of work
SSHASP	site-specific health and safety plan
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
SWSC	sanitary wastewater system consolidation
T&E	threatened and endangered
TA	technical area
TAL	target analyte list
TCLP	toxicity characteristic leaching procedure
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TPH-DRO	total petroleum hydrocarbon-diesel range organic
TPU	total propagated uncertainty
TR	transect
TSDF	treatment, storage, and disposal facility
UCL	upper confidence limit
UHTREX	Ultra-High-Temperature Reactor Experiment
UTL	upper tolerance limit
VCA	voluntary corrective action
VCS	very coarse sand
VFS	very fine sand
VOC	volatile organic compound

WCSF	waste characterization strategy form
WWTP	wastewater treatment plant
XRF	x-ray fluorescence

A-2.0 GLOSSARY

accuracy—A measure of the closeness of measurements to the true value of the parameter being measured.

action level—(1) A numerical value that has been established by statistical analysis or has been set according to regulatory limits and is used as a criterion for action. Contamination found in a particular medium below an appropriate action level is not generally subject to remediation or further study. (2) A health- and environment-based concentration derived using chemical-specific toxicity information and standardized exposure assumptions. An action level can be developed on a facility-specific basis or can be taken from standardized lists.

administrative authority—For Los Alamos National Laboratory, one or more regulatory agencies, such as the New Mexico Environment Department, the U.S. Environmental Protection Agency, or the U.S. Department of Energy, as appropriate.

aliquot—A measured portion of a sample taken for analysis.

alluvial—Pertaining to geologic deposits or features formed by running water.

alluvial fan—A fan-shaped piedmont accumulation of alluvium.

alluvium—Soil deposited by a river or other running water.

alpha radiation—A form of particle radiation that is highly ionizing and has low penetration. Alpha radiation consists of two protons and two neutrons bound together into a particle that is identical to a helium nucleus and can be written as He^{2+}.

analysis—A critical evaluation, usually made by breaking a subject (either material or intellectual) down into its constituent parts, then describing the parts and their relationship to the whole. Analyses may include physical analysis, chemical analysis, toxicological analysis, and knowledge-of-process determinations.

analyte—The element, nuclide, or ion a chemical analysis seeks to identify and/or quantify; the chemical constituent of interest.

analytical method—A procedure or technique for systematically performing an activity.

anthropogenic—Of, relating to, or resulting from, the influence of human beings.

aquifer—An underground geological formation (or group of formations) containing water that is the source of groundwater for wells and springs.

area of concern—(1) A release that may warrant investigation or remediation and is not a solid waste management unit (SWMU). (2) An area at Los Alamos National Laboratory that may have had a release of a hazardous waste or a hazardous constituent but is not a SWMU.

area of contamination (AOC)—As defined by the U.S. Environmental Protection Agency, certain areas of generally dispersed contamination that could be equated to a Resource Conservation and Recovery Act (RCRA) landfill. The movement of hazardous wastes within those areas would not be considered land disposal and would not trigger RCRA land-disposal restrictions. An area of contamination may be

designated by the Environmental Remediation and Surveillance Program as part of a corrective action for waste management purposes, subject to approval by the administrative authority.

assessment endpoint—In an ecological risk assessment, the expression of an environmental value to be protected (e.g., fish biomass or reproduction of avian populations).

background level—(1) The concentration of a substance in an environmental medium (air, water, or soil) that occurs naturally or is not the result of human activities. (2) In exposure assessment, the concentration of a substance in a defined control area over a fixed period of time before, during, or after a data-gathering operation.

background value (BV)—A statistically derived concentration (i.e., the upper tolerance limit [UTL]) of a chemical used to represent the background data set. If a UTL cannot be derived, either the detection limit or maximum reported value in the background data set is used.

basalt—A fine grained, dark volcanic rock comprised chiefly of plagioclase, augite, olivine, and magnetite.

best management practices—Methods that have been determined to be the most effective, practical means of preventing or reducing pollution from nonpoint sources.

beta radiation—High-energy electrons emitted by certain types of radioactive nuclei, such as potassium-40. The beta particles emitted are a form of ionizing radiation also known as beta rays.

bias—Systematic deviation from the true value that remains constant over replicated measurements within the statistical precision of the measurement process.

blank—A sample that is expected to have a negligible or unmeasurable amount of an analyte. Results of blank sample analyses indicate whether field samples might have been contaminated during the sample collection, transport, storage, preparation, or analysis processes.

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

chain of custody—An unbroken, documented trail of accountability that is designed to ensure the uncompromised physical integrity of samples, data, and records.

chemical—Any naturally occurring or man-made substance characterized by a definite molecular composition.

chemical analysis—A process used to measure one or more attributes of a sample in a clearly defined, controlled, and systematic manner. Chemical analysis often requires treating a sample chemically or physically before measurement.

chemical of potential concern (COPC)—A detected chemical compound or element that has the potential to adversely affect human receptors as a result of its concentration, distribution, and toxicity.

chemical of potential ecological concern (COPEC)—A detected chemical compound or element that has the potential to adversely affect ecological receptors as a result of its concentration, distribution, and toxicity.

cold vapor atomic absorption (CVAA)—An analytical technique used for measuring mercury that is described in U.S. Environmental Protection Agency Methods 7470A (“Mercury in Liquid Waste”) and 7471A (“Mercury in Solid or Semisolid Waste”). The technique is based on the absorption of nonionizing radiation at 253.7 nanometers (nm) by mercury vapor. The mercury is reduced to the elemental state and aerated from solution in a closed system. The mercury vapor passes through a

cell positioned in the light path of an atomic absorption spectrophotometer. Absorbance (peak height) is measured as a function of mercury concentration.

collocated sample—One of two or more samples collected within close proximity of each other and meant to represent the same immediate area.

colluvium—A loose deposit of rock debris accumulated through the action of gravity at the base of a cliff or slope.

conceptual model—See site conceptual model.

confluence—A place where two or more streams or canyons meet; the point where a tributary meets the main stream.

contaminant—(1) Chemicals and radionuclides present in environmental media or on debris above background levels. (2) According to the March 1, 2005, Compliance Order on Consent (Consent Order), any hazardous waste listed or identified as characteristic in 40 Code of Federal Regulations (CFR) 261 (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC]); any hazardous constituent listed in 40 CFR 261 Appendix VIII (incorporated by 20.4.1.200 NMAC) or 40 CFR 264 Appendix IX (incorporated by 20.4.1.500 NMAC); any groundwater contaminant listed in the Water Quality Control Commission (WQCC) Regulations at 20.6.3.3103 NMAC; any toxic pollutant listed in the WQCC Regulations at 20.6.2.7 NMAC; explosive compounds; nitrate; and perchlorate. (Note: Under the Consent Order, the term "contaminant" does not include radionuclides or the radioactive portion of mixed waste.)

contract-required detection limit (CRDL)—The minimum reporting limits required under a contract between Los Alamos National Laboratory and a contract laboratory. The CRDLs are not necessarily intrinsically tied to instrument sensitivity; rather they are reporting limits.

corrective action—(1) In the Resource Conservation and Recovery Act, an action taken to rectify conditions potentially adverse to human health or the environment. (2) In the quality assurance field, the process of rectifying and preventing nonconformances.

cumulative risk—The evaluation of simultaneous exposure to a receptor across multiple media, pathways, and contaminants in order to estimate the resulting health and environmental effects.

Curie—Unit of radioactivity defined as the quantity of any radioactive nuclide that has an activity of 3.7×10^{10} disintegrations per second (dps).

daily calibration—The combination of calibration blank and calibration standard; used to determine if the instrument response to analyte concentration is within acceptable bounds relative to the initial calibration. A daily calibration establishes the instrument response factors on which quantitations are based, thus verifying the satisfactory performance of an instrument on a day-to-day basis.

data quality assessment—The statistical and/or scientific evaluation of a data set that establishes whether the data set is adequate for its intended use.

data quality objective—Qualitative and quantitative statements of the overall level of uncertainty that a decision maker will accept regarding results or decisions based on environmental data. The objectives provide the statistical framework for planning and managing environmental data operations that will meet user needs.

data validation—A systematic process that applies a defined set of performance-based criteria to a body of data and that may result in qualification of the data. The data-validation process is performed independently of the analytical laboratory that generates the data set and occurs before conclusions

are drawn from the data. The process may include a standardized data review (routine data validation) and/or a problem-specific data review (focused data validation).

decommissioning—The permanent removal of facilities and their components from service after the discontinued use of structures or buildings that are deemed no longer useful. Decommissioning must take place in accordance with regulatory requirements and applicable environmental policies.

decontamination—The removal of unwanted material from the surface of, or from within, another material.

detection limit—The minimum concentration that can be determined by a single measurement of an instrument. A detection limit implies a specified statistical confidence that the analytical concentration is greater than zero.

discharge—The accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into, or on, any land or water.

disposal—The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including groundwaters.

DOE—See US Department of Energy

dose (dosage)—(1) The actual quantity of a chemical that is administered to an organism or to which it is exposed. (2) The amount of a substance that reaches a specific tissue (e.g., the liver). (3) The amount of a substance that is available for interaction with metabolic processes after it has crossed an organism's outer boundary.

dose equivalent—The product of the absorbed dose from ionizing radiation and factors that account for biological differences as a result of the radiation type and its distribution in the body.

duplicate analysis—An analysis performed on one member of a pair of identically prepared subsamples taken from the same sample.

ecological screening level (ESL)—Soil, sediment, or water concentrations that are used to screen for potential ecological effects. The concentrations are based on a chemical's no-observed-adverse-effect level for a receptor, below which no risk is indicated.

effluent—Wastewater (treated or untreated) that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

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

EPA—See US Environmental Protection Agency

ephemeral—Pertaining to a stream or spring that flows only during, and immediately after, periods of rainfall or snowmelt.

equipment blank (rinsate blank)—A sample used to rinse sample-collection equipment and expected to have negligible or unmeasurable amounts of analytes. The equipment blank is collected after the equipment decontamination is completed but before the collection of another field sample.

error—The quantifiable difference between an observed value and the true value of the parameter being measured.

estimated quantitation limit (EQL)—The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine analytical laboratory operating conditions. The low point on a calibration curve should reflect this quantitation limit. The EQL is not used to establish detection status. Sample EQLs are highly matrix-dependent, and the specified EQLs might not always be achievable.

exposure pathway—Any path from the sources of contaminants to humans and other species or settings through air, soil, water, or food.

exposure unit—The bounded area or volume within which a person or other receptor could be exposed to contaminants that have been released into the environment.

external standard calibration—A comparison of instrument responses from a sample to the responses from target compounds in the calibration standards. The sample's peak areas (or peak heights) are compared to the standards' peak areas (or peak heights).

field blank (field reagent blank)—A blank sample either prepared in the field or carried to the sampling site, exposed to sampling conditions (e.g., by removing bottle caps), and returned to a laboratory to be analyzed in the same manner in which environmental samples are being analyzed. Field blanks are used to identify the presence of any contamination that may have been added during the sampling and analysis process.

field duplicate (replicate) samples—Two separate, independent samples taken from the same source, which are collected as collocated samples (i.e., equally representative of a sample matrix at a given location and time).

field matrix spike—A known amount of a field sample to which a known amount of a target analyte has been added and used to compute the proportion of the added analyte that is recovered upon analysis.

field reagent blank—See field blank.

field sample—See sample.

flood plain—The flat, or nearly flat, land along a river or stream, or in a tidal area, that is covered by water during a flood.

focused data validation—A technically based analyte-, sample-, and data use-specific process that extends the qualification of data beyond the method or contractual compliance and provides a higher level of confidence that an analyte is present or absent. If an analyte is present, the quality of the quantitation may be obtained through focused validation.

gamma radiation—A form of electromagnetic, high-energy ionizing radiation emitted from a nucleus. Gamma rays are essentially the same as x-rays (though at higher energy) and require heavy shielding, such as concrete or steel, to be blocked.

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

groundwater—Interstitial water that occurs in saturated earth material and is capable of entering a well in sufficient amounts to be used as a water supply.

half-life—(1) The time required for a pollutant to lose one-half of its original concentration (for example, the biochemical half-life of DDT [dichlorodiphenyltrichloroethane] in the environment is 15 yr). (2) The time required for one half of the atoms in a radioactive element to undergo self-transmutation or decay (the half-life of radium is 1620 yr). (3) The time required for the elimination of one half of a total dose from the body.

hazard index (HI)—The sum of hazard quotients for multiple contaminants to which a receptor may have been exposed.

Hazardous and Solid Waste Amendments (HSWA)—Public Law No. 98-616, 98 Stat. 3221, enacted in 1984, which amended the Resource Conservation and Recovery Act of 1976 (42 United States Code § 6901 et seq).

hazardous constituent (hazardous waste constituent)—According to the March 1, 2005, Compliance Order of Consent (Consent Order), any constituent identified in Appendix VIII of Part 261, Title 40 Code of Federal Regulations (CFR) (incorporated by 20.4.1.200 New Mexico Administrative Code [NMAC]) or any constituent identified in 40 CFR 264, Appendix IX (incorporated by 20.4.1.500 NMAC).

hazardous waste—(1) Solid waste that is listed as a hazardous waste, or exhibits any of the characteristics of hazardous waste (i.e., ignitability, corrosivity, reactivity, or toxicity, as provided in 40 CFR 261, Subpart C). (2) According to the March 1, 2005, Compliance Order of Consent (Consent Order), any solid waste or combination of solid wastes that, because of its quantity, concentration, or physical, chemical, or infectious characteristics, meets the description set forth in New Mexico Statutes Annotated 1978, § 74-4-3(K) and is listed as a hazardous waste or exhibits a hazardous waste characteristic under 40 CFR 261 (incorporated by 20.4.1.200 New Mexico Administrative Code).

holding time—The maximum elapsed time a sample can be stored without unacceptable changes in analyte concentrations. Holding times apply under prescribed conditions, and deviations from these conditions may affect the holding times. Extraction holding time refers to the time lapsed between sample collection and sample preparation. Analytical holding time refers to the time lapsed between sample preparation and analysis.

HSWA module—See Module VIII.

hydrogeology—The science dealing with the occurrence of surface water and groundwater, their uses, and their functions in modifying the earth, primarily by erosion and deposition.

hypothesis—A tentative explanation that accounts for a set of data and that can be tested by further investigation.

inductively coupled plasma emission spectroscopy—A method that detects trace elements (including metals) in solutions by measuring characteristic emission spectra through optical spectrometry. Samples are nebulized, and the resulting aerosol is transported to a plasma torch. Element-specific emission spectra are produced by a radio-frequency, inductively coupled plasma. The spectra are dispersed by a grating spectrometer, and photosensitive devices are used to monitor the emission lines' intensities.

industrial scenario—A land-use condition in which current Los Alamos National Laboratory operations or industrial/commercial operations within Los Alamos County are continued or planned. Any necessary remediation involves cleanup to standards designed to ensure a safe and healthy work environment for workers.

infiltration—(1) The penetration of water through the ground surface into subsurface soil. (2) The technique of applying large volumes of wastewater to land to penetrate the surface and percolate through the underlying soil.

laboratory control sample (LCS)—A known matrix that has been spiked with compound(s) representative of target analytes. LCSs are used to document laboratory performance, and the acceptance criteria for LCSs are method-specific.

LANL (Los Alamos National Laboratory) data validation qualifiers—The Los Alamos National Laboratory data qualifiers which are defined by, and used, in the Environmental Remediation and

Surveillance (ERS) Program validation process. The qualifiers describe the general usability (or quality) of data. For a complete list of data qualifiers applicable to any particular analytical suite, consult the appropriate ERS standard operating procedure.

LANL (Los Alamos National Laboratory) data validation reason codes—The Los Alamos National Laboratory designations applied to sample data by data validators who are independent of the contract laboratory that performed a given sample analysis. Reason codes provide an analysis-specific explanation for applying a qualifier, with some description of the qualifier's potential impact on data use. For a complete list of data qualifiers applicable to any particular analytical suite, consult the appropriate Environmental Remediation and Surveillance Program standard operating procedure.

matrix—Relatively fine material in which coarser fragments or crystals are embedded; also called "ground mass" in the case of igneous rocks.

matrix spike—An aliquot of a sample to which a known concentration of target analyte has been added. Matrix spike samples are used to measure the ability to recover prescribed analytes from a native sample matrix. The spiking typically occurs before sample preparation and analysis.

medium (environmental)—Any media capable of absorbing or transporting constituents. Examples of media include tuffs, soils and sediments derived from these tuffs, surface water, soil water, groundwater, air, structural surfaces, and debris.

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

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

method detection limit (MDL)—The minimum concentration of a substance that can be measured and reported with a known statistical confidence that the analyte concentration is greater than zero. After subjecting samples to the usual preparation, the MDL is determined by analyzing those samples of a given matrix type that contain the analyte. The MDL is used to establish detection status.

migration—The movement of inorganic and organic chemical species through unsaturated or saturated materials.

migration pathway—A route (e.g., a stream or subsurface flow path) for the potential movement of contaminants to environmental receptors (plants, humans, or other animals).

minimum detectable activity—For the analysis of radionuclides, the lowest detectable radioactivity for a given analytical technique. The following equation is used to calculate the MDA unless otherwise noted or approved by Los Alamos National Laboratory. (Note: "MDA" here should not to be confused with material disposal area):

$$\mathrm{MDA} = \frac{4.65(\mathrm{BKG})^{0.5} + 2.71}{2.22 \times \mathrm{EFF} \times \mathrm{V} \times \mathrm{T_s} \times \mathrm{Y}} \ ,$$

where BKG = the total background counts,
EFF = the fraction detector efficiency,
V = the volume or unit weight,
T_s = the sample count duration, and
Y = the fractional chemical recovery obtained from the tracer recovery.

Depending on the type of analysis, other terms may also be required in the denominator (e.g., gamma abundance).

mixed waste—Waste containing both hazardous and source, special nuclear, or byproduct materials subject to the Atomic Energy Act of 1954.

model—A schematic description of a physical, biological, or social system, theory, or phenomenon that accounts for its known or inferred properties and may be used for the further study of its characteristics.

monitoring well—(1) A well used to obtain water-quality samples or to measure groundwater levels, (2) A well drilled at a hazardous waste management facility or Superfund site to collect groundwater samples for the purpose of physical, chemical, or biological analysis and to determine the amounts, types, and distribution of contaminants in the groundwater beneath the site.

National Pollutant Discharge Elimination System (NPDES)—The national program for issuing, modifying, revoking and reissuing, terminating, monitoring, and enforcing permits to discharge wastewater or storm water, and for imposing and enforcing pretreatment requirements under the Clean Water Act.

neutralize—To render a toxic chemical agent harmless by chemical action.

no further action—Under the Resource Conservation and Recovery Act, a corrective-action determination whereby, based on evidence or risk, no further investigation or remediation is warranted.

notice of deficiency—A written notification from the administrative authority to a facility owner/operator following the review of a permit application or other permit-related plan or report. A notice of deficiency requests additional information before a decision can be made regarding the original plan or report.

notices of approval, of approval with modification, or of disapproval—Notices issued by the New Mexico Environment Department (NMED). Upon receipt of a work plan, schedule, report, or other deliverable document, NMED reviews the document and approves the document as submitted, modifies the document and approves it as modified, or disapproves the document. A notice of approval means that the document is approved as submitted. A notice of approval with modifications means that the document is approved but with modifications specified by NMED. A notice of disapproval means that the document is disapproved and it states the deficiencies and other reasons for disapproval.

operable unit (OU)—At Los Alamos National Laboratory, 24 areas originally established for administering the Environmental Remediation and Surveillance Program. Set up as groups of potential release sites, the OUs were aggregated based on geographic proximity for the purpose of planning and conducting RCRA facility assessments and RCRA facility investigations. As the project matured, it became apparent that 24 were too many to allow efficient communication and to ensure consistency in approach. In 1994, the 24 OUs were reduced to six administrative “field units.”

outfall—A place where effluent is discharged into receiving waters.

perched water—A zone of unpressurized water held above the water table by impermeable rock or sediment.

permit modification—A change to a condition in a facility’s permit, initiated by either a request from the permittee or by the administrative authority’s action.

polychlorinated biphenyls (PCBs)—Any chemical substance limited to the biphenyl molecule that has been chlorinated to varying degrees, or any combination that contains such substances. PCBs are

colorless, odorless compounds that are chemically, electrically, and thermally stable and have proven to be toxic to both humans and other animals.

population—(1) A group of interbreeding organisms occupying a particular space. (2) The number of humans or other living creatures in a designated area.

precision—The degree of mutual agreement among a series of individual measurements, values, or results.

preliminary remediation goals—Acceptable exposure levels (protective of human health and the environment) that are used as a risk-based tool for evaluating remedial alternatives.

quality-assessment sample—A sample submitted for analysis, the data from which are used to assess the performance quality of a sampling or analysis process. May include performance-evaluation samples, field duplicates, or field blanks.

quality assurance/quality control—A system of procedures, checks, audits, and corrective actions set up to ensure that all U.S. Environmental Protection Agency research design and performance, environmental monitoring and sampling, and other technical and reporting activities are of the highest achievable quality.

quality-control sample—A sample that, upon analysis, is intended to provide information useful for adjusting, controlling, or verifying continuing acceptability of sampling and/or analysis activities in progress.

radiation—A stream of particles or electromagnetic waves emitted by atoms and molecules of a radioactive substance as a result of nuclear decay. The particles or waves emitted can consist of neutrons, positrons, alpha particles, beta particles, or gamma radiation.

radioactive decay—The spontaneous change in an atom by the emission of charged particles and/or gamma rays.

radioactive waste—Waste that, by either monitoring and analysis, or acceptable knowledge, or both, has been determined to contain added (or concentrated and naturally occurring) radioactive material or activation products, or that does not meet radiological release criteria.

radionuclide—Radioactive particle (human-made or natural) with a distinct atomic weight number.

RCRA facility investigation (RFI)—A Resource Conservation and Recovery Act (RCRA) investigation that determines if a release has occurred and characterizes the nature and extent of contamination at a hazardous waste facility. The RFI is generally equivalent to the remedial investigation portion of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) process.

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

recreational scenario—A land-use condition under which individuals may be exposed to contaminants for a limited amount of time as a result of outdoor activities such as hiking, camping, hunting, or fishing.

regional aquifer—Geologic material(s) or unit(s) of regional extent whose saturated portion yields significant quantities of water to wells, contains the regional zone of saturation, and is characterized by the regional water table or potentiometric surface.

relative percent difference (RPD)—The measure used to assess the precision between parent results and their associated duplicate results. The RPD is calculated as follows:

$$\left|RPD\right| = \frac{S - R}{\left(\frac{S + R}{2}\right)} 100$$

where RPD = relative percent difference,
S = parent sample result, and
R = duplicate sample result.

The Environmental Remediation and Surveillance Program criteria for the RPD are less than 20% for aqueous samples and less than 35% for soil samples when the sample concentrations are greater than, or equal to, five times the method detection limit (MDL). For samples with concentrations less than five times the MDL, but greater than the MDL, the control is +/-MDL. No precision criterion applies to samples with concentrations less than the MDL.

release—Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing of hazardous waste or hazardous constituents into the environment.

remediation—(1) The process of reducing the concentration of a contaminant (or contaminants) in air, water, or soil media to a level that poses an acceptable risk to human health and the environment. (2) The act of restoring a contaminated area to a usable condition based on specified standards.

request for supplemental information (RSI)—A request issued by the administrative authority (AA) that states that some aspect(s) of a plan or report does not meet the AA's requirements and that additional information is needed.

request number—An identifying number assigned by the Environmental Remediation and Surveillance Program to a group of samples submitted for analysis.

residential scenario—The land use condition under which individuals may be exposed to contaminants as a result of living on or near contaminated sites.

Resource Conservation and Recovery Act—The Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (Public Law [PL] 94-580, as amended by PL 95-609 and PL 96-482, United States Code 6901 et seq.).

rinsate blank—See equipment blank.

risk—A measure of the probability that damage to life, health, property, and/or the environment will occur as a result of a given hazard.

risk characterization—The last phase in the risk assessment process which estimates the potential for adverse health or ecological effects to occur as a result of exposure to a stressor, and which evaluates the uncertainty involved.

routine data validation—The process of reviewing analytical data relative to quantitative routine acceptance criteria. The objective of routine data validation is two-fold—

- to estimate the technical quality of the data relative to minimum national standards adopted by the Environmental Remediation and Surveillance Program, and
- to indicate to data users the technical data quality at a gross level by assigning laboratory qualifiers to environmental data whose quality indicators do not meet acceptance criteria.

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

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

screening action level (SAL)—A radionuclide's medium-specific concentration level; it is calculated by using conservative criteria below which it is generally assumed that no potential exists for a dose that is unacceptable to human health. The derivation of a SAL is based on conservative exposure and on land-use assumptions. However, if an applicable regulatory standard exists that is less than the value derived, it is used in place of the SAL.

screening risk assessment—A risk assessment that is performed with few data and many assumptions in order to identify exposures that should be evaluated more carefully for potential risk.

sediment—(1) A mass of fragmented inorganic solid that comes from the weathering of rock and is carried or dropped by air, water, gravity, or ice. (2) A mass that is accumulated by any other natural agent and that forms in layers on the earth's surface (e.g., sand, gravel, silt, mud, fill, or loess). (3) A solid material that is not in solution and is either distributed through the liquid or has settled out of the liquid.

serial dilution sample—A requirement of the U.S. Environmental Protection Agency (EPA) Method 6010B (Inductively Coupled Plasma-Atomic Emission Spectrometry). Serial dilutions are made by performing a series of dilutions of an aliquot taken from a stock solution for a target analyte. The first dilution of the original stock solution serves as the stock solution for the second dilution, and the second dilution serves as the stock solution for the third dilution, and so on. To meet the requirement of EPA Method 6010B, one serial dilution analysis must be performed for each matrix in every sample batch, with a minimum of one serial dilution sample per 20 samples.

site characterization—Defining the pathways and methods of migration of hazardous waste or constituents, including the media affected; the extent, direction and speed of the contaminants; complicating factors influencing movement; or concentration profiles.

site conceptual model—A qualitative or quantitative description of sources of contamination, environmental transport pathways for contamination, and receptors that may be impacted by contamination and whose relationships describe qualitatively or quantitatively the release of contamination from the sources, the movement of contamination along the pathways to the exposure points, and the uptake of contaminants by the receptors.

solid waste—Any garbage, refuse, or sludge from a waste treatment plant, water-supply treatment plant, or air-pollution control facility, and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations and from community activities. Solid waste does not include solid or dissolved materials in domestic sewage; solid or dissolved materials in irrigation return flows; industrial discharges that are point sources subject to permits under section 402 of the Federal Water Pollution Control Act, as amended; or source, special nuclear, or byproduct material as defined by the Atomic Energy Act of 1954, as amended.

solid waste management unit (SWMU)—(1) Any discernible site at which solid wastes have been placed at any time, whether or not the site use was intended to be the management of solid or hazardous waste. SWMUs include any site at a facility at which solid wastes have been routinely and systematically released. This definition includes regulated sites (i.e., landfills, surface impoundments,

waste piles, and land treatment sites), but does not include passive leakage or one-time spills from production areas and sites in which wastes have not been managed (e.g., product storage areas). (2) According to the March 1, 2005, Compliance Order on Consent (Consent Order), any discernible site at which solid waste has been placed at any time, and from which the New Mexico Environment Department determines there may be a risk of a release of hazardous waste or hazardous waste constituents (hazardous constituents), whether or not the site use was intended to be the management of solid or hazardous waste. Such sites include any area in Los Alamos National Laboratory at which solid wastes have been routinely and systematically released; they do not include one-time spills.

spring—Groundwater seeping out of the earth where the water table intersects the ground surface.

standard operating procedure—A document that details the officially approved method(s) for an operation, analysis, or action, with thoroughly prescribed techniques and steps.

stratigraphy—The study of the formation, composition, and sequence of sediments, whether consolidated or not.

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

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

technical area (TA)—At Los Alamos National Laboratory, an administrative unit of operational organization (e.g., TA-21).

topography—The physical or natural features of an object or entity and their structural relationships.

treatment—Any method, technique, or process, including elementary neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, recover energy or material resources from the waste, or to render such waste nonhazardous or less hazardous; safer to transport, store, or dispose of; or amenable for recovery or storage; or reduced in volume.

treatment, storage, and disposal facility—An interim-status or permitted facility in which hazardous waste is treated, stored, or disposed.

trip blank—A sample of analyte-free media taken from a sampling site and returned to the analytical laboratory unopened along with samples taken in the field; used to monitor cross contamination of samples during handling and storage both in the field and in the analytical laboratory.

tuff—Consolidated volcanic ash, composed largely of fragments produced by volcanic eruptions.

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

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

vadose zone—The zone between the land surface and the water table within which the moisture content is less than saturation (except in the capillary fringe) and pressure is less than atmospheric. Soil pore space also typically contains air or other gases. The capillary fringe is included in the vadose zone.

water content—The amount of water in an unsaturated medium, expressed as the ratio of the weight of water in a sample to the weight of the oven-dried sample (often expressed as a percentage).

watershed—A region or basin drained by, or contributing waters to, a river, stream, lake, or other body of water and separated from adjacent drainage areas by a divide, such as a mesa, ridge, or other geologic feature.

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

A-3.0 METRIC TO ENGLISH CONVERSION TABLE

Multiply SI (Metric) Unit	by	To Obtain US Customary Unit
kilometers (km)	0.622	miles (mi)
kilometers (km)	3281	feet (ft)
meters (m)	3.281	feet (ft)
meters (m)	39.37	inches (in.)
centimeters (cm)	0.03281	feet (ft)
centimeters (cm)	0.394	inches (in.)
millimeters (mm)	0.0394	inches (in.)
micrometers or microns (µm)	0.0000394	inches (in.)
square kilometers (km^2)	0.3861	square miles (mi^2)
hectares (ha)	2.5	acres
square meters (m^2)	10.764	square feet (ft^2)
cubic meters (m^3)	35.31	cubic feet (ft^3)
kilograms (kg)	2.2046	pounds (lb)
grams (g)	0.0353	ounces (oz)
grams per cubic centimeter (g/cm^3)	62.422	pounds per cubic foot (lb/ft^3)
milligrams per kilogram (mg/kg)	1	parts per million (ppm)
micrograms per gram (µg/g)	1	parts per million (ppm)
liters (L)	0.26	gallons (gal.)
milligrams per liter (mg/L)	1	parts per million (ppm)
degrees Celsius (°C)	9/5 + 32	degrees Fahrenheit (°F)

A-4.0 DATA QUALIFIER DEFINITIONS

Data Qualifier	Definition
U	The analyte was analyzed for but not detected.
J	The analyte was positively identified, and the associated numerical value is estimated to be more uncertain than would normally be expected for that analysis.
J+	The analyte was positively identified, and the result is likely to be biased high.
J-	The analyte was positively identified, and the result is likely to be biased low.
UJ	The analyte was not positively identified in the sample, and the associated value is an estimate of the sample-specific detection or quantitation limit.
R	The data are rejected as a result of major problems with quality assurance/quality control (QA/QC) parameters.

Appendix B

Field Methods

B-1.0 INTRODUCTION

This appendix summarizes field methods used for the 2004–2007 investigation at the Middle Mortandad/Ten Site aggregate. Table B-1.0-1 provides general method information, and the following sections provide more detailed descriptions of field methods used. All activities were conducted in accordance with the applicable Environmental Programs Directorate standard operating procedures (SOPs) and quality procedures (QPs), which also are listed in Table B-1.0-1.

B-2.0 EXPLORATORY DRILLING CHARACTERIZATION

No exploratory drilling characterization was conducted during the 2004–2007 investigation activities. All drilling was conducted for the purpose of collecting investigation samples.

B-3.0 FIELD-SCREENING METHODS

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

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

Organic vapor field screening (headspace screening) was performed on selected samples collected during investigation activities. Screening was performed with a photoionization detector (PID). The instruments used were the HNU Model PI-101 or the Organic Vapor Monitor (OVM) 580B, with 11.7 electron-volt (eV) lamps. Calibration of the PIDs was performed at least daily during field activities, and a yearly calibration was performed by the vendor. Daily calibration was performed using a standard source of 100 ppm isobutylene. The rated detection limit for the PIDs used is 0.2 ppm.

B-4.0 SURFACE AND SUBSURFACE SAMPLING

This section summarizes the methods used for collecting surface and subsurface samples for laboratory analysis.

B-4.1 Surface Soil and Fill Sampling Methods

Surface soil and fill samples were collected in accordance with either SOP-06.09, "Spade and Scoop Method for Collection of Soil Samples," or SOP-6.10, "Hand Auger and Thin-Wall Tube Sampler." The spade and scoop method was generally used to collect soil or fill samples to a depth of 1 ft bgs or less in loose, unconsolidated material, or where samples were collected from an exposed vertical soil profile. The hand auger method was generally used where soil, fill, or non-welded tuff samples were to be collected at multiple depths where the spade and scoop method was not practical. The hand auger

method was used primarily for samples at 5 ft bgs or less, although in a few cases a hand auger was used at greater depths in locations where using a drill rig was not practical.

In both methods, a stainless-steel scoop and bowl were used to homogenize the samples, which were then transferred to sterile sample collection jars or bags for transport to the Sample Management Office (SMO). The sample collection tools were decontaminated immediately prior to collection of each sample in accordance with SOP-1.08, "Field Decontamination of Drilling and Sampling Equipment".

B-4.2 Subsurface Sampling Methods

Subsurface samples were collected using a mobile rotary drill rig with hollow-stem auger, in accordance with SOP-06.26, "Core Barrel Sampling for Subsurface Earth Materials." Borehole samples were collected in a stainless-steel split-spoon core-barrel sampler which retrieved core in 2.5-ft intervals.

Core retrieved from the subsurface was field screened for radioactivity and organic vapors, and visually inspected to determine the specific 2.5-ft section of core to be sampled. Once this determination was made, volatile organic compound (VOC) samples were collected, where required, from undisturbed core. Samples for VOC analysis were collected using EnCore samplers to minimize the loss of subsurface VOCs during the sample collection process. EnCore samplers consist of a coring device that also serves as the shipping container. A clean coring tool was inserted into the fresh core surface for sample collection, taking care not to trap air behind the sample. This was done to maximize accuracy for VOC analysis. Following extraction of a core sample, the exterior of the EnCore barrel was quickly wiped with a clean disposable towel, allowing for a tight seal with the cap on the open end of the sampler. The sample was then labeled, inserted into a sealable pouch, immediately cooled to 4 ± 2°C and prepared for transfer to the SMO. All EnCore sampling followed the manufacturer's instructions.

After collection of VOC samples, the remaining core from the target interval was homogenized in a stainless-steel bowl and transferred to the appropriate sterile sample containers. The sample containers were immediately labeled and placed into a cooled container for transfer to the SMO. All samples were preserved using the appropriate methods prescribed for each analytical suite in accordance with ENV-DO-206, "Containers and Preservation of Samples."

B-4.3 Quality Assurance/Quality Control Samples

Quality assurance (QA)/quality control (QC) samples for soils and tuff were collected in accordance with SOP-01.05, "Field Quality Control Samples." Field duplicate samples were collected at a frequency of at least one duplicate sample for every ten samples (10%). Field rinsate samples were collected from sampling equipment at a frequency of at least 1 rinsate sample for every 10 samples. Field trip blanks also were collected at a frequency of 1 per 10 samples where VOC samples were collected.

B-4.4 Sample Documentation and Handling

Field personnel completed a sample collection log and associated chain-of-custody (COC) form for each sample set. Sample containers were sealed with signed COC seals and placed in coolers at approximately 4°C. Samples were packaged with preservatives, as necessary, depending upon the analytical method to be used, packed, handled, and shipped in accordance with ENV-DO-207, "Handling, Packaging, and Shipping of Samples," and ENV-DO-206, "Containers and Preservation of Samples."

Samples were transported to the SMO in sealed coolers before they were shipped to the analytical laboratory. The SMO personnel reviewed and approved the sample collection logs and COC forms and accepted custody of the samples.

B-4.5 Decontamination of Sampling Equipment

The split-spoon core barrel, hand auger, and all other sampling equipment that made (or could have made) contact with sample material were decontaminated immediately before each sample was collected, to avoid cross-contamination of samples. Decontamination included wiping the equipment with a household-strength cleaning spray and sterile paper towels. Decontamination of the drilling equipment was conducted before mobilization of the drill rig to another borehole to avoid cross-contamination between samples and borehole locations. Decontamination activities, including collection of rinsate blank samples, were performed in accordance with SOP-01.08, "Field Decontamination of Drilling and Sampling Equipment" and SOP-01.05, "Field Quality Control Samples."

B-5.0 GEODETIC SURVEYING

Geodetic surveys of all sampled locations were performed using a Trimble RTK 5700 differential global positioning system (DGPS) referenced from published and monumented external Laboratory survey control points in the vicinity. All borehole and sample locations were surveyed according to SOP-03.11, "Coordinating and Evaluating Geodetic Surveys." Horizontal accuracy of the monumented control points is within 0.1 ft. The DGPS instrument referenced from Laboratory control points is accurate within 0.2 ft.

B-6.0 DEVIATIONS FROM SAP OR ADDENDUM

The approved sampling and analysis plan (SAP) provided planned locations for sample transects. These transects were each implemented as one or more discrete sampling locations rather than continuous transects. In most cases, the discrete sampling locations were on or near the planned path of the transects. In four cases, however, the locations were adjusted to account for site conditions found at the time the SAP was implemented.

- In the Ten Site Slope Subarea, transect TR7 was specified to be located "near top of slope" at a location shown on Figure 3.2-3 of the SAP. The location specified was found to be on or immediately adjacent to a paved area where little or no sediment could accumulate. Therefore the transect location was adjusted and implemented as two sample locations in a drainage channel slightly downslope from the original planned location. The selected drainage channel is the site of significant sediment accumulation in the immediate downslope vicinity of the site under investigation (consolidated unit 35-014[g]-00). Because the channel is bifurcated, two locations were selected to attempt to capture any contamination that may have been transported and deposited in either branch. Location 35-22974 is approximately 75 ft east-southeast of the planned transect, while location 35-22975 is approximately 20 ft south of the planned transect.
- In the Ten Site Slope Subarea, transect TR5 was sampled as location 35-23201. This location is approximately 50 ft west of the planned location of the transect. The location was selected based on a geomorphic evaluation of the drainages associated with AOC 35-014(g3), and is believed to more closely match the location of the most likely flow path and accumulation area of potential contaminants associated with the AOC.
- In the Ten Site Slope Subarea, transects TR14 and TR15 were proposed at locations slightly north of the main active Ten Site Canyon channel. Upon investigation of the planned locations, no

sediment or other material was found that clearly represents post-1943 accumulations. Therefore two locations were selected upslope in material that clearly comprised post-1943 sediment accumulations and therefore was more likely to contain potential contaminants associated with consolidated unit 35-016(c)-00 as planned. Locations 35-23290 and 35-23291 are approximately 55 ft and 170 ft north, respectively, of the planned transects.

- Locations 04-23235, 04-23236, and 04-23239 represent transects TR3, TR4, and TR7, respectively, from the SAP Addendum. The sampled locations are in the drainages identified for the planned transects, but are approximately 100 ft south of the planned locations of the transects. Upon investigation of the planned locations, they were found to consist of bare tuff outcrop, with no sediment or appropriate material (post-1943) to sample. Therefore the samples were collected in the same drainages but at the nearest upslope locations where suitable material was available.

In the Mesa Top Subarea, location 35-24415 in SWMU 35-004(h) should have had four samples collected, every 5 ft from 0–20 ft bgs. Instead, three samples were collected in 2005, at depths of 4–5 ft, 14–15 ft, and 29–30 ft bgs. The samples were analyzed for TAL metals as intended. Despite this deviation, the nature and extent of contamination is defined for inorganic chemicals, with only a single detected selenium concentration above the BV (less than twice the BV). No additional sampling is warranted as a result of this deviation.

Table B-1.0-1
Brief Description of Field Investigation Methods

Method	SOP Number	Summary	Deviations from SOP
Spade-and-Scoop Collection of Soil Samples	6.09	This method is typically used for collection of shallow (i.e., approximately 0–6 in.) soil or sediment samples. The "spade-and-scoop" method involves digging a hole to the desired depth, as prescribed in the sampling and analysis plan, and collecting a discrete grab sample. The sample is typically placed in a clean stainless-steel bowl for transfer to various sample containers.	None
Hand Auger Sampling	6.10	This method is typically used for sampling soil or sediment at depths of less than 10–15 ft, but may in some cases be used for collecting samples of weathered or nonwelded tuff. The method involves hand-turning a stainless-steel bucket auger (typically 3–4 in. inside diameter [i.d.]), creating a vertical hole which can be advanced to the desired sample depth. When the desired depth is reached, the auger is decontaminated before advancing the hole through the sample depth. The sample material is transferred from the auger bucket to a stainless-steel sampling bowl before filling the various required sample containers.	None
Split-Spoon Core-Barrel Sampling	6.24, 6.26	In this method, a stainless-steel core barrel (typically 4 in. i.d. and, 2.5 ft long) is advanced using a powered drilling rig. The core barrel extracts a continuous length of soil and/or rock which can be examined as a unit. The split-spoon core barrel is a cylindrical barrel split length-wise so that the two halves can be separated to expose the core sample. Once extracted, the section of core is typically screened for radioactivity and organic vapors, photographed, and described in a geologic log. A portion of the core may then be collected as a discrete sample from the desired depth.	None
Headspace Vapor Screening	6.33	Individual soil, rock, or sediment samples may be field-screened for VOCs by placing a portion of the sample in a plastic sample bag or in a glass container with a foil-sealed cover. The container is sealed and gently shaken, and allowed to equilibrate for 5 min. The sample is then screened by inserting a PID probe into the container and measuring and recording any detected vapors. PIDs must use lamps with voltages of 10.6 eV or higher.	None
Handling, Packaging, and Shipping of Samples	ENV-DO-207	Field team members seal and label samples before packing, and they ensure that the sample containers and the containers used for transport are free of external contamination. Field team members package all samples so as to minimize the possibility of breakage during transportation. After all environmental samples are collected, packaged, and preserved, a field team member transports them either to the SMO or an SMO-approved radiation screening laboratory under chain-of-custody. The SMO arranges for shipping of samples to analytical laboratories. The field team member must inform the SMO and/or the radiation screening laboratory coordinator when levels of radioactivity are in the action-level or limited-quantity ranges.	None

Table B-1.0-1 (continued)

Method	SOP Number	Summary	Deviations from SOP
Sample Control and Field Documentation	1.04	The collection, screening, and transport of samples is documented on standard forms generated by the SMO. These include sample collection logs, chain-of-custody forms, and sample container labels. Collection logs are completed at the time of sample collection and are signed by the sampler and a reviewer who verifies the logs for completeness and accuracy. Corresponding labels are initialed and applied to each sample container, and custody seals are placed around container lids or openings. Chain-of-custody forms are completed and assigned to verify that the samples are not left unattended.	None
Field Quality Control Samples	1.05	Field quality control samples are collected as directed in the Compliance Order on Consent as follows: • Field duplicates: at a frequency of 10%; collected at the same time as a regular sample and submitted for the same analyses. • Equipment rinsate blanks: at a frequency of 10%; collected by rinsing sampling equipment with deionized water which is collected in a sample container and submitted for laboratory analysis. • Trip blanks: required for all field events that include the collection of samples for VOC analysis. Trip blank containers of certified clean sand are opened and kept with the other sample containers during the sampling process.	Prior to Consent Order, QC samples generally collected at frequency of 5%.
Field Decontamination of Drilling and Sampling Equipment	1.08	Dry decontamination is the preferred method to minimize the generation of liquid waste. Dry decontamination may include the use of a wire brush or other tool for removal of soil or other material adhering to the sampling equipment, followed by use of a commercial cleaning agent (a nonacid, waxless cleaner) and paper wipes. Dry decontamination may be followed by wet decontamination if necessary. Wet decontamination may include washing with a nonphosphate detergent and water, followed by a water rinse and a second rinse with deionized water. Alternatively, steam cleaning may be used.	None
Containers and Preservation of Samples	ENV-DO-206	Specific requirements/processes for sample containers, preservation techniques, and holding times are based on U.S. Environmental Protection Agency guidance for environmental sampling, preservation, and quality assurance. Specific requirements for each sample are printed on the sample collection logs provided by the SMO: size and type of container (i.e., glass, amber glass, polyethylene), preservative, etc. All samples are preserved by placing them in insulated containers with ice to maintain a temperature of 4°C. Other requirements such as nitric acid or other preservatives may apply to different media or analytical requests.	None

Table B-1.0-1 (continued)

Method	SOP Number	Summary	Deviations from SOP
Management, Characterization, and Storage of Investigation-Derived Waste (IDW)	1.06	IDW is managed, characterized, and stored in accordance with an approved waste characterization strategy form that documents site history, field activities, and the characterization approach for each waste stream managed. Waste characterization shall be adequate to comply with on-site or off-site waste acceptance criteria. All stored IDW will be marked with appropriate signage and labels, as appropriate. Drummed IDW will be stored on pallets to prevent deterioration of containers. Generators are required to reduce volume of waste generated by as much as is technically and economically feasible. Means to store, control, and transport each potential waste type and classification shall be determined prior to the start of field operations that generate waste. A waste storage area shall be established prior to generating waste. Waste storage areas located in controlled areas of the laboratory shall be controlled as needed to prevent inadvertent addition or management of wastes by unauthorized personnel. Each container of waste generated shall be individually labeled as to waste classification, item identification number, and radioactivity (if applicable), immediately following containerization. All waste shall be segregated by classification and compatibility to prevent cross-contamination. Management of IDW is presented in Appendix I.	None
Coordinating and Evaluating Geodetic Surveys	3.11	Geodetic surveys focused on obtaining survey data of acceptable quality for use during project investigations. Geodetic surveys were conducted with a Trimble 5700 DGPS. The survey data conformed to Laboratory Information Architecture (IA) project standards IA-CB02, "GIS Horizontal Spatial Reference System," and IA-D802, "Geospatial Positioning Accuracy Standard for A/E/C/ and Facility Management." All coordinates are expressed as SPCS 83, NM Central, U.S. feet coordinates. All elevation data are reported relative to the National Geodetic Vertical Datum of 1983.	None

Appendix C

Data Quality

C-1.0 INTRODUCTION

Quality assurance (QA), quality control (QC), and data validation procedures were implemented in accordance with the requirements of the Quality Assurance Project Plan Requirements for Sampling and Analysis (LANL 1996, 054609), and the Los Alamos National Laboratory (LANL or the Laboratory) Environmental Restoration (ER) Project analytical services statement of work (SOWs) for contract laboratories (LANL 1995, 049738; LANL 2000, 071233). The results of the QA/QC activities were used to estimate accuracy, bias, and precision of the analytical measurements. QC samples included method blanks, blank spikes, matrix spikes, and laboratory control samples (LCSs) to assess accuracy and bias. Internal standards, external standards, surrogates, and tracers were also used to assess accuracy. The type and frequency of QC analyses are described in the analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233). Other QC factors such as sample preservation and holding times were also assessed. Evaluating these QC indicators allows estimates to be made of the accuracy, bias, and precision of the analytical suites. A focused data validation was also performed for all the data packages (also referred to as request numbers). The focused validation followed the same procedure discussed above and included a more detailed review of the raw data results generated by the analytical laboratory.

A number of analytical results were rejected for various reasons and are not usable for the purposes of this report. The remaining data, including qualified data, are usable for evaluation and interpretive purposes.

Summaries of the analytical methods for metals, radionuclides, and organic analytes are provided in the following sections.

C-2.0 INORGANIC CHEMICAL ANALYSIS METHODS

A total of 898 samples from the Middle Mortandad/Ten Site Aggregate were analyzed for inorganic chemicals.

The primary method used for analysis of inorganic chemicals is inductively coupled plasma emission spectroscopy (ICPES), U.S. Environmental Protection Agency (EPA) SW-846 Method 6020/6010B, but a variety of methods were used for individual analytes (e.g., mercury was analyzed by cold vapor atomic absorption [CVAA]). In addition, a limited number of samples were analyzed for anions by EPA Method 300. The analytical methods used for inorganic chemicals are listed in Table C-2.0-1.

C-2.1 Inorganic QA/QC Samples

LCSs, method blanks, matrix spike samples, field duplicate samples, interference check samples, and serial dilution samples were analyzed to assess accuracy and precision of inorganic chemical analyses. Each of these QA/QC sample types is defined in the ER Project analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233) and described briefly in the sections below. Because some of the analyses were performed prior to the 1995 SOW, slightly different QA/QC procedures may have been followed.

The LCS serves as a monitor of the overall performance of each step during the analysis, including sample digestion. The analytical results for the samples were qualified according to National Functional Guidelines (EPA 1994, 048639) if the individual LCS recovery indicated an unacceptable bias in the measurement of individual analytes. LCS recoveries should fall into the control limits of 75–125% (LANL 1995, 049738; LANL 2000, 071233).

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

The accuracy of inorganic chemical analyses is also assessed using matrix spike samples. A matrix spike sample is designed to provide information about the effect of each sample matrix on the sample preparation procedures and analytical technique. The spike sample recoveries should be within the acceptance range of 75–125%.

Analyzing field duplicate samples assesses the precision of inorganic chemical analyses. All relative percent differences between the sample and field duplicate should be ±35% (LANL 2000, 071233).

C-2.2 Inorganic Chemical Background Values

It is important to note that the previously used analytical services SOW (LANL 1995, 049738) was issued before the widespread use of axial view ICPES (also known as trace ICPES), and before the development of the LANL soil inorganic background data set. With the advent of axial view ICPES, detection limits for inorganic chemicals have greatly improved. As an example, antimony soil detection limits for the older radial view ICPES are typically on the order of 12 mg/kg, whereas trace ICPES detection limits are as low as 0.5 mg/kg.

The document titled “Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory” (LANL 1998, 059730) was developed after trace ICPES was widely used. However, since some of this work was performed prior to widespread trace ICPES use, not all detection limits are below the background values; detection limits above the background values are addressed in the data review in Appendix D.

C-3.0 ORGANIC CHEMICAL ANALYSIS METHODS

A total of 831 samples were analyzed for organic chemicals in the Middle Mortandad/Ten Site Aggregate. Samples were analyzed for one or more of the following organic analytical suites: volatile organic compounds (VOCs) using EPA Method 5035/8260; semivolatile organic compounds (SVOCs) using EPA Method 8270; VOCs, SVOCs, and polychlorinated biphenyls (PCBs) using EPA Method 8082; and pesticides using EPA Method 8081A. The analytical methods used for organic chemicals are listed in Table C-3.0-1. All QC procedures were followed as required in the ER Project analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233). All the qualifiers applied to organic chemical analyses are included in the data tables provided in Appendix E.

C-3.1 Organic QA/QC Samples

QCs are designed to produce a quantitative measure of the reliability of a specific part of an analytical procedure. The results of the QCs performed on a sample provide confidence about whether the analyte is present and whether the concentration reported is correct. The methods for validating organic sample results on the basis of the various QA/QC sample types are specified in ENV-ERS procedures for SVOCs, for VOCs, and for pesticides and PCBs. Because some of the analyses were performed prior to the current SOWs (LANL 1995, 049738; LANL 2000, 071233), slightly different QA/QC procedures may have been followed. The validation of organic chemical data using QA/QC samples and other methods can result in the rejection of the data or the assignment of various qualifiers to individual sample results (see Table C-3.1-1 for definitions of the qualifiers used).

Calibration verifications, instrument-performance checks, LCSs, method blanks, matrix spike samples, surrogates, and internal standards were analyzed to assess the accuracy and precision of organic chemical analyses. Each of these QA/QC sample types is defined in the analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233) and described briefly in the paragraphs below.

Calibration verification is the establishment of a quantitative relationship between the response of the analytical procedure and the concentration of the target analyte. There are two aspects of calibration verification: initial and continuing. The initial calibration verifies the accuracy of the calibration curve as well as the individual calibration standards used to perform the calibration. The continuing calibration assures that the initial calibration is still holding and correct as the instrument is used to process samples. The continuing calibration also serves to determine that analyte identification criteria such as retention times and spectral matching are being met.

The LCS is a sample of a known matrix that has been spiked with compounds that are representative of the target analytes, and it serves as a monitor of overall performance on a “controlled” sample. The LCS is the primary demonstration, on a daily basis, of the ability to analyze samples with good qualitative and quantitative accuracy. The analytical results for the samples were qualified according to National Functional Guidelines (EPA 1999, 066649) if the individual LCS recoveries were not within method-specific acceptance criteria. The LCS recoveries should fall within the control limits of 75–125% (LANL 1995, 049738; LANL 2000, 071233).

A method blank is an analyte-free matrix to which all reagents are added in the same volumes or proportions as those used in the environmental sample processing and which is extracted and analyzed in the same manner as the corresponding environmental samples. Method blanks are used to assess the potential for sample contamination during extraction and analysis. All target analytes should be below the CRDL in the method blank (LANL 1995, 049738; LANL 2000, 071233).

The accuracy of organic chemical analyses is also assessed using matrix spike samples which are aliquots of the submitted samples spiked with a known concentration of the target analyte(s). Matrix spike samples are used to measure the ability to recover prescribed analytes from a native sample matrix. Spiking typically occurs before sample preparation and analysis. The spike sample recoveries should be within the acceptance range of 75–125% (LANL 2000, 071233).

A surrogate compound (surrogate) is an organic chemical compound used in the analyses of organic target analytes that is similar in composition and behavior to the target analytes but not normally found in environmental samples. Surrogates are added to every blank, sample, and spike to evaluate the efficiency with which analytes are recovered during extraction and analysis. The recovery percentage of the surrogates must be within specified ranges or the sample may be rejected or assigned a qualifier.

Internal standards are chemical compounds added to every blank, sample, and standard extract at a known concentration. They are used to compensate for (1) analyte concentration changes that might occur during storage of the extract, and (2) quantitation variations that can occur during analysis. Internal standards are used as the basis for quantitation of target analytes. The percent recovery for internal standards should be within the range of 50–200%.

C-4.0 RADIOCHEMICAL ANALYSIS METHODS

A total of 1396 samples were analyzed for radionuclides by the methods listed in Table C-4.0-1.

Radionuclides with reported values less than the minimum detectable activity (MDA) were qualified as nondetected (U). Each radionuclide result was also compared with the corresponding 1 sigma total

propagated uncertainty (TPU). If the result was not greater than three times the TPU, the radionuclide was qualified as nondetected (U).

Certain gamma spectroscopy analytes are subject to spectral interference from energies of other radionuclides. When this occurs it is not possible to reliably measure these radionuclides. Laboratory results indicated spectral interference for several gamma spectroscopy analytes. These values were rejected (R) due to spectral interference. All other radionuclide results are usable for evaluation and interpretation purposes.

The precision and bias of radiochemical analyses performed at off-site fixed laboratories were assessed using matrix spike samples, LCSs, method blanks, duplicates, and tracers. The analytical services SOW (LANL 1995, 049738; LANL 2000, 071233) specifies that spike sample recoveries should be within ±25% of the certified value. All spike sample recoveries met this acceptance criterion. LCSs were analyzed to assess the accuracy of radionuclide analyses. The LCSs serve as a monitor of the overall performance of each step during the analysis, including the radiochemical separation preparation. The analytical services SOW (LANL 1995, 049738; LANL 2000, 071233) specifies that LCS recoveries should be within ±25% of the certified value. Method blanks are also used to assess bias. The analytical services SOWs (LANL 1995, 049738; LANL 2000, 071233) specify that the method blank concentration should not exceed the required estimated quantitation limit (EQL).

C-5.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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LANL (Los Alamos National Laboratory), December 2000. "University of California, Los Alamos National Laboratory (LANL), I8980SOW0-8S, Statement of Work for Analytical Laboratories," Rev. 1, Los Alamos National Laboratory, Los Alamos, New Mexico. (LANL 2000, 071233)

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

Analytical Method	Analytical Description	Analytical Suite
EPA Method 300	Ion chromatography	Anions
EPA SW-846: 6010/6010A/6010B	ICPES—atomic emission spectroscopy (AES)	Aluminum, antimony, arsenic, barium, beryllium, boron, calcium, cadmium, cobalt, chromium, copper, iron, lead, lithium, magnesium, manganese, mercury, nickel, potassium, selenium, silicon, sodium, silver, thallium, titanium, uranium, vanadium, and zinc (target analyte list [TAL] metals)
EPA SW-846:6020	Inductively coupled plasma mass spectrometry (ICPMS)	Aluminum, antimony, arsenic, barium, beryllium, boron, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, silicon, silver, thallium, titanium, vanadium, and zinc (TAL metals)
EPA SW-846:7041	Graphite furnace atomic absorption (GFAA)	Antimony
EPA SW-846:7060	GFAA	Arsenic
EPA SW-846:7060A	GFAA	Arsenic
EPA SW-846:7081	GFAA	Barium
EPA SW-846:7131	GFAA	Cadmium
EPA SW-846:7140	GFAA	Calcium
EPA SW-846:7191	GFAA	Chromium
EPA SW-846:7196	Colorimetric method	Hexavalent chromium
EPA SW-846:7201	Colorimetric method	Cobalt
EPA SW-846:7381	Colorimetric method	Iron
EPA SW-846:7420	Colorimetric method	Lead
EPA SW-846:7421	Colorimetric method	Lead
EPA SW-846:7450	Colorimetric method	Magnesium
EPA SW-846:7461	Colorimetric method	Manganese
EPA SW-846:7470	CVAA	Mercury
EPA SW-846:7470A	CVAA	Mercury
EPA SW-846:7471	CVAA	Mercury
EPA SW-846:7471A	GFAA	Mercury (TAL metal)
EPA SW-846:7520	GFAA	Nickel
EPA SW-846:7610	GFAA	Potassium
EPA SW-846:7740	GFAA	Selenium
EPA SW-846:7761	GFAA	Silver
EPA SW-846:7770	GFAA	Sodium
EPA SW-846:7840	GFAA	Thallium
EPA SW-846:7841	GFAA	Thallium
EPA SW-846:7911	GFAA	Vanadium
EPA SW-846:7951	GFAA	Zinc

Table C-2.0-1 (continued)

Analytical Method	Analytical Description	Analytical Suite
EPA: 370.1	Colorimetric method	Silicon
CLP:ILM03.0-200.7	ICPES—AES	Aluminum, antimony, arsenic, barium, beryllium, boron, calcium, cadmium, cobalt, chromium, copper, iron, lead, magnesium, manganese, nickel, potassium, selenium, sodium, silver, thallium, titanium, vanadium, and zinc (TAL metals)
CLP:ILM03.0-245.1	CVAA	Mercury

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

Analytical Method	Analytical Description	Target Compound List
EPA SW-846:8330	Explosives	HEXP
EPA SW-846:8270B EPA SW-846:8270C	SVOCs	See analytical services SOW (LANL 1995, 049738; LANL 2000, 071233); also Appendix E of this report
EPA SW-846:9060	Total organic carbon (TOC)	
EPA Method 3540 – Extraction EPA SW-846:8270 - Analysis	SVOCs	
EPA SW-846:8240 - Analysis	VOCs	
EPA Method 5035 – Sampling EPA Method 5035 – Extraction EPA SW-846:8260 - Analysis	VOCs	
EPA SW-846:8260B - Analysis	VOCs	
EPA Method 3540 – Extraction EPA SW-846:8082 - Analysis	PCBs	
EPA SW-846:8080 – Analysis	PESTPCB	
EPA Method 3540 – Extraction EPA SW-846:8081 – Analysis EPA SW-846:8081A – Analysis	Organochlorinated pesticides	
EPA SW-846:8310 – Analysis	Polyaromatic hydrocarbons (PAHs)	
EPA SW-846:8015M_EXTRACTABLE	Total petroleum hydrocarbons—diesel range organics (TPH-DRO)	

Table C-3.1-1
Data Qualifiers Used in the Data Validation Procedure

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

Table C-4.0-1
Analytical Methods for Radiochemical Analyses

Radionuclide	Analytical Technique
Gamma-emitting radionuclides	EPA 901.1 Gamma spectroscopy
Isotopic plutonium	HASL-300 Chemical Separation/Alpha Spectroscopy
Isotopic uranium	HASL-300 Chemical Separation/Alpha Spectroscopy
Isotopic thorium	HASL-300 Chemical Separation/Alpha Spectroscopy
Americium-241	HASL-300:AM-241: Chemical Separation/Alpha Spectroscopy
Tritium	EPA 906.0 Liquid Scintillation
Strontium-90	EPA 905.0 Chemical Separation/Gas Proportional Counting

Appendix D

Data Review

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D-1.0 OVERVIEW OF DATA

The data collected during the investigation of the solid waste management units (SWMUs), areas of concern (AOCs), and consolidated units in the Middle Mortandad/Ten Site Aggregate are of varying levels of quality. In the environmental restoration database (ERDB), all data records include a vintage code field denoting how and where samples were submitted for analyses. Some samples were submitted to Los Alamos National Laboratory's (LANL or the Laboratory) Chemical Science and Technology (CST) Division. Those samples were analyzed either at a CST Division laboratory or shipped from CST to one of several offsite contract laboratories. Samples analyzed at CST Division laboratories are identified by the vintage code "CST Onsite." Because samples analyzed at CST Division laboratories were not accompanied by full chain-of-custody and quality-control documentation, the resulting data from "CST Onsite" samples are screening-level data. As a result, "CST Onsite" data are not included in this data review. Samples shipped by CST Division to offsite laboratories are identified by the vintage code "CST Offsite." From late 1995 until the present, samples have been shipped through the Sample Management Office (SMO) to offsite contract laboratories. These samples are identified by the vintage code "SMO." Samples discussed in this data review are identified by the vintage code "SMO," or “CST Offsite” and the resulting data are decision-level data. They have been used in the determination of nature and extent, in calculating 95% upper confidence limits (UCLs), and in risk screening assessments.

In some cases, individual samples were assigned to more than one SMWU, AOC, or consolidated unit because their locations were within overlapping sites. Therefore, some samples appear in the data tables for more than one site. Data from these samples were used in evaluating each site to which they were assigned.

D-1.1 Overview of COPC Identification

The purpose of the data review is to identify chemicals of potential concern (COPCs) for each site (SWMU, AOC, or consolidated unit) in the Middle Mortandad/Ten Site Aggregate. Inorganic COPCs and radionuclide COPCs are identified through background comparisons when background data are available or by detection status if no background data are available. Organic chemicals are identified as COPCs if they are detected.

For inorganic chemicals and radionuclides, data are evaluated by sample media to facilitate the comparison with media-specific background data. Background data are available, for specific lists of analytes (LANL 1998, 59730), for soil (all soil horizons, designated by the media code ALLH), for Bandelier Tuff (media codes Qbt 3, Qbt 2, Qbt 1v, Qbt 1g, and Qbo), and for canyon sediment (media code SED). Fill material is undifferentiated and may include soil and crushed tuff in varying proportions. Because soil background values are used for fill, soil and fill samples are evaluated together. Background data sets (i.e., background concentrations) are available for most constituents (LANL 1998, 059730). A background value (BV) may be a calculated value for the background data set (upper tolerance limit or the 95% upper confidence bound on the 95^{th} quantile), a detection limit (DL), a fallout value (FV), or it may be calculated based on secular equilibrium or a total analysis. Fallout values apply only to fallout radionuclides in surface samples, generally from depths of 0 to 0.5 ft. To identify inorganic or radionuclide COPCs, the first step was to compare the reported value with a BV or FV. When background data were not available, a constituent was identified as a COPC if the reported value was greater than the BV. When background data were available, a constituent was identified as a COPC if the reported value was greater than the maximum value of the background data set (or the BV, whichever was greater). If no BV or FV was available, the constituent, if detected, was identified as a COPC. Table D-1.1-1 lists all

inorganic chemicals and radionuclides analyzed in the samples collected in the Middle Mortandad/Ten Site Aggregate with BVs or FVs, if available.

D-1.2 Overview of Upper Confidence Limit Calculations

Once the COPCs for each site are identified, it is necessary to determine appropriate representative concentrations of each COPC for use in risk screening assessments. The representative concentration is called an exposure point concentration (EPC) and may be a calculated 95% UCL, a maximum detected concentration, or a maximum detection limit. Generally, a 95% UCL of the arithmetic mean is calculated using concentrations of the COPCs from samples within selected depth ranges according to the risk scenario. In this data review, the EPCs are determined for recreational, industrial, and residential scenarios for each site, using data from depth ranges of 0 to 1 ft, 0 to 1 ft, and 0 to 10 ft, respectively. The EPCs are also calculated for ecological risk assessment for each subarea, using data from the depth range of 0 to 5 ft.

In this report, EPCs were determined using all available decision-quality data within the depth range of interest. When reported COPC concentrations are detection limits (i.e., nondetect), one-half of the detection limits were used to calculate the 95% UCL. If the calculated 95% UCL was greater than the maximum reported concentration, or if the number of sample results for a particular COPC was too small to calculate a 95% UCL (generally fewer than 10 samples), the maximum detected concentration or maximum detection limit (if there were no detects within the depth interval) was used as the EPC for that analyte in that depth range.

Various methods are available for calculating 95% UCLs, depending on the distribution of the data (EPA 1997, 057589). Environmental data are most often nonparametric, but may have a normal, lognormal, or gamma distribution. The 95% UCL calculations were performed using EPA's ProUCL software version 3.0 (EPA 2004, 090033). ProUCL identified the type of distribution of each analyte in each depth range. Distributions included normal, lognormal, gamma, and nonparametric (no definable shape to the distribution). Based on the identified distribution, ProUCL calculated UCL values using several specific methods and recommended the most appropriate method and the 95% UCL.

D-1.3 Overview of Rejected Data

All the data were qualified according to EPA standards and appropriate Laboratory standard operating procedures (SOPs). In some cases, individual analytical results are qualified as "rejected" because of various data-quality issues. Rejected analytical results are not included in the data review, the evaluations of nature and extent, or the screening assessments documented in Appendix F. Data-quality issues, including rejected analytical results, are discussed in Appendix C.

A review of the impact of rejected results found that where results for specific analytes or suites had been rejected, sufficient usable data remained to evaluate the nature and extent of contamination for specific analytes and suites. No required analytical suites or specific analytes were omitted as a result of the rejection of data. The results of the review are summarized in Table D-1.3-1, and illustrate that although some results were rejected for reasons of data quality, large numbers of results remained for those analytes that had one or more results rejected. As the numbers in parentheses show, most of the rejected results were initially qualified as non-detects by the analytical laboratories. Therefore, eliminating the rejected results from evaluations of nature and extent represents an additional conservative measure in site evaluations.

D-2.0 MESA TOP SUBAREA

This section identifies the media-specific COPCs for each site in the Mesa Top Subarea.

Table D-2.0-1, Table D-2.0-2, and Table D-2.0-3 summarize the samples collected for inorganic chemical analyses, radionuclide analyses, and organic chemical analyses, respectively, at each site in the Mesa Top Subarea.

Table D-2.0-4 presents the concentrations above BV for detected and nondetected inorganic chemicals for individual samples at each site in the Mesa Top Subarea.

Table D-2.0-5 presents the concentrations of these radionuclides detected above BVs or FVs, or detected with no applicable BV or FV, for individual samples at each site in the Mesa Top Subarea.

Table D-2.0-6 presents the concentrations of these detected organic chemicals for individual samples at each site in the Mesa Top Subarea.

D-2.1 SWMU 35-002

A total of seven samples were collected from two locations at this SWMU. Of the seven samples, four were soil and three were tuff. The inorganic chemical analyses, radionuclide analyses, and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.1.1 Inorganic Chemicals in Soil at SWMU 35-002

All four soil samples collected were analyzed for target analyte list (TAL) metals. No inorganic chemical was detected above its BV in soil. Table D-2.0-4 presents the reported concentrations (detection limits) of the nondetected inorganic chemical for which the detection limits are above the BV.

Cadmium was not detected in any soil samples and had detection limits above the BV but less than the maximum concentration of the background data set. Cadmium is not retained as a COPC in soil.

D-2.1.2 Inorganic Chemicals in Tuff at SWMU 35-002

All three tuff samples collected were analyzed for TAL metals. Table D-2.0-4 presents the reported concentrations above BV for inorganic chemical COPCs in tuff.

Chromium was detected above the BV but at less than the maximum concentration of the background data set; it is not retained as a COPC in tuff.

Selenium was not detected but had detection limits above the BV; it is retained as a COPC in tuff.

D-2.1.3 Inorganic COPC Summary at SWMU 35-002

The inorganic COPC identified at SWMU 35-002 is selenium. It is listed in Table D-2.1-1. Selenium was not detected in the 0 to 10 ft below ground surface (bgs) depth range, so no EPCs were calculated, and selenium was not included in the industrial or residential risk screening assessments for the site.

D-2.1.4 Radionuclides in Soil at SWMU 35-002

One of the four soil samples collected was analyzed for gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. The concentrations of the detected radionuclides above BV/FV are presented in Table D-2.0-5.

Tritium was detected with no applicable BV/FV; it is retained as a COPC in soil.

D-2.1.5 Radionuclides in Tuff at SWMU 35-002

Two of the three tuff samples collected were analyzed for gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. The concentrations of the detected radionuclides above BV/FV are presented in Table D-2.0-5.

Tritium was detected with no applicable BV/FV; it is retained as a COPC in tuff.

D-2.1.6 Radionuclide COPC Summary at SWMU 35-002

The single radionuclide COPC identified at SWMU 35-002 is tritium. It is listed in Table D-2.1-2 with the EPC for the residential risk screening assessment of the site.

No sample was collected for tritium analysis in the 0 to 1 ft bgs depth range, so no EPC was calculated, and tritium was not included in the evaluation of industrial risk for the site.

D-2.1.7 Organic Chemicals in Soil at SWMU 35-002

One of the four soil samples collected was analyzed for polychlorinated biphenyls (PCBs), pesticides, semivolatile organic compounds (SVOCs), and volatile organic compounds (VOCs). The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Aroclor-1260 was the only detected organic chemical; it is retained as a COPC in soil.

D-2.1.8 Organic Chemicals in Tuff at SWMU 35-002

Two of the three tuff samples collected were analyzed for PCBs, pesticides, SVOCs, and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Aroclor-1260 was the only detected organic chemical; it is retained as a COPC in tuff.

D-2.1.9 Organic COPC Summary at SWMU 35-002

The single organic COPC identified at SWMU 35-002 is Aroclor-1260. It is listed in Table D-2.1-3 with the EPC for residential risk screening assessments of the site.

No sample was collected for PCB analysis in the 0 to 1 ft bgs depth range, so no EPC is provided, and Aroclor-1260 was not included in the evaluation of industrial risk for the site.

D-2.2 Consolidated Unit 35-003(a)-99

A total of 192 samples were collected from 64 locations at this consolidated unit. Of the 192 samples collected, 82 were soil and fill samples and 110 were tuff samples. The inorganic chemical, radionuclide,

and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.2.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-003(a)-99

The inorganic chemical analyses requested for soil and fill samples included anions and TAL metals. Of the 82 soil and fill samples collected, 8 were analyzed for anions and 41 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BV are presented in Table D-2.0-4.

Antimony, barium, cadmium, calcium, chromium, copper, fluoride, lead, mercury, nickel, silicon, silver, thallium, and zinc were detected above the BV, were detected and have no available BV, or were not detected but had detection limits above the BV in at least one sample in soil and fill.

- Calcium is an essential macronutrient and silicon is a naturally-occurring element that is abundant in this environment; they are not identified as COPCs.
- Antimony, chromium, copper, lead, mercury, nickel, thallium, and zinc were detected above the maximum concentration of the background data set in at least one sample; they are retained as COPCs in soil and fill.
- Barium was detected above the BV but did not exceed the maximum concentration of the background data set; it is not retained as a COPC in soil and fill.
- Boron, fluoride, and titanium were detected but have no available BVs; they are retained as COPCs in soil and fill.
- Cadmium was either detected or undetected above the BV, but did not exceed the maximum concentration of the background data set; it is not retained as a COPC in soil and fill.
- Silver was detected above the BV in one sample and had multiple nondetects with detection limits above the BV, and there is no background data set available for silver in soil and fill (therefore results could not be compared to the maximum concentration in the background data set); it is retained as a COPC in soil and fill.

D-2.2.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-003(a)-99

The inorganic chemical analyses requested for tuff samples included anions and metals. Of the 110 tuff samples collected, 26 were analyzed for anions and 46 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above the BV are presented in Table D-2.0-4.

Aluminum, antimony, arsenic, barium, beryllium, boron, bromide, calcium, chloride, chromium, copper, fluoride, lead, mercury, nickel, selenium, silicon, silver, strontium, thallium, and titanium were detected above the BV, had detection limits above the BV, or were detected without an available BV in at least one sample in tuff.

- Calcium is an essential macronutrient and silicon is a naturally occurring element that is abundant in this environment; they are not identified as COPCs.
- Aluminum, chloride, chromium, and lead were detected above their respective BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.

- Antimony and selenium were detected above BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Arsenic had detection limits above the BV but below the maximum concentration of arsenic in the background data set; it is not retained as a COPC in tuff.
- Barium, copper, nickel, silver, and thallium were detected above their respective BVs and above the maximum concentrations in the background data set in at least one sample; they are retained as COPCs in tuff.
- Beryllium was detected above the BV in only one tuff sample, at 2 mg/kg, which is only slightly above the BV (1.21 mg/kg); it is not retained as a COPC in tuff.
- Boron, bromide, fluoride, and titanium were detected and have no available BVs; they are retained as COPCs in tuff.
- Mercury was detected above the BV and has no background data set for tuff; it is retained as a COPC in tuff.
- Strontium has no available BV; however, previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 1.7 mg/kg, so strontium is not retained as a COPC in tuff.

D-2.2.3 Inorganic COPC Summary at Consolidated Unit 35-003(a)-99

The inorganic COPCs identified at Consolidated Unit 35-003(a)-99 are antimony, barium, boron, bromide, chromium, copper, fluoride, lead, mercury, nickel, selenium, silver, thallium, titanium, and zinc. They are listed in Table D-2.2-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Antimony and silver were not detected but had detection limits above BVs. The maximum detection limits are presented in Table D-2.2-1. Boron, fluoride, selenium, thallium, and titanium were not detected or were not analyzed for in the 0 to 1 ft bgs depth range, so EPCs are not included for those chemicals in Table D-2.2-1, and they are not included in the evaluation of industrial risk. Bromide was detected once at a depth greater than 10 ft; no EPC is provided for bromide, and it is not included in the evaluations of risk.

D-2.2.4 Radionuclides in Soil and Fill at Consolidated Unit 35-003(a)-99

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 82 soil and fill samples collected, 43 were analyzed for gamma-emitting radionuclides, 78 were analyzed for isotopic plutonium and isotopic uranium, 38 were analyzed for strontium-90, and 55 were analyzed for tritium. The sample concentrations of the radionuclides detected above BV/FV are presented in Table D-2.0-5.

No samples were collected at surface depths (0 to 0.5 ft bgs), therefore FVs does not apply to any fallout radionuclides in samples at this site. The following fallout radionuclides were detected in soil and fill: americium-241, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, and tritium. They are retained as COPCs in soil and fill.

Uranium-234, -235, and -238 were detected above their respective BVs and are retained as COPCs in soil and fill.

D-2.2.5 Radionuclides in Tuff at Consolidated Unit 35-003(a)-99

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 110 tuff samples collected, 60 were analyzed for gamma-emitting radionuclides, 108 were analyzed for isotopic plutonium, 109 were analyzed for isotopic uranium, 45 were analyzed for strontium-90, and 64 were analyzed for tritium. The sample concentrations of the radionuclides detected above BV/FV are presented in Table D-2.0-5.

Cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, and tritium, and FVs do not apply to any of the samples. They are retained as COPCs in tuff.

Uranium-235 was detected above its BV; it is retained as a COPC in tuff.

D-2.2.6 Radionuclide COPC Summary at Consolidated Unit 35-003(a)-99

The radionuclide COPCs identified at Consolidated Unit 35-003(a)-99 are americium-241, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, -235, and -238. They are listed in Table D-2.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Americium-241 was not detected in the 0 to 10 ft bgs depth range, so no EPCs were calculated, and it was not included in the risk evaluations for the site. Europium-152 and plutonium-238 were not detected in the 0 to 1 ft bgs range, so EPCs were not calculated, and these radionuclides were not included in the evaluation of industrial risk.

D-2.2.7 Organic Chemicals in Soil and Fill at Consolidated Unit 35-003(a)-99

The organic chemical analyses requested for soil and fill samples included PCBs, pesticides, SVOCs, and VOCs. Of the 82 soil and fill samples collected, 7 were analyzed for PCBs; 2 were analyzed for pesticides; 4 were analyzed for PCBs and pesticides as a combined suite; 32 were analyzed for SVOCs; and 29 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in soil and fill: acetone; anthracene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; di-n-octylphthalate; fluoranthene; 2-hexanone; indeno(1,2,3-cd)pyrene; methylene chloride; phenanthrene; pyrene; trichloroethene; and trichlorofluoromethane. They are retained as COPCs in soil and fill.

D-2.2.8 Organic Chemicals in Tuff at Consolidated Unit 35-003(a)-99

The organic chemical analyses requested for tuff samples included PCBs, pesticides, SVOCs, and VOCs. Of the 110 tuff samples collected, 2 were analyzed for PCBs and pesticides, 15 were analyzed for SVOCs, and 9 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in tuff: acetone; Aroclor-1260; bis(2-ethylhexyl)phthalate; and methylene chloride. They are retained as COPCs in tuff.

D-2.2.9 Organic COPC Summary at Consolidated Unit 35-003(a)-99

The organic COPCs identified at Consolidated Unit 35-003(a)-99 are acetone; anthracene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; di-n-octylphthalate; fluoranthene; 2-hexanone; indeno(1,2,3-cd)pyrene; methylene chloride; phenanthrene; pyrene; trichloroethene; and trichlorofluoromethane. They are listed in Table D-2.2-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Benzo(a)pyrene, benzo(b)fluoranthene, di-n-octylphthalate, indeno(1,2,3-cd)pyrene, and phenanthrene were not detected in the 0 to 10 ft bgs depth range, so no EPCs were calculated, and they were not included in the evaluation of residential risk for the site.

D-2.3 Consolidated Unit 35-003(j)-99

A total of 69 samples were collected from 26 locations at this consolidated unit. Of the 69 samples collected, 41 were soil and fill, 27 were tuff, and one was a sediment sample. The inorganic chemical analyses, radionuclide analyses, and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.3.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-003(j)-99

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 41 soil and fill samples collected, 4 were analyzed for TAL metals. The concentrations of the detected and nondetected inorganic chemicals above BV are presented in Table D-2.0-4.

Antimony, cadmium, calcium, copper, lead, mercury, and silver were either detected above the BV or had detection limits above the BV in at least one soil or fill sample.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Antimony, cadmium, and silver were not detected but had detection limits above their BVs. The detection limits for antimony were above the maximum concentration of antimony in the background data set; detection limits for cadmium were less than the maximum concentration of cadmium in the background data set. There is no soil or fill background data set available for silver. Antimony and silver are retained as COPCs in soil and fill.
- Copper was detected above the BV but below the maximum concentration of copper in the background data set; it is not retained as a COPC in soil and fill. Lead and mercury were detected above the maximum concentrations of lead and mercury in the background data set; they are retained as COPCs in soil and fill.

D-2.3.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-003(j)-99

The inorganic chemical analyses requested for tuff samples included TAL metals. Of the 27 tuff samples collected, 5 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above their BVs are presented in Table D-2.0-4.

Antimony, barium, calcium, nickel, selenium, and silver were either detected above their BVs or had detection limits above their BVs in at least one tuff sample.

- Calcium is an essential macronutrient and is not identified as a COPC.

- Antimony, selenium, and silver were not detected in any tuff samples. Antimony and selenium had detection limits above their BVs, and are retained as COPCs in tuff. Silver had detection limits above the maximum concentration of silver in the background data set, and is retained as a COPC in tuff.
- Barium and nickel were detected above their BVs and above the maximum concentrations of barium and nickel in the background data set; they were retained as COPCs in tuff.

D-2.3.3 Inorganic COPC Summary at Consolidated Unit 35-003(j)-99

The inorganic COPCs identified at Consolidated Unit 35-003(j)-99 are antimony, barium, lead, mercury, nickel, selenium, and silver. They are listed in Table D-2.3-1 with the EPC calculated for industrial and residential risk screening assessments of the site, except as noted below.

Antimony and silver were not analyzed for or not detected in the 0 to 1 ft bgs depth range, so no EPCs were calculated, and they were not included in the evaluation of industrial risk for the site. Antimony, selenium, and silver were not detected in the 0 to 10 ft bgs depth range but had detection limits above BVs. The maximum detection limits are presented in Table D-2.3-1.

D-2.3.4 Radionuclides in Soil and Fill at Consolidated Unit 35-003(j)-99

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritum. Of the 41 soil and fill samples collected, 4 were analyzed for gamma-emitting radionuclides, 18 were analyzed for isotopic plutoniumand isotopic uranium, and 3 were analyzed for tritum. The sample concentrations of the radionuclides detected above BVs/FVs are presented in Table D-2.0-5.

Plutonium-239 was detected at a depth where its FV does not apply. Uranium-235 was detected above its BV. Plutonium-239 and uranium-235 are retained as COPCs in soil and fill.

D-2.3.5 Radionuclides in Tuff at Consolidated Unit 35-003(j)-99

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 27 tuff samples collected, 5 were analyzed for gamma-emitting radionuclides, and 6 were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected above BVs/FVs are presented in Table D-2.0-5.

Uranium-234 and -235 were detected above their BVs in tuff, and are retained as COPCs in tuff.

D-2.3.6 Radionuclides in Sediment at Consolidated Unit 35-003(j)-99

One sediment sample was collected and analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected above BV/FV are presented in Table D-2.0-5.

Uranium-234, -235, and -238 were detected above their BVs in sediment, and are retained as COPCs in sediment.

D-2.3.7 Radionuclides COPC Summary at Consolidated Unit 35-003(j)-99

The radionuclide COPCs identified for all media at Consolidated Unit 35-003(j)-99 are plutonium-239, uranium-234, -235, and -238. They are listed in Table D-2.3-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Plutonium-238 was not detected in the 0 to 1 ft bgs depth range, so no EPC was calculated, and plutonium-238 was not included in the evaluation of industrial risk for the site.

D-2.3.8 Organic Chemicals in Soil and Fill at Consolidated Unit 35-003(j)-99

The organic chemical analyses requested for soil and fill samples included PCBs, PCBs and pesticides as a combined suite, SVOCs, total petroleum hydrocarbons-diesel range organics (TPH-DRO), and VOCs. Of the 41 soil and fill samples collected, 25 samples were analyzed for PCBs; 2 samples were analyzed for PCBs and pesticides as a combined suite; 37 samples were analyzed for SVOCs; 21 samples were analyzed for TPH-DRO; and 20 samples were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in soil and fill: acenaphthene; acetone; anthracene; Aroclor-1248; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; sec-butylbenzene; chrysene; dibenz(a,h)anthracene; dibenzofuran; di-n-butylphthalate; ethylbenzene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 4-methyl-2-pentanone; methylene chloride; 2-methylnaphthalene; naphthalene; phenanthrene; phenol; pyrene; tetrachloroethene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; trichloroethene; trichlorofluoromethane; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and xylene (total). All are retained as COPCs in soil and fill.

D-2.3.9 Organic Chemicals in Tuff at Consolidated Unit 35-003(j)-99

The organic chemical analyses requested for tuff samples included PCBs, pesticides, SVOCs, TPH-DRO, and VOCs. Of the 27 tuff samples collected, 18 samples were analyzed for PCBs; 2 samples were analyzed for pesticides; 27 samples were analyzed for SVOCs; 23 samples were analyzed for TPH-DRO; and 8 samples were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in tuff: acetone; Aroclor-1248; Aroclor-1260; bis(2-ethylhexyl)phthalate; 2-butanone; di-n-butylphthalate; 2-hexanone; 4-methyl-2-pentanone; methylene chloride; tetrachloroethene; toluene; TPH-DRO; trichloroethene; trichlorofluoromethane; and xylene (total). All are retained as COPCs in tuff.

D-2.3.10 Organic Chemicals COPC Summary at Consolidated Unit 35-003(j)-99

The organic COPCs identified at Consolidated Unit 35-003(j)-99 are acenaphthene; acetone; anthracene; Aroclor-1248; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; sec-butylbenzene; chrysene; dibenz(a,h)anthracene; dibenzofuran; di-n-butylphthalate; ethylbenzene; fluoranthene; fluorene; 2-hexanone; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 4-methyl-2-pentanone; methylene chloride; 2-methylnaphthalene; naphthalene; phenanthrene; phenol; pyrene; tetrachloroethene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; trichloroethene; trichlorofluoromethane;

1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; and xylene (total). They are listed in Table D-2.3-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Aroclor-1248, 2-butanone, sec-butylbenzene, di-n-butylphthalate, ethylbenzene, 2-hexanone, 4-isopropyltoluene, 4-methyl-2-pentanone, methylene chloride, phenol, tetrachloroethene, toluene, 1,1,2-trichloro-1,2,2-trifluoroethane, trichloroethene, trichlorofluoromethane 1,2,4-trimethylbenzene, 1,3,5-trimethylbenzene, and xylene (total) were not detected or not analyzed for in the 0 to 1 ft bgs depth range, so no EPCs were calculated and they were not included in the evaluation of industrial risk for the site.

D-2.4 SWMU 35-004(a)

A total of four samples, two soil and two tuff samples, were collected from three locations at SWMU 35-004(a). The inorganic chemical analyses, radionuclide analyses, and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.4.1 Inorganic Chemicals in Tuff at SWMU 35-004(a)

The two tuff samples collected were analyzed for TAL metals. No inorganic chemicals were detected above BVs in tuff, but some detection limits for nondetects were above BVs. Table D-2.0-4 presents the reported concentrations (detection limits) of the nondetected inorganic chemical for which the detection limits are greater than BV.

Selenium was not detected but had detection limits greater than its BV, and is retained as a COPC in tuff.

D-2.4.2 Inorganic COPC Summary at SWMU 35-004(a)

The single inorganic COPC identified at SWMU 35-004(a) is selenium. It is listed in Table D-2.4-1. No sample was collected for selenium analysis in the 0 to 1 ft bgs depth range, and selenium was not detected in the 0 to 10 ft bgs depth range. Selenium was not included in the evaluation of risk for the site.

D-2.4.3 Radionuclides in Soil at SWMU 35-004(a)

The two soil samples collected at SWMU 35-004(a) were analyzed for isotopic plutonium and isotopic uranium. No radionuclides were detected above BVs/FVs.

D-2.4.4 Radionuclides in Tuff at SWMU 35-004(a)

The two tuff samples collected were analyzed for strontium-90 and tritium. The sample concentrations of the detected radionuclides are presented in Table D-2.0-5.

Tritium was detected and is retained as a COPC in tuff.

D-2.4.5 Radionuclide COPC Summary at SWMU 35-004(a)

The single radionuclide COPC identified at SWMU 35-004(a) is tritium. It is listed in Table D-2.4-2 with the EPC for residential risk screening assessments of the site.

No sample was collected for tritium analysis in the 0 to 1 ft bgs depth range, so tritium was not included in the evaluation of industrial risk for the site.

D-2.4.6 Organic Chemicals in Tuff at SWMU 35-004(a)

The two tuff samples collected were analyzed for PCBs, pesticides, SVOCs, and VOCs. No organic chemicals were detected in the tuff samples.

D-2.4.7 Organic COPC Summary at SWMU 35-004(a)

No organic COPCs are identified at SWMU 35-004(a).

D-2.5 SWMU 35-004(h)

A total of seven samples were collected from two locations at SWMU 35-004(h). Of the seven samples collected, three were soil and fill, and four were tuff samples. The inorganic chemical analyses and radionuclide analyses requested for each sample are summarized in Table D-2.0-1 and Table D-2.0-3, respectively.

D-2.5.1 Inorganic Chemical in Fill at SWMU 35-004(h)

The inorganic chemical analyses requested for the one fill sample were TAL metals. No inorganic chemicals were detected above BVs in fill. Table D-2.0-4 presents the reported concentrations (detection limits) of the nondetected inorganic chemical for which the detection limits are greater than BV.

Cadmium was not detected but had detection limits above the BV, but less than the maximum concentration of cadmium in the background data set; it is not retained as a COPC in fill.

D-2.5.2 Inorganic Chemical in Tuff at SWMU 35-004(h)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the four tuff samples collected, two were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above the BV are presented in Table D-2.0-4.

Selenium was either detected above its BV or had detection limits above the BV; selenium is retained as a COPC in tuff.

D-2.5.3 Inorganic COPC Summary at SWMU 35-004(h)

The single inorganic COPC identified at SWMU 35-004(h) is selenium. It is listed in Table D-2.5-1 with the EPC for residential risk screening assessments of the site.

No sample was collected for selenium analysis in the 0 to 1 ft bgs depth range, so selenium was not included in the evaluation of industrial risk for the site.

D-2.5.4 Radionuclide in Soil and Fill at SWMU 35-004(h)

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. Of the three soil and fill samples collected, one was analyzed for gamma-emitting radionuclides and tritium, and all three were analyzed for isotopic plutonium

and isotopic uranium. The sample concentrations of the radionuclides detected above BVs/FVs are presented in Table D-2.0-5.

Tritium was detected in fill, and it is retained as a COPC in fill.

D-2.5.5 Radionuclide in Tuff at SWMU 35-004(h)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. Of the four tuff samples collected, two were analyzed for gamma-emitting radionuclides and tritium, and all four were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected above BVs/FVs are presented in Table D-2.0-5.

Tritium was detected in tuff; it is retained as a COPC in tuff.

D-2.5.6 Radionuclide COPC Summary in Tuff at SWMU 35-004(h)

The single radionuclide COPC identified at SWMU 35-004(h) is tritium. It is listed in Table D-2.5-2 with the EPC for residential risk screening assessments of the site.

No sample was collected for tritium analysis in the 0 to 1 ft bgs depth range, so tritium was not included in the evaluation of industrial risk for the site.

D-2.6 SWMU 35-009(a)

A total of 84 samples were collected from 27 locations at this site. Of the 84 samples collected, 19 were soil and fill, 61 were tuff, and four were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.6.1 Inorganic Chemicals in Soil at SWMU 35-009(a)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 19 soil and fill samples collected, 4 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above the BV are presented in Table D-2.0-4.

Antimony, cadmium, lithium, mercury, and strontium were detected above their BVs, had detection limits above the BVs, or were detected but had no available BV.

- Antimony and cadmium were not detected; antimony had detection limits above the maximum concentration of antimony in the background data set, and cadmium had detection limits above the BV but below the maximum concentration of cadmium in the background data set. Antimony is retained as a COPC in soil.
- Lithium was detected and has no available BV; it is retained as a COPC in soil.
- Mercury was detected above its BV and above the maximum concentration of mercury in the background data set. Mercury is retained as a COPC in soil.
- Strontium has no BV, but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum

concentration of strontium detected in soil was 8.2 mg/kg. Strontium is not retained as a COPC in soil.

D-2.6.2 Inorganic Chemicals in Tuff at SWMU 35-009(a)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 61 tuff samples collected, 34 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BVs are presented in Table D-2.0-4.

Aluminum, antimony, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, lead, lithium, magnesium, mercury, nickel, selenium, silver, strontium, vanadium, and zinc were detected above their BVs, or were detected and have no available BV, in at least one tuff sample.

- Calcium and magnesium are essential macronutrients and are not identified as COPCs.
- Aluminum, antimony, barium, cobalt, copper, lead, nickel, selenium, silver, and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are all retained as COPCs in tuff.
- Arsenic, chromium, and vanadium were detected above their BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Beryllium was detected in only one tuff sample at 1.9 mg/kg, which is slightly greater than the BV (1.21 mg/kg); it is not retained as a COPC.
- Mercury was detected above its BV. There are no background data available for mercury in tuff; it is retained as a COPC in tuff.
- Lithium was detected but has no BV; it is retained as a COPC in tuff.
- Strontium has no BV, but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 22.9 mg/kg. Strontium is not retained as a COPC in tuff.

D-2.6.3 Inorganic Chemicals in Sediment at SWMU 35-009(a)

The four sediment samples collected were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BVs are presented in Table D-2.0-4.

Cadmium, chromium, copper, mercury, selenium, silver, and zinc were detected above their BVs, or had detection limits above the BV, in at least one sediment sample.

- Cadmium and selenium were not detected but had detection limits above their BVs; they are retained as COPCs in sediment.
- Chromium, mercury, and zinc were detected above their BVs; they are retained as COPCs in sediment.
- Copper and silver were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.

D-2.6.4 Inorganic COPC Summary at SWMU 35-009(a)

The inorganic COPCs identified for all media at SWMU 35-009(a) are aluminum, antimony, barium, cadmium, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, and zinc. They are listed in Table D-2.6-1 with the EPCs calculated for industrial and residential risk screening assessments of the site. Selenium was not detected in the 0 to 1 ft bgs depth range but had detection limit above the BV. The maximum detection limit is presented in Table D-2.6-1.

D-2.6.5 Radionuclides in Soil and Fill at SWMU 35-009(a)

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 19 soil and fill samples collected, 13 were analyzed for gamma-emitting radionuclides; 10 were analyzed for isotopic plutonium; 10 were analyzed for isotopic uranium; 13 were analyzed for strontium-90; and 4 were analyzed for tritium. The sample concentrations of the radionuclides detected above BVs/FVs are presented in Table D-2.0-5.

Plutonium-239 was detected above its FV or detected where the FV does not apply, and strontium-90 and tritium were detected; they are all retained as COPCs in soil and fill.

D-2.6.6 Radionuclides in Tuff at SWMU 35-009(a)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 61 tuff samples collected, 24 were analyzed for gamma-emitting radionuclides; 40 were analyzed for isotopic plutonium; 40 were analyzed for isotopic uranium; 21 were analyzed for strontium-90; and 27 were analyzed for tritium. The sample concentrations of the radionuclides detected above BVs/FVs are presented in Table D-2.0-5.

Plutonium-238, -239, strontium-90, and tritium were detected and are retained as COPCs in tuff.

D-2.6.7 Radionuclides in Sediment at SWMU 35-009(a)

The four sediment samples collected were analyzed for gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-2.0-5.

Plutonium-238 and -239 were detected above their FVs and above the maximum concentrations in the background data set. Uranium-234, -235, and -238 were detected above their BVs. Plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 are all retained as COPCs in sediment.

D-2.6.8 Radionuclide COPC Summary at SWMU 35-009(a)

The radionuclide COPCs identified for all media at SWMU 35-009(a) are plutonium-238, -239; strontium-90; tritium; and uranium-234, -235, and -238. They are listed in Table D-2.6-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-2.6.9 Organic Chemicals in Soil at SWMU 35-009(a)

The organic chemical analyses requested for soil samples included SVOCs. Of the 19 soil and fill samples collected, four were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Bis(2-ethylhexyl)phthalate was the only organic chemical detected in soil; it is retained as a COPC in soil.

D-2.6.10 Organic Chemicals in Tuff at SWMU 35-009(a)

The organic chemical analyses requested for tuff samples included PCBs, pesticides, SVOCs, and VOCs. Of the 61 tuff samples collected, 9 were analyzed for PCBs; 9 were analyzed for pesticides; 34 were analyzed for SVOCs; and 5 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Aroclor-1242, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, diethylphthalate, and pyrene were detected in tuff. They are retained as COPCs in tuff.

D-2.6.11 Organic Chemicals in Sediment at SWMU 35-009(a)

The four sediment samples collected were analyzed for PCBs, pesticides, SVOCs, and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Acetone; Aroclor-1254; Aroclor-1260; bis(2-ethylhexyl)phthalate; 4,4'-DDE (dichlorodiphenyldichloroethylene); 1,1-dichloroethene; di-n-butylphthalate; 4-isopropyltoluene; and toluene were detected in sediment. They are retained as COPCs in sediment.

D-2.6.12 Organic COPC Summary at SWMU 35-009(a)

The organic COPCs identified for all media at SWMU 35-009(a) are acetone; Aroclor-1242; Aroclor-1254; Aroclor-1260; bis(2-ethylhexyl)phthalate; 4,4'- DDE; 1,1-dichloroethene; diethylphthalate; di-n-butylphthalate; 4-isopropyltoluene; pyrene; and toluene. They are listed in Table D-2.6-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Aroclor-1242 and diethylphthalate were not detected in the 0 to 1 ft or 0 to 10 ft bgs depth intervals, and were not included in the evaluation of industrial or residential risk for the site.

D-2.7 AOC 35-011(d)

Three tuff samples were collected from one location (35-22961) at AOC 35-011(d). The inorganic chemical and organic chemical analyses requested for each sample are summarized in Table D-2.0-1 and Table D-2.0-2, respectively.

D-2.7.1 Inorganic Chemicals in Tuff at AOC 35-011(d)

The three tuff samples were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BVs are presented in Table D-2.0-4, respectively.

Selenium was detected above its BV and is retained as a COPC in tuff.

D-2.7.2 Inorganic COPC Summary at AOC 35-011(d)

The single inorganic COPC identified at AOC 35-011(d) is selenium. No sample was analyzed for selenium in the 0 to 1 ft bgs depth range, and selenium was not detected in the 0 to 10 ft bgs depth range, so selenium is not a COPC for the purposes of risk, and was not included in the evaluation of industrial or residential risk for the site.

D-2.7.3 Organic Chemicals in Tuff at AOC 35-011(d)

The three tuff samples were analyzed for PCBs, pesticides, SVOCs, TPH-DRO, and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Acetone and TPH-DRO were detected and are retained as COPCs in tuff.

D-2.7.4 Organic COPC Summary at AOC 35-011(d)

The organic COPCs identified at AOC 35-011(d) are acetone and TPH-DRO. No samples were analyzed for acetone or TPH-DRO in the 0 to 1 ft bgs depth range; and they were not detected in the 0 to 10 ft bgs depth range. Therefore, for the purposes of risk, acetone and TPH-DRO are not COPCs and were not included in evaluations of industrial or residential risk for the site.

D-2.8 SWMU 35-014(a)

A total of 47 samples were collected from 18 locations at SWMU 35-014(a). Of the 47 samples collected, 32 were soil and 15 were tuff. The radionuclide analyses requested for each sample are summarized in Table D-2.0-3.

D-2.8.1 Radionuclides in Soil at SWMU 35-014(a)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 32 soil and fill samples collected, 12 were analyzed for gamma-emitting radionuclides; 22 were analyzed for isotopic plutonium; 22 were analyzed for isotopic uranium; 10 were analyzed for strontium-90; and 22 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-2.0-5.

No samples were collected at 0 to 0.5 ft, so the FVs do not apply to any samples at this site. Cesium-137, cobalt-60, europium-152, plutonium-239, and tritium were detected and are retained as COPCs in soil.

Uranium-234, -235, and -238 were detected above their BVs and are retained as COPCs in soil.

D-2.8.2 Radionuclides in Tuff at SWMU 35-014(a)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 15 tuff samples collected, 8 were analyzed for gamma-emitting radionuclides; 5 were analyzed for isotopic plutonium; 5 were analyzed for isotopic uranium; 10 were analyzed for strontium-90; and 7 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above their BVs are presented in Table D-2.0-5.

Plutonium-239 was detected (FV does not apply), and uranium-234 and -238 were detected above their BVs; they are retained as COPCs in tuff.

D-2.8.3 Radionuclide COPC Summary at SWMU 35-014(a)

The radionuclide COPCs identified at SWMU 35-014(a) are cesium-137; cobalt-60; europium-152; plutonium-239; tritium; and uranium-234, -235, and -238. They are listed in Table D-2.8-1 with the 95% UCLs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Cobalt-60 was not detected in the 0 to 1 ft bgs depth range; it was not included in the evaluation of industrial risk for the site.

D-2.9 AOC 35-014(f)

A total of 11 samples were collected from seven locations at AOC 35-014(f). Of the 11 samples collected, 6 were fill and 5 were tuff. The inorganic chemical and organic chemical analyses requested for each sample are summarized in Table D-2.0-1 and Table D-2.0-3, respectively.

D-2.9.1 Inorganic Chemicals in Fill at AOC 35-014(f)

The inorganic chemical analyses requested for fill samples were TAL metals. Of the six fill samples collected, four were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above their BVs are presented in Table D-2.0-4.

Antimony, cadmium, calcium, chromium, nickel, and silver were either detected above their BVs or had detection limits above their BVs.

- Antimony was detected above the BV and above the maximum concentration of the background data set; it is retained as a COPC in soil/fill.
- Calcium is an essential macronutrient and is not identified as a COPC.
- Cadmium and silver were not detected but had detection limits above their BVs. Cadmium had detection limits less than the maximum concentration of cadmium in the background data set; it is not retained as a COPC in soil/fill. Silver has no background data set in soil/fill and is retained as a COPC in fill.
- Chromium and nickel were detected above their BVs and above the maximum concentration of chromium and nickel in the background data set; chromium and nickel are retained as COPCs in soil/fill.

D-2.9.2 Inorganic Chemicals in Tuff at AOC 35-014(f)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the five tuff samples collected, two were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above their BVs are presented in Table D-2.0-4.

Selenium was detected above its BV and is retained as a COPC in tuff.

D-2.9.3 Inorganic COPC Summary at AOC 35-014(f)

The inorganic COPCs identified at SWMU 35-014(f) are antimony, chromium, nickel, selenium, and silver. They are listed in Table D-2.9-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Selenium was not detected in the 0 to 1 ft bgs depth range and was not included in the evaluation of industrial risk for the site. .

D-2.9.4 Organic Chemicals in Fill at AOC 35-014(f)

The organic chemical analyses requested for fill samples included PCBs, SVOCs, TPH-DRO, and VOCs. Of the six fill samples collected, four were analyzed for PCBs, SVOCs, and VOCs; and all six were analyzed for TPH-DRO. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected: bis(2-ethylhexyl)phthalate; cis-dichloroethene; tetrachloroethene; toluene; TPH-DRO; and trichloroethene. They are retained as COPCs in fill.

D-2.9.5 Organic Chemicals in Tuff at AOC 35-014(f)

The organic chemical analyses requested for tuff samples included SVOCs, TPH-DRO, and VOCs. Of the five tuff samples collected, two were analyzed for SVOCs and VOCs, and all five were analyzed for TPH-DRO. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

Acetone and TPH-DRO were detected and are retained as COPCs in tuff.

D-2.9.6 Organic COPC Summary at AOC 35-014(f)

The organic COPCs identified at SWMU 35-014(f) are acetone, bis(2-ethylhexyl)phthalate, cis-dichloroethene, tetrachloroethene, toluene, TPH-DRO, and trichloroethene. They are listed in Table D-2.9-2 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Acetone was not detected in the 0 to 1 ft bgs depth range and was not included in the evaluation of industrial risk for the site.

D-2.10 SWMU 35-015(a)

A total of 25 samples were collected from 13 locations at this SWMU. Of the 25 samples collected, 16 were soil and fill samples and 9 were tuff samples. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.10.1 Inorganic Chemicals in Soil and Fill at SWMU 35-015(a)

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 16 soil and fill samples collected, 11 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BVs are presented in Table D-2.0-4.

Antimony, cadmium, calcium, chromium, nickel, silver, and thallium were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Antimony, silver, and thallium were not detected but had detection limits above their BVs. Antimony had detection limits above the maximum concentration of antimony in the background data set; it is retained as a COPC in soil and fill. There is no background data set for silver in soil and fill; silver is also retained as a COPC in soil and fill. Thallium had only one detection limit (1.1 mg/kg) slightly above the BV (0.73 mg/kg); it is not retained as a COPC in soil and fill.

- Cadmium was detected above its BV but below the maximum concentration of cadmium in the background data set; it is not retained as a COPC in soil and fill.
- Chromium and nickel were detected above their BVs and above the maximum concentration of chromium and nickel in the background data set; they are retained as COPCs in soil and fill.

D-2.10.2 Inorganic Chemicals in Tuff at SWMU 35-015(a)

The nine tuff samples collected at SWMU 35-015(a) were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BVs are presented in Table D-2.0-4.

Antimony, chromium, nickel, selenium, and silver were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Antimony, selenium, and silver were not detected. Antimony and selenium had detection limits above their BVs and are retained as COPCs in tuff. Silver had detection limits above the maximum concentration of silver in the background data set; it is retained as a COPC in tuff.
- Chromium and nickel were detected above their BVs and above the maximum concentration of chromium and nickel in the background data set; they are retained as COPCs in tuff.

D-2.10.3 Inorganic COPC Summary at SWMU 35-015(a)

The inorganic COPCs identified at SWMU 35-015(a) are antimony, chromium, nickel, selenium, and silver. They are listed in Table D-2.10-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Antimony was not detected in the 0 to 1 ft bgs depth range but had detection limit above the BV. The detection limit is presented in Table D-2.10-1.

D-2.10.4 Radionuclides in Soil and Fill at SWMU 35-015(a)

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 16 soil and fill samples collected, 9 were analyzed for gamma-emitting radionuclides, 10 were analyzed for isotopic plutonium, and 10 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-2.0-5.

Plutonium-239 was detected and is retained as a COPC in fill.

D-2.10.5 Radionuclides in Tuff at SWMU 35-015(a)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the nine tuff samples collected, seven were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-2.0-5.

Europium-152 was detected and is retained as a COPC in tuff.

D-2.10.6 Radionuclide COPC Summary at SWMU 35-015(a)

The radionuclide COPCs identified at SWMU 35-015(a) are europium-152 and plutonium-239. They are listed in Table D-2.10-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Europium-152 was not detected in the 0 to 1 ft bgs depth range and was not included in the evaluation of industrial risk for the site.

D-2.10.7 Organic Chemicals in Soil and Fill at SWMU 35-015(a)

The organic chemical analyses requested for soil and fill samples included PCBs, SVOCs, TPH-DRO, and VOCs. Of the 16 soil and fill samples collected, 3 samples were analyzed for PCBs; 13 samples were analyzed for SVOCs; 12 samples were analyzed for TPH-DRO; and 2 samples were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in soil and fill: acetone, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, dimethyl phthalate, fluoranthene, phenanthrene, pyrene, toluene, and TPH-DRO. They are all retained as COPCs in soil and fill.

D-2.10.8 Organic Chemicals in Tuff at SWMU 35-015(a)

The organic chemical analyses requested for tuff samples included PCBs, pesticides, SVOCs, TPH-DRO, and VOCs. Of the nine tuff samples collected, five samples were analyzed for PCBs; two samples were analyzed for pesticides; all nine samples were analyzed for SVOCs; seven samples were analyzed for TPH-DRO; and five samples were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in tuff: acetone; bis(2-ethylhexyl)phthalate; 2-butanone; 4,4'-DDT; 2-hexanone; 4-methyl-2-pentanone; tetrachloroethene; toluene; 1,1,2-trichloro-1,2,2-trifluoroethane; trichlorofluoromethane; 1,2-xylene; and 1,3-xylene+1,4-xylene. They are all retained as COPCs in tuff.

D-2.10.9 Organic COPC Summary at SWMU 35-015(a)

The organic COPCs identified at SWMU 35-015(a) are acetone; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; 4,4'-DDT; dimethyl phthalate; fluoranthene; 2-hexanone; 4-methyl-2-pentanone; phenanthrene; pyrene; tetrachloroethene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; trichlorofluoromethane; 1,2-xylene; and 1,3-xylene+1,4-xylene. They are listed in Table D-2.10-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; 2-butanone; chrysene; 4,4'-DDT; fluoranthene; 2-hexanone; 4-methyl-2-pentanone; phenanthrene; pyrene; tetrachloroethene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; trichlorofluoromethane; 1,2-xylene; and 1,3-xylene+1,4-xylene were not detected or not analyzed for in the 0 to 1 ft bgs depth range. They were not included in the evaluation of industrial risk for the site.

D-2.11 AOC 35-018(a)

A total of 13 soil and fill samples were collected from 12 locations at AOC 35-018(a). The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-2.0-1, D-2.0-2, and D-2.0-3, respectively.

D-2.11.1 Inorganic Chemicals in Fill at AOC 35-018(a)

The inorganic chemical analyses requested for the fill samples were TAL metals. Of the 13 soil and fill samples collected, 3 fill samples were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals above BVs are presented in Table D-2.0-4.

Cadmium, mercury, and zinc were detected above their BVs in fill.

- Cadmium and zinc were detected above their BVs but below the maximum concentration of cadmium and zinc in the background data set; they are not retained as COPCs in fill.
- Mercury was detected above its BV and above the maximum concentration of mercury in the background data set; it is retained as a COPC in fill.

D-2.11.2 Inorganic COPC Summary at AOC 35-018(a)

The single inorganic COPC identified at AOC 35-018(a) is mercury. It is listed in Table D-2.11-1 with the EPCs for industrial and residential risk screening assessments of the site.

D-2.11.3 Radionuclides in Fill at AOC 35-018(a)

The radionuclide analyses requested for fill samples included gamma-emitting radionuclides and tritium. Of the 13 soil and fill samples collected, 3 fill samples were analyzed for gamma-emitting radionuclides, and 1 fill sample was analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-2.0-5.

Tritium was detected and is retained as a COPC in fill.

D-2.11.4 Radionuclide COPC Summary at AOC 35-018(a)

The single radionuclide COPC identified at AOC 35-018(a) is tritium. It is listed in Table D-2.11-2 with the EPCs for industrial and residential risk screening assessments of the site.

D-2.11.5 Organic Chemicals in Soil and Fill at AOC 35-018(a)

The organic chemical analyses requested for soil and fill samples included PCBs, pesticides, PCBs and pesticides as a combined suite, SVOCs, and VOCs. Of the 13 soil and fill samples collected, 4 were analyzed for PCBs; 1 was analyzed for pesticides and VOCs; 7 were analyzed for PCBs and pesticides as a combined suite; and 6 were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-2.0-6.

The following organic chemicals were detected in soil and fill: acenaphthene; anthracene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-

methynaphthalene; naphthalene; phenanthrene; and pyrene. They are all retained as COPCs in soil and fill.

D-2.11.6 Organic COPC Summary at AOC 35-018(a)

The organic COPC identified at AOC 35-018(a) are acenaphthene; anthracene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; Dibenz(a,h)anthracene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methynaphthalene; naphthalene; phenanthrene; pyrene; and TPH-DRO. They are listed in Table D-2.11-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Benzo(k)fluoranthene was not detected in the 0 to 1 and 0 to10 ft depth intervals, and was not included in the evaluation of risk for this site. Bis(2-ethylhexyl)phthalate was not detected in the 0 to 1 ft bgs depth range and was not included in the evaluation of industrial risk for the site.

D-2.12 Ecological Risk Assessment in Mesa Top Subarea

Because ecological risk assessment is an evaluation of the entire subarea, the EPCs of the COPCs for the Mesa Top Subarea for ecological risk assessment do not differ from the previous report (LANL 2005, 091699). The one exception is that lead has been added as a COPC. The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are presented below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft bgs, the identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Fifteen inorganic chemicals (antimony, barium, boron, calcium, chromium, copper, fluoride, lead, mercury, nickel, selenium, silver, thallium, titanium, and zinc) are identified as COPCs in the Mesa Top Subarea.

Eleven radionuclides (americium-241, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238) are identified as COPCs in the Mesa Top Subarea.

The 44 following organic chemicals are identified as COPCs in the Mesa Top Subarea: Acenaphthene; acetone; anthracene; Aroclor-1248; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; sec-butylbenzene; chrysene; dichlorodiphenylethylene (4,4'-DDT); dibenz(a,h)anthracene; dibenzofuran; cis-1,2-dichloroethene; dimethyl phthalate; di-n-butylphthalate; ethylbenzene; fluoranthene; fluorene; 2-hexanone; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 4-methyl-2-pentanone; methylene chloride; 2-methylnaphthalene; naphthalene; phenanthrene; phenol; pyrene; tetrachloroethene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; trichloroethene; trichlorofluoromethane; 1,2,4-trimethylbenzene; 1,3,5-trimethylbenzene; xylene (total); 1,2-xylene; and 1,3-xylene+1,4-xylene.

Chemicals are considered COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the Mesa Top Subarea is discussed in the following sections.

D-2.12.1 Inorganic Chemicals in Soil and Fill in Mesa Top Subarea

Forty-nine soil and fill samples were collected from 0 to 5 ft bgs in the Mesa Top Subarea and analyzed for inorganic chemicals. All the samples were analyzed for target analyte list (TAL) metals, and two fill

samples were also analyzed for anions (bromide, chloride, fluoride, sulfate) and for boron, silicon, and titanium. Table D-2.12-1 summarizes the samples collected and the inorganic chemical analyses requested for each sample.

Four antimony results (from four fill samples) were rejected because the associated spike sample had <30% recovery. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mesa Top Subarea.

Antimony, boron, chromium, copper, fluoride, lead, mercury, nickel, silver, thallium, titanium, and zinc were identified as COPCs for soil and fill in the Mesa Top Subarea based on the following rationale:

- Thirteen inorganic chemicals (aluminum, arsenic, barium, beryllium, chloride, cobalt, iron, magnesium, manganese, potassium, selenium, sodium, sulfate, and vanadium) were not reported at concentrations above their respective BVs in any soil or fill samples from 0 to 5 ft bgs and were not retained as COPCs in soil and fill.
- Boron, fluoride, silicon, and titanium were each detected in one or more soil or fill samples from 0 to 5 ft bgs, but have no BVs for comparison. Silicon is a major component of the Bandelier Tuff and of soils and fill derived from it and is not retained as a COPC in soil and fill. Boron, fluoride, and titanium are retained as COPCs in soil and fill.
- Eleven inorganic chemicals (antimony, cadmium, calcium, chromium, copper, lead, mercury, nickel, silver, thallium, and zinc) either were detected above the BV or had detection limits above the BV.
- Chromium, copper, lead, mercury, nickel, and zinc each had several detected concentrations well above the range of background data, and the highest concentration of each is approximately 4 to 10 times the BV. These concentrations indicate a potential release; as a result, chromium, copper, lead, mercury, nickel, and zinc are retained as COPCs in soil and fill.
- Antimony was not detected, but numerous samples had antimony detection limits at several times the BV. Antimony is retained as a COPC in soil and fill.
- Cadmium was detected above the BV but below the maximum concentration of cadmium in the background data set. Cadmium is not retained as a COPC in soil and fill.
- Calcium was detected above the range of background in two fill samples. Calcium accumulations occur naturally in this semiarid climate, and therefore calcium is not retained as a COPC in soil and fill.
- Thallium was not detected in any soil of fill samples from 0 to 5 ft bgs. Five samples had detection limits above the BV but less than twice the BV. Thallium is not retained as a COPC in soil and fill.
- Silver does not have a background data set for soil. Silver was detected above twice the BV in 1 fill sample, and had elevated detection limits in 17 samples, 6 of which were at or above twice the BV; therefore, silver is retained as a COPC in soil and fill.

Table D-2.12-2 presents the analytical results for inorganic COPCs in soil and fill (0 to 5 ft bgs) from the Mesa Top Subarea.

D-2.12.2 Inorganic Chemicals in Tuff in Mesa Top Subarea

Eighteen tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Mesa Top Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals. Table D-2.12-3 summarizes the samples collected and the inorganic chemical analyses requested for each sample.

One antimony result from tuff samples was rejected because the associated spike sample had <30% recovery. The rejected result was not included in the data analyses discussed here, and the result did not adversely affect the ability to evaluate the Mesa Top Subarea.

Antimony, barium, boron, chromium, copper, nickel, selenium, and titanium were identified as COPCs for tuff (0 to 5 ft bgs) in the Mesa Top Subarea based on the following rationale:

- Ten detected inorganic chemicals (beryllium, cadmium, calcium, chloride, iron, manganese, potassium, sodium, sulfate, and thallium) were not reported at concentrations above their respective BVs in any samples and are not retained as COPCs in tuff.
- Boron and strontium were detected in one or more tuff samples
- but have no BVs for comparison. Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 7.1 mg/kg. Strontium is not retained as a COPC in tuff. Boron is retained as COPCs in tuff.
- Fourteen inorganic chemicals (aluminum, antimony, arsenic, barium, chromium, cobalt, copper, lead, magnesium, nickel, selenium, silver, vanadium, and zinc) either were detected above the BV or had detection limits above the BV.
- Antimony, chromium, copper, and silver were detected or had detection limits above the maximum concentrations in the background data set. They are retained as COPCs in tuff.
- Aluminum was detected above the BV in two tuff samples. One sample was below the maximum concentration in the background data set, and the other two were less than twice the BV. Aluminum is a major natural component of Bandelier Tuff and is not retained as a COPC in tuff.
- Arsenic, lead, magnesium, and vanadium were detected above the BV but below their maximum concentrations in the background data set. They are not retained as COPCs in tuff.
- Barium was detected above the BV in four samples, all of which had concentrations above the maximum concentration of barium in the background data set. These concentrations indicate a potential release; barium is retained as a COPC in tuff.
- Cobalt was detected above the BV in two samples, both of which had concentrations less than 50% above the BV. Cobalt is not retained as a COPC in tuff.
- Vanadium was detected above the BV but below the maximum concentration of vanadium in the background data set. Vanadium is not retained as a COPC in tuff.
- Zinc was detected above the BV in one sample, at a concentration less than 50% above the BV. Zinc is not retained as a COPC in tuff.

Table D-2.12-4 summarizes the analytical results for inorganic COPCs in tuff (0 to 5 ft bgs) from the Mesa Top Subarea.

D-2.12.3 Inorganic Chemicals in Sediment in Mesa Top Subarea

No sediment samples were collected in the Mesa Top Subarea and analyzed for inorganic chemicals (only one sediment sample was collected because very little sediment is present on the mesa top; that sample, collected in 1994, was analyzed only for radionuclides). As a result, no inorganic COPCs are identified for sediment in the Mesa Top Subarea.

D-2.12.4 Inorganic COPC Summary in Mesa Top Subarea

The inorganic COPCs identified for all media in the Mesa Top Subarea are antimony, barium, boron, chromium, copper, fluoride, lead, mercury, nickel, selenium, silver, thallium, titanium, and zinc. They are listed in Table D-2.12-5 with the EPCs calculated for the ecological screening assessments.

D-2.12.5 Radionuclides in Soil and Fill in Mesa Top Subarea

In the Mesa Top Subarea, 108 soil and fill samples were collected from 0 to 5 ft bgs and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-2.12-6 summarizes the samples collected and the analyses requested for each sample.

Eight radionuclide results (four plutonium-238, three cesium-134, and one sodium-22) from soil and fill samples were rejected either because spectral interference did not allow positive identification of the analytes or because the duplicate sample had a duplicate error ratio (DER) >4. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mesa Top Subarea.

Cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 were identified as COPCs for soil and fill (0 to 5 ft bgs) in the Mesa Top Subarea based on the following rationale:

- All detected radionuclides (cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238) were detected at concentrations above the respective BV/FV in at least one sample, were detected and have no available BV, or were detected in at least one sample where the FV does not apply. Cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 are retained as COPCs in soil and fill.

Table D-2.12-7 presents the analytical results for radionuclide COPCs in soil and fill (0 to 5 ft bgs) from the Mesa Top Subarea.

D-2.12.6 Radionuclides in Tuff in Mesa Top Subarea

In the Mesa Top Subarea, 114 tuff (Qbt 3) samples were collected and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-2.12-8 summarizes the samples collected and the analyses requested for each sample.

One radionuclide result (cesium-134) from tuff samples was rejected because spectral interference did not allow the positive identification of the analyte. The rejected result was not included in the data analyses discussed here, and the result did not adversely affect the ability to evaluate the Mesa Top Subarea.

Europium-152, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 were identified as COPCs in tuff (0 to 5 ft bgs) in the Mesa Top Subarea based on the following rationale:

- Uranium-234, uranium-235, and uranium-238 were each detected above their BVs in at least one sample and are retained as COPCs in tuff.
- Europium-152, plutonium-239, strontium-90, and tritium have no BV or FV for comparison, but each was detected in at least one sample; as a result, they are retained as COPCs in tuff.

Table D-2.12-9 presents the analytical results for radionuclide COPCs in tuff samples (0 to 5 ft bgs) from the Mesa Top Subarea.

D-2.12.7 Radionuclides in Sediment in Mesa Top Subarea

Only one sediment sample was collected in the Mesa Top Subarea; it was analyzed for isotopic plutonium and isotopic uranium. The sample is summarized in Table D-2.12-10.

Uranium-234, uranium-235, and uranium-238 were identified as COPCs for sediment (0 to 5 ft bgs) in the Mesa Top Subarea based on the following rationale:

- Uranium-234, uranium-235, and uranium-238 were each detected above the BV in sample AAA6375. As a result, uranium-234, uranium-235, and uranium-238 are retained as COPCs in sediment.

Table D-2.12-11 presents the analytical results for the radionuclide COPCs in the single sediment sample.

D-2.12.8 Radionuclide COPC Summary in Mesa Top Subarea

The radionuclide COPCs identified for all media (0 to 5 ft bgs) in the Mesa Top Subarea are cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238.

Table D-2.12-12 presents the EPCs calculated for ecological risk assessment for the radionuclide COPCs in the Mesa Top Subarea.

D-2.12.9 Organic Chemicals in Soil and Fill in Mesa Top Subarea

A total of 86 soil and fill samples were collected from 0 to 5 ft bgs in the Mesa Top Subarea and analyzed for organic chemicals. Organic chemical analyses included semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), pesticides, polychlorinated biphenyls (PCBs), and TPH (not all samples received all analyses). Table D-2.12-13 summarizes the soil and fill samples collected and the organic chemical analyses requested for each sample.

A total of 288 organic chemical results (25 PCB, 136 SVOC, 20 TPH, and 117 VOC) from 24 soil and fill samples were rejected either because surrogate recovery was <10% or because holding times were grossly exceeded. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mesa Top Subarea.

Thirty-nine organic chemicals were detected in at least one soil and fill sample. All of these organic chemicals are retained as COPCs for soil and fill in the Mesa Top Subarea.

Table D-2.12-14 presents the analytical results for organic COPCs detected in soil and fill samples from the Mesa Top Subarea.

D-2.12.10 Organic Chemicals in Tuff in Mesa Top Subarea

Twenty-four tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Mesa Top Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, pesticides, PCBs, and TPH-DRO (not all samples received all analyses). Table D-2.12-15 summarizes the tuff samples collected and the organic chemical analyses requested for each sample.

Twelve organic chemical results (11 TPH-lubricant range organics [LRO] and one trichlorofluoromethane) from tuff samples were rejected because of data-quality deficiencies (see the data packages in Appendix E for details; note that TPH-LRO results were rejected for all samples in all subareas).

All 16 detected organic chemicals are identified as COPCs for tuff (0 to 5 ft bgs) in the Mesa Top Subarea.

Table D-2.12-16 presents the analytical results for organic COPCs in tuff samples from the Mesa Top Subarea.

D-2.12.11 Organic Chemicals in Sediment in Mesa Top Subarea

Only one sediment sample was collected in the Mesa Top Subarea, and it was not analyzed for organic chemicals. As a result, no organic COPCs are identified for sediment.

D-2.12.12 Organic COPC Summary in Mesa Top Subarea

The 44 organic COPCs identified for all media (0 to 5 ft bgs) in the Mesa Top Subarea are listed in Table D-2.12-17, with the EPCs calculated for ecological risk assessment.

D-3.0 TEN SITE SLOPE SUBAREA

This section identifies the media-specific COPCs for each site in the Ten Site Slope Subarea.

Table D-3.0-1, Table D-3.0-2, and Table D-3.0-3 summarize the samples collected for inorganic chemical, radionuclide, and organic chemical analyses, respectively, at each site in the Ten Site Slope Subarea.

Table D-3.0-4 presents the concentrations above BVs for detected and nondetected inorganic chemicals at each site in the Ten Site Slope Subarea.

Table D-3.0-5 presents the detected concentrations or concentrations above BV/FV for detected radionuclides at each site in the Ten Site Slope Subarea.

Table D-3.0-6 presents the concentrations of detected organic chemicals at each site in the Ten Site Slope Subarea.

D-3.1 Consolidated Unit 35-004(g)-00

A total of 45 samples were collected from 17 locations at consolidated unit 35-004(g)-00. Of the 45 samples collected, 13 were soil and fill, 30 were tuff, and two were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.1.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-004(g)-00

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 13 soil and fill samples collected, 2 were analyzed for TAL metals. The sample concentrations above BV of detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Calcium, mercury, thallium, and zinc were either detected above their BVs or had detection limits above the BV.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Mercury had only one nondetect with a detection limit (0.11 mg/kg) slightly above the BV (0.1 mg/kg); it is not retained as a COPC in soil and fill.
- Thallium had only one nondetect with a detection limit (1.1 mg/kg) slightly above the BV (0.73 mg/kg); it is not retained as a COPC in soil and fill.
- Zinc was detected above its BV but below the maximum concentration of zinc in the background data set; it is not retained as a COPC in soil and fill.

D-3.1.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-004(g)-00

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 30 tuff samples collected, 12 were analyzed for TAL metals. The sample concentrations above BVs of detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Beryllium, copper, and selenium were either detected above their BVs or had detection limits above their BVs.

- Beryllium and copper were detected their BVs. Beryllium was not detected above the maximum concentration of beryllium in the background data set; it is not retained as a COPC in tuff. Copper was detected above the maximum concentration of copper in the background data set; it is retained as a COPC in tuff.
- Selenium was not detected but had multiple detection limits above the BV; it is retained as a COPC in tuff.

D-3.1.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-004(g)-00

The two sediment samples were analyzed for TAL metals. The sample concentrations above the BV for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium and selenium were not detected but had detection limits above their BVs.

- Cadmium had only one nondetect with a detection limit (0.562 mg/kg) slightly above the BV (0.4 mg/kg); it is not retained as a COPC in sediment.
- Selenium had a detection limit above the BV in one of the two sediment samples. Selenium is retained as a COPC in sediment.

D-3.1.4 Inorganic COPC Summary at Consolidated Unit 35-004(g)-00

The inorganic COPCs identified for all media at Consolidated Unit 35-004(g)-00 are copper and selenium. They are listed in Table D-3.1-1 with the EPCs for industrial and residential risk screening assessments of the site.

Selenium was not detected in the 0 to 10 ft bgs depth range but had detection limits above the BV. The maximum detection limits are presented in Table D-3.1-1.

D-3.1.5 Radionuclides in Soil and Fill at Consolidated Unit 35-004(g)-00

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 13 soil and fill samples collected, 7 were analyzed for gamma-emitting radionuclides, 5 were analyzed for isotopic plutonium, and 11 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

No soil or fill samples were collected at depths of 0 to 0.5 ft bgs so the FVs does not apply to any soil/fill samples at this site. Europium-152 was detected, and uranium-234, -235, and -238 were detected above their BVs; they are retained as COPCs in soil and fill.

D-3.1.6 Radionuclides in Tuff at Consolidated Unit 35-004(g)-00

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 30 tuff samples collected, 18 were analyzed for gamma-emitting radionuclides, 23 were analyzed for isotopic plutonium, and 29 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-238 was detected, and uranium-235 was detected above its BV; they are retained as COPCs in tuff.

D-3.1.7 Radionuclides in sediment at Consolidated Unit 35-004(g)-00

The two sediment samples were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-239 was detected above its FV, and uranium-238 was detected above its BV; they are retained as COPCs in sediment.

D-3.1.8 Radionuclide COPC Summary at Consolidated Unit 35-004(g)-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-004(g)-00 are europium-152; plutonium-238, -239; and uranium-234, -235, and -238. They are listed in Table D-3.1-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Europium-152 and plutonium-238 were not detected in the 0 to 1 ft depth range and therefore were not included in the evaluation of industrial risk for the site.

D-3.1.9 Organic Chemicals in Soil and Fill at Consolidated Unit 35-004(g)-00

The organic chemical analyses requested for soil and fill samples included PCBs, pesticides, SVOCs, and VOCs. Of the 13 fill samples collected, 2 samples were analyzed for PCBs, pesticides, and SVOCs, and 1 sample was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Aroclor-1260 was detected in fill and is retained as a COPC in fill.

D-3.1.10 Organic Chemicals in Tuff at Consolidated Unit 35-004(g)-00

The organic chemical analyses requested for tuff samples included PCBs, pesticides, and SVOCs. Of the 30 tuff samples collected, 12 were analyzed for PCBs and pesticides, and 9 were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Aroclor-1254 was detected and is retained as a COPC in tuff.

D-3.1.11 Organic Chemicals in Sediment at Consolidated Unit 35-004(g)-00

The two sediment samples are analyzed for PCBs, pesticides, and SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Aroclor-1254, Aroclor-1260, fluoranthene, and pyrene were detected and are retained as COPCs in sediment.

D-3.1.12 Organic COPC Summary at Consolidated Unit 35-004(g)-00

The organic COPCs identified for all media at Consolidated Unit 35-004(g)-00 are Aroclor-1254, Aroclor-1260, fluoranthene, and pyrene. They are listed in Table D-3.1-3 with the EPCs for industrial and residential risk screening assessments of the site.

D-3.2 SWMU 35-009(a)

The content of this section is the same as Section 2.6 because this SWMU is collocated in Mesa Top Subarea and Ten Site Slope Subarea.

A total of 84 samples were collected from 27 locations at this site. Of the 84 samples collected, 19 were soil and fill, 61 were tuff, and four were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.2.1 Inorganic Chemicals in Soil at SWMU 35-009(a)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 19 soil and fill samples collected, four were analyzed for TAL metals. The sample concentrations above BV for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Antimony, cadmium, lithium, mercury, and strontium were detected above their BVs, had detection limits greater than their BVs, or were detected with no available BV.

- Antimony and cadmium were not detected. Antimony had detection limits above its BV and above the maximum concentration of antimony in the background data set; it is retained as a COPC in soil. Cadmium had detection limits above its BV but below the maximum concentration of cadmium in the background data set; it is not retained as a COPC in soil.
- Lithium was detected and has no available BV; it is retained as a COPC in soil.
- Mercury was detected above its BV and above the maximum concentration of mercury in the background data set; it is retained as a COPC in soil.

- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in soil was 8.2 mg/kg. Strontium is not retained as a COPC in soil.

D-3.2.2 Inorganic Chemicals in Tuff at SWMU 35-009(a)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 61 tuff samples collected, 34 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Aluminum, antimony, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, lead, lithium, magnesium, mercury, nickel, selenium, silver, strontium, vanadium, and zinc were detected above their BVs or detected with no available BV in at least one tuff sample.

- Calcium and magnesium are essential macronutrients and are not identified as COPCs.
- Aluminum, antimony, barium, copper, lead, nickel, selenium, silver, and zinc were detected above their BVs and above their maximum concentrations in the background data set; they are all retained as COPCs in tuff.
- Arsenic, chromium, and vanadium were detected above their BVs but below their maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Beryllium was detected in only one tuff sample at 1.9 mg/kg, which is slightly above the BV (1.21 mg/kg); it is not retained as a COPC.
- Cobalt and mercury were detected above their BVs and there are no background data available for cobalt and mercury in tuff; they are retained as COPCs in tuff.
- Lithium was detected but has no BV; it is retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 22.9 mg/kg. Strontium is not retained as a COPC in tuff.

D-3.2.3 Inorganic Chemicals in Sediment at SWMU 35-009(a)

The four sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium, chromium, copper, mercury, selenium, silver, and zinc were detected above their BVs, or had detection limits above their BVs in at least one sediment sample.

- Cadmium and selenium were not detected but had detection limits above their BVs; they are retained as COPCs in sediment.
- Chromium, mercury, and zinc were detected above their BVs; they are retained as COPCs in sediment.
- Copper and silver were detected above their BVs and above the maximum concentrations of copper and silver in the background data set; they are retained as COPCs in sediment.

D-3.2.4 Inorganic COPC Summary at SWMU 35-009(a)

The inorganic COPCs identified for all media at SWMU 35-009(a) are aluminum, antimony, barium, cadmium, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, and zinc. They are listed in Table D-3.2-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

Selenium was not detected in the 0 to 1 ft bgs depth range but had detection limit above the BV. The maximum detection limit is presented in Table D-3.2-1.

D-3.2.5 Radionuclides in Soil and Fill at SWMU 35-009(a)

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 19 soil and fill samples collected, 13 were analyzed for gamma-emitting radionuclides; 10 were analyzed for isotopic plutonium; 10 were analyzed for isotopic uranium; 13 were analyzed for strontium-90; and 4 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-239 was detected above its FV or detected where the FV does not apply. Strontium-90 and tritium were detected with no applicable FV. Plutonium-239, strontium-90, and tritium are retained as COPCs in soil and fill.

D-3.2.6 Radionuclides in Tuff at SWMU 35-009(a)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 61 tuff samples collected, 24 were analyzed for gamma-emitting radionuclides; 40 were analyzed for isotopic plutonium; 40 were analyzed for isotopic uranium; 21 were analyzed for strontium-90; and 27 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-238, -239, strontium-90, and tritium were detected with no applicable FV and are retained as COPCs in tuff.

D-3.2.7 Radionuclides in Sediment at SWMU 35-009(a)

The four sediment samples collected were analyzed for gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-238 and -239 were detected above their FVs and above their maximum concentrations in the background data set. Uranium-234, -235, and -238 were detected above their BVs. Plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 are retained as COPCs in sediment.

D-3.2.8 Radionuclide COPC Summary at SWMU 35-009(a)

The radionuclide COPCs identified for all media at SWMU 35-009(a) are plutonium-238, -239, strontium-90, tritium, uranium-234, -235, and -238. They are listed in Table D-3.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.2.9 Organic Chemicals in Soil at SWMU 35-009(a)

The organic chemical analyses requested for soil samples included SVOCs. Of the 19 soil and fill samples collected, 4 were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Bis(2-ethylhexyl)phthalate was detected and is retained as a COPC in soil.

D-3.2.10 Organic Chemicals in Tuff at SWMU 35-009(a)

The organic chemical analyses requested for tuff samples included PCBs, pesticides, SVOCs, and VOCs. Of the 61 tuff samples collected, 9 were analyzed for PCBs; 9 were analyzed for pesticides; 34 were analyzed for SVOCs; and 5 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Aroclor-1242, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, diethylphthalate, and pyrene were detected and are retained as COPCs in tuff.

D-3.2.11 Organic Chemicals in Sediment at SWMU 35-009(a)

The four sediment samples collected were analyzed for PCBs, pesticides, SVOCs, and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Acetone, Aroclor-1254, Aroclor-1260, bis(2-ethylhexyl)phthalate, 4,4'-DDE, 1,1-dichloroethene, di-n-butylphthalate, 4-isopropyltoluene, and toluene were detected and are retained as COPCs in sediment.

D-3.2.12 Organic COPC Summary at SWMU 35-009(a)

The organic COPCs identified for all media at SWMU 35-009(a) are acetone; Aroclor-1242; Aroclor-1254; Aroclor-1260; bis(2-ethylhexyl)phthalate; 4,4'-DDE; 1,1-dichloroethene; diethylphthalate; di-n-butylphthalate; 4-isopropyltoluene; pyrene; and toluene. They are listed in Table D-3.2-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Aroclor-1242 and diethylphthalate were not detected in the 0 to 1 ft or 0 to 10 ft bgs depth intervals, and therefore were not included in the evaluations of recreational or residential risk for the site. Pyrene was detected in the 0 to 1 ft bgs depth range and therefore was not included in the evaluations of industrial or recreational risk for the site.

D-3.3 SWMU 35-009(e)

A total of 14 samples were collected from eight locations at this SWMU. Of the 14 samples collected, 11 samples were soil, 2 samples were tuff, and 1 sample was sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.3.1 Inorganic Chemicals in Soil at SWMU 35-009(e)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 11 soil samples collected, 4 samples were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium, copper, lead, mercury, silver, thallium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Cadmium and thallium were not detected. Cadmium had detection limits above the BV but below the maximum concentration of cadmium in the background data set; it is not retained as a COPC in soil. Thallium had only one nondetect with a detection limit (1.1 mg/kg) slightly above the BV (0.73 mg/kg); it is not retained as a COPC in soil.
- Copper, lead, mercury, and zinc were detected above their BVs and above their maximum concentrations in the background data set; they are retained as COPCs in soil.
- Silver was detected above its BV and no background data set is available for silver in soil; it is retained as a COPC in soil.

D-3.3.2 Inorganic Chemicals in Sediment at SWMU 35-009(e)

The one sediment sample was analyzed for TAL metals. The sample concentrations above the BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Copper, lead, mercury, selenium, and zinc were detected above their BVs.

- Copper and lead were detected above their maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Mercury, selenium, and zinc were detected above their BVs and are retained as COPCs in sediment.

D-3.3.3 Inorganic COPC Summary at SWMU 35-009(e)

The inorganic COPCs identified at SWMU 35-009(e) are copper, lead, mercury, selenium, silver, and zinc. They are listed in Table D-3.3-1 with the EPCs for industrial and residential risk screening assessments of the site.

D-3.3.4 Radionuclides in Soil at SWMU 35-009(e)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 11 soil samples collected, 6 samples were analyzed for gamma-emitting radionuclides; 7 samples were analyzed for isotopic plutonium and isotopic uranium; 2 samples were analyzed for strontium-90 ; and 2 samples were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Cesium-137, plutonium-238, -239, and tritium were either detected or detected above their FVs or detected with no applicable FV. Uranium-234, -235, and -238 were detected above their BVs. Cesium-137, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 are retained as COPCs in soil.

D-3.3.5 Radionuclides in Tuff at SWMU 35-009(e)

Two tuff samples were collected at SWMU 35-009(e). One was analyzed for gamma-emitting radionuclides and strontium-90; the other was analyzed for isotopic plutonium, isotopic uranium, and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Americium-241 and plutonium-239 were detected with no applicable FV, and uranium-234 was detected above its BV. Americium-241, plutonium-239, and uranium-234 are retained as COPCs in tuff.

D-3.3.6 Radionuclide COPC Summary at SWMU 35-009(e)

The radionuclide COPCs identified at SWMU 35-009(e) are americium-241; cesium-137; plutonium-238, -239; tritium; and uranium-234, -235, and -238. They are listed in Table D-3.3-2 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Americium-241 was not detected in the 0 to 1 ft bgs depth range and therefore was not included in the evaluation of recreational risk for the site.

D-3.3.7 Organic Chemicals in Soil at SWMU 35-009(e)

The organic chemical analyses requested for soil samples included PCBs, pesticides, SVOCs, and VOCs. Of the 11 soil samples collected, 4 samples were analyzed for PCBs, pesticides, and SVOCs; 32 samples were analyzed for SVOCs; and 2 samples were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Acetone, Aroclor-1254, Aroclor-1260, and benzo(g,h,i)perylene were detected in soil and are retained as COPCs in soil.

D-3.3.8 Organic Chemicals in Sediment at SWMU 35-009(e)

The one sediment sample collected in SWMU 35-009(e) was analyzed for PCBs, pesticides, and SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Aroclor-1254, Aroclor-1260, and pyrene were detected in sediment and are retained as COPCs in sediment.

D-3.3.9 Organic COPC Summary at SWMU 35-009(e)

The organic COPCs identified at SWMU 35-009(e) are acetone, Aroclor-1254, Aroclor-1260, benzo(g,h,i)perylene, and pyrene. They are listed in Table D-3.3-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.4 Consolidated Unit 35-014(g)-00

A total of 46 samples were collected from 22 locations at Consolidated Unit 35-014(g)-00. Of the 46 samples collected, 37 were soil and fill, 3 were tuff, and 6 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.4.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-014(g)-00

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 37 soil and fill samples collected, 12 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Antimony, cadmium, chromium, cobalt, copper, lead, mercury, selenium, silver, thallium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Antimony, copper, lead, mercury, and zinc were detected above their maximum concentrations in the background data set; they are retained as COPCs in soil.
- Cadmium and chromium were detected above their BVs but below their maximum concentrations in the background data set; they are not retained as COPCs in soil.
- Cobalt was detected in only one soil sample at a concentration of 11 mg/kg, which is slightly greater than the BV (8.64 mg/kg) and the maximum concentration of the background data set (9.5 mg/kg); it is not retained as a COPC in soil.
- Selenium, silver, and thallium were not detected but had detection limits above their BVs. Selenium and thallium had detection limits above their maximum concentrations in the background data set, and silver has no background data set in soil. Selenium, silver, and thallium are retained as COPCs in soil.

D-3.4.2 Inorganic Chemicals in Sediment at Consolidated Unit 35-014(g)-00

The inorganic chemical analyses requested for sediment samples were TAL metals. Of the six sediment samples collected, five were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Selenium was not detected but had detection limits above the BV, and zinc was detected above the BV; both are retained as COPCs in sediment.

D-3.4.3 Inorganic COPC Summary at Consolidated Unit 35-014(g)-00

The inorganic COPCs identified at Consolidated Unit 35-014(g)-00 are antimony, copper, lead, mercury, selenium, silver, thallium, and zinc. They are listed in Table D-3.4-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.4.4 Radionuclides in Soil and Fill at Consolidated Unit 35-014(g)-00

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 37 soil and fill samples collected, 27 were analyzed for gamma-emitting radionuclides, 8 were analyzed for isotopic plutonium, and 27 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Europium-152 and plutonium-239 were detected above their FVs or detected where the FV does not apply. Uranium-234 and -235 were detected above their BVs. Europium-152, plutonium-239, uranium-234, and uranium-235 are retained as COPCs in soil and fill.

D-3.4.5 Radionuclides in Tuff at Consolidated Unit 35-014(g)-00

Two of the three tuff samples collected were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. They were either not detected or detected below BVs.

D-3.4.6 Radionuclides in Sediment at Consolidated Unit 35-014(g)-00

The six sediment samples collected were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Cesium-137 was detected above its FV but below the maximum concentration of cesium-137 in the background data set; it is not retained as a COPC in sediment.

Plutonium-239 was detected above its FV and above its maximum concentration in the background data set; it is retained as a COPC in sediment.

D-3.4.7 Radionuclide COPC Summary at Consolidated Unit 35-014(g)-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-014(g)-00 are europium-152, plutonium-239, uranium-234, and -235. They are listed in Table D-3.4-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.4.8 Organic Chemicals in Soil and Fill at Consolidated Unit 35-014(g)-00

The organic chemical analyses requested for soil and fill samples included PCBs, SVOCs, TPH-DRO, and VOCs. Of the 37 soil and fill samples collected, 7 were analyzed for PCBs; 11 were analyzed for SVOCs; 4 were analyzed for TPH-DRO; and 1 was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in soil and fill: benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; pyrene; and TPH-DRO. They are retained as COPCs in soil and fill.

D-3.4.9 Organic Chemicals in Tuff at Consolidated Unit 35-014(g)-00

One of the three tuff samples collected was analyzed for VOCs. No organic chemicals were detected, and no organic COPCs are identified in tuff.

D-3.4.10 Organic Chemicals in Sediment at Consolidated Unit 35-014(g)-00

The organic chemical analyses requested for sediment samples included PCBs, SVOCs, TPH-DRO, and VOCs. Of the six sediment samples collected, three were analyzed for PCBs, five were analyzed for SVOCs, and two were analyzed for TPH-DRO and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in sediment: acetone; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; di-n-butylphthalate; di-n-octylphthalate; fluoranthene; 4-isopropyltoluene; phenanthrene; pyrene; toluene; and TPH-DRO. They are retained as COPCs in sediment.

D-3.4.11 Organic COPC Summary at Consolidated Unit 35-014(g)-00

The organic COPCs identified for all media at Consolidated Unit 35-014(g)-00 are acetone; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; di-n-butylphthalate; di-n-octylphthalate; fluoranthene; 4-isopropyltoluene; phenanthrene; pyrene; toluene; and TPH-DRO. They are listed in Table D-3.4-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.5 AOC 35-014(g3)

A total of 32 samples were collected from 16 locations at this AOC. Of the 32 samples collected, 5 were soil and fill, 15 were tuff, and 12 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.5.1 Inorganic Chemicals in Tuff at AOC 35-014(g3)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 15 tuff samples collected, 2 were analyzed for TAL metals. Sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Antimony, calcium, chromium, mercury, selenium, silver, and thallium were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Antimony, mercury, selenium, silver, and thallium were not detected. Antimony, mercury, and selenium had detection limits above their BVs; they are retained as COPCs in tuff. Silver and thallium had detection limits above their BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Chromium was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.

D-3.5.2 Inorganic Chemicals in Sediment at AOC 35-014(g3)

The inorganic chemical analyses requested for sediment samples were TAL metals. Of the 12 sediment samples collected, 12 were analyzed for TAL metals. The sample concentrations of the detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium, selenium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Cadmium had only one nondetect with a detection limit (0.572 mg/kg) slightly greater than the BV (0.4 mg/kg); it is not retained as a COPC in sediment.
- Selenium was not detected but had detection limits above its BV; it is retained as a COPC in sediment.
- Zinc was detected above its BV and above the maximum concentration of zinc in the background data set; it is retained as a COCP in sediment.

D-3.5.3 Inorganic COPC Summary at AOC 35-014(g3)

The inorganic COPCs identified at AOC 35-014(g3) are antimony, mercury, selenium, and zinc. They are listed in Table D-3.5-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.5.4 Radionuclides in Soil and Fill at AOC 35-014(g3)

The radionuclide analyses requested for soil and fill samples were gamma-emitting radionuclides. Of the five soil and fill samples collected, four were analyzed for gamma-emitting radionuclides. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Europium-152 was detected in soil and is retained as a COPC in soil.

D-3.5.5 Radionuclides in Tuff at AOC 35-014(g3)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 15 tuff samples collected, 9 were analyzed for gamma-emitting radionuclides, 1 was analyzed for isotopic plutonium, and 2 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Cesium-137, europium-152, and plutonium-238 were detected in tuff and are retained as COPCs in tuff.

D-3.5.6 Radionuclides in Sediment at AOC 35-014(g3)

The radionuclide analyses requested for sediment samples were gamma-emitting radionuclides. Of the 12 sediment samples collected, 2 were analyzed for gamma-emitting radionuclides. No radionuclides were detected in sediment.

D-3.5.7 Radionuclide COPC Summary at AOC 35-014(g3)

The radionuclide COPCs identified in all media at AOC 35-014(g3) are cesium-137, europium-152, and plutonium-238. They are listed in Table D-3.5-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Plutonium-238 was not analyzed for in the 0 to 1 ft bgs depth range, and therefore was not included in the evaluation of recreational risk for the site.

D-3.5.8 Organic Chemicals in Soil and Fill at AOC 35-014(g3)

The organic chemical analyses requested for soil and fill samples included SVOCs and TPH-DRO. Of the five soil and fill samples collected, four were analyzed for SVOCs and TPH-DRO. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in soil and fill: bis(2-ethylhexyl)phthalate; di-n-butylphthalate; and phenol. They are retained as COPCs in soil and fill.

D-3.5.9 Organic Chemicals in Tuff at AOC 35-014(g3)

The organic chemical analyses requested for tuff samples included PCBs and pesticides as a combined suite, SVOCs, TPH-DRO, and VOCs. Of the 15 tuff samples collected, 2 were analyzed for PCBs and pesticides as a combined suite; 10 were analyzed for SVOCs; 8 were analyzed for TPH-DRO; and 10 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in tuff: acetone; aldrin; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; 4,4'- DDD; 4,4'-DDT; dibenz(a,h)anthracene; dieldrin; di-n-butylphthalate; endosulfan I; endrin; ethylbenzene; fluoranthene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; phenanthrene; phenol; pyrene; tetrachloroethene; toluene; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichloroethene. They are retained as COPCs in tuff.

D-3.5.10 Organic Chemicals in Sediment at AOC 35-014(g3)

The organic chemical analyses requested for sediment samples included SVOCs, TPH-DRO, and VOCs. Of the 12 sediment samples collected, all 12 were analyzed for SVOCs and TPH-DRO, and 10 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in sediment: acenaphthene; acenaphthylene; acetone; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; 4-chloro-3-methylphenol; chrysene; dibenz(a,h)anthracene; dibenzofuran; 1,1-dichloroethene; diethylphthalate; di-n-butylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 2-methylnaphthalene; naphthalene; phenanthrene; pyrene; styrene; toluene; TPH-DRO. They are all retained as COPCs in sediment.

D-3.5.11 Organic COPC Summary at AOC 35-014(g3)

The organic COPCs identified for all media at AOC 35-014(g3) are acenaphthene; acenaphthylene; acetone; aldrin; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; 4-chloro-3-methylphenol; chrysene; 4,4'-DDD; 4,4'-DDT; dibenz(a,h)anthracene; dibenzofuran; 1,1-dichloroethene; dieldrin; diethylphthalate; di-n-butylphthalate; endosulfan I; endrin; ethylbenzene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 2-methylnaphthalene; naphthalene; phenanthrene; phenol; pyrene; styrene; tetrachloroethene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichloroethene. They are listed in Table D-3.5-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

The analytes 4,4'-DDD, 4,4'-DDT, dieldrin, endosulfan I, endrin, ethylbenzene, tetrachloroethene, and trichloroethene were not detected in the 0 to 1 ft bgs depth range and therefore were not included in the evaluation of recreational risk for the site.

D-3.6 Consolidated Unit 35-016(a)-00

A total of 34 samples were collected from 17 locations at this consolidated unit. Of the 34 samples collected, 17 were soil, 10 were tuff, and seven were sediment samples. The inorganic chemical,

radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.6.1 Inorganic Chemicals in Soil at Consolidated Unit 35-016(a)-00

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 17 soil samples collected, 3 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium, copper, lead, and zinc were detected above their BVs.

- Cadmium was not detected above the maximum concentration of the background data set; it is not retained as a COPC in soil.
- Copper, lead, and zinc were detected above theirs maximum concentration in the background data set; they are retained as COPCs in soil.

D-3.6.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-016(a)-00

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 10 tuff samples collected, 3 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Arsenic, barium, chromium, cobalt, copper, mercury, nickel, selenium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Arsenic, cobalt, mercury, and selenium were not detected. Arsenic had detection limits less than the maximum concentration of arsenic in the background data set; it is not retained as a COPC in tuff. Cobalt had only one nondetect with a detection limit (3.2 mg/kg) slightly greater than the BV (3.14 mg/kg); it is not retained as a COPC in tuff. Mercury had only one nondetect with a detection limit (0.11 mg/kg) slightly greater than the BV (0.1 mg/kg); it is not retained as a COPC in tuff. Selenium had detection limits above its BV; it is retained as a COPC in tuff.
- Barium, chromium, copper, nickel, and zinc were detected above their maximum concentrations in the background data set; they are retained as COPCs in tuff.

D-3.6.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-016(a)-00

The seven sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, magnesium, nickel, selenium, vanadium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Magnesium is an essential macronutrient and is not identified as a COPC.
- Aluminum was detected above its BV in only one sample at, a concentration 15700 mg/kg, which is slightly greater than the BV (15400 mg/kg); it is not retained as a COPC in sediment.
- Arsenic, barium, cadmium, chromium, nickel, and zinc were detected above their BVs; they are retained as COPCs in sediment.

- Copper and lead were detected above their maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Iron was detected above its BV in only one sample, at a concentration 14500 mg/kg, which is slightly greater than the BV (13,800 mg/kg); it is not retained as a COPC in sediment.
- Selenium was not detected but had detection limits above its BV; it is retained as a COPC in sediment.
- Vanadium was detected above its BV in only one sample, at a concentration 23.2 mg/kg, which is slightly greater than the BV (19.7 mg/kg); it is not retained as a COPC.

D-3.6.4 Inorganic COPC Summary at Consolidated Unit 35-016(a)-00

The inorganic COPCs identified for all media at Consolidated Unit 35-016(a)-00 are arsenic, barium, cadmium, chromium, copper, lead, nickel, selenium, and zinc. They are listed in Table D-3.6-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.6.5 Radionuclides in Soil at Consolidated Unit 35-016(a)-00

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. Of the 17 soil samples collected, 5 were analyzed for gamma-emitting radionuclides; 7 were analyzed for isotopic plutonium; 9 were analyzed for isotopic uranium; and two were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Tritium was detected with no applicable FV, and is retained as a COPC in soil.

Uranium-234, -235, and -238 were detected above their BVs. Uranium-238 was detected above the BV in only one soil sample, at a concentration of 3.23 pCi/g, which is slightly greater than the BV (2.29 pCi/g); it is not retained as a COPC in soil. Uranium-234 and -235 are retained as COPCs in soil.

D-3.6.6 Radionuclides in Tuff at Consolidated Unit 35-016(a)-00

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 10 tuff samples collected, 8 were analyzed for gamma-emitting radionuclides; 3 were analyzed for isotopic plutonium; 1 was analyzed for isotopic uranium and tritium; and 3 were analyzed for strontium-90. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Uranium-234 was detected above the BV in tuff and is retained as a COPC in tuff.

D-3.6.7 Radionuclides in Sediment at Consolidated Unit 35-016(a)-00

The radionuclide analyses requested for sediment samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the seven sediment samples collected, five were analyzed for gamma-emitting radionuclides, six were analyzed for isotopic plutonium, and four were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-239 was detected above its FV in sediment and is retained as a COPC in sediment.

D-3.6.8 Radionuclide COPC Summary at Consolidated Unit 35-016(a)-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-016(a)-00 are plutonium-239, tritium, uranium-234, and -235. They are listed in Table D-3.6-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.6.9 Organic Chemicals in Soil at Consolidated Unit 35-016(a)-00

The organic chemical analyses requested for soil samples were SVOCs and VOCs. Of the 17 soil samples collected, 1 was analyzed for SVOCs and the other was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Bis(2-ethylhexyl)phthalate was detected in soil and is retained as a COPC in soil.

D-3.6.10 Organic Chemicals in Tuff at Consolidated Unit 35-016(a)-00

The organic chemical analyses requested for tuff samples were SVOCs and VOCs. Of the 10 tuff samples collected, 2 were analyzed for SVOCs and 1 was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

Di-n-butylphthalate was detected in tuff and is retained as a COPC in tuff.

D-3.6.11 Organic Chemicals in Sediment at Consolidated Unit 35-016(a)-00

The organic chemical analyses requested for sediment samples included PCBs, pesticides, SVOCs, and VOCs. Of the seven sediment samples collected, three were analyzed for PCBs, pesticides, and VOCs, and five were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected: acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; dibenzofuran; 1,1-dichloroethene; di-n-butylphthalate; fluoranthene; fluorene; 4-isopropyltoluene; naphthalene; phenanthrene; pyrene; and toluene. They are all retained as COPCs in sediment.

D-3.6.12 Organic COPC Summary at Consolidated Unit 35-016(a)-00

The organic COPCs identified for all media at Consolidated Unit 35-016(a)-00 are acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; dibenzofuran; 1,1-dichloroethene; di-n-butylphthalate; fluoranthene; fluorene; 4-isopropyltoluene; naphthalene; phenanthrene; pyrene; and toluene. They are listed in Table D-3.6-3 with the EPCs for industrial and residential risk screening assessments of the site.

D-3.7 AOC 35-016(b)

A total of 14 samples were collected from seven locations at this AOC. Of the 14 samples collected, 3 were soil, 4 were tuff, and 7 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0--1, D-3.0-2, and D-3.0-3, respectively.

D-3.7.1 Inorganic Chemicals in Tuff at AOC 35-016(b)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the four tuff samples collected, one was analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Antimony, lead, mercury, selenium, silver, and thallium were either detected above their BVs or had detection limits above their BVs.

- Antimony, mercury, selenium, silver, and thallium were not detected. Antimony had only one nondetect with a detection limit (0.65 mg/kg) slightly greater than the BV (0.5 mg/kg); it is not retained as a COPC in tuff. Mercury had only one nondetect with a detection limit (0.12 mg/kg) slightly greater than the BV (0.1 mg/kg); it is not retained as a COPC in tuff. Selenium had detection limits above the BV; it is retained as a COPC in tuff. Silver and thallium had detection limits above the BV but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Lead was detected above the BV and above the maximum concentration of lead in the background data set; it is retained as a COPC in tuff.

D-3.7.2 Inorganic Chemicals in Sediment at AOC 35-016(b)

The inorganic chemical analyses requested for sediment samples were cyanide and metals. Of the seven tuff samples collected, five were analyzed for cyanide and metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium, copper, lead, selenium, silver, and zinc were either detected above BVs or had detection limits above BVs.

- Cadmium and selenium were not detected but had detection limits above their BVs; they are retained as COPCs in sediment.
- Copper and silver were detected above BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Lead was detected above the BV but below the maximum concentration of lead in the background data set; it is not retained as a COPC in sediment.
- Zinc was detected above its BV; it is retained as a COP in sediment.

D-3.7.3 Inorganic COPC Summary at AOC 35-016(b)

The inorganic COPCs identified at AOC 35-016(b) are cadmium, copper, lead, selenium, silver, and zinc. They are listed in Table D-3.7-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

Selenium was not detected in the 0 to 10 ft bgs depth range but had detection limits above the BV. The maximum detection limits are presented in Table D-3.7-1.

D-3.7.4 Radionuclides in Soil at AOC 35-016(b)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the three soil samples collected, two were analyzed for gamma-

emitting radionuclides, one was analyzed for isotopic plutonium, and two were analyzed for isotopic uranium. No radionuclides were detected without an available or applicable BV/FV, or detected above the BV/FV at this AOC.

D-3.7.5 Radionuclides in Tuff at AOC 35-016(b)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the four tuff samples collected, three were analyzed for gamma-emitting radionuclides and isotopic uranium, and one was analyzed for isotopic plutonium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Uranium-234, -235, and -238 were detected above their BVs in tuff and are retained as COPCs in tuff.

D-3.7.6 Radionuclides in Sediment at AOC 35-016(b)

The radionuclide analyses requested for sediment samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the seven sediment samples collected, five were analyzed for gamma-emitting radionuclides and isotopic uranium, and four were analyzed for isotopic plutonium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-238 was detected above the FV in sediment and is retained as a COPC in sediment.

D-3.7.7 Radionuclide COPC Summary at AOC 35-016(b)

The radionuclide COPCs identified for all media at AOC 35-016(b) are plutonium-238 and uranium-234, -235, and -238. They are listed in Table D-3.7-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Uranium-235 was not detected in the 0 to 1 ft bgs depth range and therefore was not included in the evaluation of industrial risk for the site.

D-3.7.8 Organic Chemicals in Soil at AOC 35-016(b)

The organic chemical analyses requested for soil samples included SVOCs and VOCs. Of the three soil samples collected, one was analyzed for SVOCs and one was analyzed for VOCs. No organic chemicals were detected in soil at this AOC.

D-3.7.9 Organic Chemicals in Sediment at AOC 35-016(b)

The organic chemical analyses requested for sediment samples were SVOCs. Of the seven sediment samples collected, five were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in sediment: acenaphthene; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chrysene; fluoranthene; fluorene; phenanthrene; and pyrene. They are all retained as COPCs in sediment.

D-3.7.10 Organic COPC Summary at AOC 35-016(b)

The organic COPCs identified at AOC 35-016(b) are acenaphthene; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chrysene; fluoranthene; fluorene; phenanthrene; and pyrene. They are listed in Table D-3.7-3 with the EPCs for industrial and residential risk screening assessments of the site.

D-3.8 Consolidated Unit 35-016(c)-00

A total of 26 samples were collected from 14 locations at Consolidated Unit 35-016(c)-00. Of the 26 samples collected, 11 were soil, 6 were tuff, and 9 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.8.1 Inorganic Chemicals in Soil at Consolidated Unit 35-016(c)-00

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 11 soil and fill samples collected, 8 were analyzed for TAL metals. The concentrations above BV of the detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Antimony, cadmium, copper, lead, mercury, and zinc were either detected above their BVs or had detection limits above their BVs.

- Antimony, copper, lead, mercury, and zinc were detected above their maximum concentrations in the background data set; they are retained as COPCs in soil.
- Cadmium was not detected and had detection limits less than the maximum concentration of cadmium in the background data set; it is not retained as a COPC in soil.

D-3.8.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-016(c)-00

The six tuff samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Arsenic, barium, chromium, cobalt, copper, lead, mercury, nickel, selenium, and zinc were either detected above their BVs or had detection limits greater than their BVs.

- Arsenic, cobalt, and selenium were not detected. Arsenic had detection limits less than the maximum concentration in the background data set; it is not retained as a COPC in tuff. Cobalt and selenium had detection limits greater than their BVs and are retained as COPCs in tuff.
- Barium, chromium, copper, lead, nickel, and zinc were detected above their BVs and above their maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Mercury was detected above its BV and has no background data set in tuff; it is retained as a COPC in tuff.

D-3.8.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-016(c)-00

The nine sediment samples collected were analyzed for TAL metals. The concentrations above BV of the detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Cadmium, chromium, mercury, selenium, and zinc were either not detected but had detection limit greater than BV or detected greater than BV.

- Cadmium was not detected but had detection limits above its BV; it is retained as a COPC in sediment.
- Chromium, copper, mercury, selenium, and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.

D-3.8.4 Inorganic COPC Summary Consolidated Unit 35-016(c)-00

The inorganic COPCs identified for all media at Consolidated Unit 35-016(c)-00 are antimony, barium, cadmium, chromium, cobalt, copper, lead, mercury, nickel, selenium, and zinc. They are listed in Table D-3.8-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.8.5 Radionuclides in Soil at Consolidated Unit 35-016(c)-00

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 11 soil samples collected, 7 were analyzed for gamma-emitting radionuclides, 8 were analyzed for isotopic plutonium, and 2 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Cesium-137, europium-152, and plutonium-239 were detected in soil and are retained as COPCs in soil.

D-3.8.6 Radionuclides in Tuff at Consolidated Unit 35-016(c)-00

The six tuff samples collected were analyzed for gamma-emitting radionuclides and isotopic plutonium. No radionuclides were detected.

D-3.8.7 Radionuclides in Sediment at Consolidated Unit 35-016(c)-00

The radionuclide analyses requested for sediment samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the nine sediment samples collected, four were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-238, -239 were detected above FVs, and uranium-238 was detected above its BV; they are retained as COPCs in sediment.

D-3.8.8 Radionuclide COPC Summary at Consolidated Unit 35-016(c)-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-016(c)-00 are cesium-137; europium-152; plutonium-238, -239; and uranium-238. They are listed in Table D-3.8-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.8.9 Organic Chemicals in Soil at Consolidated Unit 35-016(c)-00

The organic chemical analyses requested for soil samples included SVOCs and VOCs. Of the 11 soil samples collected, 7 were analyzed for SVOCs and 1 was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in soil: anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; butylbenzylphthalate; chrysene; dibenz(a,h)anthracene; fluoranthene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene. They are all retained as COPCs in soil.

D-3.8.10 Organic Chemicals in Tuff at Consolidated Unit 35-016(c)-00

The six tuff samples collected were analyzed for SVOCs. No organic chemicals were detected in the tuff samples.

D-3.8.11 Organic Chemicals in Sediment at Consolidated Unit 35-016(c)-00

The organic chemical analyses requested for sediment samples included SVOCs and VOCs. Of the nine sediment samples collected, four were analyzed for SVOCs and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected in sediment: acetone; 1,1-dichloroethene; 4-isopropyltoluene; styrene; and toluene. They are retained as COPCs in sediment.

D-3.8.12 Organic COPC Summary at Consolidated Unit 35-016(c)-00

The organic COPCs identified for all media at Consolidated Unit 35-016(c)-00 are acetone; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; 1,1-dichloroethene; fluoranthene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; phenanthrene; pyrene; styrene; and toluene. They are listed in Table D-3.8-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Anthracene, benzo(a)pyrene, benzo(g,h,i)perylene, benzo(k)fluoranthene, dibenz(a,h)anthracene, and indeno(1,2,3-cd)pyrene were not detected in the 0 to 1 ft bgs depth range and therefore were not included in the evaluation of recreational risk for the site.

D-3.9 AOC 35-016(j)

Nine samples were collected from 6 locations at AOC 35-016(j). Of the nine samples collected, three were soil, two were tuff, and four were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-3.0-1, D-3.0-2, and D-3.0-3, respectively.

D-3.9.1 Inorganic Chemicals in Tuff at AOC 35-016(j)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the two tuff samples collected, one was analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Antimony, arsenic, chromium, mercury, selenium, and thallium were either detected above their BVs or had detection limits above their BVs.

- Antimony, mercury, selenium, and thallium were not detected. Antimony had only one nondetect with a detection limit (0.59 mg/kg) slightly greater than the BV (0.5 mg/kg); it is not retained as a COPC in tuff. Mercury had only one nondetect with a detection limit (0.11 mg/kg) slightly greater than the BV (0.10 mg/kg); it is not retained as a COPC in tuff. Selenium had detection limits above the BV and above the maximum concentration in the background data set; it is retained as a COPC in tuff. Thallium had detection limits less above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Arsenic and chromium were detected above their BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.

D-3.9.2 Inorganic Chemicals in Sediment at AOC 35-016(j)

The four sediment samples collected were analyzed for cyanide and TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-3.0-4.

Copper was detected in one sample at a concentration of 12.6 mg/kg, which is slightly above the maximum background concentration of 12 mg/kg. Because the one copper concentration is basically the same as background and no other detected concentrations of copper exceed sediment background, copper was not retained as a COPC. Cadmium was not detected but had detection limits above the BV. Selenium was detected above the BV and had multiple nondetects with detection limits above the BV; both are retained as COPCs in sediment.

D-3.9.3 Inorganic COPC Summary at AOC 35-016(j)

The inorganic COPCs identified at AOC 35-016(j) are cadmium and selenium. They are listed in Table D-3.9-1 with the EPCs for industrial and residential risk screening assessments of the site.

Cadmium was not detected in the 0 to 10 ft bgs depth range but had detection limits above the BV. The maximum detection limits are presented in Table D-3.9-1.

D-3.9.4 Radionuclides in Soil at AOC 35-016(j)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the three soil samples collected, two were analyzed for gamma-emitting radionuclides and two were analyzed for isotopic plutonium and isotopic uranium. No radionuclides were detected or detected above the BV/FV in soil.

D-3.9.5 Radionuclides in Tuff at AOC 35-016(j)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the two tuff samples collected, one was analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-3.0-5.

Plutonium-239 was detected in tuff and is retained as a COPC in tuff.

D-3.9.6 Radionuclides in Sediment at AOC 35-016(j)

The radionuclide analyses requested for sediment samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the four sediment samples collected, two were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. No radionuclides were detected or detected above BVs/FVs in sediment.

D-3.9.7 Radionuclide COPC Summary at AOC 35-016(j)

The single radionuclide COPC identified for all media at AOC 35-016(j) is plutonium-239. It is listed in Table D-3.9-2 with the EPC calculated for industrial and residential risk screening assessments of the site.

D-3.9.8 Organic Chemicals in Soil at AOC 35-016(j)

The organic chemical analyses requested for soil samples included SVOCs and VOCs. Of the three soil samples collected, one was analyzed for SVOCs and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals were detected: benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; and pyrene. They are all retained as COPCs in soil.

D-3.9.9 Organic Chemicals in Sediment at AOC 35-016(j)

The organic chemical analyses requested for sediment samples included PCBs, pesticides, and SVOCs. Of the four sediment samples collected, one was analyzed for PCBs and pesticides, and all four were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-3.0-6.

The following organic chemicals are detected: acenaphthene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; phenanthrene; and pyrene. They are all retained as COPCs in sediment.

D-3.9.10 Organic COPC Summary at AOC 35-016(j)

The organic COPCs identified at AOC 35-016(j) are acenaphthene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; phenanthrene; and pyrene. They are listed in Table D-3.9-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-3.10 Ecological Risk Assessment in Ten Site Slope Subarea

Because ecological risk assessment is an evaluation for the entire subarea, the EPCs of the COPCs for the subarea for ecological risk screening assessment will not differ from the original report (LANL 2005, 091699). The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are included below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft

bgs, the identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Eleven inorganic chemicals (antimony, cadmium, chromium, copper, lead, lithium, mercury, nickel, selenium, silver, and zinc) are identified as COPCs in the Ten Site Slope Subarea.

Nine radionuclides (americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, tritium, uranium-234, uranium-235, and uranium-238) are identified as COPCs in the Ten Site Slope Subarea.

The following 46 organic chemicals are identified as COPCs in the Ten Site Slope Subarea: Acenaphthene; acenaphthylene; acetone; aldrin; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; butylbenzylphthalate; 4-chloro-3-methylphenol; chrysene; 4,4'- dichlorodiphenyldichloroethane (DDD); 4,4'- DDE; 4,4'-p,p'-dichlorodiphenyltrichloroethane (DDT); dibenz(a,h)anthracene; dibenzofuran; 1,1-dichloroethene; dieldrin; diethylphthalate; di-n-butylphthalate; di-n-octylphthalate; endosulfan I; endrin; ethylbenzene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 2-methylnaphthalene; naphthalene; phenanthrene; phenol; pyrene; styrene; tetrachloroethene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichloroethene.

Chemicals are COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the Ten Site Slope Subarea is discussed in the following sections.

D-3.10.1 Inorganic Chemicals in Soil and Fill in Ten Site Slope Subarea

In the Ten Site Slope Subarea, 31 soil and fill samples were collected and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals. Table D-3.10-1 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Eleven inorganic chemical results (8 antimony and 3 mercury) from soil samples were rejected because the associated spike sample recoveries were <30%. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Antimony, cobalt, copper, lead, lithium, mercury, silver, and zinc are identified as COPCs for soil and fill (0 to 5 ft bgs) in the Ten Site Slope Subarea based on the following rationale:

- Aluminum, arsenic, barium, beryllium, iron, magnesium, manganese, nickel, potassium, sodium, and vanadium were not reported at concentrations above their respective BVs in any samples, and are therefore not retained as COPCs in soil and fill.
- Antimony, cadmium, calcium, chromium, cobalt, copper, lead, mercury, silver, and zinc were detected above their BVs in at least one sample; selenium and thallium were not detected but had elevated detection limits in at least one sample.
- Antimony had one detected and one nondetected concentration above the range of background (the maximum detected concentration, 8.2 mg/kg, is approximately 10 times the BV). Antimony is retained as a COPC in soil and fill.
- Cadmium, calcium, and chromium were detected above their BVs but below their maximum concentrations in the background data set. Cadmium, calcium, and chromium are not retained as COPCs in soil and fill.

- Copper, lead, mercury, and zinc were detected in multiple samples with concentrations above their maximum concentrations in the background data set, and are retained as COPCs in soil and fill.
- Cobalt was detected above the BV in only one sample, with an estimated concentration (11 mg/kg, J-qualified) only approximately 25% above the BV. Cobalt is not retained as a COPC in soil and fill.
- Silver was detected in 16 of 33 samples, but no background data are available for silver in soil. Because two detects and three nondetects were above the BV, silver is retained as a COPC in soil and fill.
- Selenium and thallium were not detected, but each had one or more detection limits above the BV. The maximum concentration of each was only approximately twice the BV. Selenium and thallium are not retained as COPCs in soil and fill.
- Lithium and strontium were each detected in two samples, but have no BV for comparison. Lithium is retained as a COPC in soil and fill. Although no BV exists for strontium, earlier studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum detected concentration of strontium in soil was 8.2 mg/kg; strontium is therefore not retained as a COPC in soil and fill.

Table D-3.10-2 presents the analytical results for inorganic COPCs in soil and fill samples (0 to 5 ft bgs) from the Ten Site Slope Subarea.

D-3.10.2 Inorganic Chemicals in Tuff in Ten Site Slope Subarea

Seventeen tuff (Qbt 3) samples were collected from 0 to 5 ft bgs and analyzed for inorganic chemicals in the Ten Site Slope Subarea. Inorganic chemical analyses included TAL metals. Table D-3.10-3 summarizes the tuff samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Eight inorganic chemical results (antimony) from tuff samples were rejected because the associated spike sample recoveries were <30%. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Antimony, barium, chromium, copper, lead, lithium, mercury, nickel, selenium, and zinc are identified as COPCs for tuff (0 to 5 ft bgs) in the Ten Site Slope Subarea based on the following rationale:

- Six inorganic chemicals (cadmium, iron, manganese, potassium, sodium, and vanadium) were not reported above their respective BVs in any samples; as a result, they are not retained as COPCs in tuff.
- Fourteen inorganic chemicals (antimony, arsenic, barium, calcium, chromium, cobalt, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc) were detected or had detection limits at concentrations above the BV in one or more samples.
- Antimony and selenium were not detected but had detection limits above the BV and above the maximum reported concentrations in the background data set. Antimony and selenium are retained as COPCs in tuff.
- Arsenic was detected above the BV but below the maximum concentration of arsenic in the background data set. Arsenic is not retained as a COPC in tuff.

- Barium, chromium, cobalt, copper, lead, nickel, and zinc were detected above their BVs and above their maximum concentrations in the background data set. Barium, chromium, cobalt, copper, lead, nickel, and zinc are retained as COPCs in tuff.
- Silver and thallium were not detected, and had elevated detection limits that were all less than their maximum concentrations in the background data set. Silver and thallium are not retained as COPCs in tuff.
- Mercury has no background data in tuff. Mercury was detected at a maximum concentration of 2.7 mg/kg, and is retained as a COPC in tuff.
- Lithium and strontium were detected but have no BV for comparison. Lithium is retained as a COPC in tuff. Although no BV exists for strontium, earlier studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum detected concentration of strontium was 22.9 mg/kg; strontium is therefore not retained as a COPC in tuff.

Table D-3.10-4 presents the analytical results for inorganic COPCs in tuff samples (0 to 5 ft bgs) from the Ten Site Slope Subarea.

D-3.10.3 Inorganic Chemicals in Sediment in Ten Site Slope Subarea

Forty-seven sediment samples were collected from 0 to 5 ft bgs and analyzed for inorganic chemicals in the Ten Site Slope Subarea. Inorganic chemical analyses included TAL metals; nine sediment samples also were analyzed for total cyanide. Table D-3.10-5 summarizes the sediment samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Six inorganic chemical results (four antimony and two mercury) from sediment samples were rejected because the associated spike sample recoveries were <30%. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc were identified as COPCs for sediment (0 to 5 ft bgs) in the Ten Site Slope Subarea based on the following rationale:

- Antimony, beryllium, calcium, cobalt, cyanide (total), manganese, potassium, sodium, and thallium were not reported at concentrations above their respective BVs in any samples, and are therefore not retained as COPCs in sediment.
- Fifteen inorganic chemicals (aluminum, arsenic, barium, cadmium, chromium, copper, iron, lead, magnesium, mercury, nickel, selenium, silver, vanadium, and zinc) had detected concentrations greater than their respective BVs in at least one sediment sample.
- Aluminum, arsenic, barium, iron, magnesium, and vanadium were each detected above their BVs in only one sediment sample, at concentrations only slightly above the BV. Aluminum, arsenic, barium, iron, magnesium, and vanadium are not retained as COPCs in sediment.
- Cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc were each detected above their BVs and above their maximum concentrations in the background data set in multiple samples. Cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc are retained as COPCs in sediment.

Table D-3.10-6 presents the analytical results for inorganic COPCs in sediment samples (0 to 5 ft) from the Ten Site Slope Subarea.

D-3.10.4 Inorganic COPC Summary in Ten Site Slope Subarea

The inorganic COPCs identified for all media in the Ten Site Slope Subarea are antimony, barium, cadmium, chromium, cobalt, copper, lead, lithium, mercury, nickel, selenium, silver, and zinc. The EPCs calculated for ecological screening assessments for the inorganic COPCs are presented in Table D-3.10-7.

D-3.10.5 Radionuclides in Soil and Fill in Ten Site Slope Subarea

A total of 91 soil and fill samples were collected in the Ten Site Slope Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-3.10-8 presents the soil and fill samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Twenty-nine radionuclide results (three cesium-134, two plutonium-238, five plutonium-239, six uranium-234, seven uranium-235, and six uranium-238) from soil and fill samples were rejected either because the duplicate sample had a DER >4 or because documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Cesium-137, europium-152, plutonium-239, tritium, uranium-234, uranium-235, and uranium-238 are identified as COPCs for soil and fill (0 to 5 ft bgs) in the Ten Site Slope Subarea based on the following rationale:

- Nine radionuclides (cesium-137, europium-152, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, uranium-235, and uranium-238) were reported at concentrations above their respective BVs or FVs, or were detected without applicable FV, in at least one sample.
- Cesium-137 was detected in seven soil samples for which the FV does not apply; as a result, cesium-137 is retained as a COPC in soil and fill.
- Europium-152 does not have a BV for comparison. It was detected in three soil and fill samples and is retained as a COPC in soil and fill.
- Plutonium-238 was detected in one soil sample, for which the FV does not apply. The sample depth was 0.25 to 0.60 ft bgs, only slightly beyond the 0 to 0.5 ft depth where FVs apply. Because this sample is effectively within the depth range of surface samples, and the detected concentration (0.0172 pCi/g) is below the FV (0.023 pCi/g), the sample is consistent with fallout radionuclides. As a result, plutonium-238 is not retained as a COPC in soil and fill.
- Plutonium-239 was detected above the FV, or was detected where the FV does not apply (subsurface samples) in multiple samples. Plutonium-239 is retained as a COPC in soil and fill.
- Strontium-90 was detected in only one soil sample, for which the FV does not apply. The sample depth was 0 to 1 ft bgs, only slightly beyond the 0 to 0.5 ft depth where FVs apply. Because this sample is effectively within the depth range of surface samples, and the detected concentration (1.25 pCi/g) is below the FV (1.31 pCi/g), the sample is consistent with fallout radionuclides. As a result, strontium-90 is not retained as a COPC in soil and fill.
- Tritium was detected in six soil and fill samples with no applicable FV. Tritium is retained as a COPC in soil and fill.

- Soil background data sets are not available for uranium-234, uranium-235, and uranium-238. Each was detected at concentrations above the BV in six or more samples, and each is retained as a COPC in soil.

Table D-3.10-9 presents the analytical results for radionuclide COPCs in soil and fill samples (0 to 5 ft bgs) from the Ten Site Slope Subarea.

D-3.10.6 Radionuclides in Tuff in Ten Site Slope Subarea

A total of 49 tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Ten Site Slope Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-3.10-10 summarizes the tuff samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Twenty-five radionuclide results (one plutonium-238, eight uranium-234, eight uranium-235, and eight uranium-238) from tuff samples were rejected either because spectral interference prevented positive identification of analytes or because documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, tritium, and uranium-234 are identified as COPCs for tuff (0 to 5 ft bgs) in the Ten Site Slope Subarea based on the following rationale:

- Americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, and tritium were each detected in one or more tuff samples. None of these radionuclides have background data sets for tuff, so each of these radionuclides is retained as a COPC in tuff.
- Uranium-234 was detected above the BV in three samples, at a maximum concentration of 3.42 pCi/g (compared with the BV of 1.98 pCi/g), and is retained as a COPC in tuff.
- Uranium-235 was detected above the BV in only one tuff sample, at a concentration (0.098 pCi/g) only slightly above the BV (0.09 pCi/g). Uranium-235 is not retained as a COPC in tuff.
- Uranium-238 was detected above the BV in only one tuff sample, at a concentration of (2.54 pCi/g) only slightly above the BV (1.93 pCi/g). Uranium-238 is not retained as a COPC in tuff.

Table D-3.10-11 presents the analytical results for radionuclide COPCs in tuff samples (0 to 5 ft bgs) from the Ten Site Slope Subarea.

D-3.10.7 Radionuclides in Sediment in Ten Site Slope Subarea

A total of 32 sediment samples were collected from 0 to 5 ft bgs in Ten Site Slope Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, and tritium (not all samples received all analyses). Table D-3.10-12 summarizes the sediment samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Seventeen radionuclide results (11 cesium-134, 2 uranium-234, 2 uranium-235, and 2 uranium-238) from sediment samples were rejected either because spectral interference prevented positive identification of analytes or because documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Plutonium-238 and plutonium-239 are identified as COPCs for sediment (0 to 5 ft bgs) in the Ten Site Slope Subarea based on the following rationale:

- Cesium-137 was detected above the FV in only two samples at concentrations below the maximum concentration of cesium-137 in the background data set for sediment. Cesium-137 is not retained as a COPC in sediment.
- Plutonium-238 and plutonium-239 were each detected above the FV or detected where the FV does not apply in multiple sediment samples. Plutonium-238 and plutonium-239 are retained as COPCs in sediment.
- Uranium-234, uranium-235, and uranium-238 were each detected above their BVs in five or fewer sediment samples, all at concentrations less than twice the BVs. Uranium-234, uranium-235, and uranium-238 are not retained as COPCs in sediment.

Table D-3.10-13 presents the analytical results for radionuclide COPCs in sediment samples (0 to 5 ft bgs) from the Ten Site Slope Subarea.

D-3.10.8 Radionuclide COPC Summary in Ten Site Slope Subarea

The radionuclide COPCs identified for all media in the Ten Site Slope Subarea are americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, tritium, uranium-234, uranium-235, and uranium-238. Table D-3.10-14 presents the EPCs calculated for the radionuclide COPCs for ecological screening assessments.

D-3.10.9 Organic Chemicals in Soil and Fill in Ten Site Slope Subarea

Thirty-nine soil and fill samples were collected from 0 to 5 ft bgs in the Ten Site Slope Subarea and analyzed for organic chemicals. Organic chemical analyses included VOC, SVOC, PCB, pesticide, and TPH (not all samples received all analyses). Table D-3.10-15 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

A total of 276 organic chemical results (272 SVOC and 4 TPH-DRO) from soil and fill samples were rejected because of data-quality deficiencies (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Acenaphthene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; butylbenzylphthalate; chrysene; dibenz(a,h)anthracene; di-n-butylphthalate; fluoranthene; indeno(1,2,3-cd)pyrene; phenanthrene; phenol; pyrene; and TPH-DRO are retained as COPCs for soil and fill in the Ten Site Slope Subarea.

Table D-3.10-16 presents the analytical results for organic COPCs in soil and fill samples from 0 to 5 ft bgs in the Ten Site Slope Subarea.

D-3.10.10 Organic Chemicals in Tuff in Ten Site Slope Subarea

Twenty-eight tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Ten Site Slope Subarea and analyzed for organic chemicals. Organic chemical analyses included VOC, SVOC, PCB, pesticide, and TPH (not all samples received all analyses). Table D-3.10-17 summarizes the tuff samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

Seventy-six organic chemical results (68 SVOC and 8 TPH-DRO) from tuff samples were rejected because either the surrogate recovery was <10% or the mass spectrum documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Acetone; aldrin; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; 4,4'-DDD; 4,4'-DDT; dibenz(a,h)anthracene; dieldrin; di-n-butylphthalate; endosulfan I; endrin; ethylbenzene; fluoranthene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; phenanthrene; phenol; pyrene; tetrachloroethene; toluene; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichloroethene were detected in at least one tuff sample. All the detected organic chemicals are retained as COPCs for tuff in the Ten Site Slope Subarea.

Table D-3.10-18 presents the analytical results for organic COPCs in tuff samples (0 to 5 ft bgs) in the Ten Site Slope Subarea.

D-3.10.11 Organic Chemicals in Sediment in Ten Site Slope Subarea

A total of 42 sediment samples were collected from 0 to 5 ft bgs in the Ten Site Slope Subarea and analyzed for organic chemicals. Organic analyses included VOC, SVOC, PCB, pesticide, and TPH (not all samples received all analyses). Table D-3.10-19 summarizes the sediment samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

A total of 750 organic chemical results (624 SVOC, 2 TPH-DRO, and 124 VOC) from sediment samples were rejected because documentation was missing or other data-quality deficiencies (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Slope Subarea.

Acenaphthene; acenaphthylene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 2-butanone; butylbenzylphthalate; 4-chloro-3-methylphenol; chrysene; 4,4'-DDE; dibenz(a,h,)anthracene; dibenzofuran; 1,1-dichloroethene; diethylphthalate; di-n-butylphthalate; di-n-octylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 2-methylnaphthalene; naphthalene; phenanthrene; pyrene; styrene; toluene; and TPH-DRO were detected in at least one sample. All the detected organic chemicals are retained as COPCs for sediment in the Ten Site Slope Subarea.

Table D-3.10-20 presents the analytical results for organic COPCs in sediment samples in the Ten Site Slope Subarea.

D-3.10.12 Organic COPC Summary in Ten Site Slope Subarea

The 46 organic COPCs identified for all media (0 to 5 ft bgs) in the Ten Site Slope Subarea are listed in Table D-3.10-21, with the EPCs calculated for ecological screening assessments.

D-4.0 MORTANDAD SLOPE SUBAREA

This section identifies the media-specific COPCs for each site in the Mortandad Slope Subarea.

Tables D-4.0-1, D-4.0-2, and D-4.0-3 summarize the samples collected for inorganic chemical analyses, radionuclide analyses, and organic chemical analyses, respectively, at each site in the Mortandad Slope Subarea.

Table D-4.0-4 presents the concentrations above BVs for detected and nondetected inorganic chemicals at each site in the Mortandad Slope Subarea.

Table D-4.0-5 presents the concentrations of the radionuclides detected above BVs/FVs, or detected with no applicable BV or FV, at each site in the Mortandad Slope Subarea.

Table D-4.0-6 presents the concentrations of detected organic chemicals at each site in the Mortandad Slope Subarea.

D-4.1 SWMU 35-004(b)

A total of three soil samples were collected from two locations at SWMU 35-004(b). The inorganic and organic chemical analyses requested for each sample are summarized in Tables D-4.0-1 and D-4.0-3. No radionuclide analyses were requested for these samples.

D-4.1.1 Inorganic Chemicals in Soil at SWMU 35-004(b)

All three soil samples were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Calcium, mercury, and thallium were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Mercury had only one nondetect with a detection limit (0.12 mg/kg) slightly greater than the BV (0.1 mg/kg), and thallium had only one nondetect with a detection limit (1.1 mg/kg) slightly greater than the BV (0.73 mg/kg); they are not retained as COPCs in soil.

D-4.1.2 Inorganic COPC Summary at SWMU 35-004(b)

No inorganic COPCs are identified for this site.

D-4.1.3 Organic Chemicals in Soil at SWMU 35-004(b)

The organic chemical analyses requested for soil samples included SVOCs and VOCs. Of the three soil samples collected, two were analyzed for SVOCs and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The detected organic chemicals are acetone; benzo(a)pyrene; benzo(b)fluoranthene; fluoranthene; 4-isopropyltoluene; methylene chloride; phenanthrene; and pyrene. They are all retained as COPCs in soil.

D-4.1.4 Organic COPC Summary at SWMU 35-004(b)

The organic COPCs identified at SWMU 35-004(b) are acetone; benzo(a)pyrene; benzo(b)fluoranthene; fluoranthene; 4-isopropyltoluene; methylene chloride; phenanthrene; and pyrene. They are listed in

Table D-4.1-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Benzo(a)pyrene, benzo(b)fluoranthene, methylene chloride, phenanthrene, and pyrene were not detected in the 0 to 1 ft bgs depth range, so they were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-4.2 Consolidated Unit 35-008-00

A total of 66 samples were collected from 31 locations at Consolidated Unit 35-008-00. Of the 66 samples collected, 16 were soil and fill, 16 were tuff, and 34 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-4.0-1, D-4.0-2, and D-4.0-3, respectively.

D-4.2.1 Inorganic Chemicals in Soil at Consolidated Unit 35-008-00

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 16 soil samples collected, 4 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, cadmium, manganese, selenium, silver, strontium, and thallium were either detected above BVs or had detection limits above BVs.

- Antimony, cadmium, selenium, silver, and thallium were not detected. Antimony, selenium, and thallium had detection limits greater than the maximum concentration in the background data set; they are retained as COPCs in soil. Cadmium had detection limits less than the maximum concentration in the background data set; it is not retained as a COPC in soil. Silver had only one non-detect with detection limit (1.1 mg/kg) slightly greater than the BV (1 mg/kg); it is not retained as a COPC in soil.
- Manganese was detected greater than the BV but less than the maximum concentration in the background data set; it is not retained as a COPC in soil.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in soil was 14.2 mg/kg. Strontium is not retained as a COPC in soil.

D-4.2.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-008-00

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 16 tuff samples collected, 2 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Aluminum, antimony, beryllium, chromium, copper, lead, nickel, and selenium were either detected above BVs or had detection limits above BVs.

- Aluminum, beryllium, chromium, copper, and nickel were detected above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Antimony was detected above the BV and had multiple nondetects with detection limits above the BV; it is retained as a COPC in tuff.

- Lead was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Selenium was not detected but had detection limits above the BV and above the maximum concentrations in the background data set; it is retained as a COPC in tuff.

D-4.2.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-008-00

The inorganic chemical analyses requested for sediment samples were TAL metals. Of the 34 sediment samples collected, 30 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, beryllium, cadmium, calcium, cobalt, copper, iron, lead, selenium, thallium, and zinc were either detected above BVs or had detection limits above BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Antimony, beryllium, copper, thallium, and zinc were detected above BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Cadmium and selenium were not detected but had detection limits above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Cobalt had only one nondetect with a detection limit (5.2 mg/kg) slightly greater than the BV (4.73 mg/kg); it is not retained as a COPC in sediment.
- Iron was detected above the BV in only one sediment sample at a concentration of 13,900 mg/kg, which is slightly greater than the BV (13800 mg/kg); it is not retained as a COPC.
- Lead was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in sediment.

D-4.2.4 Inorganic COPC Summary at Consolidated Unit 35-008-00

The inorganic COPCs identified for all media at Consolidated Unit 35-008-00 are aluminum, antimony, beryllium, cadmium, chromium, copper, nickel, selenium, thallium, and zinc. They are listed in Table D-4.2-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

Selenium was not detected in 0 to 1 ft or 0 to 10 ft bgs depth intervals but had detection limits above the BV. The maximum detection limits are presented in Table D-4.2-1.

D-4.2.5 Radionuclides in Soil at Consolidated Unit 35-008-00

The radionuclide analyses requested for soil samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 16 soil samples collected, 2 were analyzed for americium-241 and gamma-emitting radionuclides, 8 were analyzed for isotopic plutonium, and 7 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Cesium-137 and plutonium-239 were detected, and uranium-238 was detected above its BV. Cesium-137, plutonium-239, and uranium-238 are retained as COPCs in soil.

D-4.2.6 Radionuclides in Tuff at Consolidated Unit 35-008-00

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 16 tuff samples collected, 3 were analyzed for gamma-emitting radionuclides, 6 were analyzed for isotopic plutonium, and 4 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Plutonium-239 was detected, uranium-235 was detected above the BV; they are retained as COPCs in tuff.

D-4.2.7 Radionuclides in Sediment at Consolidated Unit 35-008-00

The radionuclide analyses requested for sediment samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 34 sediment samples collected, eight were analyzed for americium-241, isotopic plutonium, and isotopic uranium, and 20 were analyzed for gamma-emitting radionuclides. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Americium-241, cesium-137, plutonium-238, and -239 were detected above FVs; ruthenium-106 was detected; and uranium-234, -235, and -238 were detected above BVs. All are retained as COPCs in sediment.

D-4.2.8 Radionuclide COPC Summary at Consolidated Unit 35-008-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-008-00 are americium-241; cesium-137; plutonium-238, and -239; ruthenium-106; and uranium-234, -235, and -238. They are listed in Table D-4.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.2.9 Organic Chemicals in Soil and fill at Consolidated Unit 35-008-00

The organic chemical analyses requested for soil and fill samples included PCBs, PCBs and pesticides as a combined suite, SVOCs, TPH-DRO, and VOCs. Of the 16 soil and fill samples collected, 1 was analyzed for PCBs; 1 was analyzed for PCBs and pesticides as a combined suite; 8 were analyzed for SVOCs; 7 were analyzed for TPH-DRO; and 1 was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: benzoic acid; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; and TPH-DRO. They are retained as COPCs in soil and fill.

D-4.2.10 Organic Chemicals in Tuff at Consolidated Unit 35-008-00

The organic chemical analyses requested for tuff samples included SVOCs, TPH-DRO, and VOCs. Of the 16 tuff samples collected, 8 were analyzed for SVOCs, 7 were analyzed for TPH-DRO, and 4 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: benzoic acid; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; toluene; TPH-DRO; and trichlorofluoromethane. They are retained as COPCs in tuff.

D-4.2.11 Organic Chemicals in Sediment at Consolidated Unit 35-008-00

The organic chemical analyses requested for sediment samples included SVOCs, TPH-DRO, and VOCs. Of the 34 sediment samples collected, all 34 were analyzed for SVOCs, 14 were analyzed for TPH-DRO, and 7 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: anthracene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; di-n-butylphthalate; fluoranthene; phenanthrene; phenol; pyrene; toluene; TPH-DRO; and trichlorofluoromethane. They are all retained as COPCs in sediment.

D-4.2.12 Organic COPC Summary at Consolidated Unit 35-008-00

The organic COPCs identified for all media at Consolidated Unit 35-008-00 are anthracene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; di-n-butylphthalate; fluoranthene; phenanthrene; phenol; pyrene; toluene; TPH-DRO; and trichlorofluoromethane. They are listed in Table D-4.2-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Phenol, toluene, and trichlorofluoromethane were not detected or not analyzed for in the 0 to 1 ft bgs depth range, and therefore were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-4.3 SWMU 35-009(c)

A total of 60 samples were collected from 19 locations at SWMU 35-009(c). Of the 60 samples collected, 20 were soil and fill, 32 were tuff, and 8 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-4.0-1, D-4.0-2, and D-4.0-3, respectively.

D-4.3.1 Inorganic Chemicals in Soil at SWMU 35-009(c)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 20 soil and fill samples collected, seven soil samples were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, cadmium, lead, lithium, and strontium were either detected above BVs or had detection limits above BVs.

- Antimony was not detected but had detection limits greater than the maximum concentration in the background data set; it is retained as a COPC in soil.
- Cadmium and lead were detected above BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in soil.
- Lithium was detected and has no BV; it is retained as a COPC in soil.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in soil was 17.2 mg/kg. Strontium is not retained as a COPC in soil.

D-4.3.2 Inorganic Chemicals in Tuff at SWMU 35-009(c)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 32 tuff samples collected, 5 samples were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, arsenic, copper, lead, lithium, selenium, and strontium were either detected above BVs or had detection limits above BVs.

- Antimony was not detected but had detection limits above its BV; it is retained as a COPC in tuff.
- Arsenic was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Copper, lead and selenium were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Lithium was detected and has no BV; it is retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 8.4 mg/kg. Strontium is not retained as a COPC in tuff.

D-4.3.3 Inorganic Chemicals in Sediment at SWMU 35-009(c)

The eight sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Barium, cadmium, mercury, selenium, and zinc were either detected above BVs or had detection limits above BVs.

- Barium, selenium, and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Cadmium was not detected but had detection limits greater than its BV; it is retained as a COPC in sediment.
- Mercury was detected above its BV in only one sample, at concentration of 0.173 mg/kg, which is less than twice the BV (0.1 mg/kg); it is not retained as a COPC in sediment.

D-4.3.4 Inorganic COPC Summary at SWMU 35-009(c)

The inorganic COPCs identified for all media at SWMU 35-009(c) are antimony, barium, cadmium, copper, lead, lithium, selenium, and zinc. They are listed in Table D-4.3-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

No samples were analyzed for lithium in the 0 to 1 ft bgs depth range, so lithium was not included in the evaluation of industrial or recreational risk for the site. It was included in the evaluation of residential risk.

D-4.3.5 Radionuclides in Soil and Fill at SWMU 35-009(c)

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 20 soil and fill samples collected, 8

were analyzed for gamma-emitting radionuclides; 7 were analyzed for isotopic plutonium and isotopic uranium; 6 were analyzed for strontium-90; and 3 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Tritium was detected in fill and is retained as a COPC in fill.

D-4.3.6 Radionuclides in Tuff at SWMU 35-009(c)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 32 tuff samples collected, 8 were analyzed for gamma-emitting radionuclides, 23 were analyzed for isotopic plutonium and isotopic uranium, and 6 were analyzed for strontium-90 and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Plutonium-238, -239, and tritium were detected in tuff and are retained as COPCs in tuff.

D-4.3.7 Radionuclides in Sediment at SWMU 35-009(c)

The eight sediment samples collected were analyzed for americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Americium-241; cesium-137; plutonium-238, -239; and tritium were detected above FVs. Uranium-234 and uranium-238 were detected above BVs. All are retained as COPCs in sediment.

D-4.3.8 Radionuclide COPC Summary at SWMU 35-009(c)

The radionuclide COPCs identified for all media at SWMU 35-009(c) are americium-241; cesium-137; plutonium-238, -239; tritium; uranium-234; and uranium-238. They are listed in Table D-4.3-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.3.9 Organic Chemicals in Soil and Fill at SWMU 35-009(c)

The organic chemical analyses requested for soil and fill samples included PCBs, pesticides, SVOCs, and VOCs. Of the 20 soil and fill samples collected, 6 soil samples were analyzed for PCBs and pesticides, and 1 fill sample was analyzed for SVOCs and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: Aroclor-1242, Aroclor-1254, and Aroclor-1260. They are retained as COPCs in soil and fill.

D-4.3.10 Organic Chemicals in Tuff at SWMU 35-009(c)

The organic chemical analyses requested for tuff samples included PCBs and pesticides. Of the 32 tuff samples collected, 3 were analyzed for PCBs and pesticides. No organic chemicals were detected in tuff.

D-4.3.11 Organic Chemicals in Sediment at SWMU 35-009(c)

The eight sediment samples collected were analyzed for PCBs, pesticides, and SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: anthracene; Aroclor-1254; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; 4,4'-DDE; 4,4'-DDT; fluoranthene; fluorene; phenanthrene; and pyrene. They are retained as COPCs in sediment.

D-4.3.12 Organic COPC Summary at SWMU 35-009(c)

The organic COPCs identified for all media at SWMU 35-009(c) are anthracene; Aroclor-1242; Aroclor-1254; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; 4,4'-DDE; 4,4'-DDT; fluoranthene; fluorene; phenanthrene; and pyrene. They are listed in Table D-4.3-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.4 AOC 35-016(e)

Samples collected at Consolidated Unit 35-008-00 provide data for the evaluation of AOC 35-016(e) according to the approved SAP (LANL 2002, 073092). Section D-4.2 provides summaries of the data obtained at Consolidated Unit 35-008-00. All COPCs identified for that site are also identified as COPCs for AOC 35-016(e).

D-4.5 AOC 35-016(f)

A total of 11 samples were collected from six locations at this AOC. Of the 11 samples collected, 1 was soil, 2 were tuff, and 8 were sediment. The inorganic and organic chemical analyses requested for each sample are summarized in Table D-4.0-1 and Table D-4.0-3.

D-4.5.1 Inorganic Chemicals in Tuff at AOC 35-016(f)

One of two tuff samples collected was analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, mercury, selenium, and thallium were either detected above their BVs or had detection limits above their BVs.

- Antimony, mercury, and selenium were not detected but had detection limits above their BVs. Antimony had only one nondetect with a detection limit (0.51 mg/kg) slightly greater than the BV (0.5 mg/kg); it is not retained as a COPC in tuff. Mercury had only one nondetect with a detection limit (0.12 mg/kg) slightly greater than the BV (0.1 mg/kg); it is not retained as a COPC in tuff. Selenium is retained as a COPC in tuff.
- Thallium was detected above its BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.

D-4.5.2 Inorganic Chemicals in Sediment at AOC 35-016(f)

The eight sediment samples collected were analyzed for TAL metals. No inorganic chemicals were detected above BVs. The sample concentrations above the BV for nondetected inorganic chemicals are presented in Table D-4.0-4.

Cadmium and selenium were not detected but had detection limits above their BVs; they are retained as COPCs in sediment.

D-4.5.3 Inorganic COPC Summary at AOC 35-016(f)

The inorganic COPCs identified at AOC 35-016(f) are cadmium and selenium. They are listed in Table D-4.5-1 with the EPCs calculated for industrial and residential risk screening assessments of the site. Selenium was not detected in 0 to 1 ft or 0 to 10 ft bgs depth intervals but had detection limits above the BV. The maximum detection limits are presented in Table D-4.5-1.

D-4.5.4 Organic Chemicals in Soil at AOC 35-016(f)

The one soil sample collected was analyzed for SVOCs. The sample concentrations of detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; and pyrene. They are all retained as COPCs in soil.

D-4.5.5 Organic Chemicals in Tuff at AOC 35-016(f)

One of the two tuff samples collected was analyzed for SVOCs. No organic chemicals were detected in tuff.

D-4.5.6 Organic Chemicals in Sediment at AOC 35-016(f)

The eight sediment samples collected were analyzed for PCBs, pesticides, and SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: Aroclor-1254; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; di-n-butylphthalate; fluoranthene; fluorene; phenanthrene; and pyrene. They are all retained as COPCs in sediment.

D-4.5.7 Organic COPC Summary at AOC 35-016(f)

The organic COPCs identified for all media at AOC 35-016(f) are Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; di-n-butylphthalate; fluoranthene; fluorene; phenanthrene; and pyrene. They are listed in Table D-4.5-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.6 Consolidated Unit 35-016(i)-00

A total of 15 samples were collected from eight locations at Consolidated Unit 35-016(j)-00. Of the 15 samples collected, one was soil, two were tuff, and 12 were sediment. The inorganic and organic chemical analyses requested for each sample are summarized in Table D-4.0-1 and Table D-4.0-3.

D-4.6.1 Inorganic Chemicals in Soil at Consolidated Unit 35-016(i)-00

The one soil sample collected was analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Chromium, lead, and mercury were detected above their BVs.

- Chromium and mercury were detected above the maximum concentration in the background data set; they are retained as COPCs in soil.
- Lead was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil.

D-4.6.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-016(i)-00

The two tuff samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Barium, calcium, chromium, and selenium were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Barium was detected greater above BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Chromium was detected above its BV and above the maximum concentration in the background data set; it is retained as a COPC in tuff.
- Selenium was not detected but had detection limits above the BV and above the maximum concentration in the background data set; it is retained as a COPC in tuff.

D-4.6.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-016(i)-00

The 12 sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Cadmium was not detected but had detection limits above the BV. Selenium was detected above the BV and had multiple nondetects with detection limits above the BV. Cadmium and selenium are retained as COPCs in sediment.

D-4.6.4 Inorganic COPC Summary at Consolidated Unit 35-016(i)-00

The inorganic COPCs identified for all media at Consolidated Unit 35-016(i)-00 are cadmium, chromium, mercury, and selenium. They are listed in Table D-4.6-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.6.5 Organic Chemicals in Soil at Consolidated Unit 35-016(i)-00

The one soil sample collected was analyzed for PCBs, pesticides, and SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene. They are retained as COPCs in soil.

D-4.6.6 Organic Chemicals in Tuff at Consolidated Unit 35-016(i)-00

The two tuff samples were analyzed for PCBs, pesticides, and SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

Aroclor-1260 was detected and is retained as a COPC in tuff.

D-4.6.7 Organic Chemicals in Sediment at Consolidated Unit 35-016(i)-00

The organic chemical analyses requested for sediment samples included PCBs, pesticides, SVOCs, and TPH-DRO. Of the 12 sediment samples collected, all 12 were analyzed for PCBs, pesticides, and SVOCs, and 2 were analyzed for TPH-DRO. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; fluorene; phenanthrene; pyrene; and TPH-DRO. They are retained as COPCs in sediment.

D-4.6.8 Organic COPC Summary at Consolidated Unit 35-016(i)-00

The organic COPCs identified for all media at Consolidated Unit 35-016(i)-00 are acenaphthene; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; phenanthrene; pyrene; and TPH-DRO. They are listed in Table D-4.6-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.7 SWMU 35-016(o)

A total of 58 samples were collected from 30 locations at SWMU 35-016(o). Of the 58 samples collected, 29 were soil, 10 were tuff, and 19 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-4.0-1, D-4.0-2, and D-4.0-3, respectively.

D-4.7.1 Inorganic Chemicals in Soil at SWMU 35-016(o)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 29 soil samples collected, 9 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, cadmium, chromium, copper, lead, mercury, nickel, thallium, and zinc were either detected above BVs or had detection limits above BVs.

- Antimony was detected below its BV in one sample and had detection limits above the BV and above the maximum concentration in the background data set; it is retained as a COPC in soil.
- Cadmium was not detected but had detection limits above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil.
- Chromium, copper, lead, mercury, nickel, and thallium were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in soil.

- Zinc was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil.

D-4.7.2 Inorganic Chemicals in Tuff at SWMU 35-016(o)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 10 tuff samples collected, 6 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, arsenic, chromium, copper, lead, nickel, and selenium were either detected above BVs or had detection limits above BVs.

- Antimony and selenium were not detected but had detection limits above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Arsenic was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Chromium, copper, lead, and nickel were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.

D-4.7.3 Inorganic Chemicals in Sediment at SWMU 35-016(o)

The inorganic chemical analyses requested for sediment samples were TAL metals. Of the 19 sediment samples collected, 18 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Antimony, barium, cadmium, mercury, selenium, and zinc were either detected above BVs or had detection limits above BVs.

- Antimony and cadmium were not detected above their BVs but had detection limits above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Mercury, selenium, and zinc were detected above BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Barium was detected above the BV in two sediment samples, at concentrations (132 mg/kg and 138 mg/kg) above the BV (127 mg/kg) and above the maximum concentration in the background data set. Barium is retained as a COPC in sediment.

D-4.7.4 Inorganic COPC Summary at SWMU 35-016(o)

The inorganic COPCs identified for all media at SWMU 35-016(o) are antimony, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, thallium, and zinc. They are listed in Table D-4.7-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.7.5 Radionuclides in Soil at SWMU 35-016(o)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 29 soill samples collected, 9 were analyzed for gamma-emitting radionuclides, 13 were analyzed for isotopic plutonium and isotopic uranium, and 8

were analyzed for strontium-90 and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Cesium-137; plutonium-238, plutonium-239; and tritium were detected or detected above FVs. Plutonium-238 was detected above its FV in one sample but below the maximum concentration in the background data set; it is not retained as a COPC in soil. Cesium-137, plutonium-239, and tritium were detected in samples for which their FVs do not apply and are retained as COPCs in soil.

D-4.7.6 Radionuclides in Tuff at SWMU 35-016(o)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 10 tuff samples collected, 6 were analyzed for gamma-emitting radionuclides, strontium-90, and tritium, and 8 were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Plutonium-239 and tritium were detected, and uranium-234, -235, and -238 were detected above BVs; they are all retained as COPCs in tuff.

D-4.7.7 Radionuclides in Sediment at SWMU 35-016(o)

The radionuclide analyses requested for sediment samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 19 sediment samples collected, 16 were analyzed for americium-241, 18 were analyzed for gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium, and 2 were analyzed for strontium-90. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Americium-241; cesium-137; cobalt-60; plutonium-238, -239; and tritium were detected above FVs. Uranium-234 and -238 were detected above BVs; they are all retained as COPCs in sediment.

D-4.7.8 Radionuclide COPC Summary at SWMU 35-016(o)

The radionuclide COPCs identified for all media at SWMU 35-016(o) are americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, tritium, uranium-234, uranium-235, and uranium-238. They are listed in Table D-4.7-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.7.9 Organic Chemicals in Soil at SWMU 35-016(o)

The organic chemical analyses requested for soil samples included polyaromatic hydrocarbons (PAHs), PCBs, SVOCs, and TPH-DRO. Of the 29 soil samples collected, 16 were analyzed for PAHs, 8 were analyzed for PCBs and TPH-DRO, and 11 were analyzed for SVOCs. The concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; aniline; anthracene; Aroclor-1242; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 4-chloroaniline; chrysene; dibenz(a,h)anthracene; dibenzofuran; di-n-butylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; pentachlorophenol; phenanthrene; phenol; pyrene; and TPH-DRO. They are retained as COPCs in soil.

D-4.7.10 Organic Chemicals in Tuff at SWMU 35-016(o)

The organic chemical analyses requested for tuff samples included PAHs, PCBs, SVOCs, and TPH-DRO. Of the 10 tuff samples collected, 2 were analyzed for PAHs; 6 were analyzed for PCBs and TPH-DRO; and 8 were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1254; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; dibenz(a,h)anthracene; dibenzofuran; di-n-butylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; phenanthrene; pyrene; and TPH-DRO. They are retained as COPCs in tuff.

D-4.7.11 Organic Chemicals in Sediment at SWMU 35-016(o)

The organic chemical analyses requested for sediment samples included PCBs, pesticides, SVOCs, and TPH-DRO. Of the 19 sediment samples collected, 18 were analyzed for PCBs and SVOCs, 16 were analyzed for pesticides, and 2 were analyzed for TPH-DRO. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; 4,4'-DDE; 4,4'-DDT; dibenzofuran; di-n-butylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; phenanthrene; pyrene; and TPH-DRO. They are retained as COPCs in sediment.

D-4.7.12 Organic COPC Summary at SWMU 35-016(o)

The organic COPCs identified for all media at SWMU 35-016(o) are acenaphthene; aniline; anthracene; Aroclor-1242; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 4-chloroaniline; chrysene; 4,4'-DDE; 4,4'-DDT; dibenz(a,h)anthracene; dibenzofuran; di-n-butylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; naphthalene; pentachlorophenol; phenanthrene; phenol; pyrene; and TPH-DRO. They are listed in Table D-4.7-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.8 SWMU 35-016(p)

A total of 20 samples were collected from 12 locations at this SWMU. Of the 20 samples collected, 15 were soil, 1 was tuff, and 4 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-4.0-1, D-4.0-2, and D-4.0-3, respectively.

D-4.8.1 Inorganic Chemicals in Soil at SWMU 35-016(p)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 15 soil samples collected, 13 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Cadmium and selenium were not detected but had detection limits above the BVs. Cadmium had detection limits below the maximum concentration in the background data set; it is not retained as a COPC in soil. Selenium had detection limits above the maximum concentration in the background data set; it is retained as a COPC in soil.

D-4.8.2 Inorganic Chemicals in Sediment at SWMU 35-016(p)

The four sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-4.0-4.

Arsenic, cadmium, selenium, and zinc were detected above their BVs or had detection limits above their BVs.

- Arsenic was detected above the BV in only one sample, at a concentration 3.99 mg/kg, which is equivalent to the BV (3.98 mg/kg); it is not retained as a COPC in sediment.
- Cadmium was not detected but had detection limit (0.551 mg/kg), which is slightly above the BV (0.4 mg/kg), in only one sample; it is not retained as a COPC in sediment.
- Selenium was detected above the BV and had multiple nondetects with detection limits above the BV and above the maximum concentration of selenium in the background data set for sediment; it is retained as a COPC in sediment.
- Zinc was detected above its BV in one sediment sample but below the maximum concentration of zinc in the background data set; zinc is not retained as a COPC in sediment.

D-4.8.3 Inorganic COPC Summary at SWMU 35-016(p)

The inorganic COPC identified at SWMU 35-016(p) is selenium. It is listed in Table D-4.8-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.8.4 Radionuclides in Soil at SWMU 35-016(p)

One of the 15 soil samples collected was analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-4.0-5.

Cesium-137 was detected in one sample for which the FV does not apply; it is retained as a COPC in soil.

D-4.8.5 Radionuclides in Tuff at SWMU 35-016(p)

The one tuff sample collected was analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. No radionuclides were detected in tuff.

D-4.8.6 Radionuclide COPC Summary at SWMU 35-016(p)

The radionuclide COPC identified at SWMU 35-016(p) is cesium-137. It is listed in Table D-4.8-2 with the EPCs for industrial and residential risk screening assessments of the site.

D-4.8.7 Organic Chemicals in Soil at SWMU 35-016(p)

Fourteen of the 15 soil samples collected were analyzed for PAHs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; chrysene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; naphthalene; phenanthrene; and pyrene. They are all retained as COPCs in soil.

D-4.8.8 Organic Chemicals in Sediment at SWMU 35-016(p)

The four sediment samples collected were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-4.0-6.

The following organic chemicals were detected: acenaphthene; benzo(b)fluoranthene; benzoic acid; chrysene; fluoranthene; fluorene; phenanthrene; and pyrene. They are all retained as COPCs in sediment.

D-4.8.9 Organic COPC Summary at SWMU 35-016(p)

The organic COPCs identified at SWMU 35-016(p) are acenaphthene; anthracene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzoic acid; chrysene; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; naphthalene; phenanthrene; and pyrene. They are listed in Table D-4.8-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-4.9 Ecological Risk Assessment in Mortandad Slope Subarea

Because ecological risk assessment is an evaluation for the entire subarea, the EPCs of the COPCs for the subarea for ecological risk assessment will not differ from previous report (LANL 2005, 091699). The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are included below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft bgs, the identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Additional samples have been collected in the Mortandad Slope Subarea and analyzed for inorganic and/or organic chemicals specified in the notice of disapproval (NOD) and NOD response (LANL 2006, 093268; NMED 2006, 092534). The COPCs for the subarea have been reevaluated with the new data included, and the EPCs for ecological risk assessment have been recalculated.

Fourteen inorganic chemicals (antimony, barium, bromide, chromium, copper, fluoride, lithium, mercury, nickel, perchlorate, selenium, thallium, and zinc) are identified as COPCs in the Mortandad Slope Subarea.

Eleven radionuclides (americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, ruthenium-106, strontium-90, tritium, uranium-234, uranium-235, and uranium-238) are identified as COPCs in the Mortandad Slope Subarea.

Thirty-five organic chemicals [acenaphthene; acetone; aniline; anthracene; Aroclor-1242; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; 4-chloroaniline; chrysene; 4,4'-DDE;

4,4'-DDT; dibenz(a,h)anthracene; dibenzofuran; di-n-butylphthalate; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; methylene chloride; 2-methylnaphthalene; naphthalene; pentachlorophenol; phenanthrene; phenol; pyrene; toluene; TPH-DRO; and trichlorofluoromethane] are identified as COPCs in the Mortandad Slope Subarea.

Chemicals are COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the Mortandad Slope Subarea is discussed in the following sections.

D-4.9.1 Inorganic Chemicals in Soil in Mortandad Slope Subarea

Thirty-three soil samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for inorganic chemicals. Analyses included TAL metals. Two soil samples also were analyzed for lithium, molybdenum, and strontium, which are not included in the TAL metal analytical suite. Table D-4.9-1 summarizes the soil samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Three inorganic chemical results (two mercury and one lead) from soil samples were rejected because either the samples were analyzed beyond twice the holding time or other data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Antimony, chromium, copper, lithium, mercury, nickel, and selenium were identified as COPCs for soil in the Mortandad Slope Subarea based on the following rationale:

- Aluminum, arsenic, barium, beryllium, cobalt, iron, magnesium, potassium, sodium, and vanadium were not reported at concentrations above their respective BVs in any samples, and are not retained as COPCs in soil.
- Calcium was detected above the BV in only one sample, at a concentration (6310 mg/kg) below the maximum concentration of calcium in the background data set (14,000 mg/kg). Calcium is not retained as a COPC in soil.
- Silver was not detected in any soil samples, but one sample had a detection limit (1.1 mg/kg) slightly greater than the BV (1 mg/kg). Silver is not retained as a COPC in soil.
- Lithium and strontium have no BV for comparison. Lithium was detected in two soil samples and is retained as a COPC. Although no BV exists for strontium, earlier studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum detected concentration of strontium in the Mortandad Slope Subarea is 17.2 mg/kg; therefore, strontium is not retained as a COPC in soil.
- Cadmium was detected in only one soil sample, and had detection limits above the BV in multiple samples. All reported concentrations of cadmium were below the maximum concentration of cadmium in the background data set. Cadmium is not retained as a COPC in soil.
- Selenium was not detected but had several detection limits above the BV and above the maximum concentration of selenium in the background data set. Selenium is retained as a COPC in soil.
- Lead was detected above the BV in only three soil samples, and in only one was the concentration (33.5 mg/kg) slightly above the maximum concentration of lead in the background data set (28 mg/kg). Lead is not retained as a COPC in soil.

- Manganese was detected above the BV in only one sample, at a concentration (822 mg/kg) below the maximum concentration of manganese in the background data set (1100 mg/kg). Manganese is not retained as a COPC in soil.
- Thallium was detected above the BV in only one soil sample, and had detection limits above the BV in two samples. Thallium is not retained as a COPC in soil.
- Chromium, mercury, and nickel each had one or more detected concentrations above the range of background data, and the maximum concentrations are approximately 5 to 7 times the BV. These concentrations indicate a potential release; as a result, chromium, mercury, and nickel are retained as COPCs in soil.
- Antimony and copper each had several detected and nondetected concentrations above the range of background; the highest concentrations are approximately 3 to more than 10 times the BVs. These concentrations indicate a potential release; as a result, antimony and copper are retained as a COPC in soil.
- Zinc was detected above the BV in only one soil sample, at a concentration (58.6 mg/kg) less than the maximum concentration of zinc in the background data set (75.5 mg/kg). Zinc is not retained as a COPC in soil.

Table D-4.9-2 presents the analytical results for samples (0 to 5 ft bgs) with inorganic COPCs detected above the BV or with detection limits above the BV.

D-4.9.2 Inorganic Chemicals in Tuff in Mortandad Slope Subarea

Eleven tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for inorganic chemicals. Analyses included TAL metals. Table D-4.9-3 summarizes the samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Four inorganic chemical results (lead) from tuff samples were rejected because data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Antimony, chromium, copper, nickel, and selenium are identified as COPCs in tuff (0 to 5 ft bgs) in the Mortandad Slope Subarea based on the following rationale:

- Cadmium, cobalt, iron, magnesium, manganese, potassium, silver, sodium, vanadium, and zinc were not reported at concentrations above the BV in any tuff samples and are not retained as COPCs in tuff.
- Antimony, chromium, copper, nickel, and selenium were each detected or had detection limits above the BV and above the maximum concentrations in the background data set. They are therefore retained as COPCs in tuff.
- Aluminum, barium, beryllium, lead, and thallium were each detected or had a detection limit above the BV in only one tuff sample; they are therefore are not retained as COPCs in tuff.
- Mercury had a single detection limit above the BV in tuff. The detection limit (0.12 mg/kg) was only slightly above the BV for mercury (0.1 mg/kg), which also is based on a detection limit. Mercury is therefore not retained as a COPC in tuff.

Table D-4.9-4 presents the analytical results for inorganic COPCs in tuff samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.3 Inorganic Chemicals in Sediment in Mortandad Slope Subarea

Eighty-four sediment samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for inorganic chemicals. Analyses included TAL metals for all samples; three samples were also analyzed for anions. Table D-4.9-5 summarizes the sediment samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Five inorganic chemical results (lead) from sediment samples were rejected because data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Antimony, barium, bromide, cadmium, copper, fluoride, mercury, perchlorate, selenium, thallium, and zinc are identified as COPCs for sediment in the Mortandad Slope Subarea (0 to 5 ft bgs) based on the following rationale:

- Aluminum, chloride, magnesium, manganese, nickel, potassium, silver, sulfate, and vanadium were not reported at concentrations above the BV in any sediment samples and are not retained as COPCs in sediment.
- Bromide, fluoride, and perchlorate do not have BVs or background data sets for comparison, and are retained as COPCs in sediment.
- Antimony was detected at a concentration approximately 10 times the BV in one sediment sample, with a maximum concentration of 8.6 mg/kg (compared with the BV of 0.83 mg/kg), and had elevated detection limits in multiple samples. Antimony is retained as a COPC in sediment.
- Arsenic was detected at concentrations slightly above the BV in only two sediment samples. Arsenic is not retained as a COPC in sediment.
- Barium was detected above the BV and above the maximum concentration of barium in the background data set in three sediment samples. Barium is retained as a COPC in sediment.
- Beryllium, cobalt, iron, lead, and sodium were each detected or had a detection limit above the BV in only one sediment sample and are not retained as COPCs in sediment.
- Cadmium was detected above the BV in only one sediment sample, and had elevated detection limits slightly above the BV in multiple samples. Cadmium is not retained as a COPC in sediment.
- Calcium is an essential macronutrient and is not retained as a COPC in sediment.
- Copper, mercury, selenium, and zinc were each detected above the BV and above the maximum concentrations in the background data set in multiple samples. They are retained as COPCs in sediment
- Thallium was detected above the BV in two sediment samples, with a maximum concentration of 4.8 mg/kg (compared with the BV of 0.73 mg/kg). Thallium is retained as a COPC in sediment.

Table D-4.9-6 presents the analytical results for inorganic COPCs in sediment samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.4 Inorganic COPC Summary in Mortandad Slope Subarea

The inorganic COPCs identified for all media (0 to 5 ft bgs) in the Mortandad Slope Subarea are antimony, barium, bromide, chromium, copper, fluoride, lithium, mercury, nickel, perchlorate, selenium,

thallium, and zinc. The inorganic COPCs for all media are listed in Table D-4.9-7, with the EPCs calculated for ecological screening assessments.

D-4.9.5 Radionuclides in Soil and Fill in Mortandad Slope Subarea

Twenty-one soil and fill samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, americium-241, and tritium (not all samples received all analyses). Table D-4.9-8 presents the soil and fill samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Three radionuclide results (two cesium-134 and one plutonium-239) from soil and fill samples were rejected because the associated duplicate sample had a DER >4, spectral interference prevented positive identification of analytes, or documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Cesium-137, plutonium-239, and tritium are identified as COPCs for soil and fill (0 to 5 ft bgs) in the Mortandad Slope Subarea based on the following rationale:

- Five radionuclides (cesium-137, plutonium-238, plutonium-239, tritium, and uranium-238) were detected in at least one soil or fill sample above the BV or FV or were detected and have no applicable BV or FV.
- Cesium-137 was detected in three soil samples for which the FV does not apply (subsurface samples). Cesium-137 is retained as a COPC in soil and fill.
- Plutonium-238 was detected above the FV but below the maximum concentration of plutonium-238 in the background data set (0.037 pCi/g) in one soil sample. Plutonium-238 is not retained as a COPC in soil and fill.
- Plutonium-239 was detected in two soil samples for which the FV does not apply and is retained as a COPC in soil and fill.
- Tritium was detected in multiple samples with no applicable FV. Tritium is retained as a COPC in soil and fill.
- Uranium-238 was detected in above the BV in only one soil sample, at a concentration (2.71 pCi/g) less than 20% above the BV. Uranium-238 is not retained as a COPC in soil and fill.

Table D-4.9-9 presents the analytical results for radionuclide COPCs in soil and fill samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.6 Radionuclides in Tuff in Mortandad Slope Subarea

Fifteen tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium. Table D-4.9-10 summarizes the tuff samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Four radionuclide results (one each of americium-241, cesium-137, cobalt-60, and europium-152) from tuff samples were rejected because the associated duplicate sample had a DER >4 or because documentation was missing (see the data packages in Appendix E for details). The rejected results were

not included in the data analyses discussed here and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Five radionuclides (plutonium-239, tritium, uranium-234, uranium-235, and uranium-238) were detected in at least one tuff sample. All were identified as COPCs in tuff in the Mortandad Slope Subarea based on the following rationale:

- Plutonium-239, and tritium were detected but have no FV for comparison and no background data set for tuff; they are therefore retained as COPCs in tuff.
- Uranium-234, uranium-235, and uranium-238 were each detected at concentrations above the BV, and are retained as COPCs in tuff.

Table D-4.9-11 presents the analytical results for radionuclide COPCs in tuff samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.7 Radionuclides in Sediment in Mortandad Slope Subarea

Fifty-two sediment samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, isotopic thorium, gamma-emitting radionuclides, americium-241, strontium-90, and tritium (not all samples received all analyses). Table D-4.9-12 summarizes the sediment samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Seventeen radionuclide results (1 americium-241, 15 cesium-134, and 1 uranium-235) from sediment samples were rejected because spectral interference prevented positive identification of analytes. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, ruthenium-106, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 are identified as COPCs for sediment (0 to 5 ft bgs) in the Mortandad Slope Subarea based on the following rationale:

- Americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, ruthenium-106, strontium-90, tritium, uranium-234, uranium-235, and uranium-238 were each detected above the BV or FV or were detected and have no applicable BV or FV. All are retained as COPCs in sediment.

Table D-4.9-13 presents the analytical results for radionuclide COPCs in sediment samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.8 Radionuclide COPC Summary in Mortandad Slope Subarea

The radionuclide COPCs identified for all media in the Mortandad Slope Subarea are americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, ruthenium-106, strontium-90, tritium, uranium-234, uranium-235, and uranium-238.

The calculated EPCs for ecological screening assessments for the radionuclide COPCs are presented in Table D-4.9-14.

D-4.9.9 Organic Chemicals in Soil and Fill in Mortandad Slope Subarea

Fifty-nine soil and fill samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, pesticides, and TPH (not all samples received all analyses). Table D-4.9-15 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

A total of 369 organic chemical results (81 PCB, 63 pesticide, 92 SVOC, 13 TPH-DRO, and 120 VOC) from soil and fill samples were rejected because extraction or analysis holding times were exceeded, laboratory control sample (LCS) recoveries were <10%, or other data-quality deficiencies were identified (see data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Thirty-one organic chemicals were detected in at least one soil or fill sample. All 31 organic chemicals are retained as COPCs in soil and fill. Table D-4.9-16 presents the analytical results for organic COPCs in soil and fill samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.10 Organic Chemicals in Tuff in Mortandad Slope Subarea

Twenty-four tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, pesticides, and TPH (not all samples received all analyses). Table D-4.9-17 summarizes the samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each.

A total of 909 organic chemical results (35 PCB, 105 pesticide, 347 SVOC, and 422 VOC) from tuff samples were rejected because extraction or analysis holding times were exceeded, LCS recoveries were <10%, surrogate recoveries were <10%, or other data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Twenty-five organic chemicals were detected in at least one tuff sample. All 25 detected organic chemicals are retained as COPCs for tuff in the Mortandad Slope Subarea. Table D-4.9-18 presents the analytical results for organic COPCs in tuff samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.11 Organic Chemicals in Sediment in Mortandad Slope Subarea

Eighty sediment samples were collected from 0 to 5 ft bgs in the Mortandad Slope Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, pesticides, and TPH (not all samples received all analyses). Table D-4.9-19 summarizes the samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each.

A total of 279 organic chemical results (70 PCB, 126 pesticide, 22 SVOC, and 61 VOC) from sediment samples were rejected because LCS recoveries were <10%, extraction holding times were exceeded, or other data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Mortandad Slope Subarea.

Twenty-nine organic chemicals were detected in at least one sediment sample. All 29 detected organic chemicals are retained as COPCs for sediment in the Mortandad Slope Subarea. Table D-4.9-20

presents the analytical results for organic COPCs in sediment samples (0 to 5 ft bgs) from the Mortandad Slope Subarea.

D-4.9.12 Organic COPC Summary in Mortandad Slope Subarea

The organic COPCs identified for all media in the Mortandad Slope Subarea are listed in Table D-4.9-21, with the EPCs calculated for the ecological screening assessments.

D-5.0 PRATT CANYON SUBAREA

This section identifies the media-specific COPCs for each site in the Pratt Canyon Subarea.

Table D-5.0-1, Table D-5.0-2, and Table D-5.0-3 summarize the samples collected for inorganic chemical analyses, radionuclide analyses, and organic chemical analyses, respectively, at each site in the Pratt Canyon Subarea.

Table D-5.0-4 presents the concentrations above BVs for detected and nondetected inorganic chemicals at each site in the Pratt Canyon Subarea.

Table D-5.0-5 presents the sample concentrations of the radionuclides detected above BV/FV, or detected with no applicable BV/FV, at each site in the Pratt Canyon Subarea.

Table D-5.0-6 presents the concentrations of detected organic chemicals at each site in the Pratt Canyon Subarea.

D-5.1 Consolidated Unit 35-003(d)-00

A total of 149 samples were collected from 44 locations at this consolidated unit. Of the 149 samples collected, 28 were soil and fill, 81 were tuff, and 40 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-5.0-1, D-5.0-2, and D-5.0-3, respectively.

D-5.1.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-003(d)-00

The inorganic chemical analyses requested for soil and fill samples included anions and metals. Of the 28 soil and fill samples collected, 6 were analyzed for anions, and 9 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Antimony, boron, cadmium, fluoride, mercury, silicon, titanium, and zinc were either detected above the BVs or had detection limits above the BVs.

- Silicon is a naturally occurring element that is abundant in this environment; it is not identified as a COPC.
- Antimony and cadmium were not detected. Antimony had detection limits above the BV and above the maximum concentration in the background data set; it is retained as a COPC in soil and fill. Cadmium had detection limits above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil and fill.

- Boron, fluoride, and titanium were detected and have no BVs; they are retained as COPCs in soil and fill.
- Mercury and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in soil and fill.

D-5.1.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-003(d)-00

The inorganic chemical analyses requested for tuff samples included anions and metals. Of the 81 tuff samples collected, 21 were analyzed for anions, and 43 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Aluminum, antimony, arsenic, barium, bromide, cadmium, chromium, copper, fluoride, lead, lithium, mercury, molybdenum, nickel, selenium, silicon, strontium, thallium, titanium, and zinc were detected above BVs, were detected and have no BVs, or had detection limits above BVs.

- Silicon is a naturally occurring element that is a major component of Bandelier Tuff; it is not identified as a COPC.
- Aluminum, barium, and nickel were each detected above the BV in one or two tuff samples, at concentrations less than 50% above the BV; they are retained as COPCs in tuff.
- Mercury, selenium, and thallium were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Molybdenum was detected in one tuff sample. Molybdenum has no BV, but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background concentration for molybdenum of 0.59 mg/kg. The single detected concentration of molybdenum was 0.9 mg/kg. Molybdenum is retained as a COPC in tuff.
- Antimony, arsenic, cadmium, and nickel were not detected. Antimony and cadmium had detection limits above BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff. Arsenic had detection limits above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Bromide, fluoride, lithium, and titanium were detected and have no BVs; they are retained as COPCs in tuff.
- Chromium, copper, and lead were detected above their BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 1.7 mg/kg. Strontium is not retained as a COPC in tuff.

D-5.1.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-003(d)-00

The inorganic chemical analyses requested for sediment samples included anions, cyanide, metals, and total organic carbon (TOC). Of the 40 sediment samples collected, 2 were analyzed for anions, 9 were analyzed for cyanide and TOC, and 21 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Antimony, boron, cadmium, copper, fluoride, iron, lithium, mercury, selenium, silicon, strontium, thallium, titanium, and vanadium were either detected above BVs or had detection limits above BVs.

- Silicon is a naturally occurring element that is abundant in this environment; it is not identified as a COPC.
- Antimony and thallium were not detected but had detection limits above their BVs; they are retained as COPCs in sediment.
- Barium and nickel were each detected above the BV in one sample, at concentrations less than 50% above the BV. Barium and nickel are not retained as COPCs in sediment.
- Cadmium, copper, mercury, and selenium were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.
- Boron, fluoride, lithium, and titanium were detected and have no BVs; they are retained as COPCs in sediment.
- Iron was detected above the BV in only one sample, at a concentration 14,000 mg/kg, which is slightly greater than the BV (13,800 mg/kg); it is not retained as a COPC in sediment.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in sediment was 7.9 mg/kg. Strontium is not retained as a COPC in sediment.
- Vanadium was detected above the BV in only one sample, at a concentration 20.5 mg/kg, which is slightly greater than the BV (19.7 mg/kg); it is not retained as a COPC in sediment.

D-5.1.4 Inorganic COPC Summary at Consolidated Unit 35-003(d)-00

The inorganic COPCs identified for all media at Consolidated Unit 35-003(d)-00 are aluminum, antimony, barium, boron, bromide, cadmium, copper, fluoride, lithium, mercury, molybdenum, nickel, selenium, thallium, titanium, and zinc. They are listed in Table D-5.1-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Bromide and molybdenum were not analyzed for in the 0 to 1 ft bgs depth range, and were not detected in the 0 to 10 ft depth range. They were therefore not included in the evaluations of risk for the site. Boron, fluoride, lithium, and titanium were not detected or not analyzed for in the 0 to 1 ft bgs depth range, so they were not included in the evaluation of recreation risk for the site.

D-5.1.5 Radionuclides in Soil and Fill at Consolidated Unit 35-003(d)-00

The radionuclide analyses requested for soil and fill samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 28 soil and fill samples collected, 2 were analyzed for americium-241; 10 were analyzed for gamma-emitting radionuclides; 24 were analyzed for isotopic plutonium and isotopic uranium; 11 were analyzed for strontium-90; and 14 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Americium-241, cesium-137, cobalt-60, plutonium-239, strontium-90, and tritium were detected or detected above FVs; they are retained as COPCs in soil and fill.

D-5.1.6 Radionuclides in Tuff at Consolidated Unit 35-003(d)-00

The radionuclide analyses requested for tuff samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 81 tuff samples collected, 7 were analyzed for americium-241; 32 were analyzed for gamma-emitting radionuclides; 70 were analyzed for isotopic plutonium; 71 were analyzed for isotopic uranium; 30 were analyzed for strontium-90; and 39 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Americium-241, cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, strontium-90, and tritium were detected and are retained as COPCs in tuff.

Thorium-228 and uranium-235 were detected above BVs; they are retained as COPCs in tuff.

D-5.1.7 Radionuclides in Sediment at Consolidated Unit 35-003(d)-00

The radionuclide analyses requested for sediment samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 40 sediment samples collected, 9 were analyzed for americium-241; 20 were analyzed for gamma-emitting radionuclides; 37 were analyzed for isotopic plutonium; 30 were analyzed for isotopic uranium; 19 were analyzed for strontium-90; and 12 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, and tritium were detected and are retained as COPCs in sediment.

D-5.1.8 Radionuclide COPC Summary at Consolidated Unit 35-003(d)-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-003(d)-00 are americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, tritium, thorium-228, and uranium-235. They are listed in Table D-5.1-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

Thorium-228 was not detected in the 0 to 10 ft bgs depth range, so it was not included in the evaluations of risk for the site.

D-5.1.9 Organic Chemicals in Soil and Fill at Consolidated Unit 35-003(d)-00

The organic chemical analyses requested for soil and fill samples included PCBs, pesticides, and SVOCs. Of the 28 soil and fill samples collected, five were analyzed for PCBs, one was analyzed for pesticides, and five were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; fluoranthene; phenanthrene; and pyrene. They are retained as COPCs in soil and fill.

D-5.1.10 Organic Chemicals in Tuff at Consolidated Unit 35-003(d)-00

The organic chemical analyses requested for tuff samples included PCBs, pesticides, and SVOCs. Of the 81 tuff samples collected, 19 were analyzed for PCBs and SVOCs, and 17 were analyzed for pesticides. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: Aroclor-1254; Aroclor-1260; benzoic acid; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; di-n-octylphthalate; fluoranthene; phenanthrene; and pyrene. They are retained as COPCs in tuff.

D-5.1.11 Organic Chemicals in Sediment at Consolidated Unit 35-003(d)-00

The organic chemical analyses requested for sediment samples included PCBs, pesticides, and SVOCs. Of the 40 sediment samples collected, 20 were analyzed for PCBs, 10 were analyzed for pesticides, and 17 were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzoic acid; chrysene; dieldrin; endosulfan II; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene. They are retained as COPCs in sediment.

D-5.1.12 Organic COPC Summary at Consolidated Unit 35-003(d)-00

The organic COPCs identified for all media at Consolidated Unit 35-003(d)-00 are acenaphthene; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; dieldrin; di-n-butylphthalate; di-n-octylphthalate; endosulfan II; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; phenanthrene; and pyrene. They are listed in Table D-5.1-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Bis(2-ethylhexyl)phthalate, di-n-octylphthalate, fluorene, and indeno(1,2,3-cd)pyrene were not detected in the 0 to 1 ft bgs depth range and were therefore not included in the evaluation of recreational risk for the site.

D-5.2 SWMU 35-009(d)

A total of 43 samples were collected from 15 locations at this SWMU. Of the 43 samples collected, 18 were soil and 25 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-5.0-1, D-5.0-2, and D-5.0-3, respectively.

D-5.2.1 Inorganic Chemicals in Soil at SWMU 35-009(d)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 18 soil samples collected, three were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Antimony, cadmium, lithium, strontium, and zinc were either detected above BVs or had detection limit above BVs.

- Antimony and cadmium were not detected. Antimony had detection limits greater than the maximum concentration in the background data set; it is retained as a COPC in soil. Cadmium had detection below the maximum concentration in the background data set; it is not retained as a COPC in soil.
- Lithium was detected and has no BV; it is retained as a COPC in soil.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in soil was 4.9 mg/kg. Strontium is not retained as a COPC in soil.
- Zinc was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil.

D-5.2.2 Inorganic Chemicals in Tuff at SWMU 35-009(d)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 25 tuff samples collected, four were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, copper, lithium, magnesium, nickel, selenium, strontium, vanadium, and zinc were detected above their BVs, had detection limits above their BVs, or were detected and have no BV.

- Calcium and magnesium are essential macronutrients and are not identified as COPCs.
- Aluminum, arsenic, barium, cadmium, nickel and selenium were detected above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Antimony and silver were not detected. Antimony had detection limits above the BV; it is retained as COPC in tuff. Silver had detection limits below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Beryllium, chromium, copper, and vanadium were detected above their BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Lithium was detected and has no BV; it is retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in soil was 22.5 mg/kg. Strontium is not retained as a COPC in soil.

D-5.2.3 Inorganic COPC Summary at SWMU 35-009(d)

The inorganic COPCs identified at SWMU 35-009(d) are aluminum, antimony, arsenic, barium, cadmium, lithium, nickel, and selenium. They are listed in Table D-5.2-1 with the EPCs calculated for residential and recreational risk screening assessments of the site, except as noted below.

Antimony was not detected in the 0 to 10 ft bgs depth range but had detection limits above the BV, so it was included in the evaluations of risk for the site. The maximum detection limits are presented in

Table D-5.2-1. Cadmium, nickel, and selenium were not detected in the 0 to 1 ft bgs depth range, so they were not included in the evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-5.2.4 Radionuclides in Soil at SWMU 35-009(d)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 18 soil samples collected, 9 were analyzed for gamma-emitting radionuclides, 10 were analyzed for isotopic plutonium and isotopic uranium, and 1 was analyzed for strontium-90 and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Cesium-137, plutonium-238, and tritium were detected and are retained as COPCs in soil.

D-5.2.5 Radionuclides in Tuff at SWMU 35-009(d)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 25 tuff samples collected, 7 were analyzed for gamma-emitting radionuclides, 15 were analyzed for isotopic plutonium and isotopic uranium, and 2 were analyzed for strontium-90 and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Plutonium-238 and tritium were detected and are retained as COPCs in tuff.

D-5.2.6 Radionuclide COPC Summary at SWMU 35-009(d)

The radionuclide COPCs identified at SWMU 35-009(d) are cesium-137, plutonium-238, and tritium. They are listed in Table D-5.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Plutonium-238 was not detected, and tritium was not analyzed for, in the 0 to 1 ft bgs depth range, so they were not included in the evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-5.2.7 Organic Chemicals in Soil at SWMU 35-009(d)

One of the 18 soil samples collected was analyzed for VOCs. No organic chemicals were detected in soil.

D-5.2.8 Organic Chemicals in Tuff at SWMU 35-009(d)

Four of the 25 tuff samples collected were analyzed for VOCs. The sample concentrations of the detected organic chemical are presented in Table D-5.0-6.

Acetone was detected and is retained as a COPC in tuff.

D-5.2.9 Organic COPC Summary at SWMU 35-009(d)

The single organic COPC identified at SWMU 35-009(d) is acetone. It is listed in Table D-5.2-3 with the EPC for residential risk screening assessments of the site.

No sample was collected in the 0 to 1 ft bgs depth range, so acetone was not included in the evaluation of industrial or recreational risk for the site.

D-5.3 Consolidated Unit 35-016(k)-00

A total of 21 samples were collected from 9 locations at this consolidated unit. Of the 21 samples collected, 15 were soil and fill, 3 were tuff, and three were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-5.0-1, D-5.0-2, and D-5.0-3, respectively.

D-5.3.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-016(k)-00

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 15 soil and fill samples collected, 4 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Antimony, cadmium, copper, mercury, lead, thallium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Antimony and mercury were not detected but had detection limits greater than the maximum concentration in the background data set; they are retained as COPCs in soil and fill.
- Cadmium was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil and fill.
- Copper, lead, and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in soil and fill.
- Thallium had only one nondetect with a detection limit (1.2 mg/kg) less than twice the BV (0.73 mg/kg); it is not retained as a COPC in soil and fill.

D-5.3.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-016(k)-00

The three tuff samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Antimony, chromium, copper, selenium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Antimony and selenium were not detected but had detection limits above the BVs; they are retained as COPCs in tuff.
- Chromium, copper, and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.

D-5.3.3 Inorganic Chemicals in Sediment at Consolidated Unit 35-016(k)-00

The three sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Mercury, selenium, and zinc were detected above their BVs and above the maximum concentrations in the background data set; they are retained as COPCs in sediment.

D-5.3.4 Inorganic COPC Summary at Consolidated Unit 35-016(k)-00

The inorganic COPCs identified for all media at Consolidated Unit 35-016(k)-00 are antimony, chromium, copper, lead, mercury, selenium, and zinc. They are listed in Table D-5.3-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-5.3.5 Radionuclides in Soil and Fill at Consolidated Unit 35-016(k)-00

Of the 15 soil and fill samples collected, 3 were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Plutonium-239 was detected and is retained as a COPC in soil and fill.

D-5.3.6 Radionuclides in Tuff at Consolidated Unit 35-016(k)-00

Of the three tuff samples collected, two were analyzed for gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. No radionuclides were detected or detected greater than BVs.

D-5.3.7 Radionuclides in Sediment at Consolidated Unit 35-016(k)-00

The three sediment samples collected were analyzed for strontium-90. The sample concentrations of the detected radionuclide are presented in Table D-5.0-5.

Strontium-90 was detected and is retained as a COPC in sediment.

D-5.3.8 Radionuclide COPC Summary at Consolidated Unit 35-016(k)-00

The radionuclide COPCs identified for all media at Consolidated Unit 35-016(k)-00 are plutonium-239 and strontium-90. They are listed in Table D-5.3-2 with the EPCs for industrial and residential risk screening assessments of the site.

D-5.3.9 Organic Chemicals in Soil and Fill at Consolidated Unit 35-016(k)-00

The organic chemical analyses requested for soil and fill samples included PAHs, PCBs, SVOCs, TPH-DRO, and VOCs. Of the 15 soil and fill samples collected, 10 were analyzed for PAHs; 3 were analyzed for PCBs; 4 were analyzed for SVOCs; 1 was analyzed for TPH-DRO; and 6 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: acenaphthene; acenaphthylene; acetone; anthracene; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; dibenz(a,h)anthracene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; 4-methylphenol; naphthalene; phenanthrene; pyrene, and toluene. They are retained as COPCs in soil and fill.

D-5.3.10 Organic Chemicals in Tuff at Consolidated Unit 35-016(k)-00

Of the three tuff samples collected, all three were analyzed for PCBs, SVOCs, and TPH-DRO, and two were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; bis(2-ethylhexyl)phthalate; fluoranthene; fluorene; phenanthrene; pyrene; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichlorofluoromethane. They are retained as COPCs in tuff.

D-5.3.11 Organic Chemicals in Sediment at Consolidated Unit 35-016(k)-00

The three sediment samples collected were analyzed for PCBs, SVOCs, and TPH-DRO. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: acenaphthene; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; chrysene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; naphthalene; phenanthrene; pyrene; and TPH-DRO. They are retained as COPCs in sediment.

D-5.3.12 Organic COPC Summary at Consolidated Unit 35-016(k)-00

The organic COPCs identified for all media at Consolidated Unit 35-016(k)-00 are acenaphthene; acenaphthylene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; bis(2-ethylhexyl)phthalate; chrysene; dibenz(a,h)anthracene; dibenzofuran; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; 4-methylphenol; naphthalene; phenanthrene; pyrene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichlorofluoromethane. They are listed in Table D-5.3-3 with the EPCs calculated for industrial and residential risk screening assessments of the site.

Acetone; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichlorofluoromethane were not analyzed for in the 0 to 1 ft bgs depth range, so they were not included in the evaluations of recreational risk for the site.

D-5.4 SWMU 35-016(m)

A total six samples were collected from three locations at SWMU 35-016(m). Of the six samples collected, three were soil, one was tuff, and two were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-5.0-1, D-5.0-2, and D-5.0-3, respectively.

D-5.4.1 Inorganic Chemicals in Soil at SWMU 35-016(m)

The three soil samples collected were analyzed for TAL metals. No inorganic chemicals were detected above the BV in soil.

D-5.4.2 Inorganic Chemicals in Tuff at SWMU 35-016(m)

The one tuff sample collected was analyzed for TAL metals. No inorganic chemicals were detected above the BV in tuff.

D-5.4.3 Inorganic Chemicals in Sediment at SWMU 35-016(m)

The two sediment samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-5.0-4.

Selenium was not detected but had detection limits above the BV; it is retained as a COPC in sediment.

D-5.4.4 Inorganic COPC Summary at SWMU 35-016(m)

The single inorganic COPC identified for all media at SWMU 35-016(m) is selenium. Selenium was not detected in the 0 to 10 ft bgs depth range, and therefore is not included in the evaluations of industrial or residential risk for the site.

D-5.4.5 Radionuclides in Soil at SWMU 35-016(m)

Two of the three soil samples collected were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-5.0-5.

Uranium-234 and uranium-238 were detected above their BVs in soil; they are retained as COPCs in soil.

D-5.4.6 Radionuclide COPC Summary at SWMU 35-016(m)

The radionuclide COPCs identified at SWMU 35-016(m) are uranium-234 and uranium-238. They are listed in Table D-5.4-1 with the EPCs for industrial and residential risk screening assessments of the site.

D-5.4.7 Organic Chemicals in Soil at SWMU 35-016(m)

The three soil samples collected were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

Fluoranthene was detected and is retained as a COPC in soil.

D-5.4.8 Organic Chemicals in Tuff at SWMU 35-016(m)

The one tuff sample collected was analyzed for SVOCs. No organic chemicals were detected in tuff.

D-5.4.9 Organic Chemicals in Sediment at SWMU 35-016(m)

The two sediment samples collected were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-5.0-6.

The following organic chemicals were detected: benzoic acid; diethylphthalate; fluoranthene; phenanthrene; and pyrene. They are retained as COPCs in sediment.

D-5.4.10 Organic COPC Summary at SWMU 35-016(m)

The organic COPCs identified for all media at SWMU 35-016(m) are benzoic acid, diethylphthalate, fluoranthene, phenanthrene, and pyrene. They are listed in Table D-5.4-2 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Benzoic acid and diethylphthalate were not detected in the 0 to 1 ft bgs depth range, so they were not included in the evaluations of industrial or recreational risk for the site.

D-5.5 Ecological Risk Assessment in Pratt Canyon Subarea

Because ecological risk assessment is an evaluation for the entire subarea, the EPCs of the COPCs for the subarea for ecological risk assessment will not differ from the previous report (LANL 2005, 091699). The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are presented below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft bgs, the identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Additional samples have been collected in the Pratt Canyon Subarea and analyzed for organic chemicals or radionuclides per the NOD and NOD response (NMED 2006, 092534; LANL 2006, 093238). The COPCs for the subarea have been reevaluated with the new data included, and the EPCs for ecological risk assessment have been recalculated.

Fifteen inorganic chemicals (antimony, boron, bromide, cadmium, chromium, copper, fluoride, lithium, mercury, oxalate, perchlorate, selenium, thallium, titanium, and zinc) are identified as COPCs in the Pratt Canyon Subarea.

Seven radionuclides (americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, and tritium) are identified as COPCs in the Pratt Canyon Subarea.

Thirty-two organic chemicals [acenaphthene; acenaphthylene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; 4,4'-DDT; dibenz(a,h)anthracene; dibenzofuran; dieldrin; diethylphthalate; endosulfan II; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; 4-methylphenol; naphthalene; phenanthrene; pyrene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichlorofluoromethane] are identified as COPCs in the Pratt Canyon Subarea.

Chemicals are COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the Pratt Canyon Subarea is discussed in the following sections.

D-5.5.1 Inorganic Chemicals in Soil and Fill in Pratt Canyon Subarea

Nine soil and fill samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals; two samples were analyzed for lithium, molybdenum, silicon, strontium, and titanium. Table D-5.5-1 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

No inorganic chemical results from soil and fill samples (0 to 5 ft bgs) were rejected for data-quality reasons.

Antimony, copper, lithium, and zinc were identified as COPCs for soil and fill (0 to 5 ft bgs) in the Pratt Canyon Subarea based on the following rationale:

- Aluminum, arsenic, barium, beryllium, calcium, chloride, chromium, cobalt, iron, magnesium, manganese, nickel, potassium, selenium, silver, sodium, sulfate, and vanadium were not reported

at concentrations above their respective BVs in any samples, and are therefore not retained as COPCs in soil and fill.

- Antimony was not detected but had detection limits above the BV and above the maximum concentration in the background data set, in three samples. Antimony is retained as a COPC in soil and fill.
- Cadmium was detected above the BV in one sample at a concentration (1.2 mg/kg) below the maximum concentration of cadmium in the background data set (2.6 mg/kg). Cadmium is not retained as a COPC in soil and fill.
- Copper and zinc each had one or more detected concentration above the maximum concentrations in the background data set, and the maximum concentrations are approximately 4 to 12 times the BVs. Copper and zinc are retained as COPCs in soil and fill.
- Lead was detected above the BV in only one sample at a concentration (29.2 mg/kg) less than 50% above the BV (22.3 mg/kg) and only slightly above the maximum concentration of lead in the background data set (28 mg/kg). Lead is not retained as a COPC in soil and fill.
- Lithium and strontium were each detected in one sample but have no soil BV for comparison. Although no BV exists for strontium, earlier studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum detected concentration of strontium in subarea samples (0 to 5 ft bgs) was 4.9 mg/kg; as a result, strontium is not retained as a COPC in soil and fill. Lithium is retained as a COPC in soil and fill.
- Mercury and thallium were not detected, but each had one detection limit slightly above the BV or the maximum concentration in the background data set. Mercury and thallium are not retained as COPCs in soil and fill.

Table D-5.5-2 presents the analytical results for inorganic COPCs in soil and fill samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.2 Inorganic Chemicals in Tuff in Pratt Canyon Subarea

Four tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals. Table D-5.5-3 summarizes the tuff samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

No inorganic chemical results from tuff samples (0 to 5 ft bgs) were rejected for data-quality reasons.

Antimony, chromium, copper, and zinc are identified as COPCs for tuff (0 to 5 ft bgs) in the Pratt Canyon Subarea based on the following rationale:

- Aluminum, arsenic, barium, beryllium, boron, cadmium, calcium, cobalt, iron, lead, magnesium, manganese, mercury, nickel, potassium, silver, sodium, thallium, and vanadium did not exceed their respective BVs in any samples, and are not retained as COPCs in tuff.
- Antimony was not detected, but had two detection limits at approximately ten times the BV. Antimony is retained as a COPC in tuff.
- Chromium and copper each had one or more detected concentration (in tuff unit Qbt 3) above the range of background data with maximum concentrations approximately 2 to 4 times the BVs. Chromium and copper are retained as COPCs in tuff.

- Selenium was not detected, but had one detection limit (0.559 mg/kg) at less than twice the BV (0.3 mg/kg). Selenium is not retained as a COPC in tuff.
- Zinc was detected above the BV, and above the maximum concentration in the background data set, in one sample. Zinc is retained as a COPC in tuff.

Table D-5.5-4 presents the analytical results for inorganic COPCs in tuff samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.3 Inorganic Chemicals in Sediment in Pratt Canyon Subarea

Twenty-six sediment samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals for all 27 samples; 2 samples also were analyzed for anions; 2 samples were analyzed for lithium, molybdenum, and strontium; and 9 samples were analyzed for total cyanide and total uranium. Table D-5.5-5 summarizes the sediment samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

No inorganic chemical results from sediment samples (0 to 5 ft bgs) were rejected for data-quality reasons.

Antimony, boron, bromide, cadmium, copper, fluoride, lithium, mercury, oxalate, perchlorate, selenium, thallium, and titanium were identified as COPCs for sediment (0 to 5 ft bgs) in the Pratt Canyon Subarea based on the following rationale:

- Aluminum, arsenic, beryllium, calcium, chloride, chromium, cobalt, cyanide, lead, magnesium, manganese, molybdenum, potassium, silver, sodium, sulfate, and uranium were not detected or did not exceed their respective BVs in any samples and are not retained as COPCs in sediment.
- Eight of the detected inorganic chemicals (boron, bromide, fluoride, lithium, oxalate, perchlorate, and titanium) have no sediment BVs for comparison. All are retained as COPCs in sediment.
- Antimony and thallium were not detected, but each had detection limits above their respective BVs in at least one sample, with maximum reported concentrations approximately 5 to 35 times their BVs. Antimony and thallium are retained as COPCs in sediment.
- Barium, iron, nickel, vanadium, and zinc were each detected above the BV in only one sample. Each was detected at less than twice the BV. Barium, iron, nickel, vanadium, and zinc are not retained as COPCs in sediment.
- Cadmium, copper, mercury, and selenium were detected above their BVs, and above their maximum concentrations in the background data set, in multiple samples. Cadmium, copper, mercury, and selenium are retained as COPCs in sediment.
- Silicon was detected in one sample and has no BV for comparison. Silicon is a major natural component of Bandelier Tuff and the soils and sediments derived from it. Silicon is not retained as a COPC in sediment.
- Strontium was detected in two sediment samples. Although no BV exists for strontium, earlier studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum detected concentration of strontium in Pratt Canyon sediment samples was 7.9 mg/kg. Strontium is not retained as a COPC in sediment.

Table D-5.5-6 presents the analytical results for inorganic COPCs in sediment samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.4 Inorganic COPC Summary in Pratt Canyon Subarea

The inorganic COPCs identified for all media in the Pratt Canyon Subarea are antimony, boron, bromide, cadmium, chromium, copper, fluoride, lithium, mercury, oxalate, perchlorate, selenium, thallium, titanium, and zinc. The inorganic COPCs are listed in Table D-5.5-7, with the EPCs calculated for the ecological screening assessments.

D-5.5.5 Radionuclides in Soil and Fill in Pratt Canyon Subarea

Thirty-four soil and fill samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for radionuclides. The radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-5.5-8 presents the soil and fill samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

No radionuclide results from soil samples (0 to 5 ft bgs) were rejected because of data-quality issues.

Eight radionuclides (cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, tritium, uranium-234, and uranium-238) were detected in at least one sample. Of these, cobalt-60, plutonium-239, strontium-90, and tritium are identified as COPCs for soil and fill (0 to 5 ft bgs) in the Pratt Canyon Subarea based on the following rationale:

- Cesium-137 was detected in only one sample. Although the sample was collected from 0 to 1 ft bgs and the FV does not strictly apply, the upper portion of the sample could have been affected by fallout. Because it was only detected in one sample, and the concentration was only one-fifth the FV, cesium-137 is not retained as a COPC in soil and fill.
- Cobalt-60 was detected in one sample and has no BV for comparison. Cobalt-60 is retained as a COPC in soil and fill.
- Plutonium-238 was detected in only one soil sample, and is not retained as COPCs in soil and fill.
- Plutonium-239 was detected above the FV in one sample, and was detected in three other samples for which the FV does not apply. Plutonium-239 is retained as a COPC in soil and fill.
- Strontium-90 and tritium were each detected in two or more soil samples for which the FV does not apply. Strontium-90 and tritium are retained as COPCs in soil and fill.
- Uranium-234 was detected above the BV in only one soil sample, at a concentration (2.761 pCi/g) that only slightly exceeds the BV (2.59 pCi/g). Uranium-234 is not retained as a COPC in soil and fill.
- Uranium-238 was detected above the BV in only one sample, with a concentration (3.64 pCi/g) less than twice the BV (2.59 pCi/g). Uranium-238 is not retained as a COPC in soil and fill.

Table D-5.5-9 presents the analytical results for radionuclide COPCs in soil and fill samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.6 Radionuclides in Tuff in Pratt Canyon Subarea

Seven tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, and strontium-90, (not all samples received all analyses). Table D-5.5-10 summarizes the tuff samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

No radionuclide results from tuff samples were rejected because of data-quality issues.

Strontium-90 is identified as a COPC in tuff (0 to 5 ft bgs) in the Pratt Canyon Subarea based on the following rationale:

- Strontium-90 was detected in two samples for which the FV does not apply. Strontium-90 is retained as a COPC in tuff.

Table D-5.5-11 presents the analytical results for radionuclide COPCs in tuff samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.7 Radionuclides in Sediment in Pratt Canyon Subarea

Forty-one sediment samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic thorium, isotopic uranium, gamma-emitting radionuclides, strontium-90, americium-241, and tritium (not all samples received all analyses). Table D-5.5-12 summarizes the sediment samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Nine radionuclide results (seven cesium-134, one cobalt-60, and one uranium-235) from sediment samples were rejected because spectral interference prevented positive identification of analytes, the associated duplicate sample had a DER >4, or other data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Pratt Canyon Subarea.

Seven radionuclides (americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, and tritium) were detected in at least one sediment sample. Of these, americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, and tritium are identified as COPCs for sediment in the Pratt Canyon Subarea based on the following rationale:

- Americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, and tritium were each detected above the BV or FV, or were detected without an applicable BV or FV, in multiple sediment samples. They are retained as COPCs in sediment.

Table D-5.5-13 presents the analytical results for radionuclide COPCs in sediment samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.8 Radionuclide COPC Summary in Pratt Canyon Subarea

The radionuclide COPCs identified for all media (0 to 5 ft bgs) in the Pratt Canyon Subarea are americium-241, cesium-137, cobalt-60, plutonium-238, plutonium-239, strontium-90, and tritium. The radionuclide COPCs are listed in Table D-5.5-14, with the EPCs calculated for the ecological screening assessments.

D-5.5.9 Organic Chemicals in Soil and Fill in Pratt Canyon Subarea

Twenty soil and fill samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, and TPH (not all samples received all analyses). Table D-5.5-15 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each.

No organic chemical results from soil and fill samples (0 to 5 ft bgs) were rejected because of data-quality issues.

Twenty-three organic chemicals were detected in at least one soil or fill sample. All 23 organic chemicals are identified as COPCs for soil and fill (0 to 5 ft bgs) in the Pratt Canyon Subarea.

Table D-5.5-16 presents the analytical results for the organic COPCs in soil and fill samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.10 Organic Chemicals in Tuff in Pratt Canyon Subarea

Four tuff (Qbt 3, Qbt 2, Qbt 1v, Qbt 1g, Qbo) samples were collected from 0 to 5 ft bgs in the Pratt Canyon Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, and TPH (not all samples received all analyses). Table D-5.5-17 summarizes the samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each.

No organic chemical results from tuff samples (0 to 5 ft bgs) were rejected because of data-quality issues.

Thirteen organic chemicals were detected in at least one tuff sample. All 13 organic chemicals are identified as COPCs for tuff (0 to 5 ft bgs) in the Pratt Canyon Subarea.

Table D-5.5-18 presents the analytical results for the organic COPCs in tuff samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.11 Organic Chemicals in Sediment in Pratt Canyon Subarea

Twenty-six sediment samples were collected in the Pratt Canyon Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, pesticides, PCBs, and TPH (not all samples received all analyses). Table D-5.5-19 summarizes the samples collected and the organic chemical analyses requested for each.

No organic chemical results from sediment samples (0 to 5 ft bgs) were rejected because of data-quality issues.

Twenty-four organic chemicals were detected in at least one sediment sample. All 24 organic chemicals are identified as COPCs for sediment in the Pratt Canyon Subarea.

Table D-5.5-20 presents the analytical results for the organic COPCs in sediment samples (0 to 5 ft bgs) from the Pratt Canyon Subarea.

D-5.5.12 Organic COPC Summary in Pratt Canyon Subarea

The 32 organic COPCs identified for all media in the Pratt Canyon Subarea [acenaphthene; acenaphthylene; acetone; anthracene; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; 4,4'-DDT; dibenz(a,h)anthracene; dibenzofuran; dieldrin; diethylphthalate; endosulfan II; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 2-methylnaphthalene; 4-methylphenol; naphthalene; phenanthrene; pyrene; toluene; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichlorofluoromethane] are listed in Table D-5.5-21, with the EPCs calculated for the ecological screening assessments.

D-6.0 TEN SITE CANYON SUBAREA

This section identifies the media-specific COPCs for each site in the Ten Site Canyon Subarea.

Tables D-6.0-1, D-6.0-2, and D-6.0-3 summarize the samples collected for inorganic chemical analyses, radionuclide analyses, and organic chemical analyses, respectively, at each site in the Ten Site Canyon Subarea.

Table D-6.0-4 presents the concentrations above BVs for detected and nondetected inorganic chemicals at each site in the Ten Site Canyon Subarea.

Table D-6.0-5 presents the concentrations of the radionuclides detected above the BV or FV, or detected without an applicable BV or FV, at each site in the Ten Site Canyon Subarea.

Table D-6.0-6 presents the sample concentrations of detected organic chemicals at each site in the Ten Site Canyon Subarea.

D-6.1 Consolidated Unit 35-010(a)-99

A total of 65 samples were collected from 37 locations at this consolidated unit. Of the 65 samples collected, 19 were soil and fill, 41 were tuff, and 5 were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-6.0-1, D-6.0-2, and D-6.0-3, respectively.

D-6.1.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 35-010(a)-99

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 19 soil and fill samples collected, 12 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-6.0-4.

Antimony, cadmium, lithium, mercury, potassium, selenium, silver, strontium, and thallium were either detected above BVs or had detection limits above the BVs.

- Potassium is an essential macronutrient and is not identified as a COPC.
- Antimony, cadmium, selenium, and thallium were not detected but had detection limits greater than the maximum concentration in the background data set; they are retained as COPCs in soil and fill.
- Lithium was detected and has no BV; it is retained as a COPC in soil and fill.
- Mercury and silver were detected above their BVs and are retained as COPCs in soil and fill.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in soil was 7 mg/kg. Strontium is not retained as a COPC in soil.

D-6.1.2 Inorganic Chemicals in Tuff at Consolidated Unit 35-010(a)-99

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 41 tuff samples collected, 22 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-6.0-4.

Aluminum, antimony, arsenic, barium, beryllium, calcium, chromium, copper, lead, lithium, manganese, mercury, nickel, selenium, silver, strontium, and thallium were detected above their BVs, were detected without an available BV, or were undetected with detection limits above their BV.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Aluminum, barium, chromium, lead, and nickel were detected above the BV and above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Antimony, arsenic, mercury, selenium, silver, and thallium were not detected. Antimony, mercury, and selenium had detection limits above the BVs; they are retained as COPCs in tuff. Arsenic had detection limits below the maximum concentration in the background data set; it is not retained as a COPC in tuff. Silver and thallium had detection limits above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Beryllium, copper, and manganese were not detected above the maximum concentration in the background data set; they are not retained as COPCs in tuff.
- Lithium was detected and has no BVs; it is retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 2.3 mg/kg. Strontium is not retained as a COPC in tuff.

D-6.1.3 Inorganic COPC Summary at Consolidated Unit 35-010(a)-99

The inorganic COPCs identified at Consolidated Unit 35-010(a)-99 are aluminum, antimony, barium, cadmium, chromium, lead, lithium, mercury, nickel, selenium, silver, and thallium. They are listed in Table D-6.1-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Antimony, cadmium, and selenium were not detected in the 0 to 10 ft bgs depth range, so they were not included in the evaluations of risk for the site. Lithium was not analyzed for in the 0 to 1 ft bgs depth range, so it was not included in the evaluation of industrial or recreational risk for the site.

D-6.1.4 Radionuclides in Soil and Fill at Consolidated Unit 35-010(a)-99

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, isotopic thorium, isotopic uranium, and strontium-90. Of the 19 soil and fill samples collected, 11 were analyzed for gamma-emitting radionuclides, 19 were analyzed for isotopic plutonium and isotopic uranium, and 10 were analyzed for isotopic thorium and strontium-90. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-6.0-5.

Europium-152 was detected and is retained as a COPC in soil and fill.

D-6.1.5 Radionuclides in Tuff at Consolidated Unit 35-010(a)-99

The radionuclide analyses requested for tuff samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 41 tuff samples collected, eight were analyzed for americium-241, 16 were analyzed for gamma-emitting radionuclides, 22 were analyzed for isotopic plutonium, 14 were analyzed for isotopic uranium, 16 were analyzed for

strontium-90, and 23 were analyzed for tritium. The concentrations of the detected radionuclides are presented in Table D-6.0-5.

Plutonium-238, plutonium-239, ruthenium-106, strontium-90, and tritium were detected and are all retained as COPCs in tuff.

Uranium-235 was detected above the BV in only one tuff sample, at a concentration of 1.15 pCi/g, which is slightly greater than the BV (0.09 pCi/g); it is not retained as a COPC in tuff.

D-6.1.6 Radionuclides in Sediment at Consolidated Unit 35-010(a)-99

The five sediment samples collected were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-6.0-5.

Plutonium-238 and -239 were detected above FVs and are retained as COPCs in sediment.

D-6.1.7 Radionuclide COPC Summary at Consolidated Unit 35-010(a)-99

The radionuclide COPCs identified for all media at Consolidated Unit 35-010(a)-99 are europium-152, plutonium-238, plutonium-239, ruthenium-106, strontium-90, and tritium. They are listed in Table D-6.1-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Europium-152, ruthenium-106, and strontium-90 were not detected in the 0 to 1 ft bgs depth range, so they were not included in the evaluation of industrial or recreational risk for the site.

D-6.1.8 Organic Chemicals in Soil and Fill at Consolidated Unit 35-010(a)-99

The organic chemical analyses requested for soil and fill samples included PCBs, PCBs and pesticides as a combined suite, SVOCs, and VOCs. Of the 19 soil and fill samples collected, 10 were analyzed for PCBs; 1 was analyzed for PCBs and pesticides as a combined suite; 11 were analyzed for SVOCs; and 1 was analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-6.0-6.

Bis(2-ethylhexyl)phthalate and di-n-butylphthalate were detected; they are retained as COPCs in soil and fill.

D-6.1.9 Organic Chemicals in Tuff at Consolidated Unit 35-010(a)-99

The organic chemical analyses requested for tuff samples included PCBs, PCBs and pesticides as a combined suite, SVOCs, and VOCs. Of the 41 tuff samples collected, 18 were analyzed for PCBs; 3 were analyzed for PCBs and pesticides as a combined suite; 17 were analyzed for SVOCs; and 16 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-6.0-6.

The following organic chemical were detected: Aroclor-1260; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; toluene; and xylene (total). They are retained as COPCs in tuff.

D-6.1.10 Organic COPC Summary at Consolidated Unit 35-010(a)-99

The organic COPCs identified at Consolidated Unit 35-010(a)-99 are Aroclor-1260, bis(2-ethylhexyl)phthalate, di-n-butylphthalate, toluene, and xylene (total). They are listed in Table D-6.1-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Aroclor-1260, toluene, and xylene were not detected in the 0 to 1 ft bgs depth range. They were therefore not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-6.2 AOC C-35-007

A total of 32 samples were collected from 30 locations at this AOC. Of the 32 samples collected, 30 were soil, 1 was tuff, and 1 was sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-6.0-1, D-6.0-2, and D-6.0-3, respectively.

D-6.2.1 Inorganic Chemicals in Soil at AOC C-35-007

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 30 soil samples collected, 17 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-6.0-4.

Calcium, silver, and thallium were either detected above BVs or were undetected with detection limits above BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Silver had only one nondetect above BV, with a detection limit (1.4 mg/kg) less than twice the BV (1 mg/kg); it is not retained as a COPC in soil.
- Thallium had only one nondetect above BV, with a detection limit (1.4 mg/kg) less than twice the BV (0.73 mg/kg); it is not retained as a COPC in soil.

D-6.2.2 Inorganic Chemicals in Tuff at AOC C-35-007

The one tuff sample collected was analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-6.0-4.

Mercury and selenium were not detected.

- Mercury had only one nondetect above BV, with a detection limit (0.11 mg/kg) slightly greater than the BV (0.1 mg/kg); it is not retained as a COPC in tuff.
- Selenium had only one nondetect above BV, with a detection limit (0.53 mg/kg) less than twice the BV (0.3 mg/kg); it is not retained as a COPC in tuff.

D-6.2.3 Inorganic COPC Summary at AOC C-35-007

There are no inorganic COPCs identified for this site.

D-6.2.4 Radionuclides in Soil at AOC C-35-007

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 30 soil samples collected, 11 were analyzed for gamma-emitting radionuclides; 16 were analyzed for isotopic plutonium; 10 were analyzed for isotopic uranium; and 6 were analyzed for strontium-90 and tritium. No radionuclides were detected in soil.

D-6.2.5 Radionuclides in Sediment at AOC C-35-007

The one sediment sample collected was analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-6.0-5.

Plutonium-238 and -239 were detected above FVs and are retained as COPCs in sediment.

D-6.2.6 Radionuclide COPC Summary at AOC C-35-007

The radionuclide COPCs identified at AOC C-35-007 are plutonium-238 and plutonium-239. They are listed in Table D-6.2-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-6.2.7 Organic Chemicals in Soil at AOC C-35-007

The organic chemical analyses requested for soil samples included PCBs, pesticides, PCBs and pesticides as a combined suite, and SVOCs. Of the 30 soil samples collected, 16 were analyzed for PCBs and pesticides, 1 was analyzed for PCBs and pesticides as a combined suite, and 17 were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-6.0-6.

Benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate were detected and are retained as COPCs in soil.

D-6.2.8 Organic Chemicals in Tuff at AOC C-35-007

The one tuff sample collected was analyzed for PCBs, pesticides, and SVOCs. No organic chemicals were detected.

D-6.2.9 Organic COPC Summary at AOC C-35-007

The organic COPCs identified at AOC C-35-007 are benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate. They are listed in Table D-6.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-6.3 Ecological Risk Assessment in Ten Site Canyon Subarea

Because ecological risk assessment is an evaluation for the entire subarea, the EPCs of the COPCs for the subarea for ecological risk assessment will not differ from the previous report (LANL 2005, 091699). The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are presented below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft bgs, the

identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Fourteen inorganic chemicals (antimony, chloride, chromium, copper, fluoride, lead, mercury, nickel, nitrate, nitrite, phosphorous, selenium, silver, and sulfate) were identified as COPCs in the Ten Site Canyon Subarea.

Nine radionuclides (americium-241, cesium-134, europium-152, plutonium-238, plutonium-239, ruthenium-106, strontium-90, tritium, and uranium-235) were identified as COPCs in the Ten Site Canyon Subarea.

Thirty-three organic chemicals [acetone; anthracene; Aroclor-1254; Aroclor-1260; benzene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; alpha-benzene hexachloride(BHC); beta-BHC; gamma-BHC; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; 4,4'-DDD; 4,4'-DDE; dibenz(a,h)anthracene; di-n-butylphthalate; fluoranthene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 4,4'-methoxychlor; 4-methyl-2-pentanone; phenanthrene; pyrene; toluene; trichloroethene; trichlorofluoromethane; 1,2,4- trimethylbenzene; and total xylene] were identified as COPCs in the Ten Site Canyon Subarea.

Chemicals are COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the Ten Site Canyon Subarea is discussed in the following sections.

D-6.3.1 Inorganic Chemicals in Soil and Fill in Ten Site Canyon Subarea

Twenty-eight soil and fill samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals; one sample was also analyzed for lithium, molybdenum, and strontium. Table D-6.3-1 summarizes the samples collected from 0 to 5 ft bgs and the requested inorganic chemical analyses for each sample.

No inorganic chemical results from soil or fill samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

Antimony and silver are identified as COPCs for soil and fill (0 to 5 ft bgs) in the Ten Site Canyon Subarea based on the following rationale:

- Aluminum, arsenic, barium, beryllium, chromium, cobalt, copper, iron, lead, magnesium, manganese, nickel, selenium, sodium, vanadium, and zinc were not detected above the BV in any samples, and are not retained as COPCs in soil and fill.
- Antimony was not detected, but had multiple samples with detection limits approximately 4 to 6 times the maximum concentration of antimony in the background data set (1 mg/kg). Antimony is retained as a COPC in soil and fill.
- Cadmium was detected slightly above the BV in only one soil sample. Multiple samples had detection limits (0.5 mg/kg or less) that were only slightly above the BV (0.4 mg/kg). Cadmium is not retained as a COPC in soil and fill.
- Calcium was detected above the BV in two soil samples, but both concentrations were less than the maximum concentration of calcium in the background data set. Calcium is not retained as a COPC in soil and fill.
- Mercury was detected above the BV in one sample (0.13 mg/kg compared with the detection limit-based BV of 0.1 mg/kg) and had one detection limit above the BV (0.11 mg/kg). Because the

single detected concentration and the single elevated detection limit are only slightly above the BV, mercury is not retained as a COPC in soil and fill.

- Silver was detected above the BV in one soil sample with a concentration of 3.3 mg/kg, and had elevated detection limits in nine samples; silver is therefore retained as a COPC in soil and fill.
- Thallium was not detected above the BV in any soil or fill samples, but two samples had detection limits approximately twice the BV. Thallium is not retained as a COPC in soil and fill.

Table D-6.3-2 presents the analytical results for the inorganic COPCs in soil and fill samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.2 Inorganic Chemicals in Tuff in Ten Site Canyon Subarea

Nineteen tuff (Qbt 2, Qbt 3) samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals. Table D-6.3-3 summarizes the tuff samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

No inorganic chemical results from tuff samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

Antimony, chromium, lead, nickel, and silver were identified as COPCs for tuff in the Ten Site Canyon Subarea based on the following rationale:

- Arsenic, beryllium, cadmium, calcium, cobalt, iron, magnesium, potassium, sodium, vanadium, and zinc were not detected above the BV in any tuff samples (0 to 5 ft bgs), and are not retained as COPCs.
- Aluminum was detected above the BV in only one tuff sample (9220 mg/kg, compared to the BV of 7340 mg/kg). Aluminum is a natural component of Bandelier Tuff, and is not retained as a COPC in tuff.
- Antimony was not detected above the BV in any tuff samples, but sixteen samples had detection limits up to 12 mg/kg. Antimony is retained as a COPC in tuff.
- Barium, copper, and manganese were detected above the BV, but below the maximum concentration in the background data set, in only one or two tuff samples. Barium, copper, and manganese are not retained as COPCs in tuff.
- Chromium was detected above the BV and above the maximum concentration of chromium in the background data set in multiple samples. Chromium is retained as a COPC in tuff.
- Copper was detected above the BV but below the maximum concentration of copper in the background data set, in two samples. Copper is not retained as a COPC in tuff.
- Lead was detected above the BV and above the maximum concentration of lead in the background data set, in three samples. Lead is retained as a COPC in tuff.
- Mercury was not detected above the BV in any tuff samples. Thirteen tuff samples had detection limits for mercury slightly above the BV (the maximum nondetect was 0.12 mg/kg). Mercury is not retained as a COPC in tuff.
- Nickel was detected above the BV and above the maximum concentration of nickel in the background data set in multiple samples. Nickel is retained as a COPC in tuff.

- Selenium was not detected in any tuff samples. Nineteen tuff samples had detection limits for selenium slightly above the BV. Selenium is not retained as a COPC in tuff.
- Silver was not detected in any tuff samples but had detection limits approximately twice the BV in sixteen samples. Silver is retained as a COPC in tuff.
- Thallium was not detected in any tuff samples; five samples had detection limits above the BV but below the maximum concentration of thallium in the background data set (1.7 mg/kg). Thallium is not retained as a COPC in tuff.

Table D-6.3-4 presents the analytical results for inorganic COPCs in tuff samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.3 Inorganic Chemicals in Sediment in Ten Site Canyon Subarea

Twenty-three sediment samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses include TAL metals, anions, and total cyanide (not all samples received all analyses). Table D-6.3-5 summarizes the samples collected from 0 to 5 ft bgs and the requested chemical analyses for each sample.

No inorganic chemical results from sediment samples (0 to 5 ft bgs) were rejected because of data-quality issues.

Chloride, chromium, copper, fluoride, lead, mercury, nitrate, nitrite, phosphorous, selenium, silver, and sulfate are identified as COPCs for sediment in the Ten Site Canyon Subarea based on the following rationale:

- Aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, magnesium, manganese, nickel, potassium, sodium, and thallium were not reported at concentrations above their BVs in any samples, and are not retained as COPCs in sediment.
- Chloride, chromium, copper, lead, mercury, selenium, silver, and sulfate were each detected at concentrations above the BV, and above the maximum concentration in the background data set, in one or more samples. Chloride, chromium, copper, lead, mercury, selenium, silver, and sulfate are retained as COPCs in sediment.
- Fluoride, nitrate, nitrite, and phosphorous were each detected in multiple samples and have no BV for comparison. Fluoride, nitrate, nitrite, and phosphorous are retained as COPCs in sediment.
- Cobalt, iron, vanadium, and zinc were each detected only slightly above the BV in one or two samples. Cobalt, iron, vanadium, and zinc are not retained as COPCs in sediment.

Table D-6.3-6 presents the analytical results for inorganic COPCs in sediment samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.4 Inorganic COPC Summary in Ten Site Canyon Subarea

The inorganic COPCs for all media in the Ten Site Canyon Subarea (antimony, chloride, chromium, copper, fluoride, lead, mercury, nickel, nitrate, nitrite, phosphorous, selenium, silver, and sulfate) are listed in Table D-6.3-7, with the EPCs calculated for the ecological screening assessments.

D-6.3.5 Radionuclides in Soil and Fill in Ten Site Canyon Subarea

Thirty-seven soil and fill samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, isotopic thorium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-6.3-8 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

No radionuclide results from soil samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

- Europium-152 was detected in one soil sample, and has no BV for comparison. Europium-152 is identified as a COPC for soil and fill (0 to 5 ft bgs) in the Ten Site Canyon Subarea. No other radionuclides were detected or detected above the BV or FV.

Table D-6.3-9 presents the analytical results for the radionuclide COPC in the single soil sample where it was detected (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.6 Radionuclides in Tuff in Ten Site Canyon Subarea

Eighteen tuff (Qbt 2, Qbt 3) samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, isotopic thorium, gamma-emitting radionuclides, strontium-90, americium-241, and tritium (not all samples received all analyses). Table D-6.3-10 summarizes the tuff samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

No radionuclide results from tuff samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

Five radionuclides (plutonium-239, ruthenium-106, strontium-90, tritium, and uranium-235) were detected in at least one tuff sample. All are identified as COPCs for tuff (0 to 5 ft bgs) in the Ten Site Canyon Subarea based on the following rationale:

- Uranium-235 was detected above its BV in one sample, at a concentration 1.15 pCi/g, compared with the BV of 0.09 pCi/g. Uranium-235 is retained as a COPC in tuff.
- Plutonium-239, ruthenium-106, strontium-90, and tritium were detected in one or more tuff samples, and have no BV or FV for comparison. They are retained as COPCs in tuff.

Table D-6.3-11 presents the analytical results for radionuclide COPCs in tuff samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.7 Radionuclides in Sediment in Ten Site Canyon Subarea

Twenty-nine sediment samples were collected from 0 to 5 ft bgs and analyzed for radionuclides in the Ten Site Canyon Subarea. Radionuclide analyses included isotopic plutonium, isotopic uranium, isotopic thorium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses). Table D-6.3-12 summarizes the sediment samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

No radionuclide results from sediment samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

Eight radionuclides (americium-241, cesium-134, plutonium-238, plutonium-239, strontium-90, tritium, uranium-235, and uranium-238) were detected in at least one sediment sample. Americium-241, cesium-134, plutonium-238, plutonium-239, strontium-90, and tritium are identified as COPCs for sediment in the Ten Site Canyon Subarea based on the following rationale:

- Americium-241 was detected in three sediment samples where the FV does not apply (subsurface samples). Americium-241 is retained as a COPC in sediment.
- Cesium-134 was detected in 9 sediment samples, and has no FV for comparison. Cesium-134 is retained as a COPC in sediment.
- Plutonium-238, plutonium-239, strontium-90, and tritium were each detected above the FV in multiple samples, or were detected in samples for which the FV does not apply. Plutonium-238, plutonium-239, strontium-90, and tritium are retained as COPCs in sediment.

Table D-6.3-13 presents analytical results for the radionuclide COPCs in sediment samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.8 Radionuclide COPC Summary in Ten Site Canyon Subarea

The radionuclide COPCs identified for all media (0 to 5 ft bgs) in the Ten Site Canyon Subarea are americium-241, cesium-134, europium-152, plutonium-238, plutonium-239, ruthenium-106, strontium-90, tritium, and uranium-235. The radionuclide COPCs are listed in Table D-6.3-14, with the EPCs calculated for the ecological screening assessments.

D-6.3.9 Organic Chemicals in Soil and Fill in Ten Site Canyon Subarea

Thirty-one soil and fill samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, and pesticides (not all samples received all analyses). Table D-6.3-15 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each.

One hundred thirty-six organic chemical results (SVOC) from two soil samples were rejected because of data-quality issues. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Ten Site Canyon Subarea.

Three organic chemicals [benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate] were detected at least once in soil and fill samples. All three organic chemicals are identified as COPCs for soil and fill in the Ten Site Canyon Subarea.

Table D-6.3-16 presents the analytical results for the organic COPCs in soil and fill samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.10 Organic Chemicals in Tuff in Ten Site Canyon Subarea

Eighteen tuff (Qbt 3, Qbt 2) samples were collected from 0 to 5 ft bgs and analyzed for organic chemicals in the Ten Site Canyon Subarea. Organic chemical analyses included SVOCs, VOCs, PCBs, and pesticides (not all samples received all analyses). Table D-6.3-17 summarizes the tuff samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

No organic chemical results from tuff samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

Four organic chemicals [Aroclor-1260, bis(2-ethylhexyl)phthalate, toluene, and total xylene] were detected in at least one tuff sample. All four organic chemicals are identified as COPCs for tuff in the Ten Site Canyon Subarea.

Table D-6.3-18 presents the analytical results for the organic COPCs in tuff samples from 0 to 5 ft bgs from the Ten Site Canyon Subarea.

D-6.3.11 Organic Chemicals in Sediment in Ten Site Canyon Subarea

Twenty-three sediment samples were collected from 0 to 5 ft bgs in the Ten Site Canyon Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, PCBs, PAHs, and pesticides (not all samples received all analyses). Table D-6.3-19 summarizes the sediment samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

No organic chemical results from sediment samples (0 to 5 ft bgs) in the Ten Site Canyon Subarea were rejected because of data-quality issues.

Thirty organic chemicals [acetone; anthracene; Aroclor-1254; Aroclor-1260; benzene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; alpha-BHC; beta-BHC; gamma-BHC; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; 4,4'-DDD; 4,4'-DDE; dibenz(a,h)anthracene; fluoranthene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 4,4'-methoxychlor; 4-methyl-2-pentanone; phenanthrene; pyrene; toluene; trichloroethene; trichlorofluoromethane; and 1,2,4-trimethylbenzene] were detected in at least one sediment sample. All 30 detected organic chemicals are identified as COPCs for sediment (0 to 5 ft bgs) in the Ten Site Canyon Subarea.

Table D-6.3-20 presents analytical results for the organic COPCs in sediment samples (0 to 5 ft bgs) from the Ten Site Canyon Subarea.

D-6.3.12 Organic COPC Summary in Ten Site Canyon Subarea

The following organic chemicals were identified as COPCs for all media (0 to 5 ft bgs) in the Ten Site Canyon Subarea: acetone; anthracene; Aroclor-1254; Aroclor-1260; benzene; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzoic acid; alpha-BHC; beta-BHC; gamma-BHC; bis(2-ethylhexyl)phthalate; 2-butanone; chrysene; 4,4'-DDD; 4,4'-DDE; dibenz(a,h)anthracene; di-n-butylphthalate; fluoranthene; indeno(1,2,3-cd)pyrene; 4-isopropyltoluene; 4,4'-methoxychlor; 4-methyl-2-pentanone; phenanthrene; pyrene; toluene; trichloroethene; trichlorofluoromethane; 1,2,4- trimethylbenzene; and xylene (total).

The organic COPCs identified for all media in the Ten Site Canyon Subarea are listed in Table D-6.3-21, with the EPCs calculated for the ecological screening assessments.

D-7.0 EAST TEN SITE SLOPE SUBAREA

This section identifies the media-specific COPCs for each site in the East Ten Site Slope Subarea.

Tables D-7.0-1, D-7.0-2, and D-7.0-3 summarize the samples collected for inorganic chemical analyses, radionuclide analyses, and organic chemical analyses, respectively, at each site in the East Ten Site Slope Subarea.

Table D-7.0-4 presents the sample concentrations above BVs for detected and nondetected inorganic chemicals at each site in the East Ten Site Slope Subarea.

Table D-7.0-5 presents the sample concentrations of these radionuclides detected above the BV or FV, or detected without an applicable BV or FV at each site in the East Ten Site Slope Subarea.

Table D-7.0-6 presents the sample concentrations of detected organic chemicals at each site in the East Ten Site Slope Subarea.

D-7.1 Consolidated Unit 04-001-99

A total of 66 samples were collected from 28 locations at this consolidated unit. Of the 66 samples collected, 44 were soil and fill, and 22 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.1.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 04-001-99

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 44 soil and fill samples collected, 22 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Antimony, cadmium, copper, mercury, and zinc were either detected above their BVs or had detection limits above their BVs.

- Antimony, cadmium, and mercury were not detected. Antimony had detection limits greater than the maximum concentration in the background data set; it is retained as a COPC in soil. Cadmium had detection limits less than the maximum concentration in the background data set; it is not retained as a COPC in soil. Mercury had only one nondetect above the BV, with a detection limit (0.2 mg/kg) greater than the BV (0.1 mg/kg); it is not retained as a COPC in soil.
- Copper was detected above the maximum concentration in the background data set; it is retained as a COPC in soil.
- Zinc was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in soil.

D-7.1.2 Inorganic Chemicals in Tuff at Consolidated Unit 04-001-99

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 22 tuff samples collected, 9 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Antimony, calcium, chromium, and selenium were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Antimony and selenium were not detected but had detection limits above BVs; they are retained as COPCs in tuff.
- Chromium was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.

D-7.1.3 Inorganic COPC Summary at Consolidated Unit 04-001-99

The inorganic COPCs identified at Consolidated Unit 04-001-99 are antimony, copper, and selenium. They are listed in Table D-7.1-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

Selenium was not detected in the 0 to 1 ft bgs depth range and therefore was not included in evaluations of industrial or recreational risk for the site. It was included in the evaluation of residential risk.

D-7.1.4 Radionuclides in Soil and Fill at Consolidated Unit 04-001-99

The radionuclide analyses requested for soil and fill samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 44 soil and fill samples collected, 16 were analyzed for americium-241; 20 were analyzed for gamma-emitting radionuclides; 38 were analyzed for isotopic plutonium; and all 44 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Amercium-241, cesium-137, europium-152, plutonium-238, and plutonium-239 were detected; uranium-234, uranium-235, and uranium-238 were detected above their BVs. All are retained as COPCs in soil and fill.

D-7.1.5 Radionuclides in Tuff at Consolidated Unit 04-001-99

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 22 tuff samples collected, 3 were analyzed for gamma-emitting radionuclides, 15 were analyzed for isotopic plutonium, and all 22 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 was detected, and uranium-234, uranium-235, and uranium-238 were detected above BVs; they are retained as COPCs in tuff.

D-7.1.6 Radionuclide COPC Summary at Consolidated Unit 04-001-99

The radionuclide COPCs identified at Consolidated Unit 04-001-99 are amercium-241, cesium-137, europium-152, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238. They are listed in Table D-7.1-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-7.1.7 Organic Chemicals in Soil and Fill at Consolidated Unit 04-001-99

The organic chemical analyses requested for soil and fill samples included high explosives, SVOCs, and VOCs. Of the 44 soil and fill samples collected, 22 were analyzed for high explosives, 19 were analyzed for SVOCs, and 2 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

The following organic chemicals were detected: benzoic acid, bis[2-ethylhexyl]phthalate, 1,1-dichloroethene, di-n-butylphthalate, fluoranthene, methylene chloride, and pyrene. They are retained as COPCs in soil and fill.

D-7.1.8 Organic Chemicals in Tuff at Consolidated Unit 04-001-99

The organic chemical analyses requested for tuff samples included high explosives, SVOCs, and VOCs. Of the 22 tuff samples collected, 8 were analyzed for high explosives, 4 were analyzed for SVOCs, and 3 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Acetone, bis[2-ethylhexyl]phthalate, and methylene chloride were detected and are retained as COPCs in tuff.

D-7.1.9 Organic COPC Summary at Consolidated Unit 04-001-99

The organic COPCs identified at Consolidated Unit 04-001-99 are acetone, benzoic acid, bis[2-ethylhexyl]phthalate; 1,1-dichloroethene; di-n-butylphthalate; fluoranthene; methylene chloride; and pyrene. They are listed in Table D-7.1-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Acetone was not detected in the 0 to 1 ft bgs depth range, so it was not included in the evaluation of industrial or recreational risk for the site. It was included in the evaluation of residential risk.

D-7.2 Consolidated Unit 05-001(a)-99

A total of 103 samples were collected from 47 locations at this consolidated unit. Of the 103 samples collected, 69 were soil and fill, 32 were tuff, and two were sediment. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.2.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 05-001(a)-99

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 69 soil and fill samples collected, 44 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Barium, cadmium, copper, lead, mercury, silver, thallium, and zinc were either detected above their BVs or had detection limits above their BVs.

- Barium, cadmium, copper, lead, mercury, and zinc were detected above the maximum concentrations in the background data set; they are retained as COPCs in soil and fill.
- Silver and thallium were not detected. Silver had detection limits greater than the BV, and thallium had detection limits above the maximum concentration in the background data set; both are retained as COPCs in soil and fill.

D-7.2.2 Inorganic Chemicals in Tuff at Consolidated Unit 05-001(a)-99

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 32 tuff samples collected, 24 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Aluminum, arsenic, barium, beryllium, calcium, chromium, copper, lead, magnesium, mercury, nickel, selenium, silver, thallium, and vanadium were either detected above their BVs or had detection limits above their BVs.

- Calcium and magnesium are essential macronutrients and are not identified as COPCs.
- Aluminum, barium, copper, lead, and nickel were detected above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Arsenic, beryllium, chromium, and vanadium were detected above the BV but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.
- Mercury, silver, and thallium were not detected. Mercury had detection limits above the BV and there is no background data set for mercury in tuff; mercury is retained as a COPC in tuff. Silver and thallium had detection limits above BV but below the maximum concentration in the background data set; they are not retained as COPCs in tuff.
- Selenium was detected above the BV and above the maximum concentration in the background data set; it is retained as a COPC in tuff.

D-7.2.3 Inorganic COPC Summary at Consolidated Unit 05-001(a)-99

The inorganic COPCs identified at Consolidated Unit 05-001(a)-99 are aluminum, barium, cadmium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc. They are listed in Table D-7.2-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-7.2.4 Radionuclides in Soil and Fill at Consolidated Unit 05-001(a)-99

The radionuclide analyses requested for soil and fill samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 69 soil and fill samples collected, 18 were analyzed for americium-241; 24 were analyzed for gamma-emitting radionuclides; 67 were analyzed for isotopic plutonium; and 68 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Americum-241, cesium-137, plutonium-238, and plutonium-239 were detected or detected above FVs, and uranium-234, uranium-235, and uranium-238 were detected above BVs; they are all retained as COPCs in soil and fill.

D-7.2.5 Radionuclides in Tuff at Consolidated Unit 05-001(a)-99

The radionuclide analyses requested for tuff samples included isotopic plutonium and isotopic uranium. Of the 32 tuff samples collected, 21 were analyzed for isotopic plutonium and 27 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 and plutonium-239 were detected, and uranium-234, uranium-235, and uranium-238 were detected above BVs; they are all retained as COPCs in tuff.

D-7.2.6 Radionuclides in Sediment at Consolidated Unit 05-001(a)-99

The two sediment samples collected were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Uranium-234, uranium-235, and uranium-238 were detected above BVs; they are retained as COPCs in sediment.

D-7.2.7 Radionuclide COPC Summary at Consolidated Unit 05-001(a)-99

The radionuclide COPCs identified for all media at Consolidated Unit 05-001(a)-99 are americum-241, cesium-137, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238. They are listed in Table D-7.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-7.2.8 Organic Chemicals in Soil and Fill at Consolidated Unit 05-001(a)-99

The organic chemical analyses requested for soil and fill samples included high explosives, SVOCs, and VOCs. Of the 69 soil and fill samples collected, 21 were analyzed for high explosives, 20 were analyzed for SVOCs, and 7 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

The following organic chemicals were detected: acetone, benzoic acid, bis[2-ethylhexyl]phthalate, chrysene, fluoranthene, methylene chloride, pyrene, toluene, and trichlorofluoromethane. They are retained as COPCs in soil and fill.

D-7.2.9 Organic Chemicals in Tuff at Consolidated Unit 05-001(a)-99

The organic chemical analyses requested for tuff samples included high explosives, SVOCs, and VOCs. Of the 32 tuff samples collected, 11 were analyzed for high explosives, 11 were analyzed for SVOCs, and 4 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Acetone and toluene were detected and are retained as COPCs in tuff.

D-7.2.10 Organic COPC Summary at Consolidated Unit 05-001(a)-99

The organic COPCs identified at Consolidated Unit 05-001(a)-99 are acetone, benzoic acid, bis[2-ethylhexyl]phthalate, chrysene, fluoranthene, methylene chloride, pyrene, toluene, and trichlorofluoromethane. They are listed in Table D-7.2-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Acetone, chrysene, methylene chloride, fluoranthene, pyrene, and toluene were not detected in the 0 to 1 ft bgs depth range and were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.3 AOC 05-001(c)

A total of 38 samples were collected from 21 locations at this AOC. Of the 38 samples collected, 22 were soil and fill, 15 were tuff, and 1 was sediment. The inorganic chemical, radionuclide, and organic chemical

analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.3.1 Inorganic Chemicals in Soil and Fill at AOC 05-001(c)

All 22 soil and fill samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Antimony, barium, chromium, copper, lead, nickel, and zinc were detected above their BVs.

- Antimony, barium, copper, and lead were detected above the maximum concentrations in the background data set; they are retained as COPCs in soil and fill.
- Chromium and nickel were detected above their BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in soil and fill.
- Zinc was detected above the BV in only one sample, at a concentration 90.2 mg/kg, which is less than twice the BV (48.8 mg/kg); zinc is not retained as a COPC in soil and fill.

D-7.3.2 Inorganic Chemicals in Tuff at AOC 05-001(c)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the 15 tuff samples collected, 11 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Aluminum, antimony, arsenic, chromium, copper, lead, and selenium were detected above their BVs.

- Aluminum was detected above the BV in only one sample, at a concentration 9530 mg/kg, which is slightly greater than the BV (7340 mg/kg); it is not retained as a COPC in tuff.
- Antimony and selenium were each detected above the BV and the maximum concentrations in the background data set in one or two tuff samples. Selenium also had multiple detection limits above the BV. Antimony and selenium are retained as COPCs in tuff.
- Copper was detected above the maximum concentration in the background data set; it is retained as a COPC in tuff.
- Arsenic, chromium, and lead were detected above the BV but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.

D-7.3.3 Inorganic Chemicals in Sediment at AOC 05-001(c)

The one sediment sample collected was analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Cadmium and selenium were not detected but had detection limits above their BVs.

- Cadmium had one nondetect with a detection limit (0.498 mg/kg) slightly greater than the BV (0.4 mg/kg); it is not retained as a COPC in sediment.
- Selenium had one nondetect with a detection limit (0.498 mg/kg) slightly above the BV (0.3 mg/kg); it is not retained as a COPC in sediment.

D-7.3.4 Inorganic COPC Summary at AOC 05-001(c)

The inorganic chemical COPCs identified for all media at AOC 05-001(c) are antimony, barium, copper, lead, and selenium. They are listed in Table D-7.3-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Selenium was not detected in the 0 to 1 ft bgs depth range, and was not included in the evaluation of industrial or recreational risk for the site. It was included in the evaluation of residential risk.

D-7.3.5 Radionuclides in Soil and Fill at AOC 05-001(c)

The radionuclide analyses requested for soil and fill samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 22 soil and fill samples collected, 2 were analyzed for gamma-emitting radionuclides, and all 22 were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 and plutonium-239 were detected or detected above FVs, and uranium-234, uranium-235, and uranium-238 were detected above BVs; they are retained as COPCs in soil and fill.

D-7.3.6 Radionuclides in Tuff at AOC 05-001(c)

The radionuclide analyses requested for tuff samples included isotopic plutonium and isotopic uranium. Of the 15 tuff samples collected, 16 were analyzed for isotopic plutonium, and 16 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 and plutonium-239 were detected, and uranium-234, uranium-235, and uranium-238 were detected above BVs; they are retained as COPCs in tuff.

D-7.3.7 Radionuclides in Sediment at AOC 05-001(c)

The one sediment sample collected was analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Uranium-234 and uranium-238 were detected above BVs and are retained as COPCs in sediment.

D-7.3.8 Radionuclide COPC Summary at AOC 05-001(c)

The radionuclide COPCs identified for all media at AOC 05-001(c) are plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238. They are listed in Table D-7.3-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-7.3.9 Organic Chemicals in Soil at AOC 05-001(c)

One soil sample of the 22 soil and fill samples collected was analyzed for high explosives. No organic chemicals were detected.

D-7.3.10 Organic Chemicals in Tuff at AOC 05-001(c)

The organic chemical analyses requested for tuff samples included high explosives and SVOCs. Of the 15 tuff samples collected, seven were analyzed for high explosives, and seven were analyzed for SVOCs. No organic chemicals were detected.

D-7.3.11 Organic Chemicals in Sediment at AOC 05-001(c)

The one sediment sample collected was analyzed for SVOCs. No organic chemicals were detected.

D-7.3.12 Organic COPC Summary at AOC 05-001(c)

There are no organic COPCs identified at AOC 05-001(c).

D-7.4 Consolidated Unit 05-005(a)-00

A total of 35 samples were collected from 16 locations at this consolidated unit. Of the 35 samples collected, 29 were soil and fill, and 6 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.4.1 Inorganic Chemicals in Soil and Fill at Consolidated Unit 05-005(a)-00

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 29 soil and fill samples collected, 13 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Cadmium, copper, lead, mercury, silver, and thallium were either detected above their BVs or had detection limits above their BVs.

- Cadmium, copper, lead, and mercury were detected above BVs. Cadmium was detected below the maximum concentration in the background data set; it is not retained as a COPC in soil and fill. Copper, lead, and mercury were detected above the maximum concentrations in the background data set; they are retained as COPCs in soil and fill.
- Silver and thallium were not detected. Silver had only one nondetect above BV, with a detection limit (1.3 mg/kg) less than twice the BV (1 mg/kg); it is not retained as a COPC in soil and fill. Thallium had only one nondetect above BV, with a detection limit (1.4 mg/kg) less than twice the BV (0.73 mg/kg); it is not retained as a COPC in soil and fill.

D-7.4.2 Inorganic Chemicals in Tuff at Consolidated Unit 05-005(a)-00

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the six tuff samples collected, four were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Aluminum, arsenic, barium, beryllium, calcium, chromium, magnesium, nickel, and selenium were detected above their BVs.

- Calcium and magnesium are essential macronutrients and are not identified as COPCs.

- Aluminum, barium, and selenium were detected above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Arsenic, beryllium, chromium, and nickel were detected above BVs but below the maximum concentrations in the background data set; they are not retained as COPCs in tuff.

D-7.4.3 Inorganic COPC Summary at Consolidated Unit 05-005(a)-00

The inorganic COPCs identified at Consolidated Unit 05-005(a)-00 are aluminum, barium, copper, lead, mercury, and selenium. They are listed in Table D-7.4-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-7.4.4 Radionuclides in Soil and Fill at Consolidated Unit 05-005(a)-00

The radionuclide analyses requested for soil and fill samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 29 soil and fill samples collected, 4 were analyzed for americium-241; 7 were analyzed for gamma-emitting radionuclides; all 29 were analyzed for isotopic plutonium; and 28 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Americium-241, plutonium-238, and plutonium-239 were detected or detected above FVs, and uranium-234, uranium-235, and uranium-238 were detected above BVs; they are retained as COPCs in soil and fill.

D-7.4.5 Radionuclides in Tuff at Consolidated Unit 05-005(a)-00

The radionuclide analyses requested for tuff samples included isotopic plutonium and isotopic uranium. Of the six tuff samples collected, all six were analyzed for isotopic plutonium, and five were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 was detected, and uranium-235 was detected above the BV; they are retained as COPCs in tuff.

D-7.4.6 Radionuclide COPC Summary at Consolidated Unit 05-005(a)-00

The radionuclide COPCs identified at Consolidated Unit 05-005(a)-00 are americium-241, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238. They are listed in Table D-7.4-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-7.4.7 Organic Chemicals in Soil and Fill at Consolidated Unit 05-005(a)-00

The organic chemical analyses requested for soil and fill samples included high explosives, SVOCs, and VOCs. Of the 29 soil and fill samples collected, 6 were analyzed for high explosives and SVOCs, and 7 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-8.

The following organic chemicals were detected: bis[2-ethylhexyl]phthalate; chrysene; fluoranthene; methylene chloride; pyrene; toluene; and trichlorofluoromethane. They are retained as COPCs in soil and fill.

D-7.4.8 Organic Chemicals in Tuff at Consolidated Unit 05-005(a)-00

The organic chemical analyses requested for tuff samples included high explosives, SVOCs, and VOCs. Of the six tuff samples collected, three were analyzed for high explosives, five were analyzed for SVOCs, and four were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-8.

Acetone and toluene were detected and are retained as COPCs in tuff.

D-7.4.9 Organic COPC Summary at Consolidated Unit 05-005(a)-00

The organic COPCs identified at Consolidated Unit 05-005(a)-00 are acetone, bis[2-ethylhexyl]phthalate, chrysene, fluoranthene, methylene chloride, pyrene, toluene, and trichlorofluoromethane. They are listed in Table D-7.4-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Acetone, chrysene, fluoranthene, methylene chloride, pyrene, and toluene were not detected in the 0 to 1 ft bgs depth range, and therefore were not included in evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.5 SWMU 52-002(a)

A total of 50 samples were collected from ten locations at SWMU 52-002(a). Of the 50 samples collected, 12 were soil and fill, and 38 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.5.1 Inorganic Chemicals in Soil at SWMU 52-002(a)

The inorganic chemical analyses requested for soil samples were TAL metals. Of the 12 soil samples collected, five were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Cadmium was not detected. Detection limits were above the BV but less than the maximum concentration in the background data set. Cadmium is not retained as a COPC in soil.

D-7.5.2 Inorganic Chemicals in Tuff at SWMU 52-002(a)

The inorganic chemical analyses requested for tuff samples included anions, metals, and TOC. Of the 38 tuff samples collected, 10 were analyzed for anions and TOC, and 11 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Aluminum, arsenic, barium, lithium, molybdenum, nitrate, nitrite, selenium, silicon, silver, and strontium were either detected above their BVs, were detected with no available BV, or had detection limits above BVs.

- Silicon, as silicon dioxide, is a natural component of tuff material that is abundant in this environment; it is not identified as a COPC.

- Aluminum was detected above the BV in only one sample, at a concentration 9560 mg/kg, which is slightly greater than the BV (7340 mg/kg); it is not retained as a COPC in tuff.
- Arsenic was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Barium was detected above the BV in only one sample, at a concentration 64 mg/kg, which is slightly greater than the BV (46 mg/kg); it is not retained as a COPC in tuff.
- Lithium, nitrate, and nitrite were detected and have no BVs; they are retained as COPCs in tuff.
- Molybdenum has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for molybdenum of 0.59 mg/kg. The maximum concentration of molybdenum detected in tuff was 2.7 mg/kg. Molybdenum is retained as a COPC in tuff.
- Selenium and silver were not detected. Selenium had detection limits above the BV; it is retained as a COPC in tuff. Silver had detection limits above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 3.2 mg/kg. Strontium is not retained as a COPC in tuff.

D-7.5.3 Inorganic COPC Summary at SWMU 52-002(a)

The inorganic COPCs identified at SWMU 52-002(a) are lithium, molybdenum, nitrate, nitrite, and selenium. They are listed in Table D-7.5-1 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Lithium, molybdenum, nitrate, and nitrite were not analyzed for in the 0 to 1 ft bgs depth range, so they were not included in evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.5.4 Radionuclides in Soil and Fill at SWMU 52-002(a)

The radionuclide analyses requested for soil and fill samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 12 soil and fill samples collected, ten were analyzed for americium-241, gamma-emitting radionuclides, strontium-90, and tritium, and all 12 were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Americum-241, cesium-137, plutonium-238, and plutonium-239 were detected or detected above FVs; they are retained as COPCs in soil and fill.

Uranium-234 and uranium-238 were detected above BVs. Uranium-234 was detected above the BV in only one soil sample, at a concentration of 2.71 pCi/g, which is slightly greater than the BV (2.59 pCi/g); it is not retained as a COPC in soil and fill. Uranium-238 is retained as a COPC in soil and fill.

D-7.5.5 Radionuclides in Tuff at SWMU 52-002(a)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the 38 tuff samples collected, 7 were analyzed for gamma-emitting radionuclides, all 38 were analyzed for isotopic plutonium, 22 were analyzed for isotopic uranium, and 16 were analyzed for strontium-90 and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238, plutonium-239, and tritium were detected and are retained as COPCs in tuff.

D-7.5.6 Radionuclide COPC Summary at SWMU 52-002(a)

The radionuclide COPCs identified at SWMU 52-002(a) are americum-241, cesium-137, plutonium-238, plutonium-239, tritium, and uranium-238. They are listed in Table D-7.5-2 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Tritium was not detected in the 0 to 10 ft bgs depth range, and therefore it was not included in the evaluations of risk for the site.

D-7.5.7 Organic Chemicals in Soil at SWMU 52-002(a)

The organic chemical analyses requested for soil samples were SVOCs. Of the 12 soil samples collected, five were analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Benzoic acid was detected and is retained as a COPC is soil.

D-7.5.8 Organic Chemicals in Tuff at SWMU 52-002(a)

The organic chemical analyses requested for tuff samples included SVOCs and VOCs. Of the 38 tuff samples collected, 19 were analyzed for SVOCs and seven were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Bis[2-ethylhexyl]phthalate, di-n-butylphthalate, and methylene chloride were detected and are retained as COPCs in tuff.

D-7.5.9 Organic COPC Summary at SWMU 52-002(a)

The organic COPCs identified at SWMU 52-002(a) are benzoic acid, bis[2-ethylhexyl]phthalate, di-n-butylphthalate, and methylene chloride. They are listed in Table D-7.5-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Methylene chloride was not detected in the 0 to 10 ft bgs depth range, so it was not included in the evaluations of risk for the site. Bis[2-ethylhexyl]phthalate and di-n-butylphthalate were not detected in the 0 to 1 ft bgs depth range, so they were not included in evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.6 AOC 52-003(a)

A total of 11 samples were collected from two locations at this AOC. Of the 11 samples collected, 4 were fill and 7 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.6.1 Inorganic Chemicals in Tuff at AOC 52-003(a)

The inorganic chemical analyses requested for tuff samples were TAL metals. Of the seven tuff samples collected, four were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Aluminum, selenium, silicon dioxide, and strontium were detected above their BVs, were detected with no available BVs, or had detection limits above their BVs.

- Silicon dioxide is a natural component of tuff material that is abundant in this environment; it is not identified as a COPC.
- Aluminum was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Selenium was not detected but had detection limits above the BV; it is retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 3.2 mg/kg. Strontium is not retained as a COPC in tuff.

D-7.6.2 Inorganic COPC Summary at AOC 52-003(a)

The single inorganic COPC identified at AOC 52-003(a) is selenium. Selenium was not detected in the 0 to 10 ft bgs depth range, and therefore it was not included in the evaluations of industrial or residential risk for the site.

D-7.6.3 Radionuclides in Fill at AOC 52-003(a)

The four fill samples collected were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 and plutonium-239 were detected, and uranium-238 was detected above the BV; they are retained as COPCs in fill.

D-7.6.4 Radionuclides in Tuff at AOC 52-003(a)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, strontium-90, and tritium. Of the seven tuff samples collected, one was analyzed for gamma-emitting radionuclides; all seven were analyzed for isotopic plutonium; four were analyzed for isotopic uranium; three were analyzed for strontium-90; and four were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238, plutonium-239, and tritium were detected and are retained as COPCs in tuff.

D-7.6.5 Radionuclide COPC Summary at AOC 52-003(a)

The radionuclide COPCs identified at AOC 52-003(a) are plutonium-238, plutonium-239, tritium, and uranium-238. They are listed in Table D-7.6-1 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Tritium was not analyzed for in the 0 to 1 ft bgs depth range, and was not detected in the 0 to 10 ft bgs depth range. Tritium was therefore not included in the evaluations of risk for the site. No sample was collected in the 0 to 1 ft bgs depth range, so plutonium-238, plutonium-239, and uranium-238 were not included in the evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.6.6 Organic Chemicals in Fill at AOC 52-003(a)

One of the four fill samples collected was analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Bis[2-ethylhexyl]phthalate and di-n-butylphthalate were detected and are retained as COPCs in fill.

D-7.6.7 Organic Chemicals in Tuff at AOC 52-003(a)

The organic chemical analyses requested for tuff samples included SVOCs and VOCs. Of the seven tuff samples collected, three were analyzed for SVOCs, and four were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Acetone and methylene chloride were detected and are retained as COPCs in tuff.

D-7.6.8 Organic COPC Summary at AOC 52-003(a)

The organic COPCs identified at AOC 52-003(a) are acetone, bis[2-ethylhexyl]phthalate, di-n-butylphthalate, and methylene chloride. They are listed in Table D-7.6-2 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Acetone and methylene chloride were not detected in the 0 to 10 ft bgs depth range, so they were not included in the evaluations of risk for the site. Bis[2-ethylhexyl]phthalate and di-n-butylphthalate were not analyzed for in the 0 to 1 ft depth range, so they were not included in the evaluations of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.7 SWMU 63-001(a)

A total of 30 samples were collected from four locations at this SWMU. Of the 30 samples collected, three were fill and 27 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.7.1 Inorganic Chemicals in Fill at SWMU 63-001(a)

The three fill samples collected were analyzed for anions and TOC. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Nitrate and nitrite were detected and have no BVs; they are retained as COPCs in fill.

D-7.7.2 Inorganic Chemicals in Tuff at SWMU 63-001(a)

The inorganic chemical analyses requested for tuff samples included anions, metals, and TOC. Of the 27 tuff samples collected, 26 were analyzed for anions, 3 were analyzed for TAL metals, and all 27 were analyzed for TOC. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Antimony, boron, lithium, nitrate, nitrite, silver, and strontium were detected above their BVs, were detected without available BVs, or had detection limits above their BVs.

- Antimony was not detected but had detection limits above the BV; it is retained as a COPC in tuff.
- Boron, lithium, nitrate, and nitrite were detected and have no BVs; they are retained as COPCs in tuff.
- Silver was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Strontium has no BV but previous studies ((Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 9 mg/kg. Strontium is not retained as a COPC in tuff.

D-7.7.3 Inorganic COPC Summary at SWMU 63-001(a)

The inorganic COPCs identified at SWMU 63-001(a) are antimony, boron, lithium, nitrate, and nitrite. They are listed in Table D-7.7-1 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Antimony was not detected in the 0 to 10 ft bgs depth range, so it was not included in the evaluations of risk for the site. No sample was collected in the 0 to 1 ft bgs depth range, so boron, lithium, nitrate, and nitrite were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.7.4 Radionuclides in Fill at SWMU 63-001(a)

The radionuclide analyses requested for fill samples included isotopic plutonium and isotopic uranium. Of the three fill samples collected, two were analyzed for isotopic plutonium, and all three were analyzed for isotopic uranium. The sample concentrations of the detected radionuclides are presented in Table D-7.0-5.

Plutonium-239 was detected and is retained as a COPC in fill.

D-7.7.5 Radionuclides in Tuff at SWMU 63-001(a)

Al 27 tuff samples collected were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 and plutonium-239 were detected and are retained as COPCs in tuff.

D-7.7.6 Radionuclide COPC Summary at SWMU 63-001(a)

The radionuclide COPCs identified at SWMU 63-001(a) are plutonium-238 and plutonium-239. They are listed in Table D-7.7-2 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

No sample was collected in the 0 to 1 ft bgs depth range, so plutonium-238 and plutonium-239 were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.7.7 Organic Chemicals in Fill at SWMU 63-001(a)

One of the three fill samples collected was analyzed for SVOCs. No organic chemicals were detected.

D-7.7.8 Organic Chemicals in Tuff at SWMU 63-001(a)

The organic chemical analyses requested for tuff samples included SVOCs and VOCs. Of the 27 tuff samples collected, 2 were analyzed for SVOCs, and 3 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Di-n-butylphthalate and xylene (total) were detected and are retained as COPCs in tuff.

D-7.7.9 Organic COPC Summary at SWMU 63-001(a)

The organic COPCs identified at SWMU 63-001(a) are di-n-butylphthalate and xylene (total). Neither di-n-butylphthalate nor total xylene was detected in the 0 to 10 ft bgs depth range, so neither is included in the evaluations of risk for the site.

D-7.8 SWMU 63-001(b)

A total of 30 tuff samples were collected from four locations at this SWMU. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-7.0-1, D-7.0-2, and D-7.0-3, respectively.

D-7.8.1 Inorganic Chemicals in Tuff at SWMU 63-001(b)

The inorganic chemical analyses requested for tuff samples included anions, metals, and TOC. Of the 30 tuff samples collected, all 30 were analyzed for anions and TOC, and 3 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-7.0-4.

Arsenic, lithium, molybdenum, nitrate, nitrite, silicon dioxide, silver, and strontium were detected above their BVs, were detected without available BVs, or had detection limits above their BVs.

- Silicon dioxide is a natural component of tuff material that is abundant in this environment; it is not identified as a COPC.
- Arsenic was detected above the BV but below the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Lithium, nitrate, and nitrite were detected and have no BVs; they are retained as COPCs in tuff.

- Molybdenum has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 0.59 mg/kg. The detected concentration of molybdenum detected in tuff was 1.3 mg/kg. Molybdenum is retained as a COPC in tuff.
- Silver was not detected and the detection limit was less than the maximum concentration in the background data set; it is not retained as a COPC in tuff.
- Strontium has no BV but previous studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. The maximum concentration of strontium detected in tuff was 4.9 mg/kg. Strontium is not retained as a COPC in tuff.

D-7.8.2 Inorganic COPC Summary at SWMU 63-001(b)

The inorganic COPCs identified at SWMU 63-001(b) are lithium, molybdenum, nitrate, and nitrite. They are listed in Table D-7.8-1 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

No sample was collected in the 0 to 1 ft bgs depth range, so lithium, molybdenum, nitrate, and nitrite were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-7.8.3 Radionuclides in Tuff at SWMU 63-001(b)

The radionuclide analyses requested for tuff samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the 30 tuff samples collected, 2 were analyzed for gamma-emitting radionuclides, 21 were analyzed for isotopic plutonium, and all 30 were analyzed for isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-7.0-5.

Plutonium-238 was detected, and uranium-235 was detected above the BV; they are retained as COPCs in tuff.

D-7.8.4 Radionuclide COPC Summary at SWMU 63-001(b)

The radionuclide COPCs identified at SWMU 63-001(b) are plutonium-238 and uranium-235. Plutonium-238 was not detected in the 0 to 10 ft bgs depth range, so it was not included in the evaluations of risk for the site. No sample was collected in the 0 to 1 ft bgs depth range, so uranium-235 was not included in the evaluation of industrial or recreational risk for the site. It is listed in Table D-7.8-2 with the EPC for residential risk screening assessment of the site.

D-7.8.5 Organic Chemicals in Tuff at SWMU 63-001(b)

The organic chemical analyses requested for tuff samples included SVOCs and VOCs. Of the 30 tuff samples collected, three were analyzed for SVOCs, and three were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-7.0-6.

Bis[2-ethylhexyl]phthalate and di-n-butylphthalate were detected and are retained as COPCs in tuff.

D-7.8.6 Organic COPC Summary at SWMU 63-001(b)

The organic COPC identified at SWMU 63-001(b) are bis[2-ethylhexyl]phthalate and di-n-butylphthalate. Di-n-butylphthalate was not detected in the 0 to 10 ft bgs depth range, so it was not included in the evaluations of risk for the site. No sample was collected in the 0 to 1 ft bgs depth range, so bis[2-ethylhexyl]phthalate was not included in the evaluation of industrial or recreational risk for the site. It is listed in Table D-7.8-3 with the EPC for residential risk screening assessment of the site.

D-7.9 Ecological Risk Assessment in East Ten Site Slope Subarea

The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are presented below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft bgs, the identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Additional samples have been collected in the East Ten Site Slope Subarea and analyzed for inorganic chemicals or radionuclides per the NOD and NOD response (LANL 2006, 093268; NMED 2006, 092534). The COPCs for the subarea have been reevaluated with the new data included, and the EPCs for ecological risk assessment have been recalculated.

Twelve inorganic chemicals (barium, cadmium, copper, lead, lithium, mercury, molybdenum, nitrate, nitrite, selenium, and zinc) were identified as COPCs in the East Ten Site Slope Subarea.

Eight radionuclides (americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238) were identified as COPCs in the East Ten Site Slope Subarea.

Twelve organic chemicals (acetone, benzoic acid, bis[2-ethylhexyl]phthalate, chrysene, 1,1-dichloroethene, di-n-butylphthalate, fluoranthene, methylene chloride, pyrene, toluene, trichlorofluoromethane, and total xylene) were identified as COPCs in the East Ten Site Slope Subarea.

Chemicals are COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the East Ten Site Slope Subarea is discussed in the following sections.

D-7.9.1 Inorganic Chemicals in Soil and Fill in East Ten Site Slope Subarea

A total of 89 soil and fill samples were collected from 0 to 5 ft bgs in the East Ten Site Slope Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals; two samples were also analyzed for anions. Table D-7.9-1 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

One inorganic chemical result (antimony) from soil and fill samples was rejected because the associated spike sample had a recovery <30%. The rejected result was not included in the data analyses discussed here, and the result did not adversely affect the ability to evaluate the East Ten Site Slope Subarea.

Twenty-three inorganic chemicals were detected at least once in soil samples. Of these, barium, cadmium, copper, lead, mercury, nitrate, nitrite, and zinc were identified as COPCs for soil and fill 0 to 5 ft bgs in the East Ten Site Slope Subarea based on the following rationale:

- Aluminum, arsenic, beryllium, calcium, cobalt, iron, magnesium, manganese, potassium, selenium, sodium, and vanadium were not reported above the BV in any samples and therefore are not retained as COPCs in soil and fill.
- Antimony was detected above the BV in only one soil sample, at a concentration (1.6 mg/kg) less than twice the BV (0.83 mg/kg). One soil sample had a detection limit (5.1 mg/kg) above the BV. Antimony is not retained as a COPC in soil and fill.
- Barium, cadmium, copper, lead, mercury, and zinc each had at least one detected concentration above their respective BVs and above the maximum concentration in the background data set. Barium, cadmium, copper, lead, mercury, and zinc are retained as COPCs in soil and fill.
- Chromium and nickel were each detected above the BV but below the maximum concentration in the background data set, in one fill sample. Chromium and nickel are not retained as COPCs in soil and fill.
- Nitrate and nitrite were each detected in one or two samples and have no BV for comparison. Nitrate and nitrite are retained as COPCs in soil and fill.
- Silver was not detected above the BV (1 mg/kg) in any samples. Eight of 89 soil and fill samples had silver detection limits (maximum 1.4 mg/kg) slightly above the BV (1 mg/kg). Silver is not retained as a COPC in soil and fill.
- Thallium was not detected in any soil or fill samples. Eight of 89 soil and fill samples had thallium detection limits (maximum 1.5 mg/kg) above the BV (0.73 mg/kg). Thallium is not retained as a COPC in soil and fill.

Table D-7.9-2 presents the analytical results for the inorganic COPCs in soil and fill samples (0 to 5 ft bgs) from the East Ten Site Slope Subarea.

D-7.9.2 Inorganic Chemicals in Tuff in East Ten Site Slope Subarea

Twenty tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the East Ten Site Slope Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals and anions (not all samples received all analyses); nine samples also were analyzed for lithium, molybdenum, silicon dioxide, and strontium. Table D-7.9-3 summarizes the tuff samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

No inorganic chemical results from tuff samples were rejected for data-quality issues.

Twenty-nine inorganic chemicals were detected in at least one tuff sample. Barium, copper, lead, lithium, molybdenum, nitrate, nitrite, and selenium are identified as COPCs for tuff (0 to 5 ft bgs) in the East Ten Site Slope Subarea based on the following rationale:

- Cadmium, iron, manganese, potassium, sodium, uranium, and zinc were not detected above the BV in any tuff samples, and are not retained as COPCs in tuff.
- Aluminum was detected above the BV, and above the maximum concentration of aluminum in the background data set, in two tuff samples. Aluminum is a natural component of Bandelier Tuff and is not retained as a COPC in tuff.

- Antimony was detected (0.55 mg/kg) slightly above the BV (0.5 mg/kg) in only one tuff sample. One sample had a detection limit (5.18 mg/kg) above the BV. Antimony is not retained as a COPC in tuff.
- Arsenic, beryllium, chromium, silver, thallium, and vanadium were detected above the BV, but below the maximum concentration in the background data set, in one or more samples. Arsenic, beryllium, chromium, silver, thallium, and vanadium are not retained as COPCs in tuff.
- Barium, calcium, copper, lead, and selenium were each detected above the range of background data in one or more tuff samples. The maximum concentrations are approximately 3 to 9 times their respective BVs. Calcium is an essential macronutrient that occurs in natural accumulations in this semiarid climate, and is not retained as a COPC. Barium, copper, lead, and selenium are retained as COPCs in tuff.
- Lithium was detected in one tuff sample, at a concentration of 1.1 mg/kg. There is no BV for lithium. Lithium is retained as a COPC in tuff.
- Mercury was not detected in any tuff samples. One sample had a detection limit (0.13 mg/kg) slightly above the BV (0.1 mg/kg). Mercury is not retained as a COPC in tuff.
- Molybdenum was detected in one tuff sample with a concentration of 1.3 mg/kg. There is no BV or background data for molybdenum, but previous studies indicate a regional mean value of 0.59 mg/kg (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222). Molybdenum is retained as a COPC in tuff.
- Nitrate and nitrate were each detected in two tuff samples and have no BVs for comparison. Nitrate and nitrite are therefore retained as COPCs in tuff.
- Silicon dioxide was detected in one tuff sample. Silicon dioxide is a major natural component of Bandelier Tuff (as quartz and related quartz-bearing minerals), and therefore is not retained as a COPC in tuff.
- Strontium was detected in one tuff sample. Although no BV exists for strontium, earlier studies (Purtymun et al. 1987, 006687; Longmire et al. 1993, 040222) indicate a regional mean background for strontium of 120 mg/kg. Because the maximum detected concentration of strontium in site samples was 0.99 mg/kg, strontium is not retained as a COPC in tuff.

Table D-7.9-4 presents analytical results for the inorganic COPCs in tuff samples (0 to 5 ft bgs) from the East Ten Site Slope Subarea.

D-7.9.3 Inorganic Chemicals in Sediment in East Ten Site Slope Subarea

One sediment sample was collected from 0 to 5 ft bgs in the East Ten Site Slope Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals. Table D-7.9-5 summarizes the sample collected from 0 to 5 ft bgs and the requested chemical analyses.

Twenty-three inorganic chemicals were detected or had elevated detection limits in the sediment sample. Of these, none were identified as COPCs for sediment (0 to 5 ft bgs) in the East Ten Site Slope Subarea based on the following rationale:

- Aluminum, antimony, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, silver, sodium, thallium, vanadium, and zinc were not reported at concentrations above their respective BVs, and are not retained as COPCs in sediment.

- Cadmium and selenium each had elevated detection limits. Cadmium had a nondetected concentration of 0.498 mg/kg (BV = 0.4 mg/kg). Selenium had a nondetected concentration of 0.498 mg/kg (BV = 0.3 mg/kg). Both of these are only slightly above the BV, so cadmium and selenium are not retained as COPCs.

D-7.9.4 Inorganic COPC Summary in East Ten Site Slope Subarea

The inorganic COPCs identified for all media (0 to 5 ft bgs) in the East Ten Site Slope Subarea are barium, cadmium, copper, lead, lithium, mercury, molybdenum, nitrate, nitrite, selenium, and zinc. The COPCs for all media in the East Ten Site Slope Subarea are listed in Table D-7.9-6, with the EPCs calculated for the ecological screening assessments.

D-7.9.5 Radionuclides in Soil and Fill in East Ten Site Slope Subarea

A total of 143 soil and fill samples were collected from 0 to 5 ft bgs and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, americium-241, strontium-90, and tritium (not all samples received all analyses). Table D-7.9-7 presents the soil and fill samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Forty-six radionuclide results (one americium-241, 12 cesium-134, three cesium-137, one cobalt-60, 15 europium-152, seven plutonium-238, five plutonium-239, one ruthenium-106, and one uranium-235) from soil and fill samples were rejected because spectral interference prevented positive identification of analytes or because documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the East Ten Site Slope Subarea.

Eight radionuclides (americium-241, cesium-137, europium-152, plutonium-238, plutonium 239, uranium-234, uranium-235, and uranium-238) were detected in one or more soil samples. Americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 are identified as COPCs for soil and fill (0 to 5 ft bgs) in the East Ten Site Slope Subarea based on the following rationale:

- Americium-241, cesium-137, plutonium-238 and plutonium-239 were each detected above the range of background data and were detected in multiple samples for which the FVs do not apply (subsurface samples). Americium-241, cesium-137, plutonium-238 and plutonium-239 are retained as COPCs in soil and fill.
- Europium-152 was detected in one sample and does not have a BV for comparison, so it is retained as a COPC in soil and fill.
- Uranium-234, uranium-235, and uranium-238 were each detected in multiple samples at concentrations above their respective BVs, and are retained as COPCs in soil and fill.

Table D-7.9-8 presents the analytical results for the radionuclide COPCs in soil and fill samples (0 to 5 ft bgs) from the East Ten Site Slope Subarea.

D-7.9.6 Radionuclides in Tuff in East Ten Site Slope Subarea

Thirty-eight tuff (Qbt 3) samples were collected from 0 to 5 ft bgs and analyzed for radionuclides in the East Ten Site Slope Subarea. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, strontium-90, and tritium (not all samples received all analyses).

Table D-7.9-9 summarizes the tuff samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Eight radionuclide results (four plutonium-238 and four plutonium-239) from tuff samples (0 to 5 ft bgs) were rejected because spectral interference prevented positive identification of analytes or because documentation was missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the East Ten Site Slope Subarea.

Five radionuclides (plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238) were detected in at least one tuff sample. Plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 were identified as COPCs for tuff in the East Ten Site Slope Subarea based on the following rationale:

- Uranium-234, uranium-235, and uranium-238 were each detected above their BVs in multiple samples. They are therefore retained as COPCs in tuff.
- Plutonium-238, plutonium-239, and tritium were each detected in multiple samples, but have no applicable FV. They are therefore retained as COPCs in tuff.

Table D-7.9-10 presents analytical results for the radionuclide COPCs in tuff samples (0 to 5 ft bgs) from the East Ten Site Slope Subarea.

D-7.9.7 Radionuclides in Sediment in East Ten Site Slope Subarea

Three sediment samples were collected from 0 to 5 ft bgs and analyzed for radionuclides in the East Ten Site Slope Subarea. Radionuclide analyses included isotopic plutonium and isotopic uranium. Table D-7.9-11 lists the sediment samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Three radionuclides (uranium-234, uranium-235, uranium-238) were detected in at least one sample. Uranium-234, uranium-235, and uranium-238 are identified as COPCs for sediment in the East Ten Site Slope Subarea based on the following rationale:

- Uranium-234, uranium-235, and uranium-238 were detected above the BV in at least one sample.Uranium-234, uranium-235, and uranium-238 are retained as COPCs in sediment.

Table D-7.9-12 presents analytical results for the radionuclide COPCs in sediment samples (0 to 5 ft bgs) from the East Ten Site Slope Subarea.

D-7.9.8 Radionuclide COPC Summary in East Ten Site Slope Subarea

The radionuclide COPCs identified for all media (0 to 5 ft bgs) in the East Ten Site Slope Subarea are americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238. The radionuclide COPCs for all media are listed in Table D-7.9-13, with the EPCs calculated for the ecological screening assessments.

D-7.9.9 Organic Chemicals in Soil and Fill in East Ten Site Slope Subarea

Fifty-one soil and fill samples were collected from 0 to 5 ft bgs in the East Ten Site Slope Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, and high explosives (HE); not all samples received all analyses. Table D-7.9-14 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

Twenty-two organic chemical results (seven SVOC and 15 VOC) from soil and fill samples (0 to 5 ft bgs) were rejected because the associated LCS recovery was <10%, the samples were extracted beyond twice the acceptable extraction holding time, or other data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the East Ten Site Slope Subarea.

Ten organic chemicals [benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; 1,1-dichloroethene; di-n-butylphthalate; fluoranthene; methylene chloride; pyrene; toluene, and trichlorofluoromethane] were detected in at least one soil and fill sample. All are retained as COPCs for soil and fill in the East Ten Site Slope Subarea.

Table D-7.9-15 presents the analytical results for the organic COPCs in soil and fill samples (0 to 5 ft bgs) from the East Ten Site Slope Subarea.

D-7.9.10 Organic Chemicals in Tuff in East Ten Site Slope Subarea

Fourteen tuff (Qbt 3) samples were collected from 0 to 5 ft bgs and analyzed for organic chemicals in the East Ten Site Slope Subarea. Organic chemical analyses included SVOCs, VOCs, and HEs; not all samples received all analyses. Table D-7.9-16 summarizes the samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

Six organic chemical results (SVOC) from tuff samples were rejected because the associated LCS recovery was <10%. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the East Ten Site Slope Subarea.

Two organic chemicals [acetone and bis(2-ethylhexyl)phthalate] were detected in at least one tuff sample. All are retained as COPCs for soil and fill in the East Ten Site Slope Subarea.

Table D-7.9-17 presents the analytical results for the organic COPCs in tuff samples from the East Ten Site Slope Subarea.

D-7.9.11 Organic Chemicals in Sediment in East Ten Site Slope Subarea

One sediment sample was collected and analyzed for organic chemicals (SVOCs) in the East Ten Site Slope Subarea. Table D-7.9-18 summarizes the sample collected and the organic chemical analyses requested.

No organic chemical results from sediment samples (0 to 5 ft bgs) in the East Ten Site Slope Subarea were rejected because of data-quality issues.

No organic chemicals were detected or identified as COPCs for sediment in the East Ten Site Slope Subarea.

D-7.9.12 Organic COPC Summary in East Ten Site Slope Subarea

The organic COPCs identified for all media in the East Ten Site Slope Subarea are acetone; benzoic acid; bis(2-ethylhexyl)phthalate; chrysene; 1,1-dichloroethene; di-n-butylphthalate; fluoranthene; methylene chloride; pyrene; toluene; trichlorofluoromethane; and total xylene. The organic COPCs are listed in Table D-7.9-19, with the EPCs calculated for the ecological screening assessments.

D-8.0 SIGMA MESA SUBAREA

This section identifies the media-specific COPCs for each site in the Sigma Mesa Subarea.

Table D-8.0-1, Table D-8.0-2, and Table D-8.0-3 summarize the samples collected for inorganic chemical analyses, radionuclide analyses, and organic chemical analyses, respectively, at each site in the Sigma Mesa Subarea.

Table D-8.0-4 presents the concentrations above BVs for detected and nondetected inorganic chemicals at each site in the Sigma Mesa Subarea.

Table D-8.0-5 presents the concentrations of these radionuclides detected above the BV or FV, or detected with no applicable BV or FV, at each site in the Sigma Mesa Subarea.

Table D-8.0-6 presents the concentrations of detected organic chemicals at each site in the Sigma Mesa Subarea.

D-8.1 AOC 60-004(c)

A total of eight soil samples were collected from four locations at this site. The radionuclide and organic chemical analyses requested for each sample are summarized in Table D-8.0-2 and Table D-8.0-3, respectively.

D-8.1.1 Radionuclides in Soil at AOC 60-004(c)

The radionuclide analyses requested for soil samples included gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium. Of the eight soil samples collected, all eight were analyzed for gamma-emitting radionuclides, and three were analyzed for isotopic plutonium and isotopic uranium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-8.0-5.

Cesium-137, europium-152, and plutonium-238 were detected and are retained as COPCs in soil.

D-8.1.2 Radionuclide COPC Summary at AOC 60-004(c)

The radionuclide COPCs identified at AOC 60-004(c) are cesium-137, europium-152, and plutonium-238. They are listed in Table D-8.1-1 with the EPCs for industrial and residential risk screening assessments of the site, except as noted below.

Europium-152 was not detected, and plutonium-238 was not analyzed for, in the 0 to 1 ft bgs depth range, so they were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-8.1.3 Organic Chemicals in Soil at AOC 60-004(c)

The organic chemical analyses requested for soil samples included PCBs, pesticides, SVOCs, and VOCs. Of the eight soil samples collected, three were analyzed for PCBs, pesticides, and SVOCs, and three were analyzed for VOCs. No organic chemicals were detected.

D-8.1.4 Organic COPC Summary at AOC 60-004(c)

There are no organic COPCs identified at AOC 60-004(c).

D-8.2 AOC 60-004(e)

A total of 18 samples were collected from 10 locations at this site. Of the 19 samples collected, 17 were soil and fill and 2 were tuff. The inorganic chemical and organic chemical analyses requested for each sample are summarized in Table D-8.0-1 and Table D-8.0-3, respectively.

D-8.2.1 Inorganic Chemicals in Soil and Fill at AOC 60-004(e)

The inorganic chemical analyses requested for soil and fill samples were TAL metals. Of the 17 soil and fill samples collected, 14 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-8.0-4.

Cadmium, chromium, selenium, and thallium were detected above their BVs. Cadmium and chromium were detected below the maximum concentration in the background data set; selenium and thallium were detected above the maximum concentrations in the background data set. Selenium and thallium are retained as COPCs in soil.

D-8.2.2 Inorganic Chemicals in Tuff at AOC 60-004(e)

The two tuff samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-8.0-4.

Barium, calcium, chromium, and selenium were either detected above their BVs or had detection limits above their BVs.

- Calcium is an essential macronutrient and is not identified as a COPC.
- Barium and chromium were detected above the maximum concentrations in the background data set; they are retained as COPCs in tuff.
- Selenium was not detected but had detection limits above the BV; it is retained as a COPC in tuff.

D-8.2.3 Inorganic COPC Summary at AOC 60-004(e)

The inorganic COPCs identified at AOC 60-004(e) are barium, chromium, selenium, and thallium. They are listed in Table D-8.2-1 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-8.2.4 Organic Chemicals in Soil and Fill at AOC 60-004(e)

The organic chemical analyses requested for soil and fill samples included PCBs, SVOCs, and VOCs. Of the 17 soil and fill samples collected, 13 were analyzed for PCBs, 14 were analyzed for SVOCs, and 15 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-8.0-6.

The following organic chemicals were detected: acetone, Aroclor-1254, Aroclor-1260, bis[2-ethylhexyl]phthalate, 2-butanone, fluoranthene, 2-hexanone, 4-isopropyltoluene, 4-methyl-2-pentanone, pyrene, toluene, and xylene (total). They are all retained as COPCs in soil and fill.

D-8.2.5 Organic Chemicals in Tuff at AOC 60-004(e)

The two tuff samples collected were analyzed for PCBs, SVOCs, and VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-8.0-6.

Aroclor-1260 and bis[2-ethylhexyl]phthalate were detected and are retained as COPCs in tuff.

D-8.2.6 Organic COPC Summary at AOC 60-004(e)

The organic COPCs identified at AOC 60-004(e) are acetone, Aroclor-1254, Aroclor-1260, bis[2-ethylhexyl]phthalate, 2-butanone, fluoranthene, 2-hexanone, 4-isopropyltoluene, 4-methyl-2-pentanone, pyrene, toluene, and xylene (total). They are listed in Table D-8.2-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

The analytes 2-butanone and 4-isopropyltoluene were not detected in the 0 to 1 ft bgs depth range, so they were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-8.3 SWMU 60-005(a)

A total of 32 samples were collected from 17 locations at this site. Of the 32 samples collected, 23 were soil and fill and 9 were tuff. The inorganic chemical, radionuclide, and organic chemical analyses requested for each sample are summarized in Tables D-8.0-1, D-8.0-2, and D-8.0-3, respectively.

D-8.3.1 Inorganic Chemicals in Soil and Fill at SWMU 60-005(a)

The inorganic chemical analyses requested for soil and fill samples included cyanide and metals. Of the 23 soil and fill samples collected, 6 were analyzed for cyanide and 15 were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-8.0-4.

Antimony, cadmium, selenium, and thallium were not detected but had detection limits above their BVs.

- Antimony, selenium, and thallium had detection limits above the maximum concentrations in the background data set; they are retained as COPCs in soil and fill.
- Cadmium had detection limits below the maximum concentration in the background data set; it is not retained as a COPC in soil and fill.

D-8.3.2 Inorganic Chemicals in Tuff at SWMU 60-005(a)

The nine tuff samples collected were analyzed for TAL metals. The sample concentrations above BVs for detected and nondetected inorganic chemicals are presented in Table D-8.0-4.

Chromium, lead, manganese, and selenium were detected above their BVs.

- Chromium and selenium were detected above the maximum concentrations in the background data set; it is retained as a COPC in tuff.
- Lead and manganese were not detected above the maximum concentrations in the background data set; they are not retained as COPCs in tuff.

D-8.3.3 Inorganic COPC Summary at SWMU 60-005(a)

The inorganic COPCs identified at SWMU 60-005(a) are antimony, chromium, selenium, and thallium. They are listed in Table D-8.3-1 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Antimony was not detected in the 0 to 10 ft bgs depth range but had detection limits above the BV, so it was included in the evaluations of risk for the site. Selenium was not detected in the 0 to 1 ft bgs depth range, so it was not included in the evaluation of industrial or recreational risk for the site. It was included in the evaluation of residential risk.

D-8.3.4 Radionuclides in Soil and Fill at SWMU 60-005(a)

The radionuclide analyses requested for soil and fill samples included americium-241, gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. Of the 23 soil and fill samples collected, six were analyzed for americium-241; 17 were analyzed for gamma-emitting radionuclides; 7 were analyzed for isotopic plutonium and isotopic uranium; and 11 were analyzed for tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-8.0-5.

Cesium-137, cobalt-60, europium-152, plutonium-239, and tritium were detected or detected above FVs; they are retained as COPCs in soil and fill.

D-8.3.5 Radionuclides in Tuff at SWMU 60-005(a)

The nine tuff samples collected were analyzed for gamma-emitting radionuclides, isotopic plutonium, isotopic uranium, and tritium. The sample concentrations of the radionuclides detected or detected above BVs/FVs are presented in Table D-8.0-5.

Tritium was detected and is retained as a COPC in tuff.

D-8.3.6 Radionuclide COPC Summary at SWMU 60-005(a)

The radionuclide COPCs identified at SWMU 60-005(a) are cesium-137, cobalt-60, europium-152, plutonium-239, and tritium. They are listed in Table D-8.3-2 with the EPCs calculated for industrial and residential risk screening assessments of the site.

D-8.3.7 Organic Chemicals in Soil and Fill at SWMU 60-005(a)

The organic chemical analyses requested for soil and fill samples included SVOCs and VOCs. Of the 23 soil and fill samples collected, 15 were analyzed for SVOCs and 4 were analyzed for VOCs. The sample concentrations of the detected organic chemicals are presented in Table D-8.0-6.

The following organic chemicals were detected: aniline, benzoic acid, bis[2-ethylhexyl]phthalate, butylbenzylphthalate, fluoranthene, fluorene, and pyrene. They are all retained as COPCs in soil and fill.

D-8.3.8 Organic Chemicals in Tuff at SWMU 60-005(a)

One of the nine tuff samples collected was analyzed for SVOCs. The sample concentrations of the detected organic chemicals are presented in Table D-8.0-6.

Bis[2-ethylhexyl]phthalate was detected and is retained as a COPC in tuff.

D-8.3.9 Organic COPC Summary at SWMU 60-005(a)

The organic COPCs identified at SWMU 60-005(a) are aniline, benzoic acid, bis[2-ethylhexyl]phthalate, butylbenzylphthalate, fluoranthene, fluorene, and pyrene. They are listed in Table D-8.3-3 with the EPCs calculated for industrial and residential risk screening assessments of the site, except as noted below.

Bis[2-ethylhexyl]phthalate, butylbenzylphthalate, and fluorene were not detected in the 0 to 1 ft bgs depth range, so they were not included in the evaluation of industrial or recreational risk for the site. They were included in the evaluation of residential risk.

D-8.4 Ecological Risk Assessment in Sigma Mesa Subarea

Because ecological risk assessment is an evaluation for the entire subarea, the EPCs of the COPCs for the subarea for ecological risk assessment will not differ from the previous report (LANL 2005, 091699). The details of deriving the inorganic, organic, and radionuclide COPCs for the subarea are presented below. Because the ecological risk screening assessment is based on a depth range of 0 to 5 ft bgs, the identification of COPCs for ecological risk screening was performed using only data from samples collected at depths less than 5 ft bgs.

Five inorganic chemicals (antimony, barium, chromium, selenium, and thallium) were identified as COPCs in the Sigma Mesa Subarea.

Five radionuclides (cesium-137, cobalt-60, europium-152, plutonium-239, and tritium) were identified as COPCs in the Sigma Mesa Subarea.

Eleven organic chemicals (acetone, aniline, Aroclor-1254, Aroclor-1260, benzoic acid, bis[2-ethylhexyl]phthalate, fluoranthene, fluorene, 4-isopropyltoluene, pyrene, and toluene) were identified as COPCs in the Sigma Mesa Subarea.

Chemicals are COPCs for the entire subarea if they are identified as a COPC for any medium. The media-specific identification of COPCs for the Sigma Mesa Subarea is discussed in the following sections.

D-8.4.1 Inorganic Chemicals in Soil and Fill in Sigma Mesa Subarea

Thirty-nine soil and fill samples were collected from 0 to 5 ft bgs in the Sigma Mesa Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals; six soil samples were also analyzed for total cyanide. Table D-8.4-1 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

Twenty-three inorganic chemical results (14 antimony, three total cyanide, and six selenium) from soil and fill samples (0 to 5 ft bgs) were rejected because the associate spike sample had a recovery <30%, a preparation blank, initial-calibration blank (ICB), or continuing-calibration blank (CCB) were not analyzed with the samples, or the samples were analyzed beyond twice the acceptable holding time. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Sigma Mesa Subarea.

Twenty-two inorganic chemicals (aluminum, antimony, arsenic, barium, beryllium, cadmium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium vanadium, and zinc) were detected at least once in soil or fill samples. Antimony,

selenium, and thallium are identified as COPCs for soil and fill in the Sigma Mesa Subarea based on the following rationale:

- Aluminum, arsenic, beryllium, calcium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, silver, sodium, vanadium and zinc were not reported above the BV in any samples; they are not retained as COPCs in soil and fill.
- Antimony had several detection limits above the range of background data, with a maximum reported concentration (5.6 mg/kg) over 6 times the BV. Antimony is retained as a COPC in soil and fill.
- Barium and chromium were detected above the BV but below the maximum concentrations in the background data set. Barium and chromium are not retained as COPCs in soil and fill.
- Selenium and thallium were each detected above the maximum concentration in the background data set in one soil sample, and each had multiple detection limits above the BV. Selenium and thallium are retained as COPCs in soil and fill

Table D-8.4-2 presents the analytical results for the inorganic COPCs in soil and fill samples (0 to 5 ft bgs) from the Sigma Mesa Subarea.

D-8.4.2 Inorganic Chemicals in Tuff in Sigma Mesa Subarea

Six tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Sigma Mesa Subarea and analyzed for inorganic chemicals. Inorganic chemical analyses included TAL metals. Table D-8.4-3 summarizes the tuff samples collected from 0 to 5 ft bgs and the inorganic chemical analyses requested for each sample.

No inorganic chemical results from tuff samples (0 to 5 ft bgs) were rejected because of data-quality issues.

Twenty-one inorganic chemicals (aluminum, arsenic, barium, beryllium, calcium, chromium, cobalt, copper, iron, lead, magnesium, manganese, mercury, nickel, potassium, selenium, silver, sodium, thallium vanadium, and zinc) were detected in at least one tuff sample. Barium and chromium are identified as COPCs for tuff in the Sigma Mesa Subarea based on the following rationale:

- Aluminum, arsenic, beryllium, cobalt, copper, iron, magnesium, mercury, nickel, potassium, silver, sodium, thallium, vanadium, and zinc were not detected above their respective BVs in any tuff samples, and therefore are not retained as COPCs.
- Barium and calcium were each detected above the BV, and above the maximum concentration in the background data set, in one sample. Barium is retained as a COPC in tuff. Calcium is an essential macronutrient that occurs naturally in this semiarid climate and is not retained as a COPC in tuff.
- Lead and manganese were detected above the BV, but below their maximum concentrations in the background data set, in one or two samples. Lead and manganese are not retained as COPCs in tuff.
- Selenium was not detected above the BV in any tuff samples. Five samples had detection limits above the BV, but less than twice the BV. Selenium is not retained as a COPC in tuff.

Table D-8.4-4 presents the analytical results for the inorganic COPCs in tuff samples (0 to 5 ft bgs) from the Sigma Mesa Subarea.

D-8.4.3 Inorganic Chemicals in Sediment in Sigma Mesa Subarea

No sediment samples were collected in the Sigma Mesa Subarea. No inorganic chemicals were identified as COPCs for sediment.

D-8.4.4 Inorganic COPC Summary in Sigma Mesa Subarea

The inorganic COPCs identified for all media (0 to 5 ft bgs) in the Sigma Mesa Subarea are antimony, barium, chromium, selenium, and thallium. The inorganic COPCs for all media are listed in Table D-8.4-5, with the EPCs calculated for the ecological screening assessments.

D-8.4.5 Radionuclides in Soil and Fill in Sigma Mesa Subarea

Twenty-five soil and fill samples were collected from 0 to 5 ft bgs in the Sigma Mesa Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, americium-241, and tritium (not all samples received the same analyses). Table D-8.4-6 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Seven radionuclide results (one americium-241 and six cesium-134) from soil and fill samples were rejected because spectral interference prevented positive identification of analytes or because documentation is missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Sigma Mesa Subarea.

Eight radionuclides (cesium-137, cobalt-60, europium-152, plutonium-238, plutonium-239, tritium, uranium-234, uranium-235, and uranium-238) were detected or had elevated detection limits in one or more soil or fill samples. Cesium-137, cobalt-60, europium-152, plutonium-239, and tritium were identified as COPCs for soil and fill in the Sigma Mesa Subarea based on the following rationale:

- Plutonium-238, uranium-234, uranium-235, and uranium-238 were not reported above their BVs in any samples and therefore are not retained as COPCs in soil and fill.
- Cesium-137 and plutonium-239 were each detected above the FV or detected in samples for which the FV does not apply. Cesium-137 and plutonium-239 are retained as COPCs in soil and fill.
- Cobalt-60, europium-152, and tritium were each detected in one or more soil or fill samples, and have no BV/FV for comparison; they are therefore retained as COPCs in soil and fill.

Table D-8.4-7 presents the analytical results for the radionuclide COPCs in soil and fill samples (0 to 5 ft bgs) from the Sigma Mesa Subarea.

D-8.4.6 Radionuclides in Tuff in Sigma Mesa Subarea

Four tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Sigma Mesa Subarea and analyzed for radionuclides. Radionuclide analyses included isotopic plutonium, isotopic uranium, gamma-emitting radionuclides, and tritium (not all samples received all analyses). Table D-8.4-8 summarizes the tuff samples collected from 0 to 5 ft bgs and the radionuclide analyses requested for each sample.

Three radionuclide results (two cesium-134 and one uranium-235) from tuff samples (0 to 5 ft bgs) were rejected because spectral interference prevented positive identification of analytes or because

documentation is missing. The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Sigma Mesa Subarea.

Four radionuclides (tritium, uranium-234, uranium-235, and uranium-238) were detected in at least one tuff sample. Tritium was identified as a COPC for tuff in the Sigma Mesa Subarea based on the following rationale:

- Uranium-234, uranium-235, and uranium-238 were not reported at concentrations above their BVs in any samples and therefore are not retained as COPCs in tuff.
- Tritium was detected in 4 of 10 tuff samples but has no background data for comparison and is therefore retained as a COPC in tuff.

Table D-8.4-9 presents the analytical results for tritium in tuff samples (0 to 5 ft bgs) from the Sigma Mesa Subarea.

D-8.4.7 Radionuclides in Sediment in Sigma Mesa Subarea

No sediment samples from were collected in the Sigma Mesa Subarea. No radionuclides were identified as COPCs in sediment.

D-8.4.8 Radionuclide COPC Summary in Sigma Mesa Subarea

The radionuclide COPCs identified for all media (0 to 5 ft bgs) in the Sigma Mesa Subarea are cesium-137, cobalt-60, europium-152, plutonium-239, and tritium. The radionuclide COPCs for all media are listed in Table D-8.4-10, with the EPCs calculated for the ecological screening assessments.

D-8.4.9 Organic Chemicals in Soil and Fill in Sigma Mesa Subarea

Forty-five soil and fill samples were collected from 0 to 5 ft bgs in the Sigma Mesa Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, pesticide, and PCBs (not all samples received the same analyses). Table D-8.4-11 summarizes the soil and fill samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

Thirty-three organic chemical results (7 PCB and 26 SVOC) from soil and fill samples (0 to 5 ft bgs) were rejected because the associated LCS had a recovery <10%, the samples were extracted beyond twice the acceptable extraction holding time, or other data-quality deficiencies were identified (see the data packages in Appendix E for details). The rejected results were not included in the data analyses discussed here, and the results did not adversely affect the ability to evaluate the Sigma Mesa Subarea.

Eleven organic chemicals (acetone, aniline, Aroclor-1254, Aroclor-1260, benzoic acid, bis[2-ethylhexyl]phthalate, fluoranthene, fluorene, 4-isopropyltoluene, pyrene, and toluene) were detected in at least one in soil and fill sample. All 16 organic chemicals are identified as COPCs for soil in the Sigma Mesa Subarea.

Table D-8.4-12 presents the analytical results for the organic COPCs in soil and fill samples (0 to 5 ft bgs) from the Sigma Mesa Subarea.

D-8.4.10 Organic Chemicals in Tuff in Sigma Mesa Subarea

Three tuff (Qbt 3) samples were collected from 0 to 5 ft bgs in the Sigma Mesa Subarea and analyzed for organic chemicals. Organic chemical analyses included SVOCs, VOCs, and PCBs. Table D-8.4-13

summarizes the tuff samples collected from 0 to 5 ft bgs and the organic chemical analyses requested for each sample.

No organic chemical results from tuff samples (0 to 5 ft bgs) in the Sigma Mesa Subarea were rejected because of data-quality issues.

Two organic chemicals (Aroclor-1260 and bis[2-ethylhexyl]phthalate) were detected in one or more of the tuff samples. Both are identified as COPCs for tuff in the Sigma Mesa Subarea.

Table D-8.4-14 presents the analytical results for the organic COPCs in tuff samples (0 to 5 ft bgs) from the Sigma Mesa Subarea.

D-8.4.11 Organic Chemicals in Sediment in Sigma Mesa Subarea

No sediment samples were collected the Sigma Mesa Subarea. No organic chemicals were identified as COPCs in sediment.

D-8.4.12 Organic COPC Summary in Sigma Mesa Subarea

The organic COPCs identified for all media (0 to 5 ft bgs) in the Sigma Mesa Subarea are acetone, aniline, Aroclor-1254, Aroclor-1260, benzoic acid, bis(2-ethylhexyl)phthalate, fluoranthene, fluorene, 4-isopropyltoluene, pyrene, and toluene. The organic COPCs for all media are listed in Table D-8.4-15, with the EPCs calculated for the ecological screening assessments.

D-9.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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Longmire, P.A., C. Duffy, and S.L. Reneau, 1993. "Preliminary Background Elemental Concentrations in Bandelier Tuff and Selected Soil Series," Abstract, Los Alamos National Laboratory, Los Alamos, New Mexico. (Longmire et al. 1993, 040222)

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Purtymun, W.D., R.J. Peters, T.E. Buhl, M.N. Maes, and F.H. Brown, November 1987. "Background Concentrations of Radionuclides in Soils and River Sediments in Northern New Mexico, 1974-1986," Los Alamos, New Mexico. (Purtymun et al. 1987, 006687)

Table D-1.1-1
Background/Fallout Values and Background Data for Inorganic Chemicals and Radionuclides Detected in the Mortandad/Ten Site Aggregate

RFI Class	Analyte	Media Code	Background Value[a]	Background Data?
Inorganic	Aluminum	ALLH	29200	Yes
Inorganic	Aluminum	FILL	29200	Yes
Inorganic	Aluminum	Qbt1g, Qct, Qbo	3560	Yes
Inorganic	Aluminum	Qbt1v	8170	Yes
Inorganic	Aluminum	Qbt2, Qbt3, Qbt4	7340	Yes
Inorganic	Aluminum	SED	15400	Yes
Inorganic	Antimony	ALLH	0.83	Yes
Inorganic	Antimony	FILL	0.83	Yes
Inorganic	Antimony	Qbt1g, Qct, Qbo	0.5	Yes
Inorganic	Antimony	Qbt1v	0.5	Yes
Inorganic	Antimony	Qbt2, Qbt3, Qbt4	0.5	Yes
Inorganic	Antimony	SED	0.83	No
Inorganic	Arsenic	ALLH	8.17	Yes
Inorganic	Arsenic	FILL	8.17	Yes
Inorganic	Arsenic	Qbt1g, Qct, Qbo	0.56	Yes
Inorganic	Arsenic	Qbt1v	1.81	Yes
Inorganic	Arsenic	Qbt2, Qbt3, Qbt4	2.79	Yes
Inorganic	Arsenic	SED	3.98	Yes
Inorganic	Barium	ALLH	295	Yes
Inorganic	Barium	FILL	295	Yes
Inorganic	Barium	Qbt1g, Qct, Qbo	25.7	Yes
Inorganic	Barium	Qbt1v	26.5	Yes
Inorganic	Barium	Qbt2, Qbt3, Qbt4	46	Yes
Inorganic	Barium	SED	127	Yes
Inorganic	Beryllium	ALLH	1.83	Yes
Inorganic	Beryllium	FILL	1.83	Yes
Inorganic	Beryllium	Qbt1g, Qct, Qbo	1.44	Yes
Inorganic	Beryllium	Qbt1v	1.7	Yes
Inorganic	Beryllium	Qbt2, Qbt3, Qbt4	1.21	Yes
Inorganic	Beryllium	SED	1.31	Yes
Inorganic	Boron	ALLH	na[b]	No
Inorganic	Boron	FILL	na	No
Inorganic	Boron	Qbt1g, Qct, Qbo	na	No
Inorganic	Boron	Qbt1v	na	No
Inorganic	Boron	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Boron	SED	na	No
Inorganic	Bromide	ALLH	na	No
Inorganic	Bromide	FILL	na	Yes
Inorganic	Bromide	Qbt1g, Qct, Qbo	na	No
Inorganic	Bromide	Qbt1v	na	No
Inorganic	Bromide	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Bromide	SED	na	No

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Inorganic	Cadmium	ALLH	0.4	Yes
Inorganic	Cadmium	FILL	0.4	Yes
Inorganic	Cadmium	Qbo	0.4	No
Inorganic	Cadmium	Qbt1g	0.4	No
Inorganic	Cadmium	Qbt1v	0.4	No
Inorganic	Cadmium	Qbt2, Qbt3, Qbt4	1.63	Yes
Inorganic	Cadmium	SED	0.4	Yes
Inorganic	Calcium	ALLH	6120	Yes
Inorganic	Calcium	FILL	6120	Yes
Inorganic	Calcium	Qbt1g, Qct, Qbo	1900	Yes
Inorganic	Calcium	Qbt1v	3700	Yes
Inorganic	Calcium	Qbt2, Qbt3, Qbt4	2200	Yes
Inorganic	Calcium	SED	4420	Yes
Inorganic	Chloride	ALLH	231	Yes
Inorganic	Chloride	FILL	231	Yes
Inorganic	Chloride	Qbt1g, Qct, Qbo	474	Yes
Inorganic	Chloride	Qbt1v	446	Yes
Inorganic	Chloride	Qbt2, Qbt3, Qbt4	94.6	Yes
Inorganic	Chloride	SED	17.1	Yes
Inorganic	Chromium	ALLH	19.3	Yes
Inorganic	Chromium	FILL	19.3	Yes
Inorganic	Chromium	Qbt1g, Qct, Qbo	2.6	Yes
Inorganic	Chromium	Qbt1v	2.24	Yes
Inorganic	Chromium	Qbt2, Qbt3, Qbt4	7.14	Yes
Inorganic	Chromium	SED	10.5	Yes
Inorganic	Cobalt	ALLH	8.64	Yes
Inorganic	Cobalt	FILL	8.64	Yes
Inorganic	Cobalt	Qbt1g, Qct, Qbo	8.89	Yes
Inorganic	Cobalt	Qbt1v	1.78	Yes
Inorganic	Cobalt	Qbt2, Qbt3, Qbt4	3.14	Yes
Inorganic	Cobalt	SED	4.73	Yes
Inorganic	Copper	ALLH	14.7	Yes
Inorganic	Copper	FILL	14.7	Yes
Inorganic	Copper	Qbt1g, Qct, Qbo	3.96	Yes
Inorganic	Copper	Qbt1v	3.26	Yes
Inorganic	Copper	Qbt2, Qbt3, Qbt4	4.66	Yes
Inorganic	Copper	SED	11.2	Yes
Inorganic	Cyanide (total)	ALLH	0.5	No
Inorganic	Cyanide (total)	FILL	0.5	No
Inorganic	Cyanide (total)	Qbt1g, Qct, Qbo	0.5	No
Inorganic	Cyanide (total)	Qbt1v	0.5	No
Inorganic	Cyanide (total)	Qbt2, Qbt3, Qbt4	0.5	No
Inorganic	Cyanide (total)	SED	0.82	Yes
Inorganic	Fluoride	ALLH	na	No
Inorganic	Fluoride	FILL	na	No
Inorganic	Fluoride	Qbt1g, Qct, Qbo	na	No

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Inorganic	Fluoride	Qbt1v	na	No
Inorganic	Fluoride	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Fluoride	SED	na	No
Inorganic	Iron	ALLH	21500	Yes
Inorganic	Iron	FILL	21500	Yes
Inorganic	Iron	Qbt1g, Qct, Qbo	3700	Yes
Inorganic	Iron	Qbt1v	9900	Yes
Inorganic	Iron	Qbt2, Qbt3, Qbt4	14500	Yes
Inorganic	Iron	SED	13800	Yes
Inorganic	Lead	ALLH	22.3	Yes
Inorganic	Lead	FILL	22.3	Yes
Inorganic	Lead	Qbt1g, Qct, Qbo	13.5	Yes
Inorganic	Lead	Qbt1v	18.4	Yes
Inorganic	Lead	Qbt2, Qbt3, Qbt4	11.2	Yes
Inorganic	Lead	SED	19.7	Yes
Inorganic	Lithium	ALLH	na	No
Inorganic	Lithium	FILL	na	No
Inorganic	Lithium	Qbt1g, Qct, Qbo	na	No
Inorganic	Lithium	Qbt1v	na	No
Inorganic	Lithium	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Lithium	SED	na	No
Inorganic	Magnesium	ALLH	4610	Yes
Inorganic	Magnesium	FILL	4610	Yes
Inorganic	Magnesium	Qbt1g, Qct, Qbo	739	Yes
Inorganic	Magnesium	Qbt1v	780	Yes
Inorganic	Magnesium	Qbt2, Qbt3, Qbt4	1690	Yes
Inorganic	Magnesium	SED	2370	Yes
Inorganic	Manganese	ALLH	671	Yes
Inorganic	Manganese	FILL	671	Yes
Inorganic	Manganese	Qbt1g, Qct, Qbo	189	Yes
Inorganic	Manganese	Qbt1v	408	Yes
Inorganic	Manganese	Qbt2, Qbt3, Qbt4	482	Yes
Inorganic	Manganese	SED	543	Yes
Inorganic	Mercury	ALLH	0.1	Yes
Inorganic	Mercury	FILL	0.1	Yes
Inorganic	Mercury	Qbt1g, Qct, Qbo	0.1	No
Inorganic	Mercury	Qbt1v	0.1	No
Inorganic	Mercury	Qbt2, Qbt3, Qbt4	0.1	No
Inorganic	Mercury	SED	0.1	Yes
Inorganic	Molybdenum	ALLH	na	No
Inorganic	Molybdenum	FILL	na	No
Inorganic	Molybdenum	Qbt1g, Qct, Qbo	na	No
Inorganic	Molybdenum	Qbt1v	na	No
Inorganic	Molybdenum	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Molybdenum	SED	na	No
Inorganic	Nickel	ALLH	15.4	Yes

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Inorganic	Nickel	FILL	15.4	Yes
Inorganic	Nickel	Qbt1g, Qct, Qbo	2	Yes
Inorganic	Nickel	Qbt1v	2	Yes
Inorganic	Nickel	Qbt2, Qbt3, Qbt4	6.58	Yes
Inorganic	Nickel	SED	9.38	Yes
Inorganic	Nitrate	ALLH	na	No
Inorganic	Nitrate	FILL	na	No
Inorganic	Nitrate	Qbt1g, Qct, Qbo	na	No
Inorganic	Nitrate	Qbt1v	na	No
Inorganic	Nitrate	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Nitrate	SED	na	No
Inorganic	Nitrite	ALLH	na	No
Inorganic	Nitrite	FILL	na	No
Inorganic	Nitrite	Qbt1g, Qct, Qbo	na	No
Inorganic	Nitrite	Qbt1v	na	No
Inorganic	Nitrite	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Nitrite	SED	na	No
Inorganic	Oxalate	ALLH	na	No
Inorganic	Oxalate	FILL	na	No
Inorganic	Oxalate	Qbt1g, Qct, Qbo	na	No
Inorganic	Oxalate	Qbt1v	na	No
Inorganic	Oxalate	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Oxalate	SED	na	No
Inorganic	Perchlorate	ALLH	na	No
Inorganic	Perchlorate	FILL	na	No
Inorganic	Perchlorate	Qbt1g, Qct, Qbo	na	No
Inorganic	Perchlorate	Qbt1v	na	No
Inorganic	Perchlorate	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Perchlorate	SED	na	No
Inorganic	Phosphorous	ALLH	na	No
Inorganic	Phosphorous	FILL	na	No
Inorganic	Phosphorous	Qbt1g, Qct, Qbo	na	No
Inorganic	Phosphorous	Qbt1v	na	No
Inorganic	Phosphorous	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Phosphorous	SED	na	No
Inorganic	Potassium	ALLH	3460	Yes
Inorganic	Potassium	FILL	3460	Yes
Inorganic	Potassium	Qbt1g, Qct, Qbo	2390	Yes
Inorganic	Potassium	Qbt1v	6670	Yes
Inorganic	Potassium	Qbt2, Qbt3, Qbt4	3500	Yes
Inorganic	Potassium	SED	2690	Yes
Inorganic	Selenium	ALLH	1.52	Yes
Inorganic	Selenium	FILL	1.52	Yes
Inorganic	Selenium	Qbt1g, Qct, Qbo	0.3	No
Inorganic	Selenium	Qbt1v	0.3	No
Inorganic	Selenium	Qbt2, Qbt3, Qbt4	0.3	Yes

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Inorganic	Selenium	SED	0.3	Yes
Inorganic	Silicon	ALLH	na	No
Inorganic	Silicon	FILL	na	No
Inorganic	Silicon	Qbt1g, Qct, Qbo	na	No
Inorganic	Silicon	Qbt1v	na	No
Inorganic	Silicon	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Silicon	SED	na	No
Inorganic	Silver	ALLH	1	No
Inorganic	Silver	FILL	1	No
Inorganic	Silver	Qbt1g, Qct, Qbo	1	Yes
Inorganic	Silver	Qbt1v	1	Yes
Inorganic	Silver	Qbt2, Qbt3, Qbt4	1	Yes
Inorganic	Silver	SED	1	Yes
Inorganic	Sodium	ALLH	915	Yes
Inorganic	Sodium	FILL	915	Yes
Inorganic	Sodium	Qbt1g, Qct, Qbo	4350	Yes
Inorganic	Sodium	Qbt1v	6330	Yes
Inorganic	Sodium	Qbt2, Qbt3, Qbt4	2770	Yes
Inorganic	Sodium	SED	1470	Yes
Inorganic	Strontium	ALLH	na	No
Inorganic	Strontium	FILL	na	No
Inorganic	Strontium	Qbt1g, Qct, Qbo	na	No
Inorganic	Strontium	Qbt1v	na	No
Inorganic	Strontium	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Strontium	SED	na	No
Inorganic	Sulfate	ALLH	293	Yes
Inorganic	Sulfate	FILL	293	Yes
Inorganic	Sulfate	Qbt1g, Qct, Qbo	1120	Yes
Inorganic	Sulfate	Qbt1v	142	Yes
Inorganic	Sulfate	Qbt2, Qbt3, Qbt4	157	Yes
Inorganic	Sulfate	SED	58.2	Yes
Inorganic	Thallium	ALLH	0.73	Yes
Inorganic	Thallium	FILL	0.73	Yes
Inorganic	Thallium	Qbt1g, Qct, Qbo	1.22	Yes
Inorganic	Thallium	Qbt1v	1.24	Yes
Inorganic	Thallium	Qbt2, Qbt3, Qbt4	1.1	Yes
Inorganic	Thallium	SED	0.73	No
Inorganic	Titanium	ALLH	na	No
Inorganic	Titanium	FILL	na	No
Inorganic	Titanium	Qbt1g, Qct, Qbo	na	No
Inorganic	Titanium	Qbt1v	na	No
Inorganic	Titanium	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Titanium	SED	na	No
Inorganic	Total organic carbon	ALLH	na	No
Inorganic	Total organic carbon	FILL	na	No
Inorganic	Total organic carbon	Qbt1g, Qct, Qbo	na	No

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Inorganic	Total organic carbon	Qbt1v	na	No
Inorganic	Total organic carbon	Qbt2, Qbt3, Qbt4	na	No
Inorganic	Total organic carbon	SED	na	No
Inorganic	Uranium	ALLH	1.82	Yes
Inorganic	Uranium	FILL	1.82	Yes
Inorganic	Uranium	Qbt1g, Qct, Qbo	0.72	Yes
Inorganic	Uranium	Qbt1v	6.22	Yes
Inorganic	Uranium	Qbt2, Qbt3, Qbt4	2.4	Yes
Inorganic	Uranium	SED	2.22	Yes
Inorganic	Vanadium	ALLH	39.6	Yes
Inorganic	Vanadium	FILL	39.6	Yes
Inorganic	Vanadium	Qbt1g, Qct, Qbo	4.59	Yes
Inorganic	Vanadium	Qbt1v	4.48	Yes
Inorganic	Vanadium	Qbt2, Qbt3, Qbt4	17	Yes
Inorganic	Vanadium	SED	19.7	Yes
Inorganic	Zinc	ALLH	48.8	Yes
Inorganic	Zinc	FILL	48.8	Yes
Inorganic	Zinc	Qbt1g, Qct, Qbo	40	Yes
Inorganic	Zinc	Qbt1v	84.6	Yes
Inorganic	Zinc	Qbt2, Qbt3, Qbt4	63.5	Yes
Inorganic	Zinc	SED	60.2	Yes
Radionuclide	Americium-241	ALLH	0.013[c]	Yes
Radionuclide	Americium-241	FILL	0.013[c]	Yes
Radionuclide	Americium-241	Qbt1g, Qct, Qbo	na	No
Radionuclide	Americium-241	Qbt1v	na	No
Radionuclide	Americium-241	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Americium-241	SED	0.04[c]	Yes
Radionuclide	Cesium-134	ALLH	na	No
Radionuclide	Cesium-134	FILL	na	No
Radionuclide	Cesium-134	Qbt1g, Qct, Qbo	na	No
Radionuclide	Cesium-134	Qbt1v	na	No
Radionuclide	Cesium-134	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Cesium-134	SED	na	No
Radionuclide	Cesium-137	ALLH	1.65[c]	Yes
Radionuclide	Cesium-137	FILL	1.65[c]	Yes
Radionuclide	Cesium-137	Qbt1g, Qct, Qbo	na	No
Radionuclide	Cesium-137	Qbt1v	na	No
Radionuclide	Cesium-137	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Cesium-137	SED	0.9[c]	Yes
Radionuclide	Cobalt-60	ALLH	na	No
Radionuclide	Cobalt-60	FILL	na	No
Radionuclide	Cobalt-60	Qbt1g, Qct, Qbo	na	No
Radionuclide	Cobalt-60	Qbt1v	na	No
Radionuclide	Cobalt-60	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Cobalt-60	SED	na	No
Radionuclide	Europium-152	ALLH	na	No

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Radionuclide	Europium-152	FILL	na	No
Radionuclide	Europium-152	Qbt1g, Qct, Qbo	na	No
Radionuclide	Europium-152	Qbt1v	na	No
Radionuclide	Europium-152	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Europium-152	SED	na	No
Radionuclide	Plutonium-238	ALLH	0.023[c]	Yes
Radionuclide	Plutonium-238	FILL	0.023[c]	Yes
Radionuclide	Plutonium-238	Qbt1g, Qct, Qbo	na	No
Radionuclide	Plutonium-238	Qbt1v	na	No
Radionuclide	Plutonium-238	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Plutonium-238	SED	0.006[c]	Yes
Radionuclide	Plutonium-239	ALLH	0.054[c]	Yes
Radionuclide	Plutonium-239	FILL	0.054[c]	Yes
Radionuclide	Plutonium-239	Qbt1g, Qct, Qbo	na	No
Radionuclide	Plutonium-239	Qbt1v	na	No
Radionuclide	Plutonium-239	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Plutonium-239	SED	0.068[c]	Yes
Radionuclide	Potassium-40	ALLH	36.8	No
Radionuclide	Potassium-40	FILL	36.8	No
Radionuclide	Potassium-40	Qbt1g, Qct, Qbo	44.5	No
Radionuclide	Potassium-40	Qbt1v	33.9	No
Radionuclide	Potassium-40	Qbt2, Qbt3, Qbt4	35.7	No
Radionuclide	Potassium-40	SED	36.8	Yes
Radionuclide	Ruthenium-106	ALLH	na	No
Radionuclide	Ruthenium-106	FILL	na	No
Radionuclide	Ruthenium-106	Qbt1g, Qct, Qbo	na	No
Radionuclide	Ruthenium-106	Qbt1v	na	No
Radionuclide	Ruthenium-106	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Ruthenium-106	SED	na	No
Radionuclide	Sodium-22	ALLH	na	No
Radionuclide	Sodium-22	FILL	na	No
Radionuclide	Sodium-22	Qbt1g, Qct, Qbo	na	No
Radionuclide	Sodium-22	Qbt1v	na	No
Radionuclide	Sodium-22	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Sodium-22	SED	na	No
Radionuclide	Strontium-90	ALLH	1.31[c]	Yes
Radionuclide	Strontium-90	FILL	1.31[c]	Yes
Radionuclide	Strontium-90	Qbt1g, Qct, Qbo	na	No
Radionuclide	Strontium-90	Qbt1v	na	No
Radionuclide	Strontium-90	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Strontium-90	SED	1.04[c]	Yes
Radionuclide	Thorium-228	ALLH	2.28	No
Radionuclide	Thorium-228	FILL	2.28	No
Radionuclide	Thorium-228	Qbt1g, Qct, Qbo	4.9	No
Radionuclide	Thorium-228	Qbt1v	3.75	No

Table D-1.1-1 (continued)

RFI Class	Analyte	Media Code	Background Value	Background Data?
Radionuclide	Thorium-228	Qbt2, Qbt3, Qbt4	2.52	No
Radionuclide	Thorium-228	SED	2.28	Yes
Radionuclide	Thorium-230	ALLH	2.29	No
Radionuclide	Thorium-230	FILL	2.29	No
Radionuclide	Thorium-230	Qbt1g, Qct, Qbo	4	No
Radionuclide	Thorium-230	Qbt1v	3.12	No
Radionuclide	Thorium-230	Qbt2, Qbt3, Qbt4	1.98	No
Radionuclide	Thorium-230	SED	2.29	Yes
Radionuclide	Thorium-232	ALLH	2.33	No
Radionuclide	Thorium-232	FILL	2.33	No
Radionuclide	Thorium-232	Qbt1g, Qct, Qbo	4.9	No
Radionuclide	Thorium-232	Qbt1v	3.75	No
Radionuclide	Thorium-232	Qbt2, Qbt3, Qbt4	2.52	No
Radionuclide	Thorium-232	SED	2.33	Yes
Radionuclide	Tritium	ALLH	na	Yes[d]
Radionuclide	Tritium	FILL	na	Yes
Radionuclide	Tritium	Qbt1g, Qct, Qbo	na	No
Radionuclide	Tritium	Qbt1v	na	No
Radionuclide	Tritium	Qbt2, Qbt3, Qbt4	na	No
Radionuclide	Tritium	SED	0.093[c]	Yes
Radionuclide	Uranium-234	ALLH	2.59	No
Radionuclide	Uranium-234	FILL	2.59	No
Radionuclide	Uranium-234	Qbt1g, Qct, Qbo	4	No
Radionuclide	Uranium-234	Qbt1v	3.12	No
Radionuclide	Uranium-234	Qbt2, Qbt3, Qbt4	1.98	No
Radionuclide	Uranium-234	SED	2.59	Yes
Radionuclide	Uranium-235	ALLH	0.2	No
Radionuclide	Uranium-235	FILL	0.2	No
Radionuclide	Uranium-235	Qbt1g, Qct, Qbo	0.18	No
Radionuclide	Uranium-235	Qbt1v	0.14	No
Radionuclide	Uranium-235	Qbt2, Qbt3, Qbt4	0.09	No
Radionuclide	Uranium-235	SED	0.2	Yes
Radionuclide	Uranium-238	ALLH	2.29	No
Radionuclide	Uranium-238	FILL	2.29	No
Radionuclide	Uranium-238	Qbt1g, Qct, Qbo	3.9	No
Radionuclide	Uranium-238	Qbt1v	3.05	No
Radionuclide	Uranium-238	Qbt2, Qbt3, Qbt4	1.93	No
Radionuclide	Uranium-238	SED	2.29	Yes

Note: Inorganic background values in mg/kg; radionuclide background/fallout values in pCi/g.

[a] Background/fallout values from LANL 1998 (059730).

[b] na = Not available.

[c] Fallout value.

[d] Although a tritium fallout value for soil is available in pCi/ml in LANL 1998 (059730), tritium is conservatively evaluated based on detection status, even in surface samples of 0 to 0.5 ft.

Table D-1.3-1
Summary of Rejected Results by Subarea

Subarea	Number of Rejected Results	Number of Non-detected Rejected Results	Number of Retained Results	Percentage of Rejected Results	Additional Data Gaps Result?
Mesa Top	343	289 (84%)	16,955	2	no
Ten Site Slope	1449	1136 (78%)	13,698	11	no
Mortandad Slope	2004	1785 (89%)	13,930	14	no
Pratt Canyon	283	236 (83%)	6957	4	no
Ten Site Canyon	156	44 (28%)	2979	5	no
East Ten Site Slope	628	256 (41%)	9961	6	no
Sigma Mesa	277	150 (54%)	3413	8	no
Total:	5140	3896 (76%)	67893	8	

Table D-2.0-1
Soil, Fill, Tuff, and Sediment Samples Collected for Inorganic Chemical Analyses at Mesa Top Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
35-002	RE35-04-54075	35-22941	4-5	ALLH	—[a]	2358S[b]
	RE35-04-54076	35-22941	14-15	QBT3	—	2358S
	RE35-04-54077	35-22941	29-30	QBT3	—	2358S
	RE35-04-54126	35-22958	4-5	ALLH	—	2356S
	RE35-04-54127	35-22958	9-10	ALLH	—	2356S
	RE35-04-54128	35-22958	14-15	ALLH	—	2356S
	RE35-04-54129	35-22958	19.2-20	QBT3	—	2356S
35-003(a)-99	AAB0996	35-02004	99-100	QBT2	—	19619
	AAB0997	35-02006	24-25	QBT3	—	19606
	AAB0984	35-02013	34-35	QBT3	—	17437
	0435-95-0168	35-02269	0-0.5	FILL	—	1650
	0435-96-0003	35-02270	10-10.5	FILL	—	2043
	0435-96-0006	35-02271	7-7.5	FILL	—	1755
	0435-96-0007 (FD)	35-02271	7-7.5	FILL	—	1755
	0435-96-0010	35-02272	12-12.5	FILL	—	2504
	0435-96-0013	35-02273	15-16	FILL	—	2699
	0435-96-0016	35-02274	17-18	FILL	—	2731
	0435-96-0019	35-02275	12-12.5	FILL	—	2043
	0435-96-0022	35-02276	9-9.5	FILL	—	1964
	0435-96-0030	35-02295	1.5-2.5	FILL	—	2572
	0435-96-0034	35-02296	0-1	ALLH	—	2640
	0435-96-0038	35-02297	0-1	ALLH	—	2640
	0435-96-0042	35-02298	0-1	FILL	—	2838
	0435-96-0045	35-02299	0-1	FILL	—	2838
	0435-96-0049	35-02300	0-1	FILL	—	2838
	0435-97-0001	35-02303	3-4.5	FILL	3065R	3065R
	0435-97-0002	35-02303	4.5-7	QBT3	3065R	3065R
	0435-97-0003 (FD)	35-02303	4.5-7	QBT3	3065R	3065R
	0435-97-0004	35-02303	13.5-15	QBT3	3065R	3065R
	0435-97-0005	35-02303	17.5-19	QBT3	3065R	3065R
	0435-97-0007	35-02304	4.5-5.5	FILL	3065R	3065R

Table D-2.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	0435-97-0008	35-02304	5.5-7	QBT3	3065R	3065R
	0435-97-0009	35-02304	20-21.5	QBT3	3065R	3065R
	0435-97-0010	35-02304	24-25	QBT3	3065R	3065R
	0435-97-0012	35-02305	7-8.4	FILL	3067R	3067R
	0435-97-0013	35-02305	8.4-10	QBT3	3067R	3067R
	0435-97-0016	35-02305	14.5-15	QBT3	3067R	3067R
	0435-97-0014	35-02305	17.5-18.5	QBT3	3067R	3067R
	0435-97-0015	35-02305	38-39	QBT3	3067R	3067R
	0435-97-0033	35-02306	6.8-7.8	FILL	3071R	3071R
	0435-97-0034	35-02306	7.8-8.8	QBT3	3071R	3071R
	0435-97-0035	35-02306	11.5-12.5	QBT3	3071R	3071R
	0435-97-0036	35-02306	16.5-17.5	QBT3	3071R	3071R
	0435-97-0022	35-02307	9-10	FILL	3069R	3069R
	0435-97-0023	35-02307	10-12.5	QBT3	3069R	3069R
	0435-97-0024 (FD)	35-02307	10-12.5	QBT3	3069R	3069R
	0435-97-0027	35-02307	17-17.5	QBT3	3069R	3069R
	0435-97-0025	35-02307	21.5-22.5	QBT3	3069R	3069R
	0435-97-0026	35-02307	26.5-27.5	QBT3	3069R	3069R
	0435-97-0028	35-02308	8.4-9.4	FILL	3079R	3079R
	0435-97-0029	35-02308	9.4-10	QBT3	3079R	3079R
	0435-97-0030	35-02308	11.5-12.5	QBT3	3079R	3079R
	0435-97-0031	35-02308	19-20	QBT3	3079R	3079R
	0435-97-0038	35-02309	2.5-3.5	FILL	3079R	3079R
	0435-97-0039	35-02309	4.5-5.5	QBT3	3079R	3079R
	0435-97-0040	35-02309	8.5-10	QBT3	3079R	3079R
	0435-96-0153	35-02437	0-1	FILL	—	2678
	0435-96-0154	35-02437	4-5	FILL	—	2678
	0435-96-0156	35-02438	4-5	FILL	—	2678
	0435-96-0157	35-02438	8-9	QBT3	—	2678
	0435-96-0158	35-02439	0-1	FILL	—	2678
	0435-96-0159	35-02439	4-5	FILL	—	2678
	0435-96-0160	35-02440	4-5	FILL	—	2678
	0435-96-0161	35-02440	8-9	QBT3	—	2678
	0435-96-0162	35-02441	0-1	FILL	—	2678
	0435-96-0163	35-02441	4-5	ALLH	—	2678
	0435-96-0165	35-02442	4-5	FILL	—	2678
	0435-96-0166	35-02442	8-9	QBT3	—	2678
	0435-96-0167	35-02443	4-5	FILL	—	2678
	0435-96-0168	35-02443	8-8.5	QBT3	—	2678
	0435-96-0169	35-02444	0-1	FILL	—	2678
	0435-96-0170	35-02444	4-5	FILL	—	2678
	0435-96-0171	35-02445	0-1	FILL	—	2678
	0435-96-0172	35-02445	4.5-5.5	FILL	—	2678
	0435-96-0173	35-02446	4-5	FILL	—	2678
	0435-96-0174	35-02446	8-9	QBT3	—	2678
	0435-96-0175 (FD)	35-02446	8-9	QBT3	—	2678
	0435-97-0017	35-02529	5-6	FILL	3069R	3069R
	0435-97-0018	35-02529	6-7.5	QBT3	3069R	3069R

Table D-2.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	0435-97-0021	35-02529	10-11	QBT3	3069R	3069R
	0435-97-0019	35-02529	19.5-20.5	QBT3	3069R	3069R
	0435-97-0020	35-02529	24-25	QBT3	3069R	3069R
	RE35-04-54061	35-22936	19-20	QBT3	—	2366S
	RE35-04-54062	35-22936	29-30	QBT3	—	2374S
	RE35-04-54075	35-22941	4-5	ALLH	—	2358S
	RE35-04-54076	35-22941	14-15	QBT3	—	2358S
	RE35-04-54077	35-22941	29-30	QBT3	—	2358S
	RE35-04-54106	35-22950	4-5	QBT3	—	2369S
	RE35-04-54107	35-22950	14-15	QBT3	—	2369S
	RE35-04-54108	35-22950	29-30	QBT3	—	2369S
	RE35-05-58364	35-24414	4-5	QBT3	—	2966S
	RE35-05-58365	35-24414	14-15	QBT3	—	2966S
	RE35-05-58366	35-24414	29-30	QBT3	—	2966S
	RE35-05-58367	35-24415	4-5	FILL	—	2966S
	RE35-05-58377 (FD)	35-24415	4-5	FILL	—	2966S
	RE35-05-58368	35-24415	14-15	QBT3	—	2966S
	RE35-05-58369	35-24415	29-30	QBT3	—	2966S
	RE35-05-58370	35-24416	15.5-16.5	FILL	—	2954S
	RE35-05-58371	35-24416	16.5-17.5	FILL	—	2954S
35-003(j)-99	0435-95-0211	35-02288	1-2	FILL	—	1702
	0435-95-0212	35-02288	3-4	QBT3	—	1702
	0435-95-0213	35-02288	6-7	QBT3	—	1702
	0435-95-0214	35-02288	9-10	QBT3	—	1702
	0435-95-0219	35-02291	1-2	FILL	—	1702
	0435-95-0220	35-02291	3-4	FILL	—	1702
	0435-95-0221	35-02291	6-7	QBT3	—	1702
	0435-95-0222	35-02291	9-10	QBT3	—	1702
	0435-96-0083	35-02353	0-0.5	FILL	—	2308
35-004(a)	RE35-04-54016	35-22922	4-5	QBT3	—	2264S
	RE35-04-54017	35-22922	9-10	QBT3	—	2264S
35-004(h)	AAA6601	35-02024	1-2	ALLH	—	—
	AAA6602	35-02024	14-15	ALLH	—	—
	AAA6603	35-02024	24-25	Qbt 3	—	—
	AAA6604	35-02024	29-30	Qbt 3	—	—
	RE35-05-58367	35-24415	4-5	Fill	2966S	2966S
	RE35-05-58377 (FD)	35-24415	4-5	Fill	2966S	2966S
	RE35-05-58368	35-24415	14-15	Qbt 3	2966S	2966S
	RE35-05-58369	35-24415	29-30	Qbt 3	2966S	2966S
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	16518
	AAA6382	35-02035	8.8-9.8	QBT3	—	16518
	AAA6383	35-02035	14-15	QBT3	—	16518
	AAA6384	35-02035	17.5-18.7	QBT3	—	16518
	AAA6401	35-02036	0-1.1	ALLH	—	16518
	AAA6402	35-02036	7.4-8.4	QBT3	—	16518
	AAA6403	35-02036	14.2-15	QBT3	—	16518
	AAA6404	35-02036	19-20	QBT3	—	16518
	AAA6429	35-02037	3-4	QBT3	—	16518

Table D-2.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	AAA6433	35-02037	3-4	QBT3	—	16518
	AAA6433 (FD)	35-02037	3-4	QBT3	—	16518
	AAA6430	35-02037	9-10	QBT3	—	16518
	AAA6431	35-02037	13-14	QBT3	—	16518
	AAA6432	35-02037	19-20	QBT3	—	16518
	AAA6437	35-02038	2.5-3.5	QBT3	—	16519
	AAA6438	35-02038	9-10	QBT3	—	16519
	AAA6439	35-02038	14-15	QBT3	—	16519
	AAA6440	35-02038	19-20	QBT3	—	16519
	AAA6441	35-02221	4-5	QBT3	—	16519
	AAA6442	35-02221	8.8-10	QBT3	—	16519
	AAA6443	35-02221	14-15	QBT3	—	16519
	AAA6444	35-02221	19-20	QBT3	—	16519
	AAA6445 (FD)	35-02221	19-20	QBT3	—	16519
	AAA6446	35-02222	3-4	QBT3	—	16519
	AAA6447	35-02222	9-10	QBT3	—	16519
	AAA6448	35-02222	14-15	QBT3	—	16519
	AAA6449	35-02222	19-20	QBT3	—	16519
	0435-96-0051	35-02301	0-8	QBT3	—	1962
	0435-96-0052	35-02302	0-8	QBT3	—	1962
	RE35-04-54078	35-22942	9-10	QBT3	—	2283S
	RE35-04-54079	35-22942	19-20	QBT3	—	2283S
	RE35-04-54080	35-22942	29-30	QBT3	—	2283S
	RE35-04-54081	35-22943	9-10	QBT3	—	2267S
	RE35-04-54082	35-22943	19-20	QBT3	—	2267S
	RE35-04-54083	35-22943	29-30	QBT3	—	2267S
	RE35-04-54130	35-22959	9-10	QBT3	—	2286S
	RE35-04-54131	35-22959	19-20	QBT3	—	2286S
	RE35-04-54132	35-22959	29-30	QBT3	—	2286S
	RE35-04-54133	35-22960	6-7	ALLH	—	2262S
	RE35-04-54134	35-22960	10-11	ALLH	—	2262S
	RE35-04-54135	35-22960	14-15	QBT3	—	2262S
	RE35-04-54855	35-23280	0.43-1.41	SED	—	2719S
	RE35-04-54856	35-23280	1.41-1.84	SED	—	2719S
	RE35-04-54861	35-23282	0-0.62	SED	—	2719S
	RE35-04-54862	35-23282	0.62-1.31	SED	—	2719S
35-011(d)	RE35-04-54136	35-22961	9-10	QBT3	—	2335S
	RE35-04-54137	35-22961	19-20	QBT3	—	2335S
	RE35-04-54138	35-22961	24-25	QBT3	—	2335S
35-014(f)	0435-96-0077	35-02364	0-1	FILL	—	2237
	0435-96-0078	35-02364	2-3	FILL	—	2237
	RE35-04-54036	35-02364	4-5	QBT3	—	2337S
	RE35-04-54037	35-02364	9-10	QBT3	—	2337S
	0435-96-0079	35-02393	0-1	FILL	—	2237
	0435-96-0080 (FD)	35-02393	0-1	FILL	—	2237
	0435-96-0081	35-02393	2-3	FILL	—	2237
35-015(a)	AAC3346	35-02182	2-3	ALLH	—	21505
	0435-95-0199	35-02286	1-2	FILL	—	1679

Table D-2.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	0435-97-0104	35-02496	0-1	FILL	—	3276R
	0435-97-0105	35-02496	1-2	QBT3	—	3276R
	0435-97-0107	35-02497	0-1	FILL	—	3276R
	0435-97-0108	35-02497	1-2	QBT3	—	3276R
	0435-97-0109 (FD)	35-02497	1-2	QBT3	—	3276R
	0435-97-0112	35-02498	0-1	FILL	—	3276R
	0435-97-0113	35-02498	1-2	FILL	—	3276R
	0435-97-0115	35-02499	0-1	FILL	—	3279R
	0435-97-0116	35-02499	1-2	QBT3	—	3279R
	0435-97-0117	35-02499	2-3	QBT3	—	3279R
	0435-97-0119	35-02500	0-0.83	FILL	—	3279R
	0435-97-0121	35-02500	0.83-2	QBT3	—	3279R
	0435-97-0122	35-02501	0-1	FILL	—	3279R
	0435-97-0123	35-02501	1-2	QBT3	—	3279R
	0435-97-0276	35-02594	0-1	FILL	—	3431R
	0435-97-0277	35-02594	2-3	FILL	—	3431R
	0435-97-0278	35-02594	8.5-10	QBT3	—	3431R
	RE35-04-54031	35-22928	4-4.5	QBT3	—	2343S
	RE35-04-54032	35-22928	9-9.5	QBT3	—	2343S
35-018(a)	0435-95-0165	35-02268	2-3	FILL	—	1305
	0435-96-0083	35-02353	0-0.5	FILL	—	2308
	0435-96-0085	35-02355	0-0.5	FILL	—	2308

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-2.0-2
Soil, Fill, Tuff, and Sediment Samples Collected for Radionuclide Analyses at Mesa Top Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
35-002	RE35-04-54075	35-22941	4-5	ALLH	2359Sa	2359S	2359S	2359S	2359S
	RE35-04-54076	35-22941	14-15	QBT3	2359S	2359S	2359S	2359S	2359S
	RE35-04-54077	35-22941	29-30	QBT3	2359S	2359S	2359S	2359S	2359S
35-003(a)-99	AAB0993	35-02004	1-2	ALLH	—[b]	—	17373	17373	—
	AAB0994	35-02004	9-10	ALLH	—	—	17373	17373	—
	AAB1457	35-02004	16-17	QBT3	—	—	17373	17373	—
	AAB0995	35-02004	64-65	QBT3	—	—	17373	17373	—
	AAB0996	35-02004	99-100	QBT2	—	—	19560	19560	—
	AAB0989	35-02005	1-2	ALLH	—	—	19582	19582	—
	AAB1458	35-02005	15-16	QBT3	—	—	19582	19582	—
	AAB0991	35-02005	34-35	QBT3	—	—	19582	19582	—
	AAB0990	35-02005	49-50	QBT3	—	—	19582	19582	—
	AAB0992	35-02005	99-100	QBT2	19582	—	19582	19582	—
	AAB1459	35-02006	2-3	QBT3	—	—	19577	19577	—
	AAB0997	35-02006	24-25	QBT3	19577	—	19577	19577	—
	AAB0998	35-02006	54-55	QBT3	—	—	19577	19577	—
	AAB0999	35-02006	69-70	QBT3	—	—	19577	19577	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAB1000	35-02006	99-100	QBT2	—	—	—	19575	—
	AAB1037	35-02007	0.5-1.5	ALLH	—	—	17155	17155	—
	AAB1038	35-02007	39-40	QBT3	—	—	17155	17155	—
	AAB1039	35-02007	64-65	QBT3	17155	—	17155	17155	—
	AAB1040	35-02007	91-92	QBT3	—	—	17155	17155	—
	AAB1041 (FD)	35-02007	91-92	QBT2	—	—	17155	17155	—
	AAB1033	35-02008	1-2	ALLH	—	—	17372	17372	—
	AAB1460	35-02008	13.5-14.5	ALLH	17372	—	17372	17372	—
	AAB1034	35-02008	63.5-64.5	QBT3	17372	—	17372	17372	—
	AAB1035	35-02008	74-75	QBT3	—	—	17372	17372	—
	AAB1036	35-02008	99-100	QBT2	—	—	17372	17372	—
	AAB0977	35-02009	1-2	ALLH	—	—	17295	17295	—
	AAB1029 (FD)	35-02009	1-2	ALLH	—	—	17295	17295	—
	AAB0978	35-02009	11-12	QBT3	17295	—	17295	17295	—
	AAB0979	35-02009	80-81	QBT2	—	—	17295	17295	—
	AAB0980	35-02009	99-100	QBT2	—	—	17295	17295	—
	AAB0961	35-02010	1-2	ALLH	—	17188	17188	17188	—
	AAB0962	35-02010	13.2-14.2	QBT3	—	17188	17188	17188	—
	AAB0963	35-02010	38-39	QBT3	—	17188	17188	17188	—
	AAB0964	35-02010	90-95	QBT3	—	17247	17247	17247	—
	AAB0966 (FD)	35-02010	90-95	QBT3	—	17247	17247	17247	—
	AAB0965	35-02010	95-100	QBT2	—	17247	17247	17247	—
	AAB1001	35-02011	1-2	ALLH	—	19560	19560	19560	—
	AAB1002	35-02011	10-11	ALLH	—	19560	19560	19560	—
	AAB1003	35-02011	24-25	QBT3	—	19560	19560	19560	—
	AAB1004	35-02011	64-65	QBT3	—	—	19577	19577	—
	AAB1005	35-02011	99-100	QBT2	19577	19577	19577	19577	—
	AAB0969	35-02012	1-2	ALLH	—	17247	17247	17247	—
	AAB0970	35-02012	20.5-21.5	QBT3	—	17247	17247	17247	—
	AAB0971	35-02012	25.8-26.8	QBT3	—	17247	17247	17247	—
	AAB0972	35-02012	30-35	QBT3	—	17247	17247	17247	—
	AAB0973	35-02012	99-100	QBT3	17155	17155	17155	17155	—
	AAB0981	35-02013	1-2	ALLH	—	17333	17333	17333	—
	AAB0982	35-02013	15-16	QBT3	—	17333	17333	17333	—
	AAB0983 (FD)	35-02013	15-16	QBT3	—	17333	17333	17333	—
	AAB0984	35-02013	34-35	QBT3	17333	17333	17333	17333	—
	AAB0985	35-02013	64-65	QBT3	—	17333	17333	17333	—
	AAB0986	35-02013	99-100	QBT2	—	17333	17333	17333	—
	AAB1020	35-02014	0-2	ALLH	—	19975	19975	19975	—
	AAB0949	35-02015	1-2	ALLH	—	19595	19595	19595	—
	AAB0950	35-02015	10-11	QBT3	—	19595	19595	19595	—
	AAB0951	35-02015	19-20	QBT3	—	19595	19595	19595	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAB0952	35-02015	29-30	QBT3	19595	19595	19595	19595	—
	AAA6589	35-02016	1-2	ALLH	—	—	17017	17017	—
	AAA6590	35-02016	8-9	QBT3	—	—	17017	17017	—
	AAA6581	35-02016	29-30	QBT3	—	—	17017	17017	—
	AAA6537	35-02017	1.3-2.3	ALLH	—	—	17360	17360	—
	AAA6538	35-02017	5-6	QBT3	—	—	17360	17360	—
	AAA6539	35-02017	19-20	QBT3	—	—	17360	17360	—
	AAA6540	35-02017	28.5-29.5	QBT3	—	—	17360	17360	—
	AAA6573 (FD)	35-02017	28.5-29.5	QBT3	—	—	17360	17360	—
	AAA6633	35-02018	1-2	ALLH	17246	17246	17246	17246	—
	AAA6634	35-02018	8.5-9.5	ALLH	—	—	17246	17246	—
	AAA6635	35-02018	14-15	QBT3	—	—	17246	17246	—
	AAA6621	35-02019	1-2	ALLH	—	—	17301	17301	—
	AAA6622	35-02019	19-20	ALLH	—	—	17301	17301	—
	AAA6623	35-02019	24-25	QBT3	17301	—	17301	17301	—
	AAA6624	35-02019	25-30	QBT3	—	—	17301	17301	—
	AAA6625	35-02020	1.5-2.5	ALLH	—	—	17245	17245	—
	AAA6626	35-02020	7-8	ALLH	—	—	17245	17245	—
	AAA6627	35-02020	10-11	QBT3	—	—	17245	17245	—
	AAA6628	35-02020	26.5-27.5	QBT3	17245	17245	17245	17245	—
	AAA6629 (FD)	35-02020	26.5-27.5	QBT3	—	—	17245	17245	—
	AAA6574	35-02021	3-4	ALLH	17360	—	17360	17360	—
	AAA6575	35-02021	9-10	QBT3	—	—	17360	17360	—
	AAA6637	35-02022	1.5-2.5	ALLH	—	—	17170	17170	—
	AAA6638	35-02022	19-20	QBT3	—	—	17170	17170	—
	AAA6639	35-02022	21-22	QBT3	—	—	17170	17170	—
	AAA6640	35-02022	29-30	QBT3	—	—	17170	17170	—
	AAA6601	35-02024	1-2	ALLH	—	—	17293	17293	—
	AAA6602	35-02024	14-15	ALLH	—	—	17293	17293	—
	AAA6603	35-02024	24-25	QBT3	—	—	17293	17293	—
	AAA6604	35-02024	29-30	QBT3	—	—	17293	17293	—
	AAA6613	35-02025	1-2	ALLH	—	—	17301	17301	—
	AAA6614	35-02025	9-10	ALLH	—	—	17301	17301	—
	AAA6615	35-02025	11-12	QBT3	17301	—	17301	17301	—
	AAA6616	35-02025	27.5-28.5	QBT3	—	—	17301	17301	—
	AAA6617	35-02026	2-3	ALLH	—	—	17357	17357	—
	AAA6618	35-02026	9-10	QBT3	—	—	17357	17357	—
	AAA6619	35-02026	24-25	QBT3	—	—	17357	17357	—
	AAA6620	35-02026	28.5-29.5	QBT3	17357	—	17357	17357	—
	AAA6605	35-02027	2-3	FILL	—	—	17299	17299	—
	AAA6606	35-02027	9-10	FILL	—	—	17299	17299	—
	AAA6607 (FD)	35-02027	9-10	FILL	—	—	17299	17299	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAA6608	35-02027	20-21	FILL	—	—	17299	17299	—
	AAA6609	35-02027	28.5-29.5	QBT3	—	—	17299	17299	—
	AAB1009	35-02215	1-2	ALLH	—	—	17245	17245	—
	AAB1010 (FD)	35-02215	1-2	ALLH	—	—	17245	17245	—
	AAB1011	35-02215	5-6	ALLH	17245	17245	17245	17245	—
	AAB1012	35-02215	21.7-22.7	QBT3	—	—	17245	17245	—
	AAB1013	35-02215	28-29	QBT3	—	—	17245	17245	—
	0435-95-0168	35-02269	0-0.5	FILL	—	—	1651	1651	—
	0435-96-0003	35-02270	10-10.5	FILL	—	2044	2044	2044	—
	0435-96-0006	35-02271	7-7.5	FILL	—	1756	1756	1756	—
	0435-96-0007 (FD)	35-02271	7-7.5	FILL	—	1756	1756	1756	—
	0435-96-0010	35-02272	12-12.5	FILL	—	2505	2505	2505	—
	0435-96-0013	35-02273	15-16	FILL	—	2700	2700	2700	—
	0435-96-0016	35-02274	17-18	FILL	—	2732	2732	2732	—
	0435-96-0019	35-02275	12-12.5	FILL	—	2044	2044	2044	—
	0435-96-0022	35-02276	9-9.5	FILL	—	1965	1965	1965	—
	0435-95-0195	35-02280	0-2	FILL	—	—	—	—	—
	0435-96-0030	35-02295	1.5-2.5	FILL	2573	2573	2573	2573	2573
	0435-96-0031	35-02295	4-5	ALLH	2573	2573	2573	2573	2573
	0435-96-0034	35-02296	0-1	ALLH	2641	2641	2641	2641	2641
	0435-96-0035	35-02296	3-4	ALLH	2641	2641	2641	2641	2641
	0435-96-0038	35-02297	0-1	ALLH	2641	2641	2641	2641	2641
	0435-96-0039	35-02297	2.5-3.5	ALLH	2641	2641	2641	2641	2641
	0435-96-0042	35-02298	0-1	FILL	2839	2839	2839	2839	2839
	0435-96-0043	35-02298	4-5	QBT3	2839	2839	2839	2839	2839
	0435-96-0045	35-02299	0-1	FILL	2839	2839	2839	2839	2839
	0435-96-0046	35-02299	3-4	QBT3	2839	2839	2839	2839	2839
	0435-96-0047 (FD)	35-02299	3-4	QBT3	2839	2839	2839	2839	2839
	0435-96-0049	35-02300	0-1	FILL	2839	2839	2839	2839	2839
	0435-96-0050	35-02300	2-3	QBT3	2839	2839	2839	2839	2839
	0435-97-0001	35-02303	3-4.5	FILL	3066R	3066R	3066R	3066R	3066R
	0435-97-0002	35-02303	4.5-7	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0003 (FD)	35-02303	4.5-7	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0004	35-02303	13.5-15	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0005	35-02303	17.5-19	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0007	35-02304	4.5-5.5	FILL	3066R	3066R	3066R	3066R	3066R
	0435-97-0008	35-02304	5.5-7	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0009	35-02304	20-21.5	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0010	35-02304	24-25	QBT3	3066R	3066R	3066R	3066R	3066R
	0435-97-0012	35-02305	7-8.4	FILL	3068R	3068R	3068R	3068R	3068R
	0435-97-0013	35-02305	8.4-10	QBT3	3068R	3068R	3068R	3068R	3068R
	0435-97-0016	35-02305	14.5-15	QBT3	3068R	3068R	3068R	3068R	3068R

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0014	35-02305	17.5-18.5	QBT3	3068R	3068R	3068R	3068R	3068R
	0435-97-0015	35-02305	38-39	QBT3	3068R	3068R	3068R	3068R	3068R
	0435-97-0033	35-02306	6.8-7.8	FILL	3072R	3072R	3072R	3072R	3072R
	0435-97-0034	35-02306	7.8-8.8	QBT3	3072R	3072R	3072R	3072R	3072R
	0435-97-0035	35-02306	11.5-12.5	QBT3	3072R	3072R	3072R	3072R	3072R
	0435-97-0036	35-02306	16.5-17.5	QBT3	3072R	3072R	3072R	3072R	3072R
	0435-97-0022	35-02307	9-10	FILL	3070R	3070R	3070R	3070R	3070R
	0435-97-0023	35-02307	10-12.5	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0024 (FD)	35-02307	10-12.5	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0027	35-02307	17-17.5	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0025	35-02307	21.5-22.5	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0026	35-02307	26.5-27.5	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0028	35-02308	8.4-9.4	FILL	3080R	3080R	3080R	3080R	3080R
	0435-97-0029	35-02308	9.4-10	QBT3	3080R	3080R	3080R	3080R	3080R
	0435-97-0030	35-02308	11.5-12.5	QBT3	3080R	3080R	3080R	3080R	3080R
	0435-97-0031	35-02308	19-20	QBT3	3080R	3080R	3080R	3080R	3080R
	0435-97-0038	35-02309	2.5-3.5	FILL	3080R	3080R	3080R	3080R	3080R
	0435-97-0039	35-02309	4.5-5.5	QBT3	3080R	3080R	3080R	3080R	3080R
	0435-97-0040	35-02309	8.5-10	QBT3	3080R	3080R	3080R	3080R	3080R
	0435-96-0153	35-02437	0-1	FILL	2679	2679	2679	2679	2679
	0435-96-0154	35-02437	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0156	35-02438	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0157	35-02438	8-9	QBT3	2679	2679	2679	2679	2679
	0435-96-0158	35-02439	0-1	FILL	2679	2679	2679	2679	2679
	0435-96-0159	35-02439	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0160	35-02440	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0161	35-02440	8-9	QBT3	2679	2679	2679	2679	2679
	0435-96-0162	35-02441	0-1	FILL	2679	2679	2679	2679	2679
	0435-96-0163	35-02441	4-5	ALLH	2679	2679	2679	2679	2679
	0435-96-0165	35-02442	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0166	35-02442	8-9	QBT3	2679	2679	2679	2679	2679
	0435-96-0167	35-02443	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0168	35-02443	8-8.5	QBT3	2679	2679	2679	2679	2679
	0435-96-0169	35-02444	0-1	FILL	2679	2679	2679	2679	2679
	0435-96-0170	35-02444	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0171	35-02445	0-1	FILL	2679	2679	2679	2679	2679
	0435-96-0172	35-02445	4.5-5.5	FILL	2679	2679	2679	2679	2679
	0435-96-0173	35-02446	4-5	FILL	2679	2679	2679	2679	2679
	0435-96-0174	35-02446	8-9	QBT3	2679	2679	2679	2679	2679
	0435-96-0175 (FD)	35-02446	8-9	QBT3	2679	2679	2679	2679	2679
	0435-97-0017	35-02529	5-6	FILL	3070R	3070R	3070R	3070R	3070R
	0435-97-0018	35-02529	6-7.5	QBT3	3070R	3070R	3070R	3070R	3070R

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0021	35-02529	10-11	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0019	35-02529	19.5-20.5	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0020	35-02529	24-25	QBT3	3070R	3070R	3070R	3070R	3070R
	0435-97-0386	35-02533	0-1	FILL	3497R	3497R	—	—	3497R
	0435-97-0387	35-02533	9-10	FILL	3497R	3497R	—	—	3497R
	0435-97-0388 (FD)	35-02533	9-10	FILL	3497R	3497R	—	—	3497R
	0435-97-0389	35-02533	20-21	FILL	3497R	3497R	—	—	3497R
	0435-97-0390	35-02533	29-30	QBT3	3497R	—	—	—	3497R
	RE35-04-54061	35-22936	19-20	QBT3	2367S	2367S	2367S	2367S	2367S
	RE35-04-54062	35-22936	29-30	QBT3	2375S	2375S	2375S	2375S	2375S
	RE35-04-54075	35-22941	4-5	ALLH	2359S	2359S	2359S	2359S	2359S
	RE35-04-54076	35-22941	14-15	QBT3	2359S	2359S	2359S	2359S	2359S
	RE35-04-54077	35-22941	29-30	QBT3	2359S	2359S	2359S	2359S	2359S
	RE35-04-54106	35-22950	4-5	QBT3	2370S	2370S	2370S	2370S	2370S
	RE35-04-54107	35-22950	14-15	QBT3	2370S	2370S	2370S	2370S	2370S
	RE35-04-54108	35-22950	29-30	QBT3	2370S	2370S	2370S	2370S	2370S
	RE35-05-58364	35-24414	4-5	QBT3	2967S	2967S	2967S	2967S	2967S
	RE35-05-58365	35-24414	14-15	QBT3	2967S	2967S	2967S	2967S	2967S
	RE35-05-58366	35-24414	29-30	QBT3	2967S	2967S	2967S	2967S	2967S
	RE35-05-58367	35-24415	4-5	FILL	2967S	2967S	2967S	2967S	—
	RE35-05-58377 (FD)	35-24415	4-5	FILL	2967S	2967S	2967S	2967S	—
	RE35-05-58368	35-24415	14-15	QBT3	2967S	2967S	2967S	2967S	—
	RE35-05-58369	35-24415	29-30	QBT3	2967S	2967S	2967S	2967S	—
	RE35-05-58370	35-24416	15.5-16.5	FILL	2955S	2955S	2955S	2955S	2955S
	RE35-05-58371	35-24416	16.5-17.5	FILL	2955S	2955S	2955S	2955S	2955S
35-003(j)-99	AAA3819	35-02072	0.4-1.4	FILL	—	16386	16386	—	—
	AAA3820	35-02072	1.4-2.4	ALLH	—	16386	16386	—	—
	AAA3821	35-02072	2.4-3.4	ALLH	—	16386	16386	—	—
	AAA6366	35-02081	1.5-2	QBT3	—		16400	16400	—
	AAA6367	35-02082	1.2-1.5	ALLH	—		16400	16400	—
	AAA6368	35-02083	1.9-2.2	ALLH	—		16389	16389	—
	AAA6373	35-02084	1.5-1.9	ALLH	—		16389	16389	—
	AAA6374	35-02085	1.6-2.1	ALLH	—		16400	16400	—
	AAA6375	35-02086	0-0.5	SED	—		16389	16389	—
	AAA6376	35-02087	1.4-1.9	ALLH	—		16389	16389	—
	AAA6377	35-02088	1.5-1.8	ALLH	—		16389	16389	—
	AAA6385	35-02089	1-2	ALLH	—		16400	16400	—
	AAA6386	35-02089	2-3	ALLH	—		16400	16400	—
	AAA6387	35-02089	2-3	ALLH	—		16400	16400	—
	AAA6388	35-02089	4-5	QBT3	—		16400	16400	—
	AAA6389	35-02089	5-6	QBT3	—		16400	16400	—
	AAA6390	35-02089	6-7	QBT3	—		16400	16400	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAA6391	35-02090	0-1	ALLH	—		16400	16400	—
	AAA6392	35-02090	1-2	ALLH	—		16400	16400	—
	AAA6393	35-02090	2-3	ALLH	—		16400	16400	—
	AAA6394	35-02090	3-4	ALLH	—		16400	16400	—
	AAA6395	35-02090	4-5	ALLH	—		16400	16400	—
	AAA6396 (FD)	35-02090	4-5	ALLH	—		16400	16400	—
	AAA6397	35-02090	5-6	ALLH	—		16400	16400	—
	0435-95-0211	35-02288	1-2	FILL	1703	—	—	—	—
	0435-95-0212	35-02288	3-4	QBT3	1703	—	—	—	—
	0435-95-0213	35-02288	6-7	QBT3	1703	—	—	—	—
	0435-95-0214	35-02288	9-10	QBT3	1703	—	—	—	—
	0435-95-0219	35-02291	1-2	FILL	1703	—	—	—	—
	0435-95-0220	35-02291	3-4	FILL	1703	—	—	—	—
	0435-95-0221	35-02291	6-7	QBT3	1703	—	—	—	—
	0435-95-0222	35-02291	9-10	QBT3	1703	—	—	—	—
	0435-96-0083	35-02353	0-0.5	FILL	2309	—	—	—	—
	RE35-04-54087 (FD)	35-22957	8.8-10	QBT3	2353S		2353S	2353S	—
	RE35-04-54124	35-22957	8.8-10	QBT3	—		2351S	2351S	—
	RE35-04-54125	35-22957	19-20	QBT3	—		2351S	2351S	—
35-004(a)	AAC1153	35-02097	1-1.5	ALLH	—		21468	21468	—
	AAC1154	35-02098	1-1.5	ALLH	—		21468	21468	—
	RE35-04-54016	35-22922	4-5	QBT3	—	2265S	—		2265S
	RE35-04-54017	35-22922	9-10	QBT3	—	2265S	—		2265S
35-004(h)	AAA6601	35-02024	1-2	ALLH	—	—	17293	17293	—
	AAA6602	35-02024	14-15	ALLH	—	—	17293	17293	—
	AAA6603	35-02024	24-25	QBT3	—	—	17293	17293	—
	AAA6604	35-02024	29-30	QBT3	—	—	17293	17293	—
	RE35-05-58367	35-24415	4-5	FILL	2967S	2967S	2967S	2967S	—
	RE35-05-58368	35-24415	14-15	QBT3	2967S	2967S	2967S	2967S	—
	RE35-05-58369	35-24415	29-30	QBT3	2967S	2967S	2967S	2967S	—
35-009(a)	AAA6417	35-02033	7-8	QBT3	—	16635	16635	—	—
	AAA6418	35-02033	12-13	QBT3	—	16635	16635	—	—
	AAA6419	35-02033	16-17	QBT3	—	16635	16635	—	—
	AAA6420	35-02034	5.5-6.5	QBT3	—	16635	16635	—	—
	AAA6421	35-02034	13.5-14.5	QBT3	—	16635	16635	—	—
	AAA6422	35-02034	19-20	QBT3	—	16635	16635	—	—
	AAA6381	35-02035	1.5-2.5	ALLH	—	16522	16522	—	—
	AAA6382	35-02035	8.8-9.8	QBT3	—	16522	16522	—	—
	AAA6383	35-02035	14-15	QBT3	—	16522	16522	—	—
	AAA6384	35-02035	17.5-18.7	QBT3	16522	16522	16522	—	—
	AAA6401	35-02036	0-1.1	ALLH	—	16522	16522	—	—
	AAA6402	35-02036	7.4-8.4	QBT3	—	16522	16522	—	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAA6403	35-02036	14.2-15	QBT3	—	16522	16522	—	—
	AAA6404	35-02036	19-20	QBT3	—	16522	16522	—	—
	AAA6429	35-02037	3-4	QBT3	—	16522	16522	—	—
	AAA6433 (FD)	35-02037	3-4	QBT3	—	16522	16522	—	—
	AAA6430	35-02037	9-10	QBT3	—	16522	16522	—	—
	AAA6431	35-02037	13-14	QBT3	—	16522	16522	—	—
	AAA6432	35-02037	19-20	QBT3	—	16522	16522	—	—
	AAA6437	35-02038	2.5-3.5	QBT3	—	16532	16532	—	—
	AAA6438	35-02038	9-10	QBT3	—	16532	16532	—	—
	AAA6439	35-02038	14-15	QBT3	—	16532	16532	—	—
	AAA6440	35-02038	19-20	QBT3	16532	16532	16532	—	—
	AAA6441	35-02221	4-5	QBT3	—	16532	16532	—	—
	AAA6442	35-02221	8.8-10	QBT3	—	16532	16532	—	—
	AAA6443	35-02221	14-15	QBT3	16532	16532	16532	—	—
	AAA6444	35-02221	19-20	QBT3	—	16532	16532	—	—
	AAA6445 (FD)	35-02221	19-20	QBT3	—	16532	16532	—	—
	AAA6446	35-02222	3-4	QBT3	—	16532	16532	—	—
	AAA6447	35-02222	9-10	QBT3	—	16532	16532	—	—
	AAA6448	35-02222	14-15	QBT3	—	16532	16532	—	—
	AAA6449	35-02222	19-20	QBT3	—	16532	16532	—	—
	AAA6453	35-02223	0-0.5	ALLH	—	16635	16635	—	—
	AAA6454	35-02224	0-0.5	ALLH	—	16635	16635	—	—
	0435-97-0284	35-02536	0-0.5	FILL	3477R	—	—	3477R	—
	0435-97-0286	35-02536	1.5-2.5	QBT3	3477R	—	—	3477R	—
	0435-97-0287	35-02536	5.5-6.5	QBT3	3477R	—	—	3477R	—
	0435-97-0288 (FD)	35-02536	5.5-6.5	QBT3	3477R	—	—	3477R	—
	0435-97-0289	35-02536	19-20	QBT3	3477R	—	—	3477R	—
	0435-97-0290	35-02536	29-30	QBT3	3477R	—	—	3477R	—
	0435-97-0291	35-02537	0-1	FILL	3477R	—	—	3477R	—
	0435-97-0292	35-02537	1-2	FILL	3477R	—	—	3477R	—
	0435-97-0293	35-02537	2-3	QBT3	3477R	—	—	3477R	—
	0435-97-0294	35-02537	6.5-7.5	QBT3	3477R	—	—	3477R	—
	0435-97-0301	35-02538	0-1	FILL	3486R	—	—	3486R	—
	0435-97-0303	35-02538	1-2	QBT3	3486R	—	—	3486R	—
	0435-97-0304 (FD)	35-02538	1-2	QBT3	3486R	—	—	3486R	—
	0435-97-0305	35-02538	6-7	QBT3	3486R	—	—	3486R	—
	0435-97-0306	35-02538	19-20	QBT3	3486R	—	—	3486R	—
	0435-97-0307	35-02538	29-30	QBT3	3486R	—	—	3486R	—
	0435-97-0308	35-02539	0-0.8	FILL	3486R	—	—	3486R	—
	0435-97-0310	35-02539	1-2	QBT3	3486R	—	—	3486R	—
	0435-97-0311	35-02539	6-7	QBT3	3486R	—	—	3486R	—
	0435-97-0295	35-02540	0-0.5	FILL	3477R	—	—	3477R	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0297	35-02540	0.5-1.5	QBT3	3477R	—	—	3477R	—
	0435-97-0298	35-02540	5-6	QBT3	3477R	—	—	3477R	—
	0435-97-0299	35-02540	19-20	QBT3	3477R	—	—	3477R	—
	0435-97-0300	35-02540	29-30	QBT3	3477R	—	—	3477R	—
	0435-97-0312	35-02541	0-1	ALLH	3486R	—	—	3486R	—
	0435-97-0314	35-02541	1.5-2	QBT3	3486R	—	—	3486R	—
	0435-97-0315	35-02541	6.5-7.5	QBT3	3486R	—	—	3486R	—
	0435-97-0316	35-02542	0-1	ALLH	3546R	3546R	3546R	3546R	—
	0435-97-0317	35-02542	1-1.5	ALLH	3546R	3546R	3546R	3546R	—
	0435-97-0319	35-02542	1.5-2.5	QBT3	3546R	3546R	3546R	3546R	—
	0435-97-0320	35-02543	0-1	ALLH	3546R	3546R	3546R	3546R	—
	0435-97-0321	35-02543	1-2	ALLH	3546R	3546R	3546R	3546R	—
	0435-97-0323	35-02543	2-3	QBT3	3546R	3546R	3546R	3546R	—
	0435-97-0324	35-02544	0-1	ALLH	3546R	3546R	3546R	3546R	—
	0435-97-0325	35-02544	1-1.5	ALLH	3546R	3546R	3546R	3546R	—
	0435-97-0327	35-02544	1.5-2.5	QBT3	3546R	3546R	3546R	3546R	—
	0435-97-0328 (FD)	35-02544	1.5-2.5	QBT3	3546R	3546R	3546R	3546R	—
	RE35-04-54078	35-22942	9-10	QBT3	—	2284S	2284S	—	—
	RE35-04-54079	35-22942	19-20	QBT3	—	2284S	2284S	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	2284S	2284S	—	—
	RE35-04-54081	35-22943	9-10	QBT3	—	2268S	2268S	—	—
	RE35-04-54082	35-22943	19-20	QBT3	—	2268S	2268S	—	—
	RE35-04-54083	35-22943	29-30	QBT3	—	2268S	2268S	—	—
	RE35-04-54130	35-22959	9-10	QBT3	—	2288S	2288S	—	—
	RE35-04-54131	35-22959	19-20	QBT3	—	2288S	2288S	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	2288S	2288S	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	2720S	2720S	2720S	—	—
	RE35-04-54856	35-23280	1.41-1.84	SED	2720S	2720S	2720S	—	—
	RE35-04-54861	35-23282	0-0.62	SED	2720S	2720S	2720S	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	2720S	2720S	2720S	—	—
35-014(a)	AAA3797	35-02070	0-1	ALLH	16386	16386	16386	16386	—
	AAA3798	35-02070	1-2	ALLH	—	16386	16386	16386	—
	AAA3799	35-02070	2-3	ALLH	—	16386	16386	16386	—
	AAA3800	35-02071	0-1	ALLH	—	16386	16386	16386	—
	AAA3822 (FD)	35-02071	0-1	ALLH	—	16386	16386	16386	—
	AAA3817	35-02071	1-2	ALLH	—	16386	16386	16386	—
	AAA3818	35-02071	2-3	ALLH	—	16386	16386	16386	—
	AAA6353	35-02073	0-1	ALLH	16355	16355	16355	16355	—
	AAA6354	35-02073	1-2	ALLH	—	16355	16355	16355	—
	AAA6355	35-02073	2-3	ALLH	—	16355	16355	16355	—
	AAA6356	35-02074	0-1	ALLH	—	16355	16355	16355	—
	AAA6357	35-02074	1-2	ALLH	—	16355	16355	16355	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAA6358	35-02074	2-3	ALLH	—	16355	16355	16355	—
	AAA6359	35-02075	0-1	ALLH	—	16355	16355	16355	—
	AAA6360	35-02075	1-2	ALLH	—	16355	16355	16355	—
	AAA6361	35-02075	2-3	QBT3	—	16355	16355	16355	—
	AAA6341	35-02076	0-1	ALLH	—	16391	16391	16391	—
	AAA6342	35-02076	1-2	ALLH	—	16391	16391	16391	—
	AAA6343	35-02076	2-3	ALLH	—	16391	16391	16391	—
	AAA6344	35-02077	0-1	ALLH	—	16391	16391	16391	—
	AAA6347	35-02078	0-1	ALLH	—	16391	16391	16391	—
	AAA6348	35-02078	1-2	QBT3	—	16391	16391	16391	—
	AAA6349	35-02078	2-3	QBT3	—	16391	16391	16391	—
	AAB1042	35-02210	0-0.5	ALLH	—	19975	19975	19975	—
	AAB1043	35-02211	0-0.5	ALLH	—	19975	19975	19975	—
	AAA6369	35-02220	0-1	ALLH	—	16389	16389	16389	—
	AAA6365 (FD)	35-02220	1-2	QBT3	—	16389	16389	16389	—
	AAA6370	35-02220	1-2	QBT3	—	16389	16389	16389	—
	AAA6371	35-02220	2-3	QBT3	—	16389	16389	16389	—
	0435-97-0408	35-02560	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0409	35-02560	1-2	ALLH	3531R	—	—	—	3531R
	0435-97-0410	35-02560	2-3	QBT3	3531R	—	—	—	3531R
	0435-97-0411	35-02561	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0412	35-02561	1-2	ALLH	3531R	—	—	—	3531R
	0435-97-0413	35-02561	2-3	QBT3	3531R	—	—	—	3531R
	0435-97-0414	35-02562	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0415	35-02562	1-2	QBT3	3531R	—	—	—	3531R
	0435-97-0416	35-02562	2-3	QBT3	3531R	—	—	—	3531R
	0435-97-0417	35-02563	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0418	35-02563	1-2	ALLH	3531R	—	—	—	3531R
	0435-97-0419	35-02563	2-3	ALLH	3531R	—	—	—	3531R
	0435-97-0420	35-02564	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0421 (FD)	35-02564	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0422	35-02564	1-2	ALLH	3531R	—	—	—	3531R
	0435-97-0423	35-02564	2-3	QBT3	3531R	—	—	—	3531R
	0435-97-0424 (FD)	35-02564	2-3	QBT3	3531R	—	—	—	3531R
	0435-97-0425	35-02565	0-1	QBT3	3531R	—	—	—	3531R
	0435-97-0426	35-02565	1-2	QBT3	3531R	—	—	—	3531R
	0435-97-0427	35-02565	2-3	QBT3	3531R	—	—	—	3531R
	RE35-04-54038	35-22930	4-4.5	QBT3	—	2344S	—	—	2344S
	RE35-04-54039	35-22930	9-9.5	QBT3	—	2344S	—	—	2344S
35-015(a)	AAC3331	35-02174	0-0.5	ALLH	—	—	21508	21508	—
	AAC3349 (FD)	35-02174	0-0.5	ALLH	—	—	21508	21508	—
	0435-97-0104	35-02496	0-1	FILL	3277R	—	3277R	3277R	—

Table D-2.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0105	35-02496	1-2	QBT3	3277R	—	3277R	3277R	—
	0435-97-0107	35-02497	0-1	FILL	3277R	—	3277R	3277R	—
	0435-97-0108	35-02497	1-2	QBT3	3277R	—	3277R	3277R	—
	0435-97-0109 (FD)	35-02497	1-2	QBT3	3277R	—	3277R	3277R	—
	0435-97-0112	35-02498	0-1	FILL	3277R	—	3277R	3277R	—
	0435-97-0113	35-02498	1-2	FILL	3277R	—	3277R	3277R	—
	0435-97-0115	35-02499	0-1	FILL	3280R	—	3280R	3280R	—
	0435-97-0116	35-02499	1-2	QBT3	3280R	—	3280R	3280R	—
	0435-97-0117	35-02499	2-3	QBT3	3280R	—	3280R	3280R	—
	0435-97-0119	35-02500	0-0.83	FILL	3280R	—	3280R	3280R	—
	0435-97-0121	35-02500	0.83-2	QBT3	3280R	—	3280R	3280R	—
	0435-97-0122	35-02501	0-1	FILL	3280R	—	3280R	3280R	—
	0435-97-0123	35-02501	1-2	QBT3	3280R	—	3280R	3280R	—
	0435-97-0276	35-02594	0-1	FILL	3432R	—	3432R	3432R	—
	0435-97-0277	35-02594	2-3	FILL	3432R	—	3432R	3432R	—
	0435-97-0278	35-02594	8.5-10	QBT3	3432R	—	3432R	3432R	—
35-018(a)	0435-95-0140	35-02262	0-1	FILL	1306	1306	—	—	—
	0435-96-0083	35-02353	0-0.5	FILL	2309	—	—	—	—
	0435-96-0085	35-02355	0-0.5	FILL	2309	—	—	—	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-2.0-3
Soil, Fill, Tuff, and Sediment Samples Collected for Organic Chemical Analyses at Mesa Top Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
35-002	RE35-04-54075	35-22941	4-5	ALLH	2357a	2357S	—b	2357S	—	2357S
	RE35-04-54076	35-22941	14-15	QBT3	2357S	2357S	—	2357S	—	2357S
	RE35-04-54077	35-22941	29-30	QBT3	2357S	2357S	—	2357S	—	2357S
35-003(a)-99	AAB0989	35-02005	1-2	ALLH	17307	—	—	—	—	—
	AAB1002	35-02011	10-11	ALLH	17314	—	—	17314	—	—
	AAB0949	35-02015	1-2	ALLH	17315	—	—	17315	—	—
	0435-95-0168	35-02269	0-0.5	Fill	1649	—	—	1649	—	1649
	0435-96-0003	35-02270	10-10.5	Fill	—	—	2042	2042	—	2042
	0435-96-0006	35-02271	7-7.5	Fill	1754	—	—	1754	—	1754
	0435-96-0007 (FD)	35-02271	7-7.5	Fill	1754	—	—	1754	—	1754
	0435-96-0013	35-02273	15-16	Fill	2698	2698	—	2698	—	2698
	0435-96-0016	35-02274	17-18	Fill	—	—	2730	2730	—	2730
	0435-96-0019	35-02275	12-12.5	Fill	—	—	2042	2042	—	2042
	0435-96-0022	35-02276	9-9.5	Fill	—	—	1963	1963	—	1963
	0435-95-0195	35-02280	0-2	Fill	—	—	—	1678	—	—
	0435-96-0030	35-02295	1.5-2.5	Fill	—	—	—	2571	—	2571

Table D-2.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	0435-96-0034	35-02296	0-1	ALLH	—	—	—	2639	—	2639
	0435-96-0038	35-02297	0-1	ALLH	—	—	—	2639	—	2639
	0435-96-0042	35-02298	0-1	Fill	—	—	—	2837	—	2837
	0435-96-0045	35-02299	0-1	Fill	—	—	—	—	—	2837
	0435-96-0049	35-02300	0-1	Fill	—	—	—	—	—	2837
	0435-96-0154	35-02437	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0153	35-02437	0-1	Fill	—	—	—	2677	—	2677
	0435-96-0156	35-02438	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0157	35-02438	8-9	Qbt 3	—	—	—	2677	—	2677
	0435-96-0159	35-02439	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0158	35-02439	0-1	Fill	—	—	—	2677	—	2677
	0435-96-0160	35-02440	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0161	35-02440	8-9	Qbt 3	—	—	—	2677	—	2677
	0435-96-0163	35-02441	4-5	ALLH	—	—	—	2677	—	2677
	0435-96-0162	35-02441	0-1	Fill	—	—	—	2677	—	2677
	0435-96-0165	35-02442	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0166	35-02442	8-9	Qbt 3	—	—	—	2677	—	2677
	0435-96-0167	35-02443	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0168	35-02443	8-8.5	Qbt 3	—	—	—	2677	—	2677
	0435-96-0170	35-02444	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0169	35-02444	0-1	Fill	—	—	—	2677	—	2677
	0435-96-0171	35-02445	0-1	Fill	—	—	—	2677	—	2677
	0435-96-0172	35-02445	4.5-5.5	Fill	—	—	—	2677	—	2677
	0435-96-0173	35-02446	4-5	Fill	—	—	—	2677	—	2677
	0435-96-0174	35-02446	8-9	Qbt 3	—	—	—	2677	—	2677
	0435-96-0175 (FD)	35-02446	8-9	Qbt 3	—	—	—	2677	—	2677
	RE35-04-54061	35-22936	19-20	Qbt 3	—	—	—	2365S	—	2365S
	RE35-04-54062	35-22936	29-30	Qbt 3	—	—	—	2373S	—	2373S
	RE35-04-54075	35-22941	4-5	ALLH	2357S	2357S	—	2357S	—	2357S
	RE35-04-54076	35-22941	14-15	Qbt 3	2357S	2357S	—	2357S	—	2357S
	RE35-04-54077	35-22941	29-30	Qbt 3	2357S	2357S	—	2357S	—	2357S
	RE35-04-54106	35-22950	4-5	Qbt 3	—	—	—	2368S	—	—
	RE35-04-54107	35-22950	14-15	Qbt 3	—	—	—	2368S	—	—
	RE35-04-54108	35-22950	29-30	Qbt 3	—	—	—	2368S	—	—
	RE35-05-58364	35-24414	4-5	Qbt 3	—	—	—	2965S	—	—
	RE35-05-58365	35-24414	14-15	Qbt 3	—	—	—	2965S	—	—
	RE35-05-58366	35-24414	29-30	Qbt 3	—	—	—	2965S	—	—
	RE35-05-58370	35-24416	15.5-16.5	Fill	—	—	—	2953S	—	—
	RE35-05-58371	35-24416	16.5-17.5	Fill	—	—	—	2953S	—	—
35-003(j)-99	AAA3819	35-02072	0.4-1.4	FILL	—	—	—	16301	—	—
	AAA3820	35-02072	1.4-2.4	ALLH	—	—	—	16301	—	—
	AAA3821	35-02072	2.4-3.4	ALLH	16301	—	—	16301	—	—
	AAA3823 (FD)	35-02072	2.4-3.4	ALLH	—	—	—	16301	—	—

Table D-2.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	AAA6366	35-02081	1.5-2	QBT3	16407	—	—	16407	—	16407
	AAA6367	35-02082	1.2-1.5	ALLH	16407	—	—	16407	—	16407
	AAA6374	35-02085	1.6-2.1	ALLH	16407	—	—	16407	—	16407
	AAA6385	35-02089	1-2	ALLH	16407	—	—	16407	—	16407
	AAA6386	35-02089	2-3	ALLH	16407	—	—	16407	—	16407
	AAA6387	35-02089	2-3	ALLH	16407	—	—	16407	—	16407
	AAA6388	35-02089	4-5	QBT3	16407	—	—	16407	—	16407
	AAA6389	35-02089	5-6	QBT3	16407	—	—	16407	—	16407
	AAA6390	35-02089	6-7	QBT3	16407	—	—	16407	—	16407
	AAA6391	35-02090	0-1	ALLH	16407	—	—	16407	—	16407
	AAA6392	35-02090	1-2	ALLH	16407	—	—	16407	—	16407
	AAA6393	35-02090	2-3	ALLH	16407	—	—	16407	—	16407
	AAA6394	35-02090	3-4	ALLH	16407	—	—	16407	—	16407
	AAA6395	35-02090	4-5	ALLH	16407	—	—	16407	—	16407
	AAA6396 (FD)	35-02090	4-5	ALLH	16407	—	—	16407	—	16407
	AAA6397	35-02090	5-6	ALLH	16407	—	—	16407	—	16407
	0435-95-0211	35-02288	1-2	FILL	1701	—	—	1701	1701	1701
	0435-95-0212	35-02288	3-4	QBT3	1701	—	—	1701	1701	1701
	0435-95-0213	35-02288	6-7	QBT3	1701	—	—	1701	1701	—
	0435-95-0214	35-02288	9-10	QBT3	1701	—	—	1701	1701	—
	0435-95-0215	35-02289	1-2	FILL	—	—	—	1701	1701	—
	0435-95-0216	35-02289	3-4	ALLH	—	—	—	1701	1701	—
	0435-95-0217	35-02289	6-7	QBT3	—	—	—	1701	1701	—
	0435-95-0218	35-02289	9-10	QBT3	—	—	—	1701	1701	—
	0435-95-0231	35-02290	0.3-1	QBT3	—	—	—	1701	1701	—
	0435-95-0232	35-02290	1-2	QBT3	—	—	—	1701	1701	—
	0435-95-0233	35-02290	2-3	QBT3	—	—	—	1701	1701	—
	0435-95-0219	35-02291	1-2	FILL	1701	—	—	1701	1701	1701
	0435-95-0220	35-02291	3-4	FILL	1701	—	—	1701	1701	1701
	0435-95-0221	35-02291	6-7	QBT3	1701	—	—	1701	1701	—
	0435-95-0222	35-02291	9-10	QBT3	1701	—	—	1701	1701	—
	0435-95-0223	35-02292	1-2	FILL	—	—	—	1701	1701	—
	0435-95-0224	35-02292	4-5	QBT3	—	—	—	1701	1701	—
	0435-95-0226	35-02292	9-10	QBT3	—	—	—	1701	1701	—
	0435-95-0227	35-02293	1.5-2.5	FILL	—	—	—	1701	1701	—
	0435-95-0228	35-02293	3-4	FILL	—	—	—	1701	1701	—
	0435-95-0229	35-02293	6-7	QBT3	—	—	—	1701	1701	—
	0435-95-0230	35-02293	9-10	QBT3	—	—	—	1701	1701	—
	0435-95-0234	35-02294	0-1	FILL	—	—	—	1701	1701	—
	0435-95-0235	35-02294	1-2	FILL	—	—	—	1701	1701	—
	0435-95-0236	35-02294	2-2.5	FILL	—	—	—	1701	1701	—
	0435-96-0083	35-02353	0-0.5	FILL	—	—	2307	2307	—	—
	0435-96-0084	35-02354	0-0.5	FILL	—	—	2307	2307	—	—
	0435-97-0377	35-02534	1-2	FILL	3487R	—	—	3487R	3487R	3487R

Table D-2.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	0435-97-0378 (FD)	35-02534	1-2	FILL	3487R	—	—	3487R	3487R	3487R
	0435-97-0379	35-02534	3-4	FILL	3487R	—	—	3487R	3487R	3487R
	0435-97-0380	35-02534	5-6	FILL	3487R	—	—	3487R	3487R	3487R
	0435-97-0381	35-02534	7-7.5	QBT3	3487R	—	—	3487R	3487R	3487R
	0435-97-0382	35-02535	1-2	FILL	3487R	—	—	3487R	3487R	3487R
	0435-97-0383	35-02535	3-4	FILL	3487R	—	—	3487R	3487R	3487R
	0435-97-0384	35-02535	5-6	FILL	3487R	—	—	3487R	3487R	3487R
	0435-97-0385	35-02535	12-12.5	QBT3	3487R	—	—	3487R	3487R	3487R
	0435-97-0434	35-02568	0.5-1.5	FILL	3508R	—	—	3508R	3508R	—
	0435-97-0435	35-02568	1.5-2.5	FILL	3508R	—	—	3508R	3508R	—
	0435-97-0436	35-02568	2.5-3.5	QBT3	3508R	—	—	3508R	3508R	—
	0435-97-0437 (FD)	35-02568	2.5-3.5	QBT3	3508R	—	—	3508R	3508R	—
	0435-97-0438	35-02569	0.5-1.5	ALLH	3508R	—	—	3508R	3508R	—
	0435-97-0439	35-02569	1.5-2.5	QBT3	3508R	—	—	3508R	3508R	—
	0435-97-0440	35-02569	2.5-3.5	QBT3	3508R	—	—	3508R	3508R	—
	0435-97-0441	35-02570	0.5-1.5	ALLH	3508R	—	—	3508R	3508R	—
	0435-97-0442	35-02570	1.5-2.5	QBT3	3508R	—	—	3508R	3508R	—
	0435-97-0443	35-02570	2.5-3.5	QBT3	3508R	—	—	3508R	3508R	—
	RE35-04-54087 (FD)	35-22957	8.8-10	QBT3	2352S	2352S	—	2352S	2352S	—
	RE35-04-54124	35-22957	8.8-10	QBT3	2350S	2350S	—	2350S	2350S	—
	RE35-04-54125	35-22957	19-20	QBT3	2350S	2350S	—	2350S	2350S	2350S
35-004(a)	RE35-04-54016	35-22922	4-5	QBT3	2263S	2263S	—	2263S	—	2263S
	RE35-04-54017	35-22922	9-10	QBT3	2263S	2263S	—	2263S	—	2263S
35-004(h)	AAA6601	35-02024	1-2	ALLH	—	—	—	—	—	—
	AAA6602	35-02024	14-15	ALLH	—	—	—	—	—	—
	AAA6603	35-02024	24-25	Qbt 3	—	—	—	—	—	—
	AAA6604	35-02024	29-30	Qbt 3	—	—	—	—	—	—
	RE35-05-58367	35-24415	4-5	Fill	—	—	—	—	—	—
	RE35-05-58377 (FD)	35-24415	4-5	Fill	—	—	—	—	—	—
	RE35-05-58368	35-24415	14-15	Qbt 3	—	—	—	—	—	—
	RE35-05-58369	35-24415	29-30	Qbt 3	—	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	—	—	16470	—	—
	AAA6382	35-02035	8.8-9.8	QBT3	—	—	—	16470	—	—
	AAA6383	35-02035	14-15	QBT3	—	—	—	16470	—	—
	AAA6384	35-02035	17.5-18.7	QBT3	—	—	—	16470	—	—
	AAA6401	35-02036	0-1.1	ALLH	—	—	—	16470	—	—
	AAA6402	35-02036	7.4-8.4	QBT3	—	—	—	16470	—	—
	AAA6403	35-02036	14.2-15	QBT3	—	—	—	16470	—	—
	AAA6404	35-02036	19-20	QBT3	—	—	—	16470	—	—
	AAA6429	35-02037	3-4	QBT3	—	—	—	16470	—	—
	AAA6433 (FD)	35-02037	3-4	QBT3	—	—	—	16470	—	—
	AAA6430	35-02037	9-10	QBT3	—	—	—	16470	—	—
	AAA6431	35-02037	13-14	QBT3	—	—	—	16470	—	—
	AAA6432	35-02037	19-20	QBT3	—	—	—	16470	—	—

Table D-2.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	AAA6437	35-02038	2.5-3.5	QBT3	—	—	—	16471	—	—
	AAA6438	35-02038	9-10	QBT3	—	—	—	16471	—	—
	AAA6439	35-02038	14-15	QBT3	—	—	—	16471	—	—
	AAA6440	35-02038	19-20	QBT3	—	—	—	16471	—	—
	AAA6441	35-02221	4-5	QBT3	—	—	—	16471	—	—
	AAA6442	35-02221	8.8-10	QBT3	—	—	—	16471	—	—
	AAA6443	35-02221	14-15	QBT3	—	—	—	16471	—	—
	AAA6444	35-02221	19-20	QBT3	—	—	—	16471	—	—
	AAA6445 (FD)	35-02221	19-20	QBT3	—	—	—	16471	—	—
	AAA6446	35-02222	3-4	QBT3	—	—	—	16471	—	—
	AAA6447	35-02222	9-10	QBT3	—	—	—	16471	—	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	16471	—	—
	AAA6449	35-02222	19-20	QBT3	—	—	—	16471	—	—
	0435-96-0051	35-02301	0-8	QBT3	—	—	—	1961	—	—
	0435-96-0052	35-02302	0-8	QBT3	—	—	—	1961	—	—
	RE35-04-54078	35-22942	9-10	QBT3	2281S	2281S	—	2281S	—	—
	RE35-04-54079	35-22942	19-20	QBT3	2281S	2281S	—	2281S	—	—
	RE35-04-54080	35-22942	29-30	QBT3	2281S	2281S	—	2281S	—	2281S
	RE35-04-54081	35-22943	9-10	QBT3	2266S	2266S	—	2266S	—	2266S
	RE35-04-54082	35-22943	19-20	QBT3	2266S	2266S	—	2266S	—	2266S
	RE35-04-54083	35-22943	29-30	QBT3	2266S	2266S	—	2266S	—	2266S
	RE35-04-54130	35-22959	9-10	QBT3	2287S	2287S	—	2287S	—	—
	RE35-04-54131	35-22959	19-20	QBT3	2287S	2287S	—	2287S	—	—
	RE35-04-54132	35-22959	29-30	QBT3	2287S	2287S	—	2287S	—	2287S
	RE35-04-54133	35-22960	6-7	ALLH	—	—	—	2261S	—	—
	RE35-04-54134	35-22960	10-11	ALLH	—	—	—	2261S	—	—
	RE35-04-54135	35-22960	14-15	QBT3	—	—	—	2261S	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54856	35-23280	1.41-1.84	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54861	35-23282	0-0.62	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54862	35-23282	0.62-1.31	SED	2718S	2718S	—	2718S	—	2718S
35-011(d)	RE35-04-54136	35-22961	9-10	QBT3	2334S	2334S	—	2334S	2334S	2334S
	RE35-04-54137	35-22961	19-20	QBT3	2334S	2334S	—	2334S	2334S	2334S
	RE35-04-54138	35-22961	24-25	QBT3	2334S	2334S	—	2334S	2334S	2334S
35-014(f)	0435-96-0077	35-02364	0-1	FILL	2236	—	—	2236	2236	2236
	0435-96-0078	35-02364	2-3	FILL	2236	—	—	2236	2236	2236
	RE35-04-54036	35-02364	4-5	QBT3	—	—	—	2336S	2336S	2336S
	RE35-04-54037	35-02364	9-10	QBT3	—	—	—	2336S	2336S	2336S
	0435-96-0079	35-02393	0-1	FILL	2236	—	—	2236	2236	2236
	0435-96-0080 (FD)	35-02393	0-1	FILL	2236	—	—	2236	2236	2236
	0435-96-0081	35-02393	2-3	FILL	2236	—	—	2236	2236	2236
	0435-96-0096	35-02405	0-0.5	FILL	—	—	—	—	2452	—
	0435-96-0143	35-02428	5-5.5	QBT3	—	—	—	—	2578	—
	0435-96-0144	35-02429	5-5.5	QBT3	—	—	—	—	2578	—

Table D-2.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	0435-96-0145	35-02430	2-2.5	FILL	—	—	—	—	2578	—
	0435-96-0146	35-02431	3-3.5	QBT3	—	—	—	—	2578	—
35-015(a)	AAC3336	35-02179	0-1	ALLH	21488	—	—	21488	—	—
	AAC3344	35-02182	0-1	ALLH	—	—	—	—	—	21488
	0435-95-0198	35-02285	1-1.8	FILL	—	—	—	1678	1678	—
	0435-95-0199	35-02286	1-2	FILL	—	—	—	1678	1678	—
	0435-95-0200	35-02286	2-3	FILL	—	—	—	1678	1678	—
	0435-97-0104	35-02496	0-1	FILL	—	—	—	3275R	3275R	—
	0435-97-0105	35-02496	1-2	QBT3	3275R	—	—	3275R	3275R	3275R
	0435-97-0107	35-02497	0-1	FILL	—	—	—	3275R	3275R	—
	0435-97-0108	35-02497	1-2	QBT3	3275R	—	—	3275R	3275R	3275R
	0435-97-0109 (FD)	35-02497	1-2	QBT3	3275R	—	—	3275R	3275R	3275R
	0435-97-0112	35-02498	0-1	FILL	—	—	—	3275R	3275R	—
	0435-97-0113	35-02498	1-2	FILL	3275R	—	—	3275R	3275R	3275R
	0435-97-0115	35-02499	0-1	FILL	—	—	—	3278R	3278R	—
	0435-97-0116	35-02499	1-2	QBT3	—	—	—	3278R	3278R	—
	0435-97-0117	35-02499	2-3	QBT3	—	—	—	3278R	3278R	—
	0435-97-0119	35-02500	0-0.83	FILL	—	—	—	3278R	3278R	—
	0435-97-0121	35-02500	0.83-2	QBT3	3278R	—	—	3278R	3278R	3278R
	0435-97-0122	35-02501	0-1	FILL	—	—	—	3278R	3278R	—
	0435-97-0123	35-02501	1-2	QBT3	—	—	—	3278R	3278R	—
	0435-97-0276	35-02594	0-1	FILL	—	—	—	3430R	3430R	—
	0435-97-0277	35-02594	2-3	FILL	3430R	—	—	3430R	3430R	—
	0435-97-0278	35-02594	8.5-10	QBT3	—	—	—	3430R	3430R	—
	RE35-04-54031	35-22928	4-4.5	QBT3	2342S	2342S	—	2342S	—	2342S
	RE35-04-54032	35-22928	9-9.5	QBT3	2342S	2342S	—	2342S	—	2342S
35-018(a)	0435-95-0162	35-02268	0-1	FILL	1304	—	—	1304	—	—
	0435-96-0083	35-02353	0-0.5	FILL	—	—	2307	2307	—	—
	0435-96-0084	35-02354	0-0.5	FILL	—	—	2307	2307	—	—
	0435-96-0085	35-02355	0-0.5	FILL	—	—	2307	2307	—	—
	0435-96-0086	35-02356	0-0.5	FILL	—	—	2307	2307	—	—
	0435-96-0087 (FD)	35-02356	0-0.5	FILL	—	—	2307	2307	—	—
	0435-96-0093	35-02402	0-0.5	FILL	—	—	2448	—	—	—
	0435-96-0094	35-02403	0-0.5	FILL	—	—	2448	—	—	—
	0435-96-0095	35-02404	0-0.5	FILL	—	—	2448	—	—	—
	0435-96-0097	35-02406	3-3.5	FILL	2471	—	—	—	—	—
	0435-96-0098	35-02407	3-3.5	FILL	2471	—	—	—	—	—
	RE35-04-54027	35-22926	6-7	ALLH	2354S	2354S	—	2354S	—	2354S

[a] Analytical request number.

[b] — = Analysis not requested.

Table D-2.0-4
Summary of Inorganic COPCs above BV or Detected in Soil, Fill, Tuff, and Sediment at Mesa Top Sites

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Mercury	Nickel	Selenium	Silicon	Silver	Thallium	Titanium	Zinc
Soil/Fill Background Value (mg/kg)					0.83	8.17	295	na[a]	na	0.4	19.3	14.7	na	22.3	0.1	15.4	1.52	na	1	0.73	na	48.8
Qbt2/Qbt3 Background Value (mg/kg)					0.5	2.79	46	na	na	1.63	7.14	4.66	na	11.2	0.1	6.58	0.3	na	1	1.1	na	63.5
Sediment Background Value (mg/kg)					0.83	3.98	127	na	na	0.4	10.5	11.2	na	19.7	0.1	9.38	0.3	na	1	0.73	na	60.2
35-002	RE35-04-54075	35-22941	4-5	ALLH	—[b]	—	—	—	—	0.564 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54076	35-22941	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.533 (U)	—	—	—	—	—
	RE35-04-54077	35-22941	29-30	QBT3	—	—	—	—	—	—	7.23	—	—	—	—	—	0.529 (U)	—	—	—	—	—
	RE35-04-54126	35-22958	4-5	ALLH	—	—	—	—	—	0.547 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54127	35-22958	9-10	ALLH	—	—	—	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54128	35-22958	14-15	ALLH	—	—	—	—	—	0.546 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54129	35-22958	19.2-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.534 (U)	—	—	—	—	—
35-003(a)-99	AAB0996	35-02004	99-100	QBT2	4.2 (UJ)	3 (UJ)	—	—	—	—	—	—	—	—	—	—	6.6 (UJ)	—	—	23.4 (UJ)	—	—
	AAB0997	35-02006	24-25	QBT3	4.2 (UJ)	3 (UJ)	—	—	—	—	—	—	—	12.3 (J-)	—	—	6.6 (UJ)	—	—	23.4 (UJ)	—	—
	AAB0984	35-02013	34-35	QBT3	2.1 (U)	—	—	—	—	—	—	—	—	—	—	—	3.6 (U)	—	—	17.9	—	—
	0435-95-0168	35-02269	0-0.5	FILL	3.8 (UJ)	—	—	—	—	0.51 (U)	219	—	—	38	0.12 (U)	246 (J-)	—	—	—	—	—	—
	0435-96-0003	35-02270	10-10.5	FILL	7.9 (UJ)	—	—	—	—	0.55 (U)	—	—	—	—	—	—	—	—	1.4 (U)	—	—	—
	0435-96-0006	35-02271	7-7.5	FILL	1.4 (J-)	—	—	—	—	—	90.2 (J-)	—	—	—	—	119	—	—	—	—	—	—
	0435-96-0010	35-02272	12-12.5	FILL	8.2 (U)	—	—	—	—	1.6	—	19.5	—	32.3	—	—	—	—	1.5 (U)	—	—	204
	0435-96-0013	35-02273	15-16	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.7 (J)	—	—
	0435-96-0016	35-02274	17-18	FILL	0.94 (U)	—	—	—	—	—	—	—	—	81.6	0.16	—	—	—	—	—	—	54.3
	0435-96-0019	35-02275	12-12.5	FILL	7.4 (UJ)	—	—	—	—	0.55 (J)	—	—	—	—	—	—	—	—	1.3 (U)	—	—	—
	0435-96-0022	35-02276	9-9.5	FILL	—	—	—	—	—	—	80.1 (J-)	—	—	—	—	57.4 (J-)	—	—	—	—	—	—
	0435-96-0030	35-02295	1.5-2.5	FILL	10 (U)	—	—	—	—	0.52 (U)	—	—	—	—	—	—	—	—	2.1 (U)	1 (U)	—	—
	0435-96-0034	35-02296	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.4 (U)	—	—
	0435-96-0038	35-02297	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.2 (U)	—	—
	0435-96-0042	35-02298	0-1	FILL	11 (U)	—	—	—	—	0.57 (U)	—	—	—	—	1.4	—	—	—	2.3 (U)	1.1 (U)	—	—
	0435-96-0045	35-02299	0-1	FILL	11 (U)	—	—	—	—	0.57 (U)	—	—	—	—	0.11 (U)	—	—	—	2.3 (U)	1.1 (U)	—	—
	0435-96-0049	35-02300	0-1	FILL	11 (U)	—	—	—	—	0.55 (U)	—	—	—	—	2	—	—	—	2.2 (U)	1.1 (U)	—	69
	0435-97-0001	35-02303	3-4.5	FILL	3.8 (U)	—	—	4.7 (J)	—	—	—	—	1.5	—	—	—	—	32.8	—	—	180	—
	0435-97-0002	35-02303	4.5-7	QBT3	3.2 (U)	—	—	1.7 (J)	—	—	—	—	—	—	—	—	—	28.2	—	—	16.6	—
	0435-97-0004	35-02303	13.5-15	QBT3	3.5 (U)	—	—	—	—	—	—	—	0.65	—	—	—	—	21.2	—	—	12.6	—
	0435-97-0005	35-02303	17.5-19	QBT3	3.6 (J)	—	—	—	—	—	—	—	—	—	0.17	—	—	20.9	—	—	11.1	—
	0435-97-0007	35-02304	4.5-5.5	FILL	3.5 (U)	—	—	1.6 (J)	—	—	—	—	0.68	—	—	—	—	15.9	—	—	168	—
	0435-97-0008	35-02304	5.5-7	QBT3	3.5 (U)	—	—	—	—	—	—	—	—	—	—	—	—	29.4	—	—	26.8	—
	0435-97-0009	35-02304	20-21.5	QBT3	3.3 (U)	—	—	—	—	—	—	—	—	—	—	—	—	41.3	—	—	17.4	—
	0435-97-0010	35-02304	24-25	QBT3	3.5 (U)	—	—	—	—	—	—	—	—	—	—	—	—	32.1	—	—	9.1	—
	0435-97-0012	35-02305	7-8.4	FILL	4.6 (U)	—	392	5.4 (J)	—	0.45 (U)	—	—	2	—	—	—	—	33.4	—	—	209	—
	0435-97-0013	35-02305	8.4-10	QBT3	2.7 (U)	—	—	1.4 (J)	—	—	—	—	5.8	—	—	—	—	75.3	—	—	44.8	—
	0435-97-0016	35-02305	14.5-15	QBT3	2.8 (UJ)	—	—	2.9 (J)	—	—	—	5.3	3.2	—	—	—	—	78.9	—	—	82.4	—
	0435-97-0014	35-02305	17.5-18.5	QBT3	2.2 (U)	—	—	0.87 (J)	—	—	—	—	1.6	—	—	—	—	79.1	—	—	27.9	—
	0435-97-0015	35-02305	38-39	QBT3	2.8 (UJ)	—	—	0.79 (J)	—	—	—	—	—	—	—	—	—	42	—	—	45.6	—
	0435-97-0033	35-02306	6.8-7.8	FILL	3.1 (U)	—	—	0.94 (J)	—	0.46 (U)	—	—	—	—	—	—	—	28	—	—	224	—
	0435-97-0034	35-02306	7.8-8.8	QBT3	2.9 (U)	—	—	—	—	—	—	—	—	—	—	—	—	45.2	—	—	16.6	—
	0435-97-0035	35-02306	11.5-12.5	QBT3	2.8 (U)	—	—	—	—	—	—	—	—	—	—	—	—	39.5	—	—	20.3	—
	0435-97-0036	35-02306	16.5-17.5	QBT3	2.9 (U)	—	—	—	—	—	—	—	—	—	—	—	—	49.3	—	—	10.7	—
	0435-97-0022	35-02307	9-10	FILL	3.8 (U)	—	—	2.7 (J)	—	—	—	—	0.79	—	—	—	—	34.2	—	—	202	—
	0435-97-0023	35-02307	10-12.5	QBT3	3.5 (U)	—	—	—	—	—	—	—	0.92	—	—	—	—	35	—	—	19.1	—
	0435-97-0027	35-02307	17-17.5	QBT3	3.7 (U)	—	47.9	—	—	—	—	—	2.2	—	—	—	—	28.2	—	—	22.9	—

Table D-2.0-4 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Mercury	Nickel	Selenium	Silicon	Silver	Thallium	Titanium	Zinc
	0435-97-0025	35-02307	21.5-22.5	QBT3	3.2 (U)	—	—	—	—	—	—	—	1.2	—	—	—	0.39 (J)	42.2	—	—	30.5	—
	0435-97-0026	35-02307	26.5-27.5	QBT3	3.5 (U)	—	—	1.9 (J)	—	—	—	—	1.5	—	0.5	—	—	35.2	—	—	28.6	—
	0435-97-0028	35-02308	8.4-9.4	FILL	3.1 (UJ)	—	—	1.9 (J)	—	0.47 (U)	—	—	1.4	—	—	—	—	33.4	—	—	192	—
	0435-97-0029	35-02308	9.4-10	QBT3	3 (UJ)	—	—	—	—	—	—	—	2.1	—	—	—	—	28.5	—	—	31.8	—
	0435-97-0030	35-02308	11.5-12.5	QBT3	2.9 (UJ)	—	—	—	—	—	—	—	—	—	—	—	—	13.8	—	—	23.1	—
	0435-97-0031	35-02308	19-20	QBT3	3.1 (UJ)	—	—	—	—	—	—	—	0.83	—	—	—	—	18.3	—	—	33.3	—
	0435-97-0038	35-02309	2.5-3.5	FILL	2.7 (UJ)	—	—	—	—	0.41 (U)	—	—	0.65	—	—	—	—	19.7	—	—	113	—
	0435-97-0039	35-02309	4.5-5.5	QBT3	3 (UJ)	—	49.7	0.76 (J)	—	—	—	—	2.4	12.6	—	—	—	33.8	—	—	99.5	—
	0435-97-0040	35-02309	8.5-10	QBT3	2.8 (UJ)	—	—	—	—	—	—	—	1.5	—	—	—	—	25.8	—	—	23.1	—
	0435-96-0153	35-02437	0-1	FILL	7.7 (U)	—	—	—	—	0.67 (U)	—	—	—	—	—	25.3	—	—	1.4 (U)	—	—	—
	0435-96-0154	35-02437	4-5	FILL	8.8 (U)	—	—	—	—	0.78 (U)	78.9	128	—	—	—	47.6	—	—	1.6 (U)	—	—	—
	0435-96-0156	35-02438	4-5	FILL	8.7 (U)	—	—	—	—	0.76 (U)	—	—	—	—	0.74	—	—	—	1.6 (U)	—	—	—
	0435-96-0157	35-02438	8-9	QBT3	7.9 (U)	—	—	—	—	—	11	—	—	—	—	7.8 (J)	—	—	1.4 (U)	—	—	—
	0435-96-0158	35-02439	0-1	FILL	8.6 (U)	—	—	—	—	0.75 (U)	—	—	—	—	—	—	—	—	1.5 (U)	—	—	—
	0435-96-0159	35-02439	4-5	FILL	8.7 (U)	—	—	—	—	0.76 (U)	—	—	—	—	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0160	35-02440	4-5	FILL	9.2 (U)	—	—	—	—	0.8 (U)	—	—	—	—	—	—	—	—	2.1 (J)	—	—	—
	0435-96-0161	35-02440	8-9	QBT3	8.5 (U)	—	—	—	—	—	—	6.5	—	—	—	16.1	—	—	1.5 (U)	—	—	—
	0435-96-0162	35-02441	0-1	FILL	9 (U)	—	—	—	—	0.79 (U)	—	—	—	26.7 (J-)	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0163	35-02441	4-5	ALLH	9.1 (U)	—	—	—	—	0.8 (U)	—	—	—	—	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0165	35-02442	4-5	FILL	8.6 (U)	—	—	—	—	0.76 (U)	—	—	—	—	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0166	35-02442	8-9	QBT3	8.4 (U)	—	74.3	—	—	—	—	5.2 (U)	—	—	—	—	—	—	1.5 (U)	—	—	—
	0435-96-0167	35-02443	4-5	FILL	8.6 (U)	—	—	—	—	0.75 (U)	—	—	—	—	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0168	35-02443	8-8.5	QBT3	8.1 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5 (U)	—	—	—
	0435-96-0169	35-02444	0-1	FILL	8.8 (U)	—	—	—	—	0.77 (U)	—	—	—	—	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0170	35-02444	4-5	FILL	8.8 (U)	—	—	—	—	0.77 (U)	—	—	—	—	0.6 (U)	—	—	—	1.6 (U)	—	—	—
	0435-96-0171	35-02445	0-1	FILL	9 (U)	—	—	—	—	0.79 (U)	—	—	—	—	0.21	—	—	—	1.6 (U)	—	—	—
	0435-96-0172	35-02445	4.5-5.5	FILL	8.5 (U)	—	—	—	—	0.75 (U)	—	—	—	—	—	—	—	—	1.5 (U)	—	—	—
	0435-96-0173	35-02446	4-5	FILL	9 (U)	—	—	—	—	0.99 (J)	—	—	—	—	—	—	—	—	1.6 (U)	—	—	—
	0435-96-0174	35-02446	8-9	QBT3	8.4 (U)	—	—	—	—	—	—	—	—	11.4	—	—	—	—	1.5 (U)	—	—	—
	0435-97-0017	35-02529	5-6	FILL	4 (U)	—	—	3.1 (J)	—	—	—	—	—	—	—	—	—	24.4	—	—	112	—
	0435-97-0018	35-02529	6-7.5	QBT3	3.7 (U)	—	—	—	—	—	—	—	0.97	—	—	—	—	30.7	—	—	49.1	—
	0435-97-0021	35-02529	10-11	QBT3	3.7 (U)	—	—	—	—	—	—	—	1.9	—	—	—	—	36.7	—	—	30.3	—
	0435-97-0019	35-02529	19.5-20.5	QBT3	3.5 (U)	—	—	—	0.3	—	—	—	0.64	—	—	—	—	30.5	—	—	8.7	—
	0435-97-0020	35-02529	24-25	QBT3	3.5 (U)	—	—	1.5 (J)	—	—	—	—	—	—	—	—	—	40.4	—	—	9.4	—
	RE35-04-54061	35-22936	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.547 (U)	—	—	—	—	—
	RE35-04-54062	35-22936	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.547 (U)	—	—	—	—	—
	RE35-04-54075	35-22941	4-5	ALLH	—	—	—	—	—	0.564 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54076	35-22941	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.533 (U)	—	—	—	—	—
	RE35-04-54077	35-22941	29-30	QBT3	—	—	—	—	—	—	7.23	—	—	—	—	—	0.529 (U)	—	—	—	—	—
	RE35-04-54106	35-22950	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.504 (U)	—	—	—	—	—
	RE35-04-54107	35-22950	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.503 (U)	—	—	—	—	—
	RE35-04-54108	35-22950	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.49 (U)	—	—	—	—	—
	RE35-05-58364	35-24414	4-5	QBT3	—	—	50	—	—	—	—	—	—	—	—	—	0.594 (UJ)	—	—	—	—	—
	RE35-05-58365	35-24414	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.532 (UJ)	—	—	—	—	—
	RE35-05-58366	35-24414	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.515 (UJ)	—	—	—	—	—
	RE35-05-58367	35-24115	4-5	FILL	—	—	—	—	—	0.581 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58368	35-24115	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.524 (UJ)	—	—	—	—	—
	RE35-05-58369	35-24115	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.456 (J)	—	—	—	—	—
	RE35-05-58370	35-24416	15.5-16.5	FILL	—	—	—	—	—	0.551 (U)	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.0-4 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Mercury	Nickel	Selenium	Silicon	Silver	Thallium	Titanium	Zinc
35-003(j)-99	0435-95-0211	35-02288	1-2	FILL	10.2 (U)	—	—	—	—	0.63 (U)	—	—	—	—	—	—	—	—	2 (U)	—	—	—
	0435-95-0212	35-02288	3-4	QBT3	10.6 (U)	—	48.9	—	—	—	—	—	—	—	—	—	0.46 (U)	—	2.1 (U)	—	—	—
	0435-95-0213	35-02288	6-7	QBT3	9.9 (U)	—	237	—	—	—	—	—	—	—	—	7.2 (J)	0.43 (U)	—	2 (U)	—	—	—
	0435-95-0214	35-02288	9-10	QBT3	9.6 (U)	—	—	—	—	—	—	—	—	—	—	—	0.42 (U)	—	1.9 (U)	—	—	—
	0435-95-0219	35-02291	1-2	FILL	10 (U)	—	—	—	—	0.62 (U)	—	15.5	—	42.3	0.55	—	—	—	2 (U)	—	—	—
	0435-95-0220	35-02291	3-4	FILL	10.6 (U)	—	—	—	—	0.66 (U)	—	—	—	—	—	—	—	—	2.1 (U)	—	—	—
	0435-95-0221	35-02291	6-7	QBT3	10.9 (U)	—	—	—	—	—	—	—	—	—	—	—	0.48 (U)	—	2.2 (U)	—	—	—
	0435-95-0222	35-02291	9-10	QBT3	9.6 (U)	—	—	—	—	—	—	—	—	—	—	—	0.42 (U)	—	1.9 (U)	—	—	—
35-004(a)	RE35-04-54016	35-22922	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.532 (UJ)	—	—	—	—	—
	RE35-04-54017	35-22922	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.537 (UJ)	—	—	—	—	—
35-004(h)	RE35-05-58367	35-24415	4-5	FILL	—	—	—	—	—	0.581 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58368	35-24415	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.524 (UJ)	—	—	—	—	—
	RE35-05-58369	35-24415	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.456 (J)	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	1.1 (UJ)	—	—	—	—	0.63 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6382	35-02035	8.8-9.8	QBT3	1.1 (UJ)	—	66.5	—	—	—	8.1	7.7	—	35.3 (J+)	—	8.4 (J)	0.46 (UJ)	—	13.7 (J)	—	—	—
	AAA6383	35-02035	14-15	QBT3	1.1 (UJ)	—	—	—	—	—	—	—	—	71.2 (J+)	—	—	0.42 (UJ)	—	—	—	—	—
	AAA6384	35-02035	17.5-18.7	QBT3	1.5 (J-)	—	—	—	—	—	—	—	—	—	—	—	0.44 (UJ)	—	—	—	—	—
	AAA6401	35-02036	0-1.1	ALLH	1.1 (UJ)	—	—	—	—	0.64 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6402	35-02036	7.4-8.4	QBT3	1.1 (UJ)	—	—	—	—	—	—	—	—	—	—	—	0.43 (UJ)	—	—	—	—	—
	AAA6403	35-02036	14.2-15	QBT3	1.1 (UJ)	—	—	—	—	—	—	—	—	—	—	—	0.42 (UJ)	—	—	—	—	—
	AAA6404	35-02036	19-20	QBT3	1.1 (UJ)	—	—	—	—	—	—	—	—	—	—	—	0.43 (UJ)	—	—	—	—	—
	AAA6429	35-02037	3-4	QBT3	1 (UJ)	—	—	—	—	—	—	4.9 (J)	—	—	—	—	0.41 (UJ)	—	—	—	—	—
	AAA6430	35-02037	9-10	QBT3	1 (UJ)	—	—	—	—	—	—	—	—	—	—	—	0.41 (UJ)	—	—	—	—	—
	AAA6431	35-02037	13-14	QBT3	1 (UJ)	—	—	—	—	—	—	—	—	—	—	—	0.41 (UJ)	—	—	—	—	—
	AAA6432	35-02037	19-20	QBT3	1 (UJ)	—	—	—	—	—	—	—	—	—	—	—	0.42 (UJ)	—	—	—	—	—
	AAA6437	35-02038	2.5-3.5	QBT3	1 (U)	—	—	—	—	—	—	4.8 (J)	—	—	—	—	0.42 (J)	—	—	—	—	—
	AAA6438	35-02038	9-10	QBT3	1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.45 (J)	—	—	—	—	—
	AAA6439	35-02038	14-15	QBT3	1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.41 (U)	—	—	—	—	—
	AAA6440	35-02038	19-20	QBT3	1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.41 (U)	—	—	—	—	—
	AAA6441	35-02221	4-5	QBT3	1 (U)	—	—	—	—	—	—	12.7	—	—	—	—	0.41 (U)	—	—	—	—	—
	AAA6442	35-02221	8.8-10	QBT3	1.1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.46 (J)	—	—	—	—	—
	AAA6443	35-02221	14-15	QBT3	1.1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.44 (U)	—	—	—	—	—
	AAA6444	35-02221	19-20	QBT3	1.1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.42 (U)	—	—	—	—	—
	AAA6446	35-02222	3-4	QBT3	1 (U)	—	—	—	—	—	7.9	39.1	—	—	—	—	0.41 (U)	—	1.3 (J)	—	—	—
	AAA6447	35-02222	9-10	QBT3	1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.47 (J)	—	—	—	—	—
	AAA6448	35-02222	14-15	QBT3	1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.41 (U)	—	—	—	—	—
	AAA6449	35-02222	19-20	QBT3	1 (U)	—	—	—	—	—	—	—	—	—	—	—	0.7 (J)	—	—	—	—	—
	0435-96-0051	35-02301	7.5-8.0	QBT3	—	3.3 (J-)	110	—	—	—	9.5	15.1	—	11.5	0.68	7 (J)	0.88 (UJ)	—	—	—	—	94.6
	0435-96-0052	35-02302	7.5-8.0	QBT3	—	3.5 (J-)	90.4	—	—	—	7.3	24.3	—	—	0.61	—	0.79 (UJ)	—	—	—	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.504 (U)	—	—	—	—	—
	RE35-04-54079	35-22942	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.513 (U)	—	—	—	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.509 (U)	—	—	—	—	—
	RE35-04-54081	35-22943	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.12 (J-)	—	0.51 (UJ)	—	—	—	—	—
	RE35-04-54082	35-22943	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.515 (UJ)	—	—	—	—	—
	RE35-04-54083	35-22943	29-30	QBT3	—	—	—	—	—	—	—	—	—	27.7	—	—	0.519 (UJ)	—	—	—	—	—
	RE35-04-54130	35-22959	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.516 (U)	—	—	—	—	—
	RE35-04-54131	35-22959	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.52 (U)	—	—	—	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.528 (U)	—	—	—	—	—
	RE35-04-54133	35-22960	6-7	ALLH	—	—	—	—	—	0.561 (U)	—	—	—	—	0.136	—	—	—	—	—	—	—

Table D-2.0-4 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Mercury	Nickel	Selenium	Silicon	Silver	Thallium	Titanium	Zinc
	RE35-04-54134	35-22960	10-11	ALLH	—	—	—	—	—	0.541 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54135	35-22960	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.544 (UJ)	—	—	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	—	—	—	13.5	101	—	—	1.05	—	0.375 (U)	—	4.51	—	—	96.3
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	—	—	43	—	—	0.378	—	0.556 (UJ)	—	—	—	—	72.1
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.552 (UJ)	—	—	—	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	—	—	—	0.547 (U)	—	—	—	—	—	—	0.359 (U)	—	—	—	—	—
35-011(d)	RE35-04-54136	35-22961	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.552 (U)	—	—	—	—	—
	RE35-04-54137	35-22961	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.435 (J)	—	—	—	—	—
35-014(f)	0435-96-0077	35-02364	0-1	FILL	6.1 (U)	—	—	—	—	0.8 (U)	26.7 (J-)	—	—	—	—	16.4	—	—	1.5 (U)	—	—	—
	0435-96-0078	35-02364	2-3	FILL	5.5 (U)	—	—	—	—	0.73 (U)	90 (J-)	—	—	—	—	46.5	—	—	1.3 (U)	—	—	—
	RE35-04-54036	35-02364	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.327 (J)	—	—	—	—	—
	RE35-04-54037	35-02364	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.525 (U)	—	—	—	—	—
	0435-96-0079	35-02393	0-1	FILL	5.7 (U)	—	—	—	—	0.75 (U)	—	—	—	—	—	—	—	—	1.4 (U)	—	—	—
	0435-96-0081	35-02393	2-3	FILL	5.7 (U)	—	—	—	—	0.75 (U)	43.7	—	—	—	—	22	—	—	1.4 (U)	—	—	—
35-015(a)	AAC3346	35-02182	2-3	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.1 (U)	—	—
	0435-95-0199	35-02286	1-2	FILL	9.7 (U)	—	—	—	—	0.76 (U)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0104	35-02496	0-1	FILL	6.2 (UJ)	—	—	—	—	0.52 (U)	—	—	—	—	—	—	—	—	1.8 (U)	—	—	—
	0435-97-0105	35-02496	1-2	QBT3	6.8 (UJ)	—	—	—	—	—	—	—	—	—	—	—	—	—	2 (U)	—	—	—
	0435-97-0107	35-02497	0-1	FILL	5.9 (UJ)	—	—	—	—	0.49 (U)	—	—	—	—	—	—	—	—	1.7 (U)	—	—	—
	0435-97-0108	35-02497	1-2	QBT3	6.8 (UJ)	—	—	—	—	—	8.9	4.7 (J)	—	—	—	—	—	—	2 (U)	—	—	—
	0435-97-0112	35-02498	0-1	FILL	6.3 (UJ)	—	—	—	—	0.52 (U)	—	—	—	—	—	—	—	—	1.8 (U)	—	—	—
	0435-97-0113	35-02498	1-2	FILL	6.2 (UJ)	—	—	—	—	0.51 (U)	193	—	—	—	—	98.7	—	—	1.8 (U)	—	—	—
	0435-97-0115	35-02499	0-1	FILL	6.3 (UJ)	—	—	—	—	0.52 (U)	—	—	—	—	—	—	—	—	1.8 (U)	—	—	—
	0435-97-0116	35-02499	1-2	QBT3	6.2 (UJ)	—	—	—	—	—	12.8	—	—	—	—	8.8	—	—	1.8 (U)	—	—	—
	0435-97-0117	35-02499	2-3	QBT3	6.7 (UJ)	—	—	—	—	—	36.3	—	—	—	—	20.8	—	—	2 (U)	—	—	—
	0435-97-0119	35-02500	0-0.83	FILL	7 (UJ)	—	—	—	—	0.64 (J)	—	—	—	—	—	—	—	—	2 (U)	—	—	—
	0435-97-0121	35-02500	0.83-2	QBT3	6.5 (UJ)	—	—	—	—	—	30.8	—	—	—	—	17.7	—	—	1.9 (U)	—	—	—
	0435-97-0122	35-02501	0-1	FILL	6.2 (UJ)	—	—	—	—	0.51 (U)	—	—	—	—	—	—	—	—	1.8 (U)	—	—	—
	0435-97-0123	35-02501	1-2	QBT3	6.3 (UJ)	—	—	—	—	—	11.4	—	—	—	—	—	—	—	1.8 (U)	—	—	—
	0435-97-0277	35-02594	2-3	FILL	—	—	—	—	—	—	22	—	—	—	—	19.3	—	—	—	—	—	—
	0435-97-0278	35-02594	8.5-10	QBT3	0.77 (UJ)	—	—	—	—	—	10.1	—	—	—	—	—	0.61 (U)	—	—	—	—	—
	RE35-04-54031	35-22928	4-4.5	QBT3	—	—	—	—	—	—	38.4	—	—	—	—	—	—	—	—	—	—	—
35-018(a)	0435-95-0165	35-02268	2-3	FILL	—	—	—	—	—	1.1	—	—	—	—	0.41	—	—	—	—	—	—	59.9

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV, or not detected.

Table D-2.0-5
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil, Fill, Tuff, and Sediment at Mesa Top Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na	na	0.023	0.054	1.31	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na[a]	na	na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	na	0.006	0.068	1.04	0.093	2.59	0.2	2.29
35-002	RE35-04-54075	35-22941	4-5	ALLH	—[b]	—	—	—	—	—	—	0.0898	—	—	—
	RE35-04-54076	35-22941	14-15	QBT3	—	—	—	—	—	—	—	0.0542	—	—	—
	RE35-04-54077	35-22941	29-30	QBT3	—	—	—	—	—	—	—	0.0373	—	—	—
35-003(a)-99	AAB0994	35-02004	9.00-10.00	ALLH	—	—	—	—	—	0.02[c]	—	—	—	—	—
	AAB0995	35-02004	64.00-65.00	QBT3	—	—	—	—	0.059	0.029	—	—	—	—	—
	AAB0989	35-02005	1.00-2.00	ALLH	—	—	—	—	—	0.007[c] (J-)	—	—	—	—	—
	AAB1458	35-02005	15.00-16.00	QBT3	—	—	—	—	—	0.014 (J-)	—	—	—	—	—
	AAB0991	35-02005	34.00-35.00	QBT3	—	—	—	—	—	0.005 (J-)	—	—	—	0.101 (J-)	—
	AAB0992	35-02005	99.00-100.00	QBT2	—	—	—	0.456 (J-)	—	0.011 (J-)	—	—	—	—	—
	AAB0997	35-02006	24.00-25.00	QBT3	—	—	0.195 (J)	—	—	—	—	—	—	—	—
	AAB1460	35-02008	13.50-14.50	ALLH	—	0.837[c]	—	—	—	0.056	—	—	—	—	—
	AAB1036	35-02008	99.00-100.00	QBT2	—	—	—	—	—	0.072	—	—	—	—	—
	AAB0961	35-02010	1.00-2.00	ALLH	—	—	—	—	—	—	—	0.116	—	—	—
	AAB0962	35-02010	13.20-14.20	QBT3	—	—	—	—	—	0.099	—	0.573	—	—	—
	AAB0963	35-02010	38.00-39.00	QBT3	—	—	—	—	—	—	—	0.196	—	—	—
	AAB0964	35-02010	90.00-95.00	QBT3	—	—	—	—	—	—	—	0.437 (J)	—	—	—
	AAB0965	35-02010	95.00-100.00	QBT2	—	—	—	—	—	—	—	0.626 (J)	—	—	—
	AAB1001	35-02011	1.00-2.00	ALLH	—	—	—	—	—	—	—	0.127 (J-)	—	—	—
	AAB1002	35-02011	10.00-11.00	ALLH	—	—	—	—	—	—	—	0.193 (J-)	—	—	—
	AAB1003	35-02011	24.00-25.00	QBT3	—	—	—	—	—	—	—	7.704E-02 (J-)	—	—	—
	AAB1005	35-02011	99.00-100.00	QBT2	—	—	—	0.334 (J)	0.007[c] (J-)	—	—	0.261 (J-)	—	—	—
	AAB0969	35-02012	1.00-2.00	ALLH	—	—	—	—	—	—	—	6.000787E-02 (J)	—	—	—
	AAB0970	35-02012	20.50-21.50	QBT3	—	—	—	—	—	—	—	8.700E-02 (J)	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	AAB0971	35-02012	25.80-26.80	QBT3	—	—	—	—	—	—	—	0.216 (J)	—	—	—
	AAB0972	35-02012	30.00-35.00	QBT3	—	—	—	—	0.045[c]	—	—	0.177 (J)	—	—	—
	AAB0973	35-02012	99.00-100.00	QBT3	—	—	—	—	—	—	—	0.172	—	—	—
	AAB0981	35-02013	1.00-2.00	ALLH	—	—	—	—	—	—	—	0.186 (J)	—	—	—
	AAB0982	35-02013	15.00-16.00	QBT3	—	—	—	—	—	—	—	0.141 (J)	—	—	—
	AAB0984	35-02013	34.00-35.00	QBT3	—	—	—	—	—	—	—	4.414 (J)	—	—	—
	AAB0985	35-02013	64.00-65.00	QBT3	—	—	—	—	0.106	—	—	1.509 (J)	—	—	—
	AAB0986	35-02013	99.00-100.00	QBT2	—	—	—	—	—	—	—	0.405 (J)	—	—	—
	AAB0950	35-02015	10.00-11.00	QBT3	—	—	—	—	—	0.37 (J-)	—	—	—	—	—
	AAA6589	35-02016	1.00-2.00	ALLH	—	—	—	—	—	0.018[c]	—	—	—	—	—
	AAA6590	35-02016	8.00-9.00	QBT3	—	—	—	—	—	0.02	—	—	—	—	—
	AAA6537	35-02017	1.30-2.30	ALLH	—	—	—	—	—	0.023[c]	—	—	—	—	—
	AAA6633	35-02018	1.00-2.00	ALLH	—	0.399	—	—	—	—	—	0.128 (J)	—	—	—
	AAA6622	35-02019	19.00-20.00	ALLH	—	—	—	—	—	0.054	—	—	—	—	—
	AAA6626	35-02020	7.00-8.00	ALLH	—	—	—	—	—	0.14	—	—	—	—	—
	AAA6628	35-02020	26.50-27.50	QBT3	—	—	—	0.39 (J)	—	—	—	0.141	—	—	—
	AAA6574	35-02021	3.00-4.00	ALLH	—	0.184	—	—	—	0.086	—	—	—	—	—
	AAA6637	35-02022	1.50-2.50	ALLH	—	—	—	—	—	0.034[c]	—	—	—	—	—
	AAA6617	35-02026	2.00-3.00	ALLH	—	—	—	—	0.014	0.07	—	—	9.75 (J-)	1.124 (J-)	55.327 (J-)
	AAA6618	35-02026	9.00-10.00	QBT3	—	—	—	—	0.034[c]	—	—	—	—	—	—
	AAA6620	35-02026	28.50-29.50	QBT3	—	—	—	—	—	0.014	—	—	—	—	—
	AAA6608	35-02027	20.00-21.00	FILL	—	—	—	—	—	0.034[c]	—	—	—	—	—
	AAB1011	35-02215	5.00-6.00	ALLH	—	0.307[c]	—	—	—	0.038[c]	—	0.179	—	—	—
	0435-96-0003	35-02270	10.00-10.50	FILL	—	—	—	—	—	—	—	0.25	—	—	—
	0435-96-0006	35-02271	7.00-7.50	FILL	—	—	—	—	0.042[c]	—	—	—	—	—	—
	0435-96-0010	35-02272	12.00-12.50	FILL	—	—	—	—	—	0.0242[c]	—	0.07	3.51	—	—
	0435-96-0016	35-02274	17.00-18.00	FILL	—	—	—	—	—	0.124	—	0.13	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	0435-96-0022	35-02276	9.00-9.50	FILL	—	—	—	—	—	—	—	0.094	—	—	—
	0435-96-0030	35-02295	1.50-2.50	FILL	—	—	—	—	—	—	1.06[c]	—	—	—	—
	0435-96-0031	35-02295	4.00-5.00	ALLH	—	0.0457[c]	—	—	—	0.015[c]	0.93[c]	—	—	—	—
	0435-96-0042	35-02298	0.00-1.00	FILL	—	—	—	—	—	0.026[c]	2.7	—	—	—	—
	0435-96-0043	35-02298	4.00-5.00	QBT3	—	—	—	—	—	—	1.13	—	—	—	—
	0435-96-0045	35-02299	0.00-1.00	FILL	—	0.082[c]	—	—	—	0.024[c]	2.09	0.416	—	—	—
	0435-96-0046	35-02299	3.00-4.00	QBT3	—	—	—	—	—	—	0.93	0.313	—	—	—
	0435-96-0049	35-02300	0.00-1.00	FILL	—	—	—	—	—	—	1.22[c]	0.34	—	—	—
	0435-96-0050	35-02300	2.00-3.00	QBT3	—	—	—	—	—	—	—	0.303	—	—	—
	0435-97-0001	35-02303	3.00-4.50	FILL	—	—	—	—	—	—	0.953[c]	0.081	—	—	—
	0435-97-0002	35-02303	4.50-7.00	QBT3	—	—	—	—	—	—	0.667	0.066	—	—	—
	0435-97-0004	35-02303	13.50-15.00	QBT3	—	—	—	—	—	—	349	0.081	—	—	—
	0435-97-0005	35-02303	17.50-19.00	QBT3	—	—	—	—	—	—	2.28	0.077	—	—	—
	0435-97-0007	35-02304	4.50-5.50	FILL	—	—	—	—	—	—	—	0.468	—	—	—
	0435-97-0008	35-02304	5.50-7.00	QBT3	—	—	—	—	—	—	—	0.217	—	—	—
	0435-97-0009	35-02304	20.00-21.50	QBT3	—	—	—	—	—	—	—	0.165	—	—	—
	0435-97-0010	35-02304	24.00-25.00	QBT3	—	—	—	—	—	—	—	0.135	—	—	—
	0435-97-0012	35-02305	7.00-8.40	FILL	—	—	—	—	—	—	68.4	0.099	—	—	—
	0435-97-0013	35-02305	8.40-10.00	QBT3	—	—	—	—	—	—	116	0.053	—	—	—
	0435-97-0016	35-02305	14.50-15.00	QBT3	—	—	—	—	—	—	710	—	—	—	—
	0435-97-0014	35-02305	17.50-18.50	QBT3	—	—	—	—	—	—	270	—	—	—	—
	0435-97-0015	35-02305	38.00-39.00	QBT3	—	—	—	—	—	—	—	0.069	—	—	—
	0435-97-0033	35-02306	6.80-7.80	FILL	—	—	—	—	—	—	2.44	0.097	—	—	—
	0435-97-0034	35-02306	7.80-8.80	QBT3	—	—	—	—	—	—	—	0.062	—	—	—
	0435-97-0035	35-02306	11.50-12.50	QBT3	—	—	—	—	—	—	—	0.063	—	—	—
	0435-97-0036	35-02306	16.50-17.50	QBT3	—	—	—	—	—	—	—	0.092	—	—	—
	0435-97-0022	35-02307	9.00-10.00	FILL	—	0.924[c]	—	—	0.074	0.239	4.4	0.172	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	0435-97-0023	35-02307	10.00-12.50	QBT3	—	—	—	—	—	—	640	0.289	—	—	—
	0435-97-0027	35-02307	17.00-17.50	QBT3	—	—	—	—	—	—	1140	0.384	—	—	—
	0435-97-0025	35-02307	21.50-22.50	QBT3	—	—	—	—	—	—	26	0.336	—	—	—
	0435-97-0026	35-02307	26.50-27.50	QBT3	—	—	—	—	—	—	1.58	0.339	—	—	—
	0435-97-0028	35-02308	8.40-9.40	FILL	—	2.58	—	—	—	—	10.2	1.182	—	—	—
	0435-97-0029	35-02308	9.40-10.00	QBT3	—	—	—	—	—	—	5.8	1.164	—	—	—
	0435-97-0030	35-02308	11.50-12.50	QBT3	—	—	—	—	—	—	2.42	0.252	—	—	—
	0435-97-0031	35-02308	19.00-20.00	QBT3	—	—	—	—	—	—	6	0.11	—	—	—
	0435-97-0038	35-02309	2.50-3.50	FILL	—	—	—	—	—	—	2.23	0.07	—	—	—
	0435-97-0039	35-02309	4.50-5.50	QBT3	—	—	—	—	—	—	—	0.153	—	—	—
	0435-97-0040	35-02309	8.50-10.00	QBT3	—	—	—	—	—	—	—	0.061	—	—	—
	0435-96-0153	35-02437	0.00-1.00	FILL	—	2.94	0.63	—	—	0.017[c]	904	—	—	—	—
	0435-96-0154	35-02437	4.00-5.00	FILL	—	1.07[c]	—	0.506	—	0.027[c]	372	—	—	—	—
	0435-96-0156	35-02438	4.00-5.00	FILL	—	—	—	—	—	—	24.4	—	—	—	—
	0435-96-0157	35-02438	8.00-9.00	QBT3	—	—	—	—	—	—	—	0.159	—	—	—
	0435-96-0158	35-02439	0.00-1.00	FILL	—	0.692[c]	0.368	—	—	—	441	9.73	—	—	—
	0435-96-0159	35-02439	4.00-5.00	FILL	—	—	—	—	—	0.013[c]	—	—	—	—	—
	0435-96-0160	35-02440	4.00-5.00	FILL	—	—	0.211	—	—	—	368	—	—	—	—
	0435-96-0161	35-02440	8.00-9.00	QBT3	—	1.15	0.654	—	—	0.054	760	—	—	—	—
	0435-96-0162	35-02441	0.00-1.00	FILL	—	1.09[c]	0.301	—	—	—	146	—	—	—	—
	0435-96-0163	35-02441	4.00-5.00	ALLH	—	—	—	—	—	—	12.1	—	—	—	—
	0435-96-0165	35-02442	4.00-5.00	FILL	—	—	—	—	—	—	3.02	—	—	—	—
	0435-96-0166	35-02442	8.00-9.00	QBT3	—	—	—	—	—	—	3.5	—	—	—	—
	0435-96-0167	35-02443	4.00-5.00	FILL	—	—	—	—	—	—	4.95	0.58	—	—	—
	0435-96-0168	35-02443	8.00-8.50	QBT3	—	—	—	—	—	0.026	0.72	5.49	—	—	—
	0435-96-0169	35-02444	0.00-1.00	FILL	—	—	—	—	—	—	6.12	—	—	—	—
	0435-96-0170	35-02444	4.00-5.00	FILL	—	—	—	—	—	—	7.53	—	—	—	—
	0435-96-0171	35-02445	0.00-1.00	FILL	—	—	—	—	—	—	26.8	0.785	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	0435-96-0172	35-02445	4.50-5.50	FILL	—	—	—	—	—	—	15.8	0.426	—	—	—
	0435-96-0173	35-02446	4.00-5.00	FILL	—	0.094[c]	—	—	—	0.007[c]	25.9	—	—	—	—
	0435-96-0174	35-02446	8.00-9.00	QBT3	—	—	—	—	—	—	10.9	—	—	—	—
	0435-97-0017	35-02529	5.00-6.00	FILL	—	—	—	—	—	—	3.97	0.237	—	—	—
	0435-97-0018	35-02529	6.00-7.50	QBT3	—	—	—	—	—	—	14.4	0.084	—	—	—
	0435-97-0021	35-02529	10.00-11.00	QBT3	—	—	—	—	—	—	27.3	0.054	—	—	—
	0435-97-0019	35-02529	19.50-20.50	QBT3	—	—	—	—	—	—	—	0.07	—	—	—
	0435-97-0020	35-02529	24.00-25.00	QBT3	—	—	—	—	—	—	—	0.079	—	—	—
	0435-97-0386	35-02533	0.00-1.00	FILL	—	0.738[c]	—	—	—	—	2.6	—	—	—	—
	RE35-04-54061	35-22936	19.00-20.00	QBT3	—	—	—	—	—	—	—	0.105	—	—	—
	RE35-04-54062	35-22936	29.00-30.00	QBT3	—	—	—	—	—	—	—	0.0974	—	—	—
	RE35-04-54075	35-22941	4.00-5.00	ALLH	—	—	—	—	—	—	—	0.0898	—	—	—
	RE35-04-54076	35-22941	14.00-15.00	QBT3	—	—	—	—	—	—	—	0.0542	—	—	—
	RE35-04-54077	35-22941	29.00-30.00	QBT3	—	—	—	—	—	—	—	0.0373	—	—	—
	RE35-04-54106	35-22950	4.00-5.00	QBT3	—	—	—	—	—	0.0537	—	0.021	—	—	—
	RE35-04-54107	35-22950	14.00-15.00	QBT3	—	—	—	—	—	—	—	0.0223	—	—	—
	RE35-04-54108	35-22950	29.00-30.00	QBT3	—	—	—	—	—	0.131	—	0.0037	—	—	—
	RE35-05-58364	35-24414	4.00-5.00	QBT3	—	—	—	—	—	—	96.7	—	—	0.21	—
	RE35-05-58365	35-24414	14.00-15.00	QBT3	—	—	—	—	—	—	—	0.103	—	—	—
	RE35-05-58366	35-24414	29.00-30.00	QBT3	—	—	—	—	—	—	—	0.147	—	0.243	—
	RE35-05-58367	35-24115	4-5	FILL	—	—	—	—	—	—	—	0.24	—	—	—
	RE35-05-58368	35-24115	14-15	QBT3	—	—	—	—	—	—	—	0.0766	—	—	—
	RE35-05-58369	35-24115	29-30	QBT3	—	—	—	—	—	—	—	0.0887	—	—	—
	RE35-05-58370	35-24416	15.50-16.50	FILL	0.123	0.29[c]	—	—	—	0.0541	3.02	0.216	—	—	—
	RE35-05-58371	35-24416	16.50-17.50	FILL	—	0.402[c]	—	—	—	0.0693	2.61	0.18	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
35-003(j)-99	AAA6375	35-02086	0.00-0.50	SED	—	—	—	—	—	—	—	—	3.98 (J)	0.616	2.64
	AAA6389	35-02089	5.00-6.00	QBT3	—	—	—	—	—	—	—	—	2	—	—
	AAA6390	35-02089	6.00-7.00	QBT3	—	—	—	—	—	—	—	—	2.05	0.282	—
	AAA6394	35-02090	3.00-4.00	ALLH	—	—	—	—	—	—	—	—	—	0.651	—
	AAA6395	35-02090	4.00-5.00	ALLH	—	—	—	—	—	6.61 (J-)	—	—	—	—	—
35-004(a)	RE35-04-54017	35-22922	9.00-10.00	QBT3	—	—	—	—	—	—	—	0.0436	—	—	—
35-004(h)	RE35-05-58367	35-24415	4-5	FILL	—	—	—	—	—	—	—	0.24	—	—	—
	RE35-05-58368	35-24415	14-15	QBT3	—	—	—	—	—	—	—	0.0766	—	—	—
	RE35-05-58369	35-24415	29-30	QBT3	—	—	—	—	—	—	—	0.0887	—	—	—
35-009(a)	AAA6421	35-02034	13.50-14.50	QBT3	—	—	—	—	0.018[c]	—	—	—	—	—	—
	AAA6384	35-02035	17.50-18.70	QBT3	—	—	—	—	—	—	—	1.740	—	—	—
	AAA6401	35-02036	0.00-1.10	ALLH	—	—	—	—	—	0.027[c]	—	—	—	—	—
	AAA6440	35-02038	19.00-20.00	QBT3	—	—	—	—	—	—	—	1.161	—	—	—
	AAA6443	35-02221	14.00-15.00	QBT3	—	—	—	—	—	—	—	0.693	—	—	—
	AAA6446	35-02222	3.00-4.00	QBT3	—	—	—	—	0.029[c]	1.189	—	—	—	—	—
	AAA6453	35-02223	0.00-0.50	ALLH	—	—	—	—	—	0.059	—	—	—	—	—
	AAA6454	35-02224	0.00-0.50	ALLH	—	—	—	—	—	0.365	—	—	—	—	—
	0435-97-0287	35-02536	5.50-6.50	QBT3	—	—	—	—	—	—	—	0.09	—	—	—
	0435-97-0289	35-02536	19.00-20.00	QBT3	—	—	—	—	—	—	—	0.07	—	—	—
	0435-97-0290	35-02536	29.00-30.00	QBT3	—	—	—	—	—	—	—	0.22	—	—	—
	0435-97-0292	35-02537	1.00-2.00	FILL	—	—	—	—	—	—	—	0.07	—	—	—
	0435-97-0293	35-02537	2.00-3.00	QBT3	—	—	—	—	—	—	—	0.04	—	—	—
	0435-97-0294	35-02537	6.50-7.50	QBT3	—	—	—	—	—	—	—	0.06	—	—	—
	0435-97-0303	35-02538	1.00-2.00	QBT3	—	—	—	—	—	—	—	0.87	—	—	—
	0435-97-0305	35-02538	6.00-7.00	QBT3	—	—	—	—	—	—	—	0.14	—	—	—
	0435-97-0306	35-02538	19.00-20.00	QBT3	—	—	—	—	—	—	—	0.2	—	—	—
	0435-97-0307	35-02538	29.00-30.00	QBT3	—	—	—	—	—	—	0.78	0.21	—	—	—
	0435-97-0310	35-02539	1.00-2.00	QBT3	—	—	—	—	—	—	—	0.06	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	0435-97-0297	35-02540	0.50-1.50	QBT3	—	—	—	—	—	—	—	0.2	—	—	—
	0435-97-0298	35-02540	5.00-6.00	QBT3	—	—	—	—	—	—	—	0.37	—	—	—
	0435-97-0299	35-02540	19.00-20.00	QBT3	—	—	—	—	—	—	—	0.31	—	—	—
	0435-97-0300	35-02540	29.00-30.00	QBT3	—	—	—	—	—	—	—	0.32	—	—	—
	0435-97-0316	35-02542	0.00-1.00	ALLH	—	—	—	—	—	0.069	—	—	—	—	—
	0435-97-0317	35-02542	1.00-1.50	ALLH	—	—	—	—	—	0.0336[c]	—	0.04	—	—	—
	0435-97-0319	35-02542	1.50-2.50	QBT3	—	—	—	—	—	0.0411	—	0.05	—	—	—
	0435-97-0320	35-02543	0.00-1.00	ALLH	—	—	—	—	—	0.134	—	—	—	—	—
	0435-97-0321	35-02543	1.00-2.00	ALLH	—	—	—	—	—	0.084	—	0.07	—	—	—
	0435-97-0323	35-02543	2.00-3.00	QBT3	—	—	—	—	—	0.047	—	0.05	—	—	—
	0435-97-0324	35-02544	0.00-1.00	ALLH	—	—	—	—	—	0.062	1.25[c]	—	—	—	—
	0435-97-0325	35-02544	1.00-1.50	ALLH	—	—	—	—	—	0.0277[c]	—	—	—	—	—
	RE35-04-54083	35-22943	29.00-30.00	QBT3	—	—	—	—	—	—	—	—	—	0.103	—
	RE35-04-54130	35-22959	9.00-10.00	QBT3	—	—	—	—	—	—	—	0.0371	—	—	—
	RE35-04-54131	35-22959	19.00-20.00	QBT3	—	—	—	—	—	—	—	0.0578	—	0.104	—
	RE35-04-54132	35-22959	29.00-30.00	QBT3	—	—	—	—	—	—	—	0.186	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	—	—	0.933	—	—	4.02	—	3.02
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	0.467	—	—	4.12	—	3.49
	RE35-04-54861	35-23282	0.00-0.62	SED	—	—	—	—	0.0253[c]	0.276	—	—	3.97	0.208	4.41
35-014(a)	AAA3797	35-02070	0.00-1.00	ALLH	—	—	—	—	—	—	—	0.336	—	—	—
	AAA3798	35-02070	1.00-2.00	ALLH	—	—	—	—	—	—	—	0.563	—	—	—
	AAA3799	35-02070	2.00-3.00	ALLH	—	—	—	—	—	—	—	0.579	—	—	—
	AAA3800	35-02071	0.00-1.00	ALLH	—	—	—	—	—	—	—	0.156	—	—	—
	AAA6353	35-02073	0.00-1.00	ALLH	—	—	—	—	—	—	—	0.143	—	—	—
	AAA6354	35-02073	1.00-2.00	ALLH	—	—	—	—	—	0.569	—	0.142	—	—	—
	AAA6356	35-02074	0.00-1.00	ALLH	—	—	—	—	—	—	—	0.25	—	—	—
	AAA6357	35-02074	1.00-2.00	ALLH	—	—	—	—	—	—	—	0.457	—	—	—
	AAA6358	35-02074	2.00-3.00	ALLH	—	—	—	—	—	—	—	0.505	—	—	—

Table D-2.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	AAA6342	35-02076	1.00-2.00	ALLH	—	—	—	—	—	—	—	—	—	0.293	—
	AAA6343	35-02076	2.00-3.00	ALLH	—	—	—	—	—	—	—	0.116	—	—	—
	AAA6344	35-02077	0.00-1.00	ALLH	—	—	—	—	—	—	—	—	5.84	1.197	4.5 (J)
	AAA6348	35-02078	1.00-2.00	QBT3	—	—	—	—	—	3.16	—	—	4.58	—	—
	AAA6349	35-02078	2.00-3.00	QBT3	—	—	—	—	—	—	—	—	3.22	—	2.23 (J+)
	0435-97-0408	35-02560	0.00-1.00	ALLH	—	0.201[c]	—	—	—	—	—	—	—	—	—
	0435-97-0414	35-02562	0.00-1.00	ALLH	—	0.14[c]	—	—	—	—	—	—	—	—	—
	0435-97-0417	35-02563	0.00-1.00	ALLH	—	—	—	0.361	—	—	—	—	—	—	—
	0435-97-0420	35-02564	0.00-1.00	ALLH	—	0.12[c]	—	—	—	—	—	—	—	—	—
	0435-97-0421	35-02564	0.00-1.00	ALLH	—	0.139[c]	—	—	—	—	—	—	—	—	—
	0435-97-0422	35-02564	1.00-2.00	ALLH	—	—	0.1	—	—	—	—	—	—	—	—
35-015(a)	0435-97-0104	35-02496	0.00-1.00	FILL	—	—	—	—	—	0.028[c]	—	—	—	—	—
	0435-97-0108	35-02497	1.00-2.00	QBT3	—	—	—	0.336	—	—	—	—	—	—	—
35-018(a)	0435-95-0140	35-02262	0.00-1.00	FILL	—	—	—	—	—	—	—	3.434E-02	—	—	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-2.0-6
Summary of Organic Chemicals Detected in Soil, Fill, Tuff, and Sediment Samples at Mesa Top Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Diethylphthalate	Dimethyl Phthalate	Di-n-butylphthalate
35-002	RE35-04-54075	35-22941	4-5		—[a]	—	—	—	—	—	1.49[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54076	35-22941	14-15		—	—	—	—	—	—	0.0253	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-003(a)-99	0435-95-0168	35-02269	0-0.5	FILL	—	—	—	—	—	—	0.0174	—	—	—	—	—	0.137	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0003	35-02270	10-10.5	FILL	—	—	—	—	—	—	0.48	0.2 (J)	0.039 (J)	0.14 (J)	—	—	—	—	—	0.1 (J)	—	—	—	—	—	—	—	—	—
	0435-96-0006	35-02271	7-7.5	FILL	—	—	—	—	—	—	4.2	—	—	—	—	—	0.37 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0016	35-02274	17-18	FILL	—	—	—	—	—	—	0.056	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0019	35-02275	12-12.5	FILL	—	—	—	—	—	—	0.71	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0022	35-02276	9-9.5	FILL	—	—	—	—	—	—	14.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0195	35-02280	0-2	FILL	—	—	—	—	—	—	—	0.027 (J)	—	—	—	—	—	—	—	0.039 (J)	—	—	—	—	—	—	—	—	—
	0435-96-0038	35-02297	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.5	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0042	35-02298	0-1	FILL	—	0.06 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0045	35-02299	0-1	FILL	—	0.086 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0049	35-02300	0-1	FILL	—	0.11 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0153	35-02437	0-1	FILL	—	—	0.069 (J)	—	—	—	—	—	—	—	—	—	0.57 (J)	0.003 (J)	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0154	35-02437	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.1 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0156	35-02438	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.076 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0157	35-02438	8-9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.047 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0158	35-02439	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.059 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0159	35-02439	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.04 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0160	35-02440	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0162	35-02441	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.081 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0167	35-02443	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.071 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0168	35-02443	8-8.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.14 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0169	35-02444	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.057 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0171	35-02445	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.066 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0172	35-02445	4.5-5.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.11 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0173	35-02446	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.24 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0174	35-02446	8-9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.07 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54062	35-22936	29-30	QBT3	—	0.0052 (J+)	—	—	—	—	—	—	—	—	—	—	0.0679 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54075	35-22941	4-5	ALLH	—	—	—	—	—	—	1.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54076	35-22941	14-15	QBT3	—	—	—	—	—	—	0.0253	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-003(j)-99	AAA6366	35-02081	1.5-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	2.3 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6367	35-02082	1.20-1.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.23 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6387	35-02089	2-3	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.061 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6388	35-02089	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.21	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6390	35-02089	6-7	QBT3	—	0.19 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6391	35-02090	0-1	ALLH	—	0.12 (J)	—	—	—	—	—	—	—	—	—	—	0.85	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6392	35-02090	1-2	ALLH	—	0.054 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6396	35-02090	4-5	ALLH	—	0.053 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6397	35-02090	5-6	ALLH	—	0.049 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0211	35-02288	1-2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Diethylphthalate	Dimethyl Phthalate	Di-n-butylphthalate
	0435-95-0212	35-02288	3-4	QBT3	—	—	—	—	—	—	0.095	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0232	35-02290	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.052 (J)
	0435-95-0219	35-02291	1-2	FILL	—	—	—	—	—	—	2.9	—	—	—	—	—	0.77	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0220	35-02291	3-4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0222	35-02291	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.075 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0227	35-02293	1.5-2.5	FILL	—	—	0.047 (J)	—	—	—	—	0.045 (J)	0.047 (J)	0.027 (J)	—	0.043 (J)	—	—	—	0.053 (J)	—	—	—	—	—	—	—	—	—
	0435-95-0234	35-02294	0-1	FILL	0.14 (J)	—	0.22 (J)	—	—	—	—	0.26 (J)	0.23 (J)	0.21 (J)	0.1 (J)	0.2 (J)	—	—	—	0.28 (J)	—	—	0.055 (J)	0.059 (J)	—	—	—	—	—
	0435-95-0235	35-02294	1-2	FILL	—	—	—	—	—	—	—	0.042 (J)	—	—	—	—	—	—	—	0.038 (J)	—	—	—	—	—	—	—	—	—
	0435-95-0236	35-02294	2-2.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.066 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0083	35-02353	0-0.5	FILL	1.8	—	3.8	—	—	—	2.7 (J+)	7	5.9	9.2	4.3	—	—	—	—	7.2	—	—	—	1 (J)	—	—	—	—	—
	0435-96-0084	35-02354	0-0.5	FILL	0.27 (J)	—	0.67	—	—	—	4.7 (J+)	1.1	1	1.6	0.74	—	—	—	—	1.3	—	—	—	0.13 (J)	—	—	—	—	—
	0435-97-0377	35-02534	1-2	FILL	—	—	0.039 (J)	—	—	—	—	0.084 (J)	—	—	—	—	—	—	—	0.097 (J)	—	—	—	—	—	—	—	—	0.15 (J)
	0435-97-0378	35-02534	1-2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0379	35-02534	3-4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0380	35-02534	5-6	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0381	35-02534	7-7.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.032 (J+)	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0383	35-02535	3-4	FILL	—	—	—	—	0.072	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0384	35-02535	5-6	FILL	—	—	—	—	0.062	—	—	—	—	—	—	—	—	0.013 (J)	0.002 (J)	—	—	—	—	—	—	—	—	—	—
	0435-97-0385	35-02535	12-12.5	QBT3	—	—	—	—	0.29	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0434	35-02568	0.5-1.5	FILL	8.9	—	19	—	—	1.3	—	28	22	18	13	19	—	—	—	27	—	—	5.8	4.7	—	—	—	—	—
	0435-97-0435	35-02568	1.5-2.5	FILL	0.074 (J)	—	0.1 (J)	—	—	—	—	0.21 (J)	0.2 (J)	0.16 (J)	0.13 (J)	0.16 (J)	—	—	—	0.2 (J)	—	—	—	—	—	—	—	—	—
	0435-97-0438	35-02569	0.5-1.5	ALLH	0.038 (J)	—	0.06 (J)	—	—	—	—	0.14 (J)	0.13 (J)	0.097 (J)	—	0.11 (J)	—	—	—	0.16 (J)	—	—	—	—	—	—	—	—	—
	RE35-04-54087	35-22957	8.80-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.0349 (J)	—	—	—	—	—	—	—	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	4.8 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.18	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.0535 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	0.0436	—	0.0395	0.0495	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	0.0057	—	0.0126	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	0.112	—	—	—	0.393	1.26	—	—	—	—	—	0.199 (J)	—	—	—	—	—	—	—	—	—	—	—	0.223 (J)
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	0.249	0.894	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0025	—	—	—	0.0856 (J)
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	—	—	0.0022 (J)	0.0099	—	—	—	—	—	—	—	—	—	0.000223	—	—	—	—	—	—	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0012 (J)	—	—	—	—
35-011(d)	RE35-04-54137	35-22961	19-20	QBT3	—	0.0072	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54138	35-22961	24-25	QBT3	—	0.0043 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-014(f)	0435-96-0077	35-02364	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.75 (J)	—	—	—	—	—	—	—	—	0.003 (J-)	—	—	—
	RE35-04-54036	35-02364	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54037	35-02364	9-10	QBT3	—	0.0054 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0079	35-02393	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.65 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0081	35-02393	2-3	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.098 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0096	35-02405	0-0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0143	35-02428	5-5.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0144	35-02429	5-5.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-015(a)	AAC3344	35-02182	0-1	ALLH	—	0.043 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Dichloroethene[cis-1,2-]	Diethylphthalate	Dimethyl Phthalate	Di-n-butylphthalate
	0435-95-0198	35-02285	1-1.8	FILL	—	—	0.057 (J)	—	—	—	—	0.053 (J)	0.047 (J)	0.029 (J)	—	0.043 (J)	—	—	—	0.055 (J)	—	—	—	—	—	—	—	—	—
	0435-95-0199	35-02286	1-2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	3 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0200	35-02286	2-3	FILL	—	—	—	—	—	—	—	—	—	—	—	—	3.8 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0105	35-02496	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0107	35-02497	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06 (J)	—
	0435-97-0109	35-02497	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0115	35-02499	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.092 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0116	35-02499	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.75 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0119	35-02500	0-0.83	FILL	—	—	—	—	—	—	—	—	—	—	—	—	2.5 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0121	35-02500	0.83-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	3.1 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0123	35-02501	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.55 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54031	35-22928	4-4.5	QBT3	—	0.163	—	—	—	—	—	—	—	—	—	—	—	0.0508	—	—	—	0.103	—	—	—	—	—	—	—
	RE35-04-54032	35-22928	9-9.5	QBT3	—	0.0162	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-018(a)	0435-95-0162	35-02268	0-1	FILL	—	—	—	—	—	—	0.94	0.32 (J)	0.24 (J)	0.21 (J)	0.075 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0083	35-02353	0-0.5	FILL	1.8	—	3.8	—	—	—	2.7 (J+)	7	5.9	9.2	4.3	—	—	—	—	7.2	—	—	—	1 (J)	—	—	—	—	—
	0435-96-0084	35-02354	0-0.5	FILL	0.27 (J)	—	0.67	—	—	—	4.7 (J+)	1.1	1	1.6	0.74	—	—	—	—	1.3	—	—	—	0.13 (J)	—	—	—	—	—
	0435-96-0085	35-02355	0-0.5	FILL	1.4	—	3	—	—	—	1.9 (J+)	7.1	5.4	8.9	4	—	—	—	—	6.6	—	—	—	0.74	—	—	—	—	—
	0435-96-0086	35-02356	0-0.5	FILL	0.55	—	0.97	—	—	—	4.9 (J+)	1.9	1.4	2.2	1	—	—	—	—	2	—	—	—	0.31 (J)	—	—	—	—	—
	0435-96-0093	35-02402	0-0.5	FILL	—	—	—	—	—	—	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0094	35-02403	0-0.5	FILL	—	—	—	—	—	—	0.098	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0095	35-02404	0-0.5	FILL	—	—	—	—	—	—	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0097	35-02406	3-3.5	FILL	—	—	—	—	—	—	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0098	35-02407	3-3.5	FILL	—	—	—	—	—	—	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54027	35-22926	6-7	ALLH	—	—	—	—	—	—	0.744	—	—	—	—	—	0.0355 (J)	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Di-n-octylphthalate	Ethylbenzene	Fluoranthene	Fluorene	Hexanone[2-]	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
35-002	RE35-04-54075	35-22941	4-5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54076	35-22941	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-003(a)-99	0435-95-0168	35-02269	0-0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.003 (J)	—	—	—	—	—
	0435-96-0003	35-02270	10-10.5	FILL	—	—	0.14 (J)	—	—	0.17 (J)	—	—	—	—	—	0.1 (J)	—	0.29 (J)	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0006	35-02271	7-7.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0016	35-02274	17-18	FILL	—	—	—	—	—	—	—	—	0.011	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0019	35-02275	12-12.5	FILL	0.04 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0022	35-02276	9-9.5	FILL	—	—	—	—	—	—	—	—	0.005 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0195	35-02280	0-2	FILL	—	—	0.056 (J)	—	—	—	—	—	—	—	—	—	—	0.055 (J)	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0038	35-02297	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0042	35-02298	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.017 (J-)	—	—	—	—	—	—
	0435-96-0045	35-02299	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01 (J-)	—	—	—	—	—	—
	0435-96-0049	35-02300	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.015 (J-)	—	—	—	—	—	—
	0435-96-0153	35-02437	0-1	FILL	—	—	0.14 (J)	—	0.006 (J)	—	—	—	0.028	—	—	—	—	0.12 (J)	—	—	—	—	—	0.006	—	—	—	—	—
	0435-96-0154	35-02437	4-5	FILL	—	—	—	—	—	—	—	—	0.027	—	—	—	—	—	—	—	—	—	—	0.005 (J)	—	—	—	—	—
	0435-96-0156	35-02438	4-5	FILL	—	—	—	—	—	—	—	—	0.024	—	—	—	—	—	—	—	—	—	—	0.005 (J)	—	—	—	—	—
	0435-96-0157	35-02438	8-9	QBT3	—	—	—	—	—	—	—	—	0.007	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0158	35-02439	0-1	FILL	—	—	—	—	—	—	—	—	0.011	—	—	—	—	—	—	—	—	—	—	0.003 (J)	—	—	—	—	—
	0435-96-0159	35-02439	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0160	35-02440	4-5	FILL	—	—	—	—	—	—	—	—	0.015	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0162	35-02441	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.017	—	—	—	—	—
	0435-96-0167	35-02443	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0168	35-02443	8-8.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0169	35-02444	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0171	35-02445	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0172	35-02445	4.5-5.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0173	35-02446	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0174	35-02446	8-9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54062	35-22936	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54075	35-22941	4-5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54076	35-22941	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-003(j)-99	AAA6366	35-02081	1.5-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0067 (J)	—	—	—	—	—	—	—	—
	AAA6367	35-02082	1.20-1.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6387	35-02089	2-3	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6388	35-02089	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6390	35-02089	6-7	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6391	35-02090	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6392	35-02090	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6396	35-02090	4-5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6397	35-02090	5-6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Di-n-octylphthalate	Ethylbenzene	Fluoranthene	Fluorene	Hexanone[2-]	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
	0435-95-0211	35-02288	1-2	FILL	—	—	—	—	—	—	—	—	0.004 (J)	—	—	—	—	—	—	—	79	—	—	—	—	—	—	—	—
	0435-95-0212	35-02288	3-4	QBT3	—	—	—	—	—	—	—	—	0.013	—	—	—	—	—	—	0.002 (J)	—	—	—	—	—	—	—	—	—
	0435-95-0232	35-02290	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0219	35-02291	1-2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.007 (J+)	7700	—	—	—	—	—	—	—	—
	0435-95-0220	35-02291	3-4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	—	—	—	—	—	—	—	—
	0435-95-0222	35-02291	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	500	—	—	—	—	—	—	—	—
	0435-95-0227	35-02293	1.5-2.5	FILL	—	—	0.11 (J)	—	—	—	—	—	—	—	—	0.12 (J)	—	0.096 (J)	—	—	130	—	—	—	—	—	—	—	—
	0435-95-0234	35-02294	0-1	FILL	—	—	0.68	0.13 (J)	—	0.098 (J)	—	—	—	—	0.08 (J)	0.77	—	0.5	—	—	240	—	—	—	—	—	—	—	—
	0435-95-0235	35-02294	1-2	FILL	—	—	0.11 (J)	—	—	—	—	—	—	—	—	0.076 (J)	—	0.082 (J)	—	—	270	—	—	—	—	—	—	—	—
	0435-95-0236	35-02294	2-2.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0083	35-02353	0-0.5	FILL	—	—	23	1.8	—	3.8	—	—	—	0.33 (J)	0.67 (J)	17	—	17	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0084	35-02354	0-0.5	FILL	—	—	3.4	0.27 (J)	—	0.67	—	—	—	—	—	2.6	—	3.2	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0377	35-02534	1-2	FILL	—	—	0.17 (J)	—	—	—	—	—	—	—	—	0.15 (J)	0.048 (J)	0.2 (J)	—	—	—	—	—	—	—	—	0.001 (J)	—	—
	0435-97-0378	35-02534	1-2	FILL	—	—	0.06 (J)	—	—	—	—	—	—	—	—	0.045 (J)	—	0.076 (J)	—	—	—	—	—	—	—	—	0.002 (J)	—	—
	0435-97-0379	35-02534	3-4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—	—
	0435-97-0380	35-02534	5-6	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.004 (J+)	—	—	—	0.002 (J+)	—	—	0.003 (J+)	—	—
	0435-97-0381	35-02534	7-7.5	QBT3	—	—	—	—	0.033 (J+)	—	—	0.008 (J+)	—	—	—	—	—	—	—	0.009 (J+)	—	—	0.002 (J+)	0.004 (J+)	—	—	0.006 (J+)	—	—
	0435-97-0383	35-02535	3-4	FILL	—	0.002 (J+)	—	—	—	—	0.002 (J+)	—	—	—	—	1.1 (J)	—	—	0.001 (J+)	0.006 (J+)	—	—	0.002 (J+)	0.002 (J+)	0.003 (J+)	0.002 (J+)	0.009 (J)	—	—
	0435-97-0384	35-02535	5-6	FILL	—	0.005 (J)	—	—	—	—	0.004 (J)	0.002 (J)	—	—	—	2.2 (J)	—	—	0.003 (J)	0.016 (J+)	—	0.003 (J)	0.003 (J)	0.001 (J)	0.01 (J+)	0.005 (J+)	0.032 (J+)	—	—
	0435-97-0385	35-02535	12-12.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.001 (J+)	0.003 (J)	—	—	0.002 (J+)	0.003 (J+)	—	—	—	—	—
	0435-97-0434	35-02568	0.5-1.5	FILL	—	—	65	7.9	—	13	—	—	—	1.8 (J)	5.4	64	—	55	—	—	34	—	—	—	—	—	—	—	—
	0435-97-0435	35-02568	1.5-2.5	FILL	—	—	0.43	—	—	0.11 (J)	—	—	—	—	—	0.4	—	0.42	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0438	35-02569	0.5-1.5	ALLH	—	—	0.29 (J)	—	—	0.077 (J)	—	—	—	—	—	0.22 (J)	—	0.3 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54087	35-22957	8.80-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	37.2	—	—	—	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0249 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	—	—	—	0.0937	—	—	—	—	—	—	—	—	0.0028	—	—	—	—	—	—	—	—	—
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	—	0.0033	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	—	—	—	0.00082 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	—	—	—	—	0.00051 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-011(d)	RE35-04-54137	35-22961	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.2 (J)	—	—	—	—	—	—	—	—
	RE35-04-54138	35-22961	24-25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-014(f)	0435-96-0077	35-02364	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.019 (J)	—	—	—	—	—	—
	RE35-04-54036	35-02364	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.2 (J)	—	—	—	—	—	—	—	—
	RE35-04-54037	35-02364	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5 (J)	—	—	—	—	—	—	—	—
	0435-96-0079	35-02393	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J+)	0.002 (J+)	7000	—	0.015 (J)	—	—	—	—	—	—
	0435-96-0081	35-02393	2-3	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	740	—	0.002 (J)	—	—	—	—	—	—

Table D-2.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Di-n-octylphthalate	Ethylbenzene	Fluoranthene	Fluorene	Hexanone[2-]	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (Total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
	0435-96-0096	35-02405	0-0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	81	—	—	—	—	—	—	—	—
	0435-96-0143	35-02428	5-5.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5900 (J+)	—	—	—	—	—	—	—	—
	0435-96-0144	35-02429	5-5.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2500 (J+)	—	—	—	—	—	—	—	—
35-015(a)	AAC3344	35-02182	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.006 (J)	—	—	—	—	—	—	—	—	—
	0435-95-0198	35-02285	1-1.80	FILL	—	—	0.14 (J)	—	—	—	—	—	—	—	—	0.18 (J)	—	0.13 (J)	—	—	55	—	—	—	—	—	—	—	—
	0435-95-0199	35-02286	1-2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	44000	—	—	—	—	—	—	—	—
	0435-95-0200	35-02286	2-3	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43000	—	—	—	—	—	—	—	—
	0435-97-0105	35-02496	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J-)	—	0.005 (J-)	—	—	—	—	—
	0435-97-0107	35-02497	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0109	35-02497	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.004 (J)	—	—	—	—	—	—	—
	0435-97-0115	35-02499	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0116	35-02499	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0119	35-02500	0-0.83	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0121	35-02500	0.83-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.003 (J)	—	—	—	0.003 (J+)	—	—	—	—	—
	0435-97-0123	35-02501	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54031	35-22928	4-4.5	QBT3	—	—	—	—	0.112	—	—	0.0125	—	—	—	—	—	—	0.00085 (J)	0.00047 (J)	—	—	—	—	—	—	—	0.00051 (J)	0.0022
	RE35-04-54032	35-22928	9-9.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-018(a)	0435-95-0162	35-02268	0-1	FILL	—	—	0.3 (J)	—	—	0.056 (J)	—	—	—	—	—	0.15 (J)	—	0.33 (J)	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0083	35-02353	0-0.5	FILL	—	—	23	1.8	—	3.8	—	—	—	0.33 (J)	0.67 (J)	17	—	17	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0084	35-02354	0-0.5	FILL	—	—	3.4	0.27 (J)	—	0.67	—	—	—	—	—	2.6	—	3.2	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0085	35-02355	0-0.5	FILL	—	—	18	1.6	—	3.6	—	—	—	0.27 (J)	0.68	14	—	17	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0086	35-02356	0-0.5	FILL	—	—	4.6	0.62	—	0.9	—	—	—	0.14 (J)	0.45	4.4	—	4.7	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0093	35-02402	0-0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0094	35-02403	0-0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0095	35-02404	0-0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0097	35-02406	3-3.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0098	35-02407	3-3.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54027	35-22926	6-7	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-2.1-1
EPCs for Inorganic COPCs at SWMU 35-002

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Selenium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	ND[c]	n/a	Not a COPC for this depth

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] ND = Not detected in this depth range.

Table D-2.1-2
EPC for Radionuclide COPC at SWMU 35-002

Analyte	Depth (ft)	EPC (pCl/g)	Distribution	EPC Method
Tritium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.0898	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.1-3
EPCs for Organic COPCs at SWMU 35-002

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Aroclor-1260	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	1.49	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.2-1
EPCs for Inorganic COPCs at Consolidated Unit 35-003(a)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	11 (U)	—[a]	Maximum detection limit
	0–10	4.02	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–1	114	Normal	95% Student's-t UCL
	0–10	128	Nonparametric	95% Chebyshev (Mean, SD)
Boron	0–1	NA[b]	n/a[c]	Not a COPC for this depth
	0–10	2.69	Gamma	95% Approximate Gamma UCL
Bromide	0–1	NA	n/a	Not a COPC for this depth
	0–10	ND[d]	n/a	Not a COPC for this depth
Chromium	0–1	110	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	36.0	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	8.10	Normal	95% Student's-t UCL
	0–10	18.4	Nonparametric	95% Chebyshev (Mean, SD)
Fluoride	0–1	NA	n/a	Not a COPC for this depth
	0–10	2.05	Gamma	95% Approximate Gamma UCL
Lead	0–1	20.3	Normal	95% Student's-t UCL
	0–10	11.3	Gamma	95% Approximate Gamma UCL
Mercury	0–1	0.97	Lognormal	95% Chebyshev (MVUE)
	0–10	0.34	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–1	124	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	38.99	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.283	Nonparametric	95% Chebyshev (Mean, SD)
Silver	0–1	2.3 (U)	—	Maximum detection limit
	0–10	0.800	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.285	Nonparametric	95% Chebyshev (Mean, SD)
Titanium	0–1	NA	n/a	Not a COPC for this depth
	0–10	160	Gamma	95% Approximate Gamma UCL
Zinc	0–1	45.2	Normal	95% Student's-t UCL
	0–10	30.9	Normal	95% Student's-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] NA = Not analyzed for this analyte in this depth range.
[c] n/a = Not applicable.
[d] ND = Not detected in this depth range.

Table D-2.2-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-003(a)-99

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Cesium-137	0–1	1.056	Normal	95% KM (t) UCL
	0–10	0.555	Nonparametric	95% Chebyshev (Mean, SD)
Cobalt-60	0–1	0.4	Normal	95% KM (t) UCL
	0–10	0.123	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.092	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.006	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.0205	Normal	95% KM (t) UCL
	0–10	0.028	Nonparametric	95% Chebyshev (Mean, SD)
Strontium-90	0–1	290.3	Gamma	95% KM (BCA) UCL
	0–10	174	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	2.937	Gamma	95% KM (t) UCL
	0–10	1.20	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	0.609	Normal	95% Student's-t UCL
	0–10	1.00	Nonparametric	95% Modified-t UCL
Uranium-235	0–1	0.0358	Normal	95% KM (t) UCL
	0–10	0.097	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	0.622	Normal	95% Student's-t UCL
	0–10	4.00	Nonparametric	95% Chebyshev (Mean, SD)

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.

Table D-2.2-3
EPCs for Organic COPCs at Consolidated Unit 35-003(a)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.0773	Normal	95% Approximate Gamma UCL
	0–10	0.035	Nonparametric	95% Chebyshev (Mean, SD)
Anthracene	0–1	0.069	—[a]	Maximum detect
	0–10	0.246	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1260	0–1	0.0174	—	Maximum detect
	0–10	14.2	—	Maximum detect
Benzo(a)anthracene	0–1	0.027	—	Maximum detect
	0–10	0.254	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Benzo(b)fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Bis(2-ethylhexyl)phthalate	0–1	0.273	Approximate gamma	95% KM (BCA) UCL
	0–10	0.222	Gamma	95% Approximate Gamma UCL
Butanone[2-]	0–1	0.003	—	Maximum detect
	0–10	0.011	Nonparametric	95% Modified-t UCL
Chrysene	0–1	0.039	—	Maximum detect
	0–10	0.254	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-octylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Fluoranthene	0–1	0.14	—	Maximum detect
	0–10	0.252	Nonparametric	95% Chebyshev (Mean, SD)
Hexanone[2-]	0–1	0.006	—	Maximum detect
	0–10	0.011	Nonparametric	95% Modified-t UCL
Indeno(1,2,3-cd)pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Methylene Chloride	0–1	0.0176	Nonparametric	95% KM (t) UCL
	0–10	0.013	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Pyrene	0–1	0.12	—	Maximum detect
	0–10	0.245	Nonparametric	95% Chebyshev (Mean, SD)
Trichloroethene	0–1	0.0127	Normal	95% KM (t) UCL
	0–10	0.007	Nonparametric	95% Chebyshev (Mean, SD)
Trichlorofluoromethane	0–1	0.00803	Normal	95% KM (t) UCL
	0–10	0.006	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-2.3-1
EPCs for Inorganic COPCs at Consolidated Unit 35-003(j)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	NA[a]	n/a[b]	Not a COPC for this depth
	0–10	10.9 (U)	—[c]	Maximum detection limit
Barium	0–1	92.9	n/a	Maximum detect
	0–10	145.3	Gamma	95% Approximate Gamma UCL
Lead	0–1	13.4	n/a	Maximum detect
	0–10	21.63	Gamma	95% Approximate Gamma UCL
Mercury	0–1	0.03	n/a	Maximum detect
	0–10	0.211	Gamma	95% KM (t) UCL
Nickel	0–1	6.3	n/a	Maximum detect
	0–10	6.374	Normal	95% Student's-t UCL
Selenium	0–1	0.48 (U)	n/a	Maximum detection limit
	0–10	0.48 (U)	n/a	Maximum detection limit
Silver	0–1	ND[d]	n/a	Not a COPC for this depth
	0–10	2.2 (U)	—	Maximum detection limit

[a] NA = Not analyzed for this analyte in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate UCL.
[d] ND = Not detected in this depth range.

Table D-2.3-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-003(j)-99

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Plutonium-239	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	6.61	—[c]	Maximum detect
Uranium-234	0–1	3.98	—	Maximum detect
	0–10	1.823	Gamma	95% KM (BCA) UCL
Uranium-235	0–1	0.616	—	Maximum detect
	0–10	0.351	Normal	95% KM (t) UCL
Uranium-238	0–1	2.64	—	Maximum detect
	0–10	1.349	Gamma	95% KM (BCA) UCL

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.3-3
EPCs for Organic COPCs at Consolidated Unit 35-003(j)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	3.575	Gamma	95% KM (BCA) UCL
	0–10	0.528	Gamma	95% KM (t) UCL
Acetone	0–1	0.12	—[a]	Maximum detect
	0–10	0.069	Normal	95% KM (t) UCL
Anthracene	0–1	7.62	Gamma	95% KM (BCA) UCL
	0–10	0.996	Approximate Gamma	95% KM (t) UCL
Aroclor-1248	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.0629	Nonparametric	95% KM (t) UCL
Aroclor-1254	0–1	1.3	n/a	Not a COPC for this depth
	0–10	1.3	n/a	Not a COPC for this depth
Aroclor-1260	0–1	3.9	Nonparametric	95% KM (t) UCL
	0–10	0.601	Normal	95% KM (t) UCL
Benzo(a)anthracene	0–1	10.35	Gamma	95% KM (BCA) UCL
	0–10	2.802	Lognormal	95% KM (Chebyshev) UCL
Benzo(a)pyrene	0–1	8.896	Gamma	95% KM (BCA) UCL
	0–10	1.222	Gamma	95% KM (t) UCL
Benzo(b)fluoranthene	0–1	7.637	Normal	95% KM (t) UCL
	0–10	1.126	Gamma	95% KM (t) UCL
Benzo(g,h,i)perylene	0–1	5.086	Normal	95% KM (t) UCL
	0–10	0.811	Gamma	95% KM (t) UCL
Benzo(k)fluoranthene	0–1	12.78	Lognormal	95% KM (Chebyshev) UCL
	0–10	1.856	Lognormal	95% KM (Chebyshev) UCL
Bis(2-ethylhexyl)phthalate	0–1	0.85	—	Maximum detect
	0–10	0.23	Gamma	95% KM (t) UCL
Butanone[2-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0155	Nonparametric	95% KM (t) UCL
Butylbenzene[sec-]	0–1	NA[d]	n/a	Not a COPC for this depth
	0–10	0.002	—	Maximum detect
Chrysene	0–1	10.7	Gamma	95% KM (BCA) UCL
	0–10	2.726	Lognormal	95% KM (Chebyshev) UCL
Dibenz(a,h)anthracene	0–1	4.914	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.772	Nonparametric	95% KM (Chebyshev) UCL
Dibenzofuran	0–1	1.93	Normal	95% KM (t) UCL
	0–10	0.342	Normal	95% KM (t) UCL
Di-n-butylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.081	Nonparametric	95% KM (t) UCL
Ethylbenzene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.005[e]	Nonparametric	Maximum detect
Fluoranthene	0–1	24.67	Normal	95% KM (t) UCL
	0–10	6.679	Lognormal	95% KM (Chebyshev) UCL
Fluorene	0–1	3.27	Normal	95% KM (t) UCL
	0–10	0.561	Normal	95% KM (t) UCL

Table D-2.3-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Hexanone[2-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.033	—	Maximum detect
Indeno(1,2,3-cd)pyrene	0–1	4.822	Gamma	95% KM (BCA) UCL
	0–10	0.772	Gamma	95% KM (t) UCL
Isopropyltoluene[4-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.004[e]	Nonparametric	Maximum detect
Methyl-2-pentanone[4-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.008[e]	Nonparametric	Maximum detect
Methylene Chloride	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.00526	Nonparametric	95% KM (t) UCL
Methylnaphthalene[2-]	0–1	1.573	Nonparametric	95% KM (Chebyshev) UCL
	0–10	1.8	Nonparametric	95% KM (BCA) UCL
Naphthalene	0–1	2.222	Normal	95% KM (t) UCL
	0–10	0.374	Normal	95% KM (t) UCL
Phenanthrene	0–1	25.27	Gamma	95% KM (BCA) UCL
	0–10	6.328	Lognormal	95% KM (Chebyshev) UCL
Phenol	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.048	—	Maximum detect
Pyrene	0–1	21.22	Gamma	95% KM (BCA) UCL
	0–10	5.564	Lognormal	95% KM (Chebyshev) UCL
Tetrachloroethene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.003[e]	Nonparametric	Maximum detect
Toluene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.00562	Normal	95% KM (t) UCL
TPH-DRO	0–1	240	Nonparametric	95% KM (BCA) UCL
	0–10	1085	Lognormal	95% KM (Chebyshev) UCL
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.003	—	Maximum detect
Trichloroethene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0029	Nonparametric	95% KM (t) UCL
Trichlorofluoromethane	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.00332	Normal	95% KM (t) UCL
Trimethylbenzene[1,2,4-]	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.00519	Nonparametric	95% KM (t) UCL
Trimethylbenzene[1,3,5-]	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.005[e]	Nonparametric	Maximum detect
Xylene (total)	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.00588	Gamma	95% KM (t) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

[b] ND = Not detected in this depth range.

[c] n/a = Not applicable.

[d] NA = Not analyzed for this analyte in this depth range.

[e] Recommended UCL exceeds the maximum detected value; the maximum detected value is used.

Table D-2.4-1
EPC for Inorganic COPC at SWMU 35-004(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Selenium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	ND[c]	n/a	Not a COPC for this depth

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] ND = Not detected in this depth range.

Table D-2.4-2
EPC for Radionuclide COPC at SWMU 35-004(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Tritium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.0436	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.5-1
EPC for Inorganic COPC at SWMU 35-004(h)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Selenium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.875	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.5-2
EPC for Radionuclide COPC at SWMU 35-004(h)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Tritium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.24	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.6-1
EPCs for Inorganic COPCs at SWMU 35-009(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	0.102[a]	Nonparametric	Maximum detect
	0–10	0.533	Nonparametric	95% Chebyshev (Mean, SD)
Aluminum	0–1	9814	Normal	95% Student's-t UCL
	0–10	6012	Gamma	95% Approximate Gamma UCL
Barium	0–1	84.79	Normal	95% Student's-t UCL
	0–10	44.7	Gamma	95% Approximate Gamma UCL
Cadmium	0–1	0.319	Normal	95% KM (t) UCL
	0–10	0.563	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–1	10.08	Normal	95% Student's-t UCL
	0–10	5.48	Gamma	95% Approximate Gamma UCL
Cobalt	0–1	3.38	Normal	95% Student's-t UCL
	0–10	2.16	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	101[a]	Gamma	Maximum detect
	0–10	34.8	Lognormal	95% Chebyshev (MVUE)
Lead	0–1	12.86	Normal	95% Student's-t UCL
	0–10	10.0	Gamma	95% Approximate Gamma UCL
Lithium	0–1	3.5	—[b]	Maximum detect
	0–10	4.66	Gamma	95% Approximate Gamma UCL
Mercury	0–1	0.905	Normal	95% KM (t) UCL
	0–10	1.05[a]	Gamma	Maximum detect
Nickel	0–1	4.881	Normal	95% Student's-t UCL
	0–10	3.73	Gamma	95% Approximate Gamma UCL
Selenium	0–1	0.55 (U)	—	Maximum detection limit
	0–10	0.324	Nonparametric	95% Modified-t UCL
Silver	0–1	2.274	Gamma	95% KM (BCA) UCL
	0–10	3.86	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–1	96.3[a]	Lognormal	Maximum detect
	0–10	70.3	Gamma	95% Approximate Gamma UCL

[a] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.
[b] — = Too few samples to determine distribution or calculate EPC.

Table D-2.6-2
EPCs for Radionuclide COPCs at SWMU 35-009(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Plutonium-238	0–1	0.0253	—[a]	Maximum detect
	0–10	0.010	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.646	Gamma	95% KM (Chebyshev) UCL
	0–10	0.232	Gamma	95% Adjusted Gamma UCL
Strontium-90	0–1	1.25	—	Maximum detect
	0–10	0.336	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	0.2	—	Maximum detect
	0–10	0.257	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	2.836	Normal	95% KM (t) UCL
	0–10	2.12	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.0854	Normal	95% KM (t) UCL
	0–10	0.074	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	2.475	Gamma	95% KM (BCA) UCL
	0–10	1.45	Nonparametric	95% Modified-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-2.6-3
EPCs for Organic COPCs at SWMU 35-009(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.112	—[a]	Maximum detect
	0–10	0.112	—	Maximum detect
Aroclor-1242	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Aroclor-1254	0–1	0.393	—	Maximum detect
	0–10	0.393	—	Maximum detect
Aroclor-1260	0–1	1.26	—	Maximum detect
	0–10	1.26	—	Maximum detect
Bis(2-ethylhexyl)phthalate	0–1	0.199	—	Maximum detect
	0–10	1.24	Nonparametric	95% Chebyshev (Mean, SD)
4,4'-DDE	0–1	0.000223	—	Maximum detect
	0–10	0.000223	—	Maximum detect
1,1-Dichloroethene	0–1	0.0012	—	Maximum detect
	0–10	0.0025	—	Maximum detect
Diethylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Di-n-butylphthalate	0–1	0.223	—	Maximum detect
	0–10	0.194	Nonparametric	95% Chebyshev (Mean, SD)
4-Isopropyltoluene	0–1	0.0937	—	Maximum detect
	0–10	0.0937	—	Maximum detect
Pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.092	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	0.0028	—	Maximum detect
	0–10	0.0028	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-2.8-1
EPCs for Radionuclide COPCs at SWMU 35-014(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Cesium-137	0–1	0.201	—[a]	Maximum detect
	0–10	0.103	Nonparametric	95% Chebyshev (Mean, SD)
Cobalt-60	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.055	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–1	0.361	—	Maximum detect
	0–10	0.121	Normal	95% Student's-t UCL
Plutonium-239	0–1	0.065	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.643	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	40.2	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	15.3	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	2.51	Gamma	95% Approximate Gamma UCL
	0–10	1.80	Gamma	95% Approximate Gamma UCL
Uranium-235	0–1	0.608	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.307	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	2.23	Gamma	95% Approximate Gamma UCL
	0–10	1.41	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-2.9-1
EPCs for Inorganic COPCs at AOC 35-014(f)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	6.1	—[a]	Maximum detection limit
	0–10	6.1(U)	—	Maximum detection limit
Chromium	0–1	26.7	—	Maximum detect
	0–10	90	—	Maximum detect
Nickel	0–1	16.4	—	Maximum detect
	0–10	46.5	—	Maximum detect
Selenium	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.327	—	Maximum detect
Silver	0–1	1.5(U)	—	Maximum detection limit
	0–10	0.0267	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-2.9-2
EPCs for Organic COPCs at AOC 35-014(f)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.0054	—[c]	Maximum detect
Bis(2-ethylhexyl)phthalate	0–1	0.75	—	Maximum detect
	0–10	0.75	—	Maximum detect
***cis*-1,2-dichloroethene**	0–1	0.003	—	Maximum detect
	0–10	0.003	—	Maximum detect
Tetrachloroethene	0–1	0.002	—	Maximum detect
	0–10	0.002	—	Maximum detect
Toluene	0–1	0.002	—	Maximum detect
	0–10	0.002	—	Maximum detect
TPH-DRO	0–1	7000	—	Maximum detect
	0–10	7000[d]	Gamma	Maximum detect
Trichloroethene	0–1	0.019	—	Maximum detect
	0–10	0.019	—	Maximum detect

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.
[d] Recommended UCL exceeds the maximum detected value; the maximum detected value is used.

Table D-2.10-1
EPCs for Inorganic COPCs at SWMU 35-015(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	7(U)	—[a]	Maximum detection limit
	0–10	3.85	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–1	23.3	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	39.8	Lognormal	95% Chebyshev (MVUE)
Nickel	0–1	10.42	Nonparametric	95% Student's-t
	0–10	32.9	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–1	0.22	Nonparametric	95% KM (t) UCL
	0–10	0.306	Nonparametric	95% Chebyshev (Mean, SD)
Silver	0–1	0.5	—	Maximum detect
	0–10	1.04	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-2.10-2
EPCs for Radionuclide COPCs at SWMU 35-015(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Europium-152	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.157	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.028	—[c]	Maximum detect
	0–10	0.011	Nonparametric	95% Chebyshev (Mean, SD)

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-2.10-3
EPCs for Organic COPCs at SWMU 35-015(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.043	—[a]	Maximum detect
	0–10	0.163	—	Maximum detect
Anthracene	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	1.721	Normal	95% KM (t) UCL
	0–10	5.16	Lognormal	95% Chebyshev (MVUE)
Butanone[2-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0508	—	Maximum detect
Chrysene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
4,4'-DDT	0–1	NA[d]	n/a	Not a COPC for this depth
	0–10	0.103	—	Maximum detect
Dimethyl phthalate	0–1	0.06	—	Maximum detect
	0–10	5.53	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Hexanone[2-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.112	—	Maximum detect
Methyl-2-pentanone[4-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0125	—	Maximum detect

Table D-2.10-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Phenanthrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	5.47	Nonparametric	95% Chebyshev (Mean, SD)
Tetrachloroethene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.00085	—	Maximum detect
Toluene	0–1	0.006	—	Maximum detect
	0–10	0.006	—	Maximum detect
TPH-DRO	0–1	ND	n/a	Not a COPC for this depth
	0–10	44000[e]	Nonparametric	Maximum detect
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.002	—	Maximum detect
Trichlorofluoromethane	0–1	0.003	—	Maximum detect
	0–10	0.005	—	Maximum detect
1,2-xylene	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.00051	—	Maximum detect
1,3-xylene+1,4-xylene	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.0022	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.
[d] NA = Not analyzed for this analyte in this depth range.
[e] Recommended UCL exceeds the maximum detected value; the maximum detected value is used.

Table D-2.11-1
EPC for Inorganic COPC at AOC 35-018(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Mercury	0–1	0.04	—[a]	Maximum detect
	0–10	0.41	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-2.11-2
EPCs for Radionuclide COPC at AOC 35-018(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Tritium	0–1	0.034	—[a]	Maximum detect
	0–10	0.034	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-2.11-3
EPCs for Organic COPCs at AOC 35-018(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenapthene	0–1	1.549	Normal	95% KM (t) UCL
	0–10	1.342	Normal	95% KM (t) UCL
Anthracene	0–1	3.273	Normal	95% KM (t) UCL
	0–10	2.843	Normal	95% KM (t) UCL
Aroclor-1260	0–1	3.308	Normal	95% Student's-t UCL
	0–10	6.12	Gamma	95% Approximate Gamma UCL
Benzo(a)anthracene	0–1	6.633	Normal	95% Student's-t UCL
	0–10	5.664	Normal	95% KM (t) UCL
Benzo(a)pyrene	0–1	5.316	Normal	95% Student's-t UCL
	0–10	4.538	Normal	95% KM (t) UCL
Benzo(b)fluoranthene	0–1	8.509	Normal	95% Student's-t UCL
	0–10	7.248	Normal	95% KM (t) UCL
Benzo(g,h,i)perylene	0–1	3.905	Normal	95% Student's-t UCL
	0–10	3.324	Normal	95% KM (t) UCL
Benzo(k)fluoranthene	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Bis(2-ethylhexyl)phthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0355	—[c]	Maximum detect
Chrysene	0–1	6.595	Normal	95% KM (t) UCL
	0–10	5.729	Normal	95% KM (t) UCL
Dibenzofuran	0–1	0.854	Normal	95% KM (t) UCL
	0–10	0.752	Normal	95% KM (t) UCL
Fluoranthene	0–1	19.39	Normal	95% Student's-t UCL
	0–10	16.46	Normal	95% KM (t) UCL
Fluorene	0–1	1.637	Normal	95% KM (t) UCL
	0–10	1.42	Normal	95% KM (t) UCL
Indeno(1,2,3-cd)pyrene	0–1	3.482	Normal	95% Student's-t UCL
	0–10	2.964	Normal	95% KM (t) UCL
2-Methylnaphthalene	0–1	0.33[d]	Normal	Maximum detect
	0–10	0.322	Normal	95% KM (t) UCL
Naphthalene	0–1	0.669	Normal	95% KM (t) UCL
	0–10	0.632	Normal	95% KM (t) UCL
Phenanthrene	0–1	14.7	Normal	95% Student's-t UCL
	0–10	12.52	Normal	95% KM (t) UCL
Pyrene	0–1	16.04	Normal	95% Student's-t UCL
	0–10	13.69	Normal	95% KM (t) UCL

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.
[d] Recommended UCL exceeds the maximum detected value; the maximum detected value is used.

Table D-2.12-1
Soil and Fill Samples Collected from 0-5 ft bgs for
Inorganic Chemical Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
AAA6381	35-02035	1.5-2.5	ALLH	—[a]	16518[b]
AAA6401	35-02036	0-1.1	ALLH	—	16518
AAC3346	35-02182	2–3	ALLH	—	21505
0435-95-0165	35-02268	2–3	FILL	—	1305
0435-95-0168	35-02269	0–0.5	FILL	—	1650
0435-95-0199	35-02286	1–2	FILL	—	1679
0435-95-0211	35-02288	1–2	FILL	—	1702
0435-95-0219	35-02291	1–2	FILL	—	1702
0435-95-0220	35-02291	3–4	FILL	—	1702
0435-96-0030	35-02295	1.5–2.5	FILL	—	2572
0435-96-0034	35-02296	0–1	ALLH	—	2640
0435-96-0038	35-02297	0–1	ALLH	—	2640
0435-96-0042	35-02298	0–1	FILL	—	2838
0435-96-0045	35-02299	0–1	FILL	—	2838
0435-96-0049	35-02300	0–1	FILL	—	2838
0435-97-0001	35-02303	3–4.5	FILL	3065R	3065R
0435-97-0038	35-02309	2.5–3.5	FILL	3079R	3079R
0435-96-0083	35-02353	0–0.5	FILL	—	2308
0435-96-0085	35-02355	0–0.5	FILL	—	2308
0435-96-0077	35-02364	0–1	FILL	—	2237
0435-96-0078	35-02364	2–3	FILL	—	2237
0435-96-0079	35-02393	0–1	FILL	—	2237
0435-96-0081	35-02393	2–3	FILL	—	2237
0435-96-0153	35-02437	0–1	FILL	—	2678
0435-96-0154	35-02437	4–5	FILL	—	2678
0435-96-0156	35-02438	4–5	FILL	—	2678
0435-96-0158	35-02439	0–1	FILL	—	2678
0435-96-0159	35-02439	4–5	FILL	—	2678
0435-96-0160	35-02440	4–5	FILL	—	2678
0435-96-0162	35-02441	0–1	FILL	—	2678
0435-96-0163	35-02441	4–5	ALLH	—	2678
0435-96-0165	35-02442	4–5	FILL	—	2678
0435-96-0167	35-02443	4–5	FILL	—	2678
0435-96-0169	35-02444	0–1	FILL	—	2678
0435-96-0170	35-02444	4–5	FILL	—	2678
0435-96-0171	35-02445	0–1	FILL	—	2678
0435-96-0173	35-02446	4–5	FILL	—	2678
0435-97-0104	35-02496	0–1	FILL	—	3276R
0435-97-0107	35-02497	0–1	FILL	—	3276R
0435-97-0112	35-02498	0–1	FILL	—	3276R
0435-97-0113	35-02498	1–2	FILL	—	3276R
0435-97-0115	35-02499	0–1	FILL	—	3279R
0435-97-0119	35-02500	0–0.83	FILL	—	3279R
0435-97-0122	35-02501	0–1	FILL	—	3279R
0435-97-0276	35-02594	0–1	FILL	—	3431R
0435-97-0277	35-02594	2–3	FILL	—	3431R
RE35-04-54075	35-22941	4–5	ALLH	—	2358S
RE35-04-54126	35-22958	4–5	ALLH	—	2356S
RE35-05-58367	35-24415	4–5	FILL	—	2966S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-2.12-2
Summary of Inorganic COPCs above BV or Detected in Soil and Fill, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Boron	Cadmium	Calcium	Chromium	Copper	Fluoride	Mercury	Nickel	Silicon	Silver	Thallium	Titanium	Zinc
Soil/Fill Background Value (mg/kg)				0.83	na[a]	0.4	6120	19.3	14.7	na	0.1	15.4	na	1	0.73	na	48.8
AAC3346	35-02182	2–3	ALLH	—[b]	—	—	—	—	—	—	—	—	—	—	1.1 (U)	—	—
0435-95-0165	35-02268	2–3	FILL	—	—	1.1	—	—	—	—	0.41	—	—	—	—	—	59.9
0435-95-0168	35-02269	0–0.5	FILL	3.8 (UJ)	—	0.51 (U)	—	219	—	—	0.12 (U)	246 (J-)	—	—	—	—	—
0435-95-0199	35-02286	1–2	FILL	9.7 (U)	—	0.76 (U)	—	—	—	—	—	—	—	—	—	—	—
0435-95-0211	35-02288	1–2	FILL	10.2 (U)	—	0.63 (U)	—	—	—	—	—	—	—	2 (U)	—	—	—
0435-95-0219	35-02291	1–2	FILL	10 (U)	—	0.62 (U)	9440	—	15.5	—	0.55	—	—	2 (U)	—	—	—
0435-95-0220	35-02291	3–4	FILL	10.6 (U)	—	0.66 (U)	—	—	—	—	—	—	—	2.1 (U)	—	—	—
0435-96-0030	35-02295	1.50–2.5	FILL	10 (U)	—	0.52 (U)	—	—	—	—	—	—	—	2.1 (U)	1 (U)	—	—
0435-96-0034	35-02296	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	1.4 (U)	—	—
0435-96-0038	35-02297	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	1.2 (U)	—	—
0435-96-0042	35-02298	0–1	FILL	11 (U)	—	0.57 (U)	6800	—	—	—	1.4	—	—	2.3 (U)	1.1 (U)	—	—
0435-96-0045	35-02299	0–1	FILL	11 (U)	—	0.57 (U)	13000	—	—	—	0.11 (U)	—	—	2.3 (U)	1.1 (U)	—	—
0435-96-0049	35-02300	0–1	FILL	11 (U)	—	0.55 (U)	24000	—	—	—	2	—	—	2.2 (U)	1.1 (U)	—	69
0435-97-0001	35-02303	3–4.5	FILL	3.8 (U)	4.7 (J)	—	—	—	—	1.5	—	—	32.8	—	—	180	—
0435-97-0007	35-02304	4.50–5.5	FILL	3.5 (U)	1.6 (J)	—	—	—	—	0.68	—	—	15.9	—	—	168	—
0435-97-0038	35-02309	2.5–3.5	FILL	2.7 (UJ)	—	0.41 (U)	—	—	—	0.65	—	—	19.7	—	—	113	—
0435-96-0077	35-02364	0–1	FILL	6.1 (U)	—	0.8 (U)	—	26.7 (J-)	—	—	—	16.4	—	1.5 (U)	—	—	—
0435-96-0078	35-02364	2–3	FILL	5.5 (U)	—	0.73 (U)	—	90 (J-)	—	—	—	46.5	—	1.3 (U)	—	—	—
0435-96-0079	35-02393	0–1	FILL	5.7 (U)	—	0.75 (U)	8500	—	—	—	—	—	—	1.4 (U)	—	—	—
0435-96-0081	35-02393	2–3	FILL	5.7 (U)	—	0.75 (U)	—	43.7	—	—	—	22	—	1.4 (U)	—	—	—
0435-96-0153	35-02437	0–1	FILL	7.7 (U)	—	0.67 (U)	—	—	—	—	—	25.3	—	1.4 (U)	—	—	—
0435-96-0154	35-02437	4–5	FILL	8.8 (U)	—	0.78 (U)	—	78.9	128	—	—	47.6	—	1.6 (U)	—	—	—
0435-96-0156	35-02438	4–5	FILL	8.7 (U)	—	0.76 (U)	—	—	—	—	0.74	—	—	1.6 (U)	—	—	—
0435-96-0158	35-02439	0–1	FILL	8.6 (U)	—	0.75 (U)	—	—	—	—	—	—	—	1.5 (U)	—	—	—
0435-96-0159	35-02439	4–5	FILL	8.7 (U)	—	0.76 (U)	—	—	—	—	—	—	—	1.6 (U)	—	—	—
0435-96-0160	35-02440	4–5	FILL	9.2 (U)	—	0.8 (U)	—	—	—	—	—	—	—	2.1 (J)	—	—	—
0435-96-0162	35-02441	0–1	FILL	9 (U)	—	0.79 (U)	10700	—	—	—	—	—	—	1.6 (U)	—	—	—

Table D-2.12-2 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Boron	Cadmium	Calcium	Chromium	Copper	Fluoride	Mercury	Nickel	Silicon	Silver	Thallium	Titanium	Zinc
Soil/Fill Background Value (mg/kg)				0.83	na	0.4	6120	19.3	14.7	na	0.1	15.4	na	1	0.73	na	48.8
0435-96-0163	35-02441	4–5	ALLH	9.1 (U)	—	0.8 (U)	—	—	—	—	—	—	—	1.6 (U)	—	—	—
0435-96-0165	35-02442	4–5	FILL	8.6 (U)	—	0.76 (U)	—	—	—	—	—	—	—	1.6 (U)	—	—	—
0435-96-0167	35-02443	4–5	FILL	8.6 (U)	—	0.75 (U)	—	—	—	—	—	—	—	1.6 (U)	—	—	—
0435-96-0169	35-02444	0–1	FILL	8.8 (U)	—	0.77 (U)	—	—	—	—	—	—	—	1.6 (U)	—	—	—
0435-96-0170	35-02444	4–5	FILL	8.8 (U)	—	0.77 (U)	—	—	—	—	0.6 (U)	—	—	1.6 (U)	—	—	—
0435-96-0171	35-02445	0–1	FILL	9 (U)	—	0.79 (U)	—	—	—	—	0.21	—	—	1.6 (U)	—	—	—
0435-96-0172	35-02445	4.5–5.5	FILL	8.5 (U)	—	0.75 (U)	—	—	—	—	—	—	—	1.5 (U)	—	—	—
0435-96-0173	35-02446	4–5	FILL	9 (U)	—	0.99 (J)	—	—	—	—	—	—	—	1.6 (U)	—	—	—
0435-97-0104	35-02496	0–1	FILL	6.2 (UJ)	—	0.52 (U)	6220	—	—	—	—	—	—	1.8 (U)	—	—	—
0435-97-0107	35-02497	0–1	FILL	5.9 (UJ)	—	0.49 (U)	6990	—	—	—	—	—	—	1.7 (U)	—	—	—
0435-97-0112	35-02498	0–1	FILL	6.3 (UJ)	—	0.52 (U)	—	—	—	—	—	—	—	1.8 (U)	—	—	—
0435-97-0113	35-02498	1–2	FILL	6.2 (UJ)	—	0.51 (U)	14700	193	—	—	—	98.7	—	1.8 (U)	—	—	—
0435-97-0115	35-02499	0–1	FILL	6.3 (UJ)	—	0.52 (U)	6280	—	—	—	—	—	—	1.8 (U)	—	—	—
0435-97-0119	35-02500	0–0.83	FILL	7 (UJ)	—	0.64 (J)	—	—	—	—	—	—	—	2 (U)	—	—	—
0435-97-0122	35-02501	0–1	FILL	6.2 (UJ)	—	0.51 (U)	—	—	—	—	—	—	—	1.8 (U)	—	—	—
0435-97-0277	35-02594	2–3	FILL	—	—	—	—	22	—	—	—	19.3	—	—	—	—	—
RE35-04-54075	35-22941	4–5	ALLH	—	—	0.564 (U)	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54126	35-22958	4–5	ALLH	—	—	0.547 (U)	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58367	35-24415	4–5	FILL	—	—	0.581 (U)	—	—	—	—	—	—	—	—	—	—	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-2.12-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
AAA6429	35-02037	3–4	Qbt3	—[a]	16518[b]
AAA6437	35-02038	2.5–3.5	Qbt3	—	16519
AAA6441	35-02221	4–5	Qbt3	—	16519
AAA6446	35-02222	3–4	Qbt3	—	16519
0435-95-0212	35–02288	3–4 ft	Qbt3	—	1702
0435-96-0051	35–02301	0–8 ft	Qbt3	—	1962
0435-96-0052	35–02302	0–8 ft	Qbt3	—	1962
RE35-04-54036	35–02364	4–5 ft	Qbt3	—	2337S
0435-97-0105	35–02496	1–2 ft	Qbt3	—	3276R
0435-97-0108	35–02497	1–2 ft	Qbt3	—	3276R
0435-97-0116	35–02499	1–2 ft	Qbt3	—	3279R
0435-97-0117	35–02499	2–3 ft	Qbt3	—	3279R
0435-97-0121	35–02500	0.83–2 ft	Qbt3	—	3279R
0435-97-0123	35–02501	1–2 ft	Qbt3	—	3279R
RE35-04-54016	35–22922	4–5 ft	Qbt3	—	2264S
RE35-04-54031	35–22928	4–4.5 ft	Qbt3	—	2343S
RE35-04-54106	35–22950	4–5 ft	Qbt3	—	2369S
RE35-05-58364	35–24414	4–5 ft	Qbt3	—	2966S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-2.12-4
Summary of Inorganic COPCs above BV or Detected in Tuff, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Boron	Calcium	Chromium	Copper	Fluoride	Mercury	Nickel	Selenium	Titanium
Qbt3 Background Value (mg/kg)				0.5	46	na[a]	2200	7.14	4.66	na	0.1	6.58	0.3	na
0435-95-0212	35-02288	3–4	Qbt3	10.6 (U)	48.9	—	—	—	—	—	—	—	0.46 (U)	—
RE35-04-54036	35-02364	4–5	Qbt3	—	—	—	—	—	—	—	—	—	0.327 (J)	—
0435-97-0105	35-02496	1–2	Qbt3	6.8 (UJ)	—	—	—	—	—	—	—	—	—	—
0435-97-0108	35-02497	1–2	Qbt3	6.8 (UJ)	—	—	—	8.9	4.7 (J)	—	—	—	—	—
0435-97-0116	35-02499	1–2	Qbt3	6.2 (UJ)	—	—	—	12.8	—	—	—	8.8	—	—
0435-97-0117	35-02499	2–3	Qbt3	6.7 (UJ)	—	—	—	36.3	—	—	—	20.8	—	—
0435-97-0121	35-02500	0.83–2	Qbt3	6.5 (UJ)	—	—	—	30.8	—	—	—	17.7	—	—
0435-97-0123	35-02501	1–2	Qbt3	6.3 (UJ)	—	—	—	11.4	—	—	—	—	—	—
RE35-04-54016	35-22922	4–5	Qbt3	—	—	—	—	—	—	—	—	—	0.532 (UJ)	—
RE35-04-54031	35-22928	4–4.5	Qbt3	—	—	—	—	38.4	—	—	—	—	—	—
RE35-04-54106	35-22950	4–5	Qbt3	—	—	—	—	—	—	—	—	—	0.504 (U)	—
RE35-05-58364	35-24414	4–5	Qbt3	—	50	—	—	—	—	—	—	—	0.594 (UJ)	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-2.12-5
EPCs for Inorganic COPCs in the Mesa Top Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–5	4.17	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–5	83.370	Normal	95% Student's-t UCL
Boron	0–5	2.99	Normal	95% Student's-t UCL
Calcium	0–5	5460	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–5	35.02	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–5	15.31	Nonparametric	95% Chebyshev (Mean, SD)
Fluoride	0–5	1.32	Normal	95% Student's-t UCL
Lead	0–5	10.7	Gamma	95% Approximate Gamma UCL
Mercury	0–5	0.094	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–5	28.78	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–5	0.32	Nonparametric	95% Chebyshev (Mean, SD)
Silver	0–5	0.885	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–5	0.26	Nonparametric	95% Chebyshev (Mean, SD)
Titanium	0–5	135.22	Normal	95% Student's-t UCL
Zinc	0–5	33.635	Gamma	95% Approximate Gamma UCL

Table D-2.12-6
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
AAB0969	35-02012	1–2	ALLH	—[a]	17247[b]	17247	17247	—
AAB1020	35-02014	0–2	ALLH	—	19975	19975	19975	—
AAB0949	35-02015	1–2	ALLH	—	19595	19595	19595	—
AAA6589	35-02016	1–2	ALLH	—	—	17017	17017	—
AAA6537	35-02017	1.3–2.3	ALLH	—	—	17360	17360	—
AAA6633	35-02018	1–2	ALLH	17246	17246	17246	17246	—
AAA6625	35-02020	1.5–2.5	ALLH	—	—	17245	17245	—
AAA6574	35-02021	3–4	ALLH	17360	—	17360	17360	—
AAA6601	35-02024	1–2	ALLH	—	—	17293	17293	—
AAA6613	35-02025	1–2	ALLH	—	—	17301	17301	—
AAA6617	35-02026	2–3	ALLH	—	—	17357	17357	—
AAA6605	35-02027	2–3	FILL	—	—	17299	17299	—
AAA3797	35-02070	0–1	ALLH	16386	16386	16386	16386	—
AAA3798	35-02070	1–2	ALLH	—	16386	16386	16386	—
AAA3799	35-02070	2–3	ALLH	—	16386	16386	16386	—
AAA3800	35-02071	0–1	ALLH	—	16386	16386	16386	—
AAA3817	35-02071	1–2	ALLH	—	16386	16386	16386	—
AAA3818	35-02071	2–3	ALLH	—	16386	16386	16386	—
AAA3819	35-02072	0.4–1.4	FILL	—	16386	16386	16386	—
AAA3820	35-02072	1.4–2.4	ALLH	—	16386	16386	16386	—
AAA3821	35-02072	2.4–3.4	ALLH	—	16386	16386	16386	—
AAA6353	35-02073	0–1	ALLH	16355	16355	16355	16355	—

Table D-2.12-6 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
AAA6354	35-02073	1–2	ALLH	—	16355	16355	16355	—
AAA6355	35-02073	2–3	ALLH	—	16355	16355	16355	—
AAA6356	35-02074	0–1	ALLH	—	16355	16355	16355	—
AAA6357	35-02074	1–2	ALLH	—	16355	16355	16355	—
AAA6358	35-02074	2–3	ALLH	—	16355	16355	16355	—
AAA6359	35-02075	0–1	ALLH	—	16355	16355	16355	—
AAA6360	35-02075	1–2	ALLH	—	16355	16355	16355	—
AAA6341	35-02076	0–1	ALLH	—	16391	16391	16391	—
AAA6342	35-02076	1–2	ALLH	—	16391	16391	16391	—
AAA6343	35-02076	2–3	ALLH	—	16391	16391	16391	—
AAA6344	35-02077	0–1	ALLH	—	16391	16391	16391	—
AAA6347	35-02078	0–1	ALLH	—	16391	16391	16391	—
AAA6367	35-02082	1.2–1.5	ALLH	—	—	16400	16400	—
AAA6368	35-02083	1.9–2.2	ALLH	—	—	16389	16389	—
AAA6373	35-02084	1.5–1.9	ALLH	—	—	16389	16389	—
AAA6374	35-02085	1.6–2.1	ALLH	—	—	16400	16400	—
AAA6376	35-02087	1.4–1.9	ALLH	—	—	16389	16389	—
AAA6377	35-02088	1.5–1.8	ALLH	—	—	16389	16389	—
AAA6385	35-02089	1–2	ALLH	—	—	16400	16400	—
AAA6386	35-02089	2–3	ALLH	—	—	16400	16400	—
AAA6391	35-02090	0–1	ALLH	—	—	16400	16400	—
AAA6392	35-02090	1–2	ALLH	—	—	16400	16400	—
AAA6393	35-02090	2–3	ALLH	—	—	16400	16400	—
AAA6394	35-02090	3–4	ALLH	—	—	16400	16400	—
AAA6395	35-02090	4–5	ALLH	—	—	16400	16400	—
AAC1153	35-02097	1–1.5	ALLH	—	—	21468	21468	—
AAC1154	35-02098	1–1.5	ALLH	—	—	21468	21468	—
AAC3331	35-02174	0–0.5	ALLH	—	—	21508	21508	—
AAB1042	35-02210	0–0.5	ALLH	—	19975	19975	19975	—
AAB1043	35-02211	0–0.5	ALLH	—	19975	19975	19975	—
AAB1009	35-02215	1–2	ALLH	—	—	17245	17245	—
AAA6369	35-02220	0–1	ALLH	—	16389	16389	16389	—
0435-95-0140	35-02262	0–1	FILL	1306	1306	—	—	—
0435-95-0168	35-02269	0–0.5	FILL	—	—	1651	1651	—
0435-95-0211	35-02288	1–2	FILL	1703	—	—	—	—
0435-95-0219	35-02291	1–2	FILL	1703	—	—	—	—
0435-95-0220	35-02291	3–4	FILL	1703	—	—	—	—
0435-96-0030	35-02295	1.5–2.5	FILL	2573	2573	2573	2573	2573
0435-96-0031	35-02295	4–5	ALLH	2573	2573	2573	2573	2573
0435-96-0034	35-02296	0–1	ALLH	2641	2641	2641	2641	2641
0435-96-0035	35-02296	3–4	ALLH	2641	2641	2641	2641	2641
0435-96-0038	35-02297	0–1	ALLH	2641	2641	2641	2641	2641
0435-96-0039	35-02297	2.5–3.5	ALLH	2641	2641	2641	2641	2641
0435-96-0042	35-02298	0–1	FILL	2839	2839	2839	2839	2839

Table D-2.12-6 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0435-96-0045	35-02299	0–1	FILL	2839	2839	2839	2839	2839
0435-96-0049	35-02300	0–1	FILL	2839	2839	2839	2839	2839
0435-97-0001	35-02303	3–4.5	FILL	3066R	3066R	3066R	3066R	3066R
0435-97-0038	35-02309	2.5–3.5	FILL	3080R	3080R	3080R	3080R	3080R
0435-96-0083	35-02353	0–0.5	FILL	2309	—	—	—	—
0435-96-0085	35-02355	0–0.5	FILL	2309	—	—	—	—
0435-96-0153	35-02437	0–1	FILL	2679	2679	2679	2679	2679
0435-96-0154	35-02437	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0156	35-02438	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0158	35-02439	0–1	FILL	2679	2679	2679	2679	2679
0435-96-0159	35-02439	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0160	35-02440	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0162	35-02441	0–1	FILL	2679	2679	2679	2679	2679
0435-96-0163	35-02441	4–5	ALLH	2679	2679	2679	2679	2679
0435-96-0165	35-02442	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0167	35-02443	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0169	35-02444	0–1	FILL	2679	2679	2679	2679	2679
0435-96-0170	35-02444	4–5	FILL	2679	2679	2679	2679	2679
0435-96-0171	35-02445	0–1	FILL	2679	2679	2679	2679	2679
0435-96-0173	35-02446	4–5	FILL	2679	2679	2679	2679	2679
0435-97-0104	35-02496	0–1	FILL	3277R	—	3277R	3277R	—
0435-97-0107	35-02497	0–1	FILL	3277R	—	3277R	3277R	—
0435-97-0112	35-02498	0–1	FILL	3277R	—	3277R	3277R	—
0435-97-0113	35-02498	1–2	FILL	3277R	—	3277R	3277R	—
0435-97-0115	35-02499	0–1	FILL	3280R	—	3280R	3280R	—
0435-97-0119	35-02500	0–0.83	FILL	3280R	—	3280R	3280R	—
0435-97-0122	35-02501	0–1	FILL	3280R	—	3280R	3280R	—
0435-97-0386	35-02533	0–1	FILL	3497R	3497R	—	—	3497R
0435-97-0408	35-02560	0–1	ALLH	3531R	—	—	—	3531R
0435-97-0409	35-02560	1–2	ALLH	3531R	—	—	—	3531R
0435-97-0411	35-02561	0–1	ALLH	3531R	—	—	—	3531R
0435-97-0412	35-02561	1–2	ALLH	3531R	—	—	—	3531R
0435-97-0414	35-02562	0–1	ALLH	3531R	—	—	—	3531R
0435-97-0417	35-02563	0–1	ALLH	3531R	—	—	—	3531R
0435-97-0418	35-02563	1–2	ALLH	3531R	—	—	—	3531R
0435-97-0419	35-02563	2–3	ALLH	3531R	—	—	—	3531R
0435-97-0420	35-02564	0–1	ALLH	3531R	—	—	—	3531R
0435-97-0422	35-02564	1–2	ALLH	3531R	—	—	—	3531R
0435-97-0276	35-02594	0–1	FILL	3432R	—	3432R	3432R	—
0435-97-0277	35-02594	2–3	FILL	3432R	—	3432R	3432R	—
RE35-04-54075	35-22941	4–5	ALLH	2359S	2359S	2359S	2359S	2359S
RE35-05-58367	35-24415	4–5	FILL	2967S	2967S	2967S	2967S	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-2.12-7
Summary of Radionuclide COPCs Detected or Detected above BV/FV
in Soil and Fill, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)				**1.65**	**na[a]**	**na**	**0.023**	**0.054**	**1.31**	**na**	**2.59**	**0.2**	**2.29**
AAB0969	35-02012	1–2	ALLH	—[b]	—	—	—	—	—	6.001E-02 (J)	—	—	—
AAA6589	35-02016	1–2	ALLH	—	—	—	—	0.018[c]	—	—	—	—	—
AAA6633	35-02018	1–2	ALLH	0.399[c]	—	—	—	—	—	0.128 (J)	—	—	—
AAA6574	35-02021	3–4	ALLH	0.184[c]	—	—	—	0.086[c]	—	—	—	—	—
AAA6617	35-02026	2–3	ALLH	—	—	—	0.014[c]	0.07[c]	—	—	9.75 (J-)	1.124 (J-)	55.327 (J-)
AAA3797	35-02070	0–1	ALLH	—	—	—	—	—	—	0.336	—	—	—
AAA3798	35-02070	1–2	ALLH	—	—	—	—	—	—	0.563	—	—	—
AAA3799	35-02070	2–3	ALLH	—	—	—	—	—	—	0.579	—	—	—
AAA3800	35-02071	0–1	ALLH	—	—	—	—	—	—	0.156	—	—	—
AAA6353	35-02073	0–1	ALLH	—	—	—	—	—	—	0.143	—	—	—
AAA6354	35-02073	1–2	ALLH	—	—	—	—	0.569[c]	—	0.14175	—	—	—
AAA6356	35-02074	0–1	ALLH	—	—	—	—	—	—	0.25	—	—	—
AAA6357	35-02074	1–2	ALLH	—	—	—	—	—	—	0.457	—	—	—
AAA6358	35-02074	2–3	ALLH	—	—	—	—	—	—	0.505	—	—	—
AAA6342	35-02076	1–2	ALLH	—	—	—	—	—	—	—	—	0.293	—
AAA6343	35-02076	2–3	ALLH	—	—	—	—	—	—	0.116	—	—	—
AAA6344	35-02077	0–1	ALLH	—	—	—	—	—	—	—	5.84	1.197	4.5 (J)
AAA6394	35-02090	3–4	ALLH	—	—	—	—	—	—	—	—	0.651	—
AAA6395	35-02090	4-5	ALLH	—	—	—	—	6.61 (J-)[c]	—	—	—	—	—
0435-95-0140	35-02262	0–1	FILL	—	—	—	—	—	—	3.434E-02	—	—	—
0435-96-0030	35-02295	1.5–2.5	FILL	—	—	—	—	—	1.06[c]	—	—	—	—
0435-96-0031	35-02295	4–5	ALLH	0.0457[c]	—	—	—	0.015[c]	0.93[c]	—	—	—	—
0435-96-0042	35-02298	0–1	FILL	—	—	—	—	0.026[c]	2.7[c]	—	—	—	—
0435-96-0045	35-02299	0–1	FILL	0.082[c]	—	—	—	0.024[c]	2.09[c]	0.416	—	—	—
0435-96-0049	35-02300	0–1	FILL	—	—	—	—	—	1.22[c]	0.34	—	—	—
0435-97-0001	35-02303	3–4.5	FILL	—	—	—	—	—	0.953[c]	0.081	—	—	—
0435-97-0038	35-02309	2.5–3.5	FILL	—	—	—	—	—	2.23[c]	0.07	—	—	—
0435-96-0153	35-02437	0–1	FILL	2.94[c]	0.63	—	—	0.017[c]	904[c]	—	—	—	—
0435-96-0154	35-02437	4–5	FILL	1.07[c]	—	0.506	—	0.027[c]	372[c]	—	—	—	—
0435-96-0156	35-02438	4–5	FILL	—	—	—	—	—	24.4[c]	—	—	—	—
0435-96-0158	35-02439	0–1	FILL	0.692[c]	0.368	—	—	—	441[c]	9.73	—	—	—
0435-96-0159	35-02439	4-5	FILL	—	—	—	—	0.013[c]	—	—	—	—	—
0435-96-0160	35-02440	4–5	FILL	—	0.211	—	—	—	368[c]	—	—	—	—
0435-96-0162	35-02441	0–1	FILL	1.09[c]	0.301	—	—	—	146[c]	—	—	—	—
0435-96-0163	35-02441	4–5	ALLH	—	—	—	—	—	12.1[c]	—	—	—	—
0435-96-0165	35-02442	4–5	FILL	—	—	—	—	—	3.02[c]	—	—	—	—
0435-96-0167	35-02443	4–5	FILL	—	—	—	—	—	4.95[c]	0.58	—	—	—

Table D-2.12-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
0435-96-0169	35-02444	0–1	FILL	—	—	—	—	—	6.12[c]	—	—	—	—
0435-96-0170	35-02444	4–5	FILL	—	—	—	—	—	7.53[c]	—	—	—	—
0435-96-0171	35-02445	0–1	FILL	—	—	—	—	—	26.8[c]	0.785	—	—	—
0435-96-0173	35-02446	4–5	FILL	0.094[c]	—	—	—	0.007[c]	25.9[c]	—	—	—	—
0435-97-0104	35-02496	0–1	FILL	—	—	—	—	0.028[c]	—	—	—	—	—
0435-97-0386	35-02533	0–1	FILL	0.738[c]	—	—	—	—	2.6[c]	—	—	—	—
0435-97-0408	35-02560	0–1	ALLH	0.201[c]	—	—	—	—	—	—	—	—	—
0435-97-0414	35-02562	0–1	ALLH	0.14[c]	—	—	—	—	—	—	—	—	—
0435-97-0417	35-02563	0–1	ALLH	—	—	0.361	—	—	—	—	—	—	—
0435-97-0420	35-02564	0–1	ALLH	0.12[c]	—	—	—	—	—	—	—	—	—
0435-97-0422	35-02564	1–2	ALLH	—	0.1	—	—	—	—	—	—	—	—
RE35-04-54075	35-22941	4–5	ALLH	—	—	—	—	—	—	0.0898	—	—	—
RE35-05-58367	35-24415	4–5	FILL	—	—	—	—	—	—	0.24	—	—	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV not detected.
[c] Detected and the FV does not apply (subsurface samples).

Table D-2.12-8
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
AAA6361	35-02075	2–3	Qbt3	—[a]	16355[b]	16355	16355	—
AAA6348	35-02078	1–2	Qbt3	—	16391	16391	16391	—
AAA6349	35-02078	2–3	Qbt3	—	16391	16391	16391	—
AAA6366	35-02081	1.5–2	Qbt3	—	—	16400	16400	—
AAA6388	35-02089	4–5	Qbt3	—	—	16400	16400	—
AAA6370	35-02220	1–2	Qbt3	—	16389	16389	16389	—
AAA6371	35-02220	2–3	Qbt3	—	16389	16389	16389	—
0435-95-0212	35-02288	3–4	Qbt3	1703	—	—	—	—
0435-96-0043	35-02298	4–5	Qbt3	2839	2839	2839	2839	2839
0435-96-0046	35-02299	3–4	Qbt3	2839	2839	2839	2839	2839
0435-96-0050	35-02300	2–3	Qbt3	2839	2839	2839	2839	2839
0435-97-0105	35-02496	1–2	Qbt3	3277R	—	3277R	3277R	—
0435-97-0108	35-02497	1–2	Qbt3	3277R	—	3277R	3277R	—
0435-97-0116	35-02499	1–2	Qbt3	3280R	—	3280R	3280R	—
0435-97-0117	35-02499	2–3	Qbt3	3280R	—	3280R	3280R	—
0435-97-0121	35-02500	0.83–2	Qbt3	3280R	—	3280R	3280R	—
0435-97-0123	35-02501	1–2	Qbt3	3280R	—	3280R	3280R	—
0435-97-0410	35-02560	2–3	Qbt3	3531R	—	—	—	3531R
0435-97-0413	35-02561	2–3	Qbt3	3531R	—	—	—	3531R
0435-97-0415	35-02562	1–2	Qbt3	3531R	—	—	—	3531R
0435-97-0416	35-02562	2–3	Qbt3	3531R	—	—	—	3531R
0435-97-0423	35-02564	2–3	Qbt3	3531R	—	—	—	3531R

Table D-2.12-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0435-97-0425	35-02565	0–1	Qbt3	3531R	—	—	—	3531R
0435-97-0426	35-02565	1–2	Qbt3	3531R	—	—	—	3531R
0435-97-0427	35-02565	2–3	Qbt3	3531R	—	—	—	3531R
RE35-04-54016	35-22922	4–5	Qbt3	—	2265S	—	—	2265S
RE35-04-54038	35-22930	4–4.5	Qbt3	—	2344S	—	—	2344S
RE35-04-54106	35-22950	4–5	Qbt3	2370S	2370S	2370S	2370S	2370S
RE35-05-58364	35-24414	4–5	Qbt3	2967S	2967S	2967S	2967S	2967S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-2.12-9
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Europium-152	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Qbt3, Qbt2 Background/Fallout Value (pCi/g)				na[a]	na	na	na	1.98	0.09	1.93
AAA6348	35-02078	1–2	Qbt3	—[b]	3.16	—	—	4.58	—	—
AAA6349	35-02078	2–3	Qbt3	—	—	—	—	3.22	—	2.23 (J+)
0435-96-0043	35-02298	4–5	Qbt3	—	—	1.13	—	—	—	—
0435-96-0046	35-02299	3–4	Qbt3	—	—	0.93	0.313	—	—	—
0435-96-0050	35-02300	2–3	Qbt3	—	—	—	0.303	—	—	—
0435-97-0108	35-02497	1–2	Qbt3	0.336	—	—	—	—	—	—
RE35-04-54106	35-22950	4–5	Qbt3	—	0.0537	—	0.021	—	—	—
RE35-05-58364	35-24414	4–5	Qbt3	—	—	96.7	—	—	0.21	—

[a] na = Not available.
[b] — indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-2.12-10
Sediment Sample Collected for Radionuclide Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Isotopic plutonium	Isotopic Uranium
AAA6375	35-02086	0–0.5	SED	16389[a]	16389

[a] Analytical request number.

Table D-2.12-11
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Sediment, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Uranium-234	Uranium-235	Uranium-238
Sediment Background Value (pCi/g)				2.59	0.2	2.29
AAA6375	35-02086	0.00-0.50	SED	3.98 (J)	0.616	2.64

Table D-2.12-12
EPCs for Radionuclide COPCs in the Mesa Top Subarea

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Cesium-137	0–5	0.286	Nonparametric	95% Chebyshev (Mean, SD)
Cobalt-60	0–5	0.072	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–5	0.116	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–5	0.005	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–5	0.348	Nonparametric	95% Chebyshev (Mean, SD)
Strontium-90	0–5	131.166	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–5	6.187	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–5	1.51	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–5	0.146	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–5	3.318	Nonparametric	95% Chebyshev (Mean, SD)

Table D-2.12-13
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO	VOC
AAB0949	35-02015	1–2	ALLH	17315[a]	—[b]	—	17315	—	—
AAA3819	35-02072	0.4–1.4	FILL	—	—	—	16301	—	—
AAA3820	35-02072	1.4–2.4	ALLH	—	—	—	16301	—	—
AAA3821	35-02072	2.4–3.4	ALLH	16301	—	—	16301	—	—
AAA6367	35-02082	1.2–1.5	ALLH	16407	—	—	16407	—	16407
AAA6374	35-02085	1.6–2.1	ALLH	16407	—	—	16407	—	16407
AAA6385	35-02089	1–2	ALLH	16407	—	—	16407	—	16407
AAA6386	35-02089	2–3	ALLH	16407	—	—	16407	—	16407
AAA6391	35-02090	0–1	ALLH	16407	—	—	16407	—	16407
AAA6392	35-02090	1–2	ALLH	16407	—	—	16407	—	16407
AAA6393	35-02090	2–3	ALLH	16407	—	—	16407	—	16407
AAA6394	35-02090	3–4	ALLH	16407	—	—	16407	—	16407
AAA6395	35-02090	4–5	ALLH	16407	—	—	16407	—	16407
AAC3336	35-02179	0–1	ALLH	21488	—	—	21488	—	—
AAC3344	35-02182	0–1	ALLH	—	—	—	—	—	21488
0435-95-0162	35-02268	0–1	FILL	1304	—	—	1304	—	—
0435-95-0168	35-02269	0–0.5	FILL	1649	—	—	1649	—	1649
0435-95-0195	35-02280	0–2	FILL	—	—	—	1678	—	—
0435-95-0198	35-02285	1–1.8	FILL	—	—	—	1678	1678	—
0435-95-0199	35-02286	1–2	FILL	—	—	—	1678	1678	—
0435-95-0200	35-02286	2–3	FILL	—	—	—	1678	1678	—
0435-95-0211	35-02288	1–2	FILL	1701	—	—	1701	1701	1701
0435-95-0215	35-02289	1–2	FILL	—	—	—	1701	1701	—
0435-95-0216	35-02289	3–4	ALLH	—	—	—	1701	1701	—
0435-95-0219	35-02291	1–2	FILL	1701	—	—	1701	1701	1701
0435-95-0220	35-02291	3–4	FILL	1701	—	—	1701	1701	1701

Table D-2.12-13 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO	VOC
0435-95-0223	35-02292	1–2	FILL	—	—	—	1701	1701	—
0435-95-0227	35-02293	1.5–2.5	FILL	—	—	—	1701	1701	—
0435-95-0228	35-02293	3–4	FILL	—	—	—	1701	1701	—
0435-95-0234	35-02294	0–1	FILL	—	—	—	1701	1701	—
0435-95-0235	35-02294	1–2	FILL	—	—	—	1701	1701	—
0435-95-0236	35-02294	2–2.5	FILL	—	—	—	1701	1701	—
0435-96-0030	35-02295	1.5–2.5	FILL	—	—	—	2571	—	2571
0435-96-0034	35-02296	0–1	ALLH	—	—	—	2639	—	2639
0435-96-0038	35-02297	0–1	ALLH	—	—	—	2639	—	2639
0435-96-0042	35-02298	0–1	FILL	—	—	—	2837	—	2837
0435-96-0045	35-02299	0–1	FILL	—	—	—	—	—	2837
0435-96-0049	35-02300	0–1	FILL	—	—	—	—	—	2837
0435-96-0083	35-02353	0–0.5	FILL	—	—	2307	2307	—	—
0435-96-0084	35-02354	0–0.5	FILL	—	—	2307	2307	—	—
0435-96-0085	35-02355	0–0.5	FILL	—	—	2307	2307	—	—
0435-96-0086	35-02356	0–0.5	FILL	—	—	2307	2307	—	—
0435-96-0077	35-02364	0–1	FILL	2236	—	—	2236	2236	2236
0435-96-0078	35-02364	2–3	FILL	2236	—	—	2236	2236	2236
0435-96-0079	35-02393	0–1	FILL	2236	—	—	2236	2236	2236
0435-96-0081	35-02393	2–3	FILL	2236	—	—	2236	2236	2236
0435-96-0093	35-02402	0–0.5	FILL	—	—	2448	—	—	—
0435-96-0094	35-02403	0–0.5	FILL	—	—	2448	—	—	—
0435-96-0095	35-02404	0–0.5	FILL	—	—	2448	—	—	—
0435-96-0096	35-02405	0–0.5	FILL	—	—	—	—	2452	—
0435-96-0097	35-02406	3–3.5	FILL	2471	—	—	—	—	—
0435-96-0098	35-02407	3–3.5	FILL	2471	—	—	—	—	—
0435-96-0145	35-02430	2–2.5	FILL	—	—	—	—	2578	—
0435-96-0153	35-02437	0–1	FILL	—	—	—	2677	—	2677
0435-96-0154	35-02437	4–5	FILL	—	—	—	2677	—	2677
0435-96-0156	35-02438	4–5	FILL	—	—	—	2677	—	2677
0435-96-0158	35-02439	0–1	FILL	—	—	—	2677	—	2677
0435-96-0159	35-02439	4–5	FILL	—	—	—	2677	—	2677
0435-96-0160	35-02440	4–5	FILL	—	—	—	2677	—	2677
0435-96-0162	35-02441	0–1	FILL	—	—	—	2677	—	2677
0435-96-0163	35-02441	4–5	ALLH	—	—	—	2677	—	2677
0435-96-0165	35-02442	4–5	FILL	—	—	—	2677	—	2677
0435-96-0167	35-02443	4–5	FILL	—	—	—	2677	—	2677
0435-96-0169	35-02444	0–1	FILL	—	—	—	2677	—	2677
0435-96-0170	35-02444	4–5	FILL	—	—	—	2677	—	2677
0435-96-0171	35-02445	0–1	FILL	—	—	—	2677	—	2677
0435-96-0173	35-02446	4–5	FILL	—	—	—	2677	—	2677
0435-97-0104	35-02496	0–1	FILL	—	—	—	3275R	3275R	—
0435-97-0107	35-02497	0–1	FILL	—	—	—	3275R	3275R	—

Table D-2.12-13 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO	VOC
0435-97-0112	35-02498	0–1	FILL	—	—	—	3275R	3275R	—
0435-97-0113	35-02498	1–2	FILL	3275R	—	—	3275R	3275R	3275R
0435-97-0115	35-02499	0–1	FILL	—	—	—	3278R	3278R	—
0435-97-0119	35-02500	0–0.83	FILL	—	—	—	3278R	3278R	—
0435-97-0122	35-02501	0–1	FILL	—	—	—	3278R	3278R	—
0435-97-0377	35-02534	1–2	FILL	3487R	—	—	3487R	3487R	3487R
0435-97-0379	35-02534	3–4	FILL	3487R	—	—	3487R	3487R	3487R
0435-97-0382	35-02535	1–2	FILL	3487R	—	—	3487R	3487R	3487R
0435-97-0383	35-02535	3–4	FILL	3487R	—	—	3487R	3487R	3487R
0435-97-0434	35-02568	0.5–1.5	FILL	3508R	—	—	3508R	3508R	—
0435-97-0435	35-02568	1.5–2.5	FILL	3508R	—	—	3508R	3508R	—
0435-97-0438	35-02569	0.5–1.5	ALLH	3508R	—	—	3508R	3508R	—
0435-97-0441	35-02570	0.5–1.5	ALLH	3508R	—	—	3508R	3508R	—
0435-97-0276	35-02594	0–1	FILL	—	—	—	3430R	3430R	—
0435-97-0277	35-02594	2–3	FILL	3430R	—	—	3430R	3430R	—
RE35-04-54075	35-22941	4–5	ALLH	2357S	2357S	—	2357S	—	2357S

[a] Analytical request number.

[b] — = Analysis not requested.

Table D-2.12-14
Summary of Organic Chemicals Detected in Soil and Fill, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1248	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Chrysene	Dibenz(a,h)anthracene	Dichloroethene[cis-1,2-]	Dimethyl Phthalate	Di-n-butylphthalate	Ethylbenzene
AAA6367	35-02082	1.2–1.5	ALLH	—[a]	—	—	—	—	—	—	—	—	—	—	0.23 (J)	—	—	—	—	—	—	—	—
AAA6391	35-02090	0–1	ALLH	—	0.12 (J)	—	—	—	—	—	—	—	—	—	0.85	—	—	—	—	—	—	—	—
AAA6392	35-02090	1–2	ALLH	—	0.054 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AAC3344	35-02182	0–1	ALLH	—	0.043 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-95-0162	35-02268	0–1	FILL	—	—	—	—	—	0.94	0.32 (J)	0.24 (J)	0.21 (J)	0.075 (J)	—	—	—	—	—	—	—	—	—	—
0435-95-0168	35-02269	0–0.5	FILL	—	—	—	—	—	0.0174	—	—	—	—	—	0.137	—	—	—	—	—	—	—	—
0435-95-0195	35-02280	0–2	FILL	—	—	—	—	—	—	0.027 (J)	—	—	—	—	—	—	—	0.039 (J)	—	—	—	—	—
0435-95-0198	35-02285	1–1.8	FILL	—	—	0.057 (J)	—	—	—	0.053 (J)	0.047 (J)	0.029 (J)	—	0.043 (J)	—	—	—	0.055 (J)	—	—	—	—	—
0435-95-0199	35-02286	1–2	FILL	—	—	—	—	—	—	—	—	—	—	—	3 (J)	—	—	—	—	—	—	—	—
0435-95-0200	35-02286	2–3	FILL	—	—	—	—	—	—	—	—	—	—	—	3.8 (J)	—	—	—	—	—	—	—	—
0435-95-0211	35-02288	1–2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-95-0219	35-02291	1–2	FILL	—	—	—	—	—	2.9	—	—	—	—	—	0.77	—	—	—	—	—	—	—	—
0435-95-0220	35-02291	3–4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-95-0227	35-02293	1.5–2.5	FILL	—	—	0.047 (J)	—	—	—	0.045 (J)	0.047 (J)	0.027 (J)	—	0.043 (J)	—	—	—	0.053 (J)	—	—	—	—	—
0435-95-0234	35-02294	0–1	FILL	0.14 (J)	—	0.22 (J)	—	—	—	0.26 (J)	0.23 (J)	0.21 (J)	0.1 (J)	0.2 (J)	—	—	—	0.28 (J)	0.055 (J)	—	—	—	—
0435-95-0235	35-02294	1–2	FILL	—	—	—	—	—	—	0.042 (J)	—	—	—	—	—	—	—	0.038 (J)	—	—	—	—	—
0435-95-0236	35-02294	2–2.5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.066 (J)	—	—	—	—	—	—	—	—
0435-96-0038	35-02297	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.5	—	—	—	—	—	—	—	—
0435-96-0042	35-02298	0–1	FILL	—	0.06 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0045	35-02299	0–1	FILL	—	0.086 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0049	35-02300	0–1	FILL	—	0.11 (J-)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0083	35-02353	0–0.5	FILL	1.8	—	3.8	—	—	2.7 (J+)	7	5.9	9.2	4.3	—	—	—	—	7.2	—	—	—	—	—
0435-96-0084	35-02354	0–0.5	FILL	0.27 (J)	—	0.67	—	—	4.7 (J+)	1.1	1	1.6	0.74	—	—	—	—	1.3	—	—	—	—	—
0435-96-0085	35-02355	0–0.5	FILL	1.4	—	3	—	—	1.9 (J+)	7.1	5.4	8.9	4	—	—	—	—	6.6	—	—	—	—	—
0435-96-0086	35-02356	0–0.5	FILL	0.55	—	0.97	—	—	4.9 (J+)	1.9	1.4	2.2	1	—	—	—	—	2	—	—	—	—	—
0435-96-0077	35-02364	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.75 (J)	—	—	—	—	0.003 (J-)	—	—	—
0435-96-0079	35-02393	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.65 (J)	—	—	—	—	—	—	—	—
0435-96-0081	35-02393	2–3	FILL	—	—	—	—	—	—	—	—	—	—	—	0.098 (J)	—	—	—	—	—	—	—	—
0435-96-0093	35-02402	0–0.5	FILL	—	—	—	—	—	0.75	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0094	35-02403	0–0.5	FILL	—	—	—	—	—	0.098	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0095	35-02404	0–0.5	FILL	—	—	—	—	—	0.2	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0096	35-02405	0–0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0097	35-02406	3–3.5	FILL	—	—	—	—	—	12	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.12-14 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1248	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzene[sec-]	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[cis-1,2-]	Dimethyl Phthalate	Di-n-butylphthalate	Di-n-octylphthalate	Ethylbenzene
0435-96-0098	35-02407	3–3.5	FILL	—	—	—	—	—	0.1	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0153	35-02437	0–1	FILL	—	—	0.069 (J)	—	—	—	—	—	—	—	—	0.57 (J)	0.003 (J)	—	—	—	—	—	—	—	—	—
0435-96-0154	35-02437	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.1 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0156	35-02438	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.076 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0158	35-02439	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.059 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0159	35-02439	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.04 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0160	35-02440	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0162	35-02441	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.081 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0167	35-02443	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.071 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0169	35-02444	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.057 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0171	35-02445	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.066 (J)	—	—	—	—	—	—	—	—	—	—
0435-96-0173	35-02446	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.24 (J)	—	—	—	—	—	—	—	—	—	—
0435-97-0107	35-02497	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06 (J)	—	—	—
0435-97-0115	35-02499	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	0.092 (J)	—	—	—	—	—	—	—	—	—	—
0435-97-0119	35-02500	0–0.83	FILL	—	—	—	—	—	—	—	—	—	—	—	2.5 (J)	—	—	—	—	—	—	—	—	—	—
0435-97-0377	35-02534	1–2	FILL	—	—	0.039 (J)	—	—	—	0.084 (J)	—	—	—	—	—	—	—	0.097 (J)	—	—	—	—	0.15 (J)	—	—
0435-97-0379	35-02534	3–4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0383	35-02535	3–4	FILL	—	—	—	0.072	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J+)
0435-97-0434	35-02568	0.5–1.5	FILL	8.9	—	19	—	1.3	—	28	22	18	13	19	—	—	—	27	5.8	4.7	—	—	—	—	—
0435-97-0435	35-02568	1.5–2.5	FILL	0.074 (J)	—	0.1 (J)	—	—	—	0.21 (J)	0.2 (J)	0.16 (J)	0.13 (J)	0.16 (J)	—	—	—	0.2 (J)	—	—	—	—	—	—	—
0435-97-0438	35-02569	0.5–1.5	ALLH	0.038 (J)	—	0.06 (J)	—	—	—	0.14 (J)	0.13 (J)	0.097 (J)	—	0.11 (J)	—	—	—	0.16 (J)	—	—	—	—	—	—	—
RE35-04-54075	35-22941	4–5	ALLH	—	—	—	—	—	1.49	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.12-14 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Fluoranthene	Fluorene	Hexanone[2-]	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (total)
AAA6367	35-02082	1.2–1.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AAA6391	35-02090	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AAA6392	35-02090	1–2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AAC3344	35-02182	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.006 (J)	—	—	—	—	—	—	—
0435-95-0162	35-02268	0–1	FILL	0.3 (J)	—	—	0.056 (J)	—	—	—	—	—	0.15 (J)	—	0.33 (J)	—	—	—	—	—	—	—	—	—
0435-95-0168	35-02269	0–0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.003 (J)	—	—	—
0435-95-0195	35-02280	0–2	FILL	0.056 (J)	—	—	—	—	—	—	—	—	—	—	0.055 (J)	—	—	—	—	—	—	—	—	—
0435-95-0198	35-02285	1–1.8	FILL	0.14 (J)	—	—	—	—	—	—	—	—	0.18 (J)	—	0.13 (J)	—	—	55	—	—	—	—	—	—
0435-95-0199	35-02286	1–2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	44000	—	—	—	—	—	—
0435-95-0200	35-02286	2–3	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	43000	—	—	—	—	—	—
0435-95-0211	35-02288	1–2	FILL	—	—	—	—	—	—	0.004 (J)	—	—	—	—	—	—	—	79	—	—	—	—	—	—
0435-95-0219	35-02291	1–2	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	0.007 (J+)	7700	—	—	—	—	—	—
0435-95-0220	35-02291	3–4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	130	—	—	—	—	—	—
0435-95-0227	35-02293	1.5–2.5	FILL	0.11 (J)	—	—	—	—	—	—	—	—	0.12 (J)	—	0.096 (J)	—	—	130	—	—	—	—	—	—
0435-95-0234	35-02294	0–1	FILL	0.68	0.13 (J)	—	0.098 (J)	—	—	—	—	0.08 (J)	0.77	—	0.5	—	—	240	—	—	—	—	—	—
0435-95-0235	35-02294	1–2	FILL	0.11 (J)	—	—	—	—	—	—	—	—	0.076 (J)	—	0.082 (J)	—	—	270	—	—	—	—	—	—
0435-95-0236	35-02294	2–2.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0038	35-02297	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0042	35-02298	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.017 (J-)	—	—	—	—
0435-96-0045	35-02299	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.01 (J-)	—	—	—	—
0435-96-0049	35-02300	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.015 (J-)	—	—	—	—
0435-96-0083	35-02353	0–0.5	FILL	23	1.8	—	3.8	—	—	—	0.33 (J)	0.67 (J)	17	—	17	—	—	—	—	—	—	—	—	—
0435-96-0084	35-02354	0–0.5	FILL	3.4	0.27 (J)	—	0.67	—	—	—	—	—	2.6	—	3.2	—	—	—	—	—	—	—	—	—
0435-96-0085	35-02355	0–0.5	FILL	18	1.6	—	3.6	—	—	—	0.27 (J)	0.68	14	—	17	—	—	—	—	—	—	—	—	—
0435-96-0086	35-02356	0–0.5	FILL	4.6	0.62	—	0.9	—	—	—	0.14 (J)	0.45	4.4	—	4.7	—	—	—	—	—	—	—	—	—
0435-96-0077	35-02364	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.019 (J)	—	—	—	—
0435-96-0079	35-02393	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J+)	0.002 (J+)	7000	—	0.015 (J)	—	—	—	—
0435-96-0081	35-02393	2–3	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	740	—	0.002 (J)	—	—	—	—
0435-96-0093	35-02402	0–0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0094	35-02403	0–0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0095	35-02404	0–0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-2.12-14 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Fluoranthene	Fluorene	Hexanone[2-]	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]	Trimethylbenzene[1,3,5-]	Xylene (total)
0435-96-0096	35-02405	0–0.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	81	—	—	—	—	—	—
0435-96-0097	35-02406	3–3.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0098	35-02407	3–3.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0153	35-02437	0–1	FILL	0.14 (J)	—	0.006 (J)	—	—	—	0.028	—	—	—	—	0.12 (J)	—	—	—	—	—	0.006	—	—	—
0435-96-0154	35-02437	4–5	FILL	—	—	—	—	—	—	0.027	—	—	—	—	—	—	—	—	—	—	0.005 (J)	—	—	—
0435-96-0156	35-02438	4–5	FILL	—	—	—	—	—	—	0.024	—	—	—	—	—	—	—	—	—	—	0.005 (J)	—	—	—
0435-96-0158	35-02439	0–1	FILL	—	—	—	—	—	—	0.011	—	—	—	—	—	—	—	—	—	—	0.003 (J)	—	—	—
0435-96-0159	35-02439	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0160	35-02440	4–5	FILL	—	—	—	—	—	—	0.015	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0162	35-02441	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.017	—	—	—
0435-96-0167	35-02443	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0169	35-02444	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0171	35-02445	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0173	35-02446	4–5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0107	35-02497	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0115	35-02499	0–1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0119	35-02500	0–0.83	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0377	35-02534	1–2	FILL	0.17 (J)	—	—	—	—	—	—	—	—	0.15 (J)	0.048 (J)	0.2 (J)	—	—	—	—	—	—	—	—	0.001 (J)
0435-97-0379	35-02534	3–4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)
0435-97-0383	35-02535	3–4	FILL	—	—	—	—	0.002 (J+)	—	—	—	—	1.1 (J)	—	—	0.001 (J+)	0.006 (J+)	—	—	0.002 (J+)	0.002 (J+)	0.003 (J+)	0.002 (J+)	0.009 (J)
0435-97-0434	35-02568	0.5–1.5	FILL	65	7.9	—	13	—	—	—	1.8 (J)	5.4	64	—	55	—	—	34	—	—	—	—	—	—
0435-97-0435	35-02568	1.5–2.5	FILL	0.43	—	—	0.11 (J)	—	—	—	—	—	0.4	—	0.42	—	—	—	—	—	—	—	—	—
0435-97-0438	35-02569	0.5–1.5	ALLH	0.29 (J)	—	—	0.077 (J)	—	—	—	—	—	0.22 (J)	—	0.3 (J)	—	—	—	—	—	—	—	—	—
RE35-04-54075	35-22941	4–5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] — Indicates analyte not detected.

Table D-2.12-15
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticides	SVOC	TPH-DRO	VOC
AAA6366	35-02081	1.5–2	Qbt3	16407[a]	—[b]	16407	—	16407
AAA6388	35-02089	4–5	Qbt3	16407	—	16407	—	16407
0435-95-0212	35-02288	3–4	Qbt3	1701	—	1701	1701	1701
0435-95-0231	35-02290	0.3–1	Qbt3	—	—	1701	1701	—
0435-95-0232	35-02290	1–2	Qbt3	—	—	1701	1701	—
0435-95-0233	35-02290	2–3	Qbt3	—	—	1701	1701	—
0435-95-0224	35-02292	4–5	Qbt3	—	—	1701	1701	—
0435-96-0051	35-02301	0–8	Qbt3	—	—	1961	—	—
0435-96-0052	35-02302	0–8	Qbt3	—	—	1961	—	—
RE35-04-54036	35-02364	4–5	Qbt3	—	—	2336S	2336S	2336S
0435-96-0146	35-02431	3–3.5	Qbt3	—	—	—	2578	—
0435-97-0105	35-02496	1–2	Qbt3	3275R	—	3275R	3275R	3275R
0435-97-0108	35-02497	1–2	Qbt3	3275R	—	3275R	3275R	3275R
0435-97-0116	35-02499	1–2	Qbt3	—	—	3278R	3278R	—
0435-97-0117	35-02499	2–3	Qbt3	—	—	3278R	3278R	—
0435-97-0121	35-02500	0.83–2	Qbt3	3278R	—	3278R	3278R	3278R
0435-97-0123	35-02501	1–2	Qbt3	—	—	3278R	3278R	—
0435-97-0436	35-02568	2.5–3.5	Qbt3	3508R	—	3508R	3508R	—
0435-97-0439	35-02569	1.5–2.5	Qbt3	3508R	—	3508R	3508R	—
0435-97-0440	35-02569	2.5–3.5	Qbt3	3508R	—	3508R	3508R	—
0435-97-0442	35-02570	1.5–2.5	Qbt3	3508R	—	3508R	3508R	—
0435-97-0443	35-02570	2.5–3.5	Qbt3	3508R	—	3508R	3508R	—
RE35-04-54016	35-22922	4–5	Qbt3	2263S	2263S	2263S	—	2263S
RE35-04-54031	35-22928	4–4.5	Qbt3	2342S	2342S	2342S	—	2342S
RE35-04-54106	35-22950	4–5	Qbt3	—	—	2368S	—	—
RE35-05-58364	35-24414	4–5	Qbt3	—	—	2965S	—	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-2.12-16
Summary of Organic Chemicals Detected in Tuff, 0-5 ft bgs, in the Mesa Top Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Aroclor-1248	Aroclor-1260	Bis(2-ethylhexyl)phthalate	Butanone[2-]	DDT[4,4'-]	Di-n-butylphthalate	Hexanone[2-]	Methyl-2-pentanone[4-]	Methylene Chloride	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene	Trichlorofluoromethane	Xylene (total)	Xylene[1,2-]	Xylene[1,3-]+Xylene[1,4-]
AAA6366	35-02081	1.5–2	Qbt3	—[a]	—	—	2.3 (J)	—	—	—	—	—	—	—	0.0067 (J)	—	—	—	—	—	—	—
AAA6388	35-02089	4–5	Qbt3	—	—	—	0.21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-95-0212	35-02288	3–4	Qbt3	—	—	0.095	—	—	—	—	—	—	0.013	—	0.002 (J)	—	—	—	—	—	—	—
0435-95-0232	35-02290	1–2	Qbt3	—	—	—	—	—	—	0.052 (J)	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54036	35-02364	4–5	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	1.2 (J)	—	—	—	—	—	—
0435-97-0105	35-02496	1–2	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J-)	—	0.005 (J-)	—	—	—
0435-97-0116	35-02499	1–2	Qbt3	—	—	—	0.75 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0121	35-02500	0.83–2	Qbt3	—	—	—	3.1 (J)	—	—	—	—	—	—	—	0.003 (J)	—	—	—	0.003 (J+)	—	—	—
0435-97-0123	35-02501	1–2	Qbt3	—	—	—	0.55 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54031	35-22928	4–4.5	Qbt3	0.163	—	—	—	0.0508	0.103	—	0.112	0.0125	—	0.00085 (J)	0.00047 (J)	—	—	—	—	—	0.00051 (J)	0.0022

[a] — Indicates analyte not detected.

Table D-2.12-17
EPCs for Organic COPCs in Mesa Top Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–5	1.306	Nonparametric	95% Chebyshev (Mean, SD)
Acetone	0–5	0.04	Nonparametric	95% Chebyshev (Mean, SD)
Anthracene	0–5	1.133	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1248	0–5	0.056	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–5	0.063	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1260	0–5	1.134	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–5	1.142	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–5	1.151	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–5	1.143	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–5	1.148	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–5	1.125	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–5	0.708	Nonparametric	95% Chebyshev (Mean, SD)
Butanone[2-]	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–5	1.141	Nonparametric	95% Chebyshev (Mean, SD)
DDT[4,4'-]	0–5	0.103	—[c]	Maximum detect
Dibenz(a,h)anthracene	0–5	0.545	Nonparametric	95% Chebyshev (Mean, SD)
Dibenzofuran	0–5	1.397	Nonparametric	95% Chebyshev (Mean, SD)
Dichloroethene[cis-1,2-]	0–5	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Dimethyl Phthalate	0–5	0.588	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–5	0.576	Nonparametric	95% Chebyshev (Mean, SD)
Ethylbenzene	0–5	0.002	—	Maximum detect
Fluoranthene	0–5	1.769	Nonparametric	95% Chebyshev (Mean, SD)
Fluorene	0–5	0.609	Nonparametric	95% Chebyshev (Mean, SD)
Hexanone[2-]	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–5	1.154	Nonparametric	95% Chebyshev (Mean, SD)
Isopropyltoluene[4-]	0–5	0.002	—	Maximum detect
Methyl-2-pentanone[4-]	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
Methylene Chloride	0–5	0.008	Nonparametric	95% Chebyshev (Mean, SD)
Methylnaphthalene[2-]	0–5	1.113	Nonparametric	95% Chebyshev (Mean, SD)
Naphthalene	0–5	1.118	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–5	1.771	Nonparametric	95% Chebyshev (Mean, SD)
Phenol	0–5	0.857	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–5	1.769	Nonparametric	95% Chebyshev (Mean, SD)
Tetrachloroethene	0–5	0.002	—	Maximum detect
Toluene	0–5	0.006	Nonparametric	95% Chebyshev (Mean, SD)
TPH-DRO	0–5	73.8	Nonparametric	95% Chebyshev (Mean, SD)
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–5	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Trichloroethene	0–5	0.006	Nonparametric	95% Chebyshev (Mean, SD)
Trichlorofluoromethane	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Trimethylbenzene[1,2,4-]	0–5	0.003	—	Maximum detect
Trimethylbenzene[1,3,5-]	0–5	0.002	—	Maximum detect
Xylene (total)	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Xylene[1,2-]	0–5	0.001	—	Maximum detect
Xylene[1,3-]+Xylene[1,4-]	0–5	0.002	—	Maximum detect

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-3.0-1
Soil, Fill, Tuff, and Sediment Samples Collected for Inorganic Chemical Analyses at Ten Site Slope Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cyanide, total	Metals
35-004(g)-00	RE35-04-54030	35-02100	1-1.5	FILL	—[a]	2326S[b]
	AAC1179	35-02102	0-1	ALLH	—	21477
	RE35-04-54063	35-22937	9-10	QBT3	—	2323S
	RE35-04-54064	35-22937	19-20	QBT3	—	2323S
	RE35-04-54065	35-22937	29-30	QBT3	—	2323S
	RE35-04-54066	35-22938	9-10	QBT3	—	2313S
	RE35-04-54067	35-22938	19-20	QBT3	—	2313S
	RE35-04-54041	35-22938	29-30	QBT3	—	2316S
	RE35-04-54068	35-22938	29-30	QBT3	—	2313S
	RE35-04-54069	35-22939	9-10	QBT3	—	2296S
	RE35-04-54070	35-22939	19-20	QBT3	—	2296S
	RE35-04-54071	35-22939	29-30	QBT3	—	2296S
	RE35-04-54072	35-22940	9-10	QBT3	—	2313S
	RE35-04-54073	35-22940	19-20	QBT3	—	2313S
	RE35-04-54074	35-22940	29-30	QBT3	—	2313S
	RE35-04-54867	35-23284	0-0.59	SED	—	2714S
	RE35-04-54868	35-23284	1.31-1.64	SED	—	2714S
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	16518
	AAA6382	35-02035	8.8-9.8	QBT3	—	16518
	AAA6383	35-02035	14-15	QBT3	—	16518
	AAA6384	35-02035	17.5-18.7	QBT3	—	16518
	AAA6401	35-02036	0-1.1	ALLH	—	16518
	AAA6402	35-02036	7.4-8.4	QBT3	—	16518
	AAA6403	35-02036	14.2-15	QBT3	—	16518
	AAA6404	35-02036	19-20	QBT3	—	16518
	AAA6429	35-02037	3-4	QBT3	—	16518
	AAA6433	35-02037	3-4	QBT3	—	16518
	AAA6430	35-02037	9-10	QBT3	—	16518
	AAA6431	35-02037	13-14	QBT3	—	16518
	AAA6432	35-02037	19-20	QBT3	—	16518
	AAA6437	35-02038	2.5-3.5	QBT3	—	16519
	AAA6438	35-02038	9-10	QBT3	—	16519
	AAA6439	35-02038	14-15	QBT3	—	16519
	AAA6440	35-02038	19-20	QBT3	—	16519
	AAA6441	35-02221	4-5	QBT3	—	16519
	AAA6442	35-02221	8.8-10	QBT3	—	16519
	AAA6443	35-02221	14-15	QBT3	—	16519
	AAA6444	35-02221	19-20	QBT3	—	16519
	AAA6445	35-02221	19-20	QBT3	—	16519
	AAA6446	35-02222	3-4	QBT3	—	16519
	AAA6447	35-02222	9-10	QBT3	—	16519
	AAA6448	35-02222	14-15	QBT3	—	16519

Table D-3.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cyanide, total	Metals
	AAA6449	35-02222	19-20	QBT3	—	16519
	0435-96-0051	35-02301	7.5-8.0	QBT3	—	1962
	0435-96-0052	35-02302	7.5-8.0	QBT3	—	1962
	RE35-04-54078	35-22942	9-10	QBT3	—	2283S
	RE35-04-54079	35-22942	19-20	QBT3	—	2283S
	RE35-04-54080	35-22942	29-30	QBT3	—	2283S
	RE35-04-54081	35-22943	9-10	QBT3	—	2267S
	RE35-04-54082	35-22943	19-20	QBT3	—	2267S
	RE35-04-54083	35-22943	29-30	QBT3	—	2267S
	RE35-04-54130	35-22959	9-10	QBT3	—	2286S
	RE35-04-54131	35-22959	19-20	QBT3	—	2286S
	RE35-04-54132	35-22959	29-30	QBT3	—	2286S
	RE35-04-54133	35-22960	6-7	ALLH	—	2262S
	RE35-04-54134	35-22960	10-11	ALLH	—	2262S
	RE35-04-54135	35-22960	14-15	QBT3	—	2262S
	RE35-04-54855	35-23280	0.43-1.41	SED	—	2719S
	RE35-04-54856	35-23280	1.41-1.84	SED	—	2719S
	RE35-04-54861	35-23282	0-0.62	SED	—	2719S
	RE35-04-54862	35-23282	0.62-1.31	SED	—	2719S
35-009(e)	AAC1160	35-02105	0-1	ALLH	—	21467
	RE35-04-54052	35-22931	0.25-0.6	ALLH	—	2293S
	RE35-04-54155	35-22966	0-0.5	SED	—	2299S
	RE35-04-54157	35-22967	0-0.4	ALLH	—	2299S
	RE35-04-54040	35-22967	0.4-1.08	ALLH	—	2293S
	RE35-04-54158	35-22967	0.4-1.08	ALLH	—	2299S
35-014(g)-00	0435-95-0015	35-02168	1-2	ALLH	—	49
	RE35-98-0024	35-02169	0-0.25	SED	—	4330R
	0435-95-0023	35-02170	0-0.5	ALLH	—	49
	0435-95-0201	35-02287	1-2	ALLH	—	1679
	RE35-98-0028	35-02596	0-0.5	ALLH	—	4375R
	RE35-98-0029	35-02596	0.5-1.5	ALLH	—	4375R
	RE35-98-0030	35-02596	1.5-2.5	ALLH	—	4375R
	RE35-98-0031	35-02596	2.5-3.5	ALLH	—	4375R
	RE35-98-0032	35-02597	0-0.5	FILL	—	4375R
	RE35-98-0044	35-02597	0-0.5	FILL	—	4375R
	RE35-98-0036	35-02598	0-0.5	SED	—	4375R
	RE35-98-0040	35-02599	0-0.5	SED	—	4375R
	RE35-98-0045	35-02599	0-0.5	SED	—	4375R
	RE35-04-54171	35-22974	0.07-0.23	ALLH	—	2551S
	RE35-04-54172	35-22974	0.23-0.39	ALLH	—	2551S
	RE35-04-54173	35-22975	0-0.36	ALLH	—	2551S
	RE35-04-54174	35-22975	0.36-0.85	ALLH	—	2551S
	RE35-04-54688	35-23209	0-0.33	SED	—	2633S
	RE35-04-54689	35-23209	0.72-1.21	SED	—	2633S

Table D-3.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cyanide, total	Metals
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	—	54
	0435-95-0048	35-02187	0-1	QBT3	—	54
	RE35-04-54159	35-22968	0-0.23	SED	—	2551S
	RE35-04-54160	35-22968	0.23-0.92	SED	—	2551S
	RE35-04-54161	35-22969	0.33-0.62	SED	—	2551S
	RE35-04-54162	35-22969	0.62-0.98	SED	—	2551S
	RE35-04-54669	35-23200	0-0.66	SED	—	2633S
	RE35-04-54670	35-23200	0.66-1.35	SED	—	2633S
	RE35-04-54671	35-23201	0-0.46	SED	—	2633S
	RE35-04-54672	35-23201	0.46-0.89	SED	—	2633S
	RE35-04-54675	35-23203	0-0.2	SED	—	2633S
	RE35-04-54676	35-23203	0.2-0.49	SED	—	2633S
35-016(a)-00	AAC1144	35-02107	2-3	QBT3	—	21456
	0435-96-0054	35-02394	0-0.5	SED	—	2207
	0435-96-0055	35-02394	0.5-1	QBT3	—	2207
	0435-96-0056	35-02395	0-2	SED	—	2207
	0435-96-0057	35-02395	2-3	QBT3	—	2207
	RE35-04-54163	35-22970	0-0.15	SED	—	2310S
	RE35-04-54166	35-22971	0-0.7	SED	—	2310S
	RE35-04-54165	35-22971	0.7-0.9	ALLH	—	2310S
	RE35-04-54167	35-22972	0-0.85	ALLH	—	2310S
	RE35-04-54168	35-22972	0.85-2	ALLH	—	2310S
	RE35-04-54883	35-23292	0-0.79	SED	—	2719S
	RE35-04-54886	35-23292	0-0.79	SED	—	2719S
	RE35-04-54884	35-23292	0.79-1.57	SED	—	2719S
	RE35-04-54885	35-23292	1.57-2.03	SED	—	2719S
35-016(b)	0435-95-0009	35-02190	2-3	QBT3	—	59
	RE35-04-54679	35-23205	0-0.3	SED	2713S	2713S
	RE35-04-54691	35-23205	0-0.3	SED	2713S	2713S
	RE35-04-54680	35-23205	0.3-0.66	SED	2713S	2713S
	RE35-04-54683	35-23207	0-0.39	SED	2713S	2713S
	RE35-04-54684	35-23207	0.39-1.05	SED	2713S	2713S
	RE35-04-54685	35-23207	2.95-3.44	SED	2713S	2713S
35-016(c)-00	AAC1171	35-02111	1-2	ALLH	—	21477
	0435-96-0058	35-02396	0-0.66	ALLH	—	2207
	0435-96-0059	35-02396	0.67-1.5	QBT3	—	2207
	0435-96-0060	35-02397	0-1	ALLH	—	2207
	0435-96-0061	35-02397	1-2	QBT3	—	2207
	0435-96-0062	35-02398	0-0.5	ALLH	—	2207
	0435-96-0063	35-02398	0.5-1.5	QBT3	—	2207
	0435-96-0064	35-02399	0-0.5	ALLH	—	2207
	0435-96-0065	35-02399	0.5-1.5	QBT3	—	2207
	0435-96-0066	35-02399	0.5-1.5	QBT3	—	2207
	0435-96-0067	35-02400	0-0.66	ALLH	—	2207

Table D-3.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cyanide, total	Metals
	0435-96-0068	35-02400	2-3	QBT3	—	2207
	0435-96-0069	35-02401	0-0.83	ALLH	—	2207
	0435-96-0070	35-02401	2.5-3.5	QBT3	—	2207
	RE35-04-54873	35-23287	0-0.1	SED	—	2321S
	RE35-04-54874	35-23287	0.1-0.89	ALLH	—	2321S
	RE35-04-54875	35-23288	0-0.07	SED	—	2321S
	RE35-04-54876	35-23288	0.07-0.2	SED	—	2321S
	RE35-04-54877	35-23289	0-0.13	SED	—	2338S
	RE35-04-54878	35-23289	0.36-0.75	SED	—	2338S
	RE35-04-54879	35-23290	0-0.49	SED	—	2714S
	RE35-04-54880	35-23290	1.97-2.3	SED	—	2714S
	RE35-04-54881	35-23291	0.46-0.85	SED	—	2714S
	RE35-04-54882	35-23291	0.85-1.25	SED	—	2714S
35-016(j)	0435-95-0063	35-02192	2-3	QBT3	—	59
	RE35-04-54169	35-22973	0.03-0.3	SED	2557S	2557S
	RE35-04-54170	35-22973	0.3-0.98	SED	2557S	2557S
	RE35-04-54686	35-23208	0-0.2	SED	2556S	2556S
	RE35-04-54690	35-23210	0.1-0.66	SED	2556S	2556S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-3.0-2
Soil, Fill, Tuff, and Sediment Samples Collected for Radionuclide Analyses at Ten Site Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
35-004(g)-00	AAA6409	35-02039	5-6	QBT3	—[a]	—	16635[b]	16635	—
	AAA6410	35-02039	11-12	QBT3	—	—	16635	16635	—
	AAA6411	35-02039	19-20	QBT3	—	—	16635	16635	—
	AAA6412	35-02040	6.5-7.5	QBT3	—	—	16635	16635	—
	AAA6413	35-02040	14-15	QBT3	—	—	16635	16635	—
	AAA6414	35-02040	19-20	QBT3	—	—	16635	16635	—
	AAA6461	35-02041	4-5	ALLH	—	—	16635	16635	—
	AAA6462	35-02041	9-10	QBT3	—	—	16635	16635	—
	AAA6463	35-02041	14-15	QBT3	—	—	16635	16635	—
	AAA6474	35-02041	19-20	QBT3	—	—	16635	16635	—
	AAA6464	35-02042	4-5	ALLH	—	—	16635	16635	—
	AAA6465	35-02042	6-7	ALLH	—	—	16635	16635	—
	AAA6466	35-02042	14-15	QBT3	—	—	16635	16635	—
	AAA6467	35-02042	19-20	QBT3	—	—	16635	16635	—
	AAC1177	35-02100	1-1.5	FILL	21478	—	21478	21478	—
	AAC1178	35-02101	0-0.5	ALLH	—	—	21478	21478	—

Table D-3.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0329	35-02545	0.5-1.5	FILL	3496R	—	—	3496R	—
	0435-97-0330	35-02545	5-6	FILL	3496R	—	—	3496R	—
	0435-97-0331	35-02545	6.4-7.5	QBT3	3496R	—	—	3496R	—
	0435-97-0332	35-02545	11.5-12.5	QBT3	3496R	—	—	3496R	—
	0435-97-0333	35-02546	0.5-1.5	FILL	3496R	—	—	3496R	—
	0435-97-0334	35-02546	8.5-9.5	FILL	3496R	—	—	3496R	—
	0435-97-0335	35-02546	9.5-10.5	QBT3	3496R	—	—	3496R	—
	0435-97-0337	35-02546	14-15	QBT3	3496R	—	—	3496R	—
	0435-97-0338	35-02547	0-0.5	ALLH	3546R	—	—	3546R	—
	0435-97-0341	35-02547	0.5-1.5	QBT3	3546R	—	—	3546R	—
	0435-97-0342	35-02548	0-1	ALLH	3546R	—	—	3546R	—
	0435-97-0345	35-02548	1-2	QBT3	3546R	—	—	3546R	—
	RE35-04-54063	35-22937	9-10	QBT3	2324S	—	2324S	2324S	—
	RE35-04-54064	35-22937	19-20	QBT3	2324S	—	2324S	2324S	—
	RE35-04-54065	35-22937	29-30	QBT3	2324S	—	2324S	2324S	—
	RE35-04-54066	35-22938	9-10	QBT3	2314S	—	2314S	2314S	—
	RE35-04-54067	35-22938	19-20	QBT3	2314S	—	2314S	2314S	—
	RE35-04-54068	35-22938	29-30	QBT3	2314S	—	2314S	2314S	—
	RE35-04-54069	35-22939	9-10	QBT3	2297S	—	2297S	2297S	—
	RE35-04-54070	35-22939	19-20	QBT3	2297S	—	2297S	2297S	—
	RE35-04-54071	35-22939	29-30	QBT3	2297S	—	2297S	2297S	—
	RE35-04-54072	35-22940	9-10	QBT3	2314S	—	2314S	2314S	—
	RE35-04-54073	35-22940	19-20	QBT3	2314S	—	2314S	2314S	—
	RE35-04-54074	35-22940	29-30	QBT3	2314S	—	2314S	2314S	—
	RE35-04-54867	35-23284	0-0.59	SED	2714S	—	2714S	2714S	—
	RE35-04-54868	35-23284	1.31-1.64	SED	2714S	—	2714S	2714S	—
35-009(a)	AAA6417	35-02033	7-8	QBT3	—	—	16635	16635	—
	AAA6418	35-02033	12-13	QBT3	—	—	16635	16635	—
	AAA6419	35-02033	16-17	QBT3	—	—	16635	16635	—
	AAA6420	35-02034	5.5-6.5	QBT3	—	—	16635	16635	—
	AAA6421	35-02034	13.5-14.5	QBT3	—	—	16635	16635	—
	AAA6422	35-02034	19-20	QBT3	—	—	16635	16635	—
	AAA6381	35-02035	1.5-2.5	ALLH	—	—	16522	16522	—
	AAA6382	35-02035	8.8-9.8	QBT3	—	—	16522	16522	—
	AAA6383	35-02035	14-15	QBT3	—	—	16522	16522	—
	AAA6384	35-02035	17.5-18.7	QBT3	16522	16522	16522	16522	—
	AAA6401	35-02036	0-1.1	ALLH	—	—	16522	16522	—
	AAA6402	35-02036	7.4-8.4	QBT3	—	—	16522	16522	—
	AAA6403	35-02036	14.2-15	QBT3	—	—	16522	16522	—
	AAA6404	35-02036	19-20	QBT3	—	—	16522	16522	—
	AAA6429	35-02037	3-4	QBT3	—	—	16522	16522	—
	AAA6430	35-02037	9-10	QBT3	—	—	16522	16522	—
	AAA6431	35-02037	13-14	QBT3	—	—	16522	16522	—

Table D-3.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAA6432	35-02037	19-20	QBT3	—	—	16522	16522	—
	AAA6437	35-02038	2.5-3.5	QBT3	—	—	16532	16532	—
	AAA6438	35-02038	9-10	QBT3	—	—	16532	16532	—
	AAA6439	35-02038	14-15	QBT3	—	—	16532	16532	—
	AAA6440	35-02038	19-20	QBT3	16532	16532	16532	16532	—
	AAA6441	35-02221	4-5	QBT3	—	—	16532	16532	—
	AAA6442	35-02221	8.8-10	QBT3	—	—	16532	16532	—
	AAA6443	35-02221	14-15	QBT3	16532	16532	16532	16532	—
	AAA6444	35-02221	19-20	QBT3	—	—	16532	16532	—
	AAA6446	35-02222	3-4	QBT3	—	—	16532	16532	—
	AAA6447	35-02222	9-10	QBT3	—	—	16532	16532	—
	AAA6448	35-02222	14-15	QBT3	—	—	16532	16532	—
	AAA6449	35-02222	19-20	QBT3	—	—	16532	16532	—
	AAA6453	35-02223	0-0.5	ALLH	—	—	16635	16635	—
	AAA6454	35-02224	0-0.5	ALLH	—	—	16635	16635	—
	0435-97-0284	35-02536	0-0.5	FILL	3477R	—	—	—	3477R
	0435-97-0286	35-02536	1.5-2.5	QBT3	3477R	3477R	—	—	3477R
	0435-97-0287	35-02536	5.5-6.5	QBT3	3477R	3477R	—	—	3477R
	0435-97-0289	35-02536	19-20	QBT3	3477R	3477R	—	—	3477R
	0435-97-0290	35-02536	29-30	QBT3	3477R	3477R	—	—	3477R
	0435-97-0291	35-02537	0-1	FILL	3477R	—	—	—	3477R
	0435-97-0292	35-02537	1-2	FILL	3477R	3477R	—	—	3477R
	0435-97-0293	35-02537	2-3	QBT3	3477R	3477R	—	—	3477R
	0435-97-0294	35-02537	6.5-7.5	QBT3	3477R	3477R	—	—	3477R
	0435-97-0301	35-02538	0-1	FILL	3486R	—	—	—	3486R
	0435-97-0303	35-02538	1-2	QBT3	3486R	3486R	—	—	3486R
	0435-97-0305	35-02538	6-7	QBT3	3486R	3486R	—	—	3486R
	0435-97-0306	35-02538	19-20	QBT3	3486R	3486R	—	—	3486R
	0435-97-0307	35-02538	29-30	QBT3	3486R	3486R	—	—	3486R
	0435-97-0308	35-02539	0-0.8	FILL	3486R	—	—	—	3486R
	0435-97-0310	35-02539	1-2	QBT3	3486R	3486R	—	—	3486R
	0435-97-0311	35-02539	6-7	QBT3	3486R	3486R	—	—	3486R
	0435-97-0295	35-02540	0-0.5	FILL	3477R	—	—	—	3477R
	0435-97-0297	35-02540	0.5-1.5	QBT3	3477R	3477R	—	—	3477R
	0435-97-0298	35-02540	5-6	QBT3	3477R	3477R	—	—	3477R
	0435-97-0299	35-02540	19-20	QBT3	3477R	3477R	—	—	3477R
	0435-97-0300	35-02540	29-30	QBT3	3477R	3477R	—	—	3477R
	0435-97-0312	35-02541	0-1	ALLH	3486R	—	—	—	3486R
	0435-97-0314	35-02541	1.5-2	QBT3	3486R	3486R	—	—	3486R
	0435-97-0315	35-02541	6.5-7.5	QBT3	3486R	3486R	—	—	3486R
	0435-97-0316	35-02542	0-1	ALLH	3546R	—	3546R	3546R	3546R
	0435-97-0317	35-02542	1-1.5	ALLH	3546R	3546R	3546R	3546R	3546R
	0435-97-0319	35-02542	1.5-2.5	QBT3	3546R	3546R	3546R	3546R	3546R

Table D-3.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0320	35-02543	0-1	ALLH	3546R	—	3546R	3546R	3546R
	0435-97-0321	35-02543	1-2	ALLH	3546R	3546R	3546R	3546R	3546R
	0435-97-0323	35-02543	2-3	QBT3	3546R	3546R	3546R	3546R	3546R
	0435-97-0324	35-02544	0-1	ALLH	3546R	—	3546R	3546R	3546R
	0435-97-0325	35-02544	1-1.5	ALLH	3546R	3546R	3546R	3546R	3546R
	0435-97-0327	35-02544	1.5-2.5	QBT3	3546R	3546R	3546R	3546R	3546R
	0435-97-0328	35-02544	1.5-2.5	QBT3	3546R	3546R	3546R	3546R	3546R
	RE35-04-54078	35-22942	9-10	QBT3	—	—	2284S	2284S	—
	RE35-04-54079	35-22942	19-20	QBT3	—	—	2284S	2284S	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	2284S	2284S	—
	RE35-04-54081	35-22943	9-10	QBT3	—	—	2268S	2268S	—
	RE35-04-54082	35-22943	19-20	QBT3	—	—	2268S	2268S	—
	RE35-04-54083	35-22943	29-30	QBT3	—	—	2268S	2268S	—
	RE35-04-54130	35-22959	9-10	QBT3	—	2288S	2288S	2288S	—
	RE35-04-54131	35-22959	19-20	QBT3	—	2288S	2288S	2288S	—
	RE35-04-54132	35-22959	29-30	QBT3	—	2288S	2288S	2288S	—
	RE35-04-54855	35-23280	0.43-1.41	SED	2720S	2720S	2720S	2720S	—
	RE35-04-54856	35-23280	1.41-1.84	SED	2720S	2720S	2720S	2720S	—
	RE35-04-54861	35-23282	0-0.62	SED	2720S	2720S	2720S	2720S	—
	RE35-04-54862	35-23282	0.62-1.31	SED	2720S	2720S	2720S	2720S	—
35-009(e)	AAA3826	35-02079	0-1	ALLH	—	16391	16391	16391	—
	AAA3827	35-02079	1-2	ALLH	—	16391	16391	16391	—
	AAA3828	35-02079	2-3	QBT3	—	16391	16391	16391	—
	AAC1158	35-02103	0-0.5	ALLH	21468	—	21468	21468	—
	AAC1159	35-02104	0-0.5	ALLH	—	—	21468	21468	—
	0435-97-0428	35-02566	0-1	ALLH	3531R	—	—	—	3531R
	0435-97-0429	35-02566	1-2	ALLH	3531R	—	—	—	3531R
	0435-97-0430	35-02566	2-3	QBT3	3531R	—	—	—	3531R
	RE35-04-54052	35-22931	0.25-0.6	ALLH	2294S	—	2294S	2294S	—
	RE35-04-54155	35-22966	0-0.5	SED	2300S	—	2300S	2300S	—
	RE35-04-54157	35-22967	0-0.4	ALLH	2300S	—	2300S	2300S	—
	RE35-04-54158	35-22967	0.4-1.08	ALLH	2300S	—	2300S	2300S	—
35-014(g)-00	0435-95-0011	35-02167	0-0.5	ALLH	—	—	50	50	—
	0435-95-0013	35-02168	0-1	ALLH	51	—	—	—	—
	0435-95-0021	35-02169	0-0.5	ALLH	—	—	50	50	—
	RE35-98-0024	35-02169	0-0.25	SED	4331R	—	4331R	4331R	—
	0435-95-0028	35-02171	1-2	ALLH	51	—	—	—	—
	0435-97-0444	35-02571	0-1	FILL	3562R	—	—	3562R	—
	0435-97-0445	35-02571	2-3	FILL	3562R	—	—	3562R	—
	0435-97-0446	35-02571	4-5	FILL	3562R	—	—	3562R	—
	0435-97-0447	35-02572	0-1	FILL	3562R	—	—	3562R	—
	0435-97-0448	35-02572	3-4	FILL	3562R	—	—	3562R	—
	0435-97-0449	35-02572	5-6	FILL	3562R	—	—	3562R	—

Table D-3.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0450	35-02573	0-1	FILL	3562R	—	—	3562R	—
	0435-97-0452	35-02573	2-3	FILL	3562R	—	—	3562R	—
	0435-97-0453	35-02573	5-6	FILL	3562R	—	—	3562R	—
	0435-97-0454	35-02574	0-1	FILL	3562R	—	—	3562R	—
	0435-97-0455	35-02574	3-4	FILL	3562R	—	—	3562R	—
	0435-97-0456	35-02574	5-6	FILL	3562R	—	—	3562R	—
	0435-97-0457	35-02575	0-1	FILL	3562R	—	—	3562R	—
	0435-97-0458	35-02575	2-3	FILL	3562R	—	—	3562R	—
	0435-97-0459	35-02575	4-5	FILL	3562R	—	—	3562R	—
	0435-97-0460	35-02576	0-1	FILL	3562R	—	—	3562R	—
	0435-97-0461	35-02576	4-5	FILL	3562R	—	—	3562R	—
	0435-97-0462	35-02576	8.5-9.5	FILL	3562R	—	—	3562R	—
	0435-97-0463	35-02577	0-0.5	ALLH	3557R	—	3557R	3557R	—
	0435-97-0466	35-02577	0.5-1.5	QBT3	3557R	—	3557R	3557R	—
	0435-97-0467	35-02578	0-0.5	SED	3557R	—	3557R	3557R	—
	0435-97-0471	35-02578	0.5-1.5	QBT3	3557R	—	3557R	3557R	—
	0435-97-0495	35-02595	0-0.5	ALLH	3562R	—	—	3562R	—
	RE35-98-0028	35-02596	0-0.5	ALLH	4376R	—	4376R	4376R	—
	RE35-98-0029	35-02596	0.5-1.5	ALLH	4376R	—	4376R	4376R	—
	RE35-98-0030	35-02596	1.5-2.5	ALLH	4376R	—	4376R	4376R	—
	RE35-98-0031	35-02596	2.5-3.5	ALLH	4376R	—	4376R	4376R	—
	RE35-98-0032	35-02597	0-0.5	FILL	4376R	—	4376R	4376R	—
	RE35-98-0036	35-02598	0-0.5	SED	4376R	—	4376R	4376R	—
	RE35-98-0040	35-02599	0-0.5	SED	4376R	—	4376R	4376R	—
	RE35-04-54688	35-23209	0-0.33	SED	2634S	—	2634S	2634S	—
	RE35-04-54689	35-23209	0.72-1.21	SED	2634S	—	2634S	2634S	—
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	56	—	—	—	—
	0435-95-0040	35-02185	0-1	QBT3	—	—	—	55	—
	0435-95-0043	35-02185	2-3	QBT3	—	—	55	55	—
	0435-95-0045	35-02186	0-0.5	ALLH	—	—	—	—	—
	0435-97-0173	35-02487	0-1	ALLH	3350R	—	—	—	—
	0435-97-0174	35-02487	1-2	QBT3	3350R	—	—	—	—
	0435-97-0176	35-02488	0-1	FILL	3350R	—	—	—	—
	0435-97-0178	35-02488	1-2	QBT3	3350R	—	—	—	—
	0435-97-0181	35-02489	0-0.5	ALLH	3350R	—	—	—	—
	0435-97-0182	35-02489	0.5-1	QBT3	3350R	—	—	—	—
	0435-97-0183	35-02489	1-1.5	QBT3	3350R	—	—	—	—
	0435-97-0184	35-02490	0-0.08	SED	3350R	—	—	—	—
	0435-97-0185	35-02490	1-2	QBT3	3350R	—	—	—	—
	0435-97-0187	35-02491	0-0.5	ALLH	3350R	—	—	—	—
	0435-97-0188	35-02491	0.5-1	QBT3	3350R	—	—	—	—
	0435-97-0189	35-02491	1-2	QBT3	3350R	—	—	—	—
	0435-97-0190	35-02492	0-0.83	SED	3350R	—	—	—	—

Table D-3.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0191	35-02492	0.83-1.5	QBT3	3350R	—	—	—	—
35-016(a)-00	AAA4445	35-02080	0-1	ALLH	—	16391	16391	16391	—
	AAA4446	35-02080	1-2	ALLH	—	16391	16391	16391	—
	AAA4447	35-02080	2-3	QBT3	—	16391	16391	16391	—
	AAC1141	35-02106	0-0.5	ALLH	—	—	21457	21457	—
	AAC1137	35-02114	0-1	ALLH	—	—	21457	21457	—
	AAC1138	35-02114	1-2	ALLH	—	—	21457	21457	—
	AAC1139	35-02114	2-3	ALLH	—	—	—	21457	—
	AAC1146	35-02115	0-0.5	ALLH	21457	—	—	21457	—
	AAC1147	35-02116	0-0.5	ALLH	—	—	21457	21457	—
	AAC1148	35-02117	0-0.5	ALLH	—	—	21457	21457	—
	0435-96-0054	35-02394	0-0.5	SED	2208	—	2208	—	—
	0435-96-0055	35-02394	0.5-1	QBT3	2208	—	2208	—	—
	0435-96-0056	35-02395	0-2	SED	2208	—	2208	—	—
	0435-96-0057	35-02395	2-3	QBT3	2208	—	2208	—	—
	0435-97-0431	35-02567	0-1	QBT3	3531R	—	—	—	3531R
	0435-97-0432	35-02567	1-2	QBT3	3531R	—	—	—	3531R
	0435-97-0433	35-02567	2-3	QBT3	3531R	—	—	—	3531R
	0435-97-0482	35-02581	0-1	ALLH	3556R	—	—	—	—
	0435-97-0483	35-02581	1-1.83	ALLH	3556R	—	—	—	—
	0435-97-0485	35-02581	1.83-2.5	QBT3	3556R	—	—	—	—
	0435-97-0486	35-02582	0-0.83	ALLH	3556R	—	—	—	—
	0435-97-0487	35-02582	0-0.83	ALLH	3556R	—	—	—	—
	0435-97-0490	35-02582	0.83-1.5	QBT3	3556R	—	—	—	—
	0435-97-0491	35-02583	0-1	ALLH	3556R	—	—	—	—
	0435-97-0494	35-02583	1-2	QBT3	3556R	—	—	—	—
	RE35-04-54163	35-22970	0-0.15	SED	—	—	2311S	2311S	—
	RE35-04-54883	35-23292	0-0.79	SED	2720S	—	2720S	2720S	—
	RE35-04-54884	35-23292	0.79-1.57	SED	2720S	—	2720S	2720S	—
	RE35-04-54885	35-23292	1.57-2.03	SED	2720S	—	2720S	2720S	—
35-016(b)	0435-95-0002	35-02189	0-0.5	ALLH	—	—	61	61	—
	0435-95-0005	35-02190	0-1	ALLH	62	—	—	—	—
	0435-97-0346	35-02549	0-1	ALLH	3557R	—	—	3557R	—
	0435-97-0349	35-02549	1-2	QBT3	3557R	—	—	3557R	—
	0435-97-0350	35-02550	0-0.5	SED	3557R	—	—	3557R	—
	0435-97-0353	35-02550	0.5-1.5	QBT3	3557R	—	—	3557R	—
	0435-97-0472	35-02579	0-0.5	SED	3557R	—	3557R	3557R	—
	0435-97-0475	35-02579	0.5-1.5	QBT3	3557R	—	3557R	3557R	—
	0435-97-0476	35-02579	0.5-1.5	QBT3	3557R	—	3557R	3557R	—
	RE35-04-54683	35-23207	0-0.39	SED	2713S	—	2713S	2713S	—
	RE35-04-54684	35-23207	0.39-1.05	SED	2713S	—	2713S	2713S	—
	RE35-04-54685	35-23207	2.95-3.44	SED	2713S	—	2713S	2713S	—

Table D-3.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
35-016(c)-00	AAC1165	35-02108	0-0.5	ALLH	21478	—	21478	21478	—
	AAC1169	35-02110	0-0.5	ALLH	—	—	21478	21478	—
	0435-96-0058	35-02396	0-0.66	ALLH	2208	—	2208	—	—
	0435-96-0059	35-02396	0.67-1.5	QBT3	2208	—	2208	—	—
	0435-96-0060	35-02397	0-1	ALLH	2208	—	2208	—	—
	0435-96-0061	35-02397	1-2	QBT3	2208	—	2208	—	—
	0435-96-0062	35-02398	0-0.5	ALLH	2208	—	2208	—	—
	0435-96-0063	35-02398	0.5-1.5	QBT3	2208	—	2208	—	—
	0435-96-0064	35-02399	0-0.5	ALLH	2208	—	2208	—	—
	0435-96-0065	35-02399	0.5-1.5	QBT3	2208	—	2208	—	—
	0435-96-0067	35-02400	0-0.66	ALLH	2208	—	2208	—	—
	0435-96-0068	35-02400	2-3	QBT3	2208	—	2208	—	—
	0435-96-0069	35-02401	0-0.83	ALLH	2208	—	2208	—	—
	0435-96-0070	35-02401	2.5-3.5	QBT3	2208	—	2208	—	—
	RE35-04-54879	35-23290	0-0.49	SED	2714S	—	2714S	2714S	—
	RE35-04-54880	35-23290	1.97-2.3	SED	2714S	—	2714S	2714S	—
	RE35-04-54881	35-23291	0.46-0.85	SED	2714S	—	2714S	2714S	—
	RE35-04-54882	35-23291	0.85-1.25	SED	2714S	—	2714S	2714S	—
35-016(j)	0435-95-0056	35-02191	0-0.5	ALLH	—	—	61	61	—
	0435-95-0060	35-02192	0-1	ALLH	62	—	—	—	—
	0435-97-0477	35-02580	0-0.66	ALLH	3570R	—	3570R	3570R	—
	0435-97-0481	35-02580	0.67-1.67	QBT3	3570R	—	3570R	3570R	—
	RE35-04-54686	35-23208	0-0.2	SED	2556S	—	2556S	2556S	—
	RE35-04-54690	35-23210	0.1-0.66	SED	2556S	—	2556S	2556S	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-3.0-3
Soil, Fill, Tuff, and Sediment Samples Collected for Organic Chemical Analyses at Ten Site Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
35-004(g)-00	AAC1177	35-02100	1-1.5	FILL	—[a]	—	—	—	—	21476[b]
	RE35-04-54030	35-02100	1-1.5	FILL	2325S	2325S	—	2325S	—	—
	AAC1179	35-02102	0-1	ALLH	21476	21476	—	21476	—	—
	0435-95-0197	35-02278	5-6	QBT3	—	—	—	1678	—	—
	RE35-04-54063	35-22937	9-10	QBT3	2322S	2322S	—	2322S	—	—
	RE35-04-54064	35-22937	19-20	QBT3	2322S	2322S	—	2322S	—	—
	RE35-04-54065	35-22937	29-30	QBT3	2322S	2322S	—	2322S	—	—
	RE35-04-54066	35-22938	9-10	QBT3	2312S	2312S	—	—	—	—
	RE35-04-54067	35-22938	19-20	QBT3	2312S	2312S	—	—	—	—
	RE35-04-54041	35-22938	29-30	QBT3	2315S	2315S	—	2315S	—	—
	RE35-04-54068	35-22938	29-30	QBT3	2312S	2312S	—	2312S	—	—
	RE35-04-54069	35-22939	9-10	QBT3	2295S	2295S	—	—	—	—
	RE35-04-54070	35-22939	19-20	QBT3	2295S	2295S	—	—	—	—
	RE35-04-54071	35-22939	29-30	QBT3	2295S	2295S	—	2295S	—	—
	RE35-04-54072	35-22940	9-10	QBT3	2312S	2312S	—	2312S	—	—
	RE35-04-54073	35-22940	19-20	QBT3	2312S	2312S	—	2312S	—	—
	RE35-04-54074	35-22940	29-30	QBT3	2312S	2312S	—	2312S	—	—
	RE35-04-54867	35-23284	0-0.59	SED	2714S	2714S	—	2714S	—	—
	RE35-04-54868	35-23284	1.31-1.64	SED	2714S	2714S	—	2714S	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	—	—	16470	—	—
	AAA6382	35-02035	8.8-9.8	QBT3	—	—	—	16470	—	—
	AAA6383	35-02035	14-15	QBT3	—	—	—	16470	—	—
	AAA6384	35-02035	17.5-18.7	QBT3	—	—	—	16470	—	—
	AAA6401	35-02036	0-1.1	ALLH	—	—	—	16470	—	—
	AAA6402	35-02036	7.4-8.4	QBT3	—	—	—	16470	—	—
	AAA6403	35-02036	14.2-15	QBT3	—	—	—	16470	—	—
	AAA6404	35-02036	19-20	QBT3	—	—	—	16470	—	—
	AAA6429	35-02037	3-4	QBT3	—	—	—	16470	—	—
	AAA6433	35-02037	3-4	QBT3	—	—	—	16470	—	—
	AAA6430	35-02037	9-10	QBT3	—	—	—	16470	—	—
	AAA6431	35-02037	13-14	QBT3	—	—	—	16470	—	—
	AAA6432	35-02037	19-20	QBT3	—	—	—	16470	—	—
	AAA6437	35-02038	2.5-3.5	QBT3	—	—	—	16471	—	—
	AAA6438	35-02038	9-10	QBT3	—	—	—	16471	—	—
	AAA6439	35-02038	14-15	QBT3	—	—	—	16471	—	—
	AAA6440	35-02038	19-20	QBT3	—	—	—	16471	—	—
	AAA6441	35-02221	4-5	QBT3	—	—	—	16471	—	—
	AAA6442	35-02221	8.8-10	QBT3	—	—	—	16471	—	—
	AAA6443	35-02221	14-15	QBT3	—	—	—	16471	—	—
	AAA6444	35-02221	19-20	QBT3	—	—	—	16471	—	—
	AAA6445	35-02221	19-20	QBT3	—	—	—	16471	—	—
	AAA6446	35-02222	3-4	QBT3	—	—	—	16471	—	—

Table D-3.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	AAA6447	35-02222	9-10	QBT3	—	—	—	16471	—	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	16471	—	—
	AAA6449	35-02222	19-20	QBT3	—	—	—	16471	—	—
	0435-96-0051	35-02301	0-8	QBT3	—	—	—	1961	—	—
	0435-96-0052	35-02302	0-8	QBT3	—	—	—	1961	—	—
	RE35-04-54078	35-22942	9-10	QBT3	2281S	2281S	—	2281S	—	—
	RE35-04-54079	35-22942	19-20	QBT3	2281S	2281S	—	2281S	—	—
	RE35-04-54080	35-22942	29-30	QBT3	2281S	2281S	—	2281S	—	2281S
	RE35-04-54081	35-22943	9-10	QBT3	2266S	2266S	—	2266S	—	2266S
	RE35-04-54082	35-22943	19-20	QBT3	2266S	2266S	—	2266S	—	2266S
	RE35-04-54083	35-22943	29-30	QBT3	2266S	2266S	—	2266S	—	2266S
	RE35-04-54130	35-22959	9-10	QBT3	2287S	2287S	—	2287S	—	—
	RE35-04-54131	35-22959	19-20	QBT3	2287S	2287S	—	2287S	—	—
	RE35-04-54132	35-22959	29-30	QBT3	2287S	2287S	—	2287S	—	2287S
	RE35-04-54133	35-22960	6-7	ALLH	—	—	—	2261S	—	—
	RE35-04-54134	35-22960	10-11	ALLH	—	—	—	2261S	—	—
	RE35-04-54135	35-22960	14-15	QBT3	—	—	—	2261S	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54856	35-23280	1.41-1.84	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54861	35-23282	0-0.62	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54862	35-23282	0.62-1.31	SED	2718S	2718S	—	2718S	—	2718S
35-009(e)	AAC1158	35-02103	0-0.5	ALLH	—	—	—	—	—	21466
	AAC1162	35-02105	2-3	ALLH	21466	21466	—	21466	—	—
	RE35-04-54052	35-22931	0.25-0.6	ALLH	2292S	2292S	—	2292S	—	2292S
	RE35-04-54155	35-22966	0-0.5	SED	2298S	2298S	—	2298S	—	—
	RE35-04-54157	35-22967	0-0.4	ALLH	2298S	2298S	—	2298S	—	—
	RE35-04-54040	35-22967	0.4-1.08	ALLH	2292S	2292S	—	2292S	—	—
	RE35-04-54158	35-22967	0.4-1.08	ALLH	2298S	2298S	—	2298S	—	—
35-014(g)-00	0435-95-0015	35-02168	1-2	ALLH	—	—	—	34	—	34
	0435-95-0019	35-02168	2-3	ALLH	34	—	—	—	—	—
	RE35-98-0024	35-02169	0-0.25	SED	4329R	—	—	4329R	—	—
	0435-95-0023	35-02170	0-0.5	ALLH	34	—	—	34	—	—
	0435-95-0030	35-02171	2-3	QBT3	—	—	—	—	—	34
	RE35-98-0028	35-02596	0-0.5	ALLH	4374R	—	—	4374R	—	—
	RE35-98-0029	35-02596	0.5-1.5	ALLH	4374R	—	—	4374R	—	—
	RE35-98-0030	35-02596	1.5-2.5	ALLH	4374R	—	—	4374R	—	—
	RE35-98-0031	35-02596	2.5-3.5	ALLH	4374R	—	—	4374R	—	—
	RE35-98-0032	35-02597	0-0.5	FILL	4374R	—	—	4374R	—	—
	RE35-98-0044	35-02597	0-0.5	FILL	4374R	—	—	4374R	—	—
	RE35-98-0036	35-02598	0-0.5	SED	4374R	—	—	4374R	—	—
	RE35-98-0040	35-02599	0-0.5	SED	4374R	—	—	4374R	—	—
	RE35-98-0045	35-02599	0-0.5	SED	4374R	—	—	4374R	—	—
	RE35-04-54171	35-22974	0.07-0.23	ALLH	—	—	—	2550S	2550S	—
	RE35-04-54172	35-22974	0.23-0.39	ALLH	—	—	—	2550S	2550S	—

Table D-3.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	RE35-04-54173	35-22975	0-0.36	ALLH	—	—	—	2550S	2550S	—
	RE35-04-54174	35-22975	0.36-0.85	ALLH	—	—	—	2550S	2550S	—
	RE35-04-54688	35-23209	0-0.33	SED	—	—	—	2632S	2632S	2632S
	RE35-04-54689	35-23209	0.72-1.21	SED	—	—	—	2632S	2632S	2632S
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	—	—	39	—	—	—
	0435-95-0040	35-02185	0-1	QBT3	—	—	—	—	—	39
	0435-95-0043	35-02185	2-3	QBT3	—	—	—	39	—	—
	0435-95-0050	35-02187	2-3	QBT3	—	—	—	—	—	39
	0435-95-0052	35-02188	0-1	QBT3	—	—	42	—	—	—
	0435-95-0054	35-02188	2-3	QBT3	—	—	—	42	—	—
	0435-97-0173	35-02487	0-1	ALLH	—	—	—	3349R	3349R	—
	0435-97-0174	35-02487	1-2	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0176	35-02488	0-1	FILL	—	—	—	3349R	3349R	—
	0435-97-0177	35-02488	0-1	FILL	—	—	—	3349R	3349R	—
	0435-97-0178	35-02488	1-2	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0181	35-02489	0-0.5	ALLH	—	—	—	3349R	3349R	—
	0435-97-0182	35-02489	0.5-1	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0183	35-02489	1-1.5	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0184	35-02490	0-0.08	SED	—	—	—	3349R	3349R	—
	0435-97-0185	35-02490	1-2	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0187	35-02491	0-0.5	ALLH	—	—	—	3349R	3349R	—
	0435-97-0188	35-02491	0.5-1	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0189	35-02491	1-2	QBT3	—	—	—	3349R	3349R	3349R
	0435-97-0190	35-02492	0-0.83	SED	—	—	—	3349R	3349R	—
	0435-97-0191	35-02492	0.83-1.5	QBT3	—	—	—	3349R	3349R	3349R
	RE35-04-54159	35-22968	0-0.23	SED	—	—	—	2550S	2550S	2550S
	RE35-04-54160	35-22968	0.23-0.92	SED	—	—	—	2550S	2550S	2550S
	RE35-04-54161	35-22969	0.33-0.62	SED	—	—	—	2550S	2550S	2550S
	RE35-04-54162	35-22969	0.62-0.98	SED	—	—	—	2550S	2550S	2550S
	RE35-04-54669	35-23200	0-0.66	SED	—	—	—	2632S	2632S	2632S
	RE35-04-54670	35-23200	0.66-1.35	SED	—	—	—	2632S	2632S	2632S
	RE35-04-54671	35-23201	0-0.46	SED	—	—	—	2632S	2632S	2632S
	RE35-04-54672	35-23201	0.46-0.89	SED	—	—	—	2632S	2632S	2632S
	RE35-04-54675	35-23203	0-0.2	SED	—	—	—	2632S	2632S	2632S
	RE35-04-54676	35-23203	0.2-0.49	SED	—	—	—	2632S	2632S	2632S
35-016(a)-00	AAC1142	35-02107	0-1	ALLH	—	—	—	21455	—	—
	AAC1144	35-02107	2-3	QBT3	—	—	—	—	—	21455
	AAC1137	35-02114	0-1	ALLH	—	—	—	—	—	21455
	0435-96-0054	35-02394	0-0.5	SED	—	—	—	2206	—	—
	0435-96-0055	35-02394	0.5-1	QBT3	—	—	—	2206	—	—
	0435-96-0056	35-02395	0-2	SED	—	—	—	2206	—	—
	0435-96-0057	35-02395	2-3	QBT3	—	—	—	2206	—	—
	RE35-04-54883	35-23292	0-0.79	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54886	35-23292	0-0.79	SED	2718S	2718S	—	2718S	—	2718S

Table D-3.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	RE35-04-54884	35-23292	0.79-1.57	SED	2718S	2718S	—	2718S	—	2718S
	RE35-04-54885	35-23292	1.57-2.03	SED	2718S	2718S	—	2718S	—	2718S
35-016(b)	0435-95-0002	35-02189	0-0.5	ALLH	—	—	—	—	—	43
	0435-95-0005	35-02190	0-1	ALLH	—	—	—	43	—	—
	RE35-04-54679	35-23205	0-0.3	SED	—	—	—	2713S	—	—
	RE35-04-54691	35-23205	0-0.3	SED	2713S	2713S	—	2713S	—	—
	RE35-04-54680	35-23205	0.3-0.66	SED	—	—	—	2713S	—	—
	RE35-04-54683	35-23207	0-0.39	SED	—	—	—	2713S	—	—
	RE35-04-54684	35-23207	0.39-1.05	SED	—	—	—	2713S	—	—
	RE35-04-54685	35-23207	2.95-3.44	SED	—	—	—	2713S	—	—
35-016(c)-00	AAC1165	35-02108	0-0.5	ALLH	—	—	—	—	—	21476
	AAC1173	35-02111	2-3	ALLH	—	—	—	21476	—	—
	0435-96-0058	35-02396	0-0.66	ALLH	—	—	—	2206	—	—
	0435-96-0059	35-02396	0.67-1.5	QBT3	—	—	—	2206	—	—
	0435-96-0060	35-02397	0-1	ALLH	—	—	—	2206	—	—
	0435-96-0061	35-02397	1-2	QBT3	—	—	—	2206	—	—
	0435-96-0062	35-02398	0-0.5	ALLH	—	—	—	2206	—	—
	0435-96-0063	35-02398	0.5-1.5	QBT3	—	—	—	2206	—	—
	0435-96-0064	35-02399	0-0.5	ALLH	—	—	—	2206	—	—
	0435-96-0065	35-02399	0.5-1.5	QBT3	—	—	—	2206	—	—
	0435-96-0066	35-02399	0.5-1.5	QBT3	—	—	—	2206	—	—
	0435-96-0067	35-02400	0-0.66	ALLH	—	—	—	2206	—	—
	0435-96-0068	35-02400	2-3	QBT3	—	—	—	2206	—	—
	0435-96-0069	35-02401	0-0.83	ALLH	—	—	—	2206	—	—
	0435-96-0070	35-02401	2.5-3.5	QBT3	—	—	—	2206	—	—
	RE35-04-54879	35-23290	0-0.49	SED	—	—	—	2714S	—	2714S
	RE35-04-54880	35-23290	1.97-2.3	SED	—	—	—	2714S	—	2714S
	RE35-04-54881	35-23291	0.46-0.85	SED	—	—	—	2714S	—	2714S
	RE35-04-54882	35-23291	0.85-1.25	SED	—	—	—	2714S	—	2714S
35-016(j)	0435-95-0056	35-02191	0-0.5	ALLH	—	—	—	43	—	43
	RE35-04-54169	35-22973	0.03-0.3	SED	—	—	—	2557S	—	—
	RE35-04-54170	35-22973	0.3-0.98	SED	—	—	—	2557S	—	—
	RE35-04-54686	35-23208	0-0.2	SED	2556S	2556S	—	2556S	—	—
	RE35-04-54690	35-23210	0.1-0.66	SED	—	—	—	2556S	—	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-3.0-4
Summary of Inorganic COPCs above BV or Detected in Soil, Fill, Tuff, and Sediment at Ten Site Slope Sites

SWMU/ AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Zinc
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	19.3	8.64	14.7	22.3	na[a]	0.1	15.4	1.52	1	48.8
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	7.14	3.14	4.66	11.2	na	0.1	6.58	0.3	1	63.5
Sediment Background Value (mg/kg)					0.83	127	0.4	10.5	4.73	11.2	19.7	na	0.1	9.38	0.3	1	60.2
35-004(g)-00	RE35-04-54030	35-02100	1-1.5	FILL	—[b]	—	—	—	—	—	—	—	—	—	—	—	—
	AAC1179	35-02102	0-1	ALLH	—	—	—	—	—	—	—	—	0.11 (UJ)	—	—	—	68.5
	RE35-04-54063	35-22937	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.502 (U)	—	—
	RE35-04-54064	35-22937	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.511 (U)	—	—
	RE35-04-54065	35-22937	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	0.502 (U)	—	—
	RE35-04-54066	35-22938	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.507 (U)	—	—
	RE35-04-54067	35-22938	19-20	QBT3	—	—	—	—	—	12.8	—	—	—	—	0.508 (U)	—	—
	RE35-04-54068	35-22938	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	0.504 (U)	—	—
	RE35-04-54069	35-22939	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.494 (U)	—	—
	RE35-04-54070	35-22939	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.504 (U)	—	—
	RE35-04-54071	35-22939	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	0.508 (U)	—	—
	RE35-04-54072	35-22940	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.501 (U)	—	—
	RE35-04-54073	35-22940	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.497 (U)	—	—
	RE35-04-54074	35-22940	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	0.499 (U)	—	—
	RE35-04-54868	35-23284	1.31-1.64	SED	—	—	0.562 (U)	—	—	—	—	—	—	—	0.562 (U)	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	1.1 (UJ)	—	0.63 (U)	—	—	—	—	4 (J)	—	—	—	—	—
	AAA6382	35-02035	8.8-9.8	QBT3	1.1 (UJ)	66.5	—	8.1	—	7.7	35.3 (J+)	9.4 (J)	—	8.4 (J)	0.46 (UJ)	13.7 (J)	—
	AAA6383	35-02035	14-15	QBT3	1.1 (UJ)	—	—	—	—	—	71.2 (J+)	2.5 (J)	—	—	0.42 (UJ)	—	—
	AAA6384	35-02035	17.5-18.7	QBT3	1.5 (J-)	—	—	—	—	—	—	1.7 (J)	—	—	0.44 (UJ)	—	—
	AAA6401	35-02036	0-1.1	ALLH	1.1 (UJ)	—	0.64 (U)	—	—	—	—	3.5 (J)	—	—	—	—	—
	AAA6402	35-02036	7.4-8.4	QBT3	1.1 (UJ)	—	—	—	—	—	—	2 (J)	—	—	0.43 (UJ)	—	—
	AAA6403	35-02036	14.2-15	QBT3	1.1 (UJ)	—	—	—	—	—	—	—	—	—	0.42 (UJ)	—	—
	AAA6404	35-02036	19-20	QBT3	1.1 (UJ)	—	—	—	—	—	—	1.5 (J)	—	—	0.43 (UJ)	—	—
	AAA6429	35-02037	3-4	QBT3	1 (UJ)	—	—	—	—	4.9 (J)	—	3 (J)	—	—	0.41 (UJ)	—	—
	AAA6433	35-02037	3-4	QBT3	1.1 (UJ)	—	—	—	—	—	—	—	—	—	0.43 (UJ)	—	—
	AAA6430	35-02037	9-10	QBT3	1 (UJ)	—	—	—	—	—	—	2.9 (J)	—	—	0.41 (UJ)	—	—

Table D-3.0-4 (continued)

SWMU/ AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Zinc
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	19.3	8.64	14.7	22.3	na[a]	0.1	15.4	1.52	1	48.8
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	7.14	3.14	4.66	11.2	na	0.1	6.58	0.3	1	63.5
Sediment Background Value (mg/kg)					0.83	127	0.4	10.5	4.73	11.2	19.7	na	0.1	9.38	0.3	1	60.2
	AAA6431	35-02037	13-14	QBT3	1 (UJ)	—	—	—	—	—	—	4.5 (J)	—	—	0.41 (UJ)	—	—
	AAA6432	35-02037	19-20	QBT3	1 (UJ)	—	—	—	—	—	—	—	—	—	0.42 (UJ)	—	—
	AAA6437	35-02038	2.5-3.5	QBT3	1 (U)	—	—	—	—	4.8 (J)	—	4.9 (J)	—	—	0.42 (J)	—	—
	AAA6438	35-02038	9-10	QBT3	1 (U)	—	—	—	—	—	—	1.5 (J)	—	—	0.45 (J)	—	—
	AAA6439	35-02038	14-15	QBT3	1 (U)	—	—	—	—	—	—	2.3 (J)	—	—	0.41 (U)	—	—
	AAA6440	35-02038	19-20	QBT3	1 (U)	—	—	—	—	—	—	4.4 (J)	—	—	0.41 (U)	—	—
	AAA6441	35-02221	4-5	QBT3	1 (U)	—	—	—	—	12.7	—	3 (J)	—	—	0.41 (U)	—	—
	AAA6442	35-02221	8.8-10	QBT3	1.1 (U)	—	—	—	—	—	—	2 (J)	—	—	0.46 (J)	—	—
	AAA6443	35-02221	14-15	QBT3	1.1 (U)	—	—	—	—	—	—	3.4 (J)	—	—	0.44 (U)	—	—
	AAA6444	35-02221	19-20	QBT3	1.1 (U)	—	—	—	—	—	—	6.7 (J)	—	—	0.42 (U)	—	—
	AAA6445	35-02221	19-20	QBT3	1.1 (U)	—	—	—	—	—	—	—	—	—	0.58 (U)	—	—
	AAA6446	35-02222	3-4	QBT3	1 (U)	—	—	7.9	—	39.1	—	3.6 (J)	—	—	0.41 (U)	1.3 (J)	—
	AAA6447	35-02222	9-10	QBT3	1 (U)	—	—	—	—	—	—	2.5 (J)	—	—	0.47 (J)	—	—
	AAA6448	35-02222	14-15	QBT3	1 (U)	—	—	—	—	—	—	1.6 (J)	—	—	0.41 (U)	—	—
	AAA6449	35-02222	19-20	QBT3	1 (U)	—	—	—	—	—	—	2.5 (J)	—	—	0.7 (J)	—	—
	0435-96-0051	35-02301	7.5-8.0	QBT3	—	110	—	9.5	—	15.1	11.5	—	0.68	7 (J)	0.88 (UJ)	—	94.6
	0435-96-0052	35-02302	7.5-8.0	QBT3	—	90.4	—	7.3	—	24.3	—	—	0.61	—	0.79 (UJ)	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.504 (U)	—	—
	RE35-04-54079	35-22942	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.513 (U)	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	0.509 (U)	—	—
	RE35-04-54081	35-22943	9-10	QBT3	—	—	—	—	—	—	—	—	0.12 (J-)	—	0.51 (UJ)	—	—
	RE35-04-54082	35-22943	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.515 (UJ)	—	—
	RE35-04-54083	35-22943	29-30	QBT3	—	—	—	—	—	—	27.7	—	—	—	0.519 (UJ)	—	—
	RE35-04-54130	35-22959	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.516 (U)	—	—
	RE35-04-54131	35-22959	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.52 (U)	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	0.528 (U)	—	—
	RE35-04-54133	35-22960	6-7	ALLH	—	—	0.561 (U)	—	—	—	—	—	0.136	—	—	—	—
	RE35-04-54134	35-22960	10-11	ALLH	—	—	0.541 (U)	—	—	—	—	—	—	—	—	—	—

Table D-3.0-4 (continued)

SWMU/ AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Zinc
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	19.3	8.64	14.7	22.3	na[a]	0.1	15.4	1.52	1	48.8
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	7.14	3.14	4.66	11.2	na	0.1	6.58	0.3	1	63.5
Sediment Background Value (mg/kg)					0.83	127	0.4	10.5	4.73	11.2	19.7	na	0.1	9.38	0.3	1	60.2
	RE35-04-54135	35-22960	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	0.544 (UJ)	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	13.5	—	101	—	—	1.05	—	0.375 (U)	4.51	96.3
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	43	—	—	0.378	—	0.556 (UJ)	—	72.1
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	—	—	—	—	—	—	—	0.552 (UJ)	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	0.547 (U)	—	—	—	—	—	—	—	0.359 (U)	—	—
35-009(e)	AAC1160	35-02105	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54052	35-22931	0.25-0.6	ALLH	—	—	—	—	—	19.7	30.5	—	0.601	—	—	—	85.9
	RE35-04-54155	35-22966	0-0.5	SED	—	—	—	—	—	22.3	33.2	—	0.133	—	0.553	—	96.9
	RE35-04-54157	35-22967	0-0.4	ALLH	—	—	—	—	—	—	—	—	0.45	—	—	2.87	94.2
	RE35-04-54158	35-22967	0.4-1.08	ALLH	—	—	0.515 (U)	—	—	35	—	—	0.179	—	—	—	—
35-014(g)-00	0435-95-0015	35-02168	1-2	ALLH	—	—	—	—	—	—	—	—	0.11 (U)	—	—	1.5 (U)	—
	RE35-98-0024	35-02169	0-0.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	163
	0435-95-0023	35-02170	0-0.5	ALLH	1.2 (J-)	—	2.3	25.7	—	88.3	92	—	—	—	—	1.4 (U)	752
	0435-95-0201	35-02287	1-2	ALLH	10.4 (U)	—	0.82 (U)	—	—	—	—	—	—	—	3.4 (UJ)	1.1 (U)	—
	RE35-98-0028	35-02596	0-0.5	ALLH	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	83
	RE35-98-0029	35-02596	0.5-1.5	ALLH	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—
	RE35-98-0030	35-02596	1.5-2.5	ALLH	—	—	—	—	—	—	—	—	0.12 (U)	—	—	—	—
	RE35-98-0031	35-02596	2.5-3.5	ALLH	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—
	RE35-98-0036	35-02598	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	1 (U)	—	—
	RE35-98-0040	35-02599	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	1 (U)	—	—
	RE35-98-0045	35-02599	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	1 (U)	—	—
	RE35-04-54171	35-22974	0.07-0.23	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	58
	RE35-04-54173	35-22975	0-0.36	ALLH	—	—	1.16	—	—	51.1	33.3	—	0.207	—	—	—	586
	RE35-04-54174	35-22975	0.36-0.85	ALLH	—	—	—	—	—	16.8	—	—	—	—	—	—	214
	RE35-04-54688	35-23209	0-0.33	SED	—	—	—	—	—	—	—	—	—	—	0.563 (U)	—	—
	RE35-04-54689	35-23209	0.72-1.21	SED	—	—	—	—	—	—	—	—	—	—	0.561 (U)	—	—
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	0.61 (U)	—	—	7.5 (J+)	—	—	—	—	0.11 (UJ)	—	1.3 (U)	1.4 (U)	—
	0435-95-0048	35-02187	0-1	QBT3	0.61 (U)	—	—	—	—	—	—	—	0.11 (UJ)	—	1.3 (U)	1.4 (U)	—
	RE35-04-54159	35-22968	0-0.23	SED	—	—	0.572 (U)	—	—	—	—	—	—	—	0.572 (U)	—	73.6

Table D-3.0-4 (continued)

SWMU/ AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Zinc
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	19.3	8.64	14.7	22.3	na[a]	0.1	15.4	1.52	1	48.8
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	7.14	3.14	4.66	11.2	na	0.1	6.58	0.3	1	63.5
Sediment Background Value (mg/kg)					0.83	127	0.4	10.5	4.73	11.2	19.7	na	0.1	9.38	0.3	1	60.2
	RE35-04-54160	35-22968	0.23-0.92	SED	—	—	—	—	—	—	—	—	—	—	0.61 (U)	—	66.7
	RE35-04-54161	35-22969	0.33-0.62	SED	—	—	—	—	—	—	—	—	—	—	0.6 (U)	—	—
	RE35-04-54669	35-23200	0-0.66	SED	—	—	—	—	—	—	—	—	—	—	0.446 (U)	—	90.5
	RE35-04-54670	35-23200	0.66-1.35	SED	—	—	—	—	—	—	—	—	—	—	0.548 (U)	—	76.4
	RE35-04-54671	35-23201	0-0.46	SED	—	—	—	—	—	—	—	—	—	—	0.534 (U)	—	—
	RE35-04-54672	35-23201	0.46-0.89	SED	—	—	—	—	—	—	—	—	—	—	0.507 (U)	—	—
	RE35-04-54675	35-23203	0-0.2	SED	—	—	—	—	—	—	—	—	—	—	0.565 (U)	—	—
	RE35-04-54676	35-23203	0.2-0.49	SED	—	—	—	—	—	—	—	—	—	—	0.572 (U)	—	—
35-016(a)-00	AAC1144	35-02107	2-3	QBT3	—	—	—	—	—	—	—	—	0.11 (UJ)	—	1.1 (UJ)	—	—
	0435-96-0054	35-02394	0-0.5	SED	—	—	0.48 (U)	14.1	—	84.1	—	—	—	9.4	0.32 (U)	—	387
	0435-96-0055	35-02394	0.5-1	QBT3	—	—	—	23.8	—	44.8	—	—	—	13.1	0.32 (U)	—	194
	0435-96-0056	35-02395	0-2	SED	—	—	—	17.8	—	—	—	—	—	10.1	0.52 (U)	—	85.2
	0435-96-0057	35-02395	2-3	QBT3	—	59.1	—	12.2	—	—	—	—	—	7.5	0.56 (U)	—	—
	RE35-04-54163	35-22970	0-0.15	SED	—	—	0.976	14	—	28.6	36.5	—	—	—	0.52 (U)	—	260
	RE35-04-54165	35-22971	0.7-0.9	ALLH	—	—	0.885	—	—	27.4	32.2	—	—	—	—	—	167
	RE35-04-54167	35-22972	0-0.85	ALLH	—	—	0.575 (J)	—	—	18.8	25.6	—	—	—	—	—	113
	RE35-04-54168	35-22972	0.85-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	65.1
	RE35-04-54883	35-23292	0-0.79	SED	—	—	0.588 (U)	—	—	—	—	—	—	—	0.308 (U)	—	—
	RE35-04-54884	35-23292	0.79-1.57	SED	—	—	0.522 (U)	—	—	—	—	—	—	—	0.311 (U)	—	—
	RE35-04-54885	35-23292	1.57-2.03	SED	—	—	0.514 (U)	—	—	—	—	—	—	—	0.378 (U)	—	—
35-016(b)	0435-95-0009	35-02190	2-3	QBT3	0.65 (U)	—	—	—	—	—	67.1	—	0.12 (U)	—	1.4 (U)	1.5 (U)	—
	RE35-04-54679	35-23205	0-0.3	SED	—	—	—	—	—	—	—	—	—	—	0.43 (U)	1.1	—
	RE35-04-54680	35-23205	0.3-0.66	SED	—	—	—	—	—	—	—	—	—	—	0.572 (U)	2.58	—
	RE35-04-54683	35-23207	0-0.39	SED	—	—	0.539 (U)	—	—	—	—	—	—	—	0.43 (U)	—	—
	RE35-04-54684	35-23207	0.39-1.05	SED	—	—	—	—	—	13.6	21.6	—	—	—	0.657 (U)	2.72	86.4
	RE35-04-54685	35-23207	2.95-3.44	SED	—	—	—	—	—	—	—	—	—	—	0.538 (U)	1.41	—
35-016(c)-00	AAC1171	35-02111	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	3.1	—
	0435-96-0059	35-02396	0.67-1.5	QBT3	—	—	—	41.3	—	—	14.9	—	—	21.1	0.4 (U)	—	—
	0435-96-0060	35-02397	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	83.7

Table D-3.0-4 (continued)

SWMU/ AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Chromium	Cobalt	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Zinc
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	19.3	8.64	14.7	22.3	na[a]	0.1	15.4	1.52	1	48.8
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	7.14	3.14	4.66	11.2	na	0.1	6.58	0.3	1	63.5
Sediment Background Value (mg/kg)					0.83	127	0.4	10.5	4.73	11.2	19.7	na	0.1	9.38	0.3	1	60.2
	0435-96-0062	35-02398	0-0.5	ALLH	8.2 (J-)	—	0.65 (U)	—	—	31.8	58.6	—	1.3	—	—	—	104
	0435-96-0063	35-02398	0.5-1.5	QBT3	—	—	—	56.6	3.7 (U)	36	26.7	—	2.7	27.9	0.41 (U)	—	92.9
	0435-96-0064	35-02399	0-0.5	ALLH	—	—	0.77 (U)	—	—	28.8	28.6	—	1	—	—	—	110
	0435-96-0065	35-02399	0.5-1.5	QBT3	—	—	—	11.5	—	—	19.7	—	0.14	—	0.31 (U)	—	—
	0435-96-0066	35-02399	0.5-1.5	QBT3	—	—	—	17.1	—	—	22.4	—	0.15	8.6	0.31 (U)	—	—
	0435-96-0067	35-02400	0-0.66	ALLH	—	—	—	—	—	—	—	—	0.13	—	—	—	—
	0435-96-0068	35-02400	2-3	QBT3	—	59.7	—	25.1	3.5 (U)	—	—	—	—	13.9	0.7 (U)	—	—
	0435-96-0069	35-02401	0-0.83	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	56.7
	RE35-04-54873	35-23287	0-0.1	SED	—	—	—	—	—	12.1 (J)	—	—	—	—	0.314 (J)	—	60.3
	RE35-04-54874	35-23287	0.1-0.89	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	52.7
	RE35-04-54875	35-23288	0-0.07	SED	—	—	—	12.6 (J)	—	—	—	—	—	—	0.498 (U)	—	—
	RE35-04-54876	35-23288	0.07-0.2	SED	—	—	—	—	—	—	—	—	0.116 (J)	—	0.355 (J)	—	—
	RE35-04-54878	35-23289	0.36-0.75	SED	—	—	—	—	—	—	—	—	—	—	0.508 (U)	—	—
	RE35-04-54879	35-23290	0-0.49	SED	—	—	—	—	—	—	—	—	—	—	0.434 (U)	—	—
	RE35-04-54880	35-23290	1.97-2.3	SED	—	—	—	—	—	13.5	—	—	0.899	—	0.604 (U)	—	—
	RE35-04-54881	35-23291	0.46-0.85	SED	—	—	—	—	—	—	—	—	—	—	0.576 (U)	—	—
	RE35-04-54882	35-23291	0.85-1.25	SED	—	—	0.55 (U)	—	—	—	—	—	—	—	0.55 (U)	—	—
35-016(j)	0435-95-0063	35-02192	2-3	QBT3	0.59 (U)	—	—	10.4	—	—	—	—	0.11 (U)	—	1.2 (U)	—	—
	RE35-04-54169	35-22973	0.03-0.3	SED	—	—	0.558 (U)	—	—	12.6	—	—	—	—	0.558 (U)	—	—
	RE35-04-54170	35-22973	0.3-0.98	SED	—	—	0.593 (U)	—	—	—	—	—	—	—	0.593 (U)	—	—
	RE35-04-54686	35-23208	0-0.2	SED	—	—	0.54 (U)	—	—	—	—	—	—	—	0.54 (U)	—	—
	RE35-04-54690	35-23210	0.1-0.66	SED	—	—	0.557 (U)	—	—	—	—	—	—	—	0.307 (J)	—	—

Table D-3.0-5

Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil, Fill, Tuff, and Sediment at Ten Site Slope Sites

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	1.31	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.90	na	0.006	0.068	1.04	0.093	2.59	0.20	2.29
35-004(g)-00	AAA6411	35-02039	19.00-20.00	QBT3	—	—[b]	—	0.043	—	—	—	—	—	—
	AAA6462	35-02041	9.00-10.00	QBT3	—	—	—	0.032 (J)	—	—	—	—	—	—
	AAA6474	35-02041	19.00-20.00	QBT3	—	—	—	0.079 (J)	—	—	—	—	—	—
	AAA6464	35-02042	4.00-5.00	ALLH	—	—	—	—	—	—	—	5.099	0.212	5.05
	0435-97-0330	35-02545	5.00-6.00	FILL	—	—	0.925	—	—	—	—	3.66	—	3.59
	RE35-04-54069	35-22939	9.00-10.00	QBT3	—	—	—	—	—	—	—	—	0.0978	—
	RE35-04-54867	35-23284	0.00-0.59	SED	—	—	—	—	0.163	—	—	—	—	2.82
35-009(a)	AAA6421	35-02034	13.50-14.50	QBT3	—	—	—	0.018	—	—	—	—	—	—
	AAA6384	35-02035	17.50-18.70	QBT3	—	—	—	—	—	—	1.740004	—	—	—
	AAA6401	35-02036	0.00-1.10	ALLH	—	—	—	—	0.027[c]	—	—	—	—	—
	AAA6440	35-02038	19.00-20.00	QBT3	—	—	—	—	—	—	1.161	—	—	—
	AAA6443	35-02221	14.00-15.00	QBT3	—	—	—	—	—	—	0.693	—	—	—
	AAA6446	35-02222	3.00-4.00	QBT3	—	—	—	0.029	1.189	—	—	—	—	—
	AAA6453	35-02223	0.00-0.50	ALLH	—	—	—	—	0.059	—	—	—	—	—
	AAA6454	35-02224	0.00-0.50	ALLH	—	—	—	—	0.365	—	—	—	—	—
	0435-97-0287	35-02536	5.50-6.50	QBT3	—	—	—	—	—	—	0.09	—	—	—
	0435-97-0289	35-02536	19.00-20.00	QBT3	—	—	—	—	—	—	0.07	—	—	—
	0435-97-0290	35-02536	29.00-30.00	QBT3	—	—	—	—	—	—	0.22	—	—	—
	0435-97-0292	35-02537	1.00-2.00	FILL	—	—	—	—	—	—	0.07	—	—	—
	0435-97-0293	35-02537	2.00-3.00	QBT3	—	—	—	—	—	—	0.04	—	—	—
	0435-97-0294	35-02537	6.50-7.50	QBT3	—	—	—	—	—	—	0.06	—	—	—
	0435-97-0303	35-02538	1.00-2.00	QBT3	—	—	—	—	—	—	0.87	—	—	—
	0435-97-0305	35-02538	6.00-7.00	QBT3	—	—	—	—	—	—	0.14	—	—	—

Table D-3.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	1.31	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.90	na	0.006	0.068	1.04	0.093	2.59	0.20	2.29
	0435-97-0306	35-02538	19.00-20.00	QBT3	—	—	—	—	—	—	0.2	—	—	—
	0435-97-0307	35-02538	29.00-30.00	QBT3	—	—	—	—	—	0.78	0.21	—	—	—
	0435-97-0310	35-02539	1.00-2.00	QBT3	—	—	—	—	—	—	0.06	—	—	—
	0435-97-0297	35-02540	0.50-1.50	QBT3	—	—	—	—	—	—	0.2	—	—	—
	0435-97-0298	35-02540	5.00-6.00	QBT3	—	—	—	—	—	—	0.37	—	—	—
	0435-97-0299	35-02540	19.00-20.00	QBT3	—	—	—	—	—	—	0.31	—	—	—
	0435-97-0300	35-02540	29.00-30.00	QBT3	—	—	—	—	—	—	0.32	—	—	—
	0435-97-0316	35-02542	0.00-1.00	ALLH	—	—	—	—	0.069	—	—	—	—	—
	0435-97-0317	35-02542	1.00-1.50	ALLH	—	—	—	—	0.0336	—	0.04	—	—	—
	0435-97-0319	35-02542	1.50-2.50	QBT3	—	—	—	—	0.0411	—	0.05	—	—	—
	0435-97-0320	35-02543	0.00-1.00	ALLH	—	—	—	—	0.134	—	—	—	—	—
	0435-97-0321	35-02543	1.00-2.00	ALLH	—	—	—	—	0.084	—	0.07	—	—	—
	0435-97-0323	35-02543	2.00-3.00	QBT3	—	—	—	—	0.047	—	0.05	—	—	—
	0435-97-0324	35-02544	0.00-1.00	ALLH	—	—	—	—	0.062	1.25[c]	—	—	—	—
	0435-97-0325	35-02544	1.00-1.50	ALLH	—	—	—	—	0.0277[c]	—	—	—	—	—
	RE35-04-54083	35-22943	29.00-30.00	QBT3	—	—	—	—	—	—	—	—	0.103	—
	RE35-04-54130	35-22959	9.00-10.00	QBT3	—	—	—	—	—	—	0.0371	—	—	—
	RE35-04-54131	35-22959	19.00-20.00	QBT3	—	—	—	—	—	—	0.0578	—	0.104	—
	RE35-04-54132	35-22959	29.00-30.00	QBT3	—	—	—	—	—	—	0.186	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	—	0.933	—	—	4.02	—	3.02
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	0.467	—	—	4.12	—	3.49
	RE35-04-54861	35-23282	0.00-0.62	SED	—	—	—	0.0253	0.276	—	—	3.97	0.208	4.41

Table D-3.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
35-009(e)	AAA3826	35-02079	0.00-1.00	ALLH	—	—	—	—	—	0.0728	—	—	—	—
	AAA3827	35-02079	1.00-2.00	ALLH	—	—	—	—	—	5.178E-02	2.64	0.47	2.48 (J)	—
	AAA3828	35-02079	2.00-3.00	QBT3	—	—	—	—	3.159	—	—	3.42	—	—
	0435-97-0428	35-02566	0.00-1.00	ALLH	—	0.228[c]	—	—	—	—	—	—	—	—
	0435-97-0430	35-02566	2.00-3.00	QBT3	0.025	—	—	—	—	—	—	—	—	—
	RE35-04-54052	35-22931	0.25-0.60	ALLH	—	0.675[c]	—	0.0172[c]	0.399	—	—	—	—	3.12
	RE35-04-54157	35-22967	0.00-0.40	ALLH	—	—	—	—	0.288	—	—	—	—	—
	RE35-04-54158	35-22967	0.40-1.08	ALLH	—	0.133[c]	—	—	0.0933	—	—	—	—	2.41
35-014(g)-00	0435-95-0011	35-02167	0.00-0.50	ALLH	—	—	—	—	—	—	—	49.241	1.534	—
	0435-97.0447	35-02572	0.00-1.00	FILL	—	0.412	—	—	—	—	—	—	—	—
	0435-97-0463	35-02577	0.00-0.50	ALLH	—	—	—	—	0.347	—	—	—	—	—
	0435-97-0467	35-02578	0.00-0.50	SED	—	0.966	—	—	0.338	—	—	—	—	—
	0435-97-0495	35-02595	0.00-0.50	ALLH	—	—	—	—	—	—	—	35.6	1.04	—
	RE35-98-0030	35-02596	1.50-2.50	ALLH	—	—	—	—	0.073	—	—	—	—	—
	RE35-98-0036	35-02598	0.00-0.50	SED	—	0.96	—	—	0.164	—	—	—	—	—
	RE35-98-0040	35-02599	0.00-0.50	SED	—	—	—	—	0.173	—	—	—	—	—
	RE35-04-54688	35-23209	0.00-0.33	SED	—	—	—	—	0.122	—	—	—	—	—
	RE35-04-54689	35-23209	0.72-1.21	SED	—	—	—	—	0.0724	—	—	—	—	—
35-014(g3)	0435-95-0033	35-02183	2.00-3.00	QBT3	—	—	—	—	—	—	—	—	—	—
	0435-95-0043	35-02185	2.00-3.00	QBT3	—	—	—	0.002	—	—	—	—	—	—
	0435-95-0045	35-02186	0.00-0.50	ALLH	—	—	—	—	—	—	—	—	—	—
	0435-97-0174	35-02487	1.00-2.00	QBT3	—	0.239	—	—	—	—	—	—	—	—
	0435-97-0183	35-02489	1.00-1.50	QBT3	—	—	0.569	—	—	—	—	—	—	—
	0435-97-0187	35-02491	0.00-0.50	ALLH	—	—	0.255	—	—	—	—	—	—	—
	0435-97-0188	35-02491	0.50-1.00	QBT3	—	0.098	—	—	—	—	—	—	—	—
35-016(a)-00	AAA4445	35-02080	0.00-1.00	ALLH	—	—	—	—	—	—	6.784E-02	4.41	0.972	3.23 (J)
	AAA4446	35-02080	1.00-2.00	ALLH	—	—	—	—	—	—	—	4.13	1.15	—

Table D-3.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
	AAA4447	35-02080	2.00-3.00	QBT3	—	—	—	—	—	—	—	3.11	—	—
	0435-96-0056	35-02395	0.00-2.00	SED	—	—	—	—	0.1	—	—	—	—	—
35-016(b)	0435-97-0349	35-02549	1.00-2.00	QBT3	—	—	—	—	—	—	—	2.13	0.098	2.54
	RE35-04-54684	35-23207	0.39-1.05	SED	—	—	—	0.0382	—	—	—	—	—	—
	RE35-04-54685	35-23207	2.95-3.44	SED	—	—	—	0.0664	—	—	—	—	—	—
35-016(j)	0435-97-0481	35-02580	0.67-1.67	QBT3	—	—	—	—	0.077	—	—	—	—	—
35-016(c)-00	AAC1165	35-02108	0.00-0.50	ALLH	—	—	0.474 (J)	—	—	—	—	—	—	—
	0435-96-0058	35-02396	0.00-0.66	ALLH	—	0.52[c]	—	—	—	—	—	—	—	—
	0435-96-0060	35-02397	0.00-1.00	ALLH	—	0.45[c]	—	—	0.079	—	—	—	—	—
	0435-96-0067	35-02400	0.00-0.66	ALLH	—	0.23[c]	—	—	—	—	—	—	—	—
	RE35-04-54881	35-23291	0.46-0.85	SED	—	—	—	0.0755	0.32	—	—	—	—	2.86
	RE35-04-54882	35-23291	0.85-1.25	SED	—	—	—	1.4	0.593	—	—	—	—	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-3.0-6
Summary of Organic Chemicals Detected in Soil, Fill, Tuff, and Sediment at Ten Site Slope Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Aldrin	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butanone[2-]
35-004(g)-00	RE35-04-54030	35-02100	1-1.5	FILL	—[a]	—	—	—	—	—	—	0.15[b]	—	—	—	—	—	—	—	—
	RE35-04-54064	35-22937	19-20	QBT3	—	—	—	—	—	—	0.0021 (J)	—	—	—	—	—	—	—	—	—
	RE35-04-54867	35-23284	0-0.59	SED	—	—	—	—	—	—	0.006	0.0055	—	—	—	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.8 (J)	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0535 (J)	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	—	—	0.0436	0.0395	0.0495	—	—	—	—	—	—	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	—	—	0.0057	0.0126	—	—	—	—	—	—	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	0.112	—	—	—	0.393	1.26	—	—	—	—	—	—	0.199 (J)	—
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	—	0.249	0.894	—	—	—	—	—	—	—	—
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	—	—	—	0.0022 (J)	0.0099	—	—	—	—	—	—	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-009(e)	RE35-04-54052	35-22931	0.25-0.6	ALLH	—	—	0.0086	—	—	—	2.18	10.6	—	—	—	—	—	—	—	—
	RE35-04-54155	35-22966	0-0.5	SED	—	—	—	—	—	—	0.899	4.04	—	—	—	—	—	—	—	—
	RE35-04-54157	35-22967	0-0.4	ALLH	—	—	—	—	—	—	0.158	0.695	—	—	—	—	—	—	—	—
	RE35-04-54158	35-22967	0.4-1.08	ALLH	—	—	—	—	—	—	0.0407	0.282	—	—	—	0.0194 (J)	—	—	—	—
35-014(g)-00	RE35-98-0024	35-02169	0-0.25	SED	—	—	—	—	—	—	—	—	0.026 (J)	0.03 (J)	0.03 (J)	0.021 (J)	0.029 (J)	—	0.051 (J)	—
	0435-95-0023	35-02170	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	0.17 (J)	0.21 (J)	—	0.23 (J)	—	0.45	—
	RE35-04-54171	35-22974	0.07-0.23	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54172	35-22974	0.23-0.39	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54173	35-22975	0-0.36	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54174	35-22975	0.36-0.85	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54688	35-23209	0-0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54689	35-23209	0.72-1.21	SED	—	—	0.258 (J+)	—	—	—	—	—	—	—	—	—	—	0.699 (J)	—	0.0083
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	—	—	—	0.0106	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0043	35-02185	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.5 (J)	—
	0435-95-0050	35-02187	2-3	QBT3	—	—	0.18 (J)	—	—	—	—	—	—	—	—	—	—	—	—	0.049 (J)
	0435-95-0052	35-02188	0-1	QBT3	—	—	—	0.00262 (J-)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0173	35-02487	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0174	35-02487	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.056 (J)	0.009 (J)
	0435-97-0178	35-02488	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.23 (J)	—
	0435-97-0181	35-02489	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Aldrin	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butanone[2-]
	0435-97-0183	35-02489	1-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0184	35-02490	0-0.08	SED	0.075 (J)	—	—	—	0.083 (J)	—	—	—	0.65	1.6	1.2	1.2	1.3	—	0.046 (J)	—
	0435-97-0185	35-02490	1-2	QBT3	—	—	—	—	—	—	—	—	0.084 (J)	0.14 (J)	0.11 (J)	0.12 (J)	0.12 (J)	—	—	—
	0435-97-0187	35-02491	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.6 (J)	—
	0435-97-0188	35-02491	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.2 (J)	—
	0435-97-0189	35-02491	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2 (J)	—
	0435-97-0190	35-02492	0-0.83	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.2 (J)	—
	0435-97-0191	35-02492	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.1 (J)	—
	RE35-04-54159	35-22968	0-0.23	SED	—	—	0.0221	—	—	—	—	—	—	—	—	—	—	1.45 (J)	—	—
	RE35-04-54160	35-22968	0.23-0.92	SED	—	—	0.0539 (J+)	—	—	—	—	—	—	—	—	—	—	—	19.5	—
	RE35-04-54161	35-22969	0.33-0.62	SED	—	—	0.019 (J+)	—	—	—	—	—	—	—	—	—	—	—	11.2 (J)	—
	RE35-04-54162	35-22969	0.62-0.98	SED	—	—	0.199 (J+)	—	—	—	—	—	—	—	—	—	—	—	9.33 (J)	—
	RE35-04-54669	35-23200	0-0.66	SED	0.364	0.0217 (J)	—	—	0.374	—	—	—	3	3.9	—	2.8	—	0.638 (J)	0.146 (J)	—
	RE35-04-54670	35-23200	0.66-1.35	SED	0.361	0.0253 (J)	0.102 (J+)	—	0.472	—	—	—	2.88	3.68 (J)	—	—	6.29	0.79	0.587 (J)	0.0086
	RE35-04-54671	35-23201	0-0.46	SED	—	—	—	—	—	—	—	—	—	0.0257 (J)	—	—	—	—	—	—
	RE35-04-54672	35-23201	0.46-0.89	SED	—	—	0.116 (J+)	—	—	—	—	—	—	—	—	—	—	—	—	0.0051 (J)
	RE35-04-54675	35-23203	0-0.2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.768 (J)	—	—
	RE35-04-54676	35-23203	0.2-0.49	SED	—	—	0.0058 (J+)	—	—	—	—	—	—	—	—	—	—	—	—	—
35-016(a)-00	AAC1142	35-02107	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.98	—
	0435-96-0054	35-02394	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0055	35-02394	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0056	35-02395	0-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54883	35-23292	0-0.79	SED	0.0204 (J)	—	0.0068	—	0.0335 (J)	—	0.005	0.0268	—	0.0758	0.12	—	—	—	—	—
	RE35-04-54884	35-23292	0.79-1.57	SED	0.024 (J)	—	—	—	0.055	—	0.0068	0.0363	—	0.0635	0.0745	—	0.0363	—	—	—
	RE35-04-54885	35-23292	1.57-2.03	SED	—	—	—	—	—	—	0.0015	0.0223	—	—	—	—	—	—	0.0319 (J)	—
35-016(b)	RE35-04-54679	35-23205	0-0.3	SED	0.0109 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0835 (J)	—
	RE35-04-54680	35-23205	0.3-0.66	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0384 (J)	—
	RE35-04-54683	35-23207	0-0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.137 (J)	—
	RE35-04-54684	35-23207	0.39-1.05	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.385 (J)	—
	RE35-04-54685	35-23207	2.95-3.44	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.075 (J)	—
35-016(c)-00	AAC1173	35-02111	2-3	ALLH	—	—	—	—	0.69	—	—	—	1.8	1.3	1.5	0.51	0.96	—	—	—
	0435-96-0060	35-02397	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0062	35-02398	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Aldrin	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butanone[2-]
	0435-96-0064	35-02399	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0067	35-02400	0-0.66	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0069	35-02401	0-0.83	ALLH	—	—	—	—	—	—	—	—	0.066 (J)	—	0.066 (J)	—	—	—	—	—
	RE35-04-54879	35-23290	0-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54880	35-23290	1.97-2.3	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54881	35-23291	0.46-0.85	SED	—	—	0.0139	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54882	35-23291	0.85-1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-016(j)	0435-95-0056	35-02191	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	0.15 (J)	0.11 (J)	—	0.15 (J)	—	0.38	—
	RE35-04-54169	35-22973	0.03-0.3	SED	0.195	—	—	—	—	—	—	—	1.09	1.39 (J)	1.8 (J)	0.829 (J)	0.784 (J)	—	—	—
	RE35-04-54170	35-22973	0.3-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.571 (J)	—	—
	RE35-04-54686	35-23208	0-0.2	SED	0.0652	—	—	—	—	—	—	0.003 (J)	0.432 (J)	0.594 (J)	1.09 (J)	0.318 (J)	—	—	0.74 (J)	—
	RE35-04-54690	35-23210	0.1-0.66	SED	0.0659	—	—	—	—	—	—	—	—	0.267 (J)	0.403 (J)	—	0.163 (J)	—	0.851 (J)	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Butylbenzylphthalate	Chloro-3-methylphenol[4-	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Di-n-octylphthalate	Endosulfan I	Endrin	Ethylbenzene
35-004(g)-00	RE35-04-54030	35-02100	1-1.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54064	35-22937	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54867	35-23284	0-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.5-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	0.18	—	—	—	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	—	—	—	—	—	—	—	—	0.223 (J)	—	—	—	—
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	—	—	—	—	—	0.0025	—	—	0.0856 (J)	—	—	—	—
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	—	0.000223	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	—	—	—	—	—	—	0.0012 (J)	—	—	—	—	—	—	—
35-009(e)	RE35-04-54052	35-22931	0.25-0.6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54155	35-22966	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54157	35-22967	0-0.4	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54158	35-22967	0.4-1.08	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-014(g)-00	RE35-98-0024	35-02169	0-0.25	SED	—	—	0.037 (J)	—	—	—	—	—	—	—	—	0.018 (J)	0.018 (J)	—	—	—
	0435-95-0023	35-02170	0-0.5	ALLH	—	—	0.18 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54171	35-22974	0.07-0.23	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54172	35-22974	0.23-0.39	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54173	35-22975	0-0.36	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54174	35-22975	0.36-0.85	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54688	35-23209	0-0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54689	35-23209	0.72-1.21	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	—	—	—	0.00877	—	0.0075	—	—	—	0.0196	—	—	—	0.0074	0.0163	—
	0435-95-0043	35-02185	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0050	35-02187	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0052	35-02188	0-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0173	35-02487	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0174	35-02487	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0178	35-02488	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.1 (J)	—	—	—	—
	0435-97-0181	35-02489	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.16 (J)	—	—	—	—
	0435-97-0183	35-02489	1-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.45	—	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Butylbenzylphthalate	Chloro-3-methylphenol[4-]	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Di-n-octylphthalate	Endosulfan I	Endrin	Ethylbenzene
	0435-97-0184	35-02490	0-0.08	SED	—	—	0.84	—	—	—	0.27 (J)	—	—	—	—	0.052 (J)	—	—	—	—
	0435-97-0185	35-02490	1-2	QBT3	—	—	0.14 (J)	—	—	—	0.047 (J)	—	—	—	—	—	—	—	—	—
	0435-97-0187	35-02491	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.88 (J)	—	—	—	—
	0435-97-0188	35-02491	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.74 (J)	—	—	—	—
	0435-97-0189	35-02491	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)
	0435-97-0190	35-02492	0-0.83	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0191	35-02492	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54159	35-22968	0-0.23	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54160	35-22968	0.23-0.92	SED	—	—	—	—	—	—	—	—	0.00099 (J+)	—	—	—	—	—	—	—
	RE35-04-54161	35-22969	0.33-0.62	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54162	35-22969	0.62-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54669	35-23200	0-0.66	SED	—	—	3.77	—	—	—	—	0.0997 (J)	—	—	—	—	—	—	—	—
	RE35-04-54670	35-23200	0.66-1.35	SED	—	—	3.84	—	—	—	—	0.125 (J)	—	—	—	—	—	—	—	—
	RE35-04-54671	35-23201	0-0.46	SED	—	—	0.0289 (J)	—	—	—	—	—	—	—	0.02 (J)	—	—	—	—	—
	RE35-04-54672	35-23201	0.46-0.89	SED	—	—	—	—	—	—	—	—	—	—	0.0203 (J)	—	—	—	—	—
	RE35-04-54675	35-23203	0-0.2	SED	—	0.329 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54676	35-23203	0.2-0.49	SED	—	—	—	—	—	—	—	—	0.00082 (J)	—	—	—	—	—	—	—
35-016(a)-00	AAC1142	35-02107	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0054	35-02394	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	—	0.035 (J)	—	—	—	—
	0435-96-0055	35-02394	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.035 (J)	—	—	—	—
	0435-96-0056	35-02395	0-2	SED	—	—	—	—	—	—	—	—	—	—	—	0.036 (J)	—	—	—	—
	RE35-04-54883	35-23292	0-0.79	SED	—	—	0.0855	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54884	35-23292	0.79-1.57	SED	—	—	0.0721	—	—	—	—	0.0242 (J)	0.0012	—	—	—	—	—	—	—
	RE35-04-54885	35-23292	1.57-2.03	SED	—	—	—	—	—	—	—	—	—	—	—	0.0278 (J)	—	—	—	—
35-016(b)	RE35-04-54679	35-23205	0-0.3	SED	0.0427 (J)	—	0.036 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54680	35-23205	0.3-0.66	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54683	35-23207	0-0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54684	35-23207	0.39-1.05	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54685	35-23207	2.95-3.44	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-016(c)-00	AAC1173	35-02111	2-3	ALLH	—	—	1.9	—	—	—	0.46	—	—	—	—	—	—	—	—	—
	0435-96-0060	35-02397	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0062	35-02398	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0064	35-02399	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Butylbenzylphthalate	Chloro-3-methylphenol[4-]	Chrysene	DDD[4,4'-]	DDE[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Di-n-octylphthalate	Endosulfan I	Endrin	Ethylbenzene
	0435-96-0067	35-02400	0-0.66	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0069	35-02401	0-0.83	ALLH	0.27 (J)	—	0.066 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54879	35-23290	0-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54880	35-23290	1.97-2.3	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54881	35-23291	0.46-0.85	SED	—	—	—	—	—	—	—	—	0.0015	—	—	—	—	—	—	—
	RE35-04-54882	35-23291	0.85-1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-016(j)	0435-95-0056	35-02191	0-0.5	ALLH	—	—	0.18 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54169	35-22973	0.03-0.3	SED	—	—	1.42	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54170	35-22973	0.3-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54686	35-23208	0-0.2	SED	—	—	0.568 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54690	35-23210	0.1-0.66	SED	—	—	0.297	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Styrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene
35-004(g)-00	RE35-04-54030	35-02100	1-1.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54064	35-22937	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54867	35-23284	0-0.59	SED	0.0234 (J-)	—	—	—	—	—	—	—	0.0199 (J-)	—	—	—	—	—	—
35-009(a)	AAA6381	35-02035	1.50-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	AAA6448	35-02222	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54078	35-22942	9-10	QBT3	—	—	—	—	—	—	—	—	0.0249 (J)	—	—	—	—	—	—
	RE35-04-54080	35-22942	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54132	35-22959	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54855	35-23280	0.43-1.41	SED	—	—	—	0.0937	—	—	—	—	—	—	—	0.0028	—	—	—
	RE35-04-54856	35-23280	1.41-1.84	SED	—	—	—	0.0033	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54861	35-23282	0-0.62	SED	—	—	—	0.00082 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54862	35-23282	0.62-1.31	SED	—	—	—	0.00051 (J)	—	—	—	—	—	—	—	—	—	—	—
35-009(e)	RE35-04-54052	35-22931	0.25-0.6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54155	35-22966	0-0.5	SED	—	—	—	—	—	—	—	—	0.0508 (J-)	—	—	—	—	—	—
	RE35-04-54157	35-22967	0-0.4	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54158	35-22967	0.40-1.08	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-014(g)-00	RE35-98-0024	35-02169	0-0.25	SED	0.05 (J)	—	—	—	—	—	0.038 (J)	—	0.056 (J)	—	—	—	—	—	—
	0435-95-0023	35-02170	0-0.5	ALLH	—	—	—	—	—	—	—	—	0.17 (J)	—	—	—	—	—	—
	RE35-04-54171	35-22974	0.07-0.23	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	7.5	—	—
	RE35-04-54172	35-22974	0.23-0.39	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	3.7	—	—
	RE35-04-54173	35-22975	0-0.36	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	156 (J+)	—	—
	RE35-04-54174	35-22975	0.36-0.85	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	580 (J+)	—	—
	RE35-04-54688	35-23209	0-0.33	SED	0.042	—	—	—	—	—	—	—	0.0542	—	—	—	49.8	—	—
	RE35-04-54689	35-23209	0.72-1.21	SED	—	—	—	0.195 (J-)	—	—	—	—	—	—	—	0.0129	7.3	—	—
35-014(g3)	0435-95-0033	35-02183	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0043	35-02185	2-3	QBT3	—	—	—	—	—	—	2.4 (J)	—	—	—	—	—	—	—	—
	0435-95-0050	35-02187	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.004 (J)	—	—	—
	0435-95-0052	35-02188	0-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0173	35-02487	0-1	ALLH	—	—	—	—	—	—	—	0.16 (J)	—	—	—	—	—	—	—
	0435-97-0174	35-02487	1-2	QBT3	—	—	—	0.025 (J+)	—	—	—	—	—	—	—	0.012 (J+)	—	—	—
	0435-97-0178	35-02488	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.002 (J+)	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Styrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene
	0435-97-0181	35-02489	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0183	35-02489	1-1.5	QBT3	—	—	—	—	—	—	—	0.041 (J)	—	—	—	—	—	—	—
	0435-97-0184	35-02490	0-0.08	SED	1.4	—	1	—	—	—	0.5	—	1.5	—	—	—	—	—	—
	0435-97-0185	35-02490	1-2	QBT3	0.19 (J)	—	0.098 (J)	—	—	—	0.078 (J)	—	0.22 (J)	—	—	—	—	—	—
	0435-97-0187	35-02491	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0188	35-02491	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—
	0435-97-0189	35-02491	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	0.005 (J)	0.073 (J+)	—	—	0.003 (J)
	0435-97-0190	35-02492	0-0.83	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0191	35-02492	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54159	35-22968	0-0.23	SED	—	—	—	—	—	—	—	—	—	—	—	—	1350	—	—
	RE35-04-54160	35-22968	0.23-0.92	SED	—	—	—	—	—	—	—	—	—	—	—	0.00044 (J)	5110	—	—
	RE35-04-54161	35-22969	0.33-0.62	SED	—	—	—	—	—	—	—	—	—	—	—	—	11500	—	—
	RE35-04-54162	35-22969	0.62-0.98	SED	—	—	—	0.008 (J)	—	—	—	—	—	—	—	—	5800	—	—
	RE35-04-54669	35-23200	0-0.66	SED	7.37	0.204	2.24 (J)	—	0.0471	0.0496	2.84	—	9.48	—	—	—	93.9	—	—
	RE35-04-54670	35-23200	0.66-1.35	SED	6.02	0.252	2.48 (J)	—	0.0656	0.0902	3.04	—	8.33	—	—	—	147	—	—
	RE35-04-54671	35-23201	0-0.46	SED	0.0356 (J)	—	—	—	—	—	—	—	0.0473	0.00053 (J)	—	—	4.3	—	—
	RE35-04-54672	35-23201	0.46-0.89	SED	—	—	—	0.0195	—	—	—	—	—	—	—	0.0016	3.2	—	—
	RE35-04-54675	35-23203	0-0.2	SED	—	—	—	0.0015	—	—	—	—	—	—	—	—	194	—	—
	RE35-04-54676	35-23203	0.2-0.49	SED	—	—	—	0.0017	—	—	—	—	—	—	—	0.00097 (J)	349	—	—
35-016(a)-00	AAC1142	35-02107	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0054	35-02394	0-0.5	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0055	35-02394	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-96-0056	35-02395	0-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54883	35-23292	0-0.79	SED	0.209	0.0163 (J)	—	0.0042	—	—	0.147	—	0.193	—	—	0.00046 (J)	—	—	—
	RE35-04-54884	35-23292	0.79-1.57	SED	0.217	0.0471	—	—	—	0.0285 (J)	0.239	—	0.186	—	—	—	—	—	—
	RE35-04-54885	35-23292	1.57-2.03	SED	—	—	—	0.00041 (J)	—	—	—	—	—	—	—	—	—	—	—
35-016(b)	RE35-04-54679	35-23205	0-0.3	SED	0.0345 (J)	0.0128 (J)	—	—	—	—	0.0265 (J)	—	0.0436	—	—	—	—	—	—
	RE35-04-54680	35-23205	0.3-0.66	SED	—	—	—	—	—	—	—	—	0.0199 (J)	—	—	—	—	—	—
	RE35-04-54683	35-23207	0-0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54684	35-23207	0.39-1.05	SED	0.0392 (J)	—	—	—	—	—	—	—	0.038 (J)	—	—	—	—	—	—
	RE35-04-54685	35-23207	2.95-3.44	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-3.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Styrene	Tetrachloroethene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene
35-016(c)-00	AAC1173	35-02111	2-3	ALLH	3	—	0.77	—	—	—	2.3	—	2.4	—	—	—	—	—	—
	0435-96-0060	35-02397	0-1	ALLH	0.035 (J)	—	—	—	—	—	—	—	0.035 (J)	—	—	—	—	—	—
	0435-96-0062	35-02398	0-0.5	ALLH	—	—	—	—	—	—	0.13 (J)	—	—	—	—	—	—	—	—
	0435-96-0064	35-02399	0-0.5	ALLH	0.14 (J)	—	—	—	—	—	—	—	0.069 (J)	—	—	—	—	—	—
	0435-96-0067	35-02400	0-0.66	ALLH	0.067 (J)	—	—	—	—	—	—	—	0.034 (J)	—	—	—	—	—	—
	0435-96-0069	35-02401	0-0.83	ALLH	0.066 (J)	—	—	—	—	—	—	—	0.066 (J)	—	—	—	—	—	—
	RE35-04-54879	35-23290	0-0.49	SED	—	—	—	—	—	—	—	—	—	0.00054 (J)	—	—	—	—	—
	RE35-04-54880	35-23290	1.97-2.3	SED	—	—	—	0.0016	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54881	35-23291	0.46-0.85	SED	—	—	—	0.00092 (J)	—	—	—	—	—	—	—	0.00059 (J)	—	—	—
	RE35-04-54882	35-23291	0.85-1.25	SED	—	—	—	—	—	—	—	—	—	0.00068 (J)	—	—	—	—	—
35-016(j)	0435-95-0056	35-02191	0-0.5	ALLH	0.24 (J)	—	—	—	—	—	—	—	0.26 (J)	—	—	—	—	—	—
	RE35-04-54169	35-22973	0.03-0.3	SED	2.02	—	0.691 (J)	—	0.0468	—	1.16	—	2.73	—	—	—	—	—	—
	RE35-04-54170	35-22973	0.3-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54686	35-23208	0-0.2	SED	0.824	—	0.272 (J)	—	—	—	0.385	—	1.24 (J)	—	—	—	—	—	—
	RE35-04-54690	35-23210	0.1-0.66	SED	0.457	—	0.124 (J)	—	—	—	0.395	—	0.631	—	—	—	—	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-3.1-1
EPCs for Inorganic COPCs at Consolidated Unit 35-004(g)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Copper	0–1	5.35	—[a]	Maximum detect
	0–10	7.48	—	Maximum detect
Selenium	0–1	1.1 (U)	—	Maximum detection limit
	0–10	1.1 (U)	—	Maximum detection limit

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.1-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-004(g)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Europium-152	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.325	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.014	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.163	—[c]	Maximum detect
	0–10	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	1.67	Gamma	95% Approximate Gamma UCL
	0–10	2.23	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.0826	Normal	95% KM (t)
	0–10	0.080	Gamma	95% Approximate Gamma UCL
Uranium-238	0–1	2.466	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	2.26	Nonparametric	95% Chebyshev (Mean, SD)

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-3.1-3
EPCs for Organic COPCs at Consolidated Unit 35-004(g)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aroclor-1254	0–1	0.006	—[a]	Maximum detect
	0–10	0.006	—	Maximum detect
Aroclor-1260	0–1	0.0055	—	Maximum detect
	0–10	0.15	—	Maximum detect
Fluoranthene	0–1	0.0234	—	Maximum detect
	0–10	0.0234	—	Maximum detect
Pyrene	0–1	0.0199	—	Maximum detect
	0–10	0.0199	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.2-1
EPCs for Inorganic COPCs at SWMU 35-009(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	0.102[a]	Nonparametric	Maximum detect
	0–10	0.533	Nonparametric	95% Chebyshev (Mean, SD)
Aluminum	0–1	9814	Normal	95% Student's-t UCL
	0–10	6012	Gamma	95% Approximate Gamma UCL
Barium	0–1	84.79	Normal	95% Student's-t UCL
	0–10	44.7	Gamma	95% Approximate Gamma UCL
Cadmium	0–1	0.319	Normal	95% KM (t) UCL
	0–10	0.563	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–1	10.08	Normal	95% Student's-t UCL
	0–10	5.48	Gamma	95% Approximate Gamma UCL
Cobalt	0–1	3.38	Normal	95% Student's-t UCL
	0–10	2.16	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	101[a]	Gamma	Maximum detect
	0–10	34.8	Lognormal	95% Chebyshev (MVUE)
Lead	0–1	12.86	Normal	95% Student's-t UCL
	0–10	10.0	Gamma	95% Approximate Gamma UCL
Lithium	0–1	3.5	—[b]	Maximum detect
	0–10	4.66	Gamma	95% Approximate Gamma UCL
Mercury	0–1	0.905	Normal	95% KM (t) UCL
	0–10	1.05[a]	Gamma	Maximum detect
Nickel	0–1	4.881	Normal	95% Student's-t UCL
	0–10	3.73	Gamma	95% Approximate Gamma UCL
Selenium	0–1	0.55 (U)	—	Maximum detection limit
	0–10	0.324	Nonparametric	95% Modified-t UCL
Silver	0–1	2.274	Gamma	95% KM (BCA) UCL
	0–10	3.86	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–1	96.3[a]	Lognormal	Maximum detect
	0–10	70.3	Gamma	95% Approximate Gamma UCL

[a] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.
[b] — = Too few samples to determine distribution or calculate EPC.

Table D-3.2-2
EPCs for Radionuclide COPCs at SWMU 35-009(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Plutonium-238	0–1	0.0253	—[a]	Maximum detect
	0–10	0.010	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.646	Gamma	95% KM (Chebyshev) UCL
	0–10	0.232	Gamma	Adjusted Gamma UCL
Strontium-90	0–1	1.25	—	Maximum detect
	0–10	0.336	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	0.2	—	Maximum detect
	0–10	0.257	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	2.836	Normal	95% KM (t) UCL
	0–10	2.12	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.0854	Normal	95% KM (t) UCL
	0–10	0.074	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	2.475	Gamma	95% KM (BCA) UCL
	0–10	1.45	Nonparametric	95% Modified-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.2-3
EPCs for Organic COPCs at SWMU 35-009(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.112	—[a]	Maximum detect
	0–10	0.112	—	Maximum detect
Aroclor-1242	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Aroclor-1254	0–1	0.393	—	Maximum detect
	0–10	0.393	—	Maximum detect
Aroclor-1260	0–1	1.26	—	Maximum detect
	0–10	1.26	—	Maximum detect
Bis(2-ethylhexyl)phthalate	0–1	0.199	—	Not a COPC for this depth
	0–10	1.24	Nonparametric	95% Chebyshev (Mean, SD)
4,4'-DDE	0–1	0.000223	—	Maximum detect
	0–10	0.000223	—	Maximum detect
1,1-Dichloroethene	0–1	0.0012	—	Maximum detect
	0–10	0.0025	—	Maximum detect
Diethylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	ND	n/a	Not a COPC for this depth
Di-n-butylphthalate	0–1	0.223	—	Maximum detect
	0–10	0.194	Nonparametric	95% Chebyshev (Mean, SD)
4-Isopropyltoluene	0–1	0.0937	—	Maximum detect
	0–10	0.0937	—	Maximum detect
Pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.092	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	0.0028	—	Maximum detect
	0–10	0.0028	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-3.3-1
EPCs for Inorganic COPCs at SWMU 35-009(e)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Copper	0–1	35	—[a]	Maximum detect
	0–10	35	—	Maximum detect
Lead	0–1	33.2	—	Maximum detect
	0–10	33.2	—	Maximum detect
Mercury	0–1	0.601	—	Maximum detect
	0–10	0.601	—	Maximum detect
Selenium	0–1	0.966	—	Maximum detect
	0–10	0.966	—	Maximum detect
Silver	0–1	2.87	—	Maximum detect
	0–10	2.87	—	Maximum detect
Zinc	0–1	96.9	—	Maximum detect
	0–10	96.9	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.3-2
EPCs for Radionuclide COPCs at SWMU 35-009(e)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.087	—[c]	Maximum detect
Cesium-137	0–1	0.675	—	Maximum detect
	0–10	0.675	—	Maximum detect
Plutonium-238	0–1	0.0172	—	Maximum detect
	0–10	0.0172	—	Maximum detect
Plutonium-239	0–1	0.399	—	Maximum detect
	0–10	3.159	—	Maximum detect
Tritium	0–1	0.073	—	Maximum detect
	0–10	0.073	—	Maximum detect
Uranium-234	0–1	2.4	—	Maximum detect
	0–10	3.42	—	Maximum detect
Uranium-235	0–1	0.167	—	Maximum detect
	0–10	0.47	—	Maximum detect
Uranium-238	0–1	3.12	—	Maximum detect
	0–10	3.12	—	Maximum detect

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-3.3-3
EPCs for Organic COPCs at SWMU 35-009(e)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.0086	—[a]	Maximum detect
	0–10	0.0086	—	Maximum detect
Aroclor-1254	0–1	1.98	Normal	95% Student's-t UCL
	0–10	1.54	Normal	95% Student's-t UCL
Aroclor-1260	0–1	9.52	Normal	95% Student's-t UCL
	0–10	7.40	Normal	95% Student's-t UCL
Benzo(g,h,i)perylene	0–1	0.0194	—	Maximum detect
	0–10	0.0194	—	Maximum detect
Pyrene	0–1	0.0508	—	Maximum detect
	0–10	0.0508	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.4-1
EPCs for Inorganic COPCs at Consolidated Unit 35-014(g)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	0.427	Normal	95% KM (t) UCL
	0–10	1.86	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	46.43	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	36.80	Nonparametric	95% Chebyshev (Mean, SD)
Lead	0–1	30.76	Approximate Gamma	95% Approximate Gamma UCL
	0–10	23.6	Lognormal	95% H-UCL
Mercury	0–1	0.0625	Approximate Gamma	95% KM (t) UCL
	0–10	0.078	Lognormal	95% H-UCL
Selenium	0–1	0.582	Normal	95% KM (t) UCL
	0–10	0.729	Gamma	95% Approximate Gamma UCL
Silver	0–1	0.0885	Gamma	95% KM (t) UCL
	0–10	0.435	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	0.233	Gamma	95% KM (BCA) UCL
	0–10	0.464	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–1	446.2	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	355	Nonparametric	95% Chebyshev (Mean, SD)

[a] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

Table D-3.4-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-014(g)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Europium-152	0–1	0.412	—[a]	Maximum detect
	0–10	0.104	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.151	Normal	95% KM (t) UCL
	0–10	0.347[b]	Nonparametric	Maximum detect
Uranium-234	0–1	16.92	Nonparametric	95% KM (Chebyshev) UCL
	0–10	10.5	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.513	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.320	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.
[b] Recommended EPCexceeds the maximum detected value; the maximum detected value is used.

Table D-3.4-3
EPCs for Organic COPCs at Consolidated Unit 35-014(g)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.258	—[a]	Maximum detect
	0–10	0.258	—	Maximum detect
Benzo(a)anthracene	0–1	0.026	—	Maximum detect
	0–10	0.232	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	0.17	—	Maximum detect
	0–10	0.227	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–1	0.21	—	Maximum detect
	0–10	0.231	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–1	0.021	—	Maximum detect
	0–10	0.231	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	0.23	—	Maximum detect
	0–10	0.234	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic acid	0–1	0.699	—	Maximum detect
	0–10	2.72	Gamma	95% Approximate Gamma UCL
Bis(2-ethylhexyl)phthalate	0–1	0.353	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.661	Lognormal	95% H-UCL
Butanone[2-]	0–1	0.0083	—	Maximum detect
	0–10	0.0083	—	Maximum detect
Chrysene	0–1	0.18	Nonparametric	95% KM (BCA) UCL
	0–10	0.228	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–1	0.018	—	Maximum detect
	0–10	1.44	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-octylphthalate	0–1	0.018	—	Maximum detect
	0–10	1.44	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	0.05[b]	Nonparametric	Maximum detect
	0–10	0.228	Nonparametric	95% Chebyshev (Mean, SD)

Table D-3.4-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
4-Isopropyltoluene	0–1	0.195	—	Maximum detect
	0–10	0.195	—	Maximum detect
Phenanthrene	0–1	0.038	—	Maximum detect
	0–10	0.230	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	0.123	Lognormal	95% KM (t) UCL
	0–10	0.224	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	0.0129	—	Maximum detect
	0–10	0.0129	—	Maximum detect
TPH-DRO	0–1	536.3	Gamma	95% KM (Chebyshe) UCL
	0–10	580	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

[b] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

Table D-3.5-1
EPCs for Inorganic COPCs at AOC 35-014(g3)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	0.0711[a]	Nonparametric	Maximum detect
	0–10	0.306	Nonparametric	95% Chebyshev (Mean, SD)
Mercury	0–1	0.022	Gamma	95% KM (BCA) UCL
	0–10	0.036	Gamma	95% Approximate Gamma UCL
Selenium	0–1	0.21	—[b]	Maximum detect
	0–10	0.415	Nonparametric	95% Modified-t UCL
Zinc	0–1	66.66	Normal	95% Student's-t UCL
	0–10	64.3	Normal	95% Student's-t UCL

[a] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

[b] — = Too few samples to determine distribution or calculate EPC.

Table D-3.5-2
EPCs for Radionuclide COPCs at AOC 35-014(g3)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Cesium-137	0–1	0.098	—[a]	Maximum detect
	0–10	0.115	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–1	0.255	—	Maximum detect
	0–10	0.310	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	NA[b]	n/a[c]	Not a COPC for this depth
	0–10	0.002	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

[b] NA = Not analyzed for this analyte in this depth range.

[c] n/a = Not applicable.

Table D-3.5-3
EPCs for Organic COPCs at AOC 35-014(g3)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.21	Nonparametric	95% KM (t) UCL
	0–10	1.92	Nonparametric	95% Chebyshev (Mean, SD)
Acenaphthylene	0–1	0.0253[a]	Nonparametric	Maximum detect
	0–10	1.91	Nonparametric	95% Chebyshev (Mean, SD)
Acetone	0–1	0.079	Normal	95% KM (t) UCL
	0–10	0.109	Gamma	95% Approximate Gamma UCL
Aldrin	0–1	0.00262	—[b]	Maximum detect
	0–10	0.0106	—	Maximum detect
Anthracene	0–1	0.23	Normal	95% KM (t) UCL
	0–10	1.92	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–1	1.382	Normal	95% KM (t) UCL
	0–10	2.22	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	1.273	Normal	95% KM (t) UCL
	0–10	2.42	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–1	1.2	—	Maximum detect
	0–10	1.94	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–1	1.584	Nonparametric	95% KM (t) UCL
	0–10	2.12	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	6.29	Nonparametric	95% KM (BCA) UCL
	0–10	2.51	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic acid	0–1	1.004	Normal	95% KM (t) UCL
	0–10	10.8	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	5.065	Gamma	95% KM (BCA) UCL
	0–10	6.21	Nonparametric	95% Chebyshev (Mean, SD)
Butanone[2-]	0–1	0.00657	Nonparametric	95% KM (t) UCL
	0–10	0.013	Gamma	95% Approximate Gamma UCL
4-Chloro-3-methylphenol	0–1	0.329	—	Maximum detect
	0–10	5.12	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–1	1.266	Normal	95% KM (t) UCL
	0–10	2.39	Nonparametric	95% Chebyshev (Mean, SD)
4,4'-DDD	0–1	ND[c]	n/a[d]	Not a COPC for this depth
	0–10	0.00877	—	Maximum detect
4,4'-DDT	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0075	—	Maximum detect
Dibenz(a,h)anthracene	0–1	0.27	—	Maximum detect
	0–10	1.92	Nonparametric	95% Chebyshev (Mean, SD)
Dibenzofuran	0–1	0.125[a]	Nonparametric	Maximum detect
	0–10	3.98	Nonparametric	95% Chebyshev (Mean, SD)
1,1-Dichloroethene	0–1	0.00099[a]	Nonparametric	Maximum detect
	0–10	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Dieldrin	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0196	—	Maximum detect

Table D-3.5-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Diethylphthalate	0–1	0.0203[a]	Nonparametric	Maximum detect
	0–10	3.97	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–1	0.37	Normal	95% KM (t) UCL
	0–10	3.81	Nonparametric	95% Chebyshev (Mean, SD)
Endosulfan I	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0074	—	Maximum detect
Endrin	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0163	—	Maximum detect
Ethylbenzene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	1.99	Normal	95% KM (t) UCL
	0–10	2.42	Gamma	95% Approximate Gamma UCL
Fluorene	0–1	0.23	Nonparametric	95% KM (t) UCL
	0–10	1.92	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–1	1.436	Normal	95% KM (t) UCL
	0–10	2.14	Nonparametric	95% Chebyshev (Mean, SD)
Isopropyltoluene[4-]	0–1	0.00663	Normal	95% KM (t) UCL
	0–10	0.009	Lognormal	95% Chebyshev (MVUE)
Methylnaphthalene[2-]	0–1	0.0571	Nonparametric	95% KM (t) UCL
	0–10	1.91	Nonparametric	95% Chebyshev (Mean, SD)
Naphthalene	0–1	0.0715	Nonparametric	95% KM (t) UCL
	0–10	1.91	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	1.281	Normal	95% KM (t) UCL
	0–10	2.25	Nonparametric	95% Chebyshev (Mean, SD)
Phenol	0–1	0.16	—	Maximum detect
	0–10	3.98	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	2.365	Normal	95% KM (t) UCL
	0–10	2.76	Gamma	95% Approximate Gamma UCL
Styrene	0–1	0.00053	—	Maximum detect
	0–10	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Tetrachloroethene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	0.00112	Normal	95% KM (t) UCL
	0–10	0.024	Nonparametric	95% Chebyshev (Mean, SD)
TPH-DRO	0–1	2569	Gamma	95% KM (BCA) UCL
	0–10	3472	Nonparametric	95% Chebyshev (Mean, SD)
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–1	0.002	—	Maximum detect
	0–10	0.004	Nonparametric	95% Modified-t UCL
Trichloroethene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.003	Nonparametric	95% Chebyshev (Mean, SD)

[a] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

[b] — = Too few samples to determine distribution or calculate EPC.

[c] ND = Not detected in this depth range.

[d] n/a = Not applicable.

Table D-3.6-1
EPCs for Inorganic COPCs at Consolidated Unit 35-016(a)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Arsenic	0–1	3.404	Normal	95% KM (t) UCL
	0–10	2.90	Normal	95% Student's-t UCL
Barium	0–1	92.84	Normal	95% Student's-t UCL
	0–10	81.5	Normal	95% Student's-t UCL
Cadmium	0–1	0.58	Normal	95% KM (t) UCL
	0–10	0.518	Gamma	95% Approximate Gamma UCL
Chromium	0–1	15.03	Normal	95% Student's-t UCL
	0–10	13.3	Normal	95% Student's-t UCL
Copper	0–1	44.89	Gamma	95% Approximate Gamma UCL
	0–10	34.5	Gamma	95% Approximate Gamma UCL
Lead	0–1	24.12	Normal	95% Student's-t UCL
	0–10	20.5	Normal	95% Student's-t UCL
Nickel	0–1	8.931	Normal	95% Student's-t UCL
	0–10	7.98	Normal	95% Student's-t UCL
Selenium	0–1	0.356	Normal	95% KM (t) UCL
	0–10	0.326	Normal	95% Student's-t UCL
Zinc	0–1	205.6	Normal	95% Student's-t UCL
	0–10	187	Gamma	95% Approximate Gamma UCL

Table D-3.6-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-016(a)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Plutonium-239	0–1	0.0556	Gamma	95% KM (t) UCL
	0–10	0.037	Normal	95% Student's-t UCL
Tritium	0–1	0.068	—[a]	Maximum detect
	0–10	0.068	—	Maximum detect
Uranium-234	0–1	2.176	Nonparametric	95% KM (BCA) UCL
	0–10	2.212	Gamma	95% KM (Percentile Bootstrap) UCL
Uranium-235	0–1	0.368	Lognormal	95% KM (Chebyshev) UCL
	0–10	0.373	Nonparametric	95% KM (Chebyshev) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.6-3
EPCs for Organic COPCs at Consolidated Unit 35-016(a)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.0204	—[a]	Maximum detect
	0–10	0.024	—	Maximum detect
Acetone	0–1	0.0068	—	Maximum detect
	0–10	0.0068	—	Maximum detect
Anthracene	0–1	0.0335	—	Maximum detect
	0–10	0.055	—	Maximum detect
Aroclor-1254	0–1	0.005	—	Maximum detect
	0–10	0.0068	—	Maximum detect
Aroclor-1260	0–1	0.0268	—	Maximum detect
	0–10	0.0363	—	Maximum detect
Benzo(a)pyrene	0–1	0.0758	—	Maximum detect
	0–10	0.0758	—	Maximum detect
Benzo(b)fluoranthene	0–1	0.12	—	Maximum detect
	0–10	0.12	—	Maximum detect
Benzo(k)fluoranthene	0–1	0.0363	—	Maximum detect
	0–10	0.0363	—	Maximum detect
Bis(2-ethylhexyl)phthalate	0–1	0.98	—	Maximum detect
	0–10	0.98	—	Maximum detect
Chrysene	0–1	0.0855	—	Maximum detect
	0–10	0.0855	—	Maximum detect
Dibenzofuran	0–1	0.0242	—	Maximum detect
	0–10	0.0242	—	Maximum detect
1,1-Dichloroethene	0–1	0.0012	—	Maximum detect
	0–10	0.0012	—	Maximum detect
Di-n-butylphthalate	0–1	0.036	—	Maximum detect
	0–10	0.036	—	Maximum detect
Fluoranthene	0–1	0.217	—	Maximum detect
	0–10	0.217	—	Maximum detect
Fluorene	0–1	0.0471	—	Maximum detect
	0–10	0.0471	—	Maximum detect
4-Isopropyltoluene	0–1	0.0042	—	Maximum detect
	0–10	0.0042	—	Maximum detect
Naphthalene	0–1	0.0285	—	Maximum detect
	0–10	0.0285	—	Maximum detect
Phenanthrene	0–1	0.239	—	Maximum detect
	0–10	0.239	—	Maximum detect
Pyrene	0–1	0.193	—	Maximum detect
	0–10	0.193	—	Maximum detect
Toluene	0–1	0.00046	—	Maximum detect
	0–10	0.00046	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.7-1
EPCs for Inorganic COPCs at AOC 35-016(b)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Cadmium	0–1	0.145	—[a]	Maximum detect
	0–10	0.145	—	Maximum detect
Copper	0–1	13.6	—	Maximum detect
	0–10	13.6	—	Maximum detect
Lead	0–1	21.6	—	Maximum detect
	0–10	67.1	—	Maximum detect
Selenium	0–1	0.657 (U)	—	Maximum detection limit
	0–10	1.4 (U)	—	Maximum detection limit
Silver	0–1	2.72	—	Maximum detect
	0–10	2.72	—	Maximum detect
Zinc	0–1	86.4	—	Maximum detect
	0–10	86.4	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.7-2
EPCs for Radionuclide COPCs at AOC 35-016(b)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Plutonium-238	0–1	0.0382	—[a]	Maximum detect
	0–10	0.0664	—	Maximum detect
Uranium-234	0–1	0.837	Gamma	95% Approximate Gamma UCL
	0–10	1.21	Gamma	95% Approximate Gamma UCL
Uranium-235	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.056	Gamma	95% Approximate Gamma UCL
Uranium-238	0–1	0.866	Normal	95% Student's-t UCL
	0–10	1.34	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-3.7-3
EPCs for Organic COPCs at AOC 35-016(b)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.0109	—[a]	Maximum detect
	0–10	0.0109	—	Maximum detect
Bis(2-ethylhexyl)phthalate	0–1	0.385	—	Maximum detect
	0–10	0.385	—	Maximum detect
Butylbenzylphthalate	0–1	0.0427	—	Maximum detect
	0–10	0.0427	—	Maximum detect
Chrysene	0–1	0.036	—	Maximum detect
	0–10	0.036	—	Maximum detect
Fluoranthene	0–1	0.0392	—	Maximum detect
	0–10	0.0392	—	Maximum detect
Fluorene	0–1	0.0128	—	Maximum detect
	0–10	0.0128	—	Maximum detect
Phenanthrene	0–1	0.0265	—	Maximum detect
	0–10	0.0265	—	Maximum detect
Pyrene	0–1	0.0436	—	Maximum detect
	0–10	0.0436	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.8-1
EPCs for Inorganic COPCs at Consolidated Unit 35-016(c)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	4.647	Nonparametric	95% KM (Chebyshev)
	0–10	3.75	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–1	56.79	Normal	95% Student's-t UCL
	0–10	55.0	Normal	95% Student's-t UCL
Cadmium	0–1	0.067[a]	Nonparametric	Maximum detect
	0–10	0.161	Nonparametric	95% Modified-t UCL
Cobalt	0–1	2.096	Normal	95% KM (t) UCL
	0–10	1.87	Normal	95% Student's-t UCL
Chromium	0–1	19.38	Lognormal	95% H-UCL
	0–10	17.0	Lognormal	95% H-UCL
Copper	0–1	15.75	Approximate Gamma	95% Approximate Gamma UCL
	0–10	13.5	Gamma	95% Approximate Gamma UCL
Lead	0–1	22.65	Approximate Gamma	95% Approximate Gamma UCL
	0–10	19.8	Gamma	95% Approximate Gamma UCL
Mercury	0–1	1.04	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.88	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–1	13.64	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	8.69	Lognormal	95% H-UCL
Selenium	0–1	0.355	Normal	95% KM (t) UCL
	0–10	0.311	Normal	95% Student's-t UCL
Zinc	0–1	66.37	Gamma	95% Approximate Gamma UCL
	0–10	60.4	Gamma	95% Approximate Gamma UCL

[a] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

Table D-3.8-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-016(c)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Cesium-137	0–1	0.318	Normal	95% KM (t) UCL
	0–10	0.314	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–1	0.474	—[a]	Maximum detect
	0–10	0.219	Normal	95% Student's-t UCL
Plutonium-238	0–1	0.732	Nonparametric	95% KM (Chebyshev)
	0–10	0.447	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.174	Normal	95% KM (t) UCL
	0–10	0.22	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	2.242	Normal	95% KM (t) UCL
	0–10	2.042	Normal	95% Student's-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.8-3
EPCs for Organic COPCs at Consolidated Unit 35-016(c)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.0139	—[a]	Maximum detect
	0–10	0.0139	—	Maximum detect
Anthracene	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.37	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–1	0.066	—	Maximum detect
	0–10	0.69	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.54	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–1	0.066	—	Maximum detect
	0–10	0.60	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.32	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.44	Nonparametric	95% Chebyshev (Mean, SD)
Butylbenzylphthalate	0–1	0.27	—	Maximum detect
	0–10	0.237	Nonparametric	95% Modified-t UCL
Chrysene	0–1	0.066	—	Maximum detect
	0–10	0.72	Nonparametric	95% Chebyshev (Mean, SD)
Dibenz(a,h)anthracene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.31	Nonparametric	95% Chebyshev (Mean, SD)
Dichloroethene[1,1-]	0–1	0.0015	—	Maximum detect
	0–10	0.0015	—	Maximum detect
Fluoranthene	0–1	0.0871	Normal	95% KM (t) UCL
	0–10	1.04	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.39	Nonparametric	95% Chebyshev (Mean, SD)
Isopropyltoluene[4-]	0–1	0.00092	—	Maximum detect
	0–10	0.0016	—	Maximum detect
Phenanthrene	0–1	0.13	—	Maximum detect
	0–10	0.84	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	0.0556	Normal	95% KM (t) UCL
	0–10	0.544	Nonparametric	95% Chebyshev (MVUE)
Styrene	0–1	0.00068	—	Maximum detect
	0–10	0.00068	—	Maximum detect
Toluene	0–1	0.00059	—	Maximum detect
	0–10	0.00059	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-3.9-1
EPCs for Inorganic COPCs at AOC 35-016(j)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Cadmium	0–1	0.59 (U)	—[a]	Maximum detection limit
	0–10	0.59 (U)	—	Maximum detection limit
Selenium	0–1	0.307	—	Maximum detect
	0–10	0.307	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.9-2
EPC for Radionuclide COPC at AOC 35-016(j)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Plutonium-239	0–1	0.0671	Normal	95% KM (t) UCL
	0–10	0.0671	Normal	95% KM (t) UCL

Table D-3.9-3
EPCs for Organic COPCs at AOC 35-016(j)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.195	—[a]	Maximum detect
	0–10	0.195	—	Maximum detect
Aroclor-1260	0–1	0.003	—	Maximum detect
	0–10	0.003	—	Maximum detect
Benzo(a)anthracene	0–1	1.09	—	Maximum detect
	0–10	1.09	—	Maximum detect
Benzo(a)pyrene	0–1	1.39	—	Maximum detect
	0–10	1.39	—	Maximum detect
Benzo(b)fluoranthene	0–1	1.8	—	Maximum detect
	0–10	1.8	—	Maximum detect
Benzo(g,h,i)perylene	0–1	0.829	—	Maximum detect
	0–10	0.829	—	Maximum detect
Benzo(k)fluoranthene	0–1	0.784	—	Maximum detect
	0–10	0.784	—	Maximum detect
Benzoic acid	0–1	0.571	—	Maximum detect
	0–10	0.571	—	Maximum detect
Bis(2-ethylhexyl)phthalate	0–1	0.851	—	Maximum detect
	0–10	0.851	—	Maximum detect
Chrysene	0–1	1.42	—	Maximum detect
	0–10	1.42	—	Maximum detect
Fluoranthene	0–1	2.02	—	Maximum detect
	0–10	2.02	—	Maximum detect
Indeno(1,2,3-cd)pyrene	0–1	0.691	—	Maximum detect
	0–10	0.691	—	Maximum detect
2-Methylnaphthalene	0–1	0.0468	—	Maximum detect
	0–10	0.0468	—	Maximum detect
Phenanthrene	0–1	1.16	—	Maximum detect
	0–10	1.16	—	Maximum detect
Pyrene	0–1	2.73	—	Maximum detect
	0–10	2.73	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.10-1
Soil and Fill Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Metals
AAA6381	35-02035	1.5–2.5	ALLH	16518[a]
AAA6401	35-02036	0–1.1	ALLH	16518
RE35-04-54030	35-02100	1–1.5	FILL	2326S
AAC1179	35-02102	0–1	ALLH	21477
AAC1160	35-02105	0–1	ALLH	21467
AAC1171	35-02111	1–2	ALLH	21477
0435-95-0015	35-02168	1–2	ALLH	49
0435-95-0023	35-02170	0–0.5	ALLH	49
0435-95-0201	35-02287	1–2	ALLH	1679
0435-96-0058	35-02396	0–0.66	ALLH	2207
0435-96-0060	35-02397	0–1	ALLH	2207
0435-96-0062	35-02398	0–0.5	ALLH	2207
0435-96-0064	35-02399	0–0.5	ALLH	2207
0435-96-0067	35-02400	0–0.66	ALLH	2207
0435-96-0069	35-02401	0–0.83	ALLH	2207
RE35-98-0029	35-02596	0.5–1.5	ALLH	4375R
RE35-98-0028	35-02596	0–0.5	ALLH	4375R
RE35-98-0030	35-02596	1.5–2.5	ALLH	4375R
RE35-98-0031	35-02596	2.5–3.5	ALLH	4375R
RE35-98-0032	35-02597	0–0.5	FILL	4375R
RE35-04-54052	35-22931	0.25–0.6	ALLH	2293S
RE35-04-54158	35-22967	0.4–1.08	ALLH	2299S
RE35-04-54157	35-22967	0–0.4	ALLH	2299S
RE35-04-54165	35-22971	0.7–0.9	ALLH	2310S
RE35-04-54168	35-22972	0.85–2	ALLH	2310S
RE35-04-54167	35-22972	0–0.85	ALLH	2310S
RE35-04-54171	35-22974	0.07–0.23	ALLH	2551S
RE35-04-54172	35-22974	0.23–0.39	ALLH	2551S
RE35-04-54174	35-22975	0.36–0.85	ALLH	2551S
RE35-04-54173	35-22975	0–0.36	ALLH	2551S
RE35-04-54874	35-23287	0.1–0.89	ALLH	2321S

[a] Analytical request number.

Table D-3.10-2
Summary of Inorganic Chemicals above BV or Detected in Soil and Fill, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Copper	Lead	Lithium	Mercury	Silver	Zinc
Soil/Fill Background Value (mg/kg)				0.83	14.7	22.3	na[a]	0.1	1	48.8
AAA6381	35-02035	1.50–2.50	ALLH	1.1 (UJ)	—[b]	—	4(J)	—	—	—
AAA6401	35-02036	0.00–1.10	ALLH	1.1 (UJ)	—	—	3.5 (J)	—	—	—
AAC1179	35-02102	0.00–1.00	ALLH	—	—	—	—	0.11 (UJ)	—	68.5
AAC1160	35-02105	0.00–1.00	ALLH	—	—	—	—	—	—	—
AAC1171	35-02111	1.00–2.00	ALLH	—	—	—	—	—	3.1	—
0435-95-0015	35-02168	1.00–2.00	ALLH	—	—	—	—	0.11 (U)	1.5 (U)	—
0435-95-0023	35-02170	0.00–0.50	ALLH	1.2 (J-)	88.3	92	—	—	1.4 (U)	752
0435-95-0201	35-02287	1.00–2.00	ALLH	10.4 (U)	—	—	—	—	1.1 (U)	—
0435-96-0060	35-02397	0.00–1.00	ALLH	—	—	—	—	—	—	83.7
0435-96-0062	35-02398	0.00–0.50	ALLH	8.2 (J-)	31.8	58.6	—	1.3	—	104
0435-96-0064	35-02399	0.00–0.50	ALLH	—	28.8	28.6	—	1	—	110
0435-96-0067	35-02400	0.00–0.66	ALLH	—	—	—	—	0.13	—	—
0435-96-0069	35-02401	0.00–0.83	ALLH	—	—	—	—	—	—	56.7
RE35-98-0028	35-02596	0.00–0.50	ALLH	—	—	—	—	0.11 (U)	—	83
RE35-98-0029	35-02596	0.50–1.50	ALLH	—	—	—	—	0.11 (U)	—	—
RE35-98-0030	35-02596	1.50–2.50	ALLH	—	—	—	—	0.12 (U)	—	—
RE35-98-0031	35-02596	2.50–3.50	ALLH	—	—	—	—	0.11 (U)	—	—
RE35-04-54052	35-22931	0.25–0.60	ALLH	—	19.7	30.5	—	0.601	—	85.9
RE35-04-54157	35-22967	0.00–0.40	ALLH	—	—	—	—	0.45	2.87	94.2
RE35-04-54158	35-22967	0.40–1.08	ALLH	—	35	—	—	0.179	—	—
RE35-04-54165	35-22971	0.70–0.90	ALLH	—	27.4	32.2	—	—	—	167
RE35-04-54167	35-22972	0.00–0.85	ALLH	—	18.8	25.6	—	—	—	113
RE35-04-54168	35-22972	0.85–2.00	ALLH	—	—	—	—	—	—	65.1
RE35-04-54171	35-22974	0.07–0.23	ALLH	—	—	—	—	—	—	58
RE35-04-54173	35-22975	0.00–0.36	ALLH	—	51.1	33.3	—	0.207	—	586
RE35-04-54174	35-22975	0.36–0.85	ALLH	—	16.8	—	—	—	—	214
RE35-04-54874	35-23287	0.10–0.89	ALLH	—	—	—	—	—	—	52.7

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV.

Table D-3.10-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Metals
AAA6429	35-02037	3–4	Qbt3	16518[a]
AAA6437	35-02038	2.5–3.5	Qbt3	16519
AAC1144	35-02107	2–3	Qbt3	21456
0435-95-0033	35-02183	2–3	Qbt3	54
0435-95-0048	35-02187	0–1	Qbt3	54
0435-95-0009	35-02190	2–3	Qbt3	59
0435-95-0063	35-02192	2–3	Qbt3	59
AAA6441	35-02221	4–5	Qbt3	16519
AAA6446	35-02222	3–4	Qbt3	16519
0435-96-0055	35-02394	0.5–1	Qbt3	2207
0435-96-0057	35-02395	2–3	Qbt3	2207
0435-96-0059	35-02396	0.67–1.5	Qbt3	2207
0435-96-0061	35-02397	1–2	Qbt3	2207
0435-96-0063	35-02398	0.5–1.5	Qbt3	2207
0435-96-0065	35-02399	0.5–1.5	Qbt3	2207
0435-96-0068	35-02400	2–3	Qbt3	2207
0435-96-0070	35-02401	2.5–3.5	Qbt3	2207

[a] Analytical request number.

Table D-3.10-4
Summary of Inorganic Chemicals above BV or Detected in Tuff, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Zinc
Qbt3 Background Value (mg/kg)				0.83	7.14	4.56	11.2	na[a]	0.1	6.58	0.3	63.5
AAA6429	35-02037	3–4	Qbt3	1 (UJ)	—[b]	4.9 (J)	—	3 (J)	—	—	0.41 (UJ)	—
AAA6437	35-02038	2.5–3.5	Qbt3	1 (U)	—	4.8 (J)	—	4.9 (J)	—	—	0.42 (J)	—
AAC1144	35-02107	2–3	Qbt3	—	—	—	—	—	0.11 (UJ)	—	1.1 (UJ)	—
0435-95-0033	35-02183	2–3	Qbt3	—	7.5 (J+)	—	—	—	0.11 (UJ)	—	1.3 (U)	—
0435-95-0048	35-02187	0–1	Qbt3	—	—	—	—	—	0.11 (UJ)	—	1.3 (U)	—
0435-95-0009	35-02190	2–3	Qbt3	—	—	—	67.1	—	0.12 (U)	—	1.4 (U)	—
0435-95-0063	35-02192	2–3	Qbt3	—	10.4	—	—	—	0.11 (U)	—	1.2 (U)	—
AAA6441	35-02221	4–5	Qbt3	1 (U)	—	12.7	—	3 (J)	—	—	0.41 (U)	—
AAA6446	35-02222	3–4	Qbt3	1 (U)	7.9	39.1	—	3.6 (J)	—	—	0.41 (U)	—
0435-96-0055	35-02394	0.5–1	Qbt3	—	23.8	44.8	—	—	—	13.1	0.32 (U)	194
0435-96-0057	35-02395	2–3	Qbt3	—	12.2	—	—	—	—	7.5	0.56 (U)	—
0435-96-0059	35-02396	0.67–1.5	Qbt3	—	41.3	—	14.9	—	—	21.1	0.4 (U)	—
0435-96-0063	35-02398	0.5–1.5	Qbt3	—	56.6	36	26.7	—	2.7	27.9	0.41 (U)	92.9
0435-96-0065	35-02399	0.5–1.5	Qbt3	—	11.5	—	19.7	—	0.14	—	0.31 (U)	—
0435-96-0068	35-02400	2–3	Qbt3	—	25.1	—	—	—	—	13.9	0.7 (U)	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-3.10-5
Sediment Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cyanide	Metals
RE35-98-0024	35-02169	0–0.25	SED	—[a]	4330R[b]
0435-96-0054	35-02394	0–0.5	SED	—	2207
0435-96-0056	35-02395	0–2	SED	—	2207
RE35-98-0036	35-02598	0–0.5	SED	—	4375R
RE35-98-0040	35-02599	0–0.5	SED	—	4375R
RE35-04-54155	35-22966	0–0.5	SED	—	2299S
RE35-04-54159	35-22968	0–0.23	SED	—	2551S
RE35-04-54160	35-22968	0.23–0.92	SED	—	2551S
RE35-04-54161	35-22969	0.33–0.62	SED	—	2551S
RE35-04-54162	35-22969	0.62–0.98	SED	—	2551S
RE35-04-54163	35-22970	0–0.15	SED	—	2310S
RE35-04-54166	35-22971	0–0.7	SED	—	2310S
RE35-04-54169	35-22973	0.03–0.3	SED	2557S	2557S
RE35-04-54170	35-22973	0.3–0.98	SED	2557S	2557S

Table D-3.10-5 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Cyanide	Metals
RE35-04-54669	35-23200	0–0.66	SED	—	2633S
RE35-04-54670	35-23200	0.66–1.35	SED	—	2633S
RE35-04-54671	35-23201	0–0.46	SED	—	2633S
RE35-04-54672	35-23201	0.46–0.89	SED	—	2633S
RE35-04-54675	35-23203	0–0.2	SED	—	2633S
RE35-04-54676	35-23203	0.2–0.49	SED	—	2633S
RE35-04-54679	35-23205	0–0.3	SED	2713S	2713S
RE35-04-54680	35-23205	0.3–0.66	SED	2713S	2713S
RE35-04-54683	35-23207	0–0.39	SED	2713S	2713S
RE35-04-54684	35-23207	0.39–1.05	SED	2713S	2713S
RE35-04-54685	35-23207	2.95–3.44	SED	2713S	2713S
RE35-04-54686	35-23208	0–0.2	SED	2556S	2556S
RE35-04-54688	35-23209	0–0.33	SED	—	2633S
RE35-04-54689	35-23209	0.72–1.21	SED	—	2633S
RE35-04-54690	35-23210	0.1–0.66	SED	2556S	2556S
RE35-04-54855	35-23280	0.43–1.41	SED	—	2719S
RE35-04-54856	35-23280	1.41–1.84	SED	—	2719S
RE35-04-54861	35-23282	0–0.62	SED	—	2719S
RE35-04-54862	35-23282	0.62–1.31	SED	—	2719S
RE35-04-54867	35-23284	0–0.59	SED	—	2714S
RE35-04-54868	35-23284	1.31–1.64	SED	—	2714S
RE35-04-54873	35-23287	0–0.1	SED	—	2321S
RE35-04-54875	35-23288	0–0.07	SED	—	2321S
RE35-04-54876	35-23288	0.07–0.2	SED	—	2321S
RE35-04-54877	35-23289	0–0.13	SED	—	2338S
RE35-04-54878	35-23289	0.36–0.75	SED	—	2338S
RE35-04-54879	35-23290	0–0.49	SED	—	2714S
RE35-04-54880	35-23290	1.97–2.3	SED	—	2714S
RE35-04-54881	35-23291	0.46–0.85	SED	—	2714S
RE35-04-54882	35-23291	0.85–1.25	SED	—	2714S
RE35-04-54883	35-23292	0–0.79	SED	—	2719S
RE35-04-54884	35-23292	0.79–1.57	SED	—	2719S
RE35-04-54885	35-23292	1.57–2.03	SED	—	2719S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-3.10-6
Summary of Inorganic Chemicals above BV or Detected in Sediment, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cadmium	Chromium	Copper	Lead	Mercury	Selenium	Silver	Zinc
Sediment Background Value (mg/kg)				0.4	10.5	11.2	19.7	0.1	0.3	1	60.2
RE35-98-0024	35–02169	0.00-0.25	SED	—[a]	—	—	—	—	—	—	163
0435-96-0054	35–02394	0.00-0.50	SED	0.48 (U)	14.1	84.1	—	—	0.32 (U)	—	387
0435-96-0056	35–02395	0.00-2.00	SED	—	17.8	—	—	—	0.52 (U)	—	85.2
RE35-98-0036	35–02598	0.00-0.50	SED	—	—	—	—	—	1 (U)	—	—
RE35-98-0040	35–02599	0.00-0.50	SED	—	—	—	—	—	1 (U)	—	—
RE35-04-54155	35–22966	0.00-0.50	SED	—	—	22.3	33.2	0.133	0.553	—	96.9
RE35-04-54159	35–22968	0.00-0.23	SED	0.572 (U)	—	—	—	—	0.572 (U)	—	73.6
RE35-04-54160	35–22968	0.23-0.92	SED	—	—	—	—	—	0.61 (U)	—	66.7
RE35-04-54161	35–22969	0.33-0.62	SED	—	—	—	—	—	0.6 (U)	—	—
RE35-04-54163	35–22970	0.00-0.15	SED	0.976	14	28.6	36.5	—	0.52 (U)	—	260
RE35-04-54169	35–22973	0.03-0.30	SED	0.558 (U)	—	12.6	—	—	0.558 (U)	—	—
RE35-04-54170	35–22973	0.30-0.98	SED	0.593 (U)	—	—	—	—	0.593 (U)	—	—
RE35-04-54669	35–23200	0.00-0.66	SED	—	—	—	—	—	0.446 (U)	—	90.5
RE35-04-54670	35–23200	0.66-1.35	SED	—	—	—	—	—	0.548 (U)	—	76.4
RE35-04-54671	35–23201	0.00-0.46	SED	—	—	—	—	—	0.534 (U)	—	—
RE35-04-54672	35–23201	0.46-0.89	SED	—	—	—	—	—	0.507 (U)	—	—
RE35-04-54675	35–23203	0.00-0.20	SED	—	—	—	—	—	0.565 (U)	—	—
RE35-04-54676	35–23203	0.20-0.49	SED	—	—	—	—	—	0.572 (U)	—	—
RE35-04-54679	35–23205	0.00-0.30	SED	—	—	—	—	—	0.43 (U)	1.1	—
RE35-04-54680	35–23205	0.30-0.66	SED	—	—	—	—	—	0.572 (U)	2.58	—
RE35-04-54683	35–23207	0.00-0.39	SED	0.539 (U)	—	—	—	—	0.43 (U)	—	—
RE35-04-54684	35–23207	0.39-1.05	SED	—	—	13.6	21.6	—	0.657 (U)	2.72	86.4
RE35-04-54685	35–23207	2.95-3.44	SED	—	—	—	—	—	0.538 (U)	1.41	—
RE35-04-54686	35–23208	0.00-0.20	SED	0.54 (U)	—	—	—	—	0.54 (U)	—	—
RE35-04-54688	35–23209	0.00-0.33	SED	—	—	—	—	—	0.563 (U)	—	—
RE35-04-54689	35–23209	0.72-1.21	SED	—	—	—	—	—	0.561 (U)	—	—
RE35-04-54690	35–23210	0.10-0.66	SED	0.557 (U)	—	—	—	—	0.307 (J)	—	—
RE35-04-54855	35–23280	0.43-1.41	SED	—	13.5	101	—	1.05	0.375 (U)	4.51	96.3
RE35-04-54856	35–23280	1.41-1.84	SED	—	—	43	—	0.378	0.556 (UJ)	—	72.1
RE35-04-54861	35–23282	0.00-0.62	SED	—	—	—	—	—	0.552 (UJ)	—	—
RE35-04-54862	35–23282	0.62-1.31	SED	0.547 (U)	—	—	—	—	0.359 (U)	—	—
RE35-04-54868	35–23284	1.31-1.64	SED	0.562 (U)	—	—	—	—	0.562 (U)	—	—
RE35-04-54873	35–23287	0.00-0.10	SED	—	—	12.1 (J)	—	—	0.314 (J)	—	60.3
RE35-04-54875	35–23288	0.00-0.07	SED	—	12.6 (J)	—	—	—	0.498 (U)	—	—
RE35-04-54876	35–23288	0.07-0.20	SED	—	—	—	—	0.116 (J)	0.355 (J)	—	—
RE35-04-54878	35–23289	0.36-0.75	SED	—	—	—	—	—	0.508 (U)	—	—
RE35-04-54879	35–23290	0.00-0.49	SED	—	—	—	—	—	0.434 (U)	—	—
RE35-04-54880	35–23290	1.97-2.30	SED	—	—	13.5	—	0.899	0.604 (U)	—	—
RE35-04-54881	35–23291	0.46-0.85	SED	—	—	—	—	—	0.576 (U)	—	—
RE35-04-54882	35–23291	0.85-1.25	SED	0.55 (U)	—	—	—	—	0.55 (U)	—	—
RE35-04-54883	35–23292	0.00-0.79	SED	0.588 (U)	—	—	—	—	0.308 (U)	—	—
RE35-04-54884	35–23292	0.79-1.57	SED	0.522 (U)	—	—	—	—	0.311 (U)	—	—
RE35-04-54885	35–23292	1.57-2.03	SED	0.514 (U)	—	—	—	—	0.378 (U)	—	—

[a] — indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-3.10-7
EPCs for Inorganic COPCs in the Ten Site Slope Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–5	0.713	Nonparametric	95% Chebyshev (Mean, SD)
Cadmium	0–5	0.340	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–5	11.21	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–5	19.316	Nonparametric	95% Chebyshev (Mean, SD)
Lead	0–5	19.265	Nonparametric	95% Chebyshev (Mean, SD)
Lithium	0–5	4.9	—[a]	Maximum detect
Mercury	0–5	0.295	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–5	5.264	Lognormal	95% H-UCL
Selenium	0–5	0.44	Nonparametric	95% Chebyshev (Mean, SD)
Silver	0–5	0.67	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–5	119.526	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-3.10-8
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
AAA6381	35-02035	1.5–2.5	ALLH	—[a]	—	16522[b]	16522	—
AAA6401	35-02036	0–1.1	ALLH	—	—	16522	16522	—
AAA6461	35-02041	4–5	ALLH	—	—	16635	16635	—
AAA6464	35-02042	4–5	ALLH	—	—	16635	16635	—
AAA3826	35-02079	0–1	ALLH	—	16391	16391	16391	—
AAA3827	35-02079	1–2	ALLH	—	16391	16391	16391	—
AAA4445	35-02080	0–1	ALLH	—	16391	16391	16391	—
AAA4446	35-02080	1–2	ALLH	—	16391	16391	16391	—
AAC1177	35-02100	1–1.5	FILL	21478	—	21478	21478	—
AAC1178	35-02101	0–0.5	ALLH	—	—	21478	21478	—
AAC1158	35-02103	0–0.5	ALLH	21468	—	21468	21468	—
AAC1159	35-02104	0–0.5	ALLH	—	—	21468	21468	—
AAC1141	35-02106	0–0.5	ALLH	—	—	21457	21457	—
AAC1165	35-02108	0–0.5	ALLH	21478	—	21478	21478	—
AAC1169	35-02110	0–0.5	ALLH	—	—	21478	21478	—
AAC1137	35-02114	0–1	ALLH	—	—	21457	21457	—
AAC1138	35-02114	1–2	ALLH	—	—	21457	21457	—
AAC1139	35-02114	2–3	ALLH	—	—	—	21457	—
AAC1146	35-02115	0–0.5	ALLH	21457	—	—	21457	—
AAC1147	35-02116	0–0.5	ALLH	—	—	21457	21457	—
AAC1148	35-02117	0–0.5	ALLH	—	—	21457	21457	—
0435-95-0011	35-02167	0–0.5	ALLH	—	—	50	50	—

Table D-3.10-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0435-95-0013	35-02168	0–1	ALLH	51	—	—	—	—
0435-95-0021	35-02169	0–0.5	ALLH	—	—	50	50	—
0435-95-0028	35-02171	1–2	ALLH	51	—	—	—	—
0435-95-0045	35-02186	0–0.5	ALLH	—	—	—	—	—
0435-95-0002	35-02189	0–0.5	ALLH	—	—	61	61	—
0435-95-0005	35-02190	0–1	ALLH	62	—	—	—	—
0435-95-0056	35-02191	0–0.5	ALLH	—	—	61	61	—
0435-95-0060	35-02192	0–1	ALLH	62	—	—	—	—
AAA6453	35-02223	0–0.5	ALLH	—	—	16635	16635	—
AAA6454	35-02224	0–0.5	ALLH	—	—	16635	16635	—
0435-96-0058	35-02396	0–0.66	ALLH	2208	—	2208	—	—
0435-96-0060	35-02397	0–1	ALLH	2208	—	2208	—	—
0435-96-0062	35-02398	0–0.5	ALLH	2208	—	2208	—	—
0435-96-0064	35-02399	0–0.5	ALLH	2208	—	2208	—	—
0435-96-0067	35-02400	0–0.66	ALLH	2208	—	2208	—	—
0435-96-0069	35-02401	0–0.83	ALLH	2208	—	2208	—	—
0435-97-0173	35-02487	0–1	ALLH	3350R	—	—	—	—
0435-97-0176	35-02488	0–1	FILL	3350R	—	—	—	—
0435-97-0181	35-02489	0–0.5	ALLH	3350R	—	—	—	—
0435-97-0187	35-02491	0–0.5	ALLH	3350R	—	—	—	—
0435-97-0284	35-02536	0–0.5	FILL	3477R	—	—	—	3477R
0435-97-0291	35-02537	0–1	FILL	3477R	—	—	—	3477R
0435-97-0292	35-02537	1–2	FILL	3477R	3477R	—	—	3477R
0435-97-0301	35-02538	0–1	FILL	3486R	—	—	—	3486R
0435-97-0308	35-02539	0–0.8	FILL	3486R	—	—	—	3486R
0435-97-0295	35-02540	0–0.5	FILL	3477R	—	—	—	3477R
0435-97-0312	35-02541	0–1	ALLH	3486R	—	—	—	3486R
0435-97-0316	35-02542	0–1	ALLH	3546R	—	3546R	3546R	3546R
0435-97-0317	35-02542	1–1.5	ALLH	3546R	3546R	3546R	3546R	3546R
0435-97-0320	35-02543	0–1	ALLH	3546R	—	3546R	3546R	3546R
0435-97-0321	35-02543	1–2	ALLH	3546R	3546R	3546R	3546R	3546R
0435-97-0324	35-02544	0–1	ALLH	3546R	—	3546R	3546R	3546R
0435-97-0325	35-02544	1–1.5	ALLH	3546R	3546R	3546R	3546R	3546R
0435-97-0329	35-02545	0.5–1.5	FILL	3496R	—	—	3496R	—
0435-97-0333	35-02546	0.5–1.5	FILL	3496R	—	—	3496R	—
0435-97-0338	35-02547	0–0.5	ALLH	3546R	—	—	3546R	—
0435-97-0342	35-02548	0–1	ALLH	3546R	—	—	3546R	—
0435-97-0346	35-02549	0–1	ALLH	3557R	—	—	3557R	—
0435-97-0428	35-02566	0–1	ALLH	3531R	—	—	—	3531R
0435-97-0429	35-02566	1–2	ALLH	3531R	—	—	—	3531R

Table D-3.10-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0435-97-0444	35-02571	0–1	FILL	3562R	—	—	3562R	—
0435-97-0445	35-02571	2–3	FILL	3562R	—	—	3562R	—
0435-97-0446	35-02571	4–5	FILL	3562R	—	—	3562R	—
0435-97-0447	35-02572	0–1	FILL	3562R	—	—	3562R	—
0435-97-0448	35-02572	3–4	FILL	3562R	—	—	3562R	—
0435-97-0450	35-02573	0–1	FILL	3562R	—	—	3562R	—
0435-97-0452	35-02573	2–3	FILL	3562R	—	—	3562R	—
0435-97-0454	35-02574	0–1	FILL	3562R	—	—	3562R	—
0435-97-0455	35-02574	3–4	FILL	3562R	—	—	3562R	—
0435-97-0457	35-02575	0–1	FILL	3562R	—	—	3562R	—
0435-97-0458	35-02575	2–3	FILL	3562R	—	—	3562R	—
0435-97-0459	35-02575	4–5	FILL	3562R	—	—	3562R	—
0435-97-0460	35-02576	0–1	FILL	3562R	—	—	3562R	—
0435-97-0461	35-02576	4–5	FILL	3562R	—	—	3562R	—
0435-97-0463	35-02577	0–0.5	ALLH	3557R	—	3557R	3557R	—
0435-97-0477	35-02580	0–0.66	ALLH	3570R	—	3570R	3570R	—
0435-97-0482	35-02581	0–1	ALLH	3556R	—	—	—	—
0435-97-0483	35-02581	1–1.83	ALLH	3556R	—	—	—	—
0435-97-0486	35-02582	0–0.83	ALLH	3556R	—	—	—	—
0435-97-0491	35-02583	0–1	ALLH	3556R	—	—	—	—
0435-97-0495	35-02595	0–0.5	ALLH	3562R	—	—	3562R	—
RE35-98-0028	35-02596	0–0.5	ALLH	4376R	—	4376R	4376R	—
RE35-98-0029	35-02596	0.5–1.5	ALLH	4376R	—	4376R	4376R	—
RE35-98-0030	35-02596	1.5–2.5	ALLH	4376R	—	4376R	4376R	—
RE35-98-0031	35-02596	2.5–3.5	ALLH	4376R	—	4376R	4376R	—
RE35-98-0032	35-02597	0–0.5	FILL	4376R	—	4376R	4376R	—
RE35-04-54052	35-22931	0.25–0.6	ALLH	2294S	—	2294S	2294S	—
RE35-04-54157	35-22967	0–0.4	ALLH	2300S	—	2300S	2300S	—
RE35-04-54158	35-22967	0.4–1.08	ALLH	2300S	—	2300S	2300S	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-3.10-9
Summary of Radionuclides Detected or Detected above BV/FV in Soil and Fill, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cesium-137	Europium-152	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)				1.65	na[a]	0.054	na	2.59	0.2	2.29
AAA6401	35-02036	0–1.1	ALLH	—[b]	—	0.027[c]	—	—	—	—
AAA6464	35-02042	4–5	ALLH	—	—	—	—	5.099	0.212	5.05
AAA3826	35-02079	0–1	ALLH	—	—	—	0.072789	—	—	—
AAA3827	35-02079	1–2	ALLH	—	—	—	5.178E-02	2.64	0.47	2.48 (J)
AAA4445	35-02080	0–1	ALLH	—	—	—	6.784E-02	4.41	0.972	3.23 (J)
AAA4446	35-02080	1–2	ALLH	—	—	—	—	4.13	1.15	—
AAC1165	35-02108	0–0.5	ALLH	—	0.474 (J)	—	—	—	—	—
0435-95-0011	35-02167	0–0.5	ALLH	—	—	—	—	49.241	1.534	—
AAA6453	35-02223	0–0.5	ALLH	—	—	0.059	—	—	—	—
AAA6454	35-02224	0–0.5	ALLH	—	—	0.365	—	—	—	—
0435-96-0058	35-02396	0–0.66	ALLH	0.52[c]	—	—	—	—	—	—
0435-96-0060	35-02397	0–1	ALLH	0.45[c]	—	0.079	—	—	—	—
0435-96-0067	35-02400	0–0.66	ALLH	0.23[c]	—	—	—	—	—	—
0435-97-0187	35-02491	0–0.5	ALLH	—	0.255	—	—	—	—	—
0435-97-0292	35-02537	1–2	FILL	—	—	—	0.07	—	—	—
0435-97-0316	35-02542	0–1	ALLH	—	—	0.069	—	—	—	—
0435-97-0317	35-02542	1–1.5	ALLH	—	—	0.0336[c]	0.04	—	—	—
0435-97-0320	35-02543	0–1	ALLH	—	—	0.134	—	—	—	—
0435-97-0321	35-02543	1–2	ALLH	—	—	0.084	0.07	—	—	—
0435-97-0324	35-02544	0–1	ALLH	—	—	0.062	—	—	—	—
0435-97-0325	35-02544	1–1.5	ALLH	—	—	0.0277[c]	—	—	—	—
0435-97-0428	35-02566	0–1	ALLH	0.228[c]	—	—	—	—	—	—
0435-97-0447	35-02572	0–1	FILL	—	0.412	—	—	—	—	—
0435-97-0463	35-02577	0–0.5	ALLH	—	—	0.347	—	—	—	—
0435-97-0495	35-02595	0–0.5	ALLH	—	—	—	—	35.6	1.04	—
RE35-98-0030	35-02596	1.5–2.5	ALLH	—	—	0.073	—	—	—	—
RE35-04-54052	35-22931	0.25–0.6	ALLH	0.675[c]	—	0.399	—	—	—	3.12
RE35-04-54157	35-22967	0–0.4	ALLH	—	—	0.288	—	—	—	—
RE35-04-54158	35-22967	0.4–1.08	ALLH	0.133[c]	—	0.0933	—	—	—	2.41

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-3.10-10
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec.	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
AAA6429	35-02037	3–4	Qbt3	—[a]	—	16522[b]	16522	—
AAA6437	35-02038	2.5–3.5	Qbt3	—	—	16532	16532	—
AAA3828	35-02079	2–3	Qbt3	—	16391	16391	16391	—
AAA4447	35-02080	2–3	Qbt3	—	16391	16391	16391	—
0435-95-0033	35-02183	2–3	Qbt3	56	—	—	—	—
0435-95-0040	35-02185	0–1	Qbt3	—	—	—	55	—
0435-95-0043	35-02185	2–3	Qbt3	—	—	55	55	—
AAA6441	35-02221	4–5	Qbt3	—	—	16532	16532	—
AAA6446	35-02222	3–4	Qbt3	—	—	16532	16532	—
0435-96-0055	35-02394	0.5–1	Qbt3	2208	—	2208	—	—
0435-96-0057	35-02395	2–3	Qbt3	2208	—	2208	—	—
0435-96-0059	35-02396	0.67–1.5	Qbt3	2208	—	2208	—	—
0435-96-0061	35-02397	1–2	Qbt3	2208	—	2208	—	—
0435-96-0063	35-02398	0.5–1.5	Qbt3	2208	—	2208	—	—
0435-96-0065	35-02399	0.5–1.5	Qbt3	2208	—	2208	—	—
0435-96-0068	35-02400	2–3	Qbt3	2208	—	2208	—	—
0435-96-0070	35-02401	2.5–3.5	Qbt3	2208	—	2208	—	—
0435-97-0174	35-02487	1–2	Qbt3	3350R	—	—	—	—
0435-97-0178	35-02488	1–2	Qbt3	3350R	—	—	—	—
0435-97-0182	35-02489	0.5–1	Qbt3	3350R	—	—	—	—
0435-97-0183	35-02489	1–1.5	Qbt3	3350R	—	—	—	—
0435-97-0185	35-02490	1–2	Qbt3	3350R	—	—	—	—
0435-97-0188	35-02491	0.5–1	Qbt3	3350R	—	—	—	—
0435-97-0189	35-02491	1–2	Qbt3	3350R	—	—	—	—
0435-97-0191	35-02492	0.83–1.5	Qbt3	3350R	—	—	—	—
0435-97-0286	35-02536	1.5–2.5	Qbt3	3477R	3477R	—	—	3477R
0435-97-0293	35-02537	2–3	Qbt3	3477R	3477R	—	—	3477R
0435-97-0303	35-02538	1–2	Qbt3	3486R	3486R	—	—	3486R
0435-97-0310	35-02539	1–2	Qbt3	3486R	3486R	—	—	3486R
0435-97-0297	35-02540	0.5–1.5	Qbt3	3477R	3477R	—	—	3477R
0435-97-0314	35-02541	1.5–2	Qbt3	3486R	3486R	—	—	3486R
0435-97-0319	35-02542	1.5–2.5	Qbt3	3546R	3546R	3546R	3546R	3546R
0435-97-0323	35-02543	2–3	Qbt3	3546R	3546R	3546R	3546R	3546R
0435-97-0327	35-02544	1.5–2.5	Qbt3	3546R	3546R	3546R	3546R	3546R
0435-97-0341	35-02547	0.5–1.5	Qbt3	3546R	—	—	3546R	—
0435-97-0345	35-02548	1–2	Qbt3	3546R	—	—	3546R	—
0435-97-0349	35-02549	1–2	Qbt3	3557R	—	—	3557R	—
0435-97-0353	35-02550	0.5–1.5	Qbt3	3557R	—	—	3557R	—
0435-97-0430	35-02566	2–3	Qbt3	3531R	—	—	—	3531R
0435-97-0431	35-02567	0–1	Qbt3	3531R	—	—	—	3531R

Table D-3.10-10 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Gamma Spec.	Tritium	Isotopic Plutonium	Isotopic Uranium	Strontium-90
0435-97-0432	35-02567	1–2	Qbt3	3531R	—	—	—	3531R
0435-97-0433	35-02567	2–3	Qbt3	3531R	—	—	—	3531R
0435-97-0466	35-02577	0.5–1.5	Qbt3	3557R	—	3557R	3557R	—
0435-97-0471	35-02578	0.5–1.5	Qbt3	3557R	—	3557R	3557R	—
0435-97-0475	35-02579	0.5–1.5	Qbt3	3557R	—	3557R	3557R	—
0435-97-0481	35-02580	0.67–1.67	Qbt3	3570R	—	3570R	3570R	—
0435-97-0485	35-02581	1.83–2.5	Qbt3	3556R	—	—	—	—
0435-97-0490	35-02582	0.83–1.5	Qbt3	3556R	—	—	—	—
0435-97-0494	35-02583	1–2	Qbt3	3556R	—	—	—	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-3.10-11
Summary of Radionuclides Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Qbt3 Background/Fallout Value (pCi/g)				na[a]	na	na	na	na	na	1.98	0.09	1.93
AAA3828	35-02079	2–3	Qbt3	—[b]	—	—	—	3.159	—	3.42	—	—
AAA4447	35-02080	2–3	Qbt3	—	—	—	—	—	—	3.11	—	—
0435-95-0043	35-02185	2–3	Qbt3	—	—	—	0.002	—	—	—	—	—
AAA6446	35-02222	3–4	Qbt3	—	—	—	0.029	1.189	—	—	—	—
0435-97-0174	35-02487	1–2	Qbt3	—	0.239	—	—	—	—	—	—	—
0435-97-0183	35-02489	1–1.50	Qbt3	—	—	0.569	—	—	—	—	—	—
0435-97-0188	35-02491	0.50–1	Qbt3	—	0.098	—	—	—	—	—	—	—

Table D-3.10-11 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Qbt3 Background/Fallout Value (pCi/g)				na[a]	na	na	na	na	na	1.98	0.09	1.93
0435-97-0293	35-02537	2–3	Qbt3	—	—	—	—	—	0.04	—	—	—
0435-97-0303	35-02538	1–2	Qbt3	—	—	—	—	—	0.87	—	—	—
0435-97-0310	35-02539	1–2	Qbt3	—	—	—	—	—	0.06	—	—	—
0435-97-0297	35-02540	0.5–1.5	Qbt3	—	—	—	—	—	0.2	—	—	—
0435-97-0323	35-02543	2–3	Qbt3	—	—	—	—	0.047	0.05	—	—	—
0435-97-0349	35-02549	1–2	Qbt3	—	—	—	—	—	—	2.13	0.098	2.54
0435-97-0430	35-02566	2–3	Qbt3	0.087	—	—	—	—	—	—	—	—
0435-97-0481	35-02580	0.67–1.67	Qbt3	—	—	—	—	0.077	—	—	—	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-3.10-12
Sediment Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U
RE35-98-0024	35-02169	0–0.25	SED	4331R[a]	—[b]	4331R	4331R
0435-96-0054	35-02394	0–0.5	SED	2208	—	2208	—
0435-96-0056	35-02395	0–2	SED	2208	—	2208	—
0435-97-0184	35-02490	0–0.08	SED	3350R	—	—	—
0435-97-0190	35-02492	0–0.83	SED	3350R	—	—	—
0435-97-0350	35-02550	0–0.5	SED	3557R	—	—	3557R
0435-97-0467	35-02578	0–0.5	SED	3557R	—	3557R	3557R
0435-97-0472	35-02579	0–0.5	SED	3557R	—	3557R	3557R
RE35-98-0036	35-02598	0–0.5	SED	4376R	—	4376R	4376R
RE35-98-0040	35-02599	0–0.5	SED	4376R	—	4376R	4376R
RE35-04-54155	35-22966	0–0.5	SED	2300S	—	2300S	2300S
RE35-04-54163	35-22970	0–0.15	SED	—	—	2311S	2311S
RE35-04-54683	35-23207	0–0.39	SED	2713S	—	2713S	2713S
RE35-04-54684	35-23207	0.39–1.05	SED	2713S	—	2713S	2713S
RE35-04-54685	35-23207	2.95–3.44	SED	2713S	—	2713S	2713S
RE35-04-54686	35-23208	0–0.2	SED	2556S	—	2556S	2556S
RE35-04-54688	35-23209	0–0.33	SED	2634S	—	2634S	2634S
RE35-04-54689	35-23209	0.72–1.21	SED	2634S	—	2634S	2634S
RE35-04-54690	35-23210	0.1–0.66	SED	2556S	—	2556S	2556S
RE35-04-54855	35-23280	0.43–1.41	SED	2720S	2720S	2720S	2720S
RE35-04-54856	35-23280	1.41–1.84	SED	2720S	2720S	2720S	2720S
RE35-04-54861	35-23282	0–0.62	SED	2720S	2720S	2720S	2720S
RE35-04-54862	35-23282	0.62–1.31	SED	2720S	2720S	2720S	2720S
RE35-04-54867	35-23284	0–0.59	SED	2714S	—	2714S	2714S
RE35-04-54868	35-23284	1.31–1.64	SED	2714S	—	2714S	2714S
RE35-04-54879	35-23290	0–0.49	SED	2714S	—	2714S	2714S
RE35-04-54880	35-23290	1.97–2.3	SED	2714S	—	2714S	2714S
RE35-04-54881	35-23291	0.46–0.85	SED	2714S	—	2714S	2714S
RE35-04-54882	35-23291	0.85–1.25	SED	2714S	—	2714S	2714S
RE35-04-54883	35-23292	0–0.79	SED	2720S	—	2720S	2720S
RE35-04-54884	35-23292	0.79–1.57	SED	2720S	—	2720S	2720S
RE35-04-54885	35-23292	1.57–2.03	SED	2720S	—	2720S	2720S

[a] Analytical request number.
[b] Analysis not requested.

Table D-3.10-13
Summary of Radionuclides Detected or Detected above BV/FV in Sediment, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Plutonium-238	Plutonium-239
Sediment Fallout Value (pCi/g)				0.006	0.068
0435-96-0056	35-02395	0–2	SED	—[a]	0.1
0435-97-0467	35-02578	0–0.5	SED	—	0.338
RE35-98-0036	35-02598	0–0.5	SED	—	0.164
RE35-98-0040	35-02599	0–0.5	SED	—	0.173
RE35-04-54684	35-23207	0.39–1.05	SED	0.0382	—
RE35-04-54685	35-23207	2.95–3.44	SED	0.0664	—
RE35-04-54688	35-23209	0.–0.33	SED	—	0.122
RE35-04-54689	35-23209	0.72–1.21	SED	—	0.0724
RE35-04-54855	35-23280	0.43–1.41	SED	—	0.933
RE35-04-54856	35-23280	1.41–1.84	SED	—	0.467
RE35-04-54861	35-23282	0–0.62	SED	0.0253	0.276
RE35-04-54867	35-23284	0–0.59	SED	—	0.163
RE35-04-54881	35-23291	0.46–0.85	SED	0.0755	0.32
RE35-04-54882	35-23291	0.85–1.25	SED	1.4	0.593

[a] — indicates analyte not reported (detect or nondetect) above FV or not detected.

Table D-3.10-14
EPCs for Radionuclide COPCs in the Ten Site Slope Subarea

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–5	0.065	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–5	0.15	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–5	0.087	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–5	0.075	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–5	0.261	Nonparametric	95% Chebyshev (Mean, SD)
Strontium-90	0–5	0.292	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–5	0.36	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–5	4.045	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–5	0.183	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–5	1.451	Nonparametric	95% Chebyshev (Mean, SD)

Table D-3.10-15
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	SVOC	TPH-DRO	VOC
AAA6381	35-02035	1.5–2.5	ALLH	—[a]	—	16470[b]	—	—
AAA6401	35-02036	0–1.1	ALLH	—	—	16470	—	—
AAC1177	35-02100	1–1.5	FILL	—	—	—	—	21476
RE35-04-54030	35-02100	1–1.5	FILL	2325S	2325S	2325S	—	—
AAC1179	35-02102	0–1	ALLH	21476	21476	21476	—	—
AAC1158	35-02103	0–0.5	ALLH	—	—	—	—	21466
AAC1162	35-02105	2–3	ALLH	21466	21466	21466	—	—
AAC1142	35-02107	0–1	ALLH	—	—	21455	—	—
AAC1165	35-02108	0–0.5	ALLH	—	—	—	—	21476
AAC1173	35-02111	2–3	ALLH	—	—	21476	—	—
AAC1137	35-02114	0–1	ALLH	—	—	—	—	21455
0435-95-0015	35-02168	1–2	ALLH	—	—	34	—	34
0435-95-0019	35-02168	2–3	ALLH	34	—	—	—	—
0435-95-0023	35-02170	0–0.5	ALLH	34	—	34	—	—
0435-95-0002	35-02189	0–0.5	ALLH	—	—	—	—	43
0435-95-0005	35-02190	0–1	ALLH	—	—	43	—	—
0435-95-0056	35-02191	0–0.5	ALLH	—	—	43	—	43
0435-96-0058	35-02396	0–0.66	ALLH	—	—	2206	—	—
0435-96-0060	35-02397	0–1	ALLH	—	—	2206	—	—
0435-96-0062	35-02398	0–0.5	ALLH	—	—	2206	—	—
0435-96-0064	35-02399	0–0.5	ALLH	—	—	2206	—	—
0435-96-0067	35-02400	0–0.66	ALLH	—	—	2206	—	—
0435-96-0069	35-02401	0–0.83	ALLH	—	—	2206	—	—
0435-97-0173	35-02487	0–1	ALLH	—	—	3349R	3349R	—
0435-97-0176	35-02488	0–1	FILL	—	—	3349R	3349R	—
0435-97-0181	35-02489	0–0.5	ALLH	—	—	3349R	3349R	—
0435-97-0187	35-02491	0–0.5	ALLH	—	—	3349R	3349R	—
RE35-98-0028	35-02596	0–0.5	ALLH	4374R	—	4374R	—	—
RE35-98-0029	35-02596	0.5–1.5	ALLH	4374R	—	4374R	—	—
RE35-98-0030	35-02596	1.5–2.5	ALLH	4374R	—	4374R	—	—
RE35-98-0031	35-02596	2.5–3.5	ALLH	4374R	—	4374R	—	—
RE35-98-0032	35-02597	0–0.5	FILL	4374R	—	4374R	—	—
RE35-04-54052	35-22931	0.25–0.6	ALLH	2292S	2292S	2292S	—	2292S
RE35-04-54157	35-22967	0–0.4	ALLH	2298S	2298S	2298S	—	—
RE35-04-54158	35-22967	0.4–1.08	ALLH	2298S	2298S	2298S	—	—
RE35-04-54171	35-22974	0.07–0.23	ALLH	—	—	2550S	2550S	—
RE35-04-54172	35-22974	0.23–0.39	ALLH	—	—	2550S	2550S	—
RE35-04-54173	35-22975	0–0.36	ALLH	—	—	2550S	2550S	—
RE35-04-54174	35-22975	0.36–0.85	ALLH	—	—	2550S	2550S	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-3.10-16
Summary of Organic Chemicals Detected in Soil and Fill, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butylbenzylphthalate	Chrysene	Dibenz(a,h)anthracene	Di-n-butylphthalate	Fluoranthene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Phenol	Pyrene	TPH-DRO
AAA6381	35-02035	1.5–2.5	ALLH	—[a]	—	—	—	—	—	—	—	—	—	4.8 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54030	35-02100	1–1.5	FILL	—	—	—	—	0.15	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AAC1142	35-02107	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	0.98	—	—	—	—	—	—	—	—	—	—
AAC1173	35-02111	2–3	ALLH	—	—	0.69	—	—	1.8	1.3	1.5	0.51	0.96	—	—	1.9	0.46	—	3	0.77	2.3	—	2.4	—
0435-95-0023	35-02170	0–0.5	ALLH	—	—	—	—	—	—	0.17 (J)	0.21 (J)	—	0.23 (J)	0.45	—	0.18 (J)	—	—	—	—	—	—	0.17 (J)	—
0435-95-0056	35-02191	0–0.5	ALLH	—	—	—	—	—	—	0.15 (J)	0.11 (J)	—	0.15 (J)	0.38	—	0.18 (J)	—	—	0.24 (J)	—	—	—	0.26 (J)	—
0435-96-0060	35-02397	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.035 (J)	—	—	—	0.035 (J)	—
0435-96-0062	35-02398	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13 (J)	—	—	—
0435-96-0064	35-02399	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.14 (J)	—	—	—	0.069 (J)	—
0435-96-0067	35-02400	0–0.66	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.067 (J)	—	—	—	0.034 (J)	—
0435-96-0069	35-02401	0–0.83	ALLH	—	—	—	—	—	0.066 (J)	—	0.066 (J)	—	—	—	0.27 (J)	0.066 (J)	—	—	0.066 (J)	—	—	—	0.066 (J)	—
0435-97-0173	35-02487	0–1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16 (J)	—	—
0435-97-0181	35-02489	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.16 (J)	—	—	—	—	—	—
0435-97-0187	35-02491	0–0.5	ALLH	—	—	—	—	—	—	—	—	—	—	2.6 (J)	—	—	—	0.88 (J)	—	—	—	—	—	—
RE35-04-54052	35-22931	0.25–0.6	ALLH	—	0.0086	—	2.18	10.6	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54157	35-22967	0–0.40	ALLH	—	—	—	0.158	0.695	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54158	35-22967	0.40–1.08	ALLH	—	—	—	0.0407	0.282	—	—	—	0.0194 (J)	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54171	35-22974	0.07–0.23	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.5
RE35-04-54172	35-22974	0.23–0.39	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.7
RE35-04-54173	35-22975	0–0.36	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	156 (J+)
RE35-04-54174	35-22975	0.36–0.85	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	580 (J+)

[a] — Indicates analyte not detected.

Table D-3.10-17
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO	VOC
AAA6429	35-02037	3–4	Qbt3	—[a]	—	—	16470[b]	—	—
AAA6437	35-02038	2.5–3.5	Qbt3	—	—	—	16471	—	—
AAC1144	35-02107	2–3	Qbt3	—	—	—	—	—	21455
0435-95-0030	35-02171	2–3	Qbt3	—	—	—	—	—	34
0435-95-0033	35-02183	2–3	Qbt3	—	—	39	—	—	—
0435-95-0040	35-02185	0–1	Qbt3	—	—	—	—	—	39
0435-95-0043	35-02185	2–3	Qbt3	—	—	—	39	—	—
0435-95-0050	35-02187	2–3	Qbt3	—	—	—	—	—	39
0435-95-0052	35-02188	0–1	Qbt3	—	—	42	—	—	—
0435-95-0054	35-02188	2–3	Qbt3	—	—	—	42	—	—
AAA6441	35-02221	4–5	Qbt3	—	—	—	16471	—	—
AAA6446	35-02222	3–4	Qbt3	—	—	—	16471	—	—
0435-96-0055	35-02394	0.5–1	Qbt3	—	—	—	2206	—	—
0435-96-0057	35-02395	2–3	Qbt3	—	—	—	2206	—	—
0435-96-0059	35-02396	0.67–1.5	Qbt3	—	—	—	2206	—	—
0435-96-0061	35-02397	1–2	Qbt3	—	—	—	2206	—	—
0435-96-0063	35-02398	0.5–1.5	Qbt3	—	—	—	2206	—	—
0435-96-0065	35-02399	0.5–1.5	Qbt3	—	—	—	2206	—	—
0435-96-0068	35-02400	2–3	Qbt3	—	—	—	2206	—	—
0435-96-0070	35-02401	2.5–3.5	Qbt3	—	—	—	2206	—	—
0435-97-0174	35-02487	1–2	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0178	35-02488	1–2	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0182	35-02489	0.5–1	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0183	35-02489	1–1.5	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0185	35-02490	1–2	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0188	35-02491	0.5–1	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0189	35-02491	1–2	Qbt3	—	—	—	3349R	3349R	3349R
0435-97-0191	35-02492	0.83–1.5	Qbt3	—	—	—	3349R	3349R	3349R

[a] — = Analysis not requested.
[b] Analytical request number.

Table 3.10-18
Summary of Organic Chemicals Detected in Tuff, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Aldrin	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Chrysene	DDD[4,4'-]	DDT[4,4'-]	Dibenz(a,h)anthracene
0435-95-0033	35-02183	2–3	Qbt3	—[a]	0.0106	—	—	—	—	—	—	—	—	0.0088	0.0075	—
0435-95-0043	35-02185	2–3	Qbt3	—	—	—	—	—	—	—	2.5 (J)	—	—	—	—	—
0435-95-0050	35-02187	2–3	Qbt3	0.18 (J)	—	—	—	—	—	—	—	0.049 (J)	—	—	—	—
0435-95-0052	35-02188	0–1	Qbt3	—	0.003 (J-)	—	—	—	—	—	—	—	—	—	—	—
0435-96-0055	35-02394	0.5–1	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0174	35-02487	1–2	Qbt3	—	—	—	—	—	—	—	0.056 (J)	0.009 (J)	—	—	—	—
0435-97-0178	35-02488	1–2	Qbt3	—	—	—	—	—	—	—	0.23 (J)	—	—	—	—	—
0435-97-0183	35-02489	1–1.5	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0185	35-02490	1–2	Qbt3	—	—	0.084 (J)	0.14 (J)	0.11 (J)	0.12 (J)	0.12 (J)	—	—	0.14 (J)	—	—	0.047 (J)
0435-97-0188	35-02491	0.5–1	Qbt3	—	—	—	—	—	—	—	3.2 (J)	—	—	—	—	—
0435-97-0189	35-02491	1–2	Qbt3	—	—	—	—	—	—	—	2.2 (J)	—	—	—	—	—
0435-97-0191	35-02492	0.83–1.5	Qbt3	—	—	—	—	—	—	—	2.1 (J)	—	—	—	—	—

.

Table 3.10-18 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Dieldrin	Di-n-butylphthalate	Endosulfan I	Endrin	Ethylbenzene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Phenanthrene	Phenol	Pyrene	Tetrachloroethene	Toluene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichloroethene
0435-95-0033	35-02183	2–3	Qbt3	0.0196	—	0.0074	0.0163	—	—	—	—	—	—	—	—	—	—	—
0435-95-0043	35-02185	2–3	Qbt3	—	—	—	—	—	—	—	—	2.4 (J)	—	—	—	—	—	—
0435-95-0050	35-02187	2–3	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	0.004 (J)	—	—
0435-95-0052	35-02188	0–1	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0055	35-02394	0.5–1	Qbt3	—	0.035 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0174	35-02487	1–2	Qbt3	—	—	—	—	—	—	—	0.025 (J+)	—	—	—	—	0.012 (J+)	—	—
0435-97-0178	35-02488	1–2	Qbt3	—	0.1 (J)	—	—	—	—	—	—	—	—	—	—	0.002 (J+)	—	—
0435-97-0183	35-02489	1–1.5	Qbt3	—	0.45	—	—	—	—	—	—	—	0.041 (J)	—	—	—	—	—
0435-97-0185	35-02490	1–2	Qbt3	—	—	—	—	—	0.19 (J)	0.098 (J)	—	0.078 (J)	—	0.22 (J)	—	—	—	—
0435-97-0188	35-02491	0.5–1	Qbt3	—	0.74 (J)	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—
0435-97-0189	35-02491	1–2	Qbt3	—	—	—	—	0.002 (J)	—	—	—	—	—	—	0.005 (J)	0.073 (J+)	—	0.003 (J)
0435-97-0191	35-02492	0.83–1.5	Qbt3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] — = Analyte not detected.

Table D-3.10-19
Sediment Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	SVOC	TPH-DRO	VOC
RE35-98-0024	35-02169	0–0.25	SED	4329R[a]	—[b]	4329R	—	—
0435-96-0054	35-02394	0–0.5	SED	—	—	2206	—	—
0435-96-0056	35-02395	0–2	SED	—	—	2206	—	—
0435-97-0184	35-02490	0–0.08	SED	—	—	3349R	3349R	—
0435-97-0190	35-02492	0–0.83	SED	—	—	3349R	3349R	—
RE35-98-0036	35-02598	0–0.5	SED	4374R	—	4374R	—	—
RE35-98-0040	35-02599	0–0.5	SED	4374R	—	4374R	—	—
RE35-04-54155	35-22966	0–0.5	SED	2298S	2298S	2298S	—	—
RE35-04-54159	35-22968	0–0.23	SED	—	—	2550S	2550S	2550S
RE35-04-54160	35-22968	0.23–0.92	SED	—	—	2550S	2550S	2550S
RE35-04-54161	35-22969	0.33–0.62	SED	—	—	2550S	2550S	2550S
RE35-04-54162	35-22969	0.62–0.98	SED	—	—	2550S	2550S	2550S
RE35-04-54169	35-22973	0.03–0.3	SED	—	—	2557S	—	—
RE35-04-54170	35-22973	0.3–0.98	SED	—	—	2557S	—	—
RE35-04-54669	35-23200	0–0.66	SED	—	—	2632S	2632S	2632S
RE35-04-54670	35-23200	0.66–1.35	SED	—	—	2632S	2632S	2632S
RE35-04-54671	35-23201	0–0.46	SED	—	—	2632S	2632S	2632S
RE35-04-54672	35-23201	0.46–0.89	SED	—	—	2632S	2632S	2632S
RE35-04-54675	35-23203	0–0.2	SED	—	—	2632S	2632S	2632S
RE35-04-54676	35-23203	0.2–0.49	SED	—	—	2632S	2632S	2632S
RE35-04-54679	35-23205	0–0.3	SED	—	—	2713S	—	—
RE35-04-54680	35-23205	0.3–0.66	SED	—	—	2713S	—	—
RE35-04-54683	35-23207	0–0.39	SED	—	—	2713S	—	—
RE35-04-54684	35-23207	0.39–1.05	SED	—	—	2713S	—	—
RE35-04-54685	35-23207	2.95–3.44	SED	—	—	2713S	—	—
RE35-04-54686	35-23208	0–0.2	SED	2556S	2556S	2556S	—	—
RE35-04-54688	35-23209	0–0.33	SED	—	—	2632S	2632S	2632S
RE35-04-54689	35-23209	0.72–1.21	SED	—	—	2632S	2632S	2632S
RE35-04-54690	35-23210	0.1–0.66	SED	—	—	2556S	—	—
RE35-04-54855	35-23280	0.43–1.41	SED	2718S	2718S	2718S	—	2718S
RE35-04-54856	35-23280	1.41–1.84	SED	2718S	2718S	2718S	—	2718S
RE35-04-54861	35-23282	0–0.62	SED	2718S	2718S	2718S	—	2718S
RE35-04-54862	35-23282	0.62–1.31	SED	2718S	2718S	2718S	—	2718S
RE35-04-54867	35-23284	0–0.59	SED	2714S	2714S	2714S	—	—
RE35-04-54868	35-23284	1.31–1.64	SED	2714S	2714S	2714S	—	—
RE35-04-54879	35-23290	0–0.49	SED	—	—	2714S	—	2714S
RE35-04-54880	35-23290	1.97–2.3	SED	—	—	2714S	—	2714S
RE35-04-54881	35-23291	0.46–0.85	SED	—	—	2714S	—	2714S
RE35-04-54882	35-23291	0.85–1.25	SED	—	—	2714S	—	2714S
RE35-04-54883	35-23292	0–0.79	SED	2718S	2718S	2718S	—	2718S
RE35-04-54884	35-23292	0.79–1.57	SED	2718S	2718S	2718S	—	2718S
RE35-04-54885	35-23292	1.57–2.03	SED	2718S	2718S	2718S	—	2718S

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-3.10-20
Summary of Organic Chemicals Detected in Sediment, 0-5 ft bgs, in the Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzylphthalate	Chloro-3-methylphenol[4-]	Chrysene	DDE[4,4'-]
RE35-98-0024	35-02169	0–0.25	SED	—[a]	—	—	—	—	—	0.026 (J)	0.03 (J)	0.03 (J)	0.021 (J)	0.029 (J)	—	0.051 (J)	—	—	—	0.037 (J)	—
0435-96-0054	35-02394	0–0.5	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0056	35-02395	0–2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0184	35-02490	0–0.08	SED	0.075 (J)	—	—	0.083 (J)	—	—	0.65	1.6	1.2	1.2	1.3	—	0.046 (J)	—	—	—	0.84	—
0435-97-0190	35-02492	0–0.83	SED	—	—	—	—	—	—	—	—	—	—	—	—	4.2 (J)	—	—	—	—	—
RE35-04-54155	35-22966	0–0.5	SED	—	—	—	—	0.899	4.04	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54159	35-22968	0–0.23	SED	—	—	0.0221	—	—	—	—	—	—	—	—	1.45 (J)	—	—	—	—	—	—
RE35-04-54160	35-22968	0.23–0.92	SED	—	—	0.0539 (J+)	—	—	—	—	—	—	—	—	—	19.5	—	—	—	—	—
RE35-04-54161	35-22969	0.33–0.62	SED	—	—	0.019 (J+)	—	—	—	—	—	—	—	—	—	11.2 (J)	—	—	—	—	—
RE35-04-54162	35-22969	0.62–0.98	SED	—	—	0.199 (J+)	—	—	—	—	—	—	—	—	—	9.33 (J)	—	—	—	—	—
RE35-04-54169	35-22973	0.03–0.3	SED	0.195	—	—	—	—	—	1.09	1.39 (J)	1.8 (J)	0.829 (J)	0.784 (J)	—	—	—	—	—	1.42	—
RE35-04-54170	35-22973	0.30–0.98	SED	—	—	—	—	—	—	—	—	—	—	—	0.571 (J)	—	—	—	—	—	—
RE35-04-54669	35-23200	0–0.66	SED	0.364	0.0217 (J)	—	0.374	—	—	3	3.9	—	2.8	—	0.638 (J)	0.146 (J)	—	—	—	3.77	—
RE35-04-54670	35-23200	0.66–1.35	SED	0.361	0.0253 (J)	0.102 (J+)	0.472	—	—	2.88	3.68 (J)	—	—	6.29	0.79	0.587 (J)	0.0086	—	—	3.84	—
RE35-04-54671	35-23201	0–0.46	SED	—	—	—	—	—	—	—	0.0257 (J)	—	—	—	—	—	—	—	—	0.0289 (J)	—
RE35-04-54672	35-23201	0.46–0.89	SED	—	—	0.116 (J+)	—	—	—	—	—	—	—	—	—	—	0.0051 (J)	—	—	—	—
RE35-04-54675	35-23203	0–0.2	SED	—	—	—	—	—	—	—	—	—	—	—	0.768 (J)	—	—	—	0.329 (J)	—	—
RE35-04-54676	35-23203	0.20–0.49	SED	—	—	0.0058 (J+)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54679	35-23205	0–0.3	SED	0.0109 (J)	—	—	—	—	—	—	—	—	—	—	—	0.0835 (J)	—	0.0427 (J)	—	0.036 (J)	—
RE35-04-54680	35-23205	0.30–0.66	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.0384 (J)	—	—	—	—	—
RE35-04-54683	35-23207	0–0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.137 (J)	—	—	—	—	—
RE35-04-54684	35-23207	0.39–1.05	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.385 (J)	—	—	—	—	—
RE35-04-54685	35-23207	2.95–3.44	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.075 (J)	—	—	—	—	—
RE35-04-54686	35-23208	0–0.2	SED	0.0652	—	—	—	—	0.003 (J)	0.432 (J)	0.594 (J)	1.09 (J)	0.318 (J)	—	—	0.74 (J)	—	—	—	0.568 (J)	—
RE35-04-54688	35-23209	0–0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54689	35-23209	0.72–1.21	SED	—	—	0.258 (J+)	—	—	—	—	—	—	—	—	0.699 (J)	—	0.0083	—	—	—	—
RE35-04-54690	35-23210	0.1–0.66	SED	0.0659	—	—	—	—	—	—	0.267 (J)	0.403 (J)	—	0.163 (J)	—	0.851 (J)	—	—	—	0.297	—
RE35-04-54855	35-23280	0.43–1.41	SED	—	—	0.112	—	0.393	1.26	—	—	—	—	—	—	0.199 (J)	—	—	—	—	—
RE35-04-54856	35-23280	1.41–1.84	SED	—	—	—	—	0.249	0.894	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54861	35-23282	0–0.62	SED	—	—	—	—	0.0022 (J)	0.0099	—	—	—	—	—	—	—	—	—	—	—	0.000223
RE35-04-54862	35-23282	0.62–1.31	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54867	35-23284	0–0.59	SED	—	—	—	—	0.006	0.0055	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54879	35-23290	0–0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54880	35-23290	1.97–2.3	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54881	35-23291	0.46–0.85	SED	—	—	0.0139	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54882	35-23291	0.85–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54883	35-23292	0–0.79	SED	0.0204 (J)	—	0.0068	0.0335 (J)	0.005	0.0268	—	0.0758	0.12	—	—	—	—	—	—	—	0.0855	—
RE35-04-54884	35-23292	0.79–1.57	SED	0.024 (J)	—	—	0.055	0.0068	0.0363	—	0.0635	0.0745	—	0.0363	—	—	—	—	—	0.0721	—
RE35-04-54885	35-23292	1.57–2.03	SED	—	—	—	—	0.0015	0.0223	—	—	—	—	—	—	0.0319 (J)	—	—	—	—	—

Table D-3.10-20 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Dibenz(a,h)anthracene	Dibenzofuran	Dichloroethene[1,1-]	Diethylphthalate	Di-n-butylphthalate	Di-n-octylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene	Styrene	Toluene	TPH-DRO
RE35-98-0024	35-02169	0–0.25	SED	—	—	—	—	0.018 (J)	0.018 (J)	0.05 (J)	—	—	—	—	—	0.038 (J)	0.056 (J)	—	—	—
0435-96-0054	35-02394	0–0.5	SED	—	—	—	—	0.035 (J)	—	—	—	—	—	—	—	—	—	—	—	—
0435-96-0056	35-02395	0–2	SED	—	—	—	—	0.036 (J)	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0184	35-02490	0–0.08	SED	0.27 (J)	—	—	—	0.052 (J)	—	1.4	—	1	—	—	—	0.5	1.5	—	—	—
0435-97-0190	35-02492	0–0.83	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54155	35-22966	0–0.5	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0508 (J-)	—	—	—
RE35-04-54159	35-22968	0–0.23	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1350
RE35-04-54160	35-22968	0.23–0.92	SED	—	—	0.00099 (J+)	—	—	—	—	—	—	—	—	—	—	—	—	0.00044 (J)	5110
RE35-04-54161	35-22969	0.33–0.62	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11500
RE35-04-54162	35-22969	0.62–0.98	SED	—	—	—	—	—	—	—	—	—	0.008 (J)	—	—	—	—	—	—	5800
RE35-04-54169	35-22973	0.03–0.3	SED	—	—	—	—	—	—	2.02	—	0.691 (J)	—	0.0468	—	1.16	2.73	—	—	—
RE35-04-54170	35-22973	0.3–0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54669	35-23200	0–0.66	SED	—	0.0997 (J)	—	—	—	—	7.37	0.204	2.24 (J)	—	0.0471	0.0496	2.84	9.48	—	—	93.9
RE35-04-54670	35-23200	0.66–1.35	SED	—	0.125 (J)	—	—	—	—	6.02	0.252	2.48 (J)	—	0.0656	0.0902	3.04	8.33	—	—	147
RE35-04-54671	35-23201	0–0.46	SED	—	—	—	0.02 (J)	—	—	0.0356 (J)	—	—	—	—	—	—	0.0473	0.00053 (J)	—	4.3
RE35-04-54672	35-23201	0.46–0.89	SED	—	—	—	0.0203 (J)	—	—	—	—	—	0.0195	—	—	—	—	—	0.0016	3.2
RE35-04-54675	35-23203	0–0.2	SED	—	—	—	—	—	—	—	—	—	0.0015	—	—	—	—	—	—	194
RE35-04-54676	35-23203	0.2–0.49	SED	—	—	0.00082 (J)	—	—	—	—	—	—	0.0017	—	—	—	—	—	0.00097 (J)	349
RE35-04-54679	35-23205	0–0.3	SED	—	—	—	—	—	—	0.0345 (J)	0.0128 (J)	—	—	—	—	0.0265 (J)	0.0436	—	—	—
RE35-04-54680	35-23205	0.3–0.66	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0199 (J)	—	—	—
RE35-04-54683	35-23207	0–0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54684	35-23207	0.39–1.05	SED	—	—	—	—	—	—	0.0392 (J)	—	—	—	—	—	—	0.038 (J)	—	—	—
RE35-04-54685	35-23207	2.95–3.44	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54686	35-23208	0–0.2	SED	—	—	—	—	—	—	0.824	—	0.272 (J)	—	—	—	0.385	1.24 (J)	—	—	—
RE35-04-54688	35-23209	0–0.33	SED	—	—	—	—	—	—	0.042	—	—	—	—	—	—	0.0542	—	—	49.8
RE35-04-54689	35-23209	0.72–1.21	SED	—	—	—	—	—	—	—	—	—	0.195 (J-)	—	—	—	—	—	0.0129	7.3
RE35-04-54690	35-23210	0.10–0.66	SED	—	—	—	—	—	—	0.457	—	0.124 (J)	—	—	—	0.395	0.631	—	—	—
RE35-04-54855	35-23280	0.43–1.41	SED	—	—	—	—	0.223 (J)	—	—	—	—	0.0937	—	—	—	—	—	0.0028	—
RE35-04-54856	35-23280	1.41–1.84	SED	—	—	0.0025	—	0.0856 (J)	—	—	—	—	0.0033	—	—	—	—	—	—	—
RE35-04-54861	35-23282	0–0.62	SED	—	—	—	—	—	—	—	—	—	0.00082 (J)	—	—	—	—	—	—	—
RE35-04-54862	35-23282	0.62–1.31	SED	—	—	0.0012 (J)	—	—	—	—	—	—	0.00051 (J)	—	—	—	—	—	—	—
RE35-04-54867	35-23284	0–0.59	SED	—	—	—	—	—	—	0.0234 (J-)	—	—	—	—	—	—	0.0199 (J-)	—	—	—
RE35-04-54879	35-23290	0–0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00054 (J)	—	—
RE35-04-54880	35-23290	1.97–2.3	SED	—	—	—	—	—	—	—	—	—	0.0016	—	—	—	—	—	—	—
RE35-04-54881	35-23291	0.46–0.85	SED	—	—	0.0015	—	—	—	—	—	—	0.00092 (J)	—	—	—	—	—	0.00059 (J)	—
RE35-04-54882	35-23291	0.85–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00068 (J)	—	—
RE35-04-54883	35-23292	0–0.79	SED	—	—	—	—	—	—	0.209	0.0163 (J)	—	0.0042	—	—	0.147	0.193	—	0.00046 (J)	—
RE35-04-54884	35-23292	0.79–1.57	SED	—	0.0242 (J)	0.0012	—	—	—	0.217	0.0471	—	—	—	0.0285 (J)	0.239	0.186	—	—	—
RE35-04-54885	35-23292	1.57–2.03	SED	—	—	—	—	0.0278 (J)	—	—	—	—	0.00041 (J)	—	—	—	—	—	—	—

[a] — = Analyte not detected.

Table D-3.10-21
EPCs for Organic COPCs in the Ten Site Slope Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–5	0.368	Nonparametric	95% Chebyshev (Mean, SD)
Acenaphthylene	0–5	0.356	Nonparametric	95% Chebyshev (Mean, SD)
Acetone	0–5	0.078	Nonparametric	95% Chebyshev (Mean, SD)
Aldrin	0–5	0.006	Nonparametric	95% Chebyshev (Mean, SD)
Anthracene	0–5	0.377	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–5	0.413	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1260	0–5	1.926	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–5	0.525	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–5	0.597	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–5	0.442	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–5	0.468	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–5	0.591	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic Acid	0–5	1.14	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–5	1.799	Nonparametric	95% Chebyshev (Mean, SD)
Butanone[2-]	0–5	0.013	Nonparametric	95% Chebyshev (Mean, SD)
Butylbenzylphthalate	0–5	0.757	Nonparametric	95% Chebyshev (Mean, SD)
Chloro-3-methylphenol[4-]	0–5	0.704	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–5	0.596	Nonparametric	95% Chebyshev (Mean, SD)
DDD[4,4'-]	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
DDE[4,4'-]	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
DDT[4,4'-]	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
Dibenz(a,h)anthracene	0–5	0.369	Nonparametric	95% Chebyshev (Mean, SD)
Dibenzofuran	0–5	0.752	Nonparametric	95% Chebyshev (Mean, SD)
Dichloroethene[1,1-]	0–5	0.002	Nonparametric	95% Chebyshev (Mean, SD)
Dieldrin	0–5	0.012	Nonparametric	95% Chebyshev (Mean, SD)
Diethylphthalate	0–5	0.754	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–5	0.678	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-octylphthalate	0–5	0.752	Nonparametric	95% Chebyshev (Mean, SD)
Endosulfan I	0–5	0.006	Nonparametric	95% Chebyshev (Mean, SD)
Endrin	0–5	0.012	Nonparametric	95% Chebyshev (Mean, SD)
Ethylbenzene	0–5	0.002	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–5	0.983	Nonparametric	95% Chebyshev (Mean, SD)
Fluorene	0–5	0.361	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–5	0.479	Nonparametric	95% Chebyshev (Mean, SD)
Isopropyltoluene[4-]	0–5	0.031	Nonparametric	95% Chebyshev (Mean, SD)
Methylnaphthalene[2-]	0–5	0.357	Nonparametric	95% Chebyshev (Mean, SD)
Naphthalene	0–5	0.358	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–5	0.566	Nonparametric	95% Chebyshev (Mean, SD)
Phenol	0–5	0.758	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–5	1.136	Nonparametric	95% Chebyshev (Mean, SD)
Styrene	0–5	0.002	Nonparametric	95% Chebyshev (Mean, SD)
Tetrachloroethene	0–5	0.002	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–5	0.011	Nonparametric	95% Chebyshev (Mean, SD)
TPH-DRO	0–5	2652	Nonparametric	95% Chebyshev (Mean, SD)
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Trichloroethene	0–5	0.002	Nonparametric	95% Chebyshev (Mean, SD)

[a] ND = Not detected.
[b] n/a = Not applicable.

Table D-4.0-1
Soil, Tuff, and Sediment Samples Collected for Inorganic Chemical Analyses at Mortandad Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Metals
35-004(b)	AAC1288	35-02121	0-1	ALLH	21675[a]
	RE35-04-54014	35-22921	0.5-1	ALLH	2409S
	RE35-04-54015	35-22921	2-2.5	ALLH	2409S
35-008-00	AAB4269	35-02032	0-0.5	ALLH	19653
	0435-95-0203	35-02282	1-2	ALLH	1679
	0435-97-0193	35-02453	0-1	SED	3342R
	0435-97-0194	35-02453	1-2	SED	3342R
	0435-97-0195	35-02453	2-3.4	SED	3342R
	0435-97-0196 (FD)	35-02453	2-3.4	SED	3342R
	0435-97-0198	35-02454	0-1	SED	3342R
	0435-97-0199	35-02454	1-2	SED	3342R
	0435-97-0200	35-02454	2-3	SED	3342R
	0435-97-0201	35-02455	0-1	SED	3342R
	0435-97-0202	35-02455	1-2	SED	3342R
	0435-97-0203	35-02455	2-3	QBT3	3342R
	0435-97-0204	35-02456	0-1	SED	3328R
	0435-97-0205	35-02456	1-2	SED	3328R
	0435-97-0206	35-02456	2-3	QBT3	3328R
	RE35-04-54561	35-23144	0-0.56	SED	2572S
	RE35-04-54562	35-23144	0.56-0.95	SED	2572S
	RE35-04-54563	35-23145	0.46-0.79	SED	2572S
	RE35-04-54609 (FD)	35-23145	0.46-0.79	SED	2572S
	RE35-04-54564	35-23145	0.79-1.05	SED	2572S
	RE35-04-54565	35-23146	0-0.3	SED	2581S
	RE35-04-54566	35-23146	0.3-0.69	SED	2581S
	RE35-04-54567	35-23147	0-0.36	SED	2581S
	RE35-04-54568	35-23147	0.36-0.69	SED	2581S
	RE35-04-54569	35-23148	0.23-0.69	SED	2581S
	RE35-04-54570	35-23148	0.69-1.21	SED	2581S
	RE35-04-54571	35-23149	0-0.46	SED	2581S
	RE35-04-54572	35-23149	0.46-1.25	SED	2581S
	RE35-04-54573	35-23150	0-0.23	SED	2572S
	RE35-04-54574	35-23150	0.23-0.56	SED	2572S
	RE35-04-54575	35-23151	0-0.43	SED	2589S
	RE35-04-54576	35-23151	0.43-0.82	SED	2589S
	RE35-04-54577	35-23152	0-0.33	SED	2597S
	RE35-04-54578	35-23152	0.69-0.98	SED	2597S
	RE35-04-54579	35-23153	0.52-1.31	ALLH	2597S
	RE35-04-54580	35-23153	1.31-2.46	ALLH	2597S
	RE35-04-54581	35-23154	0.03-0.59	SED	2597S
	RE35-04-54582	35-23154	1.48-2.46	SED	2597S

Table D-4.0-1 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Metals
35-009(c)	AAA6496	35-02049	12-13	QBT3	16704
	AAA6510	35-02053	9-10	QBT3	16704
	AAA6484	35-02056	4-5	ALLH	16703
	RE35-04-54018	35-22923	2-2.5	ALLH	2349S
	RE35-04-54019	35-22923	3.9-4.4	ALLH	2349S
	RE35-04-54020	35-22923	7-7.5	QBT3	2349S
	RE35-04-54021	35-22924	0.5-1	ALLH	2349S
	RE35-04-54022	35-22924	8.5-9.5	ALLH	2349S
	RE35-04-54023	35-22924	14-15	QBT3	2349S
	RE35-04-54024	35-22925	0-0.5	ALLH	2349S
	RE35-04-54025	35-22925	1.2-1.7	ALLH	2349S
	RE35-04-54026	35-22925	4.5-5	QBT3	2349S
	RE35-04-54623	35-23178	0.07-0.26	SED	2601S
	RE35-04-54624	35-23178	0.26-0.66	SED	2601S
	RE35-04-54627	35-23180	0.2-0.39	SED	2601S
	RE35-04-54628	35-23180	0.95-1.18	SED	2601S
	RE35-04-54631	35-23182	0-0.59	SED	2601S
	RE35-04-54632	35-23182	1.21-1.54	SED	2601S
	RE35-04-54633	35-23183	0-0.95	SED	2629S
	RE35-04-54634	35-23183	1.48-1.97	SED	2629S
35-016(f)	AAC1208	35-02155	0-1	QBT3	21579
	RE35-04-54601	35-23164	0.07-0.49	SED	2567S
	RE35-04-54602	35-23164	0.49-0.92	SED	2567S
	RE35-04-54603	35-23165	0.13-0.39	SED	2567S
	RE35-04-54604	35-23165	0.39-1.21	SED	2567S
	RE35-04-54605	35-23166	0.1-0.39	SED	2567S
	RE35-04-54606	35-23166	0.39-0.89	SED	2567S
	RE35-04-54607	35-23167	0-0.26	SED	2597S
	RE35-04-54608	35-23167	0.26-0.46	SED	2597S
35-016(i)-00	RE35-04-54033	35-22929	0.5-1	ALLH	2347S
	RE35-04-54034	35-22929	4-4.5	QBT3	2347S
	RE35-04-54035	35-22929	7-7.5	QBT3	2347S
	RE35-04-54585	35-23156	0-0.59	SED	2581S
	RE35-04-54587	35-23157	0.07-0.56	SED	2589S
	RE35-04-54588	35-23157	0.56-0.92	SED	2589S
	RE35-04-54589	35-23158	0.1-0.3	SED	2589S
	RE35-04-54590	35-23158	0.3-0.49	SED	2589S
	RE35-04-54593	35-23160	0-0.39	SED	2589S
	RE35-04-54594	35-23160	0.39-0.95	SED	2589S
	RE35-04-54597	35-23162	0-0.75	SED	2597S
	RE35-04-54610 (FD)	35-23162	0-0.75	SED	2597S
	RE35-04-54598	35-23162	0.75-1.15	SED	2597S
	RE35-04-54599	35-23163	0-0.33	SED	2581S

Table D-4.0-1 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Metals
	RE35-04-54600	35-23163	0.33-0.85	SED	2581S
	RE35-04-54611	35-23168	0-0.49	SED	2581S
35-016(o)	AAB4262	35-02257	0-1	ALLH	20292
	0435-97-0144	35-02505	0-1	ALLH	3310R
	0435-97-0145	35-02505	1-2	QBT3	3310R
	0435-97-0154	35-02506	0-1	SED	3328R
	0435-97-0155 (FD)	35-02506	0-1	SED	3328R
	0435-97-0156	35-02506	1-2	QBT3	3328R
	0435-97-0158	35-02507	0-1	SED	3328R
	0435-97-0159	35-02507	1-2	QBT3	3328R
	0435-97-0150	35-02509	0-1	ALLH	3310R
	0435-97-0151	35-02509	1-1.8	ALLH	3310R
	0435-97-0161	35-02510	0-1	ALLH	3328R
	0435-97-0162	35-02510	1-2.2	QBT3	3328R
	0435-97-0164	35-02511	0-1	ALLH	3310R
	0435-97-0165	35-02511	1-1.8	QBT3	3310R
	0435-97-0167	35-02512	0-1	ALLH	3310R
	0435-97-0168	35-02512	1-2	ALLH	3310R
	0435-97-0170	35-02513	0-0.5	ALLH	3310R
	0435-97-0171	35-02513	0.5-1.5	QBT3	3310R
	RE35-04-54623	35-23178	0.07-0.26	SED	2601S
	RE35-04-54624	35-23178	0.26-0.66	SED	2601S
	RE35-04-54627	35-23180	0.2-0.39	SED	2601S
	RE35-04-54628	35-23180	0.95-1.18	SED	2601S
	RE35-04-54631	35-23182	0-0.59	SED	2601S
	RE35-04-54632	35-23182	1.21-1.54	SED	2601S
	RE35-04-54633	35-23183	0-0.95	SED	2629S
	RE35-04-54634	35-23183	1.48-1.97	SED	2629S
	RE35-04-54635	35-23184	0-0.33	SED	2601S
	RE35-04-54636	35-23184	0.79-1.21	SED	2601S
	RE35-04-54637	35-23185	0-0.3	SED	2629S
	RE35-04-54638	35-23185	0.3-0.69	SED	2629S
	RE35-04-54639	35-23186	0.1-0.33	SED	2600S
	RE35-04-54640	35-23186	0.33-0.49	SED	2600S
	RE35-04-54641	35-23187	0.16-0.66	SED	2630S
	RE35-04-54642	35-23187	0.66-1.51	SED	2630S
35-016(p)	RE35-04-54646	35-23189	0.49-0.85	SED	2600S
	RE35-04-54645	35-23189	0.23-0.49	SED	2600S
	RE35-04-54649	35-23191	0-0.39	SED	2630S
	RE35-04-54650	35-23191	0.39-1.38	SED	2630S
	RE35-07-75211	35-27429	0.5-1	ALLH	6909S
	RE35-07-75210	35-27429	0-0.5	ALLH	6909S
	RE35-07-75217	35-27432	0.4-1	ALLH	6909S

Table D-4.0-1 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Metals
	RE35-07-75216	35-27432	0-0.4	ALLH	6909S
	RE35-07-75215	35-27431	0.4-0.8	ALLH	6909S
	RE35-07-75219	35-27433	0.7-1	ALLH	6909S
	RE35-07-75218	35-27433	0-0.5	ALLH	6909S
	RE35-07-75212	35-27430	0-0.4	ALLH	6909S
	RE35-07-75213	35-27430	0.4-1	ALLH	6909S
	RE35-07-75214	35-27431	0-0.4	ALLH	6909S
	RE35-07-4023	35-23188	1-1.5	ALLH	07-232
	RE35-07-4022	35-600908	0.5-0.6	ALLH	07-232
	RE35-07-4028	35-600909	0.5-0.6	ALLH	07-232
	RE35-07-75215	35-27431	0.4-0.8	ALLH	6909S

[a] Analytical request number.

Table D-4.0-2
Soil, Fill, Tuff, and Sediment Samples Collected for Radionuclide Analyses at Mortandad Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
35-008-00	AAB4269	35-02032	0-0.5	ALLH	—[a]	—	—	19551[b]	19551	—
	AAB4270	35-02032	1-2	QBT3	—	—	—	19551	19551	—
	AAB4271	35-02032	2-3	QBT3	—	—	—	19551	19551	—
	AAB4272	35-02213	0-0.5	ALLH	—	—	—	19551	19551	—
	AAB4273 (FD)	35-02213	0-0.5	ALLH	—	—	—	19551	19551	—
	AAB4274	35-02213	1-2	ALLH	—	—	—	19551	19551	—
	AAB4275	35-02213	2-3	ALLH	—	—	—	19551	19551	—
	AAB4276	35-02250	0-0.5	ALLH	—	—	—	18791	18791	—
	AAB4277	35-02250	1-2	QBT3	—	—	—	18791	18791	—
	AAB4278	35-02250	2-3	QBT3	—	—	—	18791	18791	—
	XAAB4257	35-02251	0-0.5	ALLH	—	—	—	19551	—	—
	XAAB4258	35-02251	1-2	QBT3	—	—	—	19551	—	—
	XAAB4259	35-02251	2-3	QBT3	—	—	—	19551	—	—
	0435-97-0193	35-02453	0-1	SED	—	3343R	—	—	—	—
	0435-97-0194	35-02453	1-2	SED	—	3343R	—	—	—	—
	0435-97-0195	35-02453	2-3.4	SED	—	3343R	—	—	—	—
	0435-97-0196 (FD)	35-02453	2-3.4	SED	—	3343R	—	—	—	—
	0435-97-0198	35-02454	0-1	SED	—	3343R	—	—	—	—
	0435-97-0199	35-02454	1-2	SED	—	3343R	—	—	—	—
	0435-97-0200	35-02454	2-3	SED	—	3343R	—	—	—	—

Table D-4.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0201	35-02455	0-1	SED	—	3343R	—	—	—	—
	0435-97-0202	35-02455	1-2	SED	—	3343R	—	—	—	—
	0435-97-0203	35-02455	2-3	QBT3	—	3343R	—	—	—	—
	0435-97-0204	35-02456	0-1	SED	—	3329R	—	—	—	—
	0435-97-0205	35-02456	1-2	SED	—	3329R	—	—	—	—
	0435-97-0206	35-02456	2-3	QBT3	—	3329R	—	—	—	—
	0435-97-0208	35-02457	0-1	SED	—	3329R	—	—	—	—
	0435-97-0209	35-02457	1-2	SED	—	3329R	—	—	—	—
	0435-97-0210	35-02457	2-3	QBT3	—	3329R	—	—	—	—
	RE35-04-54573	35-23150	0-0.23	SED	2573S	2573S	—	2573S	2573S	—
	RE35-04-54574	35-23150	0.23-0.56	SED	2573S	2573S	—	2573S	2573S	—
	RE35-04-54575	35-23151	0-0.43	SED	2590S	2590S	—	2590S	2590S	—
	RE35-04-54576	35-23151	0.43-0.82	SED	2590S	2590S	—	2590S	2590S	—
	RE35-04-54577	35-23152	0-0.33	SED	2597S	2597S	—	2597S	2597S	—
	RE35-04-54578	35-23152	0.69-0.98	SED	2597S	2597S	—	2597S	2597S	—
	RE35-04-54579	35-23153	0.52-1.31	ALLH	2597S	2597S	—	2597S	2597S	—
	RE35-04-54580	35-23153	1.31-2.46	ALLH	2597S	2597S	—	2597S	2597S	—
	RE35-04-54581	35-23154	0.03-0.59	SED	2597S	2597S	—	2597S	2597S	—
	RE35-04-54582	35-23154	1.48-2.46	SED	2597S	2597S	—	2597S	2597S	—
35-009(c)	AAA6495	35-02049	8-9	QBT3	—	—	—	16669	16669	—
	AAA6496	35-02049	12-13	QBT3	—	—	—	16669	16669	—
	AAA6497	35-02049	19-20	QBT3	—	—	—	16669	16669	—
	AAA6498	35-02050	9-10	QBT3	—	—	—	16669	16669	—
	AAA6499	35-02050	11.5-12.5	QBT3	—	—	—	16669	16669	—
	AAA6500	35-02050	19-20	QBT3	—	16669	—	16669	16669	—
	AAA6525	35-02051	3.5-4.5	ALLH	—	—	—	16683	16683	—
	AAA6526	35-02051	9-10	QBT3	—	—	—	16683	16683	—
	AAA6527	35-02051	14-15	QBT3	—	—	—	16683	16683	—
	AAA6528	35-02051	17-18	QBT3	—	—	—	16683	16683	—
	AAA6529	35-02052	4-5	ALLH	—	—	—	16683	16683	—
	AAA6530	35-02052	9-10	ALLH	—	16683	—	16683	16683	—
	AAA6531	35-02052	14-15	QBT3	—	—	—	16683	16683	—
	AAA6532	35-02052	18.8-20	QBT3	—	—	—	16683	16683	—
	AAA6533 (FD)	35-02052	18.8-20	QBT3	—	—	—	16683	16683	—
	AAA6508	35-02053	3-4	ALLH	—	16669	—	16669	16669	—
	AAA6509 (FD)	35-02053	3-4	ALLH	—	16669	—	16669	16669	—
	AAA6510	35-02053	9-10	QBT3	—	—	—	16669	16669	—
	AAA6511	35-02053	14-15	QBT3	—	—	—	16669	16669	—
	AAA6512	35-02053	17.5-18.5	QBT3	—	—	—	16669	16669	—
	AAA6513	35-02054	4-5	ALLH	—	—	—	16669	16669	—
	AAA6514	35-02054	8-9	ALLH	—	—	—	16669	16669	—
	AAA6515	35-02054	14-15	QBT3	—	—	—	16669	16669	—
	AAA6516	35-02054	19-20	QBT3	—	—	—	16669	16669	—

Table D-4.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAA6480	35-02055	4-5	QBT3	—	—	—	16685	16685	—
	AAA6481	35-02055	9-10	QBT3	—	—	—	16685	16685	—
	AAA6482	35-02055	14-15	QBT3	—	—	—	16685	16685	—
	AAA6483	35-02055	19-20	QBT3	—	—	—	16685	16685	—
	AAA6484	35-02056	4-5	ALLH	—	—	—	16685	16685	—
	AAA6485	35-02056	6-7	QBT3	—	16685	—	16685	16685	—
	AAA6486	35-02056	13-14	QBT3	—	—	—	16685	16685	—
	AAA6487	35-02056	19-20	QBT3	—	—	—	16685	16685	—
	0435-97-0355	35-02551	0-1	FILL	—	3488R	—	—	—	3488R
	0435-97-0356	35-02551	5.5-6.5	FILL	—	3488R	3488R	—	—	3488R
	0435-97-0357	35-02551	6.5-7.5	QBT3	—	3488R	3488R	—	—	3488R
	0435-97-0358	35-02551	11.5-12.5	QBT3	—	3488R	3488R	—	—	3488R
	0435-97-0359	35-02552	0-1	FILL	—	3488R	—	—	—	3488R
	0435-97-0360	35-02552	5-5.5	FILL	—	3488R	3488R	—	—	3488R
	0435-97-0361 (FD)	35-02552	5-5.5	FILL	—	3488R	3488R	—	—	3488R
	0435-97-0362	35-02552	5.5-6.5	QBT3	—	3488R	3488R	—	—	3488R
	0435-97-0363	35-02552	11.5-12.5	QBT3	—	3488R	3488R	—	—	3488R
	0435-97-0364	35-02553	0-1	FILL	—	3488R	—	—	—	3488R
	0435-97-0365	35-02553	4.5-5.5	FILL	—	3488R	3488R	—	—	3488R
	0435-97-0366	35-02553	5.5-6.5	QBT3	—	3488R	3488R	—	—	3488R
	0435-97-0367	35-02553	11.5-12.5	QBT3	—	3488R	3488R	—	—	3488R
	RE35-04-54623	35-23178	0.07-0.26	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54624	35-23178	0.26-0.66	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54627	35-23180	0.2-0.39	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54628	35-23180	0.95-1.18	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54631	35-23182	0-0.59	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54632	35-23182	1.21-1.54	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54633	35-23183	0-0.95	SED	2629S	2629S	2629S	2629S	2629S	—
	RE35-04-54634	35-23183	1.48-1.97	SED	2629S	2629S	2629S	2629S	2629S	—
35-016(o)	AAA6490	35-02044	0-0.5	ALLH	—	16669	—	16669	16669	—
	AAA6491	35-02045	0-0.5	ALLH	—	—	—	16669	16669	—
	AAB4260	35-02255	2-3	QBT3	—	—	—	18791	18791	—
	AAB4261	35-02256	0-0.5	ALLH	—	—	—	18791	18791	—
	AAB4262	35-02257	0-1	ALLH	—	—	—	18791	18791	—
	AAB4263	35-02257	1-2	ALLH	—	—	—	18791	18791	—
	AAB4264	35-02257	2-3	QBT3	—	—	—	18791	18791	—
	0435-97-0144	35-02505	0-1	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0145	35-02505	1-2	QBT3	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0154	35-02506	0-1	SED	—	3329R	3329R	3329R	3329R	3329R
	0435-97-0155 (FD)	35-02506	0-1	SED	—	3329R	—	3329R	3329R	3329R
	0435-97-0156	35-02506	1-2	QBT3	—	3329R	3329R	3329R	3329R	3329R
	0435-97-0158	35-02507	0-1	SED	—	3329R	3329R	3329R	3329R	3329R
	0435-97-0159	35-02507	1-2	QBT3	—	3329R	3329R	3329R	3329R	3329R

Table D-4.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0435-97-0150	35-02509	0-1	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0151	35-02509	1-1.8	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0161	35-02510	0-1	ALLH	—	3329R	3329R	3329R	3329R	3329R
	0435-97-0162	35-02510	1-2.2	QBT3	—	3329R	3329R	3329R	3329R	3329R
	0435-97-0164	35-02511	0-1	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0165	35-02511	1-1.8	QBT3	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0167	35-02512	0-1	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0168	35-02512	1-2	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0170	35-02513	0-0.5	ALLH	—	3311R	3311R	3311R	3311R	3311R
	0435-97-0171	35-02513	0.5-1.5	QBT3	—	3311R	3311R	3311R	3311R	3311R
	RE35-04-54623	35-23178	0.07-0.26	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54624	35-23178	0.26-0.66	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54627	35-23180	0.2-0.39	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54628	35-23180	0.95-1.18	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54631	35-23182	0-0.59	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54632	35-23182	1.21-1.54	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54633	35-23183	0-0.95	SED	2629S	2629S	2629S	2629S	2629S	—
	RE35-04-54634	35-23183	1.48-1.97	SED	2629S	2629S	2629S	2629S	2629S	—
	RE35-04-54635	35-23184	0-0.33	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54636	35-23184	0.79-1.21	SED	2601S	2601S	2601S	2601S	2601S	—
	RE35-04-54637	35-23185	0-0.3	SED	2629S	2629S	2629S	2629S	2629S	—
	RE35-04-54638	35-23185	0.3-0.69	SED	2629S	2629S	2629S	2629S	2629S	—
	RE35-04-54639	35-23186	0.1-0.33	SED	2600S	2600S	2600S	2600S	2600S	—
	RE35-04-54640	35-23186	0.33-0.49	SED	2600S	2600S	2600S	2600S	2600S	—
	RE35-04-54641	35-23187	0.16-0.66	SED	2630S	2630S	2630S	2630S	2630S	—
	RE35-04-54642	35-23187	0.66-1.51	SED	2630S	2630S	2630S	2630S	2630S	—
35-016(p)	0435-97-0279	35-02584	0-1	ALLH	—	3475R	—	3475R	3475R	—
	0435-97-0283	35-02584	1-2	QBT3	—	3475R	—	3475R	3475R	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-4.0-3
Soil, Tuff, and Sediment Samples Collected for Organic Chemical Analyses at Mortandad Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
35-004(b)	RE35-04-54014	35-22921	0.5-1	ALLH	—[a]	—	—	—	2408S[b]	—	2408S
	RE35-04-54015	35-22921	2-2.5	ALLH	—	—	—	—	2408S	—	2408S
35-008-00	AAC1227	35-02126	2-3	QBT3	—	—	—	—	21576	—	—
	AAC1240	35-02130	1-2	QBT3	—	—	—	—	21576	—	—
	AAC1259	35-02136	1-2	QBT3	—	—	—	—	—	—	21602
	AAB4276	35-02250	0-0.5	ALLH	—	—	—	—	17890	—	17890
	XAAB4259	35-02251	2-3	QBT3	—	—	—	—	—	—	17859
	XAAB4263	35-02253	0-0.5	ALLH	—	17890	—	—	17890	—	—
	0435-95-0202	35-02282	0-0.5	ALLH	—	—	—	—	1678	1678	—
	0435-95-0203	35-02282	1-2	ALLH	—	—	—	—	—	1678	—
	0435-95-0204	35-02283	1-2	ALLH	—	—	—	1678	1678	1678	—
	0435-97-0193	35-02453	0-1	SED	—	—	—	—	3341R	3341R	—
	0435-97-0194	35-02453	1-2	SED	—	—	—	—	3341R	3341R	3341R
	0435-97-0195	35-02453	2-3.4	SED	—	—	—	—	3341R	3341R	3341R
	0435-97-0196 (FD)	35-02453	2-3.4	SED	—	—	—	—	3341R	3341R	3341R
	0435-97-0198	35-02454	0-1	SED	—	—	—	—	3341R	3341R	—
	0435-97-0199	35-02454	1-2	SED	—	—	—	—	3341R	3341R	3341R
	0435-97-0200	35-02454	2-3	SED	—	—	—	—	3341R	3341R	3341R
	0435-97-0201	35-02455	0-1	SED	—	—	—	—	3341R	3341R	—
	0435-97-0202	35-02455	1-2	SED	—	—	—	—	3341R	3341R	3341R
	0435-97-0203	35-02455	2-3	QBT3	—	—	—	—	3341R	3341R	—
	0435-97-0204	35-02456	0-1	SED	—	—	—	—	3327R	3327R	—
	0435-97-0205	35-02456	1-2	SED	—	—	—	—	3327R	3327R	3327R
	0435-97-0206	35-02456	2-3	QBT3	—	—	—	—	—	3327R	3327R
	0435-97-0208	35-02457	0-1	SED	—	—	—	—	3327R	3327R	—
	0435-97-0209	35-02457	1-2	SED	—	—	—	—	3327R	3327R	3327R
	0435-97-0210	35-02457	2-3	QBT3	—	—	—	—	3327R	3327R	3327R
	0435-97-0211	35-02458	0-1	SED	—	—	—	—	3327R	3327R	—
	0435-97-0212	35-02458	1-2	SED	—	—	—	—	3327R	3327R	—
	0435-97-0213	35-02458	2-3	QBT3	—	—	—	—	3327R	3327R	—
	0435-97-0214	35-02459	0-0.5	ALLH	—	—	—	—	3341R	3341R	—
	0435-97-0215	35-02459	0.5-1	QBT3	—	—	—	—	3341R	3341R	—
	0435-97-0216	35-02459	1-2	QBT3	—	—	—	—	3341R	3341R	—
	0435-97-0217	35-02460	0-0.83	ALLH	—	—	—	—	3341R	3341R	—
	0435-97-0218	35-02460	0.83-1.5	QBT3	—	—	—	—	3341R	3341R	—
	0435-97-0219 (FD)	35-02460	0.83-1.5	QBT3	—	—	—	—	3341R	3341R	—
	0435-97-0221	35-02461	0-1	FILL	—	—	—	—	—	3341R	—
	0435-97-0222	35-02462	0-1	FILL	—	—	—	—	—	3341R	—
	RE35-04-54561	35-23144	0-0.56	SED	—	—	—	—	2571S	—	—
	RE35-04-54562	35-23144	0.56-0.95	SED	—	—	—	—	2571S	—	—
	RE35-04-54563	35-23145	0.46-0.79	SED	—	—	—	—	2571S	—	—
	RE35-04-54609 (FD)	35-23145	0.46-0.79	SED	—	—	—	—	—	2571S	—

Table D-4.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	RE35-04-54564	35-23145	0.79-1.05	SED	—	—	—	—	2571S	—	—
	RE35-04-54565	35-23146	0-0.3	SED	—	—	—	—	2580S	—	—
	RE35-04-54566	35-23146	0.3-0.69	SED	—	—	—	—	2580S	—	—
	RE35-04-54567	35-23147	0-0.36	SED	—	—	—	—	2580S	—	—
	RE35-04-54568	35-23147	0.36-0.69	SED	—	—	—	—	2580S	—	—
	RE35-04-54569	35-23148	0.23-0.69	SED	—	—	—	—	2580S	—	—
	RE35-04-54570	35-23148	0.69-1.21	SED	—	—	—	—	2580S	—	—
	RE35-04-54571	35-23149	0-0.46	SED	—	—	—	—	2580S	—	—
	RE35-04-54572	35-23149	0.46-1.25	SED	—	—	—	—	2580S	—	—
	RE35-04-54573	35-23150	0-0.23	SED	—	—	—	—	2571S	—	—
	RE35-04-54574	35-23150	0.23-0.56	SED	—	—	—	—	2571S	—	—
	RE35-04-54575	35-23151	0-0.43	SED	—	—	—	—	2588S	—	—
	RE35-04-54576	35-23151	0.43-0.82	SED	—	—	—	—	2588S	—	—
	RE35-04-54577	35-23152	0-0.33	SED	—	—	—	—	2596S	—	—
	RE35-04-54578	35-23152	0.69-0.98	SED	—	—	—	—	2596S	—	—
	RE35-04-54579	35-23153	0.52-1.31	ALLH	—	—	—	—	2596S	—	—
	RE35-04-54580	35-23153	1.31-2.46	ALLH	—	—	—	—	2596S	—	—
	RE35-04-54581	35-23154	0.03-0.59	SED	—	—	—	—	2596S	—	—
	RE35-04-54582	35-23154	1.48-2.46	SED	—	—	—	—	2596S	—	—
35-009(c)	0435-95-0194	35-02279	3-4	FILL	—	—	—	—	1678	—	1671
	RE35-04-54018	35-22923	2-2.5	ALLH	—	2348S	2348S	—	—	—	—
	RE35-04-54019	35-22923	3.9-4.4	ALLH	—	2348S	2348S	—	—	—	—
	RE35-04-54020	35-22923	7-7.5	QBT3	—	2348S	2348S	—	—	—	—
	RE35-04-54021	35-22924	0.5-1	ALLH	—	2348S	2348S	—	—	—	—
	RE35-04-54022	35-22924	8.5-9.5	ALLH	—	2348S	2348S	—	—	—	—
	RE35-04-54023	35-22924	14-15	QBT3	—	2348S	2348S	—	—	—	—
	RE35-04-54024	35-22925	0-0.5	ALLH	—	2348S	2348S	—	—	—	—
	RE35-04-54025	35-22925	1.2-1.7	ALLH	—	2348S	2348S	—	—	—	—
	RE35-04-54026	35-22925	4.5-5	QBT3	—	2348S	2348S	—	—	—	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54627	35-23180	0.2-0.39	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54631	35-23182	0-0.59	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54632	35-23182	1.21-1.54	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54633	35-23183	0-0.95	SED	—	2629S	2629S	—	2629S	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	2629S	2629S	—	2629S	—	—
35-016(f)	AAC1209	35-02155	1-2	QBT3	—	—	—	—	21576	—	—
	0435-95-0205	35-02284	0-1	ALLH	—	—	—	—	1678	—	—
	RE35-04-54601	35-23164	0.07-0.49	SED	—	2567S	2567S	—	2567S	—	—
	RE35-04-54602	35-23164	0.49-0.92	SED	—	2567S	2567S	—	2567S	—	—
	RE35-04-54603	35-23165	0.13-0.39	SED	—	2567S	2567S	—	2567S	—	—
	RE35-04-54604	35-23165	0.39-1.21	SED	—	2567S	2567S	—	2567S	—	—

Table D-4.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	RE35-04-54605	35-23166	0.1-0.39	SED	—	2567S	2567S	—	2567S	—	—
	RE35-04-54606	35-23166	0.39-0.89	SED	—	2567S	2567S	—	2567S	—	—
	RE35-04-54607	35-23167	0-0.26	SED	—	2596S	2596S	—	2596S	—	—
	RE35-04-54608	35-23167	0.26-0.46	SED	—	2596S	2596S	—	2596S	—	—
35-016(i)-00	RE35-04-54033	35-22929	0.5-1	ALLH	—	2346S	2346S	—	2346S	—	—
	RE35-04-54034	35-22929	4-4.5	QBT3	—	2346S	2346S	—	2346S	—	—
	RE35-04-54035	35-22929	7-7.5	QBT3	—	2346S	2346S	—	2346S	—	—
	RE35-04-54585	35-23156	0-0.59	SED	—	2580S	2580S	—	2580S	—	—
	RE35-04-54587	35-23157	0.07-0.56	SED	—	2588S	2588S	—	2588S	—	—
	RE35-04-54588	35-23157	0.56-0.92	SED	—	2588S	2588S	—	2588S	—	—
	RE35-04-54589	35-23158	0.1-0.3	SED	—	2588S	2588S	—	2588S	—	—
	RE35-04-54590	35-23158	0.3-0.49	SED	—	2588S	2588S	—	2588S	—	—
	RE35-04-54593	35-23160	0-0.39	SED	—	2588S	2588S	—	2588S	—	—
	RE35-04-54594	35-23160	0.39-0.95	SED	—	2588S	2588S	—	2588S	—	—
	RE35-04-54597	35-23162	0-0.75	SED	—	2596S	2596S	—	2596S	—	—
	RE35-04-54610 (FD)	35-23162	0-0.75	SED	—	2596S	2596S	—	2596S	—	—
	RE35-04-54598	35-23162	0.75-1.15	SED	—	2596S	2596S	—	2596S	—	—
	RE35-04-54599	35-23163	0-0.33	SED	—	2580S	2580S	—	2580S	2580S	—
	RE35-04-54600	35-23163	0.33-0.85	SED	—	2580S	2580S	—	2580S	2580S	—
	RE35-04-54611	35-23168	0-0.49	SED	—	2580S	2580S	—	2580S	—	—
35-016(o)	AAA6490	35-02044	0-0.5	ALLH	—	—	—	—	—	—	—
	AAA6491	35-02045	0-0.5	ALLH	—	—	—	—	—	—	—
	RE35-07-75605 (FD)	35-02092	0-0.5	ALLH	6898S	—	—	—	—	—	—
	RE35-07-75242	35-02255	1.7-1.9	Qbt 3	6896S	—	—	—	—	—	—
	AAB4260	35-02255	2-3	Qbt 3	—	—	—	—	19803	—	—
	AAB4261	35-02256	0-0.5	ALLH	—	—	—	—	19803	—	—
	AAB4262	35-02257	0-1	ALLH	—	—	—	—	19803	—	—
	AAB4263	35-02257	1-2	ALLH	—	—	—	—	19803	—	—
	AAB4264	35-02257	2-3	Qbt 3	—	—	—	—	19803	—	—
	0435-97-0144	35-02505	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
	0435-97-0145	35-02505	1-2	Qbt 3	—	3309R	—	—	3309R	3309R	—
	0435-97-0154	35-02506	0-1	SED	—	—	—	—	—	—	—
	0435-97-0155 (FD)	35-02506	0-1	SED	—	3327R	—	—	3327R	3327R	—
	0435-97-0274	35-02506	0-0.5	SED	—	3430R	—	—	3430R	3430R	—
	0435-97-0156	35-02506	1-2	Qbt 3	—	3327R	—	—	3327R	3327R	—
	0435-97-0158	35-02507	0-1	SED	—	3327R	—	—	3327R	3327R	—
	0435-97-0159	35-02507	1-2	Qbt 3	—	3327R	—	—	3327R	3327R	—
	RE35-07-75604	35-02508	2.5-2.8	Qbt 3	6898S	—	—	—	—	—	—
	0435-97-0150	35-02509	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
	0435-97-0151	35-02509	1-1.8	ALLH	—	3309R	—	—	3309R	3309R	—
	0435-97-0161	35-02510	0-1	ALLH	—	3327R	—	—	3327R	3327R	—
	0435-97-0162	35-02510	1-2.2	Qbt 3	—	3327R	—	—	3327R	3327R	—
	0435-97-0164	35-02511	0-1	ALLH	—	3309R	—	—	3309R	3309R	—

Table D-4.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	0435-97-0165	35-02511	1-1.8	Qbt 3	—	3309R	—	—	3309R	3309R	—
	0435-97-0167	35-02512	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
	0435-97-0168	35-02512	1-2	ALLH	—	3309R	—	—	3309R	3309R	—
	0435-97-0170	35-02513	0-0.5	ALLH	—	3309R	—	—	3309R	3309R	—
	0435-97-0171	35-02513	0.5-1.5	Qbt 3	—	3309R	—	—	3309R	3309R	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54627	35-23180	0.2-0.39	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54631	35-23182	0-0.59	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54632	35-23182	1.21-1.54	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54633	35-23183	0-0.95	SED	—	2629S	2629S	—	2629S	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	2629S	2629S	—	2629S	—	—
	RE35-04-54635	35-23184	0-0.33	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54636	35-23184	0.79-1.21	SED	—	2601S	2601S	—	2601S	—	—
	RE35-04-54637	35-23185	0-0.3	SED	—	2629S	2629S	—	2629S	—	—
	RE35-04-54638	35-23185	0.3-0.69	SED	—	2629S	2629S	—	2629S	—	—
	RE35-04-54639	35-23186	0.1-0.33	SED	—	2600S	2600S	—	2600S	—	—
	RE35-04-54640	35-23186	0.33-0.49	SED	—	2600S	2600S	—	2600S	—	—
	RE35-04-54641	35-23187	0.16-0.66	SED	—	2630S	2630S	—	2630S	—	—
	RE35-04-54642	35-23187	0.66-1.51	SED	—	2630S	2630S	—	2630S	—	—
	RE35-07-75198	35-27423	0-0.3	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75199	35-27423	0.3-0.8	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75200	35-27424	0-0.3	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75201	35-27424	0.4-0.8	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75202	35-27425	0-0.3	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75603 (FD)	35-27425	0-0.3	ALLH	6910S	—	—	—	—	—	—
	RE35-07-75203	35-27425	0.3-0.7	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75204	35-27426	0-0.3	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75205	35-27426	0.3-0.8	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75206	35-27427	0-0.2	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75602 (FD)	35-27427	0-0.2	ALLH	6910S	—	—	—	—	—	—
	RE35-07-75207	35-27427	0.2-0.6	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75208	35-27428	0-0.5	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75209	35-27428	0.5-1	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75226	35-27434	0-0.2	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75227	35-27434	0.2-0.6	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75228	35-27435	0-0.2	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75229	35-27435	0.2-0.5	ALLH	6908S	—	—	—	—	—	—
35-016(p)	RE35-07-75188	35-02096	2.2-2.5	ALLH	6908S	—	—	—	—	—	—
	RE35-07-4023	35-23188	1-1.5	ALLH	07-231	—	—	—	—	—	—
	RE35-04-54646	35-23189	0.49-0.85	SED	—	—	—	—	2600S	—	—
	RE35-04-54645	35-23189	0.23-0.49	SED	—	—	—	—	2600S	—	—

Table D-4.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	PESTPCB	SVOC	TPH-DRO	VOC
	RE35-04-54650	35-23191	0.39-1.38	SED	—	—	—	—	2630S	—	—
	RE35-04-54649	35-23191	0-0.39	SED	—	—	—	—	2630S	—	—
	RE35-07-75210	35-27429	0-0.5	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75211	35-27429	0.5-1	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75212	35-27430	0-0.4	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75213	35-27430	0.4-1	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75215	35-27431	0.4-0.8	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75214	35-27431	0-0.4	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75217	35-27432	0.4-1	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75216	35-27432	0-0.4	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75219	35-27433	0.7-1	ALLH	6908S	—	—	—	—	—	—
	RE35-07-75218	35-27433	0-0.5	ALLH	6908S	—	—	—	—	—	—
	RE35-07-4022	35-600908	0.5-0.6	ALLH	07-231	—	—	—	—	—	—
	RE35-07-4028	35-600909	0.5-0.6	ALLH	07-231	—	—	—	—	—	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-4.0-4
Summary of Inorganic COPCs above BV or Detected in Soil, Tuff, and Sediment at Mortandad Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	295	1.83	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.21	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1.10	63.5
Sediment Background Value (mg/kg)					15400	0.83	127	1.31	0.4	10.5	11.2	19.7	na	0.1	9.38	0.3	0.73	60.2
35-004(b)	AAC1288	35-02121	0.00-1.00	ALLH	—	—[b]	—	—	—	—	—	—	—	0.12 (U)	—	—	1.1 (UJ)	—
	RE35-04-54015	35-22921	2.00-2.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-008-00	AAB4269	35-02032	0.00-0.50	ALLH	—	5.4 (U)	—	—	0.44 (U)	—	—	—	6.5	—	—	8.5 (U)	30.1 (U)	—
	0435-95-0203	35-02282	1.00-2.00	ALLH	—	10.8 (U)	—	—	0.85 (U)	—	—	—	—	—	—	3.5 (UJ)	—	—
	0435-97-0193	35-02453	0.00-1.00	SED	—	7.4 (UJ)	—	—	0.64 (U)	—	—	—	—	—	—	0.52 (U)	—	—
	0435-97-0194	35-02453	1.00-2.00	SED	—	7.2 (UJ)	—	—	0.63 (U)	—	—	—	—	—	—	0.76 (U)	—	—
	0435-97-0195	35-02453	2.00-3.40	SED	—	8.6 (J-)	—	—	0.68 (U)	—	—	—	—	—	—	0.34 (U)	—	—
	0435-97-0198	35-02454	0.00-1.00	SED	—	7.4 (UJ)	—	—	0.64 (U)	—	—	—	—	—	—	0.33 (U)	—	—
	0435-97-0199	35-02454	1.00-2.00	SED	—	7.4 (UJ)	—	—	0.64 (U)	—	—	—	—	—	—	0.32 (U)	—	—
	0435-97-0200	35-02454	2.00-3.00	SED	—	7.2 (UJ)	—	—	0.62 (U)	—	—	—	—	—	—	0.55 (U)	—	—
	0435-97-0201	35-02455	0.00-1.00	SED	—	7.3 (UJ)	—	—	0.63 (U)	—	—	—	—	—	—	0.47 (U)	—	—
	0435-97-0202	35-02455	1.00-2.00	SED	—	7.7 (UJ)	—	2.1	0.67 (U)	—	—	—	—	—	—	0.67 (U)	4.8	—
	0435-97-0203	35-02455	2.00-3.00	QBT3	9110	7.7 (UJ)	—	2.6	—	9.6	6.8	11.7	—	—	8.6 (J)	0.43 (U)	—	—
	0435-97-0204	35-02456	0.00-1.00	SED	—	5.15 (U)	—	—	0.515 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0205	35-02456	1.00-2.00	SED	—	4.78 (U)	—	—	0.478 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0206	35-02456	2.00-3.00	QBT3	—	5 (U)	—	—	—	34	—	—	—	—	17.5	—	—	—
	RE35-04-54561	35-23144	0.00-0.56	SED	—	—	—	—	—	—	13.7	—	—	—	—	0.306 (U)	—	—
	RE35-04-54562	35-23144	0.56-0.95	SED	—	—	—	—	—	—	—	—	—	—	—	0.855 (U)	—	—
	RE35-04-54563	35-23145	0.46-0.79	SED	—	—	—	—	—	—	—	—	—	—	—	0.345 (U)	—	84.7
	RE35-04-54564	35-23145	0.79-1.05	SED	—	—	—	—	—	—	—	—	—	—	—	0.55 (U)	—	—
	RE35-04-54567	35-23147	0.00-0.36	SED	—	—	—	—	0.582 (U)	—	—	—	—	—	—	0.576 (U)	—	—
	RE35-04-54568	35-23147	0.36-0.69	SED	—	—	—	—	0.58 (U)	—	—	—	—	—	—	0.58 (U)	—	—
	RE35-04-54569	35-23148	0.23-0.69	SED	—	—	—	—	—	—	—	—	—	—	—	0.565 (U)	—	—
	RE35-04-54570	35-23148	0.69-1.21	SED	—	—	—	—	0.572 (U)	—	—	—	—	—	—	0.572 (U)	—	—
	RE35-04-54571	35-23149	0.00-0.46	SED	—	—	—	—	—	—	—	—	—	—	—	0.601 (U)	—	—
	RE35-04-54572	35-23149	0.46-1.25	SED	—	—	—	—	0.597 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54573	35-23150	0.00-0.23	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	67.7

Table D-4.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	295	1.83	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.21	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1.10	63.5
Sediment Background Value (mg/kg)					15400	0.83	127	1.31	0.4	10.5	11.2	19.7	na	0.1	9.38	0.3	0.73	60.2
	RE35-04-54574	35-23150	0.23-0.56	SED	—	—	—	—	0.556 (U)	—	—	—	—	—	—	0.406 (U)	—	—
	RE35-04-54575	35-23151	0.00-0.43	SED	—	—	—	—	—	—	—	—	—	—	—	0.523 (U)	—	—
	RE35-04-54576	35-23151	0.43-0.82	SED	—	—	—	—	—	—	—	—	—	—	—	0.574 (U)	—	—
	RE35-04-54577	35-23152	0.00-0.33	SED	—	—	—	—	—	—	—	21.7	—	—	—	0.629 (U)	—	—
	RE35-04-54578	35-23152	0.69-0.98	SED	—	—	—	—	0.552 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54581	35-23154	0.03-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	0.573 (U)	—	—
	RE35-04-54582	35-23154	1.48-2.46	SED	—	—	—	—	0.592 (U)	—	—	—	—	—	—	0.592 (U)	—	—
35-009(c)	AAA6496	35-02049	12.00-13.00	QBT3	—	1 (U)	—	—	—	—	—	14.6	7.6 (J)	—	—	0.42 (UJ)	—	—
	AAA6510	35-02053	9.00-10.00	QBT3	—	1.6 (U)	—	—	—	—	7 (J)	—	3.3 (J)	—	—	0.64 (J-)	—	—
	AAA6484	35-02056	4.00-5.00	ALLH	—	1.1 (UJ)	—	—	0.83 (J)	—	—	—	7 (J)	—	—	—	—	—
	RE35-04-54018	35-22923	2.00-2.50	ALLH	—	—	—	—	0.526 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54019	35-22923	3.90-4.40	ALLH	—	—	—	—	0.517 (U)	—	—	26.6 (J)	—	—	—	—	—	—
	RE35-04-54020	35-22923	7.00-7.50	QBT3	—	—	—	—	—	—	—	17.7 (J)	—	—	—	0.499 (U)	—	—
	RE35-04-54021	35-22924	0.50-1.00	ALLH	—	—	—	—	0.506 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54022	35-22924	8.50-9.50	ALLH	—	—	—	—	0.504 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54023	35-22924	14.00-15.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.492 (U)	—	—
	RE35-04-54024	35-22925	0.00-0.50	ALLH	—	—	—	—	0.522 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54025	35-22925	1.20-1.70	ALLH	—	—	—	—	0.507 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54026	35-22925	4.50-5.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.501 (U)	—	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	—	—	—	—	—	—	—	—	0.173 (J+)	—	0.545 (U)	—	67
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	—	—	—	—	—	—	—	—	0.58 (U)	—	—
	RE35-04-54627	35-23180	0.20-0.39	SED	—	—	—	—	0.641 (U)	—	—	—	—	—	—	0.544 (U)	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	0.337 (U)	—	—
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	0.61 (U)	—	—
	RE35-04-54632	35-23182	1.21-1.54	SED	—	—	132	—	—	—	—	—	—	—	—	0.326 (U)	—	61
	RE35-04-54633	35-23183	0.00-0.95	SED	—	—	—	—	—	—	—	—	—	—	—	0.776	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	—	138	—	—	—	—	—	—	—	—	0.893	—	—
35-016(f)	AAC1208	35-02155	0.00-1.00	QBT3	—	0.51 (U)	—	—	—	—	—	—	—	0.12 (U)	—	1.1 (U)	1.2 (J)	—

Table D-4.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	295	1.83	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.21	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1.10	63.5
Sediment Background Value (mg/kg)					15400	0.83	127	1.31	0.4	10.5	11.2	19.7	na	0.1	9.38	0.3	0.73	60.2
	RE35-04-54601	35-23164	0.07-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	0.585 (U)	—	—
	RE35-04-54602	35-23164	0.49-0.92	SED	—	—	—	—	—	—	—	—	—	—	—	0.903 (U)	—	—
	RE35-04-54603	35-23165	0.13-0.39	SED	—	—	—	—	0.579 (U)	—	—	—	—	—	—	0.377 (U)	—	—
	RE35-04-54604	35-23165	0.39-1.21	SED	—	—	—	—	0.546 (U)	—	—	—	—	—	—	0.546 (U)	—	—
	RE35-04-54605	35-23166	0.10-0.39	SED	—	—	—	—	0.593 (U)	—	—	—	—	—	—	0.549 (U)	—	—
	RE35-04-54606	35-23166	0.39-0.89	SED	—	—	—	—	—	—	—	—	—	—	—	0.84 (U)	—	—
	RE35-04-54607	35-23167	0.00-0.26	SED	—	—	—	—	—	—	—	—	—	—	—	0.418 (U)	—	—
	RE35-04-54608	35-23167	0.26-0.46	SED	—	—	—	—	0.556 (U)	—	—	—	—	—	—	0.556 (U)	—	—
35-016(i)-00	RE35-04-54033	35-22929	0.50-1.00	ALLH	—	—	—	—	—	66.6	—	26.3 (J)	—	0.745 (J)	—	—	—	—
	RE35-04-54034	35-22929	4.00-4.50	QBT3	—	—	—	—	—	8.36 (J)	—	—	—	—	—	—	—	—
	RE35-04-54035	35-22929	7.00-7.50	QBT3	—	—	—	—	—	15.2 (J)	—	—	—	—	—	0.515 (U)	—	—
	RE35-04-54585	35-23156	0.00-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	0.525 (U)	—	—
	RE35-04-54587	35-23157	0.07-0.56	SED	—	—	—	—	0.527 (U)	—	—	—	—	—	—	0.527 (U)	—	—
	RE35-04-54588	35-23157	0.56-0.92	SED	—	—	—	—	0.53 (U)	—	—	—	—	—	—	0.53 (U)	—	—
	RE35-04-54589	35-23158	0.10-0.30	SED	—	—	—	—	0.557 (U)	—	—	—	—	—	—	0.557 (U)	—	—
	RE35-04-54590	35-23158	0.30-0.49	SED	—	—	—	—	0.538 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54593	35-23160	0.00-0.39	SED	—	—	—	—	0.546 (U)	—	—	—	—	—	—	0.45 (J)	—	—
	RE35-04-54594	35-23160	0.39-0.95	SED	—	—	—	—	0.572 (U)	—	—	—	—	—	—	0.572 (U)	—	—
	RE35-04-54597	35-23162	0.00-0.75	SED	—	—	—	—	—	—	—	—	—	—	—	0.536 (U)	—	—
	RE35-04-54599	35-23163	0.00-0.33	SED	—	—	—	—	0.585 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54600	35-23163	0.33-0.85	SED	—	—	—	—	0.562 (U)	—	—	—	—	—	—	0.394 (U)	—	—
	RE35-04-54611	35-23168	0.00-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	0.613 (U)	—	—
35-016(o)	AAB4262	35-02257	0.00-1.00	ALLH	—	—	—	—	0.83 (U)	—	—	—	—	—	—	—	1.3 (J)	—
	0435-97-0144	35-02505	0.00-1.00	ALLH	—	4.4 (U)	—	—	0.44 (U)	—	23	33.5	—	0.36	—	—	—	58.6
	0435-97-0145	35-02505	1.00-2.00	QBT3	—	5.4 (U)	—	—	—	—	8.5	—	—	—	—	—	—	—
	0435-97-0154	35-02506	0.00-1.00	SED	—	4.24 (U)	—	—	0.424 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0156	35-02506	1.00-2.00	QBT3	—	4.93 (U)	—	—	—	14.3	—	—	—	—	8.18	—	—	—
	0435-97-0158	35-02507	0.00-1.00	SED	—	4.67 (U)	—	—	0.467 (U)	—	—	—	—	—	—	—	—	—

Table D-4.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	295	1.83	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.21	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1.10	63.5
Sediment Background Value (mg/kg)					15400	0.83	127	1.31	0.4	10.5	11.2	19.7	na	0.1	9.38	0.3	0.73	60.2
	0435-97-0159	35-02507	1.00-2.00	QBT3	—	4.7 (U)	—	—	—	47.8	—	—	—	—	23.5	—	—	—
	0435-97-0150	35-02509	0.00-1.00	ALLH	—	4.7 (U)	—	—	0.47 (U)	—	20.8	—	—	—	—	—	—	—
	0435-97-0151	35-02509	1.00-1.80	ALLH	—	4.3 (U)	—	—	0.43 (U)	197	—	—	—	—	110	—	—	—
	0435-97-0161	35-02510	0.00-1.00	ALLH	—	4.97 (U)	—	—	0.497 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0162	35-02510	1.00-2.20	QBT3	—	3.99 (U)	—	—	—	23.9	—	—	—	—	13.1	—	—	—
	0435-97-0164	35-02511	0.00-1.00	ALLH	—	4.1 (U)	—	—	0.41 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0165	35-02511	1.00-1.80	QBT3	—	4.4 (U)	—	—	—	8.3	—	—	—	—	—	—	—	—
	0435-97-0167	35-02512	0.00-1.00	ALLH	—	4.9 (U)	—	—	0.49 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0168	35-02512	1.00-2.00	ALLH	—	5.2 (U)	—	—	0.52 (U)	23.5	—	—	—	—	—	—	—	—
	0435-97-0170	35-02513	0.00-0.50	ALLH	—	5 (U)	—	—	0.5 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0171	35-02513	0.50-1.50	QBT3	—	5.1 (U)	—	—	—	8.9	—	—	—	—	—	—	—	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	—	—	—	—	—	—	—	—	0.173 (J+)	—	0.545 (U)	—	67
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	—	—	—	—	—	—	—	—	0.58 (U)	—	—
	RE35-04-54627	35-23180	0.20-0.39	SED	—	—	—	—	0.641 (U)	—	—	—	—	—	—	0.544 (U)	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	0.337 (U)	—	—
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	0.61 (U)	—	—
	RE35-04-54632	35-23182	1.21-1.54	SED	—	—	—	—	—	—	—	—	—	—	—	0.326 (U)	—	61
	RE35-04-54633	35-23183	0.00-0.95	SED	—	—	—	—	—	—	—	—	—	—	—	0.776	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	—	—	—	—	—	—	—	—	—	—	0.893	—	—
	RE35-04-54635	35-23184	0.00-0.33	SED	—	—	—	—	—	—	—	—	—	—	—	0.547 (U)	—	—
	RE35-04-54636	35-23184	0.79-1.21	SED	—	—	—	—	—	—	—	—	—	—	—	0.56 (U)	—	—
	RE35-04-54637	35-23185	0.00-0.30	SED	—	—	—	—	0.571 (U)	—	—	—	—	—	—	0.571 (U)	—	—
	RE35-04-54638	35-23185	0.30-0.69	SED	—	—	—	—	—	—	—	—	—	0.134	—	0.583 (U)	—	—
	RE35-04-54639	35-23186	0.10-0.33	SED	—	—	—	—	—	—	—	—	—	—	—	0.619 (U)	—	—
	RE35-04-54640	35-23186	0.33-0.49	SED	—	—	—	—	0.614 (U)	—	—	—	—	—	—	0.597 (J)	—	—
	RE35-04-54641	35-23187	0.16-0.66	SED	—	—	—	—	—	—	—	—	—	—	—	0.597 (U)	—	—
	RE35-04-54642	35-23187	0.66-1.51	SED	—	—	—	—	0.53 (U)	—	—	—	—	—	—	0.729	—	—
35-016(p)	RE35-07-4023	35-23188	1.00-1.50	SOIL	—	—	—	—	0.515 (U)	—	—	—	—	—	—	—	—	—

Table D-4.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Beryllium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	295	1.83	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.21	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1.10	63.5
Sediment Background Value (mg/kg)					15400	0.83	127	1.31	0.4	10.5	11.2	19.7	na	0.1	9.38	0.3	0.73	60.2
	RE35-04-54645	35-23189	0.23-0.49	SED	—	—	—	—	0.551 (U)	—	—	—	—	—	—	—	—	—
	RE35-04-54646	35-23189	0.49-0.85	SED	—	—	—	—	—	—	—	—	—	—	—	0.564 (U)	—	—
	RE35-04-54649	35-23191	0.00-0.39	SED	—	—	—	—	—	—	—	—	—	—	—	0.577 (U)	—	—
	RE35-04-54650	35-23191	0.39-1.38	SED	—	—	—	—	—	—	—	—	—	—	—	0.576	—	—
	RE35-07-75210	35-27429	0.00-0.50	SOIL	—	—	—	—	0.57 (U)	—	—	—	—	—	—	—	—	—
	RE35-07-75211	35-27429	0.50-1.00	SOIL	—	—	—	—	0.567 (U)	—	—	—	—	—	—	1.7 (U)	—	—
	RE35-07-75212	35-27430	0.00-0.40	SOIL	—	—	—	—	0.593 (U)	—	—	—	—	—	—	1.78 (U)	—	—
	RE35-07-75213	35-27430	0.40-1.00	SOIL	—	—	—	—	0.568 (U)	—	—	—	—	—	—		—	—
	RE35-07-75214	35-27431	0.00-0.40	SOIL	—	—	—	—	0.591 (U)	—	—	—	—	—	—	1.77 (U)	—	—
	RE35-07-75215	35-27431	0.40-0.80	SOIL	—	—	—	—	0.582 (U)	—	—	—	—	—	—	1.75 (U)	—	—
	RE35-07-75216	35-27432	0.00-0.40	SOIL	—	—	—	—	0.572 (U)	—	—	—	—	—	—		—	—
	RE35-07-75217	35-27432	0.40-1.00	SOIL	—	—	—	—	0.551 (U)	—	—	—	—	—	—		—	—
	RE35-07-75218	35-27433	0.00-0.50	SOIL	—	—	—	—	0.597 (U)	—	—	—	—	—	—		—	—
	RE35-07-75219	35-27433	0.70-1.00	SOIL	—	—	—	—	0.584 (U)	—	—	—	—	—	—	1.75 (U)	—	—
	RE35-07-4028	35-600909	0.50-0.60	SOIL	—	—	—	—	0.514 (U)	—	—	—	—	—	—	1.54 (U)	—	50.9

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-4.0-5

Summary of Radionuclides Detected or Detected above BV/FV in Soil, Fill, Tuff, and Sediment at Mortandad Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Plutonium-238	Plutonium-239	Ruthenium-106	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	na	0.093	2.59	0.2	2.29
35-008-00	AAB4277	35-02250	1.00-2.00	QBT3	—[b]	—	—	—	0.03	—	—	—	—	—
	0435-97-0193	35-02453	0.00-1.00	SED	—	—	—	—	—	0.561	—	—	—	—
	0435-97-0210	35-02457	2.00-3.00	QBT3	—	—	—	—	—	—	—	—	0.242	—
	RE35-04-54577	35-23152	0.00-0.33	SED	0.151	2.44	—	0.0533	0.589	—	—	7.21	0.441	9.11
	RE35-04-54579	35-23153	0.52-1.31	ALLH	—	0.28[c]	—	—	0.0665	—	—	—	—	2.71
	RE35-04-54582	35-23154	1.48-2.46	SED	0.105	—	—	—	—	—	—	—	—	—
35-009(c)	AAA6496	35-02049	12.00-13.00	QBT3	—	—	—	0.025	—	—	—	—	—	—
	AAA6480	35-02055	4.00-5.00	QBT3	—	—	—	—	0.014	—	—	—	—	—
	AAA6485	35-02056	6.00-7.00	QBT3	—	—	—	—	0.025	—	—	—	—	—
	AAA6486	35-02056	13.00-14.00	QBT3	—	—	—	0.023	—	—	—	—	—	—
	AAA6487	35-02056	19.00-20.00	QBT3	—	—	—	0.018	0.014	—	—	—	—	—
	0435-97-0356	35-02551	5.50-6.50	FILL	—	—	—	—	—	—	0.32	—	—	—
	0435-97-0357	35-02551	6.50-7.50	QBT3	—	—	—	—	—	—	0.16	—	—	—
	0435-97-0360	35-02552	5.00-5.50	FILL	—	—	—	—	—	—	0.62	—	—	—
	0435-97-0362	35-02552	5.50-6.50	QBT3	—	—	—	—	—	—	0.63	—	—	—
	0435-97-0363	35-02552	11.50-12.50	QBT3	—	—	—	—	—	—	0.09	—	—	—
	0435-97-0365	35-02553	4.50-5.50	FILL	—	—	—	—	—	—	0.21	—	—	—
	0435-97-0366	35-02553	5.50-6.50	QBT3	—	—	—	—	—	—	0.31	—	—	—
	0435-97-0367	35-02553	11.50-12.50	QBT3	—	—	—	—	—	—	0.3	—	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	—	0.0811	—	—	3.16	—	3.52
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	0.0811	—	—	—	—	2.52
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	—	0.157	—	—	—	—	3.46
	RE35-04-54632	35-23182	1.21-1.54	SED	0.0636	—	—	0.0192	0.134	—	—	3.17	—	3.18
	RE35-04-54633	35-23183	0.00-0.95	SED	3.45	9.83	—	1.86	4.15	—	0.118	—	—	2.74
	RE35-04-54634	35-23183	1.48-1.97	SED	1.59	1.4	—	0.134	0.425	—	0.101	—	—	—
35-016(o)	AAA6490	35-02044	0.00-0.50	ALLH	—	—	—	0.032	—	—	—	—	—	—
	AAB4260	35-02255	2.00-3.00	QBT3	—	—	—	—	0.032	—	—	3.07	0.17	3.33
	AAB4263	35-02257	1.00-2.00	ALLH	—	—	—	—	0.014	—	—	—	—	—

Table D-4.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Plutonium-238	Plutonium-239	Ruthenium-106	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	na	0.093	2.59	0.2	2.29
	0435-97-0144	35-02505	0.00-1.00	ALLH	—	—	—	—	—	—	4.71	—	—	—
	0435-97-0145	35-02505	1.00-2.00	QBT3	—	—	—	—	0.043	—	1.16	—	—	—
	0435-97-0154	35-02506	0.00-1.00	SED	—	—	—	—	—	—	0.15	—	—	—
	0435-97-0156	35-02506	1.00-2.00	QBT3	—	—	—	—	—	—	0.09	—	—	—
	0435-97-0159	35-02507	1.00-2.00	QBT3	—	—	—	—	—	—	0.06	—	—	—
	0435-97-0150	35-02509	0.00-1.00	ALLH	—	—	—	—	—	—	0.687	—	—	—
	0435-97-0151	35-02509	1.00-1.80	ALLH	—	—	—	—	—	—	0.682	—	—	—
	0435-97-0161	35-02510	0.00-1.00	ALLH	—	—	—	—	—	—	0.09	—	—	—
	0435-97-0162	35-02510	1.00-2.20	QBT3	—	—	—	—	—	—	0.08	—	—	—
	0435-97-0164	35-02511	0.00-1.00	ALLH	—	0.23	—	—	—	—	0.298	—	—	—
	0435-97-0165	35-02511	1.00-1.80	QBT3	—	—	—	—	—	—	0.235	—	—	—
	0435-97-0167	35-02512	0.00-1.00	ALLH	—	—	—	—	—	—	0.272	—	—	—
	0435-97-0170	35-02513	0.00-0.50	ALLH	—	—	—	—	—	—	0.293	—	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	—	0.0811	—	—	3.16	—	3.52
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	0.0811	—	—	—	—	2.52
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	—	0.157	—	—	—	—	3.46
	RE35-04-54632	35-23182	1.21-1.54	SED	0.0636	—	—	0.0192	0.134	—	—	3.17	—	3.18
	RE35-04-54633	35-23183	0.00-0.95	SED	3.45	9.83	—	1.86	4.15	—	0.118	—	—	2.74
	RE35-04-54634	35-23183	1.48-1.97	SED	1.59	1.4	—	0.134	0.425	—	0.101	—	—	—
	RE35-04-54636	35-23184	0.79-1.21	SED	—	—	—	—	0.118	—	—	—	—	—
	RE35-04-54639	35-23186	0.10-0.33	SED	—	1.06	0.278	—	—	—	—	—	—	—
	RE35-04-54640	35-23186	0.33-0.49	SED	—	1.04	—	—	0.132	—	—	—	—	—
	RE35-04-54641	35-23187	0.16-0.66	SED	—	—	—	—	0.245	—	0.0963	—	—	3.12
35-016(p)	AAB4253	35-02095	0.00-0.50	ALLH	—	—	—	—	0.0606 (J)	—	—	—	—	—
	0435-97-0279	35-02584	0.00-1.00	ALLH	—	0.8	—	—	—	—	—	—	—	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-4.0-6
Summary of Organic Chemicals Detected in Soil, Tuff, and Sediment at Mortandad Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Aniline	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chloroaniline[4-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]
35-004(b)	RE35-04-54014	35-22921	0.5-1	ALLH	—[a]	0.0163[b]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54015	35-22921	2-2.5	ALLH	—	—	—	—	—	—	—	—	0.0191 (J)	0.0352 (J)	—	—	—	—	—	—	—	—
35-008	AAB4276	35-02250	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	8.4 (J)	—	—	—	—
	0435-95-0202	35-02282	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	8.2	—	—	—	—
	0435-95-0203	35-02282	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0204	35-02283	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	4.1 (J)	—	—	—	—
	0435-97-0193	35-02453	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0194	35-02453	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.083 (J)	—	—	—	—
	0435-97-0195	35-02453	2-3.4	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0196	35-02453	2-3.4	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0198	35-02454	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0199	35-02454	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.039 (J)	—	—	—	—	—
	0435-97-0200	35-02454	2-3	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0201	35-02455	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.058 (J)	—	—	—	—	—
	0435-97-0202	35-02455	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0203	35-02455	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0204	35-02456	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.059 (J)	—	—	—	—
	0435-97-0205	35-02456	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0206	35-02456	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0208	35-02457	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0209	35-02457	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0210	35-02457	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0211	35-02458	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	2.1 (J)	—	—	—	—
	0435-97-0212	35-02458	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	1.3 (J)	—	—	—	—
	0435-97-0213	35-02458	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	2.4 (J)	—	—	—	—
	0435-97-0214	35-02459	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	8.6 (J)	—	—	—	—
	0435-97-0215	35-02459	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	5.9 (J)	—	—	—	—
	0435-97-0216	35-02459	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	6.1 (J)	—	—	—	—
	0435-97-0217	35-02460	0-0.83	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.1 (J)	0.069 (J)	—	—	—	—
	0435-97-0218	35-02460	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.043 (J)	—	—	—	—	—
	0435-97-0219	35-02460	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.062 (J)	—	—	—	—	—
	0435-97-0221	35-02461	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54561	35-23144	0-0.56	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0755 (J)	—	—	—	—
	RE35-04-54563	35-23145	0.46-0.79	SED	—	—	—	0.056	—	—	—	—	—	—	—	0.0542	—	0.088 (J)	—	0.0493	—	—
	RE35-04-54609	35-23145	0.46-0.79	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54564	35-23145	0.79-1.05	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54566	35-23146	0.3-0.69	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.44 (J)	—	—	—	—	—
	RE35-04-54567	35-23147	0-0.36	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.474 (J)	—	—	—	—	—

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Aniline	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chloroaniline[4-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]
	RE35-04-54570	35-23148	0.69-1.21	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.446 (J)	—	—	—	—	—
	RE35-04-54571	35-23149	0-0.46	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.519 (J)	—	—	—	—	—
	RE35-04-54572	35-23149	0.46-1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.481 (J)	—	—	—	—	—
	RE35-04-54577	35-23152	0-0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54579	35-23153	0.52-1.31	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54582	35-23154	1.48-2.46	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.613	—	—	—	—
35-009(c)	RE35-04-54018	35-22923	2-2.5	ALLH	—	—	—	—	—	—	0.0057 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54019	35-22923	3.9-4.4	ALLH	—	—	—	—	—	—	0.102 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54021	35-22924	0.5-1	ALLH	—	—	—	—	—	0.0278 (J-)	0.0784 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54022	35-22924	8.5-9.5	ALLH	—	—	—	—	—	0.0183 (J-)	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54024	35-22925	0-0.5	ALLH	—	—	—	—	0.0085 (J-)	0.0069 (J-)	0.0127 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54025	35-22925	1.2-1.7	ALLH	—	—	—	—	—	—	0.002 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	—	—	0.119 (J)	—	0.588 (J-)	0.21 (J-)	—	0.435 (J)	0.526 (J)	—	0.213 (J)	—	—	—	0.346	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	0.0251 (J)	—	0.362 (J-)	0.101 (J-)	—	0.0712 (J)	0.0754 (J)	—	0.0403 (J)	—	—	—	0.0575	—	—
	RE35-04-54627	35-23180	0.20-0.39	SED	—	—	—	0.0402 (J)	—	0.0157 (J-)	0.037 (J-)	—	0.119 (J)	0.133 (J)	—	0.0833 (J)	—	—	—	0.106	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00058 (J)	0.00233 (J)
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	—	—	—	0.0262 (J-)	—	—	—	—	—	—	—	—	—	0.00141 (J)	0.003 (J)
	RE35-04-54632	35-23182	1.21-1.54	SED	—	—	—	—	—	—	0.0189 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54633	35-23183	0.00-0.95	SED	—	—	—	0.0227 (J)	—	0.094	0.0859	—	—	—	—	—	—	0.056 (J)	—	0.0879	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	—	—	—	—	0.0222 (J)	0.045	—	—	—	—	—	—	0.0382 (J)	—	—	—	—
35-016(f)	0435-95-0205	35-02284	0-1	ALLH	—	—	—	—	—	—	—	0.026 (J)	0.04 (J)	0.036 (J)	—	0.027 (J)	—	0.066 (J)	—	0.039 (J)	—	—
	RE35-04-54601	35-23164	0.07-0.49	SED	—	—	—	—	—	0.0023 (J)	0.0031 (J)	—	—	0.0222 (J)	—	—	0.473 (J)	0.0904 (J)	—	0.0201 (J)	—	—
	RE35-04-54602	35-23164	0.49-0.92	SED	—	—	—	—	—	0.0045	0.0054	—	0.0324 (J)	0.0573	—	—	0.522 (J)	0.158 (J)	—	0.0377 (J)	—	—
	RE35-04-54603	35-23165	0.13-0.39	SED	—	—	—	—	—	0.0064	0.0105	—	0.0354 (J)	0.0479	—	0.0276 (J)	—	0.164 (J)	—	0.0378 (J)	—	—
	RE35-04-54604	35-23165	0.39-1.21	SED	—	—	—	—	—	—	0.009	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54605	35-23166	0.1-0.39	SED	—	—	—	—	—	—	0.0046	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54606	35-23166	0.39-0.89	SED	—	—	—	—	—	—	0.0016 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54607	35-23167	0-0.26	SED	—	—	—	—	—	—	0.0045	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54608	35-23167	0.26-0.46	SED	—	—	—	—	—	—	0.0044	—	—	—	—	—	—	—	—	—	—	—
35-016(i)-00	RE35-04-54033	35-22929	0.5-1	ALLH	0.104 (J)	—	—	0.139	—	0.0913	0.44	0.331	0.32	0.51	0.621	—	—	0.257 (J)	—	0.354	—	—
	RE35-04-54034	35-22929	4-4.5	QBT3	—	—	—	—	—	—	0.0066	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54035	35-22929	7-7.5	QBT3	—	—	—	—	—	—	0.0071	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54585	35-23156	0-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54588	35-23157	0.56-0.92	SED	—	—	—	0.123 (J)	—	—	—	—	0.1 (J)	0.152	0.0791 (J)	0.0936 (J)	—	—	—	0.129 (J)	—	—
	RE35-04-54589	35-23158	0.1-0.3	SED	—	—	—	—	—	—	0.0026 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54590	35-23158	0.3-0.49	SED	—	—	—	—	—	—	0.0029 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54593	35-23160	0-0.39	SED	—	—	—	—	—	—	0.0024 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54597	35-23162	0-0.75	SED	—	—	—	—	—	—	0.0031 (J)	—	—	—	—	—	—	—	—	—	—	—

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Aniline	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chloroaniline[4-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]
	RE35-04-54610	35-23162	0-0.75	SED	—	—	—	0.0214 (J)	—	—	0.0028 (J)	—	—	0.0206 (J)	—	—	0.0434 (J)	0.0382 (J)	—	—	—	—
	RE35-04-54598	35-23162	0.75-1.15	SED	—	—	—	—	—	—	0.0027 (J-)	—	—	—	—	—	—	0.0417 (J)	—	—	—	—
	RE35-04-54599	35-23163	0-0.33	SED	0.0236 (J)	—	—	0.029 (J)	—	—	0.0446	—	—	—	—	—	—	—	—	0.0701 (J)	—	—
	RE35-04-54600	35-23163	0.33-0.85	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54611	35-23168	0-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.498 (J)	—	—	—	—	—
35-016(o)	RE35-07-75242	35-02255	1.7-1.9	QBT3	—	—	—	0.0207	—	—	—	0.0731	0.082	0.131	0.0673	—	—	—	—	0.0712	—	—
	AAB4260	35-02255	2-3	QBT3	—	—	—	—	—	—	—	0.04 (J)	0.065 (J)	0.069 (J)	0.049 (J)	0.05 (J)	—	—	—	0.064 (J)	—	—
	AAB4261	35-02256	0-0.5	ALLH	0.074 (J)	—	—	—	—	—	—	—	0.076 (J)	0.093 (J)	0.043 (J)	0.049 (J)	—	—	—	0.088 (J)	—	—
	AAB4264	35-02257	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	0.27 (J)	—	—	—	—
	0435-97-0144	35-02505	0.00-1.00	ALLH	3.2	—	—	4.1	—	1.4	—	11	10	9.3	6.2	11	—	0.36 (J)	0.14 (J)	11	—	—
	0435-97-0145	35-02505	1.00-2.00	QBT3	2.2 (J)	—	—	3.2	—	0.83	—	6.4	7.4	5.6	5.5	6.6	—	—	—	7.5	—	—
	0435-97-0274	35-02506	0.00-0.50	SED	—	—	—	—	—	—	—	0.044 (J)	—	—	—	—	—	—	—	0.055 (J)	—	—
	0435-97-0156	35-02506	1.00-2.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0158	35-02507	0.00-1.00	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0159	35-02507	1.00-2.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-07-75604	35-02508	2.50-2.80	QBT3	—	—	—	0.0461	—	—	—	0.112	0.12	0.192	0.0946	0.0724	—	—	—	0.0996	—	—
	0435-97-0150	35-02509	0.00-1.00	ALLH	1.4 (J)	—	—	1.4 (J)	—	—	—	6	7.4	7.1	5.5	6.4	—	—	—	7.5	—	—
	0435-97-0151	35-02509	1.00-1.80	ALLH	0.053 (J)	—	—	0.077 (J)	—	—	—	0.47	0.64	0.48	0.49	0.56	—	—	—	0.54	—	—
	0435-97-0161	35-02510	0.00-1.00	ALLH	0.18 (J)	—	—	0.21 (J)	—	—	—	0.53	0.64	0.55	0.54	0.65	—	—	—	0.69	—	—
	0435-97-0162	35-02510	1.00-2.20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0164	35-02511	0.00-1.00	ALLH	—	—	—	—	—	—	—	0.074 (J)	0.098 (J)	0.076 (J)	—	0.076 (J)	—	—	—	0.085 (J)	—	—
	0435-97-0165	35-02511	1.00-1.80	QBT3	0.042 (J)	—	—	0.053 (J)	—	—	—	0.16 (J)	0.17 (J)	0.13 (J)	—	0.18 (J)	—	—	—	0.17 (J)	—	—
	0435-97-0167	35-02512	0.00-1.00	ALLH	—	—	0.21 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0170	35-02513	0.00-0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.04 (J)	—	—	—	—	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	—	—	0.119 (J)	—	0.588 (J-)	0.21 (J-)	—	0.435 (J)	0.526 (J)	—	0.213 (J)	—	—	—	0.346	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	0.0251 (J)	—	0.362 (J-)	0.101 (J-)	—	0.0712 (J)	0.0754 (J)	—	0.0403 (J)	—	—	—	0.0575	—	—
	RE35-04-54627	35-23180	0.20-0.39	SED	—	—	—	0.0402 (J)	—	0.0157 (J-)	0.037 (J-)	—	0.119 (J)	0.133 (J)	—	0.0833 (J)	—	—	—	0.106	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00058 (J)	0.00233 (J)
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	—	—	—	0.0262 (J-)	—	—	—	—	—	—	—	—	—	0.00141 (J)	0.003 (J)
	RE35-04-54632	35-23182	1.21-1.54	SED	—	—	—	—	—	—	0.0189 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54633	35-23183	0.00-0.95	SED	—	—	—	0.0227 (J)	—	0.094	0.0859	—	—	—	—	—	—	0.056 (J)	—	0.0879	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	—	—	—	—	0.0222 (J)	0.045	—	—	—	—	—	—	0.0382 (J)	—	—	—	—
	RE35-04-54635	35-23184	0.00-0.33	SED	—	—	—	—	—	—	0.0152 (J-)	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54636	35-23184	0.79-1.21	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54637	35-23185	0.00-0.30	SED	0.162	—	—	0.251	—	0.0211 (J)	0.0406	0.786	0.242	0.131	0.543	—	—	—	—	0.956	—	—
	RE35-04-54638	35-23185	0.30-0.69	SED	0.47	—	—	0.686	—	0.0225 (J)	0.0407	—	0.657	0.343	1.65	—	—	—	—	2.39	—	—
	RE35-04-54639	35-23186	0.10-0.33	SED	—	—	—	—	—	0.0166 (J-)	0.0568 (J-)	—	—	—	—	—	—	—	—	0.0852	—	0.0113
	RE35-04-54640	35-23186	0.33-0.49	SED	—	—	—	—	—	0.0255 (J-)	0.198 (J-)	—	—	—	—	—	0.0974 (J)	—	—	—	0.00205 (J)	0.00703

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Aniline	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chloroaniline[4-]	Chrysene	DDE[4,4'-]	DDT[4,4'-]
	RE35-04-54641	35-23187	0.16-0.66	SED	0.0166 (J)	—	—	0.0228 (J)	—	—	0.269	—	—	0.0873	—	—	0.0607 (J)	—	—	0.0771	—	—
	RE35-04-54642	35-23187	0.66-1.51	SED	—	—	—	—	—	—	0.0316 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE35-07-75200	35-27424	0.00-0.30	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0348	—	—
	RE35-07-75206	35-27427	0.00-0.20	ALLH	—	—	—	—	—	—	—	—	—	—	0.00862 (J)	—	—	—	—	—	—	—
35-016(p)	RE35-07-75188	35-02096	2.20-2.50	SOIL	—	—	—	—	—	—	—	0.195	0.172	—	0.126	—	—	—	—	0.167	—	—
	RE35-04-54645	35-23189	0.23-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	1.6	—	—	—	—	—
	RE35-04-54646	35-23189	0.49-0.85	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0337 (J)	—	—
	RE35-04-54649	35-23191	0.00-0.39	SED	0.0105 (J)	—	—	—	—	—	—	—	—	0.0799	—	—	0.159 (J)	—	—	0.0764	—	—
	RE35-04-54650	35-23191	0.39-1.38	SED	—	—	—	—	—	—	—	—	—	0.0479	—	—	—	—	—	0.0364	—	—
	RE35-07-4022	35-600908	0.50-0.60	SOIL	0.0351	—	—	0.0228	—	—	—	0.0581	0.0424	0.0591	0.0257	—	—	—	—	0.0389	—	—
	RE35-07-4028	35-600909	0.50-0.60	SOIL	—	—	—	—	—	—	—	0.0692	—	—	—	—	—	—	—	0.0486	—	—

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Dibenz(a,h)anthracene	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
35-004(b)	RE35-04-54014	35-22921	0.5-1	ALLH	—	—	—	0.0184 (J)	—	—	0.0034	—	—	—	—	—	—	—	—	—	—
	RE35-04-54015	35-22921	2-2.5	ALLH	—	—	—	0.0508	—	—	—	0.0017 (J)	—	—	—	0.0389	—	0.045	—	—	—
35-008	AAB4276	35-02250	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0202	35-02282	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25000	—
	0435-95-0203	35-02282	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15000	—
	0435-95-0204	35-02283	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27000	—
	0435-97-0193	35-02453	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	—
	0435-97-0194	35-02453	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.006 (J)	14	—
	0435-97-0195	35-02453	2-3.4	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.6	—
	0435-97-0196	35-02453	2-3.4	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.6	—
	0435-97-0198	35-02454	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.9	—
	0435-97-0199	35-02454	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.004 (J+)	4.5	—
	0435-97-0200	35-02454	2-3	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.003 (J)	7.1	—
	0435-97-0201	35-02455	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27	—
	0435-97-0202	35-02455	1-2	SED	—	—	0.24 (J)	—	—	—	—	—	—	—	—	—	0.057 (J)	—	0.008 (J+)	21	—
	0435-97-0203	35-02455	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11	—
	0435-97-0204	35-02456	0-1	SED	—	—	0.047 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0205	35-02456	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—	0.002 (J)
	0435-97-0206	35-02456	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.001 (J)
	0435-97-0208	35-02457	0-1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	12	—
	0435-97-0209	35-02457	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16	0.001 (J)
	0435-97-0210	35-02457	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	7.3	0.001 (J)
	0435-97-0211	35-02458	0-1	SED	—	—	0.45 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0212	35-02458	1-2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0213	35-02458	2-3	QBT3	—	—	0.48 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0214	35-02459	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0215	35-02459	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0216	35-02459	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0217	35-02460	0-0.83	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0218	35-02460	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0219	35-02460	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0221	35-02461	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18	—
	RE35-04-54561	35-23144	0-0.56	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54563	35-23145	0.46-0.79	SED	—	—	—	0.09	—	—	—	—	—	—	—	—	—	0.108	—	—	—
	RE35-04-54609	35-23145	0.46-0.79	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27.6	—
	RE35-04-54564	35-23145	0.79-1.05	SED	—	—	—	0.0194 (J)	—	—	—	—	—	—	—	—	—	0.0208 (J)	—	—	—
	RE35-04-54566	35-23146	0.3-0.69	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54567	35-23147	0-0.36	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54570	35-23148	0.69-1.21	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Dibenz(a,h)anthracene	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
	RE35-04-54571	35-23149	0-0.46	SED	—	—	—	0.0337 (J)	—	—	—	—	—	—	—	0.0201 (J)	—	0.0568	—	—	—
	RE35-04-54572	35-23149	0.46-1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54577	35-23152	0-0.33	SED	—	—	0.029 (J)	0.0262 (J)	—	—	—	—	—	—	—	—	—	0.0284 (J)	—	—	—
	RE35-04-54579	35-23153	0.52-1.31	ALLH	—	—	0.0373 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54582	35-23154	1.48-2.46	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
35-009(c)	RE35-04-54018	35-22923	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54019	35-22923	3.9-4.4	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54021	35-22924	0.5-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54022	35-22924	8.5-9.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54024	35-22925	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54025	35-22925	1.2-1.7	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	—	—	0.87	—	—	—	—	—	—	—	—	—	0.628	—	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	0.131	—	—	—	—	—	—	—	—	—	0.119	—	—	—
	RE35-04-54627	35-23180	0.20-0.39	SED	—	—	—	0.244	—	—	—	—	—	—	—	—	—	0.2	—	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	0.0464	—	—	—	—	—	—	—	—	—	0.052	—	—	—
	RE35-04-54632	35-23182	1.21-1.54	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54633	35-23183	0.00-0.95	SED	—	—	—	0.182	0.0125 (J)	—	—	—	—	—	—	0.113	—	0.207	—	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	—	—	0.87	—	—	—	—	—	—	—	—	—	—	—	—	—
35-016(f)	0435-95-0205	35-02284	0-1	ALLH	—	—	—	0.058 (J)	—	—	—	—	—	—	—	—	—	0.05 (J)	—	—	—
	RE35-04-54601	35-23164	0.07-0.49	SED	—	—	0.0278 (J)	0.0303 (J)	—	—	—	—	—	—	—	—	—	0.0291 (J)	—	—	—
	RE35-04-54602	35-23164	0.49-0.92	SED	—	—	0.0335 (J)	0.0615	0.0076 (J)	—	—	—	—	—	—	0.0282 (J)	—	0.0571	—	—	—
	RE35-04-54603	35-23165	0.13-0.39	SED	—	—	—	0.0611	0.0071 (J)	—	—	—	—	—	—	0.0298 (J)	—	0.0588	—	—	—
	RE35-04-54604	35-23165	0.39-1.21	SED	—	—	0.0279 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54605	35-23166	0.1-0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54606	35-23166	0.39-0.89	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54607	35-23167	0-0.26	SED	—	—	—	0.0298 (J)	—	—	—	—	—	—	—	—	—	0.0353 (J)	—	—	—
	RE35-04-54608	35-23167	0.26-0.46	SED	—	—	—	0.0261 (J)	—	—	—	—	—	—	—	—	—	0.0273 (J)	—	—	—
35-016(i)-00	RE35-04-54033	35-22929	0.5-1	ALLH	—	—	—	0.877	0.0917 (J)	0.61	—	—	—	—	—	0.752	—	0.707	—	—	—
	RE35-04-54034	35-22929	4-4.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54035	35-22929	7-7.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54585	35-23156	0-0.59	SED	—	—	—	0.0535	—	—	—	—	—	—	—	0.0443	—	0.13 (J)	—	—	—
	RE35-04-54588	35-23157	0.56-0.92	SED	—	—	—	0.213	—	—	—	—	—	—	—	—	—	0.171	—	—	—
	RE35-04-54589	35-23158	0.1-0.3	SED	—	—	—	0.0227 (J)	—	—	—	—	—	—	—	—	—	0.0219 (J)	—	—	—
	RE35-04-54590	35-23158	0.3-0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54593	35-23160	0-0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54597	35-23162	0-0.75	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54610	35-23162	0-0.75	SED	—	—	—	0.0308 (J)	—	—	—	—	—	—	—	—	—	0.0252 (J)	—	—	—
	RE35-04-54598	35-23162	0.75-1.15	SED	—	—	—	0.0292 (J)	—	—	—	—	—	—	—	—	—	0.0309 (J)	—	—	—

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Dibenz(a,h)anthracene	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
	RE35-04-54599	35-23163	0-0.33	SED	—	—	—	0.117	0.0191 (J)	—	—	—	—	—	—	0.155	—	0.326 (J)	—	39	—
	RE35-04-54600	35-23163	0.33-0.85	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26.7	—
	RE35-04-54611	35-23168	0-0.49	SED	—	—	—	0.0307 (J)	—	—	—	—	—	—	—	—	—	0.0467	—	—	—
35-016(o)	RE35-07-75242	35-02255	1.70-1.90	QBT3	—	—	—	0.155	0.0101 (J)		—	—	—	—	—	0.0948	—	0.153	—	—	—
	AAB4260	35-02255	2.00-3.00	QBT3	—	—	—	0.13 (J)	—	0.043 (J)	—	—	—	—	—	0.09 (J)	—	0.12 (J)	—	—	—
	AAB4261	35-02256	0.00-0.50	ALLH	—	—	—	0.18 (J)	—	0.046 (J)	—	—	—	—	—	0.11 (J)	—	0.18 (J)	—	—	—
	AAB4264	35-02257	2.00-3.00	QBT3	—	—	—	0.071 (J)	—	—	—	—	—	—	—	0.07 (J)	—	0.053 (J)	—	—	—
	0435-97-0144	35-02505	0.00-1.00	ALLH	2.2	1.3	0.21 (J)	21	2.3	6.5			0.47 (J)	1.5	0.23 (J)	19	—	25	—	170	—
	0435-97-0145	35-02505	1.00-2.00	QBT3	1.9	1 (J)	—	16	1.6 (J)	5			0.36 (J)	1.3 (J)	—	15	—	20	—	96	—
	0435-97-0274	35-02506	0.00-0.50	SED	—	—	—	0.11 (J)	—	—	—	—	—	—	—	0.085 (J)	—	0.12 (J)	—	—	—
	0435-97-0156	35-02506	1.00-2.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	—
	0435-97-0158	35-02507	0.00-1.00	SED	—	—	0.038 (J)	—	—	—	—	—	—	—	—	—	—	—	—	17	—
	0435-97-0159	35-02507	1.00-2.00	QBT3	—	—	0.043 (J)	—	—	—	—	—	—	—	—	—	—	—	—	8.9	—
	RE35-07-75604	35-02508	2.50-2.80	QBT3	—	—	—	0.238	0.0237	—	—	—	—	—	—	0.192	—	0.233	—	—	—
	0435-97-0150	35-02509	0.00-1.00	ALLH	1.6 (J)	0.59 (J)	—	12	0.97 (J)	5.4	—	—	0.25 (J)	0.89 (J)	—	9.6	—	18	—	120	—
	0435-97-0151	35-02509	1.00-1.80	ALLH	0.19 (J)	—	0.41	0.97	0.042 (J)	0.47	—	—	—	—	—	0.49	0.13 (J)	1.1	—	23	—
	0435-97-0161	35-02510	0.00-1.00	ALLH	0.17 (J)	0.082 (J)	0.096 (J)	1.5	0.14 (J)	0.45	—	—	0.035 (J)	0.13 (J)	—	1.1	0.093 (J)	1.6	—	15	—
	0435-97-0162	35-02510	1.00-2.20	QBT3	—	—	—	0.064 (J)	—	—	—	—	—	—	—	0.043 (J)	—	0.072 (J)	—	9.3	—
	0435-97-0164	35-02511	0.00-1.00	ALLH	—	—	0.11 (J)	0.15 (J)	—	—	—	—	—	—	—	0.08 (J)	0.058 (J)	0.13 (J)	—	14	—
	0435-97-0165	35-02511	1.00-1.80	QBT3	—	—	—	0.28 (J)	—	—	—	—	—	—	—	0.25 (J)	—	0.31 (J)	—	36	—
	0435-97-0167	35-02512	0.00-1.00	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.7	—
	0435-97-0170	35-02513	0.00-0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20	—
	RE35-04-54623	35-23178	0.07-0.26	SED	—	—	—	0.87	—	—	—	—	—	—	—	—	—	0.628	—	—	—
	RE35-04-54624	35-23178	0.26-0.66	SED	—	—	—	0.131	—	—	—	—	—	—	—	—	—	0.119	—	—	—
	RE35-04-54627	35-23180	0.20-0.39	SED	—	—	—	0.244	—	—	—	—	—	—	—	—	—	0.2	—	—	—
	RE35-04-54628	35-23180	0.95-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54631	35-23182	0.00-0.59	SED	—	—	—	0.0464	—	—	—	—	—	—	—	—	—	0.052	—	—	—
	RE35-04-54632	35-23182	1.21-1.54	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54633	35-23183	0.00-0.95	SED	—	—	—	0.182	0.0125 (J)	—	—	—	—	—	—	0.113	—	0.207	—	—	—
	RE35-04-54634	35-23183	1.48-1.97	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54635	35-23184	0.00-0.33	SED	—	—	—	0.0556	—	—	—	—	—	—	—	—	—	0.0537	—	—	—
	RE35-04-54636	35-23184	0.79-1.21	SED	—	—	—	0.0391	—	—	—	—	—	—	—	—	—	0.0398	—	—	—
	RE35-04-54637	35-23185	0.00-0.30	SED	—	0.0852 (J)	—	1.74	0.141	0.51	—	—	0.0363 (J)	0.106	—	1.3	—	2.29	—	—	—
	RE35-04-54638	35-23185	0.30-0.69	SED	—	0.228 (J)	—	5.1	0.405	0.281	—	—	—	—	—	3.77	—	6.03	—	—	—
	RE35-04-54639	35-23186	0.10-0.33	SED	—	—	—	0.191	—	—	—	—	—	—	—	—	—	0.168	—	—	—
	RE35-04-54640	35-23186	0.33-0.49	SED	—	—	—	0.0603 (J)	—	—	—	—	—	—	—	—	—	0.0508 (J)	—	—	—
	RE35-04-54641	35-23187	0.16-0.66	SED	—	—	—	0.154	0.0129 (J)	—	—	—	—	—	—	0.103	—	0.16	—	—	—
	RE35-04-54642	35-23187	0.66-1.51	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-07-75200	35-27424	0.00-0.30	ALLH	—	—	—	0.0685	—	—	—	—	—	—	—	—	—	0.0621	—	—	—

Table D-4.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Dibenz(a,h)anthracene	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
	RE35-07-75206	35-27427	0.00-0.20	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0275	—	—	—
35-016(p)	RE35-07-75188	35-02096	2.20-2.50	SOIL	—	—	—	0.436	—	—	—	—	—	—	—	0.253	—	0.34	—	—	—
	RE35-04-54645	35-23189	0.23-0.49	SED	—	—	—	0.0324 (J)	—	—	—	—	—	—	—	—	—	0.0244 (J)	—	—	—
	RE35-04-54646	35-23189	0.49-0.85	SED	—	—	—	0.058	—	—	—	—	—	—	—	—	—	0.052	—	—	—
	RE35-04-54649	35-23191	0.00-0.39	SED	—	—	—	0.12	0.0108 (J)	—	—	—	—	—	—	0.0889	—	0.138	—	—	—
	RE35-04-54650	35-23191	0.39-1.38	SED	—	—	—	0.0676	—	—	—	—	—	—	—	0.0353	—	0.0588	—	—	—
	RE35-07-4022	35-600908	0.50-0.60	SOIL	—	—	—	—	0.0345	0.0286	—	—	—	0.0103 (J)	—	0.143	—	0.104	—	—	—
	RE35-07-4028	35-600909	0.50-0.60	SOIL	—	—	—	—	—	—	—	—	—	—	—	0.158	—	0.121	—	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-4.1-1
EPCs for Organic COPCs at SWMU 35-004(b)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–1	0.0163	—[a]	Maximum detect
	0–10	0.0163	—	Maximum detect
Benzo(a)pyrene	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.0191	—	Maximum detect
Benzo(b)fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0352	—	Maximum detect
Fluoranthene	0–1	0.0184	—	Maximum detect
	0–10	0.0508	—	Maximum detect
4-Isopropyltoluene	0–1	0.0034	—	Maximum detect
	0–10	0.0034	—	Maximum detect
Methylene chloride	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0017	—	Maximum detect
Phenanthrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0389	—	Maximum detect
Pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.045	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-4.2-1
EPCs for Inorganic COPCs at Consolidated Unit 35-008-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Aluminum	0–1	6072	Gamma	95% Approximate Gamma UCL
	0–10	5641	Normal	95% Student's-t UCL
Antimony	0–1	0.0914	Normal	95% KM (t) UCL
	0–10	3.08	Nonparametric	95% Chebyshev (Mean, SD)
Beryllium	0–1	0.617	Normal	95% KM (t) UCL
	0–10	0.782	Nonparametric	95% Modified-t UCL
Cadmium	0–1	0.168	Normal	95% KM (t) UCL
	0–10	0.303	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–1	4.542	Approximate Gamma	95% Approximate Gamma UCL
	0–10	9.51	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	5.846	Gamma	95% Approximate Gamma UCL
	0–10	5.45	Gamma	95% Approximate Gamma UCL
Nickel	0–1	3.56	Normal	95% KM (t) UCL
	0–10	4.62	Lognormal	95% H-UCL
Selenium	0–1	8.5(U)	n/a[a]	Maximum detection limit
	0–10	8.5(U)	n/a	Maximum detection limit
Thallium	0–1	0.0758	Gamma	95% KM (Percentile Bootstrap) UCL
	0–10	2.51	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–1	42.16	Gamma	95% KM (BCA) UCL
	0–10	38.2	Gamma	95% Approximate Gamma UCL

[a] n/a = Not applicable.

Table D-4.2-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-008-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–1	0.151	—[a]	Maximum detect
	0–10	0.066	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	1.093	Lognormal	95% KM (Chebyshev) UCL
	0–10	0.594	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	0.0533	—	Maximum detect
	0–10	0.016	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.286	Lognormal	95% KM (Chebyshev) UCL
	0–10	0.158	Nonparametric	95% Chebyshev (Mean, SD)
Ruthenium-106	0–1	0.561	—	Maximum detect
	0–10	0.125	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	4.228	Lognormal	95% KM (Chebyshev) UCL
	0–10	2.92	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.167	Normal	95% KM (t) UCL
	0–10	0.150	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	5.2	Lognormal	95% KM (Chebyshev) UCL
	0–10	3.49	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.2-3
EPCs for Organic COPCs at Consolidated Unit 35-008-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Anthracene	0–1	0.056	—[a]	Maximum detect
	0–10	4.07	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	0.0542	—	Maximum detect
	0–10	4.07	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic acid	0–1	0.427	Nonparametric	95% KM (BCA) UCL
	0–10	16.09	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	1.923	Approximate Gamma	95% KM (t) UCL
	0–10	3.89	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–1	0.0493	—	Maximum detect
	0–10	4.07	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–1	0.135	Lognormal	95% KM (Chebyshev) UCL
	0–10	3.93	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	0.0379	Normal	95% KM (t) UCL
	0–10	4.07	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	0.0201	—	Maximum detect
	0–10	4.07	Nonparametric	95% Chebyshev (Mean, SD)
Phenol	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	4.18	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	0.0415	Normal	95% KM (t) UCL
	0–10	4.07	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.005	Normal	95% Student's-t UCL

Table D-4.2-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
TPH-DRO	0–1	10753	Nonparametric	95% KM (Chebyshev) UCL
	0–10	8446	Nonparametric	95% Chebyshev (Mean, SD)
Trichlorofluoromethane	0–1	NA[d]	n/a	Not a COPC for this depth
	0–10	0.002	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.
[d] NA = Not analyzed for this analyte in this depth range.

Table D-4.3-1
EPCs for Inorganic COPCs at SWMU 35-009(c)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	0.137	—[a]	Maximum detect
	0–10	0.308	Lognormal	95% H-UCL
Barium	0–1	78.96	Normal	95% Student's-t UCL
	0–10	79.4	Normal	95% Student's-t UCL
Cadmium	0–1	0.267	Normal	95% KM (t) UCL
	0–10	0.344	Lognormal	95% H-UCL
Copper	0–1	9.29	Normal	95% Student's-t UCL
	0–10	7.13	Normal	95% Student's-t UCL
Lead	0–1	17.16	Normal	95% Student's-t UCL
	0–10	16.2	Normal	95% Student's-t UCL
Lithium	0–1	NA[b]	n/a[c]	Not a COPC for this depth
	0–10	7	—	Maximum detect
Selenium	0–1	0.776	—	Maximum detect
	0–10	0.435	Nonparametric	95% Modified-t UCL
Zinc	0–1	52.99	Normal	95% Student's-t UCL
	0–10	45.0	Normal	95% Student's-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] NA = Not analyzed for this analyte in this depth range.
[c] n/a = Not applicable.

Table D-4.3-2
EPCs for Radionuclide COPCs at SWMU 35-009(c)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–1	2.319	Lognormal	95% KM (Chebyshev) UCL
	0–10	1.08	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	6.163	Lognormal	95% KM (Chebyshev) UCL
	0–10	0.047	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	1.86	—[a]	Maximum detect
	0–10	0.462	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	3.877	Nonparametric	95% KM (Chebyshev) UCL
	0–10	1.16	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	0.118	—	Maximum detect
	0–10	0.435	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	2.656	Normal	95% KM (t) UCL
	0–10	1.58	Gamma	95% Approximate Gamma UCL
Uranium-238	0–1	3.285	Normal	95% KM (t) UCL
	0–10	1.81	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.3-3
EPCs for Organic COPCs at SWMU 35-009(c)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Anthracene	0–1	0.0761	Normal	95% KM (t) UCL
	0–10	0.0619	Normal	95% KM (t) UCL
Aroclor-1242	0–1	0.0085	—[a]	Maximum detect
	0–10	0.0085	—	Maximum detect
Aroclor-1254	0–1	0.29	Normal	95% KM (t) UCL
	0–10	0.149	Approximate Gamma	95% KM (t) UCL
Aroclor-1260	0–1	0.116	Normal	95% KM (t) UCL
	0–10	0.109	Gamma	95% KM (Chebyshev) UCL
Benzo(a)pyrene	0–1	0.274	Normal	95% KM (t) UCL
	0–10	0.204	Normal	95% KM (t) UCL
Benzo(b)fluoranthene	0–1	0.326	Normal	95% KM (t) UCL
	0–10	0.239	Normal	95% KM (t) UCL
Benzo(k)fluoranthene	0–1	0.14	Normal	95% KM (t) UCL
	0–10	0.113	Normal	95% KM (t) UCL
Bis(2-ethylhexyl)phthalate	0–1	0.056	—	Maximum detect
	0–10	0.056	—	Maximum detect
Chrysene	0–1	0.217	Normal	95% KM (t) UCL
	0–10	0.174	Normal	95% KM (t) UCL
4,4'-DDE	0–1	0.00141	—	Maximum detect
	0–10	0.000924	Nonparametric	95% KM (t) UCL

Table D-4.3-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
4,4'-DDT	0–1	0.003	—	Maximum detect
	0–10	0.00253	Nonparametric	95% KM (t) UCL
Fluoranthene	0–1	0.82	Gamma	95% KM (Chebyshev) UCL
	0–10	0.396	Gamma	95% KM (BCA) UCL
Fluorene	0–1	0.0125	—	Maximum detect
	0–10	0.0125	—	Maximum detect
Phenanthrene	0–1	0.113	—	Maximum detect
	0–10	0.113	—	Maximum detect
Pyrene	0–1	0.391	Normal	95% KM (t) UCL
	0–10	0.286	Normal	95% KM (t) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.5-1
EPCs for Inorganic COPCs at AOC 35-016(f)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Cadmium	0–1	0.108	Normal	95% KM (t) UCL
	0–10	0.108	Normal	95% KM (t) UCL
Selenium	0–1	1.1(U)	n/a[a]	Maximum detection limit
	0–10	1.1(U)	n/a	Maximum detection limit

[a] n/a = Not applicable.

Table D-4.5-2
EPCs for Organic COPCs at AOC 35-016(f)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Aroclor-1254	0–1	0.00427	Normal	95% KM (t) UCL
	0–10	0.00427	Normal	95% KM (t) UCL
Aroclor-1260	0–1	0.00737	Normal	95% KM (t) UCL
	0–10	0.00737	Normal	95% KM (t) UCL
Benzo(a)anthracene	0–1	0.026	—[a]	Maximum detect
	0–10	0.026	—	Maximum detect
Benzo(a)pyrene	0–1	0.0378	Normal	95% KM (t) UCL
	0–10	0.0378	Normal	95% KM (t) UCL
Benzo(b)fluoranthene	0–1	0.0474	Normal	95% KM (t) UCL
	0–10	0.0474	Normal	95% KM (t) UCL
Benzo(k)fluoranthene	0–1	0.0276	—	Maximum detect
	0–10	0.0276	—	Maximum detect
Benzoic acid	0–1	0.522	—	Maximum detect
	0–10	0.522	—	Maximum detect

Table D-4.5-2 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Bis(2-ethylhexyl)phthalate	0–1	0.164[b]	Normal	Maximum detect
	0–10	0.164[b]	Normal	Maximum detect
Chrysene	0–1	0.0371	Nonparametric	95% KM (t) UCL
	0–10	0.0371	Nonparametric	95% KM (t) UCL
Di-n-butylphthalate	0–1	0.0332	Nonparametric	95% KM (t) UCL
	0–10	0.0332	Nonparametric	95% KM (t) UCL
Fluoranthene	0–1	0.053	Approximate Gamma	95% KM (Percentile Bootstrap) UCL
	0–10	0.053	Approximate Gamma	95% KM (Percentile Bootstrap) UCL
Fluorene	0–1	0.0076	—	Maximum detect
	0–10	0.0076	—	Maximum detect
Phenanthrene	0–1	0.0298	—	Maximum detect
	0–10	0.0298	—	Maximum detect
Pyrene	0–1	0.0511	Normal	95% KM (t) UCL
	0–10	0.0511	Normal	95% KM (t) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

[b] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

Table D-4.6-1
EPCs for Inorganic COPCs at Consolidated Unit 35-016(i)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Cadmium	0–1	0.12	Normal	95% KM (t) UCL
	0–10	0.302	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–1	29.32	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	27.0	Nonparametric	95% Chebyshev (Mean, SD)
Mercury	0–1	0.631	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.28	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–1	0.397	Nonparametric	95% KM (t) UCL
	0–10	0.296	Nonparametric	95% Modified-t UCL

Table D-4.6-2
EPCs for Organic COPCs at Consolidated Unit 35-016(i)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.104	—[a]	Maximum detect
	0–10	0.077	Nonparametric	95% Chebyshev (Mean, SD)
Anthracene	0–1	0.0826	Normal	95% KM (t) UCL
	0–10	0.095	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–1	0.0913	—	Maximum detect
	0–10	0.040	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1260	0–1	0.191	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.17	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–1	0.331	—	Maximum detect
	0–10	0.147	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	0.158	Nonparametric	95% KM (t) UCL
	0–10	0.146	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–1	0.246	Nonparametric	95% KM (t) UCL
	0–10	0.22	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–1	0.621	—	Maximum detect
	0–10	0.25	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	0.0936	—	Maximum detect
	0–10	0.074	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic acid	0–1	0.498	—	Maximum detect
	0–10	1.41	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	0.257	—	Maximum detect
	0–10	0.667	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–1	0.145	Normal	95% KM (t) UCL
	0–10	0.164	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	0.248	Gamma	95% KM (BCA) UCL95% Chebyshev (MVUE)
	0–10	0.36	Nonparametric	95% Chebyshev (Mean, SD)
Fluorene	0–1	0.0917	—	Maximum detect
	0–10	0.075	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–1	0.61	—	Maximum detect
	0–10	0.24	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	0.221	Normal	95% KM (t) UCL
	0–10	0.30	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	0.225	Gamma	95% KM (BCA) UCL
	0–10	0.262	Lognormal	95% Chebyshev (MVUE)
TPH-DRO	0–1	39	—	Maximum detect
	0–10	39	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.7-1
EPCs for Inorganic COPCs at SWMU 35-016(o)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–1	0.11	Normal	95% KM (t) UCL
	0–10	0.105	Normal	95% KM (t) UCL
Barium	0–1	55.86	Normal	95% Student's-t UCL
	0–10	58.45	Gamma	95% Approximate Gamma UCL
Cadmium	0–1	0.197	Normal	95% KM (t) UCL
	0–10	0.192	Normal	95% KM (t) UCL
Chromium	0–1	6.455	Normal	95% Student's-t UCL
	0–10	40.01	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	11.15	Gamma	95% KM (Chebyshev) UCL
	0–10	9.708	Gamma	95% KM (Chebyshev) UCL
Lead	0–1	15.22	Normal	95% Student's-t UCL
	0–10	13.56	Gamma	95% KM (BCA) UCL
Mercury	0–1	0.088	Gamma	95% KM (Percentile Bootstrap) UCL
	0–10	0.0739	Approximate Gamma	95% KM (t) UCL
Nickel	0–1	4.947	Gamma	95% Approximate Gamma UCL
	0–10	23.09	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–1	0.642	Normal	95% KM (t) UCL
	0–10	0.644	Normal	95% KM (t) UCL
Thallium	0–1	0.255	Nonparametric	95% KM (BCA) UCL
	0–10	0.203	Nonparametric	95% KM (t) UCL
Zinc	0–1	40.38	Normal	95% Student's-t UCL
	0–10	37.54	Normal	95% Student's-t UCL

Table D-4.7-2
EPCs for Radionuclide COPCs at SWMU 35-016(o)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–1	0.866	Nonparametric	95% KM (Chebyshev) UCL)
	0–10	0.646	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	2.467	Lognormal	95% KM (Chebyshev) UCL
	0–10	1.27	Lognormal	95% Chebyshev (MVUE)
Cobalt-60	0–1	0.278	—[a]	Maximum detect
	0–10	0.051	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	0.441	Lognormal	95% KM (Chebyshev) UCL
	0–10	0.262	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.517	Nonparametric	95% KM (BCA) UCL
	0–10	0.615	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	1.228	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.950	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	1.536	Gamma	95% Approximate Gamma UCL
	0–10	1.48	Gamma	95% Approximate Gamma UCL
Uranium-235	0–1	0.0685	Normal	95% KM (t) UCL
	0–10	0.092	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	1.797	Gamma	95% Approximate Gamma UCL
	0–10	2.06	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.7-3
EPCs for Organic COPCs at SWMU 35-016(o)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.314	Gamma	95% KM (t) UCL
	0–10	0.296	Gamma	95% KM (t) UCL
Aniline	0–1	0.21	—[a]	Maximum detect
	0–10	0.21	—	Maximum detect
Anthracene	0–1	0.378	Gamma	95% KM (t) UCL
	0–10	0.643	Nonparametric	95% KM (Chebyshev) UCL
Aroclor-1254	0–1	0.415	Lognormal	95% KM (Chebyshev) UCL
	0–10	0.354	Nonparametric	95% KM (Chebyshev) UCL
Aroclor-1260	0–1	0.0885	Gamma	95% KM (t) UCL
	0–10	0.0717	Gamma	95% KM (t) UCL
Benzo(a)anthracene	0–1	1.036	Gamma	95% KM (t) UCL
	0–10	0.934	Approximate Gamma	95% KM (t) UCL
Benzo(a)pyrene	0–1	1.882	Lognormal	95% KM (Chebyshev) UCL
	0–10	1.702	Nonparametric	95% KM (Chebyshev) UCL
Benzo(b)fluoranthene	0–1	1.765	Nonparametric	95% KM (Chebyshev) UCL
	0–10	1.526	Nonparametric	95% KM (Chebyshev) UCL
Benzo(g,h,i)perylene	0–1	0.723	Gamma	95% KM (t) UCL
	0–10	0.694	Gamma	95% KM (t) UCL
Benzo(k)fluoranthene	0–1	1.031	Approximate Gamma	95% KM (t) UCL
	0–10	1.653	Nonparametric	95% KM (Chebyshev) UCL
Benzoic acid	0–1	0.0841	Normal	95% KM (t) UCL
	0–10	0.0838	Normal	95% KM (t) UCL
Bis(2-ethylhexyl)phthalate	0–1	0.36	—	Maximum detect
	0–10	0.185	Normal	95% KM (t) UCL
4-Chloroaniline	0–1	0.14	Lognormal	95% H-UCL
	0–10	0.808	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–1	2.034	Nonparametric	95% KM (Chebyshev) UCL
	0–10	1.815	Nonparametric	95% KM (Chebyshev) UCL
4,4'-DDE	0–1	0.00181	Normal	95% KM (t) UCL
	0–10	0.00174	Normal	95% KM (t) UCL
4,4'-DDT	0–1	0.00565	Normal	95% KM (t) UCL
	0–10	0.00505	Normal	95% KM (t) UCL
Dibenz(a,h)anthracene	0–1	0.376	Normal	95% KM (t) UCL
	0–10	0.365	Normal	95% KM (t) UCL
Dibenzofuran	0–1	0.321	Normal	95% KM (t) UCL
	0–10	0.303	Normal	95% KM (t) UCL
Di-n-butylphthalate	0–1	0.154	Normal	95% KM (t) UCL
	0–10	0.149	Normal	95% KM (t) UCL
Fluoranthene	0–1	3.701	Nonparametric	95% KM (Chebyshev) UCL
	0–10	3.44	Nonparametric	95% KM (Chebyshev) UCL

Table D-4.7-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Fluorene	0–1	0.228	Gamma	95% KM (t) UCL
	0–10	0.216	Gamma	95% KM (t) UCL
Indeno(1,2,3-cd)pyrene	0–1	0.73	Gamma	95% KM (t) UCL
	0–10	0.684	Gamma	95% KM (t) UCL
2-Methylnaphthalene	0–1	0.107	Normal	95% KM (t) UCL
	0–10	0.103	Normal	95% KM (t) UCL
Naphthalene	0–1	0.235	Normal	95% KM (t) UCL
	0–10	0.235	Normal	95% KM (t) UCL
Pentachlorophenol	0–1	0.23	—	Maximum detect
	0–10	1.69	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	1.827	Approximate Gamma	95% KM (t) UCL
	0–10	3.047	Nonparametric	95% KM (Chebyshev) UCL
Phenol	0–1	0.093	—	Maximum detect
	0–10	0.129	Normal	95% KM (t) UCL
Pyrene	0–1	4.668	Nonparametric	95% KM (Chebyshev) UCL
	0–10	4.317	Nonparametric	95% KM (Chebyshev) UCL
TPH-DRO	0–1	130.7	Nonparametric	95% KM (Chebyshev) UCL
	0–10	89.58	Nonparametric	95% KM (Chebyshev) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.8-1
EPCs for Inorganic COPCs at SWMU 35-016(p)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Selenium	0–1	0.825	Normal	95% KM (t) UCL
	0–10	0.818	Normal	95% KM (t) UCL

Table D-4.8-2
EPCs for Radionuclide COPCs at SWMU 35-016(p)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Cesium-137	0–1	0.8	—[a]	Maximum detect
	0–10	0.8	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-4.8-3
EPCs for Organic COPCs at SWMU 35-016(p)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–1	0.0299	Nonparametric	95% KM (t) UCL
	0–10	0.0262	Nonparametric	95% KM (t) UCL
Anthracene	0–1	0.0228	—[a]	Maximum detect
	0–10	0.0228	—	Maximum detect
Benzo(a)anthracene	0–1	0.0605	Nonparametric	95% KM (t) UCL
	0–10	0.082	Normal	95% KM (t) UCL
Benzo(a)pyrene	0–1	0.0424	—	Maximum detect
	0–10	0.0682	Nonparametric	95% KM (t) UCL
Benzo(b)fluoranthene	0–1	0.0579	Normal	95% KM (t) UCL
	0–10	0.0579	Normal	95% KM (t) UCL
Benzo(g,h,i)perylene	0–1	0.0257	—	Maximum detect
	0–10	0.126	—	Maximum detect
Benzoic acid	0–1	1.6	—	Maximum detect
	0–10	1.6	—	Maximum detect
Chrysene	0–1	0.0432	Normal	95% KM (t) UCL
	0–10	0.0589	Gamma	95% KM (t) UCL
Fluoranthene	0–1	0.0612	Normal	95% KM (t) UCL
	0–10	0.117	Gamma	95% KM (t) UCL
Fluorene	0–1	0.0345	—	Maximum detect
	0–10	0.0345	—	Maximum detect
Indeno(1,2,3-cd)pyrene	0–1	0.0286	—	Maximum detect
	0–10	0.0286	—	Maximum detect
Naphthalene	0–1	0.0103	—	Maximum detect
	0–10	0.0103	—	Maximum detect
Phenanthrene	0–1	0.115	Normal	95% KM (t) UCL
	0–10	0.118	Normal	95% KM (t) UCL
Pyrene	0–1	0.0662	Normal	95% KM (t) UCL
	0–10	0.0964	Normal	95% KM (t) UCL

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-4.9-1
Soil Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Metals
AAB4269	35-02032	0-0.5	ALLH	19653[a]
AAA6484	35-02056	4-5	ALLH	16703
AAC1288	35-02121	0-1	ALLH	21675
AAB4262	35-02257	0-1	ALLH	20292
0435-95-0203	35-02282	1-2	ALLH	1679
0435-97-0144	35-02505	0-1	ALLH	3310R
0435-97-0150	35-02509	0-1	ALLH	3310R
0435-97-0151	35-02509	1-1.8	ALLH	3310R
0435-97-0161	35-02510	0-1	ALLH	3328R
0435-97-0164	35-02511	0-1	ALLH	3310R
0435-97-0167	35-02512	0-1	ALLH	3310R
0435-97-0168	35-02512	1-2	ALLH	3310R
0435-97-0170	35-02513	0-0.5	ALLH	3310R
RE35-04-54014	35-22921	0.5-1	ALLH	2409S
RE35-04-54015	35-22921	2-2.5	ALLH	2409S
RE35-04-54018	35-22923	2-2.5	ALLH	2349S
RE35-04-54019	35-22923	3.9-4.4	ALLH	2349S
RE35-04-54021	35-22924	0.5-1	ALLH	2349S
RE35-04-54024	35-22925	0-0.5	ALLH	2349S
RE35-04-54025	35-22925	1.2-1.7	ALLH	2349S
RE35-04-54033	35-22929	0.5-1	ALLH	2347S
RE35-04-54579	35-23153	0.52-1.31	ALLH	2597S
RE35-04-54580	35-23153	1.31-2.46	ALLH	2597S
RE35-07-75210	35-27429	0-0.5	ALLH	6909S
RE35-07-75211	35-27429	0.5-1	ALLH	6909S
RE35-07-75609 (FD)	35-27429	0.5-1	ALLH	6910S
RE35-07-75212	35-27430	0-0.4	ALLH	6909S
RE35-07-75213	35-27430	0.4-1	ALLH	6909S
RE35-07-75214	35-27431	0-0.4	ALLH	6909S
RE35-07-75215	35-27431	0.4-0.8	ALLH	6909S
RE35-07-75216	35-27432	0-0.4	ALLH	6909S
E35-07-75217	35-27432	0.4-1	ALLH	6909S
RE35-07-75218	35-27433	0-0.5	ALLH	6909S
RE35-07-75219	35-27433	0.7-1	ALLH	6909S

[a] Analytical request number.

Table D-4.9-2
Summary of Inorganic Chemicals above BV or Detected in Soil, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Chromium	Copper	Lithium	Mercury	Nickel	Selenium
Soil/Fill Background Value (mg/kg)				0.83	19.3	14.7	na[a]	0.1	15.4	1.52
AAB4269	35-02032	0.00-0.50	ALLH	5.4 (U)	—[b]	—	6.5	—	—	8.5 (U)
AAA6484	35-02056	4.00-5.00	ALLH	1.1 (UJ)	—	—	7 (J)	—	—	—
AAC1288	35-02121	0.00-1.00	ALLH	—	—	—	—	0.12 (U)	—	—
AAB4262	35-02257	0.00-1.00	ALLH	—	—	—	—	—	—	—
0435-95-0203	35-02282	1.00-2.00	ALLH	10.8 (U)	—	—	—	—	—	3.5 (UJ)
0435-97-0144	35-02505	0.00-1.00	ALLH	4.4 (U)	—	23	—	0.36	—	—
0435-97-0150	35-02509	0.00-1.00	ALLH	4.7 (U)	—	20.8	—	—	—	—
0435-97-0151	35-02509	1.00-1.80	ALLH	4.3 (U)	197	—	—	—	110	—
0435-97-0161	35-02510	0.00-1.00	ALLH	4.97 (U)	—	—	—	—	—	—
0435-97-0164	35-02511	0.00-1.00	ALLH	4.1 (U)	—	—	—	—	—	—
0435-97-0167	35-02512	0.00-1.00	ALLH	4.9 (U)	—	—	—	—	—	—
0435-97-0168	35-02512	1.00-2.00	ALLH	5.2 (U)	23.5	—	—	—	—	—
0435-97-0170	35-02513	0.00-0.50	ALLH	5 (U)	—	—	—	—	—	—
RE35-04-54015	35-22921	2.00-2.50	ALLH	—	—	—	—	—	—	—
RE35-04-54018	35-22923	2.00-2.50	ALLH	—	—	—	—	—	—	—
RE35-04-54019	35-22923	3.90-4.40	ALLH	—	—	—	—	—	—	—
RE35-04-54021	35-22924	0.50-1.00	ALLH	—	—	—	—	—	—	—
RE35-04-54024	35-22925	0.00-0.50	ALLH	—	—	—	—	—	—	—
RE35-04-54025	35-22925	1.20-1.70	ALLH	—	—	—	—	—	—	—
RE35-04-54033	35-22929	0.50-1.00	ALLH	—	66.6	—	—	0.745 (J)	—	—
RE35-07-75210	35-27429	0.00-0.50	ALLH	—	—	—	—	—	—	—
RE35-07-75211	35-27429	0.50-1.00	ALLH	—	—	—	—	—	—	1.7 (U)
RE35-07-75212	35-27430	0.00-0.40	ALLH	—	—	—	—	—	—	1.78 (U)
RE35-07-75213	35-27430	0.40-1.00	ALLH	—	—	—	—	—	—	—
RE35-07-75214	35-27431	0.00-0.40	ALLH	—	—	—	—	—	—	1.77 (U)
RE35-07-75215	35-27431	0.40-0.80	ALLH	—	—	—	—	—	—	1.75 (U)
RE35-07-75216	35-27432	0.00-0.40	ALLH	—	—	—	—	—	—	—
RE35-07-75217	35-27432	0.40-1.00	ALLH	—	—	—	—	—	—	—
RE35-07-75218	35-27433	0.00-0.50	ALLH	—	—	—	—	—	—	—
RE35-07-75219	35-27433	0.70-1.00	ALLH	—	—	—	—	—	—	1.75 (U)

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-4.9-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Metals
AAC1208	35-02155	0–1	Qbt3	21579[a]
0435-97-0203	35-02455	2–3	Qbt3	3342R
0435-97-0206	35-02456	2–3	Qbt3	3328R
0435-97-0145	35-02505	1–2	Qbt3	3310R
0435-97-0156	35-02506	1–2	Qbt3	3328R
0435-97-0159	35-02507	1–2	Qbt3	3328R
0435-97-0162	35-02510	1–2.2	Qbt3	3328R
0435-97-0165	35-02511	1–1.8	Qbt3	3310R
0435-97-0171	35-02513	0.5–1.5	Qbt3	3310R
RE35-04-54026	35-22925	4.5–5	Qbt3	2349S
RE35-04-54034	35-22929	4–4.5	Qbt3	2347S

[a] Analytical request number.

Table D-4.9-4
Summary of Inorganic Chemicals above BV or Detected in Tuff, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Chromium	Copper	Nickel	Selenium
Qbt3, Qbt2 Background Value (mg/kg)				0.5	7.14	4.66	6.58	0.3
0435-97-0145	35-02505	1.00–2.00	Qbt3	5.4 (U)	—[b]	8.5	—	—
0435-97-0156	35-02506	1.00–2.00	Qbt3	4.93 (U)	14.3	—	8.18	—
0435-97-0159	35-02507	1.00–2.00	Qbt3	4.7 (U)	47.8	—	23.5	—
0435-97-0162	35-02510	1.00–2.20	Qbt3	3.99 (U)	23.9	—	13.1	—
0435-97-0165	35-02511	1.00–1.80	Qbt3	4.4 (U)	8.3	—	—	—
0435-97-0171	35-02513	0.50–1.50	Qbt3	5.1 (U)	8.9	—	—	—
0435-97-0203	35-02455	2.00–3.00	Qbt3	7.7 (UJ)	9.6	6.8	8.6 (J)	0.43 (U)
0435-97-0206	35-02456	2.00–3.00	Qbt3	5 (U)	34	—	17.5	—
AAC1208	35-02155	0.00–1.00	Qbt3	0.51 (U)	—	—	—	1.1 (U)
RE35-04-54026	35-22925	4.50–5.00	Qbt3	—	—	—	—	0.501 (U)
RE35-04-54034	35-22929	4.00–4.50	Qbt3	—	8.36 (J)	—	—	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-4.9-5
Sediment Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
0435-97-0193	35-02453	0–1	SED	—[a]	3342R[b]
0435-97-0194	35-02453	1–2	SED	—	3342R
0435-97-0195	35-02453	2–3.4	SED	—	3342R
0435-97-0198	35-02454	0–1	SED	—	3342R
0435-97-0199	35-02454	1–2	SED	—	3342R
0435-97-0200	35-02454	2–3	SED	—	3342R
0435-97-0201	35-02455	0–1	SED	—	3342R
0435-97-0202	35-02455	1–2	SED	—	3342R
0435-97-0204	35-02456	0–1	SED	—	3328R
0435-97-0205	35-02456	1–2	SED	—	3328R
0435-97-0154	35-02506	0–1	SED	—	3328R
0435-97-0158	35-02507	0–1	SED	—	3328R
RE35-04-54561	35-23144	0–0.56	SED	—	2572S
RE35-04-54562	35-23144	0.56–0.95	SED	—	2572S
RE35-04-54563	35-23145	0.46–0.79	SED	—	2572S
RE35-04-54564	35-23145	0.79–1.05	SED	—	2572S
RE35-04-54565	35-23146	0–0.3	SED	—	2581S
RE35-04-54566	35-23146	0.3–0.69	SED	—	2581S
RE35-04-54567	35-23147	0–0.36	SED	—	2581S
RE35-04-54568	35-23147	0.36–0.69	SED	—	2581S
RE35-04-54569	35-23148	0.23–0.69	SED	—	2581S
RE35-04-54570	35-23148	0.69–1.21	SED	—	2581S
RE35-04-54571	35-23149	0–0.46	SED	—	2581S
RE35-04-54572	35-23149	0.46–1.25	SED	—	2581S
RE35-04-54573	35-23150	0–0.23	SED	—	2572S
RE35-04-54574	35-23150	0.23–0.56	SED	—	2572S
RE35-04-54575	35-23151	0–0.43	SED	—	2589S
RE35-04-54576	35-23151	0.43–0.82	SED	—	2589S
RE35-04-54577	35-23152	0–0.33	SED	—	2597S
RE35-04-54578	35-23152	0.69–0.98	SED	—	2597S
RE35-04-54581	35-23154	0.03–0.59	SED	—	2597S
RE35-04-54582	35-23154	1.48–2.46	SED	—	2597S
RE35-04-54585	35-23156	0–0.59	SED	—	2581S
RE35-04-54587	35-23157	0.07–0.56	SED	—	2589S
RE35-04-54588	35-23157	0.56–0.92	SED	—	2589S
RE35-04-54589	35-23158	0.1–0.3	SED	—	2589S
RE35-04-54590	35-23158	0.3–0.49	SED	—	2589S
RE35-04-54593	35-23160	0–0.39	SED	—	2589S
RE35-04-54594	35-23160	0.39–0.95	SED	—	2589S
RE35-04-54597	35-23162	0–0.75	SED	—	2597S
RE35-04-54598	35-23162	0.75–1.15	SED	—	2597S
RE35-04-54599	35-23163	0–0.33	SED	—	2581S

Table D-4.9-5 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
RE35-04-54600	35-23163	0.33–0.85	SED	—	2581S
RE35-04-54601	35-23164	0.07–0.49	SED	—	2567S
RE35-04-54602	35-23164	0.49–0.92	SED	—	2567S
RE35-04-54603	35-23165	0.13–0.39	SED	—	2567S
RE35-04-54604	35-23165	0.39–1.21	SED	—	2567S
RE35-04-54605	35-23166	0.1–0.39	SED	—	2567S
RE35-04-54606	35-23166	0.39–0.89	SED	—	2567S
RE35-04-54607	35-23167	0–0.26	SED	—	2597S
RE35-04-54608	35-23167	0.26–0.46	SED	—	2597S
RE35-04-54611	35-23168	0–0.49	SED	—	2581S
RE35-04-54623	35-23178	0.07–0.26	SED	—	2601S
RE35-04-54624	35-23178	0.26–0.66	SED	—	2601S
RE35-04-54627	35-23180	0.2–0.39	SED	—	2601S
RE35-04-54628	35-23180	0.95–1.18	SED	—	2601S
RE35-04-54631	35-23182	0–0.59	SED	—	2601S
RE35-04-54632	35-23182	1.21–1.54	SED	—	2601S
RE35-04-54633	35-23183	0–0.95	SED	—	2629S
RE35-04-54634	35-23183	1.48–1.97	SED	—	2629S
RE35-04-54635	35-23184	0–0.33	SED	—	2601S
RE35-04-54636	35-23184	0.79–1.21	SED	—	2601S
RE35-04-54637	35-23185	0–0.3	SED	—	2629S
RE35-04-54638	35-23185	0.3–0.69	SED	—	2629S
RE35-04-54639	35-23186	0.1–0.33	SED	—	2600S
RE35-04-54640	35-23186	0.33–0.49	SED	—	2600S
RE35-04-54641	35-23187	0.16–0.66	SED	—	2630S
RE35-04-54642	35-23187	0.66–1.51	SED	—	2630S
RE35-04-54645	35-23189	0.23–0.49	SED	—	2600S
RE35-04-54646	35-23189	0.49–0.85	SED	—	2600S
RE35-04-54649	35-23191	0–0.39	SED	—	2630S
RE35-04-54650	35-23191	0.39–1.38	SED	—	2630S
CAMO-01-0067	MO-10049	0–0.33	SED	9508R	9507R
CAMO-01-0097	MO-10050	0.56–1.46	SED	—	9507R
CAMO-01-0098	MO-10051	0–0.73	SED	—	9507R
CAMO-01-0099	MO-10051	0.73–1.72	SED	—	9507R
CAMO-01-0100	MO-10052	0–0.94	SED	—	9507R
CAMO-01-0101	MO-10053	0–1.35	SED	—	9507R
CAMO-01-0102	MO-10054	0–0.83	SED	—	9507R
CAMO-01-0103	MO-10054	0.83–1.29	SED	—	9507R
CAMO-01-0069	MO-10054	1.29–1.8	SED	9508R	9507R
CAMO-01-0104	MO-10054	2.11–2.5	SED	—	9507R
CAMO-01-0105	MO-10054	2.51–3.76	SED	—	9507R
CAMO-01-0106	MO-10055	0–0.36	SED	—	9507R
CAMO-01-0070	MO-10055	0.36–1.25	SED	9508R	9507R
CAMO-01-0107	MO-10055	1.55–2.57	SED	—	9507R

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-4.9-6
Summary of Inorganic Chemicals above BV or Detected in Sediment, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Bromide	Cadmium	Calcium	Copper	Fluoride	Mercury	Perchlorate	Selenium	Thallium	Zinc
Sediment Background Value (mg/kg)				0.83	127	na[a]	0.4	4420	11.2	na	0.1	na	0.3	0.73	60.2
0435-97-0193	35-02453	0–1	SED	7.4 (UJ)	—	—[b]	0.64 (U)	—	—	—	—	—	0.52 (U)	—	—
0435-97-0194	35-02453	1–2	SED	7.2 (UJ)	—	—	0.63 (U)	—	—	—	—	—	0.76 (U)	—	—
0435-97-0195	35-02453	2–3.4	SED	8.6 (J-)	—	—	0.68 (U)	—	—	—	—	—	0.34 (U)	—	—
0435-97-0198	35-02454	0–1	SED	7.4 (UJ)	—	—	0.64 (U)	—	—	—	—	—	0.33 (U)	—	—
0435-97-0199	35-02454	1–2	SED	7.4 (UJ)	—	—	0.64 (U)	—	—	—	—	—	0.32 (U)	—	—
0435-97-0200	35-02454	2–3	SED	7.2 (UJ)	—	—	0.62 (U)	—	—	—	—	—	0.55 (U)	—	—
0435-97-0201	35-02455	0–1	SED	7.3 (UJ)	—	—	0.63 (U)	—	—	—	—	—	0.47 (U)	—	—
0435-97-0202	35-02455	1–2	SED	7.7 (UJ)	—	—	0.67 (U)	—	—	—	—	—	0.67 (U)	4.8	—
0435-97-0204	35-02456	0–1	SED	5.15 (U)	—	—	0.515 (U)	—	—	—	—	—	—	—	—
0435-97-0205	35-02456	1–2	SED	4.78 (U)	—	—	0.478 (U)	—	—	—	—	—	—	—	—
0435-97-0154	35-02506	0–1	SED	4.24 (U)	—	—	0.424 (U)	—	—	—	—	—	—	—	—
0435-97-0158	35-02507	0–1	SED	4.67 (U)	—	—	0.467 (U)	—	—	—	—	—	—	—	—
RE35-04-54561	35-23144	0–0.56	SED	—	—	—	—	4790 (J-)	13.7	—	—	—	0.306 (U)	—	—
RE35-04-54562	35-23144	0.56–0.95	SED	—	—	—	—	—	—	—	—	—	0.855 (U)	—	—
RE35-04-54563	35-23145	0.46–0.79	SED	—	—	—	—	—	—	—	—	—	0.345 (U)	—	84.7
RE35-04-54564	35-23145	0.79–1.05	SED	—	—	—	—	—	—	—	—	—	0.55 (U)	—	—
RE35-04-54567	35-23147	0–0.36	SED	—	—	—	0.582 (U)	—	—	—	—	—	0.576 (U)	—	—
RE35-04-54568	35-23147	0.36–0.69	SED	—	—	—	0.58 (U)	—	—	—	—	—	0.58 (U)	—	—
RE35-04-54569	35-23148	0.23–0.69	SED	—	—	—	—	—	—	—	—	—	0.565 (U)	—	—
RE35-04-54570	35-23148	0.69–1.21	SED	—	—	—	0.572 (U)	—	—	—	—	—	0.572 (U)	—	—
RE35-04-54571	35-23149	0–0.46	SED	—	—	—	—	—	—	—	—	—	0.601 (U)	—	—
RE35-04-54572	35-23149	0.46–1.25	SED	—	—	—	0.597 (U)	—	—	—	—	—	—	—	—
RE35-04-54573	35-23150	0–0.23	SED	—	—	—	—	—	—	—	—	—	—	—	67.7
RE35-04-54574	35-23150	0.23–0.56	SED	—	—	—	0.556 (U)	—	—	—	—	—	0.406 (U)	—	—
RE35-04-54575	35-23151	0–0.43	SED	—	—	—	—	—	—	—	—	—	0.523 (U)	—	—
RE35-04-54576	35-23151	0.43–0.82	SED	—	—	—	—	—	—	—	—	—	0.574 (U)	—	—
RE35-04-54577	35-23152	0–0.33	SED	—	—	—	—	—	—	—	—	—	0.629 (U)	—	—
RE35-04-54578	35-23152	0.69–0.98	SED	—	—	—	0.552 (U)	—	—	—	—	—	—	—	—
RE35-04-54581	35-23154	0.03–0.59	SED	—	—	—	—	—	—	—	—	—	0.573 (U)	—	—

Table D-4.9-6 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Bromide	Cadmium	Calcium	Copper	Fluoride	Mercury	Perchlorate	Selenium	Thallium	Zinc
Sediment Background Value (mg/kg)				0.83	127	na[a]	0.4	4420	11.2	na	0.1	na	0.3	0.73	60.2
RE35-04-54582	35-23154	1.48–2.46	SED	—	—	—	0.592 (U)	—	—	—	—	—	0.592 (U)	—	—
RE35-04-54585	35-23156	0–0.59	SED	—	—	—	—	—	—	—	—	—	0.525 (U)	—	—
RE35-04-54587	35-23157	0.07–0.56	SED	—	—	—	0.527 (U)	—	—	—	—	—	0.527 (U)	—	—
RE35-04-54588	35-23157	0.56–0.92	SED	—	—	—	0.53 (U)	—	—	—	—	—	0.53 (U)	—	—
RE35-04-54589	35-23158	0.1–0.3	SED	—	—	—	0.557 (U)	—	—	—	—	—	0.557 (U)	—	—
RE35-04-54590	35-23158	0.3–0.49	SED	—	—	—	0.538 (U)	—	—	—	—	—	—	—	—
RE35-04-54593	35-23160	0–0.39	SED	—	—	—	0.546 (U)	—	—	—	—	—	0.45 (J)	—	—
RE35-04-54594	35-23160	0.39–0.95	SED	—	—	—	0.572 (U)	—	—	—	—	—	0.572 (U)	—	—
RE35-04-54597	35-23162	0–0.75	SED	—	—	—	—	—	—	—	—	—	0.536 (U)	—	—
RE35-04-54599	35-23163	0–0.33	SED	—	—	—	0.585 (U)	—	—	—	—	—	—	—	—
RE35-04-54600	35-23163	0.33–0.85	SED	—	—	—	0.562 (U)	—	—	—	—	—	0.394 (U)	—	—
RE35-04-54601	35-23164	0.07–0.49	SED	—	—	—	—	—	—	—	—	—	0.585 (U)	—	—
RE35-04-54602	35-23164	0.49–0.92	SED	—	—	—	—	—	—	—	—	—	0.903 (U)	—	—
RE35-04-54603	35-23165	0.13–0.39	SED	—	—	—	0.579 (U)	—	—	—	—	—	0.377 (U)	—	—
RE35-04-54604	35-23165	0.39–1.21	SED	—	—	—	0.546 (U)	—	—	—	—	—	0.546 (U)	—	—
RE35-04-54605	35-23166	0.10–0.39	SED	—	—	—	0.593 (U)	—	—	—	—	—	0.549 (U)	—	—
RE35-04-54606	35-23166	0.39–0.89	SED	—	—	—	—	—	—	—	—	—	0.84 (U)	—	—
RE35-04-54607	35-23167	0–0.26	SED	—	—	—	—	—	—	—	—	—	0.418 (U)	—	—
RE35-04-54608	35-23167	0.26–0.46	SED	—	—	—	0.556 (U)	—	—	—	—	—	0.556 (U)	—	—
RE35-04-54611	35-23168	0–0.49	SED	—	—	—	—	—	—	—	—	—	0.613 (U)	—	—
RE35-04-54623	35-23178	0.07–0.26	SED	—	—	—	—	—	—	—	0.173 (J+)	—	0.545 (U)	—	67
RE35-04-54624	35-23178	0.26–0.66	SED	—	—	—	—	—	—	—	—	—	0.58 (U)	—	—
RE35-04-54627	35-23180	0.20–0.39	SED	—	—	—	0.641 (U)	—	—	—	—	—	0.544 (U)	—	—
RE35-04-54628	35-23180	0.95–1.18	SED	—	—	—	—	—	—	—	—	—	0.337 (U)	—	—
RE35-04-54631	35-23182	0–0.59	SED	—	—	—	—	—	—	—	—	—	0.61 (U)	—	—
RE35-04-54632	35-23182	1.21–1.54	SED	—	132	—	—	—	—	—	—	—	0.326 (U)	—	61
RE35-04-54633	35-23183	0–0.95	SED	—	—	—	—	—	—	—	—	—	0.776	—	—
RE35-04-54634	35-23183	1.48–1.97	SED	—	138	—	—	—	—	—	—	—	0.893	—	—
RE35-04-54635	35-23184	0–0.33	SED	—	—	—	—	—	—	—	—	—	0.547 (U)	—	—
RE35-04-54636	35-23184	0.79–1.21	SED	—	—	—	—	—	—	—	—	—	0.56 (U)	—	—

Table D-4.9-6 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Bromide	Cadmium	Calcium	Copper	Fluoride	Mercury	Perchlorate	Selenium	Thallium	Zinc
RE35-04-54637	35-23185	0–0.3	SED	—	—	—	0.571 (U)	—	—	—	—	—	0.571 (U)	—	—
RE35-04-54638	35-23185	0.3–0.69	SED	—	—	—	—	—	—	—	0.134	—	0.583 (U)	—	—
RE35-04-54639	35-23186	0.1–0.33	SED	—	—	—	—	—	—	—	—	—	0.619 (U)	—	—
RE35-04-54640	35-23186	0.33–0.49	SED	—	—	—	0.614 (U)	—	—	—	—	—	0.597 (J)	—	—
RE35-04-54641	35-23187	0.16–0.66	SED	—	—	—	—	—	—	—	—	—	0.597 (U)	—	—
RE35-04-54642	35-23187	0.66–1.51	SED	—	—	—	0.53 (U)	—	—	—	—	—	0.729	—	—
RE35-04-54645	35-23189	0.23–0.49	SED	—	—	—	0.551 (U)	—	—	—	—	—	—	—	—
RE35-04-54646	35-23189	0.49–0.85	SED	—	—	—	—	—	—	—	—	—	0.564 (U)	—	—
RE35-04-54649	35-23191	0–0.39	SED	—	—	—	—	—	—	—	—	—	0.577 (U)	—	—
RE35-04-54650	35-23191	0.39–1.38	SED	—	—	—	—	—	—	—	—	—	0.576	—	—
CAMO-01-0067	MO-10049	0–0.33	SED	—	—	—	—	—	—	1.06	—	—	—	—	—
CAMO-01-0098	MO-10051	0–0.73	SED	—	—	—	—	—	—	—	—	—	0.37 (J)	—	—
CAMO-01-0099	MO-10051	0.73–1.72	SED	—	—	—	—	—	—	—	—	—	0.31 (UJ)	—	—
CAMO-01-0101	MO-10053	0–1.35	SED	—	—	—	—	—	20	—	—	—	—	—	—
CAMO-01-0102	MO-10054	0–0.83	SED	—	—	—	—	7400 (J-)	23	—	0.43	—	—	—	—
CAMO-01-0103	MO-10054	0.83–1.29	SED	—	—	—	—	—	36	—	0.67	—	—	—	—
CAMO-01-0069	MO-10054	1.29–1.8	SED	—	—	0.357	—	5600 (J-)	41	2.06	0.69	0.064 (J)	—	—	—
CAMO-01-0104	MO-10054	2.11–2.5	SED	—	—	—	—	—	47	—	0.51	—	—	0.8 (J)	—
CAMO-01-0105	MO-10054	2.51–3.76	SED	—	—	—	—	—	30	—	0.24	—	—	—	—
CAMO-01-0106	MO-10055	0–0.36	SED	—	—	—	0.8	9200	23	—	0.22	—	0.57	—	—
CAMO-01-0070	MO-10055	0.36–1.25	SED	—	—	0.723	—	5300 (J-)	12	1.2	—	0.0629 (J)	—	—	—
CAMO-01-0107	MO-10055	1.55–2.57	SED	—	130	—	—	5000	—	—	—	—	0.34 (J)	—	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect of nondetect) above BV or not detected.

Table D-4.9-7
EPCs for Inorganic COPCs in the Mortandad Slope Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–5	1.35	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–5	48.3	Gamma	95% Approximate Gamma UCL
Brormide	0–5	0.723	—[a]	Maximum detect
Calcium	0–5	2251	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–5	14.9	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–5	9.70	Nonparametric	95% Chebyshev (Mean, SD)
Fluoride	0–5	2.06	—	Maximum detect
Lithium	0–5	7	—	Maximum detect
Mercury	0–5	0.105	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–5	5.02	Lognormal	95% H-UCL
Perchlorate	0–5	0.064	—	Maximum detect
Selenium	0–5	0.506	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–5	0.797	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–5	73.0	Nonparametric	95% Chebyshev (Mean, SD)

[a] Too few samples to determine distribution or calculate EPC.

Table D-4.9-8
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
AAB4269	35-02032	0–0.5	ALLH	—[a]	—	—	19551[b]	19551	—
AAA6490	35-02044	0–0.5	ALLH	—	16669	—	16669	16669	—
AAA6491	35-02045	0–0.5	ALLH	—	—	—	16669	16669	—
AAA6525	35-02051	3.5–4.5	ALLH	—	—	—	16683	16683	—
AAA6529	35-02052	4–5	ALLH	—	—	—	16683	16683	—
AAA6508	35-02053	3–4	ALLH	—	16669	—	16669	16669	—
AAA6513	35-02054	4–5	ALLH	—	—	—	16669	16669	—
AAA6484	35-02056	4–5	ALLH	—	—	—	16685	16685	—
AAB4272	35-02213	0–0.5	ALLH	—	—	—	19551	19551	—
AAB4274	35-02213	1–2	ALLH	—	—	—	19551	19551	—
AAB4275	35-02213	2–3	ALLH	—	—	—	19551	19551	—
AAB4276	35-02250	0–0.5	ALLH	—	—	—	18791	18791	—
XAAB4257	35-02251	0–0.5	ALLH	—	—	—	19551	—	—
AAB4261	35-02256	0–0.5	ALLH	—	—	—	18791	18791	—
AAB4262	35-02257	0–1	ALLH	—	—	—	18791	18791	—
AAB4263	35-02257	1–2	ALLH	—	—	—	18791	18791	—
0435-97-0144	35-02505	0–1	ALLH	—	3311R	3311R	3311R	3311R	3311R
0435-97-0150	35-02509	0–1	ALLH	—	3311R	3311R	3311R	3311R	3311R
0435-97-0151	35-02509	1–1.8	ALLH	—	3311R	3311R	3311R	3311R	3311R
0435-97-0161	35-02510	0–1	ALLH	—	3329R	3329R	3329R	3329R	3329R
0435-97-0164	35-02511	0–1	ALLH	—	3311R	3311R	3311R	3311R	3311R

Table D-4.9-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0435-97-0167	35-02512	0–1	ALLH	—	3311R	3311R	3311R	3311R	3311R
0435-97-0168	35-02512	1–2	ALLH	—	3311R	3311R	3311R	3311R	3311R
0435-97-0170	35-02513	0–0.5	ALLH	—	3311R	3311R	3311R	3311R	3311R
0435-97-0355	35-02551	0–1	FILL	—	3488R	—	—	—	3488R
0435-97-0359	35-02552	0–1	FILL	—	3488R	—	—	—	3488R
0435-97-0364	35-02553	0–1	FILL	—	3488R	—	—	—	3488R
0435-97-0279	35-02584	0–1	ALLH	—	3475R	—	3475R	3475R	—
RE35-04-54579	35-23153	0.52–1.31	ALLH	2597S	2597S	—	2597S	2597S	—
RE35-04-54580	35-23153	1.31–2.46	ALLH	2597S	2597S	—	2597S	2597S	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-4.9-9
Summary of Radionuclides Detected or Detected above BV/FV in Soil and Fill, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cesium-137	Plutonium-239	Tritium
	Soil, Fill Background/Fallout Value (pCi/g)			1.65	0.054	na[a]
AAA6490	35-02044	0.00–0.50	ALLH	—[b]	—	—
AAB4253	35-02095	0.00–0.50	ALLH	—	0.0606 (J)	—
AAB4263	35-02257	1.00–2.00	ALLH	—	0.014[c]	—
0435-97-0144	35-02505	0.00–1.00	ALLH	—	—	4.71
0435-97-0147	35-02508	0.00–1.00	ALLH	—	0.086	0.91
0435-97-0150	35-02509	0.00–1.00	ALLH	—	—	0.687
0435-97-0151	35-02509	1.00–1.80	ALLH	—	—	0.682
0435-97-0161	35-02510	0.00–1.00	ALLH	—	—	0.09
0435-97-0164	35-02511	0.00–1.00	ALLH	0.23[c]	—	0.298
0435-97-0167	35-02512	0.00–1.00	ALLH	—	—	0.272
0435-97-0170	35-02513	0.00–0.50	ALLH	—	—	0.293
0435-97-0279	35-02584	0.00–1.00	ALLH	0.8[c]		
RE35-04-54579	35-23153	0.52–1.31	ALLH	0.28[c]	0.0665	—

[a] na = Not available.

[b] — indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-4.9-10
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
AAB4270	35-02032	1–2	Qbt3	—[a]	—	19551[b]	19551	—
AAB4271	35-02032	2–3	Qbt3	—	—	19551	19551	—
AAA6480	35-02055	4–5	Qbt3	—	—	16685	16685	—
AAB4277	35-02250	1–2	Qbt3	—	—	18791	18791	—
AAB4278	35-02250	2–3	Qbt3	—	—	18791	18791	—
XAAB4258	35-02251	1–2	Qbt3	—	—	19551	—	—
XAAB4259	35-02251	2–3	Qbt3	—	—	19551	—	—
AAB4260	35-02255	2–3	Qbt3	—	—	18791	18791	—
AAB4264	35-02257	2–3	Qbt3	—	—	18791	18791	—
0435-97-0203	35-02455	2–3	Qbt3	3343R	—	—	—	—
0435-97-0206	35-02456	2–3	Qbt3	3329R	—	—	—	—
0435-97-0210	35-02457	2–3	Qbt3	3329R	—	—	—	—
0435-97-0145	35-02505	1–2	Qbt3	3311R	3311R	3311R	3311R	3311R
0435-97-0156	35-02506	1–2	Qbt3	3329R	3329R	3329R	3329R	3329R
0435-97-0159	35-02507	1–2	Qbt3	3329R	3329R	3329R	3329R	3329R
0435-97-0162	35-02510	1–2.2	Qbt3	3329R	3329R	3329R	3329R	3329R
0435-97-0165	35-02511	1–1.8	Qbt3	3311R	3311R	3311R	3311R	3311R
0435-97-0171	35-02513	0.5–1.5	Qbt3	3311R	3311R	3311R	3311R	3311R
0435-97-0283	35-02584	1–2	Qbt3	3475R	—	3475R	3475R	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-4.9-11
Summary of Radionuclides Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Qbt3 Background/Fallout Value (pCi/g)				na[a]	na	1.98	0.09	1.93
AAA6480	35-02055	4.00-5.00	Qbt3	0.014	—[b]	—	—	—
AAB4277	35-02250	1.00-2.00	Qbt3	0.03	—	—	—	—
AAB4260	35-02255	2.00-3.00	Qbt3	0.032	—	3.07	0.17	3.33
0435-97-0210	35-02457	2.00-3.00	Qbt3	—	—	—	0.242	—
0435-97-0145	35-02505	1.00-2.00	Qbt3	0.043	1.16	—	—	—
0435-97-0156	35-02506	1.00-2.00	Qbt3	—	0.09	—	—	—
0435-97-0159	35-02507	1.00-2.00	Qbt3	—	0.06	—	—	—
0435-97-0162	35-02510	1.00-2.20	Qbt3	—	0.08	—	—	—
0435-97-0165	35-02511	1.00-1.80	Qbt3	—	0.235	—	—	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-4.9-12
Sediment Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
0435-97-0193	35-02453	0–1	SED	—[a]	3343R[b]	—	—	—	—	—
0435-97-0194	35-02453	1–2	SED	—	3343R	—	—	—	—	—
0435-97-0195	35-02453	2–3.4	SED	—	3343R	—	—	—	—	—
0435-97-0198	35-02454	0–1	SED	—	3343R	—	—	—	—	—
0435-97-0199	35-02454	1–2	SED	—	3343R	—	—	—	—	—
0435-97-0200	35-02454	2–3	SED	—	3343R	—	—	—	—	—
0435-97-0201	35-02455	0–1	SED	—	3343R	—	—	—	—	—
0435-97-0202	35-02455	1–2	SED	—	3343R	—	—	—	—	—
0435-97-0204	35-02456	0–1	SED	—	3329R	—	—	—	—	—
0435-97-0205	35-02456	1–2	SED	—	3329R	—	—	—	—	—
0435-97-0208	35-02457	0–1	SED	—	3329R	—	—	—	—	—
0435-97-0209	35-02457	1–2	SED	—	3329R	—	—	—	—	—
0435-97-0154	35-02506	0–1	SED	—	3329R	3329R	3329R	—	3329R	3329R
0435-97-0158	35-02507	0–1	SED	—	3329R	3329R	3329R	—	3329R	3329R
RE35-04-54573	35-23150	0–0.23	SED	2573S	2573S	—	2573S	—	2573S	—
RE35-04-54574	35-23150	0.23–0.56	SED	2573S	2573S	—	2573S	—	2573S	—
RE35-04-54575	35-23151	0–0.43	SED	2590S	2590S	—	2590S	—	2590S	—
RE35-04-54576	35-23151	0.43–0.82	SED	2590S	2590S	—	2590S	—	2590S	—
RE35-04-54577	35-23152	0–0.33	SED	2597S	2597S	—	2597S	—	2597S	—
RE35-04-54578	35-23152	0.69–0.98	SED	2597S	2597S	—	2597S	—	2597S	—
RE35-04-54581	35-23154	0.03–0.59	SED	2597S	2597S	—	2597S	—	2597S	—
RE35-04-54582	35-23154	1.48–2.46	SED	2597S	2597S	—	2597S	—	2597S	—
RE35-04-54623	35-23178	0.07–0.26	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54624	35-23178	0.26–0.66	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54627	35-23180	0.2–0.39	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54628	35-23180	0.95–1.18	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54631	35-23182	0–0.59	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54632	35-23182	1.21–1.54	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54633	35-23183	0–0.95	SED	2629S	2629S	2629S	2629S	—	2629S	—
RE35-04-54634	35-23183	1.48–1.97	SED	2629S	2629S	2629S	2629S	—	2629S	—
RE35-04-54635	35-23184	0–0.33	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54636	35-23184	0.79–1.21	SED	2601S	2601S	2601S	2601S	—	2601S	—
RE35-04-54637	35-23185	0–0.3	SED	2629S	2629S	2629S	2629S	—	2629S	—
RE35-04-54638	35-23185	0.3–0.69	SED	2629S	2629S	2629S	2629S	—	2629S	—
RE35-04-54639	35-23186	0.1–0.33	SED	2600S	2600S	2600S	2600S	—	2600S	—
RE35-04-54640	35-23186	0.33–0.49	SED	2600S	2600S	2600S	2600S	—	2600S	—
RE35-04-54641	35-23187	0.16–0.66	SED	2630S	2630S	2630S	2630S	—	2630S	—
RE35-04-54642	35-23187	0.66–1.51	SED	2630S	2630S	2630S	2630S	—	2630S	—
CAMO-01-0067	MO-10049	0–0.33	SED	—	9509R	9509R	9509R	9509R	9509R	9509R
CAMO-01-0097	MO-10050	0.56–1.46	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0098	MO-10051	0–0.73	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0099	MO-10051	0.73–1.72	SED	—	9509R	—	9509R	—	—	9509R

Table D-4.9-12 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
CAMO-01-0100	MO-10052	0–0.94	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0101	MO-10053	0–1.35	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0102	MO-10054	0–0.83	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0103	MO-10054	0.83–1.29	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0069	MO-10054	1.29–1.8	SED	—	9509R	9509R	9509R	9509R	9509R	9509R
CAMO-01-0104	MO-10054	2.11–2.5	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0105	MO-10054	2.51–3.76	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0106	MO-10055	0–0.36	SED	—	9509R	—	9509R	—	—	9509R
CAMO-01-0070	MO-10055	0.36–1.25	SED	—	9509R	9509R	9509R	9509R	9509R	9509R
CAMO-01-0107	MO-10055	1.55–2.57	SED	—	9509R	—	9509R	—	—	9509R

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-4.9-13

Summary of Radionuclides Detected or Detected above BV/FV in Sediment, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Plutonium-238	Plutonium-239	Ruthenium-106	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Sediment Background/Fallout Value (pCi/g)				0.04	0.9	na[a]	0.006	0.068	na	1.04	0.093	2.59	0.2	2.29
0435-97-0193	35-02453	0–1	SED	—[b]	—	—	—	—	0.561	—	—	—	—	—
0435-97-0154	35-02506	0–1	SED	—	—	—	—	—	—	—	0.15	—	—	—
RE35-04-54577	35-23152	0–0.33	SED	0.151	2.44	—	0.0533	0.589	—	—	—	7.21	0.441	9.11
RE35-04-54582	35-23154	1.48–2.46	SED	0.105	—	—	—	—	—	—	—	—	—	—
RE35-04-54624	35-23178	0.26–0.66	SED	—	—	—	—	0.0811	—	—	—	3.16	—	3.52
RE35-04-54628	35-23180	0.95–1.18	SED	—	—	—	—	0.0811	—	—	—	—	—	2.52
RE35-04-54631	35-23182	0–0.59	SED	—	—	—	—	0.157	—	—	—	—	—	3.46
RE35-04-54632	35-23182	1.21–1.54	SED	0.0636	—	—	0.0192	0.134	—	—	—	3.17	—	3.18
RE35-04-54633	35-23183	0.00–0.95	SED	3.45	9.83	—	1.86	4.15	—	—	0.118	—	—	2.74
RE35-04-54634	35-23183	1.48–1.97	SED	1.59	1.4	—	0.134	0.425	—	—	0.101	—	—	—
RE35-04-54636	35-23184	0.79–1.21	SED	—	—	—	—	0.118	—	—	—	—	—	—
RE35-04-54639	35-23186	0.1–0.33	SED	—	1.06	0.278	—	—	—	—	—	—	—	—
RE35-04-54640	35-23186	0.33–0.49	SED	—	1.04	—	—	0.132	—	—	—	—	—	—
RE35-04-54641	35-23187	0.16–0.66	SED	—	—	—	—	0.245	—	—	0.0963	—	—	3.12
CAMO-01-0067	MO-10049	0.00–0.33	SED	4.7	11.4	0.184	3.9	4.36	—	—	0.166	—	—	—
CAMO-01-0097	MO-10050	0.56–1.46	SED	11.9	33.2	0.51	4.02	10.3	—	1.92	—	—	—	—
CAMO-01-0098	MO-10051	0.00–0.73	SED	17	33	0.58	5.84	13.5	—	2.62	—	—	—	—
CAMO-01-0099	MO-10051	0.73–1.72	SED	8.8	33.5	0.29	3.2	7.9	—	3.9	—	—	—	—
CAMO-01-0100	MO-10052	0–0.94	SED	8.7	19.3	0.276	5.97	6.23	—	1.06	—	—	—	—
CAMO-01-0101	MO-10053	0–1.35	SED	66	89	0.74	13.7	40.1	—	3.46	—	—	—	—
CAMO-01-0102	MO-10054	0–0.83	SED	—	339	0.154	58	13.2	—	10.6	—	—	—	—
CAMO-01-0103	MO-10054	0.83–1.29	SED	7.3	589	—	119	16.7	—	14.8	—	—	—	—
CAMO-01-0069	MO-10054	1.29–1.80	SED	7.3	870	—	145	21.8	—	10.3	0.363	—	—	—
CAMO-01-0104	MO-10054	2.11–2.5	SED	16.8	850	0.273	189	32.9	—	8.7	—	—	—	—
CAMO-01-0105	MO-10054	2.51–3.76	SED	5.8	335	0.21	46.2	11.7	—	3.92	—	—	—	—

Table D-4.9-13 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Plutonium-238	Plutonium-239	Ruthenium-106	Strontium-90	Tritium	Uranium-234	Uranium-235	Uranium-238
Sediment Background/Fallout Value (pCi/g)				0.04	0.9	na[a]	0.006	0.068	na	1.04	0.093	2.59	0.2	2.29
CAMO-01-0106	MO-10055	0–0.36	SED	8.2	129	—	1.59	24.7	—	10.4	—	—	—	—
CAMO-01-0070	MO-10055	0.36–1.25	SED	0.94	41.9	—	0.139	2.11	—	8.6	0.26	—	—	—
CAMO-01-0107	MO-10055	1.55–2.57	SED	—	1.21	—	—	0.147	—	5.8	—	—	—	—

[a] na = Not available.

[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-4.9-14
EPCs for Radionuclide COPCs in the Mortandad Slope Subarea

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–5	6.20	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–5	122	Nonparametric	95% Chebyshev (Mean, SD)
Cobalt-60	0–5	0.116	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–5	21.4	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–5	6.15	Nonparametric	95% Chebyshev (Mean, SD)
Ruthenium-106	0–5	0.106	Nonparametric	95% Chebyshev (Mean, SD)
Strontium-90	0–5	5.76	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–5	0.891	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–5	1.38	Lognormal	95% H-UCL
Uranium-235	0–5	0.098	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–5	1.53	Lognormal	95% H-UCL

Table D-4.9-15
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	Pesticides	Pesticide-PCB	SVOC	TPH-DRO	VOC
RE35-07-75188	35-02096	2.2-2.5	ALLH	6908S[a]	—[b]	—	—	—	—	—
AAB4276	35-02250	0-0.5	ALLH	—	—	—	—	17890	—	17890
XAAB4263	35-02253	0-0.5	ALLH	—	17890	—	—	17890	—	—
AAB4261	35-02256	0-0.5	ALLH	—	—	—	—	19803	—	—
AAB4262	35-02257	0-1	ALLH	—	—	—	—	19803	—	—
AAB4263	35-02257	1-2	ALLH	—	—	—	—	19803	—	—
0435-95-0194	35-02279	3-4	FILL	—	—	—	—	1678	—	1671
0435-95-0202	35-02282	0-0.5	ALLH	—	—	—	—	1678	1678	—
0435-95-0203	35-02282	1-2	ALLH	—	—	—	—	—	1678	—
0435-95-0204	35-02283	1-2	ALLH	—	—	—	1678	1678	1678	—
0435-95-0205	35-02284	0-1	ALLH	—	—	—	—	1678	—	—
0435-97-0214	35-02459	0-0.5	ALLH	—	—	—	—	3341R	3341R	—
0435-97-0217	35-02460	0-0.83	ALLH	—	—	—	—	3341R	3341R	—
0435-97-0221	35-02461	0-1	FILL	—	—	—	—	—	3341R	—
0435-97-0222	35-02462	0-1	FILL	—	—	—	—	—	3341R	—
0435-97-0144	35-02505	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
0435-97-0150	35-02509	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
0435-97-0151	35-02509	1-1.8	ALLH	—	3309R	—	—	3309R	3309R	—
0435-97-0161	35-02510	0-1	ALLH	—	3327R	—	—	3327R	3327R	—
0435-97-0164	35-02511	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
0435-97-0167	35-02512	0-1	ALLH	—	3309R	—	—	3309R	3309R	—
0435-97-0168	35-02512	1-2	ALLH	—	3309R	—	—	3309R	3309R	—
0435-97-0170	35-02513	0-0.5	ALLH	—	3309R	—	—	3309R	3309R	—
RE35-04-54014	35-22921	0.5-1	ALLH	—	—	—	—	2408S	—	2408S

Table D-4.9-15 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	Pesticides	Pesticide-PCB	SVOC	TPH-DRO	VOC
RE35-04-54015	35-22921	2-2.5	ALLH	—	—	—	—	2408S	—	2408S
RE35-04-54018	35-22923	2-2.5	ALLH	—	2348S	2348S	—	—	—	—
RE35-04-54019	35-22923	3.9-4.4	ALLH	—	2348S	2348S	—	—	—	—
RE35-04-54021	35-22924	0.5-1	ALLH	—	2348S	2348S	—	—	—	—
RE35-04-54024	35-22925	0-0.5	ALLH	—	2348S	2348S	—	—	—	—
RE35-04-54025	35-22925	1.2-1.7	ALLH	—	2348S	2348S	—	—	—	—
RE35-04-54033	35-22929	0.5-1	ALLH	—	2346S	2346S	—	2346S	—	—
RE35-04-54579	35-23153	0.52-1.31	ALLH	—	—	—	—	2596S	—	—
RE35-04-54580	35-23153	1.31-2.46	ALLH	—	—	—	—	2596S	—	—
RE35-07-75198	35-27423	0-0.3	ALLH	6908S	—	—	—	—	—	—
RE35-07-75199	35-27423	0.3-0.8	ALLH	6908S	—	—	—	—	—	—
RE35-07-75200	35-27424	0-0.3	ALLH	6908S	—	—	—	—	—	—
RE35-07-75201	35-27424	0.4-0.8	ALLH	6908S	—	—	—	—	—	—
RE35-07-75202	35-27425	0-0.3	ALLH	6908S	—	—	—	—	—	—
RE35-07-75603 (FD)	35-27425	0-0.3	ALLH	6910S	—	—	—	—	—	—
RE35-07-75203	35-27425	0.3-0.7	ALLH	6908S	—	—	—	—	—	—
RE35-07-75204	35-27426	0-0.3	ALLH	6908S	—	—	—	—	—	—
RE35-07-75205	35-27426	0.3-0.8	ALLH	6908S	—	—	—	—	—	—
RE35-07-75206	35-27427	0-0.2	ALLH	6908S	—	—	—	—	—	—
RE35-07-75602 (FD)	35-27427	0-0.2	ALLH	6910S	—	—	—	—	—	—
RE35-07-75207	35-27427	0.2-0.6	ALLH	6908S	—	—	—	—	—	—
RE35-07-75208	35-27428	0-0.5	ALLH	6908S	—	—	—	—	—	—
RE35-07-75209	35-27428	0.5-1	ALLH	6908S	—	—	—	—	—	—
RE35-07-75210	35-27429	0-0.5	ALLH	6908S	—	—	—	—	—	—
RE35-07-75211	35-27429	0.5-1	ALLH	6908S	—	—	—	—	—	—
RE35-07-75609 (FD)	35-27429	0.5-1	ALLH	6910S	—	—	—	—	—	—
RE35-07-75212	35-27430	0-0.4	ALLH	6908S	—	—	—	—	—	—
RE35-07-75213	35-27430	0.4-1	ALLH	6908S	—	—	—	—	—	—
RE35-07-75214	35-27431	0-0.4	ALLH	6908S	—	—	—	—	—	—
RE35-07-75215	35-27431	0.4-0.8	ALLH	6908S	—	—	—	—	—	—
RE35-07-75216	35-27432	0-0.4	ALLH	6908S	—	—	—	—	—	—
RE35-07-75217	35-27432	0.4-1	ALLH	6908S	—	—	—	—	—	—
RE35-07-75218	35-27433	0-0.5	ALLH	6908S	—	—	—	—	—	—
RE35-07-75219	35-27433	0.7-1	ALLH	6908S	—	—	—	—	—	—
RE35-07-75226	35-27434	0-0.2	ALLH	6908S	—	—	—	—	—	—
RE35-07-75227	35-27434	0.2-0.6	ALLH	6908S	—	—	—	—	—	—
RE35-07-75228	35-27435	0-0.2	ALLH	6908S	—	—	—	—	—	—
RE35-07-75229	35-27435	0.2-0.5	ALLH	6908S	—	—	—	—	—	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-4.9-16
Summary of Organic Chemicals Detected in Soil and Fill, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Aniline	Anthracene	Aroclor-1242	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chloroaniline[4-]	Chrysene
RE35-07-75188	35-02096	2.2-2.5	ALLH	—[a]	—	—	—	—	—	—	0.195	0.172	—	0.126	—	—	—	—	0.167
AAB4276	35-02250	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	8.4 (J)	—	—
AAB4261	35-02256	0-0.5	ALLH	0.074 (J)	—	—	—	—	—	—	—	0.076 (J)	0.093 (J)	0.043 (J)	0.049 (J)	—	—	—	0.088 (J)
0435-95-0202	35-02282	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	8.2	—	—
0435-95-0203	35-02282	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-95-0204	35-02283	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	4.1 (J)	—	—
0435-95-0205	35-02284	0-1	ALLH	—	—	—	—	—	—	—	0.026 (J)	0.04 (J)	0.036 (J)	—	0.027 (J)	—	0.066 (J)	—	0.039 (J)
0435-97-0214	35-02459	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	8.6 (J)	—	—
0435-97-0217	35-02460	0-0.83	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.1 (J)	0.069 (J)	—	—
0435-97-0221	35-02461	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0144	35-02505	0-1	ALLH	3.2	—	—	4.1	—	1.4	—	11	10	9.3	6.2	11	—	0.36 (J)	0.14 (J)	11
0435-97-0150	35-02509	0-1	ALLH	1.4 (J)	—	—	1.4 (J)	—	—	—	6	7.4	7.1	5.5	6.4	—	—	—	7.5
0435-97-0151	35-02509	1-1.8	ALLH	0.053 (J)	—	—	0.077 (J)	—	—	—	0.47	0.64	0.48	0.49	0.56	—	—	—	0.54
0435-97-0161	35-02510	0-1	ALLH	0.18 (J)	—	—	0.21 (J)	—	—	—	0.53	0.64	0.55	0.54	0.65	—	—	—	0.69
0435-97-0164	35-02511	0-1	ALLH	—	—	—	—	—	—	—	0.074 (J)	0.098 (J)	0.076 (J)	—	0.076 (J)	—	—	—	0.085 (J)
0435-97-0167	35-02512	0-1	ALLH	—	—	0.21 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0170	35-02513	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.04 (J)	—	—	—
RE35-04-54014	35-22921	0.5-1	ALLH	—	0.0163	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54015	35-22921	2-2.5	ALLH	—	—	—	—	—	—	—	—	0.0191 (J)	0.0352 (J)	—	—	—	—	—	—
RE35-04-54018	35-22923	2-2.5	ALLH	—	—	—	—	—	—	0.0057 (J-)	—	—	—	—	—	—	—	—	—
RE35-04-54019	35-22923	3.9-4.4	ALLH	—	—	—	—	—	—	0.102 (J-)	—	—	—	—	—	—	—	—	—
RE35-04-54021	35-22924	0.5-1	ALLH	—	—	—	—	—	0.0278 (J-)	0.0784 (J-)	—	—	—	—	—	—	—	—	—
RE35-04-54024	35-22925	0-0.5	ALLH	—	—	—	—	0.0085 (J-)	0.0069 (J-)	0.0127 (J-)	—	—	—	—	—	—	—	—	—
RE35-04-54025	35-22925	1.2-1.7	ALLH	—	—	—	—	—	—	0.002 (J-)	—	—	—	—	—	—	—	—	—
RE35-04-54033	35-22929	0.5-1	ALLH	0.104 (J)	—	—	0.139	—	0.0913	0.44	0.331	0.32	0.51	0.621	—	—	0.257 (J)	—	0.354
RE35-04-54579	35-23153	0.52-1.31	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-07-75200	35-27424	0-0.3	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0348
RE35-07-75206	35-27427	0-0.2	ALLH	—	—	—	—	—	—	—	—	—	—	0.00862 (J)	—	—	—	—	—

Table D-4.9-16 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Dibenz(a,h)anthracene	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylene Chloride	Methylnaphthalene[2-]	Naphthalene	Pentachlorophenol	Phenanthrene	Phenol	Pyrene	TPH-DRO
RE35-07-75188	35-02096	2.2-2.5	ALLH	—	—	—	0.436	—	—	—	—	—	—	—	0.253	—	0.34	—
AAB4276	35-02250	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
AAB4261	35-02256	0-0.5	ALLH	—	—	—	0.18 (J)	—	0.046 (J)	—	—	—	—	—	0.11 (J)	—	0.18 (J)	—
0435-95-0202	35-02282	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25000
0435-95-0203	35-02282	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	15000
0435-95-0204	35-02283	1-2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27000
0435-95-0205	35-02284	0-1	ALLH	—	—	—	0.058 (J)	—	—	—	—	—	—	—	—	—	0.05 (J)	—
0435-97-0214	35-02459	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0217	35-02460	0-0.83	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0221	35-02461	0-1	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18
0435-97-0144	35-02505	0-1	ALLH	2.2	1.3	0.21 (J)	21	2.3	6.5	—	—	0.47 (J)	1.5	0.23 (J)	19	—	25	170
0435-97-0150	35-02509	0-1	ALLH	1.6 (J)	0.59 (J)	—	12	0.97 (J)	5.4	—	—	0.25 (J)	0.89 (J)	—	9.6	—	18	120
0435-97-0151	35-02509	1-1.8	ALLH	0.19 (J)	—	0.41	0.97	0.042 (J)	0.47	—	—	—	—	—	0.49	0.13 (J)	1.1	23
0435-97-0161	35-02510	0-1	ALLH	0.17 (J)	0.082 (J)	0.096 (J)	1.5	0.14 (J)	0.45	—	—	0.035 (J)	0.13 (J)	—	1.1	0.093 (J)	1.6	15
0435-97-0164	35-02511	0-1	ALLH	—	—	0.11 (J)	0.15 (J)	—	—	—	—	—	—	—	0.08 (J)	0.058 (J)	0.13 (J)	14
0435-97-0167	35-02512	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	9.7
0435-97-0170	35-02513	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	20
RE35-04-54014	35-22921	0.50-1	ALLH	—	—	—	0.0184 (J)	—	—	0.0034	—	—	—	—	—	—	—	—
RE35-04-54015	35-22921	2-2.5	ALLH	—	—	—	0.0508	—	—	—	0.0017 (J)	—	—	—	0.0389	—	0.045	—
RE35-04-54018	35-22923	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54019	35-22923	3.9-4.4	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54021	35-22924	0.5-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54024	35-22925	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54025	35-22925	1.2-1.7	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54033	35-22929	0.5-1	ALLH	—	—	—	0.877	0.0917 (J)	0.61	—	—	—	—	—	0.752	—	0.707	—
RE35-04-54579	35-23153	0.52-1.31	ALLH	—	—	0.0373 (J)	—	—	—	—	—	—	—	—	—	—	—	—
RE35-07-75200	35-27424	0-0.3	ALLH	—	—	—	0.0685	—	—	—	—	—	—	—	—	—	0.0621	—
RE35-07-75206	35-27427	0-0.2	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0275	—

[a] — = Analyte not detected.

Table D-4.9-17
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	Pesticide	SVOC	TPH-DRO	VOC
AAC1227	35-02126	2-3	QBT3	—[a]	—	—	21576[b]	—	—
AAC1240	35-02130	1-2	QBT3	—	—	—	21576	—	—
AAC1259	35-02136	1-2	QBT3	—	—	—	—	—	21602
AAC1209	35-02155	1-2	QBT3	—	—	—	21576	—	—
RE35-07-75242	35-02255	1.7-1.9	QBT3	6896S	—	—	—	—	—
AAB4260	35-02255	2-3	QBT3	—	—	—	19803	—	—
AAB4264	35-02257	2-3	QBT3	—	—	—	19803	—	—
0435-97-0203	35-02455	2-3	QBT3	—	—	—	3341R	3341R	—
0435-97-0206	35-02456	2-3	QBT3	—	—	—	—	3327R	3327R
0435-97-0210	35-02457	2-3	QBT3	—	—	—	3327R	3327R	3327R
0435-97-0213	35-02458	2-3	QBT3	—	—	—	3327R	3327R	—
0435-97-0215	35-02459	0.5-1	QBT3	—	—	—	3341R	3341R	—
0435-97-0216	35-02459	1-2	QBT3	—	—	—	3341R	3341R	—
0435-97-0218	35-02460	0.83-1.5	QBT3	—	—	—	3341R	3341R	—
0435-97-0219 (FD)	35-02460	0.83-1.5	QBT3	—	—	—	3341R	3341R	—
0435-97-0145	35-02505	1-2	QBT3	—	3309R	—	3309R	3309R	—
0435-97-0156	35-02506	1-2	QBT3	—	3327R	—	3327R	3327R	—
0435-97-0159	35-02507	1-2	QBT3	—	3327R	—	3327R	3327R	—
RE35-07-75604	35-02508	2.5-2.8	QBT3	6898S	—	—	—	—	—
0435-97-0162	35-02510	1-2.2	QBT3	—	3327R	—	3327R	3327R	—
0435-97-0165	35-02511	1-1.8	QBT3	—	3309R	—	3309R	3309R	—
0435-97-0171	35-02513	0.5-1.5	QBT3	—	3309R	—	3309R	3309R	—
RE35-04-54026	35-22925	4.5-5	QBT3	—	2348S	2348S	—	—	—
RE35-04-54034	35-22929	4-4.5	QBT3	—	2346S	2346S	2346S	—	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-4.9-18
Summary of Organic Chemicals Detected in Tuff, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene
RE35-07-75242	35-02255	1.7-1.9	QBT3	—[a]	0.0207	—	—	0.0731	0.082	0.131	0.0673	—	—	—	0.0712	—
AAB4260	35-02255	2-3	QBT3	—	—	—	—	0.04 (J)	0.065 (J)	0.069 (J)	0.049 (J)	0.05 (J)	—	—	0.064 (J)	—
AAB4264	35-02257	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	0.27 (J)	—	—
0435-97-0203	35-02455	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0206	35-02456	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0210	35-02457	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0213	35-02458	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	2.4 (J)	—	—
0435-97-0215	35-02459	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	5.9 (J)	—	—
0435-97-0216	35-02459	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	6.1 (J)	—	—
0435-97-0218	35-02460	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	0.043 (J)	—	—	—
0435-97-0145	35-02505	1-2	QBT3	2.2 (J)	3.2	0.83	—	6.4	7.4	5.6	5.5	6.6	—	—	7.5	1.9
0435-97-0156	35-02506	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0159	35-02507	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-07-75604	35-02508	2.5-2.8	QBT3	—	0.0461	—	—	0.112	0.12	0.192	0.0946	0.0724	—	—	0.0996	—
0435-97-0162	35-02510	1-2.2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0165	35-02511	1-1.8	QBT3	0.042 (J)	0.053 (J)	—	—	0.16 (J)	0.17 (J)	0.13 (J)	—	0.18 (J)	—	—	0.17 (J)	—
RE35-04-54034	35-22929	4-4.5	QBT3	—	—	—	0.0066	—	—	—	—	—	—	—	—	—

Table D-4.9-18 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
RE35-07-75242	35-02255	1.7-1.9	QBT3	—	—	0.155	0.0101 (J)	—	—	—	0.0948	0.153	—	—	—
AAB4260	35-02255	2-3	QBT3	—	—	0.13 (J)	—	0.043 (J)	—	—	0.09 (J)	0.12 (J)	—	—	—
AAB4264	35-02257	2-3	QBT3	—	—	0.071 (J)	—	—	—	—	0.07 (J)	0.053 (J)	—	—	—
0435-97-0203	35-02455	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	11	—
0435-97-0206	35-02456	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.001 (J)
0435-97-0210	35-02457	2-3	QBT3	—	—	—	—	—	—	—	—	—	0.002 (J)	7.3	0.001 (J)
0435-97-0213	35-02458	2-3	QBT3	—	0.48 (J)	—	—	—	—	—	—	—	—	—	—
0435-97-0215	35-02459	0.5-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0216	35-02459	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0218	35-02460	0.83-1.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0145	35-02505	1-2	QBT3	1 (J)	—	16	1.6 (J)	5	0.36 (J)	1.3 (J)	15	20	—	96	—
0435-97-0156	35-02506	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	20	—
0435-97-0159	35-02507	1-2	QBT3	—	0.043 (J)	—	—	—	—	—	—	—	—	8.9	—
RE35-07-75604	35-02508	2.5-2.8	QBT3	—	—	0.238	0.0237	—	—	—	0.192	0.233	—	—	—
0435-97-0162	35-02510	1-2.2	QBT3	—	—	0.064 (J)	—	—	—	—	0.043 (J)	0.072 (J)	—	9.3	—
0435-97-0165	35-02511	1-1	QBT3	—	—	0.28 (J)	—	—	—	—	0.25 (J)	0.31 (J)	—	36	—
RE35-04-54034	35-22929	4-4.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—

[a] — = Analyte not detected.

Table D-4.9-19
Sediment Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO	VOC
0435-97-0193	35-02453	0–1	SED	—[a]	—	—	3341R[b]	3341R	—
0435-97-0194	35-02453	1–2	SED	—	—	—	3341R	3341R	3341R
0435-97-0195	35-02453	2–3.4	SED	—	—	—	3341R	3341R	3341R
0435-97-0198	35-02454	0–1	SED	—	—	—	3341R	3341R	—
0435-97-0199	35-02454	1–2	SED	—	—	—	3341R	3341R	3341R
0435-97-0200	35-02454	2–3	SED	—	—	—	3341R	3341R	3341R
0435-97-0201	35-02455	0–1	SED	—	—	—	3341R	3341R	—
0435-97-0202	35-02455	1–2	SED	—	—	—	3341R	3341R	3341R
0435-97-0204	35-02456	0–1	SED	—	—	—	3327R	3327R	—
0435-97-0205	35-02456	1–2	SED	—	—	—	3327R	3327R	3327R
0435-97-0208	35-02457	0–1	SED	—	—	—	3327R	3327R	—
0435-97-0209	35-02457	1–2	SED	—	—	—	3327R	3327R	3327R
0435-97-0211	35-02458	0–1	SED	—	—	—	3327R	3327R	—
0435-97-0212	35-02458	1–2	SED	—	—	—	3327R	3327R	—
0435-97-0274	35-02506	0–0.5	SED	3430R	—	—	3430R	3430R	—
0435-97-0158	35-02507	0–1	SED	3327R	—	—	3327R	3327R	—
RE35-04-54561	35-23144	0–0.56	SED	—	—	—	2571S	—	—
RE35-04-54562	35-23144	0.56–0.95	SED	—	—	—	2571S	—	—
RE35-04-54563	35-23145	0.46–0.79	SED	—	—	—	2571S	—	—
RE35-04-54564	35-23145	0.79–1.05	SED	—	—	—	2571S	—	—
RE35-04-54565	35-23146	0–0.3	SED	—	—	—	2580S	—	—
RE35-04-54566	35-23146	0.3–0.69	SED	—	—	—	2580S	—	—
RE35-04-54567	35-23147	0–0.36	SED	—	—	—	2580S	—	—
RE35-04-54568	35-23147	0.36–0.69	SED	—	—	—	2580S	—	—
RE35-04-54569	35-23148	0.23–0.69	SED	—	—	—	2580S	—	—
RE35-04-54570	35-23148	0.69–1.21	SED	—	—	—	2580S	—	—
RE35-04-54571	35-23149	0–0.46	SED	—	—	—	2580S	—	—
RE35-04-54572	35-23149	0.46–1.25	SED	—	—	—	2580S	—	—
RE35-04-54573	35-23150	0–0.23	SED	—	—	—	2571S	—	—
RE35-04-54574	35-23150	0.23–0.56	SED	—	—	—	2571S	—	—
RE35-04-54575	35-23151	0–0.43	SED	—	—	—	2588S	—	—
RE35-04-54576	35-23151	0.43–0.82	SED	—	—	—	2588S	—	—
RE35-04-54577	35-23152	0–0.33	SED	—	—	—	2596S	—	—
RE35-04-54578	35-23152	0.69–0.98	SED	—	—	—	2596S	—	—
RE35-04-54581	35-23154	0.03–0.59	SED	—	—	—	2596S	—	—
RE35-04-54582	35-23154	1.48–2.46	SED	—	—	—	2596S	—	—
RE35-04-54585	35-23156	0–0.59	SED	2580S	2580S	—	2580S	—	—
RE35-04-54587	35-23157	0.07–0.56	SED	2588S	2588S	—	2588S	—	—
RE35-04-54588	35-23157	0.56–0.92	SED	2588S	2588S	—	2588S	—	—
RE35-04-54589	35-23158	0.1–0.3	SED	2588S	2588S	—	2588S	—	—
RE35-04-54590	35-23158	0.3–0.49	SED	2588S	2588S	—	2588S	—	—
RE35-04-54593	35-23160	0–0.39	SED	2588S	2588S	—	2588S	—	—
RE35-04-54594	35-23160	0.39–0.95	SED	2588S	2588S	—	2588S	—	—

Table D-4.9-19 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO	VOC
RE35-04-54597	35-23162	0–0.75	SED	2596S	2596S	—	2596S	—	—
RE35-04-54598	35-23162	0.75–1.15	SED	2596S	2596S	—	2596S	—	—
RE35-04-54599	35-23163	0–0.33	SED	2580S	2580S	—	2580S	2580S	—
RE35-04-54600	35-23163	0.33–0.85	SED	2580S	2580S	—	2580S	2580S	—
RE35-04-54601	35-23164	0.07–0.49	SED	2567S	2567S	—	2567S	—	—
RE35-04-54602	35-23164	0.49–0.92	SED	2567S	2567S	—	2567S	—	—
RE35-04-54603	35-23165	0.13–0.39	SED	2567S	2567S	—	2567S	—	—
RE35-04-54604	35-23165	0.39–1.21	SED	2567S	2567S	—	2567S	—	—
RE35-04-54605	35-23166	0.1–0.39	SED	2567S	2567S	—	2567S	—	—
RE35-04-54606	35-23166	0.39–0.89	SED	2567S	2567S	—	2567S	—	—
RE35-04-54607	35-23167	0–0.26	SED	2596S	2596S	—	2596S	—	—
RE35-04-54608	35-23167	0.26–0.46	SED	2596S	2596S	—	2596S	—	—
RE35-04-54611	35-23168	0–0.49	SED	2580S	2580S	—	2580S	—	—
RE35-04-54623	35-23178	0.07–0.26	SED	2601S	2601S	—	2601S	—	—
RE35-04-54624	35-23178	0.26–0.66	SED	2601S	2601S	—	2601S	—	—
RE35-04-54627	35-23180	0.2–0.39	SED	2601S	2601S	—	2601S	—	—
RE35-04-54628	35-23180	0.95–1.18	SED	2601S	2601S	—	2601S	—	—
RE35-04-54631	35-23182	0–0.59	SED	2601S	2601S	—	2601S	—	—
RE35-04-54632	35-23182	1.21–1.54	SED	2601S	2601S	—	2601S	—	—
RE35-04-54633	35-23183	0–0.95	SED	2629S	2629S	—	2629S	—	—
RE35-04-54634	35-23183	1.48–1.97	SED	2629S	2629S	—	2629S	—	—
RE35-04-54635	35-23184	0–0.33	SED	2601S	2601S	—	2601S	—	—
RE35-04-54636	35-23184	0.79–1.21	SED	2601S	2601S	—	2601S	—	—
RE35-04-54637	35-23185	0–0.3	SED	2629S	2629S	—	2629S	—	—
RE35-04-54638	35-23185	0.3–0.69	SED	2629S	2629S	—	2629S	—	—
RE35-04-54639	35-23186	0.1–0.33	SED	2600S	2600S	—	2600S	—	—
RE35-04-54640	35-23186	0.33–0.49	SED	2600S	2600S	—	2600S	—	—
RE35-04-54641	35-23187	0.16–0.66	SED	2630S	2630S	—	2630S	—	—
RE35-04-54642	35-23187	0.66–1.51	SED	2630S	2630S	—	2630S	—	—
RE35-04-54646	35-23189	0.49–0.85	SED	—	—	—	2600S	—	—
RE35-04-54649	35-23191	0–0.39	SED	—	—	—	2630S	—	—
RE35-04-54650	35-23191	0.39–1.38	SED	—	—	—	2630S	—	—
CAMO-01-0067	MO-10049	0–0.33	SED	—	9506R	9506R	9506R	—	—
CAMO-01-0289	MO-10049	0–0.33	SED	—	—	—	—	—	9732R
CAMO-01-0290	MO-10050	0–0.56	SED	—	—	—	—	—	9732R
CAMO-01-0069	MO-10054	1.29–1.8	SED	—	—	9506R	9506R	—	—
CAMO-01-0070	MO-10055	0.36–1.25	SED	—	—	9506R	9506R	—	—
CAMO-01-0291	MO-10055	0.36–1.25	SED	—	—	—	—	—	9732R

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-4.9-20
Summary of Organic Chemicals Detected in Sediment, 0-5 ft bgs, in the Mortandad Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	DDE[4,4'-]	DDT[4,4'-]
0435-97-0193	35-02453	0–1	SED	—[a]	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0194	35-02453	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	0.083 (J)	—	—	—
0435-97-0195	35-02453	2–3.4	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0198	35-02454	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0199	35-02454	1–2	SED	—	—	—	—	—	—	—	—	—	—	0.039 (J)	—	—	—	—
0435-97-0200	35-02454	2–3	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0201	35-02455	0–1	SED	—	—	—	—	—	—	—	—	—	—	0.058 (J)	—	—	—	—
0435-97-0202	35-02455	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0204	35-02456	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	0.059 (J)	—	—	—
0435-97-0205	35-02456	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0208	35-02457	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0209	35-02457	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0211	35-02458	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	2.1 (J)	—	—	—
0435-97-0212	35-02458	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	1.3 (J)	—	—	—
0435-97-0274	35-02506	0–0.5	SED	—	—	—	—	—	0.044 (J)	—	—	—	—	—	—	0.055 (J)	—	—
0435-97-0158	35-02507	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54561	35-23144	0–0.56	SED	—	—	—	—	—	—	—	—	—	—	—	0.0755 (J)	—	—	—
RE35-04-54563	35-23145	0.46–0.79	SED	—	—	0.056	—	—	—	—	—	—	0.0542	—	0.088 (J)	0.0493	—	—
RE35-04-54564	35-23145	0.79–1.05	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54566	35-23146	0.3–0.69	SED	—	—	—	—	—	—	—	—	—	—	0.44 (J)	—	—	—	—
RE35-04-54567	35-23147	0–0.36	SED	—	—	—	—	—	—	—	—	—	—	0.474 (J)	—	—	—	—
RE35-04-54570	35-23148	0.69–1.21	SED	—	—	—	—	—	—	—	—	—	—	0.446 (J)	—	—	—	—
RE35-04-54571	35-23149	0–0.46	SED	—	—	—	—	—	—	—	—	—	—	0.519 (J)	—	—	—	—
RE35-04-54572	35-23149	0.46–1.25	SED	—	—	—	—	—	—	—	—	—	—	0.481 (J)	—	—	—	—
RE35-04-54577	35-23152	0–0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54582	35-23154	1.48–2.46	SED	—	—	—	—	—	—	—	—	—	—	—	0.613	—	—	—
RE35-04-54585	35-23156	0–0.59	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54588	35-23157	0.56–0.92	SED	—	—	0.123 (J)	—	—	—	0.1 (J)	0.152	0.0791 (J)	0.0936 (J)	—	—	0.129 (J)	—	—
RE35-04-54589	35-23158	0.1–0.3	SED	—	—	—	—	0.0026 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54590	35-23158	0.3–0.49	SED	—	—	—	—	0.0029 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54593	35-23160	0–0.39	SED	—	—	—	—	0.0024 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54597	35-23162	0–0.75	SED	—	—	—	—	0.0031 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54598	35-23162	0.75–1.15	SED	—	—	—	—	0.0027 (J-)	—	—	—	—	—	—	0.0417 (J)	—	—	—
RE35-04-54599	35-23163	0–0.33	SED	0.0236 (J)	—	0.029 (J)	—	0.0446	—	—	—	—	—	—	—	0.0701 (J)	—	—
RE35-04-54600	35-23163	0.33–0.85	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54601	35-23164	0.07–0.49	SED	—	—	—	0.0023 (J)	0.0031 (J)	—	—	0.0222 (J)	—	—	0.473 (J)	0.0904 (J)	0.0201 (J)	—	—

Table D-4.9-20 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	DDE[4,4'-]	DDT[4,4'-]
RE35-04-54602	35-23164	0.49–0.92	SED	—	—	—	0.0045	0.0054	—	0.0324 (J)	0.0573	—	—	0.522 (J)	0.158 (J)	0.0377 (J)	—	—
RE35-04-54603	35-23165	0.13–0.39	SED	—	—	—	0.0064	0.0105	—	0.0354 (J)	0.0479	—	0.0276 (J)	—	0.164 (J)	0.0378 (J)	—	—
RE35-04-54604	35-23165	0.39–1.21	SED	—	—	—	—	0.009	—	—	—	—	—	—	—	—	—	—
RE35-04-54605	35-23166	0.1–0.39	SED	—	—	—	—	0.0046	—	—	—	—	—	—	—	—	—	—
RE35-04-54606	35-23166	0.39–0.89	SED	—	—	—	—	0.0016 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54607	35-23167	0–0.26	SED	—	—	—	—	0.0045	—	—	—	—	—	—	—	—	—	—
RE35-04-54608	35-23167	0.26–0.46	SED	—	—	—	—	0.0044	—	—	—	—	—	—	—	—	—	—
RE35-04-54611	35-23168	0–0.49	SED	—	—	—	—	—	—	—	—	—	—	0.498 (J)	—	—	—	—
RE35-04-54623	35-23178	0.07–0.26	SED	—	—	0.119 (J)	0.588 (J-)	0.21 (J-)	—	0.435 (J)	0.526 (J)	—	0.213 (J)	—	—	0.346	—	—
RE35-04-54624	35-23178	0.26–0.66	SED	—	—	0.0251 (J)	0.362 (J-)	0.101 (J-)	—	0.0712 (J)	0.0754 (J)	—	0.0403 (J)	—	—	0.0575	—	—
RE35-04-54627	35-23180	0.2–0.39	SED	—	—	0.0402 (J)	0.0157 (J-)	0.037 (J-)	—	0.119 (J)	0.133 (J)	—	0.0833 (J)	—	—	0.106	—	—
RE35-04-54628	35-23180	0.95–1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00058 (J)	0.00233 (J)
RE35-04-54631	35-23182	0–0.59	SED	—	—	—	—	0.0262 (J-)	—	—	—	—	—	—	—	—	0.00141 (J)	0.003 (J)
RE35-04-54632	35-23182	1.21–1.54	SED	—	—	—	—	0.0189 (J-)	—	—	—	—	—	—	—	—	—	—
RE35-04-54633	35-23183	0–0.95	SED	—	—	0.0227 (J)	0.094	0.0859	—	—	—	—	—	—	0.056 (J)	0.0879	—	—
RE35-04-54634	35-23183	1.48–1.97	SED	—	—	—	0.0222 (J)	0.045	—	—	—	—	—	—	0.0382 (J)	—	—	—
RE35-04-54635	35-23184	0–0.33	SED	—	—	—	—	0.0152 (J-)	—	—	—	—	—	—	—	—	—	—
RE35-04-54636	35-23184	0.79–1.21	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54637	35-23185	0–0.3	SED	0.162	—	0.251	0.0211 (J)	0.0406	0.786	0.242	0.131	0.543	—	—	—	0.956	—	—
RE35-04-54638	35-23185	0.30–0.69	SED	0.47	—	0.686	0.0225 (J)	0.0407	—	0.657	0.343	1.65	—	—	—	2.39	—	—
RE35-04-54639	35-23186	0.10–0.33	SED	—	—	—	0.0166 (J-)	0.0568 (J-)	—	—	—	—	—	—	—	0.0852	—	0.0113
RE35-04-54640	35-23186	0.33–0.49	SED	—	—	—	0.0255 (J-)	0.198 (J-)	—	—	—	—	—	0.0974 (J)	—	—	0.00205 (J)	0.00703
RE35-04-54641	35-23187	0.16–0.66	SED	0.0166 (J)	—	0.0228 (J)	—	0.269	—	—	0.0873	—	—	0.0607 (J)	—	0.0771	—	—
RE35-04-54642	35-23187	0.66–1.51	SED	—	—	—	—	0.0316 (J)	—	—	—	—	—	—	—	—	—	—
RE35-04-54643	35-23188	0–0.3	SED	2.65	—	4.85	—	—	17.6	—	22.9	6.62 (J+)	11.4	—	0.433 (J)	17.8	—	—
RE35-04-54644	35-23188	0.3–0.59	SED	4.15	—	8.22	—	—	26.4	—	36.1	13.3 (J+)	13	—	—	28.4	—	—
RE35-04-54645	35-23189	0.23–0.49	SED	—	—	—	—	—	—	—	—	—	—	1.6	—	—	—	—
RE35-04-54646	35-23189	0.49–0.85	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.0337 (J)	—	—
RE35-04-54649	35-23191	0–0.39	SED	0.0105 (J)	—	—	—	—	—	—	0.0799	—	—	0.159 (J)	—	0.0764	—	—
RE35-04-54650	35-23191	0.39–1.38	SED	—	—	—	—	—	—	—	0.0479	—	—	—	—	0.0364	—	—
CAMO-01-0067	MO-10049	0–0.33	SED	—	—	—	—	0.0043	—	—	—	—	—	—	—	—	—	—
CAMO-01-0289	MO-10049	0–0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-01-0290	MO-10050	0–0.56	SED	—	0.017 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-01-0069	MO-10054	1.29–1.8	SED	—	—	—	0.15	—	—	—	—	—	—	—	—	—	—	0.019 (J)
CAMO-01-0070	MO-10055	0.36–1.25	SED	—	—	—	—	0.13	0.073 (J-)	—	—	—	—	—	—	0.077 (J-)	—	0.013 (J)
CAMO-01-0291	MO-10055	0.36–1.25	SED	—	0.032 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-4.9-20 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
0435-97-0193	35-02453	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	11	—
0435-97-0194	35-02453	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	0.006 (J)	14	—
0435-97-0195	35-02453	2–3.4	SED	—	—	—	—	—	—	—	—	—	—	—	—	4.6	—
0435-97-0198	35-02454	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	4.9	—
0435-97-0199	35-02454	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	0.004 (J+)	4.5	—
0435-97-0200	35-02454	2–3	SED	—	—	—	—	—	—	—	—	—	—	—	0.003 (J)	7.1	—
0435-97-0201	35-02455	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	27	—
0435-97-0202	35-02455	1–2	SED	—	0.24 (J)	—	—	—	—	—	—	—	0.057 (J)	—	0.008 (J+)	21	—
0435-97-0204	35-02456	0–1	SED	—	0.047 (J)	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0205	35-02456	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	0.002 (J)	—	0.002 (J)
0435-97-0208	35-02457	0–1	SED	—	—	—	—	—	—	—	—	—	—	—	—	12	—
0435-97-0209	35-02457	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	—	16	0.001 (J)
0435-97-0211	35-02458	0–1	SED	—	0.45 (J)	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0212	35-02458	1–2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0435-97-0274	35-02506	0–0	SED	—	—	0.11 (J)	—	—	—	—	—	0.085 (J)	—	0.12 (J)	—	—	—
0435-97-0158	35-02507	0–1	SED	—	0.038 (J)	—	—	—	—	—	—	—	—	—	—	17	—
RE35-04-54561	35-23144	0–0.56	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54563	35-23145	0.46–0.79	SED	—	—	0.09	—	—	—	—	—	—	—	0.108	—	—	—
RE35-04-54564	35-23145	0.79–1.05	SED	—	—	0.0194 (J)	—	—	—	—	—	—	—	0.0208 (J)	—	—	—
RE35-04-54566	35-23146	0.3–0.69	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54567	35-23147	0–0.36	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54570	35-23148	0.69–1.21	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54571	35-23149	0–0.46	SED	—	—	0.0337 (J)	—	—	—	—	—	0.0201 (J)	—	0.0568	—	—	—
RE35-04-54572	35-23149	0.46–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54577	35-23152	0–0.33	SED	—	0.029 (J)	0.0262 (J)	—	—	—	—	—	—	—	0.0284 (J)	—	—	—
RE35-04-54582	35-23154	1.48–2.46	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54585	35-23156	0–0.59	SED	—	—	0.0535	—	—	—	—	—	0.0443	—	0.13 (J)	—	—	—
RE35-04-54588	35-23157	0.56–0.92	SED	—	—	0.213	—	—	—	—	—	—	—	0.171	—	—	—
RE35-04-54589	35-23158	0.1–0.3	SED	—	—	0.0227 (J)	—	—	—	—	—	—	—	0.0219 (J)	—	—	—
RE35-04-54590	35-23158	0.3–0.49	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54593	35-23160	0–0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54597	35-23162	0–0.75	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54598	35-23162	0.75–1.15	SED	—	—	0.0292 (J)	—	—	—	—	—	—	—	0.0309 (J)	—	—	—
RE35-04-54599	35-23163	0–0.33	SED	—	—	0.117	0.0191 (J)	—	—	—	—	0.155	—	0.326 (J)	—	39	—
RE35-04-54600	35-23163	0.33–0.85	SED	—	—	—	—	—	—	—	—	—	—	—	—	26.7	—
RE35-04-54601	35-23164	0.07–0.49	SED	—	0.0278 (J)	0.0303 (J)	—	—	—	—	—	—	—	0.0291 (J)	—	—	—
RE35-04-54602	35-23164	0.49–0.92	SED	—	0.0335 (J)	0.0615	0.0076 (J)	—	—	—	—	0.0282 (J)	—	0.0571	—	—	—
RE35-04-54603	35-23165	0.13–0.39	SED	—	—	0.0611	0.0071 (J)	—	—	—	—	0.0298 (J)	—	0.0588	—	—	—

Table D-4.9-20 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Dibenzofuran	Di-n-butylphthalate	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methylnaphthalene[2-]	Naphthalene	Phenanthrene	Phenol	Pyrene	Toluene	TPH-DRO	Trichlorofluoromethane
RE35-04-54604	35-23165	0.39–1.21	SED	—	0.0279 (J)	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54605	35-23166	0.1–0.39	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54606	35-23166	0.39–0.89	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54607	35-23167	0–0.26	SED	—	—	0.0298 (J)	—	—	—	—	—	—	—	0.0353 (J)	—	—	—
RE35-04-54608	35-23167	0.26–0.46	SED	—	—	0.0261 (J)	—	—	—	—	—	—	—	0.0273 (J)	—	—	—
RE35-04-54611	35-23168	0–0.49	SED	—	—	0.0307 (J)	—	—	—	—	—	—	—	0.0467	—	—	—
RE35-04-54623	35-23178	0.07–0.26	SED	—	—	0.87	—	—	—	—	—	—	—	0.628	—	—	—
RE35-04-54624	35-23178	0.26–0.66	SED	—	—	0.131	—	—	—	—	—	—	—	0.119	—	—	—
RE35-04-54627	35-23180	0.2–0.39	SED	—	—	0.244	—	—	—	—	—	—	—	0.2	—	—	—
RE35-04-54628	35-23180	0.95–1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54631	35-23182	0–0.59	SED	—	—	0.0464	—	—	—	—	—	—	—	0.052	—	—	—
RE35-04-54632	35-23182	1.21–1.54	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54633	35-23183	0–0.95	SED	—	—	0.182	0.0125 (J)	—	—	—	—	0.113	—	0.207	—	—	—
RE35-04-54634	35-23183	1.48–1.97	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54635	35-23184	0–0.33	SED	—	—	0.0556	—	—	—	—	—	—	—	0.0537	—	—	—
RE35-04-54636	35-23184	0.79–1.21	SED	—	—	0.0391	—	—	—	—	—	—	—	0.0398	—	—	—
RE35-04-54637	35-23185	0–0.3	SED	0.0852 (J)	—	1.74	0.141	0.51	—	0.0363 (J)	0.106	1.3	—	2.29	—	—	—
RE35-04-54638	35-23185	0.3–0.69	SED	0.228 (J)	—	5.1	0.405	0.281	—	—	—	3.77	—	6.03	—	—	—
RE35-04-54639	35-23186	0.1–0.33	SED	—	—	0.191	—	—	—	—	—	—	—	0.168	—	—	—
RE35-04-54640	35-23186	0.33–0.49	SED	—	—	0.0603 (J)	—	—	—	—	—	—	—	0.0508 (J)	—	—	—
RE35-04-54641	35-23187	0.16–0.66	SED	—	—	0.154	0.0129 (J)	—	—	—	—	0.103	—	0.16	—	—	—
RE35-04-54642	35-23187	0.66–1.51	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
RE35-04-54643	35-23188	0–0.3	SED	1.25 (J)	—	39.8	1.35	6.94 (J)	—	—	0.733	27.3 (J)	—	—	—	—	—
RE35-04-54644	35-23188	0.3–0.59	SED	2.12 (J)	—	50.7	3.24	12.9 (J)	—	—	1.01	43 (J)	—	44.2	—	—	—
RE35-04-54645	35-23189	0.23–0.49	SED	—	—	0.0324 (J)	—	—	—	—	—	—	—	0.0244 (J)	—	—	—
RE35-04-54646	35-23189	0.49–0.85	SED	—	—	0.058	—	—	—	—	—	—	—	0.052	—	—	—
RE35-04-54649	35-23191	0–0.39	SED	—	—	0.12	0.0108 (J)	—	—	—	—	0.0889	—	0.138	—	—	—
RE35-04-54650	35-23191	0.39–1.38	SED	—	—	0.0676	—	—	—	—	—	0.0353	—	0.0588	—	—	—
CAMO-01-0067	MO-10049	0–0.33	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-01-0289	MO-10049	0–0.33	SED	—	—	—	—	—	0.0022 (J)	—	—	—	—	—	—	—	—
CAMO-01-0290	MO-10050	0–0.56	SED	—	—	—	—	—	0.0032 (J)	—	—	—	—	—	—	—	0.0021 (J)
CAMO-01-0069	MO-10054	1.29–1.8	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-01-0070	MO-10055	0.36–1.25	SED	—	—	0.17 (J-)	—	—	—	—	—	0.15 (J-)	—	—	—	—	—
CAMO-01-0291	MO-10055	0.36–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] — = Analyte not detected.

Table D-4.9-21
EPCs for Organic COPCs in the Mortandad Slope Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenaphthene	0–5	1.51	Nonparametric	95% Chebyshev (Mean, Sd)
Acetone	0–5	0.013	Gamma	95% Approximate Gamma UCL
Aniline	0–5	1.92	Nonparametric	95% Chebyshev (Mean, Sd)
Anthracene	0–5	1.60	Nonparametric	95% Chebyshev (Mean, Sd)
Aroclor-1242	0–5	0.035	Nonparametric	95% Chebyshev (Mean, Sd)
Aroclor-1254	0–5	0.183	Nonparametric	95% Chebyshev (Mean, Sd)
Aroclor-1260	0–5	0.086	Nonparametric	95% Chebyshev (Mean, Sd)
Benzo(a)anthracene	0–5	2.30	Nonparametric	95% Chebyshev (Mean, Sd)
Benzo(a)pyrene	0–5	1.87	Nonparametric	95% Chebyshev (Mean, Sd)
Benzo(b)fluoranthene	0–5	2.64	Nonparametric	95% Chebyshev (Mean, Sd)
Benzo(g,h,i)perylene	0–5	1.79	Nonparametric	95% Chebyshev (Mean, Sd)
Benzo(k)fluoranthene	0–5	1.95	Nonparametric	95% Chebyshev (Mean, Sd)
Benzoic acid	0–5	7.20	Nonparametric	95% Chebyshev (Mean, Sd)
Bis(2-ethylhexyl)phthalate	0–5	1.79	Nonparametric	95% Chebyshev (Mean, Sd)
Chloroaniline[4-]	0–5	2.91	Nonparametric	95% Chebyshev (Mean, Sd)
Chrysene	0–5	2.40	Nonparametric	95% Chebyshev (Mean, Sd)
DDE[4,4'-]	0–5	0.021	Nonparametric	95% Chebyshev (Mean, Sd)
DDT[4,4'-]	0–5	0.016	Gamma	95% Approximate Gamma UCL
Dibenz(a,h)anthracene	0–5	1.43	Nonparametric	95% Chebyshev (Mean, Sd)
Dibenzofuran	0–5	1.91	Nonparametric	95% Chebyshev (Mean, Sd)
Di-n-butylphthalate	0–5	1.80	Nonparametric	95% Chebyshev (Mean, Sd)
Fluoranthene	0–5	3.76	Nonparametric	95% Chebyshev (Mean, Sd)
Fluorene	0–5	1.47	Nonparametric	95% Chebyshev (Mean, Sd)
Indeno(1,2,3-cd)pyrene	0–5	1.77	Nonparametric	95% Chebyshev (Mean, Sd)
Isopropyltoluene[4-]	0–5	0.003	Nonparametric	95% Modified-t UCL
Methylene chloride	0–5	0.006	Gamma	95% Approximate Gamma UCL
Methylnaphthalene[2-]	0–5	1.73	Nonparametric	95% Chebyshev (Mean, Sd)
Naphthalene	0–5	1.44	Nonparametric	95% Chebyshev (Mean, Sd)
Pentachlorophenol	0–5	6.97	Nonparametric	95% Chebyshev (Mean, Sd)
Phenanthrene	0–5	3.21	Nonparametric	95% Chebyshev (Mean, Sd)
Phenol	0–5	1.92	Nonparametric	95% Chebyshev (Mean, Sd)
Pyrene	0–5	3.21	Nonparametric	95% Chebyshev (Mean, Sd)
Toluene	0–5	0.004	Normal	95% Student's-t UCL
TPH-DRO	0–5	5213	Nonparametric	95% Chebyshev (Mean, Sd)
Trichlorofluoromethane	0–5	0.004	Gamma	95% Approximate Gamma UCL

Table D-5.0-1
Soil, Fill, Tuff, and Sediment Samples Collected for Inorganic Chemical Analyses at Pratt Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Cyanide (total)	Metals
35-003(d)-00	AAB0996	35-02004	99-100	QBT2	—[a]	—	19619[b]
	AAB0997	35-02006	24-25	QBT3	—	—	19606
	AAB0984	35-02013	34-35	QBT3	—	—	17437
	0435-95-0208	35-02028	13.3-13.5	QBT3	—	—	1676
	0435-95-0209	35-02028	52.5-52.7	QBT2	—	—	1676
	XAAB4219	35-02028	54-55	QBT2	—	—	20046
	0435-95-0206	35-02028	133.3-133.5	QBT1V	—	—	1676
	0435-95-0207 (FD)	35-02028	133.3-133.5	QBT1V	—	—	1676
	XAAB4229	35-02028	133.5-134.5	QBT1V	—	—	20048
	XAAB4239	35-02028	199-200	QBT1G	—	—	20050
	XAAB4273	35-02028	298-299	QBO	—	—	20051
	AAB4221	35-02244	1-2	SED	—	—	19623
	AAB4235	35-02247	2-3	SED	—	—	19649
	0435-97-0043	35-02310	13.5-14.5	FILL	3102R	—	3102R
	0435-97-0044	35-02310	14.5-16.5	QBT3	3102R	—	3102R
	0435-97-0045 (FD)	35-02310	14.5-16.5	QBT3	3102R	—	3102R
	0435-97-0046	35-02310	19-20	QBT3	3102R	—	3102R
	0435-97-0047	35-02310	28.5-30	QBT3	3102R	—	3102R
	0435-97-0049	35-02311	13-14	FILL	3102R	—	3102R
	0435-97-0050	35-02311	14-15	QBT3	3102R	—	3102R
	0435-97-0051	35-02311	17.5-18.5	QBT3	3102R	—	3102R
	0435-97-0052	35-02311	29-30	QBT3	3102R	—	3102R
	0435-97-0054	35-02312	12.8-13.8	FILL	3109R	—	3109R
	0435-97-0055	35-02312	13.8-15	QBT3	3109R	—	3109R
	0435-97-0056	35-02312	17.5-18.5	QBT3	3109R	—	3109R
	0435-97-0057	35-02312	29-30	QBT3	3109R	—	3109R
	0435-97-0075	35-02370	3-4	SED	3112R	—	3112R
	0435-97-0076	35-02370	6.4-7.4	SED	3112R	—	3112R
	0435-97-0077	35-02370	7.4-9	QBT2	3112R	—	3112R
	0435-97-0078	35-02370	12.5-15	QBT2	3112R	—	3112R
	0435-97-0079 (FD)	35-02370	12.5-15	QBT2	3112R	—	3112R
	0435-97-0080	35-02370	17.5-18.5	QBT2	3112R	—	3112R
	0435-97-0059	35-02526	18.5-19.9	FILL	3083R	—	3083R
	0435-97-0060	35-02526	19.9-21	QBT3	3083R	—	3083R
	0435-97-0061	35-02526	22.5-23.5	QBT3	3083R	—	3083R
	0435-97-0062	35-02526	26.5-27.5	QBT3	3083R	—	3083R
	0435-97-0064	35-02527	18.5-19.5	FILL	3102R	—	3102R
	0435-97-0065	35-02527	19.5-20.5	QBT3	3102R	—	3102R
	0435-97-0066	35-02527	22.5-23.5	QBT3	3102R	—	3102R
	0435-97-0067	35-02527	26.5-27.5	QBT3	3102R	—	3102R
	0435-97-0069	35-02528	16.5-19.7	FILL	3083R	—	3083R
	0435-97-0070 (FD)	35-02528	16.5-19.7	FILL	3083R	—	3083R

Table D-5.0-1 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Cyanide (total)	Metals
	0435-97-0071	35-02528	19.7-21.5	QBT3	3083R	—	3083R
	0435-97-0072	35-02528	22.5-23.5	QBT3	3083R	—	3083R
	0435-97-0073	35-02528	26.5-27.5	QBT3	3083R	—	3083R
	RE35-05-58304	35-24400	5-5.6	ALLH	—	—	2940S
	RE35-05-58305	35-24400	8-8.6	QBT3	—	—	2940S
	RE35-05-58306	35-24401	0-0.43	SED	—	—	2970S
	RE35-05-58307	35-24401	0.43-1.02	SED	—	—	2970S
	RE35-05-58312	35-24402	0.82-1.28	SED	—	—	2970S
	RE35-05-58313	35-24402	1.94-2.2	SED	—	—	2970S
	RE35-05-58322	35-24404	0.82-1.28	SED	—	—	2970S
	RE35-05-58326	35-24405	0-0.92	SED	—	—	2970S
	RE35-05-58327	35-24405	0.92-1.94	SED	—	—	2970S
	RE35-05-58331	35-24406	0-0.59	SED	—	—	2970S
	RE35-05-58345	35-24410	9.5-10	ALLH	—	—	2970S
	RE35-05-58346	35-24410	11-12	QBT3	—	—	2970S
	RE35-05-58347	35-24411	19-20	QBT3	—	—	2963S
	RE35-05-58348	35-24411	39-40	QBT3	—	—	2963S
	RE35-05-58349	35-24411	59-60	QBT3	—	—	2963S
	RE35-05-58359 (FD)	35-24411	59-60	QBT3	—	—	2963S
	RE35-05-58350	35-24411	79-80	QBT3	—	—	2963S
	RE35-05-58351	35-24411	99-100	QBT2	—	—	2963S
	RE35-05-58352	35-24412	9-10	FILL	—	—	2963S
	RE35-05-58353	35-24412	19-20	QBT3	—	—	2963S
	RE35-05-58354	35-24412	29-30	QBT3	—	—	2963S
	RE35-05-58355	35-24413	9-10	QBT3	—	—	2951S
	RE35-05-58356	35-24413	19-20	QBT3	—	—	2951S
	RE35-05-58357	35-24413	29-30	QBT3	—	—	2951S
	RE35-05-58358 (FD)	35-24413	29-30	QBT3	—	—	2951S
	CAMO-98-0037	MO-00030	0-0.82	SED	—	4668R	4668R
	CAMO-98-0038	MO-00031	1.67-2.66	SED	—	4668R	4668R
	CAMO-98-0039	MO-00031	2.66-2.95	SED	—	4668R	4668R
	CAMO-98-0040	MO-00032	0-1.18	SED	—	4668R	4668R
	CAMO-98-0041	MO-00032	1.18-2.03	SED	—	4668R	4668R
	CAMO-98-0042	MO-00032	2.03-2.89	SED	—	4668R	4668R
	CAMO-98-0043	MO-00033	0-0.98	SED	—	4668R	4668R
	CAMO-98-0044	MO-00033	1.9-2.89	SED	—	4668R	4668R
	CAMO-98-0045	MO-00034	1.74-2.17	SED	—	4668R	4668R
35-009(d)	AAA6543	35-02048	0-0.5	ALLH	—	—	16748
	AAA6564	35-02057	5-8	QBT3	—	—	16776
	AAA6517	35-02059	7.5-8.5	ALLH	—	—	16748
	AAA6555	35-02062	19-20	QBT3	—	—	16748
	RE35-04-54084	35-22944	4-5	ALLH	—	—	2374S
	RE35-04-54085	35-22944	9-10	QBT3	—	—	2374S
	RE35-04-54086	35-22944	14-15	QBT3	—	—	2374S

Table D-5.0-1 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Cyanide (total)	Metals
35-016(k)-00	AAC1133	35-02112	0-0.5	ALLH	—	—	21435
	0435-97-0125	35-02502	0-1	FILL	—	—	3325R
	0435-97-0126	35-02502	1-2	QBT3	—	—	3325R
	0435-97-0129	35-02503	0-1	FILL	—	—	3325R
	0435-97-0130 (FD)	35-02503	0-1	FILL	—	—	3325R
	0435-97-0131	35-02503	1-2	QBT3	—	—	3325R
	RE35-04-54028	35-22927	1.5-2	ALLH	—	—	2409S
	RE35-04-54029	35-22927	4.5-5	QBT3	—	—	2409S
	RE35-04-54088 (FD)	35-22927	4.5-5	QBT3	—	2411S	2411S
	RE35-05-58336	35-24407	0-0.98	SED	—	—	2963S
	RE35-05-58337	35-24407	0.98-1.38	SED	—	—	2963S
	RE35-05-58339	35-24408	0-0.56	SED	—	—	2963S
35-016(m)	AAB4245	35-02031	2-3	ALLH	—	—	20292
	AAB4251 (FD)	35-02093	0-0.5	ALLH	—	—	20292
	AAB4246	35-02094	0-1	ALLH	—	—	20292
	AAB4247	35-02094	1-2	ALLH	—	—	20292
	AAB4248	35-02094	2-3	QBT3	—	—	20292
	RE35-05-58342	35-24409	0-1.08	SED	—	—	2970S
	RE35-05-58343	35-24409	1.08-2.13	SED	—	—	2970S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.0-2
Soil, Fill, Tuff, and Sediment Samples Collected for Radionuclide Analyses at Pratt Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Am-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
35-003(d)-00	AAB0993	35-02004	1-2	ALLH	—[a]	—	—	17373[b]	17373	—
	AAB0994	35-02004	9-10	ALLH	—	—	—	17373	17373	—
	AAB1457	35-02004	16-17	Qbt3	—	—	—	17373	17373	—
	AAB0995	35-02004	64-65	Qbt3	—	—	—	17373	17373	—
	AAB0996	35-02004	99-100	Qbt2	—	—	—	19560	19560	—
	AAB0989	35-02005	1-2	ALLH	—	—	—	19582	19582	—
	AAB1458	35-02005	15-16	Qbt3	—	—	—	19582	19582	—
	AAB0991	35-02005	34-35	Qbt3	—	—	—	19582	19582	—
	AAB0990	35-02005	49-50	Qbt3	—	—	—	19582	19582	—
	AAB0992	35-02005	99-100	Qbt2	—	19582	—	19582	19582	—
	AAB1459	35-02006	2-3	Qbt3	—	—	—	19577	19577	—
	AAB0997	35-02006	24-25	Qbt3	—	19577	—	19577	19577	—
	AAB0998	35-02006	54-55	Qbt3	—	—	—	19577	19577	—
	AAB0999	35-02006	69-70	Qbt3	—	—	—	19577	19577	—
	AAB1000	35-02006	99-100	Qbt2	—	—	—	—	19575	—
	AAB1037	35-02007	0.5-1.5	ALLH	—	—	—	17155	17155	—
	AAB1038	35-02007	39-40	Qbt3	—	—	—	17155	17155	—
	AAB1039	35-02007	64-65	Qbt3	—	17155	—	17155	17155	—
	AAB1040	35-02007	91-92	Qbt2	—	—	—	17155	17155	—
	AAB1041 (FD)	35-02007	91-92	Qbt2	—	—	—	17155	17155	—
	AAB1033	35-02008	1-2	ALLH	—	—	—	17372	17372	—
	AAB1460	35-02008	13.5-14.5	ALLH	—	17372	—	17372	17372	—
	AAB1034	35-02008	63.5-64.5	Qbt3	—	17372	—	17372	17372	—
	AAB1035	35-02008	74-75	Qbt3	—	—	—	17372	17372	—
	AAB1036	35-02008	99-100	Qbt2	—	—	—	17372	17372	—
	AAB0977	35-02009	1-2	ALLH	—	—	—	17295	17295	—
	AAB1029 (FD)	35-02009	1-2	ALLH	—	—	—	17295	17295	—
	AAB0978	35-02009	11-12	Qbt3	—	17295	—	17295	17295	—
	AAB0979	35-02009	80-81	Qbt2	—	—	—	17295	17295	—
	AAB0980	35-02009	99-100	Qbt2	—	—	—	17295	17295	—
	AAB0961	35-02010	1-2	ALLH	—	—	17188	17188	17188	—
	AAB0962	35-02010	13.2-14.2	Qbt3	—	—	17188	17188	17188	—
	AAB0963	35-02010	38-39	Qbt3	—	—	17188	17188	17188	—
	AAB0964	35-02010	90-95	Qbt3	—	—	17247	17247	17247	—
	AAB0966 (FD)	35-02010	90-95	Qbt3	—	—	17247	17247	17247	—
	AAB0965	35-02010	95-100	Qbt2	—	—	17247	17247	17247	—
	AAB1001	35-02011	1-2	ALLH	—	—	19560	19560	19560	—
	AAB1002	35-02011	10-11	ALLH	—	—	19560	19560	19560	—
	AAB1003	35-02011	24-25	Qbt3	—	—	19560	19560	19560	—
	AAB1004	35-02011	64-65	Qbt3	—	—	—	19577	19577	—

Table D-5.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Am-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAB1005	35-02011	99-100	Qbt2	—	19577	19577	19577	19577	—
	AAB0969	35-02012	1-2	ALLH	—	—	17247	17247	17247	—
	AAB0970	35-02012	20.5-21.5	Qbt3	—	—	17247	17247	17247	—
	AAB0971	35-02012	25.8-26.8	Qbt3	—	—	17247	17247	17247	—
	AAB0972	35-02012	30-35	Qbt3	—	—	17247	17247	17247	—
	AAB0973	35-02012	99-100	Qbt3	—	17155	17155	17155	17155	—
	AAB0981	35-02013	1-2	ALLH	—	—	17333	17333	17333	—
	AAB0982	35-02013	15-16	Qbt3	—	—	17333	17333	17333	—
	AAB0983 (FD)	35-02013	15-16	Qbt3	—	—	17333	17333	17333	—
	AAB0984	35-02013	34-35	Qbt3	—	17333	17333	17333	17333	—
	AAB0985	35-02013	64-65	Qbt3	—	—	17333	17333	17333	—
	AAB0986	35-02013	99-100	Qbt2	—	—	17333	17333	17333	—
	AAB4282	35-02028	0-0.5	SED	—	—	20163	20163	20163	—
	AAB4283	35-02028	6.5-7.5	Qbt3	—	—	—	20163	20163	—
	0435-95-0208	35-02028	13.3-13.5	Qbt3	—	—	—	—	—	—
	AAB4284	35-02028	14-15	Qbt3	—	—	20163	20163	20163	—
	AAB4285	35-02028	24-25	Qbt3	—	—	20163	20163	20163	—
	0435-95-0209	35-02028	52.5-52.7	Qbt2	—	—	—	—	—	—
	XAAB4219	35-02028	54-55	Qbt2	—	—	—	20160	20160	—
	0435-95-0206	35-02028	133.3-133.5	Qbt1v	—	—	—	—	—	—
	0435-95-0207 (FD)	35-02028	133.3-133.5	Qbt1v	—	—	—	—	—	—
	AAB4230 (FD)	35-02028	133.5-134.5	Qbt1v	—	—	20159	20159	20159	—
	XAAB4229	35-02028	133.5-134.5	Qbt1v	—	—	20159	20159	20159	—
	XAAB4239	35-02028	199-200	Qbt1g	—	20158	—	20158	20158	—
	XAAB4273	35-02028	298-299	Qbo	—	—	20155	20155	20155	—
	AAB4240	35-02030	0-0.5	ALLH	—	19594	—	19594	19594	—
	AAB1024	35-02208	0-0.5	ALLH	—	—	19975	19975	19975	—
	AAB1028	35-02209	0-0.5	ALLH	—	—	19975	19975	19975	—
	AAB0987 (FD)	35-02212	0-0.5	ALLH	—	—	19975	19975	19975	—
	AAB1044	35-02212	0-0.5	ALLH	—	—	19975	19975	19975	—
	RE35-07-75224	35-02214	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-75225	35-02214	3-3.5	ALLH	—	—	—	—	—	—
	AAB4217	35-02243	0-0.5	SED	—	—	—	19529	19529	—
	AAB4218	35-02243	1-2	SED	—	—	—	19529	19529	—
	AAB4219	35-02243	2-3	SED	—	—	—	19529	19529	—
	AAB4220	35-02244	0-0.5	SED	—	—	—	19529	19529	—
	AAB4221	35-02244	1-2	SED	—	—	—	—	19529	—
	AAB4222	35-02244	2-3	SED	—	—	—	19529	19529	—
	AAB4223	35-02245	0-0.5	SED	—	—	—	19529	19529	—
	AAB4224 (FD)	35-02245	0-0.5	SED	—	—	—	19529	19529	—
	AAB4226	35-02245	1-2	SED	—	—	—	19529	19529	—
	AAB4225	35-02245	2-3	SED	—	—	—	19529	19529	—
	AAB4227	35-02246	0-0.5	SED	—	—	—	19529	19529	—

Table D-5.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Am-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	AAB4228	35-02246	1-2	SED	—	—	—	19529	19529	—
	AAB4229	35-02246	2-3	SED	—	—	—	19529	19529	—
	AAB4233	35-02247	0-0.5	SED	—	—	—	19594	19594	—
	AAB4234	35-02247	1-2	SED	—	—	—	19594	19594	—
	AAB4235	35-02247	2-3	SED	—	—	—	19594	19594	—
	AAB4236	35-02248	0-0.5	SED	—	—	—	19594	19594	—
	AAB4237 (FD)	35-02248	0-0.5	SED	—	—	—	19594	19594	—
	AAB4238	35-02248	1-2	SED	—	—	—	19594	19594	—
	AAB4239	35-02248	2-3	SED	—	19594	—	19594	19594	—
	0435-95-0196	35-02281	0-2	FILL	—	—	—	—	—	—
	0435-97-0043	35-02310	13.5-14.5	FILL	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0044	35-02310	14.5-16.5	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0045 (FD)	35-02310	14.5-16.5	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0046	35-02310	19-20	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0047	35-02310	28.5-30	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0049	35-02311	13-14	FILL	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0050	35-02311	14-15	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0051	35-02311	17.5-18.5	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0052	35-02311	29-30	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0054	35-02312	12.8-13.8	FILL	—	3110R	3110R	3110R	3110R	3110R
	0435-97-0055	35-02312	13.8-15	Qbt3	—	3110R	3110R	3110R	3110R	3110R
	0435-97-0056	35-02312	17.5-18.5	Qbt3	—	3110R	3110R	3110R	3110R	3110R
	0435-97-0057	35-02312	29-30	Qbt3	—	3110R	3110R	3110R	3110R	3110R
	0435-97-0075	35-02370	3-4	SED	—	3113R	3113R	3113R	3113R	3113R
	0435-97-0076	35-02370	6.4-7.4	SED	—	3113R	3113R	3113R	3113R	3113R
	0435-97-0077	35-02370	7.4-9	Qbt2	—	3113R	3113R	3113R	3113R	3113R
	0435-97-0078	35-02370	12.5-15	Qbt2	—	3113R	3113R	3113R	3113R	3113R
	0435-97-0079 (FD)	35-02370	12.5-15	Qbt2	—	3113R	3113R	3113R	3113R	3113R
	0435-97-0080	35-02370	17.5-18.5	Qbt2	—	3113R	3113R	3113R	3113R	3113R
	0435-97-0059	35-02526	18.5-19.9	FILL	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0060	35-02526	19.9-21	Qbt3	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0061	35-02526	22.5-23.5	Qbt3	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0062	35-02526	26.5-27.5	Qbt3	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0064	35-02527	18.5-19.5	FILL	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0065	35-02527	19.5-20.5	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0066	35-02527	22.5-23.5	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0067	35-02527	26.5-27.5	Qbt3	—	3103R	3103R	3103R	3103R	3103R
	0435-97-0069	35-02528	16.5-19.7	FILL	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0070 (FD)	35-02528	16.5-19.7	FILL	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0071	35-02528	19.7-21.5	Qbt3	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0072	35-02528	22.5-23.5	Qbt3	—	3084R	3084R	3084R	3084R	3084R
	0435-97-0073	35-02528	26.5-27.5	Qbt3	—	3084R	3084R	3084R	3084R	3084R
	RE35-05-58304	35-24400	5-5.6	ALLH	2940S	2940S	—	2940S	2940S	2940S

Table D-5.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Am-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	RE35-05-58305	35-24400	8-8.6	Qbt3	2940S	2940S	—	2940S	2940S	2940S
	RE35-05-58306	35-24401	0-0.43	SED	—	2971S	—	2971S	—	2971S
	RE35-05-58307	35-24401	0.43-1.02	SED	—	2971S	—	2971S	—	2971S
	RE35-05-58311	35-24402	0-0.82	SED	—	—	—	—	—	—
	RE35-05-58312	35-24402	0.82-1.28	SED	—	2971S	—	2971S	—	2971S
	RE35-05-58313	35-24402	1.94-2.2	SED	—	2971S	—	2971S	—	2971S
	RE35-07-75230	35-24402	2.5-3	ALLH	—	—	—	—	—	6883S
	RE35-07-75611 (FD)	35-24402	2.5-3	ALLH	—	—	—	—	—	6881S
	RE35-07-75231	35-24402	4-4.5	ALLH	—	—	—	—	—	6883S
	RE35-05-58321	35-24404	0-0.82	SED	—	—	—	—	—	—
	RE35-05-58322	35-24404	0.82-1.28	SED	—	2971S	—	2971S	—	2971S
	RE35-05-58326	35-24405	0-0.92	SED	—	2971S	—	2971S	—	2971S
	RE35-05-58327	35-24405	0.92-1.94	SED	—	2971S	—	2971S	—	2971S
	RE35-07-75233	35-24405	2.5-3	Qbt3	—	—	—	—	—	6883S
	RE35-07-75232	35-24405	4-4.1	Qbt3	—	—	—	—	—	6883S
	RE35-05-58331	35-24406	0-0.59	SED	—	2971S	—	2971S	—	2971S
	RE35-05-58345	35-24410	9.5-10	ALLH	2971S	2971S	—	2971S	2971S	2971S
	RE35-05-58346	35-24410	11-12	Qbt3	2971S	2971S	—	2971S	2971S	2971S
	RE35-05-58347	35-24411	19-20	Qbt3	2964S	—	—	2964S	2964S	—
	RE35-05-58348	35-24411	39-40	Qbt3	2964S	—	—	2964S	2964S	—
	RE35-05-58349	35-24411	59-60	Qbt3	2964S	—	—	2964S	2964S	—
	RE35-05-58359 (FD)	35-24411	59-60	Qbt3	2964S	—	—	2964S	2964S	—
	RE35-05-58350	35-24411	79-80	Qbt3	2964S	—	—	2964S	2964S	—
	RE35-05-58351	35-24411	99-100	Qbt2	2964S	—	—	2964S	2964S	—
	RE35-05-58352	35-24412	9-10	FILL	—	—	—	—	—	2964S
	RE35-05-58353	35-24412	19-20	Qbt3	—	—	—	—	—	2964S
	RE35-05-58354	35-24412	29-30	Qbt3	—	—	—	—	—	2964S
	RE35-05-58355	35-24413	9-10	Qbt3	—	—	—	—	—	2952S
	RE35-05-58356	35-24413	19-20	Qbt3	—	—	—	—	—	2952S
	RE35-05-58357	35-24413	29-30	Qbt3	—	—	—	—	—	2952S
	RE35-05-58358 (FD)	35-24413	29-30	Qbt3	—	—	—	—	—	2952S
	RE35-07-75194	35-27421	0-1	ALLH	—	—	—	—	—	—
	RE35-07-75195	35-27421	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-75196	35-27422	0-1	ALLH	—	—	—	—	—	—
	RE35-07-75197	35-27422	2-2.5	ALLH	—	—	—	—	—	—
	CAMO-98-0037	MO-00030	0-0.82	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0038	MO-00031	1.67-2.66	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0039	MO-00031	2.66-2.95	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0040	MO-00032	0-1.18	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0041	MO-00032	1.18-2.03	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0042	MO-00032	2.03-2.89	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0043	MO-00033	0-0.98	SED	4671R	4671R	4671R	4671R	4671R	4671R
	CAMO-98-0044	MO-00033	1.9-2.89	SED	4671R	4671R	4671R	4671R	4671R	4671R

Table D-5.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Am-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	CAMO-98-0045	MO-00034	1.74-2.17	SED	4671R	4671R	4671R	4671R	4671R	4671R
35-009(d)	AAA6541	35-02046	0-0.5	ALLH	—	—	—	16721	16721	—
	AAA6542	35-02047	0-0.5	ALLH	—	—	—	16721	16721	—
	AAA6543	35-02048	0-0.5	ALLH	—	—	—	16721	16721	—
	AAA6564	35-02057	5-8	QBT3	—	—	—	16754	16754	—
	AAA6565	35-02057	8-10	QBT3	—	16754	—	16754	16754	—
	AAA6566	35-02057	10-15.2	QBT3	—	—	—	16754	16754	—
	AAA6567	35-02058	5-8	QBT3	—	—	—	16755	16755	—
	AAA6568	35-02058	8-10	QBT3	—	—	—	16755	16755	—
	AAA6569	35-02058	10-18.2	QBT3	—	—	—	16755	16755	—
	AAA6570 (FD)	35-02058	10-18.2	QBT3	—	—	—	16755	16755	—
	AAA6517	35-02059	7.5-8.5	ALLH	—	16721	—	16721	16721	—
	AAA6504	35-02059	1-2	ALLH	—	—	—	16721	16721	—
	AAA6518	35-02059	14-15	QBT3	—	—	—	16721	16721	—
	AAA6519	35-02059	17.5-18.5	QBT3	—	—	—	16721	16721	—
	AAA6520	35-02060	4-5	ALLH	—	—	—	16721	16721	—
	AAA6534	35-02060	7.5-8.5	ALLH	—	—	—	16721	16721	—
	AAA6535	35-02060	14-15	QBT3	—	—	—	16721	16721	—
	AAA6536	35-02060	17-18	QBT3	—	—	—	16721	16721	—
	AAA6547	35-02061	0.5-2.5	ALLH	—	16721	—	16721	16721	—
	AAA6548	35-02061	7.5-8.5	ALLH	—	—	—	16721	16721	—
	AAA6549	35-02061	14-15	QBT3	—	—	—	16721	16721	—
	AAA6550 (FD)	35-02061	14-15	QBT3	—	—	—	16721	16721	—
	AAA6551	35-02061	17-18	QBT3	—	—	—	16721	16721	—
	AAA6552	35-02062	1-2.5	ALLH	—	—	—	16721	16721	—
	AAA6553	35-02062	9-10	QBT3	—	—	—	16721	16721	—
	AAA6554	35-02062	14-15	QBT3	—	—	—	16721	16721	—
	AAA6555	35-02062	19-20	QBT3	—	—	—	16721	16721	—
	0435-97-0391	35-02556	0-1	ALLH	—	3509R	—	—	—	—
	0435-97-0392	35-02556	6.5-7.5	ALLH	—	3509R	—	—	—	—
	0435-97-0393	35-02556	7.5-8.5	QBT3	—	3509R	—	—	—	—
	0435-97-0394	35-02556	11.5-12.5	QBT3	—	3509R	—	—	—	—
	0435-97-0395	35-02557	0-1	ALLH	—	3509R	—	—	—	—
	0435-97-0396 (FD)	35-02557	0-1	ALLH	—	3509R	—	—	—	—
	0435-97-0397	35-02557	8.5-9.5	ALLH	—	3509R	—	—	—	—
	0435-97-0398	35-02557	9.5-10.5	QBT3	—	3509R	—	—	—	—
	0435-97-0399	35-02557	14-15	QBT3	—	3509R	—	—	—	—
	0435-97-0400	35-02558	0-0.5	ALLH	—	3510R	—	—	—	—
	0435-97-0403	35-02558	0.5-1.5	QBT3	—	3510R	—	—	—	—
	0435-97-0404	35-02559	0-1	ALLH	—	3510R	—	—	—	—
	0435-97-0406	35-02559	1-1.5	ALLH	—	3510R	—	—	—	—
	0435-97-0407	35-02559	1.5-2.5	QBT3	—	3510R	—	—	—	—
	RE35-04-54084	35-22944	4-5	ALLH	—	—	2375S	—	—	2375S

Table D-5.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media	Am-241	Gamma Spectroscopy	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	RE35-04-54085	35-22944	9-10	QBT3	—	—	2375S	—	—	2375S
	RE35-04-54086	35-22944	14-15	QBT3	—	—	2375S	—	—	2375S
35-016(k)-00	AAC1133	35-02112	0-0.5	ALLH	—	21436	—	21436	21436	—
	AAC1140	35-02214	0-1	ALLH	—	—	—	—	—	—
	RE35-07-75224	35-02214	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-75225	35-02214	3-3.5	ALLH	—	—	—	—	—	—
	0435-97-0125	35-02502	0-1	FILL	—	3326R	—	3326R	3326R	—
	0435-97-0126	35-02502	1-2	Qbt3	—	3326R	—	3326R	3326R	—
	RE35-07-76429	35-02502	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-76430	35-02502	3-3.5	ALLH	—	—	—	—	—	—
	0435-97-0129	35-02503	0-1	FILL	—	3326R	—	3326R	3326R	—
	0435-97-0130 (FD)	35-02503	0-1	FILL	—	3326R	—	3326R	3326R	—
	0435-97-0131	35-02503	1-2	Qbt3	—	3326R	—	3326R	3326R	—
	RE35-07-75607 (FD)	35-02503	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-76427	35-02503	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-76428	35-02503	3-3.5	ALLH	—	—	—	—	—	—
	RE35-04-54028	35-22927	1.5-2	ALLH	—	—	—	—	—	—
	RE35-04-54029	35-22927	4.5-5	Qbt3	—	—	—	—	—	—
	RE35-04-54088 (FD)	35-22927	4.5-5	Qbt3	—	—	—	—	—	—
	RE35-05-58336	35-24407	0-0.98	SED	—	—	—	—	—	2964S
	RE35-05-58337	35-24407	0.98-1.38	SED	—	—	—	—	—	2964S
	RE35-05-58339	35-24408	0-0.56	SED	—	—	—	—	—	2964S
	RE35-07-75194	35-27421	0-1	ALLH	—	—	—	—	—	—
	RE35-07-75195	35-27421	2-2.5	ALLH	—	—	—	—	—	—
	RE35-07-75196	35-27422	0-1	ALLH	—	—	—	—	—	—
	RE35-07-75197	35-27422	2-2.5	ALLH	—	—	—	—	—	—
35-016(m)	AAB4245	35-02093	0-0.5	ALLH	—	—	—	19594	19594	—
	AAB4251 (FD)	35-02093	0-0.5	ALLH	—	—	—	20284	20284	—
	AAB4246	35-02094	0-1	ALLH	—	—	—	19594	19594	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.0-3
Soil, Fill, Tuff, and Sediment Samples Collected for Organic Chemical Analyses at Pratt Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	SVOC	TPH-DRO	VOC
35-003(d)-00	AAB0989	35-02005	1-2	ALLH	—[a]	17307[b]	—	—	—	—
	AAB1002	35-02011	10-11	ALLH	—	17314	—	17314	—	—
	AAB4282	35-02028	0-0.5	SED	—	19836	19836	—	—	—
	AAB4283	35-02028	6.5-7.5	QBT3	—	19836	19836	19836	—	—
	AAB4284	35-02028	14-15	QBT3	—	19836	19836	19836	—	—
	AAB4285	35-02028	24-25	QBT3	—	19836	19836	19836	—	—
	XAAB4219	35-02028	54-55	QBT2	—	19902	19902	19902	—	—
	AAB4230 (FD)	35-02028	133.5-134.5	QBT1V	—	—	—	19901	—	—
	XAAB4229	35-02028	133.5-134.5	QBT1V	—	19901	19901	19901	—	—
	XAAB4239	35-02028	199-200	QBT1G	—	19926	19926	19926	—	—
	XAAB4273	35-02028	298-299	QBO	—	20031	20031	20031	—	—
	0435-95-0196	35-02281	0-2	FILL	—	—	—	1678	—	—
	RE35-05-58304	35-24400	5-5.6	ALLH	—	2940S	—	2940S	—	—
	RE35-05-58305	35-24400	8-8.6	QBT3	—	2940S	—	2940S	—	—
	RE35-05-58306	35-24401	0-0.43	SED	—	2969S	—	2969S	—	—
	RE35-05-58307	35-24401	0.43-1.02	SED	—	2969S	—	2969S	—	—
	RE35-05-58311	35-24402	0-0.82	SED	—	2969S	—	—	—	—
	RE35-05-58312	35-24402	0.82-1.28	SED	—	2969S	—	2969S	—	—
	RE35-05-58313	35-24402	1.94-2.2	SED	—	2969S	—	2969S	—	—
	RE35-05-58321	35-24404	0-0.82	SED	—	2969S	—	—	—	—
	RE35-05-58322	35-24404	0.82-1.28	SED	—	2969S	—	2969S	—	—
	RE35-05-58326	35-24405	0-0.92	SED	—	2969S	—	2969S	—	—
	RE35-05-58327	35-24405	0.92-1.94	SED	—	2969S	—	2969S	—	—
	RE35-05-58331	35-24406	0-0.59	SED	—	2969S	—	2969S	—	—
	RE35-05-58345	35-24410	9.5-10	ALLH	—	2969S	—	2969S	—	—
	RE35-05-58346	35-24410	11-12	QBT3	—	2969S	—	2969S	—	—
	RE35-05-58347	35-24411	19-20	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58348	35-24411	39-40	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58349	35-24411	59-60	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58359 (FD)	35-24411	59-60	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58350	35-24411	79-80	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58351	35-24411	99-100	QBT2	—	2962S	2962S	2962S	—	—
	RE35-05-58352	35-24412	9-10	FILL	—	2962S	2962S	2962S	—	—
	RE35-05-58353	35-24412	19-20	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58354	35-24412	29-30	QBT3	—	2962S	2962S	2962S	—	—
	RE35-05-58355	35-24413	9-10	QBT3	—	2950S	2950S	2950S	—	—
	RE35-05-58356	35-24413	19-20	QBT3	—	2950S	2950S	2950S	—	—
	RE35-05-58357	35-24413	29-30	QBT3	—	2950S	2950S	2950S	—	—
	RE35-05-58358 (FD)	35-24413	29-30	QBT3	—	2950S	2950S	2950S	—	—
	CAMO-98-0037	MO-00030	0-0.82	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0038	MO-00031	1.67-2.66	SED	—	4667R	4667R	4667R	—	—

Table D-5.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	PEST	SVOC	TPH-DRO	VOC
	CAMO-98-0039	MO-00031	2.66-2.95	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0040	MO-00032	0-1.18	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0041	MO-00032	1.18-2.03	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0042	MO-00032	2.03-2.89	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0043	MO-00033	0-0.98	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0044	MO-00033	1.9-2.89	SED	—	4667R	4667R	4667R	—	—
	CAMO-98-0045	MO-00034	1.74-2.17	SED	—	4667R	4667R	4667R	—	—
35-009(d)	0435-95-0191	35-02277	8-10	QBT3	—	—	—	—	—	1671
	0435-95-0192	35-02277	10-11	QBT3	—	—	—	—	—	1671
	RE35-04-54084	35-22944	4-5	ALLH	—	—	—	—	—	2373S
	RE35-04-54085	35-22944	9-10	QBT3	—	—	—	—	—	2373S
	RE35-04-54086	35-22944	14-15	QBT3	—	—	—	—	—	2373S
35-016(k)-00	AAC1140	35-02214	0-1	ALLH	—	—	—	21434	—	—
	RE35-07-75224	35-02214	2-2.5 ft	ALLH	6882S	—	—	—	—	—
	RE35-07-75225	35-02214	3-3.5 ft	ALLH	6882S	—	—	—	—	—
	0435-97-0125	35-02502	0-1	FILL	—	3324R	—	3324R	3324R	—
	0435-97-0126	35-02502	1-2	QBT3	—	3324R	—	3324R	3324R	3324R
	RE35-07-76429	35-02502	2-2.5 ft	ALLH	6893S	—	—	—	—	6893S
	RE35-07-76430	35-02502	3-3.5 ft	ALLH	6893S	—	—	—	—	6893S
	0435-97-0129	35-02503	0-1	FILL	—	3324R	—	3324R	3324R	—
	0435-97-0130 (FD)	35-02503	0-1	FILL	—	3324R	—	3324R	3324R	—
	0435-97-0131	35-02503	1-2	QBT3	—	3324R	—	3324R	3324R	3324R
	RE35-07-76427	35-02503	2-2.5 ft	ALLH	6893S	—	—	—	—	6893S
	RE35-07-76428	35-02503	3-3.5 ft	ALLH	6893S	—	—	—	—	6893S
	RE35-04-54028	35-22927	1.5-2	ALLH	—	2408S	—	2408S	2408S	—
	RE35-04-54029	35-22927	4.5-5	QBT3	—	2408S	—	2408S	2408S	—
	RE35-04-54088 (FD)	35-22927	4.5-5	QBT3	—	2410S	2410S	2410S	2410S	—
	RE35-05-58336	35-24407	0-0.98	SED	—	2962S	—	2962S	2962S	—
	RE35-05-58337	35-24407	0.98-1.38	SED	—	2962S	—	2962S	2962S	—
	RE35-05-58339	35-24408	0-0.56	SED	—	2962S	—	2962S	2962S	—
	RE35-07-75194	35-27421	0-1	ALLH	6882S	—	—	—	—	—
	RE35-07-75195	35-27421	2-2.5 ft	ALLH	6882S	—	—	—	—	—
	RE35-07-75196	35-27422	0-1	ALLH	6882S	—	—	—	—	—
	RE35-07-75197	35-27422	2-2.5 ft	ALLH	6882S	—	—	—	—	—
35-016(m)	AAB4245	35-02093	0-0.5	ALLH	—	—	—	19803	—	—
	AAB4246	35-02094	0-1	ALLH	—	—	—	19803	—	—
	AAB4247	35-02094	1-2	ALLH	—	—	—	19803	—	—
	AAB4248	35-02094	2-3	QBT3	—	—	—	19803	—	—
	RE35-05-58342	35-24409	0-1.08	SED	—	—	—	2969S	—	—
	RE35-05-58343	35-24409	1.08-2.13	SED	—	—	—	2969S	—	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-5.0-4
Summary of Inorganic Chemicals above BV or Detected in Soil, Fill, Tuff, and Sediment at Pratt Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Lithium	Mercury	Molybdenum	Nickel	Selenium	Silicon	Thallium	Titanium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	na[a]	na	0.4	19.3	14.7	na	22.3	na	0.1	na	15.4	1.52	na	0.73	na	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	na	na	1.63	7.14	4.66	na	11.2	na	0.1	na	6.58	0.3	na	1.10	na	63.5
Qbt1v Background Value (mg/kg)					8170	0.5	1.81	26.5	na	na	0.4	2.24	3.26	na	18.4	na	0.1	na	2	0.3	na	1.24	na	84.6
Qbt1g/Qbo/Qct Background Value (mg/kg)					3560	0.5	0.56	25.7	na	na	0.4	2.60	3.96	na	13.5	na	0.1	na	2	0.3	na	1.22	na	40.0
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	na	na	0.4	10.5	11.2	na	19.7	na	0.1	na	9.38	0.3	na	0.73	na	60.2
35-003(d)-00	AAB0996	35-02004	99.00-100.00	QBT2	—	4.2 (UJ)	—	—	—[b]	—	—	—	—	—	—	5 (J-)	—	0.9 (J-)	—	6.6 (UJ)	—	23.4 (UJ)	—	—
	AAB0997	35-02006	24.00-25.00	QBT3	—	4.2 (UJ)	—	—	—	—	—	—	—	—	—	1.5 (J-)	—	—	—	6.6 (UJ)	—	23.4 (UJ)	—	—
	AAB0984	35-02013	34.00-35.00	QBT3	—	2.1 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	3.6 (U)	—	17.9	—	—
	0435-95-0208	35-02028	13.30-13.50	QBT3	—	8.7 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0209	35-02028	52.50-52.70	QBT2	—	8.7 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	XAAB4219	35-02028	54.00-55.00	QBT2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.92 (UJ)	—	—	—	—
	0435-95-0206	35-02028	133.30-133.50	QBT1V	—	8.9 (U)	—	—	—	—	0.7 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	XAAB4229	35-02028	133.50-134.50	QBT1V	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 (UJ)	—	—	—	—
	XAAB4239	35-02028	199.00-200.00	QBT1G	—	—	—	—	—	—	—	—	—	—	—	—	0.11 (UJ)	—	—	0.94 (UJ)	—	1.4 (U)	—	—
	XAAB4273	35-02028	298.00-299.00	QBO	3630	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.93 (U)	—	—	—	—
	AAB4221	35-02244	1.00-2.00	SED	—	3.3 (UJ)	—	—	—	—	0.42 (J-)	—	—	—	—	4.3 (J-)	—	—	—	7.1 (UJ)	—	18.5 (UJ)	—	—
	AAB4235	35-02247	2.00-3.00	SED	—	4.5 (U)	—	—	—	—	2.1	—	11.4	—	—	4.2	—	—	—	7.1 (U)	—	25.2 (U)	—	—
	0435-97-0043	35-02310	13.50-14.50	FILL	—	3.7 (U)	—	—	2.4 (J)	—	—	—	—	1.1	—	—	—	—	—	—	22.5	—	122	—
	0435-97-0044	35-02310	14.50-16.50	QBT3	—	2.8 (U)	—	—	—	—	—	—	—	0.88	—	—	—	—	—	—	25.1	—	42.1	—
	0435-97-0046	35-02310	19.00-20.00	QBT3	—	3.2 (U)	—	—	—	—	—	—	—	3.3	—	—	—	—	—	—	22.2	—	44.3	—
	0435-97-0047	35-02310	28.50-30.00	QBT3	—	3.1 (U)	—	—	—	0.28	—	—	—	—	—	—	—	—	—	—	27.9	—	78.6	—
	0435-97-0049	35-02311	13.00-14.00	FILL	—	3.6 (U)	—	—	—	—	—	—	—	1.1	—	—	—	—	—	—	14.1	—	124	—
	0435-97-0050	35-02311	14.00-15.00	QBT3	—	2.8 (U)	—	—	—	—	—	—	—	1.3	—	—	—	—	—	—	27.2	—	46.4	—
	0435-97-0051	35-02311	17.50-18.50	QBT3	—	2.7 (U)	—	—	—	—	—	—	—	1.9	—	—	—	—	—	—	17.1	—	40.5	—
	0435-97-0052	35-02311	29.00-30.00	QBT3	—	3 (U)	—	—	—	—	—	—	—	1.8	—	—	—	—	—	—	23.6	—	64.4	—
	0435-97-0054	35-02312	12.80-13.80	FILL	—	3.6 (U)	—	—	1.7 (J)	—	—	—	—	1.3	—	—	—	—	—	—	31	—	43.4	—
	0435-97-0055	35-02312	13.80-15.00	QBT3	—	3.4 (U)	—	—	—	—	—	—	—	1.1	—	—	—	—	—	—	30.3	—	37.8	—
	0435-97-0056	35-02312	17.50-18.50	QBT3	—	3.5 (U)	—	—	—	—	—	—	—	1.7	—	—	—	—	—	—	22	—	26	—
	0435-97-0057	35-02312	29.00-30.00	QBT3	—	3.5 (U)	—	—	—	—	—	—	—	0.83	—	—	—	—	—	—	20.7	—	18.1	—
	0435-97-0075	35-02370	3.00-4.00	SED	—	3.4 (U)	—	—	2.3 (J)	—	—	—	—	0.72	—	—	1	—	—	—	22.8	—	158 (J)	—
	0435-97-0076	35-02370	6.40-7.40	SED	—	3.6 (U)	—	—	—	—	—	—	—	6.6	—	—	—	—	—	—	57.1	—	103 (J)	—
	0435-97-0077	35-02370	7.40-9.00	QBT2	—	3.3 (U)	—	—	—	—	—	—	—	2.6	—	—	—	—	—	—	11.2	—	33.6 (J)	—
	0435-97-0078	35-02370	12.50-15.00	QBT2	—	2.8 (U)	—	—	—	—	—	—	—	0.88	—	—	—	—	—	—	27.9	—	43.8 (J)	—
	0435-97-0080	35-02370	17.50-18.50	QBT2	—	3.1 (U)	—	—	—	—	—	—	—	1.3	—	—	—	—	—	—	19.2	—	43.1 (J)	—
	0435-97-0059	35-02526	18.50-19.90	FILL	—	2.8 (U)	—	—	—	—	0.42 (U)	—	—	1.6	—	—	—	—	—	—	26.3	—	75.2	—
	0435-97-0060	35-02526	19.90-21.00	QBT3	—	2.9 (U)	—	—	—	—	—	—	—	2.9	—	—	—	—	—	—	42	—	64.6	—
	0435-97-0061	35-02526	22.50-23.50	QBT3	—	2.7 (U)	—	—	—	—	—	—	—	2.9	—	—	—	—	—	—	39.1	—	62.6	—
	0435-97-0062	35-02526	26.50-27.50	QBT3	—	2.9 (U)	—	—	—	—	—	—	—	1.8	—	—	—	—	—	—	39.1	—	24.8	—
	0435-97-0064	35-02527	18.50-19.50	FILL	—	3.2 (U)	—	—	—	—	—	—	—	1.4	—	—	—	—	—	—	24.1	—	85.4	—
	0435-97-0065	35-02527	19.50-20.50	QBT3	—	2.8 (U)	—	—	—	—	—	—	—	1.8	—	—	—	—	—	—	16.3	—	122	—

Table D-5.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Lithium	Mercury	Molybdenum	Nickel	Selenium	Silicon	Thallium	Titanium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	na[a]	na	0.4	19.3	14.7	na	22.3	na	0.1	na	15.4	1.52	na	0.73	na	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	na	na	1.63	7.14	4.66	na	11.2	na	0.1	na	6.58	0.3	na	1.10	na	63.5
Qbt1v Background Value (mg/kg)					8170	0.5	1.81	26.5	na	na	0.4	2.24	3.26	na	18.4	na	0.1	na	2	0.3	na	1.24	na	84.6
Qbt1g/Qbo/Qct Background Value (mg/kg)					3560	0.5	0.56	25.7	na	na	0.4	2.60	3.96	na	13.5	na	0.1	na	2	0.3	na	1.22	na	40.0
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	na	na	0.4	10.5	11.2	na	19.7	na	0.1	na	9.38	0.3	na	0.73	na	60.2
	0435-97-0066	35-02527	22.50-23.50	QBT3	—	3.3 (U)	—	—	—	—	—	—	—	1	—	—	—	—	—	—	38	—	41.9	—
	0435-97-0067	35-02527	26.50-27.50	QBT3	—	3.3 (U)	—	—	—	—	—	—	—	0.53	—	—	—	—	—	—	21.8	—	35	—
	0435-97-0069	35-02528	16.50-19.70	FILL	—	2.8 (U)	—	—	1.2 (J)	—	0.42 (U)	—	—	1.3	—	—	0.5 (U)	—	—	—	35.1	—	101	—
	0435-97-0071	35-02528	19.70-21.50	QBT3	—	2.8 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27.7	—	16.5	—
	0435-97-0072	35-02528	22.50-23.50	QBT3	—	2.7 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26.8	—	17.2	—
	0435-97-0073	35-02528	26.50-27.50	QBT3	—	2.7 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	27.2	—	14.1	—
	RE35-05-58304	35-24400	5.00-5.60	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	51.9
	RE35-05-58305	35-24400	8.00-8.60	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.37 (U)	—	—	—	—
	RE35-05-58306	35-24401	0.00-0.43	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.587 (U)	—	—	—	—
	RE35-05-58307	35-24401	0.43-1.02	SED	—	—	—	162	—	—	0.576 (U)	—	—	—	—	—	—	—	—	0.448 (J)	—	—	—	—
	RE35-05-58312	35-24402	0.82-1.28	SED	—	—	—	—	—	—	0.622 (U)	—	—	—	—	—	0.206	—	—	0.622 (U)	—	—	—	—
	RE35-05-58313	35-24402	1.94-2.20	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.293	—	—	0.578 (U)	—	—	—	—
	RE35-05-58322	35-24404	0.82-1.28	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.149	—	—	0.964	—	—	—	—
	RE35-05-58326	35-24405	0.00-0.92	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.581 (U)	—	—	—	—
	RE35-05-58327	35-24405	0.92-1.94	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.66	—	—	—	—
	RE35-05-58331	35-24406	0.00-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.598 (U)	—	—	—	—
	RE35-05-58345	35-24410	9.50-10.00	ALLH	—	—	—	—	—	—	0.529 (U)	—	—	—	—	—	0.257	—	—	—	—	—	—	—
	RE35-05-58346	35-24410	11.00-12.00	QBT3	10100	—	—	—	—	—	—	7.99	5.61	—	—	—	0.13	—	—	—	—	—	—	—
	RE35-05-58347	35-24411	19.00-20.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.516 (U)	—	—	—	—
	RE35-05-58348	35-24411	39.00-40.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.523 (U)	—	—	—	—
	RE35-05-58349	35-24411	59.00-60.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.516 (U)	—	—	—	—
	RE35-05-58350	35-24411	79.00-80.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.73	—	—	—	—
	RE35-05-58351	35-24411	99.00-100.00	QBT2	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.521 (U)	—	—	—	—
	RE35-05-58352	35-24412	9.00-10.00	FILL	—	—	—	—	—	—	0.514 (U)	—	—	—	—	—	—	—	—	—	—	—	—	82.3
	RE35-05-58353	35-24412	19.00-20.00	QBT3	—	—	—	54.7	—	—	—	—	—	—	—	—	—	—	—	0.604	—	—	—	—
	RE35-05-58355	35-24413	9.00-10.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.502 (U)	—	—	—	—
	RE35-05-58356	35-24413	19.00-20.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.506 (U)	—	—	—	—
	RE35-05-58357	35-24413	29.00-30.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.61 (U)	—	—	—	—
	CAMO-98-0037	MO-00030	0.00-0.82	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.15	—	—	0.81 (U)	—	—	—	—
	CAMO-98-0038	MO-00031	1.67-2.66	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.45	—	—	0.69 (U)	—	—	—	—
	CAMO-98-0039	MO-00031	2.66-2.95	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.48	—	—	0.68 (U)	—	—	—	—
	CAMO-98-0040	MO-00032	0.00-1.18	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.59 (U)	—	—	—	—
	CAMO-98-0041	MO-00032	1.18-2.03	SED	—	—	—	—	—	—	—	—	—	—	—	—	1.6	—	—	0.6 (U)	—	—	—	—
	CAMO-98-0042	MO-00032	2.03-2.89	SED	—	—	—	—	—	—	—	—	—	—	—	—	1.3	—	—	0.6 (U)	—	—	—	—
	CAMO-98-0043	MO-00033	0.00-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.59 (U)	—	—	—	—
	CAMO-98-0044	MO-00033	1.90-2.89	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.59	—	—	0.6 (U)	—	—	—	—

Table D-5.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Boron	Bromide	Cadmium	Chromium	Copper	Fluoride	Lead	Lithium	Mercury	Molybdenum	Nickel	Selenium	Silicon	Thallium	Titanium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	na[a]	na	0.4	19.3	14.7	na	22.3	na	0.1	na	15.4	1.52	na	0.73	na	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	na	na	1.63	7.14	4.66	na	11.2	na	0.1	na	6.58	0.3	na	1.10	na	63.5
Qbt1v Background Value (mg/kg)					8170	0.5	1.81	26.5	na	na	0.4	2.24	3.26	na	18.4	na	0.1	na	2	0.3	na	1.24	na	84.6
Qbt1g/Qbo/Qct Background Value (mg/kg)					3560	0.5	0.56	25.7	na	na	0.4	2.60	3.96	na	13.5	na	0.1	na	2	0.3	na	1.22	na	40.0
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	na	na	0.4	10.5	11.2	na	19.7	na	0.1	na	9.38	0.3	na	0.73	na	60.2
	CAMO-98-0045	MO-00034	1.74-2.17	SED	—	—	—	—	—	—	—	—	13.2	—	—	—	0.32	—	11.5	0.67 (U)	—	—	—	—
35-009(d)	AAA6543	35-02048	0.00-0.50	ALLH	—	1.1 (UJ)	—	—	—	—	0.65 (U)	—	—	—	—	2.8 (J)	—	—	—	—	—	—	—	—
	AAA6564	35-02057	5.00-8.00	QBT3	13600	4.7 (UJ)	5.4	53.5	—	—	1.7	11.9	5.3 (J)	—	—	10.8	—	—	9.8	0.45 (U)	—	—	—	—
	AAA6517	35-02059	7.50-8.50	ALLH	—	1.1 (UJ)	—	—	—	—	0.64 (U)	—	—	—	—	3.4 (J)	—	—	—	—	—	—	—	—
	AAA6555	35-02062	19.00-20.00	QBT3	—	1 (UJ)	—	—	—	—	—	—	—	—	—	3.5 (J)	—	—	—	0.42 (U)	—	—	—	—
	RE35-04-54084	35-22944	4.00-5.00	ALLH	—	—	—	—	—	—	0.5 (U)	—	—	—	—	—	—	—	—	—	—	—	—	51.3
	RE35-04-54085	35-22944	9.00-10.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.389 (J)	—	—	—	—
	RE35-04-54086	35-22944	14.00-15.00	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.513 (U)	—	—	—	—
35-016(k)-00	AAC1133	35-02112	0.00-0.50	ALLH	—	—	—	—	—	—	1.2 (J)	—	54.1	—	29.2	—	0.12 (U)	—	—	—	—	1.2 (U)	—	573
	0435-97-0125	35-02502	0.00-1.00	FILL	—	4.9 (U)	—	—	—	—	0.49 (U)	—	—	—	—	—	—	—	—	—	—	—	—	114
	0435-97-0126	35-02502	1.00-2.00	QBT3	—	5.5 (U)	—	—	—	—	—	—	9.3	—	—	—	—	—	—	—	—	—	—	83
	0435-97-0129	35-02503	0.00-1.00	FILL	—	5.2 (U)	—	—	—	—	0.52 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-97-0131	35-02503	1.00-2.00	QBT3	—	5.7 (U)	—	—	—	—	—	—	4.8	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54029	35-22927	4.50-5.00	QBT3	—	—	—	—	—	—	—	30.8	—	—	—	—	—	—	—	0.559 (U)	—	—	—	—
	RE35-05-58336	35-24407	0.00-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	80.7
	RE35-05-58337	35-24407	0.98-1.38	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.308 (J)	—	—	—	—
	RE35-05-58339	35-24408	0.00-0.56	SED	—	—	—	—	—	—	—	—	—	—	—	—	1.04 (J)	—	—	0.616 (U)	—	—	—	—
35-016(m)	RE35-05-58342	35-24409	0.00-1.08	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.557 (U)	—	—	—	—
	RE35-05-58343	35-24409	1.08-2.13	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.55 (U)	—	—	—	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV, or not detected.

Table D-5.0-5
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil, Fill, Tuff, and Sediment at Pratt Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Thorium-228	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na	na	0.023	0.054	1.31	2.28	na	2.59	0.20	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na[a]	na	na	na	na	na	na	2.52	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	na	0.006	0.068	1.04	2.28	0.093	2.59	0.20	2.29
35-003(d)-00	AAB0994	35-02004	9-10	ALLH	—[b]	—	—	—	—	0.02	—	—	—	—	—	—
	AAB0995	35-02004	64-65	QBT3	—	—	—	—	0.059	0.029	—	—	—	—	—	—
	AAB0989	35-02005	1-2	ALLH	—	—	—	—	—	0.007 (J-)	—	—	—	—	—	—
	AAB1458	35-02005	15-16	QBT3	—	—	—	—	—	0.014 (J-)	—	—	—	—	—	—
	AAB0991	35-02005	34-35	QBT3	—	—	—	—	—	0.005 (J-)	—	—	—	—	0.101 (J-)	—
	AAB0992	35-02005	99-100	QBT2	—	—	—	0.456 (J-)	—	0.011 (J-)	—	—	—	—	—	—
	AAB0997	35-02006	24-25	QBT3	—	—	0.195 (J)	—	—	—	—	—	—	—	—	—
	AAB1460	35-02008	13.5-14.5	ALLH	—	0.837[c]	—	—	—	0.056	—	—	—	—	—	—
	AAB1036	35-02008	99-100	QBT2	—	—	—	—	—	0.072	—	—	—	—	—	—
	AAB0961	35-02010	1-2	ALLH	—	—	—	—	—	—	—	—	0.116	—	—	—
	AAB0962	35-02010	13.2-14.2	QBT3	—	—	—	—	—	0.099	—	—	0.573	—	—	—
	AAB0963	35-02010	38-39	QBT3	—	—	—	—	—	—	—	—	0.196	—	—	—
	AAB0964	35-02010	90-95	QBT3	—	—	—	—	—	—	—	—	0.437 (J)	—	—	—
	AAB0965	35-02010	95-100	QBT2	—	—	—	—	—	—	—	—	0.626 (J)	—	—	—
	AAB1001	35-02011	1-2	ALLH	—	—	—	—	—	—	—	—	0.127 (J-)	—	—	—
	AAB1002	35-02011	10-11	ALLH	—	—	—	—	—	—	—	—	0.193 (J-)	—	—	—
	AAB1003	35-02011	24-25	QBT3	—	—	—	—	—	—	—	—	7.704E-02 (J-)	—	—	—
	AAB1005	35-02011	99-100	QBT2	—	—	—	0.334 (J)	0.007 (J-)	—	—	—	0.261 (J-)	—	—	—
	AAB0981	35-02013	1-2	ALLH	—	—	—	—	—	—	—	—	0.186 (J)	—	—	—
	AAB0982	35-02013	15-16	QBT3	—	—	—	—	—	—	—	—	0.141 (J)	—	—	—
	AAB0984	35-02013	34-35	QBT3	—	—	—	—	—	—	—	—	4.414 (J)	—	—	—
	AAB0985	35-02013	64-65	QBT3	—	—	—	—	0.106	—	—	—	1.509 (J)	—	—	—
	AAB0986	35-02013	99-100	QBT2	—	—	—	—	—	—	—	—	0.405 (J)	—	—	—
	AAB4282	35-02028	0-0.50	SED	—	—	—	—	—	0.0902	—	—	—	—	—	—
	AAB4284	35-02028	14-15	QBT3	—	—	—	—	—	—	—	—	0.168	—	—	—
	AAB4285	35-02028	24-25	QBT3	—	—	—	—	—	—	—	—	9.563E-02	—	—	—
	XAAB4239	35-02028	199-200	QBT1G	—	—	—	—	—	—	—	8.986	—	—	—	—
	AAB4240	35-02030	0-0.5	ALLH	—	—	0.108	—	—	—	—	—	—	—	—	—
	AAB1024	35-02208	0-0.5	ALLH	—	—	—	—	—	—	—	—	0.168 (J-)	—	—	—
	AAB1028	35-02209	0-0.5	ALLH	—	—	—	—	—	0.1 (J-)	—	—	0.197 (J-)	—	—	—
	AAB1044	35-02212	0-0.5	ALLH	—	—	—	—	—	—	—	—	0.139 (J-)	—	—	—
	AAB4217	35-02243	0-0.5	SED	—	—	—	—	—	0.162 (J)	—	—	—	—	—	—
	AAB4222	35-02244	2-3	SED	—	—	—	—	—	0.07 (J)	—	—	—	—	—	—
	AAB4223	35-02245	0-0.5	SED	—	—	—	—	—	0.673 (J)	—	—	—	—	—	—
	AAB4226	35-02245	1-2	SED	—	—	—	—	—	1.002 (J)	—	—	—	—	—	—
	AAB4225	35-02245	2-3	SED	—	—	—	—	—	0.16 (J)	—	—	—	—	—	—
	AAB4227	35-02246	0-0.5	SED	—	—	—	—	—	0.545 (J)	—	—	—	—	—	—
	AAB4228	35-02246	1-2	SED	—	—	—	—	—	0.18 (J)	—	—	—	—	—	—
	AAB4229	35-02246	2-3	SED	—	—	—	—	—	0.11 (J)	—	—	—	—	—	—

Table D-5.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Thorium-228	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na	na	0.023	0.054	1.31	2.28	na	2.59	0.20	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na[a]	na	na	na	na	na	na	2.52	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	na	0.006	0.068	1.04	2.28	0.093	2.59	0.20	2.29
	AAB4238	35-02248	1-2	SED	—	—	—	—	0.02 (J-)	—	—	—	—	—	—	—
	0435-97-0043	35-02310	13.5-14.5	FILL	—	—	—	—	—	0.121	2.67	—	0.32	—	—	—
	0435-97-0044	35-02310	14.5-16.5	QBT3	—	—	—	—	—	—	2.18	—	0.16	—	—	—
	0435-97-0046	35-02310	19-20	QBT3	—	—	—	—	—	—	—	—	0.26	—	—	—
	0435-97-0047	35-02310	28.5-30	QBT3	—	—	—	—	—	—	—	—	1.88	—	—	—
	0435-97-0049	35-02311	13-14	FILL	—	—	—	—	—	0.578	3.19	—	0.43	—	—	—
	0435-97-0050	35-02311	14-15	QBT3	—	—	—	—	0.025	—	18.6	—	0.33	—	—	—
	0435-97-0051	35-02311	17.5-18.5	QBT3	—	—	—	—	—	—	—	—	0.23	—	—	—
	0435-97-0052	35-02311	29-30	QBT3	—	—	—	—	—	—	—	—	0.15	—	—	—
	0435-97-0054	35-02312	12.8-13.8	FILL	—	—	—	—	—	—	—	—	2.0094	—	—	—
	0435-97-0055	35-02312	13.8-15	QBT3	—	—	—	—	—	—	—	—	0.3662	—	—	—
	0435-97-0056	35-02312	17.5-18.5	QBT3	—	—	—	—	—	—	—	—	0.3864	—	—	—
	0435-97-0057	35-02312	29-30	QBT3	—	—	—	—	—	—	—	—	0.4182	—	0.1011	—
	0435-97-0075	35-02370	3-4	SED	—	5.3834	—	—	—	0.3423	38.4	—	0.211	—	—	—
	0435-97-0076	35-02370	6.4-7.4	SED	—	—	—	—	—	—	1.57	—	0.125	—	—	—
	0435-97-0077	35-02370	7.4-9	QBT2	—	—	—	—	—	—	0.933	—	0.148	—	—	—
	0435-97-0078	35-02370	12.5-15	QBT2	—	—	—	—	—	—	—	—	0.142	—	—	—
	0435-97-0080	35-02370	17.5-18.5	QBT2	—	—	—	—	—	—	—	—	0.196	—	0.0905	—
	0435-97-0059	35-02526	18.5-19.9	FILL	—	0.4838[c]	—	—	—	—	12.4	—	0.288	—	—	—
	0435-97-0060	35-02526	19.9-21	QBT3	—	0.0837	—	—	—	—	1.81	—	0.322	—	—	—
	0435-97-0061	35-02526	22.5-23.5	QBT3	—	—	—	—	—	—	—	—	0.284	—	—	—
	0435-97-0062	35-02526	26.5-27.5	QBT3	—	—	—	—	—	—	—	—	0.223	—	—	—
	0435-97-0064	35-02527	18.5-19.5	FILL	—	1.0515[c]	—	—	—	0.129	5.8	—	0.31	—	—	—
	0435-97-0065	35-02527	19.5-20.5	QBT3	—	—	—	—	—	—	2.45	—	0.21	—	—	—
	0435-97-0066	35-02527	22.5-23.5	QBT3	—	—	—	—	—	—	—	—	0.19	—	—	—
	0435-97-0067	35-02527	26.5-27.5	QBT3	1.221	—	—	—	—	—	—	—	0.2	—	—	—
	0435-97-0069	35-02528	16.5-19.7	FILL	—	—	—	—	—	0.104	3.16	—	0.379	—	—	—
	0435-97-0071	35-02528	19.7-21.5	QBT3	—	—	—	—	—	—	—	—	0.195	—	—	—
	0435-97-0072	35-02528	22.5-23.5	QBT3	—	—	—	—	—	—	—	—	0.261	—	0.0923	—
	0435-97-0073	35-02528	26.5-27.5	QBT3	—	—	—	—	—	—	—	—	0.207	—	—	—
	RE35-05-58304	35-24400	5-5.6	ALLH	—	0.161[c]	—	—	—	—	0.448	—	—	—	—	—
	RE35-05-58306	35-24401	0-0.43	SED	—	—	—	—	—	—	1.77	—	—	—	—	—
	RE35-05-58307	35-24401	0.43-1.02	SED	—	—	—	—	—	—	1.5	—	—	—	—	—
	RE35-05-58312	35-24402	0.82-1.28	SED	—	1.56	—	—	—	0.126	34.1	—	—	—	—	—
	RE35-05-58313	35-24402	1.94-2.2	SED	—	1.04	—	—	—	0.151	36.8	—	—	—	—	—
	RE35-07-75230	35-24402	2.5-3	ALLH	—	—	—	—	—	—	11.4	—	—	—	—	—
	RE35-07-75231	35-24402	4-4.5	ALLH	—	—	—	—	—	—	2.22	—	—	—	—	—
	RE35-05-58322	35-24404	0.82-1.28	SED	—	1.16	—	—	—	0.197	34.6	—	—	—	—	—
	RE35-05-58326	35-24405	0-0.92	SED	—	—	—	—	0.672	0.246	1.47	—	—	—	—	—
	RE35-05-58327	35-24405	0.92-1.94	SED	—	—	—	—	0.0701	—	5.95	—	—	—	—	—

Table D-5.0-5 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Strontium-90	Thorium-228	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na	na	0.023	0.054	1.31	2.28	na	2.59	0.20	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na[a]	na	na	na	na	na	na	2.52	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	na	0.006	0.068	1.04	2.28	0.093	2.59	0.20	2.29
	RE35-07-75233	35-24405	2.5-3	QBT3	—	—	—	—	—	—	16.9	—	—	—	—	—
	RE35-07-75232	35-24405	4-4.1	QBT3	—	—	—	—	—	—	4.87	—	—	—	—	—
	RE35-05-58331	35-24406	0-0.59	SED	—	—	—	—	0.0337	—	—	—	—	—	—	—
	RE35-05-58345	35-24410	9.5-1	ALLH	0.0749	0.972[c]	—	—	—	0.285	8.32	—	—	—	—	—
	RE35-05-58346	35-24410	11-12	QBT3	0.0705	0.75	—	—	—	0.24	6.33	—	—	—	—	—
	RE35-05-58347	35-24411	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.157	—
	RE35-05-58351	35-24411	99-100	QBT2	—	—	—	—	—	—	—	—	—	—	0.0941	—
	RE35-05-58352	35-24412	9-10	FILL	—	—	—	—	—	—	13.9	—	—	—	—	—
	RE35-05-58353	35-24412	19-20	QBT3	—	—	—	—	—	—	1.46	—	—	—	—	—
	RE35-05-58354	35-24412	29-30	QBT3	—	—	—	—	—	—	0.645	—	—	—	—	—
	CAMO-98-0037	MO-00030	0-0.82	SED	0.047	1.39	—	—	—	0.082	42.8	—	—	—	—	—
	CAMO-98-0038	MO-00031	1.67-2.66	SED	0.113	10.6	—	—	—	0.377	63	—	—	—	—	—
	CAMO-98-0039	MO-00031	2.66-2.95	SED	0.165	7.7	—	—	—	0.421	62	—	—	—	—	—
	CAMO-98-0040	MO-00032	0-1.18	SED	—	1	0.151	—	—	—	52.4	—	—	—	—	—
	CAMO-98-0041	MO-00032	1.18-2.03	SED	0.312	19.2	—	—	—	1.19	78	—	—	—	—	—
	CAMO-98-0042	MO-00032	2.03-2.89	SED	0.321	25	0.17	—	—	1.081	45.2	—	—	—	—	—
	CAMO-98-0043	MO-00033	0-0.98	SED	—	—	—	—	—	—	4.28	—	—	—	—	—
	CAMO-98-0044	MO-00033	1.90-2.89	SED	0.198	12.8	—	—	—	0.715	37.6	—	—	—	—	—
	CAMO-98-0045	MO-00034	1.74-2.17	SED	0.412	20.9	0.368	—	—	1.32	118	—	—	—	—	—
35-009(d)	0435-97-0404	35-02559	0-1	ALLH	—	0.335[c]	—	—	—	—	—	—	—	—	—	—
	RE35-04-54084	35-22944	4-5	ALLH	—	—	—	—	—	—	—	—	0.0308	—	—	—
	RE35-04-54085	35-22944	9-10	QBT3	—	—	—	—	—	—	—	—	0.0253	—	—	—
	RE35-04-54086	35-22944	14-15	QBT3	—	—	—	—	—	—	—	—	0.0154	—	—	—
35-016(k)-00	0435-97-0125	35-02502	0-1	FILL	—	—	—	—	—	0.0284	—	—	—	—	—	—
	RE35-05-58336	35-24407	0-0.98	SED	—	—	—	—	—	—	2.05	—	—	—	—	—
35-016(m)	AAB4246	35-02094	0-1	ALLH	—	—	—	—	—	—	—	—	—	2.761	—	3.64

Table D-5.0-6
Summary of Organic Chemicals Detected in Soil, Fill, Tuff, and Sediment at Pratt Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran
35-003(d)-00	AAB4282	35-02028	0-0.5	SED	—[a]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0196	35-02281	0-2	FILL	—	—	—	—	—	—	0.035 (J)[b]	0.044 (J)	0.032 (J)	—	0.038 (J)	—	—	0.037 (J)	—	—
	RE35-05-58304	35-24400	5-5.6	ALLH	—	—	—	—	—	0.002 (J)	—	—	—	—	—	—	0.0733 (J)	—	—	—
	RE35-05-58305	35-24400	8-8.6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.0449 (J)	—	—	—
	RE35-05-58306	35-24401	0-0.43	SED	—	—	—	—	—	0.0136	—	—	—	—	—	—	—	0.0264 (J)	—	—
	RE35-05-58307	35-24401	0.43-1.02	SED	—	—	—	—	0.0015 (J)	0.0038 (J)	—	—	—	—	—	0.506 (J)	—	—	—	—
	RE35-05-58311	35-24402	0-0.82	SED	—	—	—	—	0.0111	0.0862	—	—	—	—	—	—	—	—	—	—
	RE35-05-58312	35-24402	0.82-1.28	SED	0.015 (J)	—	—	0.0285 (J)	—	0.129	—	0.11	0.136	0.176	—	—	—	0.0975	—	—
	RE35-05-58313	35-24402	1.94-2.2	SED	0.138	—	—	—	—	0.02	—	—	—	—	—	—	—	—	—	—
	RE35-05-58321	35-24404	0-0.82	SED	—	—	—	—	—	0.0539	—	—	—	—	—	—	—	—	—	—
	RE35-05-58322	35-24404	0.82-1.28	SED	—	—	—	—	0.0062	0.0688	—	—	—	—	—	0.529 (J)	—	—	—	—
	RE35-05-58326	35-24405	0-0.92	SED	—	—	—	—	—	0.0234	—	0.049	—	—	—	—	—	—	—	—
	RE35-05-58327	35-24405	0.92-1.94	SED	—	—	—	—	—	0.0326	—	—	—	—	—	0.528 (J)	—	—	—	—
	RE35-05-58331	35-24406	0-0.59	SED	—	—	—	—	—	0.0036 (J)	—	—	—	—	—	—	—	—	—	—
	RE35-05-58345	35-24410	9.50-10	ALLH	—	—	—	—	0.0105	0.0755	—	—	—	—	—	—	—	—	—	—
	RE35-05-58346	35-24410	11-12	QBT3	—	—	—	—	0.0079	0.0463	—	—	—	—	—	—	—	—	—	—
	RE35-05-58348	35-24411	39-40	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58352	35-24412	9-10	FILL	—	—	—	—	0.0125 (J-)	0.0247 (J-)	—	—	—	—	—	—	—	—	—	—
	RE35-05-58353	35-24412	19-20	QBT3	—	—	—	—	—	0.0853 (J-)	—	—	—	—	—	—	—	—	—	—
	RE35-05-58355	35-24413	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.369 (J)	—	—	—	—
	CAMO-98-0037	MO-00030	0-0.82	SED	—	—	—	—	—	0.16	—	—	—	—	—	—	—	1.1 (J-)	—	—
	CAMO-98-0038	MO-00031	1.67-2.66	SED	—	—	—	—	—	0.19	—	—	—	—	—	—	—	0.54	—	—
	CAMO-98-0039	MO-00031	2.66-2.95	SED	—	—	—	—	—	0.067	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0040	MO-00032	0-1.18	SED	—	—	—	—	—	0.082	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0041	MO-00032	1.18-2.03	SED	—	—	—	—	—	0.6	—	—	—	—	—	—	—	0.69 (J)	—	—
	CAMO-98-0042	MO-00032	2.03-2.89	SED	—	—	—	—	—	0.053	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0043	MO-00033	0-0.98	SED	—	—	—	—	—	0.096	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0044	MO-00033	1.90-2.89	SED	—	—	—	—	—	0.38	0.37	0.36	0.35	—	—	—	—	0.61	—	—
	CAMO-98-0045	MO-00034	1.74-2.17	SED	—	—	—	—	—	0.43	—	—	—	—	—	—	—	—	—	—
35-009(d)	0435-95-0191	35-02277	8-10	QBT3	—	—	0.007 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54085	35-22944	9-10	QBT3	—	—	0.004 (J+)	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-5.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran
35-016(k)-00	AAC1140	35-02214	0-1	ALLH	1.7	—	—	1.4 (J)	—	—	2.4	2.5	2.6	1.9	2.2	—	—	2.8	0.86 (J)	0.8 (J)
	0435-97-0125	35-02502	0-1	FILL	1.2	0.041 (J)	—	1.9	—	0.31	2.9	2.5	2	2.1	2.3	—	0.15 (J)	3.1	0.55	0.56
	0435-97-0126	35-02502	1-2	QBT3	—	—	—	—	—	0.58 (J-)	—	—	—	0.56	—	—	1	—	—	—
	RE35-07-76429	35-02502	2-2.5	ALLH	—	—	0.00432 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-07-76430	35-02502	3-3.5	ALLH	0.856	—	—	0.798	—	—	0.91	—	—	0.528	—	—	—	0.668	—	—
	0435-97-0129	35-02503	0-1	FILL	0.12 (J)	—	—	0.22 (J)	—	0.91 (J-)	0.45	0.45	0.41	0.38	0.43	—	0.12 (J)	0.53	0.11 (J)	0.047 (J)
	0435-97-0131	35-02503	1-2	QBT3	—	—	—	—	—	0.15	—	—	—	—	—	—	1.8 (J)	—	—	—
	RE35-07-76427	35-02503	2-2.5	ALLH	—	—	0.00494 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-07-76428	35-02503	3-3.5	ALLH	—	—	0.0035 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54028	35-22927	1.5-2	ALLH	—	—	—	—	—	—	—	0.0256 (J)	0.0326 (J)	—	0.0209 (J)	—	—	0.0302 (J)	—	—
	RE35-04-54029	35-22927	4.5-5	QBT3	0.0253 (J)	—	—	0.0408	—	0.0022 (J)	—	0.0392	0.0392	—	—	—	—	—	—	—
	RE35-05-58336	35-24407	0-0.98	SED	0.803	—	—	1.25	—	0.378 (J-)	—	2.9	3.34	2.92 (J)	1.49	—	—	2.77	—	0.396 (J)
	RE35-05-58337	35-24407	0.98-1.38	SED	0.163 (J)	—	—	0.306 (J)	—	0.104 (J-)	—	0.823	0.654	1.47 (J)	0.256 (J)	—	—	0.654	—	—
	RE35-05-58339	35-24408	0-0.56	SED	—	—	—	—	0.101 (J-)	0.108 (J-)	—	0.88	0.693	1.71 (J)	0.273 (J)	—	—	0.696	—	—
	RE35-07-75196	35-27422	0-1	ALLH	—	—	—	0.103	—	—	0.187	0.183	0.268	0.126	—	—	—	0.167	—	—
	RE35-07-75197	35-27422	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0187	—	—
35-016(m)	AAB4246	35-02094	0-1	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58342	35-24409	0-1.08	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58343	35-24409	1.08-2.13	SED	—	—	—	—	—	—	—	—	—	—	—	33.8	—	—	—	—

Table D-5.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Di-n-octylphthalate	Endosulfan II	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Methylphenol[4-]	Naphthalene	Phenanthrene	Pyrene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichlorofluoromethane
35-003(d)-00	AAB4282	35-02028	0-0.5	SED	0.00566 (J)	—	—	—	0.0157 (J+)	—	—	—	—	—	—	—	—	—	—	—	—
	0435-95-0196	35-02281	0-2	FILL	—	—	—	—	—	0.11 (J)	—	—	—	—	—	0.11 (J)	0.1 (J)	—	—	—	—
	RE35-05-58304	35-24400	5-5.6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58305	35-24400	8-8.6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58306	35-24401	0-0.43	SED	—	—	—	—	—	0.0408	—	—	—	—	—	—	0.0535	—	—	—	—
	RE35-05-58307	35-24401	0.43-1.02	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58311	35-24402	0-0.82	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58312	35-24402	0.82-1.28	SED	—	—	—	—	—	0.2	0.0138 (J)	0.187	—	—	—	0.126	0.197	—	—	—	—
	RE35-05-58313	35-24402	1.94-2.2	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58321	35-24404	0-0.82	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58322	35-24404	0.82-1.28	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58326	35-24405	0-0.92	SED	—	—	—	—	—	0.0317 (J)	—	—	—	—	—	—	0.0315 (J)	—	—	—	—
	RE35-05-58327	35-24405	0.92-1.94	SED	—	—	—	—	—	0.0342 (J)	—	—	—	—	—	—	0.0419	—	—	—	—
	RE35-05-58331	35-24406	0-0.59	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58345	35-24410	9.5-10	ALLH	—	—	—	—	—	0.0441	—	—	—	—	—	0.0329 (J)	0.0534	—	—	—	—
	RE35-05-58346	35-24410	11-12	QBT3	—	—	—	—	—	0.0436	—	—	—	—	—	0.0323 (J)	0.0457	—	—	—	—
	RE35-05-58348	35-24411	39-40	QBT3	—	—	0.0263 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58352	35-24412	9-10	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58353	35-24412	19-20	QBT3	—	—	0.0421 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58355	35-24413	9-10	QBT3	—	—	—	0.24 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0037	MO-00030	0-0.82	SED	—	—	—	—	—	1.8 (J-)	—	—	—	—	—	1 (J-)	1.7 (J-)	—	—	—	—
	CAMO-98-0038	MO-00031	1.67-2.66	SED	—	—	—	—	—	0.9	—	—	—	—	—	0.56	0.82	—	—	—	—
	CAMO-98-0039	MO-00031	2.66-2.95	SED	—	—	—	—	—	0.39	—	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0040	MO-00032	0-1.18	SED	—	—	—	—	—	1 (J)	—	—	—	—	—	0.72 (J)	0.9 (J)	—	—	—	—
	CAMO-98-0041	MO-00032	1.18-2.03	SED	—	—	—	—	—	1.3 (J)	—	—	—	—	—	0.72 (J)	1.1 (J)	—	—	—	—
	CAMO-98-0042	MO-00032	2.03-2.89	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0043	MO-00033	0-0.98	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	CAMO-98-0044	MO-00033	1.90-2.89	SED	—	—	—	—	—	1	—	—	—	—	—	0.64	0.88	—	—	—	—
	CAMO-98-0045	MO-00034	1.74-2.17	SED	—	—	—	—	—	0.78 (J)	—	—	—	—	—	—	—	—	—	—	—
35-009(d)	0435-95-0191	35-02277	8-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-04-54085	35-22944	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-5.0-6 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Dieldrin	Diethylphthalate	Di-n-butylphthalate	Di-n-octylphthalate	Endosulfan II	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Methylphenol[4-]	Naphthalene	Phenanthrene	Pyrene	Toluene	TPH-DRO	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichlorofluoromethane
35-016(k)-00	AAC1140	35-02214	0-1	ALLH	—	—	—	—	—	5.4	1.2 (J)	1.9	0.24 (J)	—	1.2 (J)	5.7	5.3	—	—	—	—
	0435-97-0125	35-02502	0-1	FILL	—	—	—	—	—	6.7	1	1.8	0.32 (J)	0.038 (J)	1	6.9	8	—	—	—	—
	0435-97-0126	35-02502	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	0.45	—	—	0.001 (J+)	0.009 (J+)
	RE35-07-76429	35-02502	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00102 (J)	—	—	—
	RE35-07-76430	35-02502	3-3.5	ALLH	—	—	—	—	—	2.15	0.467	—	—	—	0.284	2.58	2.01	—	—	—	—
	0435-97-0129	35-02503	0-1	FILL	—	—	—	—	—	1.2	0.11 (J)	0.3 (J)	—	—	0.057 (J)	0.87	1.2	—	—	—	—
	0435-97-0131	35-02503	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.002 (J+)
	RE35-07-76427	35-02503	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	0.0226	—	—	—	—
	RE35-07-76428	35-02503	3-3.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	0.000493 (J)	—	—	—
	RE35-04-54028	35-22927	1.5-2	ALLH	—	—	—	—	—	0.0627	0.0043 (J)	—	—	—	—	0.0439	0.0666	—	—	—	—
	RE35-04-54029	35-22927	4.5-5	QBT3	—	—	—	—	—	0.108	0.0218 (J)	—	—	—	—	0.128	0.0971	—	—	—	—
	RE35-05-58336	35-24407	0-0.98	SED	—	—	—	—	—	6.92	0.698	2.8	—	—	0.528	5.93	7.18	—	208	—	—
	RE35-05-58337	35-24407	0.98-1.38	SED	—	—	—	—	—	1.55	0.172 (J)	1.51	—	—	—	1.46	1.56	—	102	—	—
	RE35-05-58339	35-24408	0-0.56	SED	—	—	—	—	—	1.5	0.0885 (J)	1.73	—	—	—	1.05	1.49	—	70.4	—	—
	RE35-07-75196	35-27422	0-1	ALLH	—	—	—	—	—	—	0.0536	—	—	—	0.0444	0.413	0.392	—	—	—	—
	RE35-07-75197	35-27422	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.0271	0.0399	—	—	—	—
35-016(m)	AAB4246	35-02094	0-1	ALLH	—	—	—	—	—	0.43	—	—	—	—	—	—	—	—	—	—	—
	RE35-05-58342	35-24409	0-1.08	SED	—	—	—	—	—	0.105 (J)	—	—	—	—	—	0.0779 (J)	0.118 (J)	—	—	—	—
	RE35-05-58343	35-24409	1.08-2.13	SED	—	0.435 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-5.1-1
EPCs for Inorganic COPCs at Consolidated Unit 35-003(d)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aluminum	0–1	9246	Normal	95% Student's-t UCL
	0–10	7018	Gamma	95% Approximate Gamma UCL
Antimony	0–1	0.0703	—[a]	Maximum detect
	0–10	1.06	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–1	95.01	Normal	95% Student's-t UCL
	0–10	69.5	Gamma	95% Approximate Gamma UCL
Boron	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	1.27	Nonparametric	95% Modified-t UCL
Cadmium	0–1	0.141	Nonparametric	95% KM (t)
	0–10	0.538	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	6.166	Normal	95% Student's-t UCL
	0–10	6.57	Normal	95% Student's-t UCL
Fluoride	0–1	NA[d]	n/a	Not a COPC for this depth
	0–10	6.6	—	Maximum detect
Lithium	0–1	NA	n/a	Not a COPC for this depth
	0–10	4.3	—	Maximum detect
Mercury	0–1	0.136	Gamma	95% Approximate Gamma UCL
	0–10	0.494	Gamma	95% Approximate Gamma UCL
Nickel	0–1	5.631	Normal	95% Student's-t UCL
	0–10	5.14	Gamma	95% Approximate Gamma UCL
Selenium	0–1	0.639	Normal	95% KM (t) UCL
	0–10	1.29	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	0.14	Normal	95% KM (t) UCL
	0–10	3.40	Nonparametric	95% Chebyshev (Mean, SD)
Titanium	0–1	NA	n/a	Not a COPC for this depth
	0–10	158	—	Maximum detect
Zinc	0–1	39.98	Normal	95% Student's-t UCL
	0–10	40.6	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.
[d] NA = Not analyzed for this analyte in this depth range.

Table D-5.1-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-003(d)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Americium-241	0–1	0.047	—[a]	Maximum detect
	0–10	0.174	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	0.975	Normal	95% KM (t) UCL
	0–10	10.9	Nonparametric	95% Chebyshev (Mean, SD)
Cobalt-60	0–1	0.137	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.121	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	0.124	Normal	95% KM (t) UCL
	0–10	0.068	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.21	Gamma	95% KM (Percentile Bootstrap) UCL
	0–10	0.404	Nonparametric	95% Chebyshev (Mean, SD)
Strontium-90	0–1	46.19	Gamma	95% KM (Chebyshev) UCL
	0–10	48.5	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	0.148	Normal	95% KM (t) UCL
	0–10	0.156	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.0525	Normal	95% KM (t) UCL
	0–10	0.050	Normal	95% Student's-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-5.1-3
EPCs for Organic COPCs at Consolidated Unit 35-003(d)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acenaphthene	0–1	0.015	—[a]	Maximum detect
	0–10	0.47	Nonparametric	95% Chebyshev (Mean, SD)
Anthracene	0–1	0.0285	—	Maximum detect
	0–10	0.47	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–1	0.00541	Normal	95% KM (t) UCL
	0–10	0.023	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1260	0–1	0.0865	Normal	95% KM (t) UCL
	0–10	0.161	Gamma	95% Approximate Gamma UCL
Benzo(a)anthracene	0–1	0.035	—	Maximum detect
	0–10	0.47	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–1	0.07	Normal	95% KM (t) UCL
	0–10	0.48	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–1	0.136	—	Maximum detect
	0–10	0.48	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–1	0.176	—	Maximum detect
	0–10	0.47	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–1	0.038	—	Maximum detect
	0–10	0.46	Nonparametric	95% Chebyshev (Mean, SD)

Table D-5.1-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Benzoic acid	0–1	0.529[b]	Normal	Maximum detect
	0–10	4.68	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	ND[c]	n/a[d]	Not a COPC for this depth
	0–10	0.506	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–1	0.391	Gamma	95% KM (t) UCL
	0–10	0.53	Nonparametric	95% Chebyshev (Mean, SD)
Dieldrin	0–1	0.00566	—	Maximum detect
	0–10	0.005	Lognormal	95% H-UCL
Di-n-octylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.514	Nonparametric	95% Chebyshev (Mean, SD)
Endosulfan II	0–1	0.0157	—	Maximum detect
	0–10	0.008	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	0.641	Gamma	95% KM (BCA) UCL
	0–10	0.81	Nonparametric	95% Chebyshev (Mean, SD)
Fluorene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.47	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.47	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	0.464	Normal	95% KM (t) UCL
	0–10	0.54	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	0.623	Gamma	95% KM (BCA) UCL
	0–10	0.74	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.
[b] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.
[c] ND = Not detected in this depth range.
[d] n/a = Not applicable.

Table D-5.2-1
EPCs for Inorganic COPCs at SWMU 35-009(d)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aluminum	0–1	2270	—[a]	Maximum detect
	0–10	13600	—	Maximum detect
Antimony	0–1	1.1(UJ)	—	Maximum detection limit
	0–10	4.7(UJ)	—	Maximum detection limit
Arsenic	0–1	1.1	—	Maximum detect
	0–10	5.4	—	Maximum detect
Barium	0–1	19.7	—	Maximum detect
	0–10	53.5	—	Maximum detect
Cadmium	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	1.7	—	Maximum detect
Lithium	0–1	2.8	—	Maximum detect
	0–10	10.8	—	Maximum detect
Nickel	0–1	ND	n/a	Not a COPC for this depth
	0–10	9.8	—	Maximum detect
Selenium	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.389	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-5.2-2
EPCs for Radionuclide COPCs at SWMU 35-009(d)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Cesium-137	0–1	0.335	—[a]	Maximum detect
	0–10	0.111	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.018	Lognormal	95% Chebyshev (MVUE)
Tritium	0–1	NA[d]	n/a	Not a COPC for this depth
	0–10	0.0308	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.
[d] NA = Not analyzed for this analyte in this depth range.

Table D-5.2-3
EPC for Organic COPC at SWMU 35-009(d)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.007	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-5.3-1
EPCs for Inorganic COPCs at Consolidated Unit 35-016(k)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Antimony	0–1	0.114	—[a]	Maximum detect
	0–10	2.95	Nonparametric	95% Chebyshev (Mean, SD)
Chromium	0–1	6.592	Normal	95% Student's-t UCL
	0–10	12.8	Gamma	95% Approximate Gamma UCL
Copper	0–1	40.92	Approximate Gamma	95% Approximate Gamma UCL
	0–10	25.1	Lognormal	95% H-UCL
Lead	0–1	21.68	Normal	95% Student's-t UCL
	0–10	15.6	Normal	95% Student's-t UCL
Mercury	0–1	0.575	Normal	95% KM (t) UCL
	0–10	1.04[b]	Nonparametric	Maximum detect
Selenium	0–1	0.304	Nonparametric	95% KM (t) UCL
	0–10	0.361	Gamma	95% Approximate Gamma UCL
Zinc	0–1	445.8	Approximate Gamma	95% Approximate Gamma UCL
	0–10	337	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.
[b] Recommended EPC exceeds the maximum detected value; the maximum detected value is used.

Table D-5.3-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-016(k)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Plutonium-239	0–1	0.03	—[a]	Maximum detect
	0–10	0.03	—	Maximum detect
Strontium-90	0–1	2.05	—	Maximum detect
	0–10	2.05	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-5.3-3
EPCs for Organic COPCs at Consolidated Unit 35-016(k)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acenaphthene	0–1	0.979	Normal	95% KM (t) UCL
	0–10	1.80	Nonparametric	95% Chebyshev (Mean, SD)
Acenaphthylene	0–1	0.041	—[a]	Maximum detect
	0–10	0.621	Lognormal	95% Chebyshev (MVUE) UCL
Acetone	0–1	NA[b]	n/a[c]	Not a COPC for this depth
	0–10	0.0049	—	Maximum detect
Anthracene	0–1	1.176	Normal	95% KM (t) UCL
	0–10	1.03	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–1	0.101	—	Maximum detect
	0–10	0.101	—	Maximum detect

Table D-5.3-3 (continued)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aroclor-1260	0–1	0.676	Normal	95% KM (t) UCL
	0–10	0.91	—	Maximum detect
Benzo(a)anthracene	0–1	1.758	Normal	95% KM (t) UCL
	0–10	1.54	Gamma	95% Adjusted Gamma UCL
Benzo(a)pyrene	0–1	2.072	Normal	95% KM (t) UCL
	0–10	1.78	Gamma	95% Adjusted Gamma UCL
Benzo(b)fluoranthene	0–1	2.09	Normal	95% KM (t) UCL
	0–10	1.75	Gamma	95% Adjusted Gamma UCL
Benzo(g,h,i)perylene	0–1	2.038	Normal	95% KM (t) UCL
	0–10	0.997	Nonparametric	95% Hall's Bootstrap UCL
Benzo(k)fluoranthene	0–1	1.56	Normal	95% KM (t) UCL
	0–10	1.28	Gamma	95% Adjusted Gamma UCL
Bis(2-ethylhexyl)phthalate	0–1	0.15	—	Maximum detect
	0–10	0.989	Gamma	95% Approximate Gamma UCL
Chrysene	0–1	3.1[d]	Gamma	Maximum detect
	0–10	1.90	Gamma	95% Adjusted Gamma UCL
Dibenz(a,h)anthracene	0–1	0.479	Normal	95% KM (t) UCL
	0–10	0.751	Nonparametric	95% Chebyshev (Mean, SD)
Dibenzofuran	0–1	0.769	Normal	95% KM (t) UCL
	0–10	1.36	Normal	95% Student's-t UCL
Fluoranthene	0–1	5.016	Normal	95% KM (t) UCL
	0–10	3.75	Gamma	95% Adjusted Gamma UCL
Fluorene	0–1	0.741	Normal	95% KM (t) UCL
	0–10	0.884	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–1	1.97	Normal	95% KM (t) UCL
	0–10	1.74	Gamma	95% Adjusted Gamma UCL
2-Methylnaphthalene	0–1	0.32	—	Maximum detect
	0–10	1.02	Gamma	95% Approximate Gamma UCL
4-Methylphenol	0–1	0.038	—	Maximum detect
	0–10	2.22	Nonparametric	95% Chebyshev (Mean, SD)
Naphthalene	0–1	0.709	Normal	95% KM (t) UCL
	0–10	0.864	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–1	4.739	Normal	95% KM (t) UCL
	0–10	3.43	Gamma	95% Adjusted Gamma UCL
Pyrene	0–1	5.309	Normal	95% KM (t) UCL
	0–10	3.88	Gamma	95% Adjusted Gamma UCL
TPH-DRO	0–1	166.5	Normal	95% KM (t) UCL
	0–10	208	—	Maximum detect
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.001	—	Maximum detect
Trichlorofluoromethane	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.009	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

[b] NA = Not analyzed for this analyte in this depth range.

[c] n/a = Not applicable.

Table D-5.4-1
EPCs for Radionuclide COPCs at SWMU 35-016(m)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Uranium-234	0–1	2.761	—[a]	Maximum detect
	0–10	2.761	—	Maximum detect
Uranium-238	0–1	3.64	—	Maximum detect
	0–10	3.61	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-5.4-2
EPCs for Organic COPCs at SWMU 35-016(m)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Benzoic acid	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	33.8	—[c]	Maximum detect
Diethylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.435	—	Maximum detect
Fluoranthene	0–1	0.43	—	Maximum detect
	0–10	0.43	—	Maximum detect
Phenanthrene	0–1	0.0799	—	Maximum detect
	0–10	0.0799	—	Maximum detect
Pyrene	0–1	0.118	—	Maximum detect
	0–10	0.118	—	Maximum detect

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-5.5-1
Soil and Fill Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
AAB4245	35-02093	0–0.5	ALLH	—[a]	20292[b]
AAA6543	35-02048	0–0.5	ALLH	—	16748
AAB4246	35-02094	0–1	ALLH	—	20292
AAB4247	35-02094	1–2	ALLH	—	20292
AAC1133	35-02112	0–0.5	ALLH	—	21435
0435-97-0125	35-02502	0–1	FILL	—	3325R
0435-97-0129	35-02503	0–1	FILL	—	3325R
RE35-04-54028	35-22927	1.5–2	ALLH	—	2409S
RE35-04-54084	35-22944	4–5	ALLH	—	2374S

[a] — = Analysis not requested.
[b] Analytical request number

Table D-5.5-2
Summary of Inorganic COPCs above BV or Detected in Soil and Fill, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Copper	Lithium	Zinc
Soil/Fill Background Value (mg/kg)				0.83	14.7	na[a]	48.8
AAA6543	35-02048	0.00–0.50	ALLH	1.1 (UJ)	—[b]	2.8 (J)	—
AAC1133	35-02112	0.00–0.50	ALLH	—	54.1	—	573
0435-97-0125	35-02502	0.00–1.00	FILL	4.9 (U)	—	—	114
0435-97-0129	35-02503	0.00–1.00	FILL	5.2 (U)	—	—	—
RE35-04-54084	35-22944	4.00–5.00	ALLH	—	—	—	51.3

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-5.5-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Cyanide	Metals
AAB4248	35-02094	2–3	Qbt3	—[a]	—	20292[b]
0435-97-0126	35-02502	1–2	Qbt3	—	—	3325R
0435-97-0131	35-02503	1–2	Qbt3	—	—	3325R
RE35-04-54029	35-22927	4.5–5	Qbt3	—	—	2409S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-4
Summary of Inorganic COPCs above BV or Detected in Tuff, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Chromium	Copper	Zinc
Qbt3, Qbt2 Background Value (mg/kg)				0.5	7.14	4.66	63.5
0435-97-0126	35-02502	1.00–2.00	Qbt3	5.5 (U)	—[a]	9.3	83
0435-97-0131	35-02503	1.00–2.00	Qbt3	5.7 (U)	—	4.8	—
RE35-04-54029	35-22927	4.50–5.00	Qbt3	—	30.8	—	—

[a] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-5.5-5
Sediment Samples Collected from 0-5 ft bgs for
Inorganic Chemical Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Cyanide	Metals
AAB4221	35-02244	1–2	SED	—[a]	—	19623[b]
AAB4235	35-02247	2–3	SED	—	—	19649
0435-97-0075	35-02370	3–4	SED	3112R	—	3112R
RE35-05-58306	35-24401	0–0.43	SED	—	—	2970S
RE35-05-58307	35-24401	0.43–1.02	SED	—	—	2970S
RE35-05-58312	35-24402	0.82–1.28	SED	—	—	2970S
RE35-05-58313	35-24402	1.94–2.2	SED	—	—	2970S
RE35-05-58322	35-24404	0.82–1.28	SED	—	—	2970S
RE35-05-58326	35-24405	0–0.92	SED	—	—	2970S
RE35-05-58327	35-24405	0.92–1.94	SED	—	—	2970S
RE35-05-58331	35-24406	0–0.59	SED	—	—	2970S
RE35-05-58336	35-24407	0–0.98	SED	—	—	2963S
RE35-05-58337	35-24407	0.98–1.38	SED	—	—	2963S
RE35-05-58339	35-24408	0–0.56	SED	—	—	2963S
RE35-05-58342	35-24409	0–1.08	SED	—	—	2970S
RE35-05-58343	35-24409	1.08–2.13	SED	—	—	2970S
CAMO-98-0037	MO-00030	0–0.82	SED	—	4668R	4668R
CAMO-01-0025	MO-00031	0–0.76	SED	9475R	—	9474R
CAMO-98-0038	MO-00031	1.67–2.66	SED	—	4668R	4668R
CAMO-98-0039	MO-00031	2.66–2.95	SED	—	4668R	4668R
CAMO-98-0040	MO-00032	0–1.18	SED	—	4668R	4668R
CAMO-98-0041	MO-00032	1.18–2.03	SED	—	4668R	4668R
CAMO-98-0042	MO-00032	2.03–2.89	SED	—	4668R	4668R
CAMO-98-0043	MO-00033	0–0.98	SED	—	4668R	4668R
CAMO-98-0044	MO-00033	1.9–2.89	SED	—	4668R	4668R
CAMO-98-0045	MO-00034	1.74–2.17	SED	—	4668R	4668R

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-6

Summary of Inorganic COPCs above BV or Detected in Sediment, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Boron	Bromide	Cadmium	Copper	Fluoride	Lithium	Mercury	Oxalate	Perchlorate	Selenium	Thallium	Titanium
Sediment Background Value (mg/kg)				0.83	na[a]	na	0.4	11.2	na	na	0.1	na	na	0.3	0.73	na
AAB4221	35-02244	1.00–2.00	SED	3.3 (UJ)	—[b]	—	0.42 (J-)	—	—	4.3 (J-)	—	—	—	7.1 (UJ)	18.5 (U)	—
AAB4235	35-02247	2.00–3.00	SED	4.5 (U)	—	—	2.1	11.4	—	4.2	—	—	—	7.1 (U)	25.2 (U)	—
0435-97-0075	35-02370	3.00–4.00	SED	3.4 (U)	2.3 (J)	—	—	—	0.72	—	1	—	—	—	—	158 (J)
RE35-05-58306	35-24401	0.00–0.43	SED	—	—	—	—	—	—	—	—	—	—	0.587 (U)	—	—
RE35-05-58307	35-24401	0.43–1.02	SED	—	—	—	0.576 (U)	—	—	—	—	—	—	0.448 (J)	—	—
RE35-05-58312	35-24402	0.82–1.28	SED	—	—	—	0.622 (U)	—	—	—	0.206	—	—	0.622 (U)	—	—
RE35-05-58313	35-24402	1.94–2.20	SED	—	—	—	—	—	—	—	0.293	—	—	0.578 (U)	—	—
RE35-05-58322	35-24404	0.82–1.28	SED	—	—	—	—	—	—	—	0.149	—	—	0.964	—	—
RE35-05-58326	35-24405	0.00–0.92	SED	—	—	—	—	—	—	—	—	—	—	0.581 (U)	—	—
RE35-05-58327	35-24405	0.92–1.94	SED	—	—	—	—	—	—	—	—	—	—	0.66	—	—
RE35-05-58331	35-24406	0.00–0.59	SED	—	—	—	—	—	—	—	—	—	—	0.598 (U)	—	—
RE35-05-58337	35-24407	0.98–1.38	SED	—	—	—	—	—	—	—	—	—	—	0.308 (J)	—	—
RE35-05-58339	35-24408	0.00–0.56	SED	—	—	—	—	—	—	—	1.04 (J)	—	—	0.616 (U)	—	—
RE35-05-58342	35-24409	0.00–1.08	SED	—	—	—	—	—	—	—	—	—	—	0.557 (U)	—	—
RE35-05-58343	35-24409	1.08–2.13	SED	—	—	—	—	—	—	—	—	—	—	0.55 (U)	—	—
CAMO-98-0037	MO-00030	0.00–0.82	SED	—	—	—	—	—	—	—	0.15	—	—	0.81 (U)	—	—
CAMO-01-0025	MO-00031	0.00–0.76	SED	—	—	0.366	—	17	0.874	—	0.21	0.415 (J)	0.0632 (J)	—	—	—
CAMO-98-0038	MO-00031	1.67–2.66	SED	—	—	—	—	—	—	—	0.45	—	—	0.69 (U)	—	—
CAMO-98-0039	MO-00031	2.66–2.95	SED	—	—	—	—	—	—	—	0.48	—	—	0.68 (U)	—	—
CAMO-98-0040	MO-00032	0.00–1.18	SED	—	—	—	—	—	—	—	—	—	—	0.59 (U)	—	—
CAMO-98-0041	MO-00032	1.18–2.03	SED	—	—	—	—	—	—	—	1.6	—	—	0.6 (U)	—	—
CAMO-98-0042	MO-00032	2.03–2.89	SED	—	—	—	—	—	—	—	1.3	—	—	0.6 (U)	—	—
CAMO-98-0043	MO-00033	0.00–0.98	SED	—	—	—	—	—	—	—	—	—	—	0.59 (U)	—	—
CAMO-98-0044	MO-00033	1.90–2.89	SED	—	—	—	—	—	—	—	0.59	—	—	0.6 (U)	—	—
CAMO-98-0045	MO-00034	1.74–2.17	SED	—	—	—	—	13.2	—	—	0.32	—	—	0.67 (U)	—	—

[a] na = Not available.

[b] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-5.5-7
EPCs for Inorganic COPCs in the Pratt Canyon Subarea

Analyte	Depth	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–5	1.278	Nonparametric	95% Chebyshev (Mean, Sd)
Boron	0–5	1.698	Nonparametric	95% Chebyshev (Mean, Sd)
Bromide	0–5	0.366	—[a]	Maximum detect
Cadmium	0–5	0.485	Nonparametric	95% Chebyshev (Mean, Sd)
Chromium	0–5	9.349	Nonparametric	95% Chebyshev (Mean, Sd)
Copper	0–5	13.637	Nonparametric	95% Chebyshev (Mean, Sd)
Fluoride	0–5	0.874	—	Maximum detect
Lithium	0–5	4.3	—	Maximum detect
Mercury	0–5	0.476	Nonparametric	95% Chebyshev (Mean, Sd)
Oxalate	0–5	0.415	—	Maximum detect
Perchlorate	0–5	0.0632	—	Maximum detect
Selenium	0–5	1.001	Nonparametric	95% Chebyshev (Mean, Sd)
Thallium	0–5	2.533	Nonparametric	95% Chebyshev (Mean, Sd)
Titanium	0–5	158	—	Maximum detect
Zinc	0–5	127.551	Nonparametric	95% Chebyshev (Mean, Sd)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-5.5-8
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR-90
AAB0993	35-02004	1-2	ALLH	—[a]	—	17373[b]	17373	—
AAB0989	35-02005	1-2	ALLH	—	—	19582	19582	—
AAB1037	35-02007	0.5-1.5	ALLH	—	—	17155	17155	—
AAB1033	35-02008	1-2	ALLH	—	—	17372	17372	—
AAB0977	35-02009	1-2	ALLH	—	—	17295	17295	—
AAB1029 (FD)	35-02009	1-2	ALLH	—	—	17295	17295	—
AAB0961	35-02010	1-2	ALLH	—	17188	17188	17188	—
AAB1001	35-02011	1-2	ALLH	—	19560	19560	19560	—
AAB0981	35-02013	1-2	ALLH	—	17333	17333	17333	—
AAA6621	35-02019	1-2	ALLH	—	—	17301	17301	—
AAA6637	35-02022	1.5-2.5	ALLH	—	—	17170	17170	—
AAB4240	35-02030	0-0.5	ALLH	19594	—	19594	19594	—
AAA6541	35-02046	0-0.5	ALLH	—	—	16721	16721	—
AAA6542	35-02047	0-0.5	ALLH	—	—	16721	16721	—
AAA6543	35-02048	0-0.5	ALLH	—	—	16721	16721	—
AAA6504	35-02059	1-2	ALLH	—	—	16721	16721	—
AAA6520	35-02060	4-5	ALLH	—	—	16721	16721	—
AAA6547	35-02061	0.5-2.5	ALLH	16721	—	16721	16721	—
AAA6552	35-02062	1-2.5	ALLH	—	—	16721	16721	—
AAB4245	35-02093	0-0.5	ALLH	—	—	19594	19594	—
AAB4251 (FD)	35-02093	0-0.5	ALLH	—	—	20284	20284	—
AAB4246	35-02094	0-1	ALLH	—	—	19594	19594	—
AAC1133	35-02112	0-0.5	ALLH	21436	—	21436	21436	—
AAB1024	35-02208	0-0.5	ALLH	—	19975	19975	19975	—

Table D-5.5-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR-90
AAB1028	35-02209	0-0.5	ALLH	—	19975	19975	19975	—
AAB0987 (FD)	35-02212	0-0.5	ALLH	—	19975	19975	19975	—
AAB1044	35-02212	0-0.5	ALLH	—	19975	19975	19975	—
0435-97-0125	35-02502	0-1	FILL	3326R	—	3326R	3326R	—
0435-97-0129	35-02503	0-1	FILL	3326R	—	3326R	3326R	—
0435-97-0130 (FD)	35-02503	0-1	FILL	3326R	—	3326R	3326R	—
0435-97-0391	35-02556	0-1	ALLH	3509R	—	—	—	—
0435-97-0395	35-02557	0-1	ALLH	3509R	—	—	—	—
0435-97-0396 (FD)	35-02557	0-1	ALLH	3509R	—	—	—	—
0435-97-0400	35-02558	0-0.5	ALLH	3510R	—	—	—	—
0435-97-0404	35-02559	0-1	ALLH	3510R	—	—	—	—
0435-97-0406	35-02559	1-1.5	ALLH	3510R	—	—	—	—
RE35-04-54084	35-22944	4-5	ALLH	—	2375S	—	—	2375S
RE35-07-75230	35-24402	2.5-3	ALLH	—	—	—	—	6883S
RE35-07-75611 (FD)	35-24402	2.5-3	ALLH	—	—	—	—	6881S
RE35-07-75231	35-24402	4-4.5	ALLH	—	—	—	—	6883S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-9
Summary of Radionuclide COPCs Detected or Detected above BV/FV
in Soil and Fill, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cobalt-60	Plutonium-239	Strontium-90	Tritium
Soil, Fill Background/Fallout Value (pCi/g)				na[a]	0.054	1.31	na
AAB0989	35-02005	1.00-2.00	ALLH	—[b]	0.007 (J-)[c]	—	—
AAB0961	35-02010	1.00-2.00	ALLH	—	—	—	0.1162723
AAB1001	35-02011	1.00-2.00	ALLH	—	—	—	0.1268485 (J-)
AAB0981	35-02013	1.00-2.00	ALLH	—	—	—	0.1860074 (J)
AAA6637	35-02022	1.50-2.50	ALLH	—	0.034[c]	—	—
AAB4240	35-02030	0.00-0.50	ALLH	0.108	—	—	—
AAA6552	35-02062	1.00-2.50	ALLH	—	—	—	—
AAB4246	35-02094	0.00-1.00	ALLH	—	—	—	—
AAB1024	35-02208	0.00-0.50	ALLH	—	—	—	0.1682597 (J-)
AAB1028	35-02209	0.00-0.50	ALLH	—	0.1 (J-)	—	0.1971649 (J-)
AAB1044	35-02212	0.00-0.50	ALLH	—	—	—	0.1394579 (J-)
0435-97-0125	35-02502	0.00-1.00	FILL	—	0.0284[c]	—	—
0435-97-0404	35-02559	0.00-1.00	ALLH	—	—	—	—
RE35-04-54084	35-22944	4.00-5.00	ALLH	—	—	—	0.0308
RE35-07-75230	35-24402	2.50-3.00	ALLH	—	—	11.4[c]	—
RE35-07-75231	35-24402	4.00-4.50	ALLH	—	—	2.22[c]	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.
[c] Detected and the FV does not apply (subsurface samples).

Table D-5.5-10
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	ISO_PU	ISO_U	SR-90
AAB1459	35-02006	2-3	QBT3	—	19577	19577	—
0435-97-0126	35-02502	1-2	QBT3	3326R	3326R	3326R	—
0435-97-0131	35-02503	1-2	QBT3	3326R	3326R	3326R	—
0435-97-0403	35-02558	0.5-1.5	QBT3	3510R	—	—	—
0435-97-0407	35-02559	1.5-2.5	QBT3	3510R	—	—	—
RE35-07-75233	35-24405	2.5-3	QBT3	—	—	—	6883S
E35-07-75232	35-24405	4-4.1	QBT3	—	—	—	6883S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-11
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Strontium-90
			Qbt3 Background/Fallout Value (pCi/g)	1
RE35-07-75233	35-24405	2.50-3.00	QBT3	16.9[a]
RE35-07-75232	35-24405	4.00-4.10	QBT3	4.87

[a] Detected and the FV does not apply (subsurface samples).

Table D-5.5-12
Sediment Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
AAB4282	35-02028	0–0.5	SED	—[a]	—	20163[b]	20163	—	20163	—
AAB4217	35-02243	0–0.5	SED	—	—	—	19529	—	19529	—
AAB4218	35-02243	1–2	SED	—	—	—	19529	—	19529	—
AAB4219	35-02243	2–3	SED	—	—	—	19529	—	19529	—
AAB4220	35-02244	0–0.5	SED	—	—	—	19529	—	19529	—
AAB4221	35-02244	1–2	SED	—	—	—	—	—	19529	—
AAB4222	35-02244	2–3	SED	—	—	—	19529	—	19529	—
AAB4223	35-02245	0–0.5	SED	—	—	—	19529	—	19529	—
AAB4226	35-02245	1–2	SED	—	—	—	19529	—	19529	—
AAB4225	35-02245	2–3	SED	—	—	—	19529	—	19529	—
AAB4227	35-02246	0–0.5	SED	—	—	—	19529	—	19529	—
AAB4228	35-02246	1–2	SED	—	—	—	19529	—	19529	—
AAB4229	35-02246	2–3	SED	—	—	—	19529	—	19529	—
AAB4233	35-02247	0–0.5	SED	—	—	—	19594	—	19594	—
AAB4234	35-02247	1–2	SED	—	—	—	19594	—	19594	—
AAB4235	35-02247	2–3	SED	—	—	—	19594	—	19594	—
AAB4236	35-02248	0–0.5	SED	—	—	—	19594	—	19594	—
AAB4238	35-02248	1–2	SED	—	—	—	19594	—	19594	—
AAB4239	35-02248	2–3	SED	—	19594	—	19594	—	19594	—

Table D-5.5-12 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
0435-97-0075	35-02370	3–4	SED	—	3113R	3113R	3113R	—	3113R	3113R
RE35-05-58306	35-24401	0–0.43	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58307	35-24401	0.43–1.02	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58312	35-24402	0.82–1.28	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58313	35-24402	1.94–2.2	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58322	35-24404	0.82–1.28	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58326	35-24405	0–0.92	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58327	35-24405	0.92–1.94	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58331	35-24406	0–0.59	SED	—	2971S	—	2971S	—	—	2971S
RE35-05-58336	35-24407	0–0.98	SED	—	—	—	—	—	—	2964S
RE35-05-58337	35-24407	0.98–1.38	SED	—	—	—	—	—	—	2964S
RE35-05-58339	35-24408	0–0.56	SED	—	—	—	—	—	—	2964S
CAMO-98-0037	MO-00030	0–0.82	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-01-0025	MO-00031	0–0.76	SED	—	9476R	9476R	9476R	9476R	9476R	9476R
CAMO-98-0038	MO-00031	1.67–2.66	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0039	MO-00031	2.66–2.95	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0040	MO-00032	0–1.18	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0041	MO-00032	1.18–2.03	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0042	MO-00032	2.03–2.89	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0043	MO-00033	0–0.98	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0044	MO-00033	1.9–2.89	SED	4671R	4671R	4671R	4671R	—	4671R	4671R
CAMO-98-0045	MO-00034	1.74–2.17	SED	4671R	4671R	4671R	4671R	—	4671R	4671R

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-13
Summary of Radionuclide COPCs Detected or Detected above BV/FV
in Sediment, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Plutonium-238	Plutonium-239	Strontium-90	Tritium
Sediment Background/Fallout Value (pCi/g)				0.04	0.9	na[a]	0.006	0.068	1.04	0.093
AAB4282	35-02028	0.00–0.50	SED	—	—[b]	—	—	0.0902	—	—
AAB4217	35-02243	0.00–0.50	SED	—	—	—	—	0.162 (J)	—	—
AAB4222	35-02244	2.00–3.00	SED	—	—	—	—	0.07 (J)	—	—
AAB4223	35-02245	0.00–0.50	SED	—	—	—	—	0.673 (J)	—	—
AAB4226	35-02245	1.00–2.00	SED	—	—	—	—	1.002 (J)	—	—
AAB4225	35-02245	2.00–3.00	SED	—	—	—	—	0.16 (J)	—	—
AAB4227	35-02246	0.00–0.50	SED	—	—	—	—	0.545 (J)	—	—
AAB4228	35-02246	1.00–2.00	SED	—	—	—	—	0.18 (J)	—	—
AAB4229	35-02246	2.00–3.00	SED	—	—	—	—	0.11 (J)	—	—
AAB4238	35-02248	1.00–2.00	SED	—	—	—	0.02 (J-)	—	—	—

Table D-5.5-13 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Cobalt-60	Plutonium-238	Plutonium-239	Strontium-90	Tritium
Sediment Background/Fallout Value (pCi/g)				0.04	0.9	na[a]	0.006	0.068	1.04	0.093
0435-97-0075	35-02370	3.00–4.00	SED	—	5.3834	—	—	0.3423	38.4	0.211
RE35-05-58306	35-24401	0.00–0.43	SED	—	—	—	—	—	1.77	—
RE35-05-58307	35-24401	0.43–1.02	SED	—	—	—	—	—	1.5	—
RE35-05-58312	35-24402	0.82–1.28	SED	—	1.56	—	—	0.126	34.1	—
RE35-05-58313	35-24402	1.94–2.20	SED	—	1.04	—	—	0.151	36.8	—
RE35-05-58322	35-24404	0.82–1.28	SED	—	1.16	—	—	0.197	34.6	—
RE35-05-58326	35-24405	0.00–0.92	SED	—	—	—	0.672	0.246	1.47	—
RE35-05-58327	35-24405	0.92–1.94	SED	—	—	—	0.0701	—	5.95	—
RE35-05-58331	35-24406	0.00–0.59	SED	—	—	—	0.0337	—	—	—
RE35-05-58336	35-24407	0.00–0.98	SED	—	—	—	—	—	2.05	—
CAMO-98-0037	MO-00030	0.00–0.82	SED	0.047	1.39	—	—	0.082	42.8	—
CAMO-01-0025	MO-00031	0.00–0.76	SED	47	176	0.096	21.1	45.3	2.45	0.128
CAMO-98-0038	MO-00031	1.67–2.66	SED	0.113	10.6	—	—	0.377	63	—
CAMO-98-0039	MO-00031	2.66–2.95	SED	0.165	7.7	—	—	0.421	62	—
CAMO-98-0040	MO-00032	0.00–1.18	SED	—	1	0.151	—	—	52.4	—
CAMO-98-0041	MO-00032	1.18–2.03	SED	0.312	19.2	—	—	1.19	78	—
CAMO-98-0042	MO-00032	2.03–2.89	SED	0.321	25	0.17	—	1.081	45.2	—
CAMO-98-0043	MO-00033	0.00–0.98	SED	—	—	—	—	—	4.28	—
CAMO-98-0044	MO-00033	1.90–2.89	SED	0.198	12.8	—	—	0.715	37.6	—
CAMO-98-0045	MO-00034	1.74–2.17	SED	0.412	20.9	0.368	—	1.32	118	—

[a] na = Not available.

[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-5.5-14
EPCs for Radionuclide COPCs in Pratt Canyon Subarea

Analyte	Depth	EPC (mg/kg)	Distribution	EPC Method
Americium-241	0–5	7.45	Nonparametric	95% Chebyshev (Mean, Sd)
Cesium-137	0–5	31.1	Nonparametric	95% Chebyshev (Mean, Sd)
Cobalt-60	0–5	0.0939	Nonparametric	95% Chebyshev (Mean, Sd)
Plutonium-238	0–5	1.73	Nonparametric	95% Chebyshev (Mean, Sd)
Plutonium-239	0–5	4.42	Nonparametric	95% Chebyshev (Mean, Sd)
Strontium-90	0–5	51.09	Nonparametric	95% Chebyshev (Mean, Sd)
Tritium	0–5	0.154	Nonparametric	95% Chebyshev (Mean, Sd)

Table D-5.5-15
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	SVOC	TPH-DRO	VOC
AAB0989	35-02005	1-2	ALLH	—[a]	17307[b]	—	—	—
AAB4245	35-02093	0-0.5	ALLH	—	—	19803	—	—
AAB4246	35-02094	0-1	ALLH	—	—	19803	—	—
AAB4247	35-02094	1-2	ALLH	—	—	19803	—	—
AAC1140	35-02214	0-1	ALLH	—	—	21434	—	—
RE35-07-75224	35-02214	2-2.5	ALLH	6882S	—	—	—	—
RE35-07-75225	35-02214	3-3.5	ALLH	6882S	—	—	—	—
0435-95-0196	35-02281	0-2	FILL	—	—	1678	—	—
0435-97-0125	35-02502	0-1	FILL	—	3324R	3324R	3324R	—
RE35-07-76429	35-02502	2-2.5	ALLH	6893S	—	—	—	6893S
RE35-07-76430	35-02502	3-3.5	ALLH	6893S	—	—	—	6893S
0435-97-0129	35-02503	0-1	FILL	—	3324R	3324R	3324R	—
0435-97-0130 (FD)	35-02503	0-1	FILL	—	3324R	3324R	3324R	—
RE35-07-75607 (FD)	35-02503	2-2.5	ALLH	6892S	—	—	—	—
RE35-07-76427	35-02503	2-2.5	ALLH	6893S	—	—	—	6893S
RE35-07-76428	35-02503	3-3.5	ALLH	6893S	—	—	—	6893S
RE35-04-54028	35-22927	1.5-2	ALLH	—	2408S	2408S	2408S	—
RE35-04-54084	35-22944	4-5	ALLH	—	—	—	—	2373S
RE35-07-75194	35-27421	0-1	ALLH	6882S	—	—	—	—
RE35-07-75195	35-27421	2-2.5	ALLH	6882S	—	—	—	—
RE35-07-75196	35-27422	0-1	ALLH	6882S	—	—	—	—
RE35-07-75197	35-27422	2-2.5	ALLH	6882S	—	—	—	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-16
Summary of Organic Chemicals Detected in Soil and Fill, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acenaphthylene	Acetone	Anthracene	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenz(a,h)anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Methylnaphthalene[2-]	Methylphenol[4-]	Naphthalene	Phenanthrene	Pyrene	Toluene
AAB4246	35-02094	0-1	ALLH	—[a]	—	—	—	—	—	—	—	—	—	—	—	—	—	0.43	—	—	—	—	—	—	—	—
AAC1140	35-02214	0-1	ALLH	1.7	—	—	1.4 (J)	—	2.4	2.5	2.6	1.9	2.2	—	2.8	0.86 (J)	0.8 (J)	5.4	1.2 (J)	1.9	0.24 (J)	—	1.2 (J)	5.7	5.3	—
0435-95-0196	35-02281	0-2	FILL	—	—	—	—	—	0.035 (J)	0.044 (J)	0.032 (J)	—	0.038 (J)	—	0.037 (J)	—	—	0.11 (J)	—	—	—	—	—	0.11 (J)	0.1 (J)	—
0435-97-0125	35-02502	0-1	FILL	1.2	0.041 (J)	—	1.9	0.31	2.9	2.5	2	2.1	2.3	0.15 (J)	3.1	0.55	0.56	6.7	1	1.8	0.32 (J)	0.038 (J)	1	6.9	8	—
RE35-07-76429	35-02502	2-2.5	ALLH	—	—	0.00432 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.00102 (J)
RE35-07-76430	35-02502	3-3	ALLH	0.856	—	—	0.798	—	0.91	—	—	0.528	—	—	0.668	—	—	2.15	0.467	—	—	—	0.284	2.58	2.01	—
0435-97-0129	35-02503	0-1	FILL	0.12 (J)	—	—	0.22 (J)	0.91 (J-)	0.45	0.45	0.41	0.38	0.43	0.12 (J)	0.53	0.11 (J)	0.047 (J)	1.2	0.11 (J)	0.3 (J)	—	—	0.057 (J)	0.87	1.2	—
RE35-07-76427	35-02503	2-2.5	ALLH	—	—	0.00494 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0226	—
RE35-07-76428	35-02503	3-3	ALLH	—	—	0.0035 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.000493 (J)
RE35-04-54028	35-22927	1.5-2	ALLH	—	—	—	—	—	—	0.0256 (J)	0.0326 (J)	—	0.0209 (J)	—	0.0302 (J)	—	—	0.0627	0.0043 (J)	—	—	—	—	0.0439	0.0666	—
RE35-07-75196	35-27422	0-1	ALLH	—	—	—	0.103	—	0.187	0.183	0.268	0.126	—	—	0.167	—	—	—	0.0536	—	—	—	0.0444	0.413	0.392	—
RE35-07-75197	35-27422	2-2.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.0187	—	—	—	—	—	—	—	—	0.0271	0.0399	—

[a] — = Analyte not detected.

Table D-5.5-17
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	SVOC	TPH-DRO	VOC
AAB4248	35-02094	2–3	Qbt3	—[a]	19803[b]	—	—
0435-97-0126	35-02502	1–2	Qbt3	3324R	3324R	3324R	3324R
0435-97-0131	35-02503	1–2	Qbt3	3324R	3324R	3324R	3324R
RE35-04-54029	35-22927	4.5–5	Qbt3	2408S	2408S	2408S	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-5.5-18
Summary of Organic Chemicals Detected in Tuff, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Phenanthrene	Pyrene	Trichloro-1,2,2-trifluoroethane[1,1,2-]	Trichlorofluoromethane
0435-97-0126	35-02502	1–2	Qbt3	—	—	—	—	0.58 (J-)	—	—	0.56	—	1	—	—	—	—	—	—	0.45	0.001 (J+)	0.009 (J+)
0435-97-0131	35-02503	1–2	Qbt3	—	—	—	—	0.15	—	—	—	—	1.8 (J)	—	—	—	—	—	—	—	—	0.002 (J+)

[a] — = Analyte not detected.

Table D-5.5-19
Sediment Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	TPH-DRO
AAB4282	35-02028	0–0.5	SED	19836[a]	19836	—[b]	—	—
RE35-05-58306	35-24401	0–0.43	SED	2969S	—	—	2969S	—
RE35-05-58307	35-24401	0.43–1.02	SED	2969S	—	—	2969S	—
RE35-05-58311	35-24402	0–0.82	SED	2969S	—	—	—	—
RE35-05-58312	35-24402	0.82–1.28	SED	2969S	—	—	2969S	—
RE35-05-58313	35-24402	1.94–2.2	SED	2969S	—	—	2969S	—
RE35-05-58321	35-24404	0–0.82	SED	2969S	—	—	—	—
RE35-05-58322	35-24404	0.82–1.28	SED	2969S	—	—	2969S	—
RE35-05-58326	35-24405	0–0.92	SED	2969S	—	—	2969S	—
RE35-05-58327	35-24405	0.92–1.94	SED	2969S	—	—	2969S	—
RE35-05-58331	35-24406	0–0.59	SED	2969S	—	—	2969S	—
RE35-05-58336	35-24407	0–0.98	SED	2962S	—	—	2962S	2962S
RE35-05-58337	35-24407	0.98–1.38	SED	2962S	—	—	2962S	2962S
RE35-05-58339	35-24408	0–0.56	SED	2962S	—	—	2962S	2962S
RE35-05-58342	35-24409	0–1.08	SED	—	—	—	2969S	—
RE35-05-58343	35-24409	1.08–2.13	SED	—	—	—	2969S	—
CAMO-98-0037	MO-00030	0–0.82	SED	4667R	4667R	—	4667R	—
CAMO-01-0025	MO-00031	0–0.76	SED	—	9473R	9473R	9473R	—
CAMO-98-0038	MO-00031	1.67–2.66	SED	4667R	4667R	—	4667R	—
CAMO-98-0039	MO-00031	2.66–2.95	SED	4667R	4667R	—	4667R	—
CAMO-98-0040	MO-00032	0–1.18	SED	4667R	4667R	—	4667R	—
CAMO-98-0041	MO-00032	1.18–2.03	SED	4667R	4667R	—	4667R	—
CAMO-98-0042	MO-00032	2.03–2.89	SED	4667R	4667R	—	4667R	—
CAMO-98-0043	MO-00033	0–0.98	SED	4667R	4667R	—	4667R	—
CAMO-98-0044	MO-00033	1.9–2.89	SED	4667R	4667R	—	4667R	—
CAMO-98-0045	MO-00034	1.74–2.17	SED	4667R	4667R	—	4667R	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-5.5-20
Summary of Organic Chemicals Detected in Sediment, 0-5 ft bgs, in the Pratt Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acenaphthene	Anthracene	Aroclor-1254	Aroclor-1260	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene
AAB4282	35-02028	0–0.5	SED	—[a]	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58306	35-24401	0–0.43	SED	—	—	—	0.0136	—	—	—	—	—	—	—	0.0264 (J)
RE35-05-58307	35-24401	0.43–1.02	SED	—	—	0.0015 (J)	0.0038 (J)	—	—	—	—	—	0.506 (J)	—	—
RE35-05-58311	35-24402	0–0.82	SED	—	—	0.0111	0.0862	—	—	—	—	—	—	—	—
RE35-05-58312	35-24402	0.82–1.28	SED	0.015 (J)	0.0285 (J)	—	0.129	—	0.11	0.136	0.176	—	—	—	0.0975
RE35-05-58313	35-24402	1.94–2.2	SED	0.138	—	—	0.02	—	—	—	—	—	—	—	—
RE35-05-58321	35-24404	0–0.82	SED	—	—	—	0.0539	—	—	—	—	—	—	—	—
RE35-05-58322	35-24404	0.82–1.28	SED	—	—	0.0062	0.0688	—	—	—	—	—	0.529 (J)	—	—
RE35-05-58326	35-24405	0–0.92	SED	—	—	—	0.0234	—	0.049	—	—	—	—	—	—
RE35-05-58327	35-24405	0.92–1.94	SED	—	—	—	0.0326	—	—	—	—	—	0.528 (J)	—	—
RE35-05-58331	35-24406	0–0.59	SED	—	—	—	0.0036 (J)	—	—	—	—	—	—	—	—
RE35-05-58336	35-24407	0–0.98	SED	0.803	1.25	—	0.378 (J-)	—	2.9	3.34	2.92 (J)	1.49	—	—	2.77
RE35-05-58337	35-24407	0.98–1.38	SED	0.163 (J)	0.306 (J)	—	0.104 (J-)	—	0.823	0.654	1.47 (J)	0.256 (J)	—	—	0.654
RE35-05-58339	35-24408	0–0.56	SED	—	—	0.101 (J-)	0.108 (J-)	—	0.88	0.693	1.71 (J)	0.273 (J)	—	—	0.696
RE35-05-58342	35-24409	0–1.08	SED	—	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58343	35-24409	1.08–2.13	SED	—	—	—	—	—	—	—	—	—	33.8	—	—
CAMO-98-0037	MO-00030	0–0.82	SED	—	—	—	0.16	—	—	—	—	—	—	—	1.1 (J-)
CAMO-01-0025	MO-00031	0–0.76	SED	—	—	—	0.03	—	—	—	—	—	—	0.091 (J)	0.073 (J)
CAMO-98-0038	MO-00031	1.67–2.66	SED	—	—	—	0.19	—	—	—	—	—	—	—	0.54
CAMO-98-0039	MO-00031	2.66–2.95	SED	—	—	—	0.067	—	—	—	—	—	—	—	—
CAMO-98-0040	MO-00032	0–1.18	SED	—	—	—	0.082	—	—	—	—	—	—	—	—
CAMO-98-0041	MO-00032	1.18–2.03	SED	—	—	—	0.6	—	—	—	—	—	—	—	0.69 (J)
CAMO-98-0042	MO-00032	2.03–2.89	SED	—	—	—	0.053	—	—	—	—	—	—	—	—
CAMO-98-0043	MO-00033	0–0.98	SED	—	—	—	0.096	—	—	—	—	—	—	—	—
CAMO-98-0044	MO-00033	1.90–2.89	SED	—	—	—	0.38	0.37	0.36	0.35	—	—	—	—	0.61
CAMO-98-0045	MO-00034	1.74–2.17	SED	—	—	—	0.43	—	—	—	—	—	—	—	—

Table D-5.5-20 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	DDT[4,4'-]	Dibenzofuran	Dieldrin	Endosulfan II	Fluoranthene	Fluorene	Indeno(1,2,3-cd)pyrene	Naphthalene	Phenanthrene	Pyrene	TPH-DRO
AAB4282	35-02028	0–0.5	SED	—	—	0.00566 (J)	0.0157 (J+)	—	—	—	—	—	—	—
RE35-05-58306	35-24401	0–0.43	SED	—	—	—	—	0.0408	—	—	—	—	0.0535	—
RE35-05-58307	35-24401	0.43–1.02	SED	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58311	35-24402	0–0.82	SED	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58312	35-24402	0.82–1.28	SED	—	—	—	—	0.2	0.0138 (J)	0.187	—	0.126	0.197	—
RE35-05-58313	35-24402	1.94–2.2	SED	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58321	35-24404	0–0.82	SED	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58322	35-24404	0.82–1.28	SED	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58326	35-24405	0–0.92	SED	—	—	—	—	0.0317 (J)	—	—	—	—	0.0315 (J)	—
RE35-05-58327	35-24405	0.92–1.94	SED	—	—	—	—	0.0342 (J)	—	—	—	—	0.0419	—
RE35-05-58331	35-24406	0–0.59	SED	—	—	—	—	—	—	—	—	—	—	—
RE35-05-58336	35-24407	0–0.98	SED	—	0.396 (J)	—	—	6.92	0.698	2.8	0.528	5.93	7.18	208
RE35-05-58337	35-24407	0.98–1.38	SED	—	—	—	—	1.55	0.172 (J)	1.51	—	1.46	1.56	102
RE35-05-58339	35-24408	0–0.56	SED	—	—	—	—	1.5	0.0885 (J)	1.73	—	1.05	1.49	70.4
RE35-05-58342	35-24409	0–1.08	SED	—	—	—	—	0.105 (J)	—	—	—	0.0779 (J)	0.118 (J)	—
RE35-05-58343	35-24409	1.08–2.13	SED	—	—	—	—	—	—	—	—	—	—	—
CAMO-98-0037	MO-00030	0–0.82	SED	—	—	—	—	1.8 (J-)	—	—	—	1 (J-)	1.7 (J-)	—
CAMO-01-0025	MO-00031	0–0.76	SED	0.01 (J)	—	—	—	0.17 (J)	—	—	—	0.14 (J)	—	—
CAMO-98-0038	MO-00031	1.67–2.66	SED	—	—	—	—	0.9	—	—	—	0.56	0.82	—
CAMO-98-0039	MO-00031	2.66–2.95	SED	—	—	—	—	0.39	—	—	—	—	—	—
CAMO-98-0040	MO-00032	0–1.18	SED	—	—	—	—	1 (J)	—	—	—	0.72 (J)	0.9 (J)	—
CAMO-98-0041	MO-00032	1.18–2.03	SED	—	—	—	—	1.3 (J)	—	—	—	0.72 (J)	1.1 (J)	—
CAMO-98-0042	MO-00032	2.03–2.89	SED	—	—	—	—	—	—	—	—	—	—	—
CAMO-98-0043	MO-00033	0–0.98	SED	—	—	—	—	—	—	—	—	—	—	—
CAMO-98-0044	MO-00033	1.90–2.89	SED	—	—	—	—	1	—	—	—	0.64	0.88	—
CAMO-98-0045	MO-00034	1.74–2.17	SED	—	—	—	—	0.78 (J)	—	—	—	—	—	—

[a] — = Analyte not detected.

Table D-5.5-21
EPCs for Organic COPCs in the Pratt Canyon Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC Method
Acenapthene	0–5	0.616	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Acenaphthylene	0–5	0.469	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Acetone	0–5	0.00494	—[a]	Maximum detect
Anthracene	0–5	0.662	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Aroclor-1254	0–5	0.044	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Aroclor-1260	0–5	0.254	Gamma	95% Approximate Gamma UCL
Benzo(a)anthracene	0–5	0.620	Gamma	95% Adjusted Gamma UCL
Benzo(a)pyrene	0–5	0.687	Gamma	95% Adjusted Gamma UCL
Benzo(b)fluoranthene	0–5	0.689	Gamma	95% Adjusted Gamma UCL
Benzo(g,h,i)perylene	0–5	0.651	Gamma	95% Adjusted Gamma UCL
Benzo(k)fluoranthene	0–5	0.735	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Benzoic Acid	0–5	7.88	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Bis(2-ethylhexyl)phthalate	0–5	0.730	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Chrysene	0–5	0.743	Gamma	95% Adjusted Gamma UCL
DDT[4,4'-]	0–5	0.008	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Dibenz(a,h)anthracene	0–5	0.499	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Dibenzofuran	0–5	0.961	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Dieldrin	0–5	0.003	lognormal	95% H-UCL
Diethylphthalate	0–5	0.948	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Endosulfan II	0–5	0.009	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Fluoranthene	0–5	1.39	Gamma	95% Adjusted Gamma UCL
Fluorene	0–5	0.555	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Indeno(1,2,3-cd)pyrene	0–5	0.676	Gamma	95% Adjusted Gamma UCL
Methylnaphthalene[2-]	0–5	0.590	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Methylphenol[4-]	0–5	1.02	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Naphthalene	0–5	0.549	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Phenanthrene	0–5	1.79	Nonparametric	95% Chebyshev (Mean, Sd) UCL
Pyrene	0–5	1.36	Gamma	95% Adjusted Gamma UCL
Toluene	0–5	0.003	Nonparametric	95% Chebyshev (Mean, Sd) UCL
TPH-DRO	0–5	208	—	Maximum detect
Trichloro-1,2,2-trifluoroethane[1,1,2-]	0–5	0.001	—	Maximum detect
Trichlorofluoromethane	0–5	0.009	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-6.0-1
Soil, Fill, and Tuff Samples Collected for Inorganic Chemical Analyses at Ten Site Canyon Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Metals
35-010(a)-99	AAB1509	35-02069	9-10	QBT3	19617[a]
	0435-95-0115	35-02193	2-3	ALLH	71
	AAB1517	35-02216	8-9	ALLH	19615
	0435-97-0226	35-02466	4-5	QBT3	3372R
	0435-97-0229	35-02467	1.5-2.5	QBT3	3372R
	0435-97-0232	35-02468	1.5-2.5	QBT3	3372R
	0435-97-0235	35-02469	3.8-4.5	QBT3	3372R
	0435-97-0238	35-02470	1.5-2.5	QBT3	3372R
	0435-97-0242	35-02471	4-5	QBT3	3396R
	0435-97-0245	35-02472	1.5-2.5	QBT3	3396R
	0435-97-0246 (FD)	35-02472	1.5-2.5	QBT3	3396R
	0435-97-0249	35-02473	3.2-4.2	QBT3	3396R
	0435-97-0253	35-02474	1.5-2.7	QBT3	3396R
	0435-97-0254 (FD)	35-02474	1.5-2.7	QBT3	3396R
	0435-97-0257	35-02475	5-5.9	QBT3	3396R
	0435-97-0260	35-02476	0.66-1.5	QBT3	3406R
	0435-97-0263	35-02477	0.67-1.5	QBT3	3406R
	0435-97-0266	35-02478	4-5	QBT3	3406R
	0435-97-0270	35-02479	1-2	QBT3	3406R
	0435-97-0273	35-02480	0.75-1.5	QBT3	3406R
	0435-97-0133	35-02481	0-0.5	FILL	3325R
	0435-97-0134	35-02481	2-2.5	FILL	3325R
	0435-97-0135	35-02482	0-0.33	ALLH	3291R
	0435-97-0136	35-02482	2.8-3.2	ALLH	3291R
	0435-97-0137 (FD)	35-02482	2.8-3.2	ALLH	3291R
	0435-97-0138	35-02483	0-0.5	ALLH	3291R
	0435-97-0139	35-02483	2.3-2.6	ALLH	3291R
	0435-97-0140	35-02484	0-0.5	ALLH	3291R
	0435-97-0141	35-02484	2-2.5	ALLH	3291R
	0435-97-0142	35-02485	3.25-3.75	ALLH	3325R
	0435-97-0143	35-02486	4-4.5	ALLH	3291R
	RE35-98-0022 (FD)	35-02603	0-0.5	QBT3	4327R
	RE35-04-54219	35-22987	2.5-3.2	QBT3	2389S
	RE35-04-54222	35-22988	3.5-4	QBT3	2389S
	RE35-04-54226	35-22990	4-5	QBT3	2386S
	RE35-04-54227	35-22990	8.5-10	QBT2	2386S
	RE35-04-54243 (FD)	35-22990	8.5-10	QBT2	2386S
	RE35-04-54228	35-22991	4-5	QBT3	2386S
	RE35-04-54229	35-22991	9-10	QBT2	2386S
C-35-007	RE35-98-0001	35-02204	0-0.5	ALLH	4330R
	0435-95-0101	35-02206	0-0.5	ALLH	71
	RE35-98-0002	35-02600	0-0.5	ALLH	4327R
	RE35-98-0003	35-02601	0-0.5	ALLH	4327R

Table D-6.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Metals
	RE35-98-0004	35-02602	0-0.5	ALLH	4327R
	RE35-98-0005	35-02603	0-0.5	QBT3	4327R
	RE35-98-0006	35-02604	0-0.5	ALLH	4327R
	RE35-98-0007	35-02605	0-0.5	ALLH	4327R
	RE35-98-0008	35-02606	0-0.5	ALLH	4330R
	RE35-98-0009	35-02607	0-0.5	ALLH	4330R
	RE35-98-0010	35-02608	0-0.5	ALLH	4333R
	RE35-98-0011	35-02608	0.5-1.5	ALLH	4333R
	RE35-98-0012	35-02610	0-0.5	ALLH	4327R
	RE35-98-0013	35-02611	0-0.5	ALLH	4327R
	RE35-98-0014	35-02612	0-0.5	ALLH	4327R
	RE35-98-0015	35-02613	0-0.5	ALLH	4327R
	RE35-98-0016	35-02614	0-0.5	ALLH	4327R
	RE35-98-0017	35-02615	0-0.5	ALLH	4327R

[a] Analytical request number.

Table D-6.0-2
Soil, Fill, Tuff, and Sediment Samples Collected for Radionuclide Analyses at Ten Site Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Sr-90
35-010(a)-99	AAB1509	35-02069	9-10	QBT3	—[a]	—	—	19585[b]	—	19585	—
	AAB1510	35-02069	13-14	QBT3	—	—	—	19585	—	19585	—
	AAB1511	35-02069	19-20	QBT3	—	—	—	19585	—	19585	—
	AAB1512	35-02069	23-24	QBT3	—	19585	—	19585	—	19585	—
	AAB1513	35-02069	29-30	QBT2	—	—	—	19585	—	19585	—
	AAB1515	35-02069	34-35	QBT2	—	—	—	19585	—	19585	—
	AAB1514	35-02069	39-40	QBT2	—	—	—	19585	—	19585	—
	AAB1516	35-02069	49-50	QBT2	—	—	—	19585	—	19585	—
	0435-95-0112	35-02193	0-1	FILL	—	—	—	73	—	73	—
	0435-95-0113	35-02193	1-2	ALLH	—	—	—	73	—	73	—
	0435-95-0115	35-02193	2-3	ALLH	—	73	—	73	—	73	—
	0435-95-0118	35-02194	0-1	ALLH	—	—	—	73	—	73	—
	0435-95-0120	35-02194	1-2	ALLH	—	—	—	73	—	73	—
	0435-95-0122	35-02194	2-3	ALLH	—	—	—	73	—	73	—
	0435-95-0123	35-02195	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0124	35-02196	0-0.5	SED	—	—	—	73	—	73	—
	0435-95-0127	35-02197	0-1	SED	—	—	—	73	—	73	—
	0435-95-0128	35-02197	1-2	SED	—	—	—	73	—	73	—
	0435-95-0129	35-02197	2-3	SED	—	—	—	73	—	73	—
	AAB1517	35-02216	8-9	ALLH	—	—	—	19581	—	19581	—
	AAB1518	35-02216	14-15	ALLH	—	—	—	19581	—	19581	—
	AAB1519	35-02216	19-20	QBT3	—	—	—	19581	—	19581	—
	AAB1520	35-02216	24-25	QBT3	—	—	—	19581	—	19581	—
	AAB1521	35-02216	29-30	QBT3	—	—	—	19581	—	19581	—
	AAB1522 (FD)	35-02216	29-30	QBT3	—	—	—	—	—	19581	—
	AAB1523	35-02216	34-35	QBT3	—	—	—	19581	—	19581	—
	AAB1524	35-02216	39-40	QBT2	—	—	—	19554	—	19554	—
	AAB1525	35-02216	49-50	QBT2	—	—	—	19554	—	19554	—
	0435-95-0106	35-02235	0-0.5	SED	—	—	—	73	—	73	—
	0435-95-0107 (FD)	35-02235	0-0.5	SED	—	—	—	73	—	73	—

Table D-6.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Sr-90
	0435-97-0226	35-02466	4-5	QBT3	—	3373R	3373R	—	—	—	3373R
	0435-97-0229	35-02467	1.5-2.5	QBT3	—	3373R	3373R	—	—	—	3373R
	0435-97-0232	35-02468	1.5-2.5	QBT3	—	3373R	3373R	—	—	—	3373R
	0435-97-0235	35-02469	3.8-4.5	QBT3	—	3373R	3373R	—	—	—	3373R
	0435-97-0238	35-02470	1.5-2.5	QBT3	—	3373R	3373R	—	—	—	3373R
	0435-97-0242	35-02471	4-5	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0245	35-02472	1.5-2.5	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0246 (FD)	35-02472	1.5-2.5	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0249	35-02473	3.2-4.2	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0253	35-02474	1.5-2.7	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0254 (FD)	35-02474	1.5-2.7	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0257	35-02475	5-5.9	QBT3	—	3397R	3397R	—	—	—	3397R
	0435-97-0260	35-02476	0.66-1.5	QBT3	—	3407R	3407R	—	—	—	3407R
	0435-97-0263	35-02477	0.67-1.5	QBT3	—	3407R	3407R	—	—	—	3407R
	0435-97-0266	35-02478	4-5	QBT3	—	3407R	3407R	—	—	—	3407R
	0435-97-0270	35-02479	1-2	QBT3	—	3407R	3407R	—	—	—	3407R
	0435-97-0273	35-02480	0.75-1.5	QBT3	—	3407R	3407R	—	—	—	3407R
	0435-97-0133	35-02481	0-0.5	FILL	—	3326R	—	3326R	3326R	3326R	3326R
	0435-97-0134	35-02481	2-2.5	FILL	—	3326R	—	3326R	3326R	3326R	3326R
	0435-97-0135	35-02482	0-0.33	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0136	35-02482	2.8-3.2	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0137 (FD)	35-02482	2.8-3.2	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0138	35-02483	0-0.5	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0139	35-02483	2.3-2.6	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0140	35-02484	0-0.5	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0141	35-02484	2-2.5	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	0435-97-0142	35-02485	3.25-3.75	ALLH	—	3326R	—	3326R	3326R	3326R	3326R
	0435-97-0143	35-02486	4-4.5	ALLH	—	3292R	—	3292R	3292R	3292R	3292R
	RE35-04-54216	35-22986	7-7.5	QBT3	—	—	—	—	—	—	2391S
	RE35-04-54226	35-22990	4-5	QBT3	2387S	—	2387S	2387S	—	—	—
	RE35-04-54227	35-22990	8.5-10	QBT2	2387S	—	2387S	2387S	—	—	—

Table D-6.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Thorium	Isotopic Uranium	Sr-90
	RE35-04-54243 (FD)	35-22990	8.5-10	QBT2	2387S	2387S	2387S	2387S	—	—	2387S
	RE35-04-54228	35-22991	4-5	QBT3	2387S	—	2387S	2387S	—	—	—
	RE35-04-54229	35-22991	9-10	QBT2	2387S	—	2387S	2387S	—	—	—
	RE35-04-54231	35-22992	4-5	QBT3	2387S	—	2387S	2387S	—	—	—
	RE35-04-54232	35-22992	9-10	QBT2	2387S	—	2387S	2387S	—	—	—
	RE35-04-54234	35-22993	4-5	QBT3	2379S	—	2379S	2379S	—	—	—
	RE35-04-54235	35-22993	9-10	QBT3	2379S	—	2379S	2379S	—	—	—
C-35-007	0435-95-0091	35-02198	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0092 (FD)	35-02198	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0093	35-02199	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0094	35-02200	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0095	35-02201	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0096	35-02202	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0097	35-02203	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0098	35-02204	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0099	35-02205	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0101	35-02206	0-0.5	ALLH	—	—	—	73	—	73	—
	0435-95-0103	35-02207	0-0.5	ALLH	—	73	—	73	—	73	—
	0435-95-0108	35-02236	0-0.5	SED	—	—	—	73	—	73	—
	RE35-98-0012	35-02610	0-0.5	ALLH	—	4328R	4328R	4328R	—	—	4328R
	RE35-98-0013	35-02611	0-0.5	ALLH	—	4328R	4328R	4328R	—	—	4328R
	RE35-98-0014	35-02612	0-0.5	ALLH	—	4328R	4328R	4328R	—	—	4328R
	RE35-98-0015	35-02613	0-0.5	ALLH	—	4328R	4328R	4328R	—	—	4328R
	RE35-98-0016	35-02614	0-0.5	ALLH	—	4328R	4328R	4328R	—	—	4328R
	RE35-98-0017	35-02615	0-0.5	ALLH	—	4328R	4328R	4328R	—	—	4328R
	RE35-98-0018	35-02616	0-0.5	ALLH	—	4328R	—	—	—	—	—
	RE35-98-0019	35-02617	0-0.5	ALLH	—	4328R	—	—	—	—	—
	RE35-98-0020	35-02618	0-0.5	ALLH	—	4328R	—	—	—	—	—
	RE35-98-0021	35-02619	0-0.5	ALLH	—	4328R	—	—	—	—	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.0-3
Soil, Fill, and Tuff Samples Collected for Organic Chemical Analyses at Ten Site Canyon Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	PESTPCB	SVOC	VOC
35-010(a)-99	AAB1512	35-02069	23-24	QBT3	—[a]	—	—	17551[b]	—
	AAB1514	35-02069	39-40	QBT2	—	—	—	—	17551
	0435-95-0113	35-02193	1-2	ALLH	—	—	69	—	—
	0435-95-0118	35-02194	0-1	ALLH	—	—	—	69	—
	0435-95-0120	35-02194	1-2	ALLH	—	—	—	—	69
	AAB1524	35-02216	39-40	QBT2	—	—	—	17549	—
	0435-97-0226	35-02466	4-5	QBT3	3371R	—	—	3371R	3371R
	0435-97-0229	35-02467	1.5-2.5	QBT3	3371R	—	—	3371R	3371R
	0435-97-0232	35-02468	1.5-2.5	QBT3	3371R	—	—	3371R	3371R
	0435-97-0235	35-02469	3.8-4.5	QBT3	3371R	—	—	3371R	3371R
	0435-97-0238	35-02470	1.5-2.5	QBT3	3371R	—	—	3371R	3371R
	0435-97-0242	35-02471	4-5	QBT3	3395R	—	—	3395R	3395R
	0435-97-0245	35-02472	1.5-2.5	QBT3	3395R	—	—	3395R	3395R
	0435-97-0246 (FD)	35-02472	1.5-2.5	QBT3	3395R	—	—	3395R	3395R
	0435-97-0249	35-02473	3.2-4.2	QBT3	3395R	—	—	3395R	3395R
	0435-97-0253	35-02474	1.5-2.7	QBT3	3395R	—	—	3395R	3395R
	0435-97-0254 (FD)	35-02474	1.5-2.7	QBT3	3395R	—	—	3395R	3395R
	0435-97-0257	35-02475	5-5.9	QBT3	3395R	—	—	3395R	3395R
	0435-97-0260	35-02476	0.66-1.5	QBT3	3405R	—	—	3405R	3405R
	0435-97-0263	35-02477	0.67-1.5	QBT3	3405R	—	—	3405R	3405R
	0435-97-0266	35-02478	4-5	QBT3	3405R	—	—	3405R	3405R
	0435-97-0270	35-02479	1-2	QBT3	3405R	—	—	3405R	3405R
	0435-97-0273	35-02480	0.75-1.5	QBT3	3405R	—	—	3405R	3405R
	0435-97-0133	35-02481	0-0.5	FILL	3324R	—	—	3324R	—
	0435-97-0134	35-02481	2-2.5	FILL	3324R	—	—	3324R	—
	0435-97-0135	35-02482	0-0.33	ALLH	3290R	—	—	3290R	—
	0435-97-0136	35-02482	2.8-3.2	ALLH	3290R	—	—	3290R	—
	0435-97-0137 (FD)	35-02482	2.8-3.2	ALLH	3290R	—	—	3290R	—
	0435-97-0138	35-02483	0-0.5	ALLH	3290R	—	—	3290R	—
	0435-97-0139	35-02483	2.3-2.6	ALLH	3290R	—	—	3290R	—
	0435-97-0140	35-02484	0-0.5	ALLH	3290R	—	—	3290R	—
	0435-97-0141	35-02484	2-2.5	ALLH	3290R	—	—	3290R	—
	0435-97-0142	35-02485	3.25-3.75	ALLH	3324R	—	—	3324R	—
	0435-97-0143	35-02486	4-4.5	ALLH	3290R	—	—	3290R	—
	RE35-98-0022 (FD)	35-02603	0-0.5	QBT3	4326R	4326R	—	4326R	—
	RE35-04-54219	35-22987	2.5-3.2	QBT3	2388S	2388S	—	—	—
	RE35-04-54222	35-22988	3.5-4	QBT3	2388S	2388S	—	—	—
	RE35-04-54225	35-22989	2-2.5	QBT3	2390S	2390S	—	—	—

Table D-6.0-3 (continued)

C-35-007	0435-95-0099	35-02205	0-0.5	ALLH	—	—	—	69	—
	0435-95-0103	35-02207	0-0.5	ALLH	—	—	69	—	—
	RE35-98-0001	35-02204	0-0.5	ALLH	4329R	4329R	—	4329R	—
	RE35-98-0002	35-02600	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0003	35-02601	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0004	35-02602	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0005	35-02603	0-0.5	QBT3	4326R	4326R	—	4326R	—
	RE35-98-0006	35-02604	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0007	35-02605	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0008	35-02606	0-0.5	ALLH	4329R	4329R	—	4329R	—
	RE35-98-0009	35-02607	0-0.5	ALLH	4329R	4329R	—	4329R	—
	RE35-98-0010	35-02608	0-0.5	ALLH	4332R	4332R	—	4332R	—
	RE35-98-0011	35-02608	0.5-1.5	ALLH	4332R	4332R	—	4332R	—
	RE35-98-0012	35-02610	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0013	35-02611	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0014	35-02612	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0015	35-02613	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0016	35-02614	0-0.5	ALLH	4326R	4326R	—	4326R	—
	RE35-98-0017	35-02615	0-0.5	ALLH	4326R	4326R	—	4326R	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.0-4
Summary of Inorganic COPCs above BV or Detected in Soil, Fill, and Tuff at Ten Site Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Thallium
Soil/Fill Background Value (mg/kg)					29200	0.83	295	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	1	0.73
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1	1.1
35-010(a)-99	AAB1509	35-02069	9.00-10.00	QBT3	—	4 (UJ)	—	—[b]	—	—	—	0.8 (J)	—	—	6.6 (UJ)	—	23.4 (UJ)
	0435-95-0115	35-02193	2.00-3.00	ALLH	—	—	—	—	—	—	—	—	0.11 (U)	—	—	1.5 (U)	1.5 (UJ)
	AAB1517	35-02216	8.00-9.00	ALLH	—	4 (U)	—	3 (U)	—	—	—	2.5 (J)	—	—	4 (U)	—	23.4 (U)
	0435-97-0226	35-02466	4.00-5.00	QBT3	—	—	49	—	23	—	—	—	0.12 (U)	13	0.47 (UJ)	2.3 (U)	1.5 (U)
	0435-97-0229	35-02467	1.50-2.50	QBT3	—	—	—	—	9.5	—	—	—	0.11 (U)	—	0.44 (UJ)	2.2 (U)	1.4 (U)
	0435-97-0232	35-02468	1.50-2.50	QBT3	—	—	—	—	14	—	—	—	0.11 (U)	—	0.43 (UJ)	2.1 (U)	1.4 (U)
	0435-97-0235	35-02469	3.80-4.50	QBT3	—	—	—	—	39	—	—	—	0.11 (U)	20	0.43 (UJ)	2.2 (U)	1.4 (U)
	0435-97-0238	35-02470	1.50-2.50	QBT3	—	—	—	—	—	—	—	—	0.11 (U)	—	0.44 (UJ)	2.2 (U)	1.4 (U)
	0435-97-0242	35-02471	4.00-5.00	QBT3	—	11 (UJ)	—	—	48	—	16 (J-)	—	0.11 (U)	23	0.44 (UJ)	2.2 (UJ)	—
	0435-97-0245	35-02472	1.50-2.50	QBT3	—	11 (UJ)	—	—	51	—	18 (J-)	—	0.11 (U)	24	0.44 (UJ)	2.2 (UJ)	—
	0435-97-0249	35-02473	3.20-4.20	QBT3	—	11 (UJ)	—	—	59	—	—	—	0.11 (U)	29	0.44 (UJ)	2.2 (UJ)	—
	0435-97-0253	35-02474	1.50-2.70	QBT3	—	11 (UJ)	—	—	57	5.9 (J-)	—	—	0.11 (U)	26	0.46 (UJ)	2.3 (UJ)	—
	0435-97-0257	35-02475	5.00-5.90	QBT3	9200	11 (UJ)	100	—	34	—	—	—	0.11 (U)	19	0.44 (UJ)	2.2 (UJ)	—
	0435-97-0260	35-02476	0.66-1.50	QBT3	—	6.8 (U)	—	—	—	—	—	—	—	—	0.34 (U)	2 (UJ)	—
	0435-97-0263	35-02477	0.67-1.50	QBT3	—	6.9 (U)	—	—	—	—	—	—	—	—	0.34 (U)	2 (UJ)	—
	0435-97-0266	35-02478	4.00-5.00	QBT3	—	6.5 (U)	—	—	11.5	—	—	—	—	7.5 (J)	0.32 (U)	1.9 (U)	—
	0435-97-0270	35-02479	1.00-2.00	QBT3	—	6.6 (U)	—	—	12.8	—	—	—	—	9.6	0.33 (U)	1.9 (U)	—
	0435-97-0273	35-02480	0.75-1.50	QBT3	—	6.4 (U)	—	—	—	—	—	—	—	—	0.32 (U)	1.9 (U)	—
	0435-97-0133	35-02481	0.00-0.50	FILL	—	4.9 (U)	—	0.49 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0134	35-02481	2.00-2.50	FILL	—	4.6 (U)	—	0.46 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0135	35-02482	0.00-0.33	ALLH	—	6 (U)	—	0.5 (U)	—	—	—	—	—	—	—	1.8 (U)	—
	0435-97-0136	35-02482	2.80-3.20	ALLH	—	6.1 (U)	—	0.5 (U)	—	—	—	—	—	—	—	1.8 (U)	—
	0435-97-0138	35-02483	0.00-0.50	ALLH	—	5.7 (U)	—	0.47 (U)	—	—	—	—	0.13	—	—	3.3	—
	0435-97-0139	35-02483	2.30-2.60	ALLH	—	5.8 (U)	—	0.48 (U)	—	—	—	—	—	—	—	1.7 (U)	—
	0435-97-0140	35-02484	0.00-0.50	ALLH	—	6.1 (U)	—	0.5 (U)	—	—	—	—	—	—	—	1.8 (U)	—
	0435-97-0141	35-02484	2.00-2.50	ALLH	—	5.4 (U)	—	0.45 (U)	—	—	—	—	—	—	—	1.6 (U)	—

Table D-6.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Barium	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Nickel	Selenium	Silver	Thallium
Soil/Fill Background Value (mg/kg)					29200	0.83	295	0.4	19.3	14.7	22.3	na[a]	0.1	15.4	1.52	1	0.73
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	46	1.63	7.14	4.66	11.2	na	0.1	6.58	0.3	1	1.1
	0435-97-0142	35-02485	3.25-3.75	ALLH	—	4.1 (U)	—	0.41 (U)	—	—	—	—	—	—	—	—	—
	0435-97-0143	35-02486	4.00-4.50	ALLH	—	5.5 (U)	—	0.45 (U)	—	—	—	—	—	—	—	1.6 (U)	—
	RE35-04-54219	35-22987	2.50-3.20	QBT3	—	—	—	—	—	—	—	—	—	—	0.525 (U)	—	—
	RE35-04-54222	35-22988	3.50-4.00	QBT3	—	—	—	—	—	—	—	—	—	—	0.522 (U)	—	—
	RE35-04-54226	35-22990	4.00-5.00	QBT3	9220	—	—	—	—	—	—	—	—	—	0.521 (U)	—	—
	RE35-04-54227	35-22990	8.50-10.00	QBT2	—	—	—	—	—	—	—	—	—	—	0.516 (U)	—	—
	RE35-04-54228	35-22991	4.00-5.00	QBT3	—	—	—	—	—	—	—	—	—	—	1.09 (U)	—	—
	RE35-04-54229	35-22991	9.00-10.00	QBT2	—	—	—	—	—	—	—	—	—	—	1.05 (U)	—	—
C-35-007	0435-95-0101	35-02206	0.00-0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	1.4 (U)	1.4 (UJ)
	RE35-98-0002	35-02600	0.00-0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-98-0003	35-02601	0.00-0.50	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE35-98-0005	35-02603	0.00-0.50	QBT3	—	—	—	—	—	—	—	—	0.11 (U)	—	0.53 (UJ)	—	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV, or not detected.

Table D-6.0-5
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil, Fill, Tuff, and Sediment in Ten Site Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Europium-152	Plutonium-238	Plutonium-239	Ruthenium-106	Strontium-90	Tritium	Uranium-235
Soil/Fill Background/Fallout Value (pCi/g)					na[a]	0.023	0.054	na	1.31	0.76	0.20
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	0.05	0.05	na	1	0.3	0.09
Sediment Background/Fallout Value (pCi/g)					na	0.006	0.068	na	1.04	0.093	0.20
35-010(a)-99	AAB1509	35-02069	9.00-10.00	QBT3	—[b]	0.009 (J-)[c]	0.034 (J)[c]	—	—	—	—
	AAB1510	35-02069	13.00-14.00	QBT3	—	0.007 (J-)[c]	—	—	—	—	—
	AAB1511	35-02069	19.00-20.00	QBT3	—	0.011 (J-)[c]	—	—	—	—	—
	AAB1512	35-02069	23.00-24.00	QBT3	—	0.007 (J-)[c]	0.007 (J)[c]	—	—	—	—
	AAB1513	35-02069	29.00-30.00	QBT2	—	0.023 (J-)[c]	0.011 (J)[c]	—	—	—	—
	AAB1515	35-02069	34.00-35.00	QBT2	—	—	0.007 (J)[c]	—	—	—	—
	AAB1514	35-02069	39.00-40.00	QBT2	—	0.004 (J-)[c]	—	—	—	—	—
	0435-95-0115	35-02193	2.00-3.00	ALLH	0.259	—	—	—	—	—	—
	0435-95-0124	35-02196	0.00-0.50	SED	—	0.171	—	—	—	—	—
	0435-95-0127	35-02197	0.00-1.00	SED	—	0.164	0.106	—	—	—	—
	0435-97-0229	35-02467	1.50-2.50	QBT3	—	—	—	—	—	0.307	—
	0435-97-0235	35-02469	3.80-4.50	QBT3	—	—	—	0.527	—	—	—
	0435-97-0238	35-02470	1.50-2.50	QBT3	—	—	—	—	—	0.388	—
	0435-97-0242	35-02471	4.00-5.00	QBT3	—	—	—	—	0.77[c]	—	1.15
	0435-97-0245	35-02472	1.50-2.50	QBT3	—	—	—	—	1.41	—	—
	0435-97-0257	35-02475	5.00-5.90	QBT3	—	—	—	—	2.4	—	—
	0435-97-0260	35-02476	0.66-1.50	QBT3	—	—	—	—	—	0.381	—
	0435-97-0266	35-02478	4.00-5.00	QBT3	—	—	—	—	—	3	—
	0435-97-0273	35-02480	0.75-1.50	QBT3	—	—	—	—	—	0.974	—
	RE35-04-54226	35-22990	4.00-5.00	QBT3	—	—	0.0365[c]	—	—	—	—
	RE35-04-54234	35-22993	4.00-5.00	QBT3	—	—	0.0493[c]	—	—	0.0727[c]	—
	RE35-04-54235	35-22993	9.00-10.00	QBT3	—	—	—	—	—	0.156[c]	—
C-35-007	0435-95-0108	35-02236	0.00-0.50	SED	—	2.523	0.896	—	—	—	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.
[c] Detected and the FV does not apply (subsurface samples).

Table D-6.0-6
Summary of Organic Chemicals Detected in Soil, Fill, Tuff, and Sediment at Ten Site Canyon Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aroclor-1260	Benzoic Acid	Bis(2-ethylhexyl) phthalate	Di-n-butylphthalate	Toluene	Xylene (Total)
35-010(a)-99	0435-97-0238	35-02470	1.50-2.50	QBT3	—[a]	—	0.052 (J)[b]	—	0.004 (J+)	0.001 (J+)
	0435-97-0253	35-02474	1.50-2.70	QBT3	—	—	0.1 (J)	—	—	—
	0435-97-0133	35-02481	0.00-0.50	FILL	—	—	—	0.036 (J)	—	—
	0435-97-0135	35-02482	0.00-0.33	ALLH	—	—	0.049 (J)	—	—	—
	0435-97-0139	35-02483	2.30-2.60	ALLH	—	—	0.11 (J)	—	—	—
	RE35-04-54225	35-22989	2.00-2.50	QBT3	0.0063	—	—	—	—	—
C-35-007	RE35-98-0001	35-02204	0.00-0.50	ALLH	—	—	—	0.017 (J)	—	—
	RE35-98-0008	35-02606	0.00-0.50	ALLH	—	0.023 (J)	—	—	—	—
	RE35-98-0009	35-02607	0.00-0.50	ALLH	—	—	0.058 (J)	0.022 (J)	—	—
	RE35-98-0011	35-02608	0.50-1.50	ALLH	—	—	—	0.02 (J)	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-6.1-1
EPCs for Inorganic COPCs at Consolidated Unit 35-010(a)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aluminum	0–1	957	Normal	95% Student's-t UCL
	0–10	2819	Gamma	95% Approximate Gamma UCL
Barium	0–1	32.32	Lognormal	95% H-UCL
	0–10	38.5	Lognormal	95% H-UCL
Chromium	0–1	4.762	Normal	95% KM (t) UCL
	0–10	27.9	Lognormal	95% H-UCL
Lead	0–1	6.279	Normal	95% Student's-t UCL
	0–10	6.91	Gamma	95% Approximate Gamma UCL
Lithium	0–1	NA[a]	n/a	Not a COPC for this depth
	0–10	2.5	—[b]	Maximum detect
Mercury	0–1	0.13	—	Maximum detect
	0–10	0.055	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–1	3.819	Normal	95% KM (t) UCL
	0–10	12.6	Lognormal	95% H-UCL
Silver	0–1	3.3	—	Maximum detect
	0–10	1.26	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	0.15	—	Maximum detect
	0–10	2.94	Nonparametric	95% Chebyshev (Mean, SD)

[a] NA = Not analyzed for this analyte in this depth range.
[b] — = Too few samples to determine distribution or calculate EPC.

Table D-6.1-2
EPCs for Radionuclide COPCs at Consolidated Unit 35-010(a)-99

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Europium-152	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.077	Normal	95% Student's-t UCL
Plutonium-238	0–1	0.169	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.049	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.083	—[c]	Maximum detect
	0–10	0.029	Nonparametric	95% Chebyshev (Mean, SD)
Ruthenium-106	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.127	Nonparametric	95% Chebyshev (Mean, SD)
Stronium-90	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.637	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	0.974	—	Maximum detect
	0–10	0.849	Nonparametric	95% Chebyshev (Mean, SD)

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-6.1-3
EPCs for Organic COPCs at Consolidated Unit 35-010(a)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aroclor-1260	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.020	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	0.049	—[c]	Maximum detect
	0–10	0.175	Nonparametric	95% Modified-t UCL
Di-n-butylphthalate	0–1	0.036	—	Maximum detect
	0–10	0.182	Nonparametric	95% Modified-t UCL
Toluene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.003	Nonparametric	95% Modified-t UCL
Xylene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.003	Nonparametric	95% Modified-t UCL

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-6.2-1
EPCs for Radionuclide COPCs at AOC C-35-007

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Plutonium-238	0–1	0.845	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.845	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.284	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.284	Nonparametric	95% Chebyshev (Mean, SD)

Table D-6.2-2
EPCs for Organic COPCs at AOC C-35-007

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Benzoic acid	0–1	0.023	—[a]	Maximum detect
	0–10	1.89	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	0.058	—	Maximum detect
	0–10	0.172	Nonparametric	95% Modified-t UCL
Di-n-butylphthalate	0–1	0.022	—	Maximum detect
	0–10	0.201	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-6.3-1
Soil and Fill Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth	Media Code	Metals
0435-95-0101	35-02206	0–0.5	ALLH	71[a]
0435-95-0115	35-02193	2–3	ALLH	71
0435-97-0133	35-02481	0–0.5	FILL	3325R
0435-97-0134	35-02481	2–2.5	FILL	3325R
0435-97-0135	35-02482	0–0.33	ALLH	3291R
0435-97-0136	35-02482	2.8–3.2	ALLH	3291R
0435-97-0138	35-02483	0–0.5	ALLH	3291R
0435-97-0139	35-02483	2.3–2.6	ALLH	3291R
0435-97-0140	35-02484	0–0.5	ALLH	3291R
0435-97-0141	35-02484	2–2.5	ALLH	3291R
0435-97-0142	35-02485	3.25–3.75	ALLH	3325R
0435-97-0143	35-02486	4–4.5	ALLH	3291R
RE35-98-0001	35-02204	0–0.5	ALLH	4330R
RE35-98-0002	35-02600	0–0.5	ALLH	4327R
RE35-98-0003	35-02601	0–0.5	ALLH	4327R
RE35-98-0004	35-02602	0–0.5	ALLH	4327R
RE35-98-0006	35-02604	0–0.5	ALLH	4327R
RE35-98-0007	35-02605	0–0.5	ALLH	4327R
RE35-98-0008	35-02606	0–0.5	ALLH	4330R
RE35-98-0009	35-02607	0–0.5	ALLH	4330R
RE35-98-0010	35-02608	0–0.5	ALLH	4333R
RE35-98-0011	35-02608	0.5–1.5	ALLH	4333R
RE35-98-0012	35-02610	0–0.5	ALLH	4327R
RE35-98-0013	35-02611	0–0.5	ALLH	4327R
RE35-98-0014	35-02612	0–0.5	ALLH	4327R
RE35-98-0015	35-02613	0–0.5	ALLH	4327R
RE35-98-0016	35-02614	0–0.5	ALLH	4327R
RE35-98-0017	35-02615	0–0.5	ALLH	4327R

[a] Analytical request number.

Table D-6.3-2
Summary of Inorganic Chemicals above BV or Detected in Soil and Fill, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Silver
			Soil, Fill Background Value (mg/kg)	0.83	1
0435-95-0115	35-02193	2.00–3.00	ALLH	—[a]	1.5 (U)
0435-95-0101	35-02206	0.00–0.50	ALLH	—	1.4 (U)
0435-97-0133	35-02481	0.00–0.50	FILL	4.9 (U)	—
0435-97-0134	35-02481	2.00–2.50	FILL	4.6 (U)	—
0435-97-0135	35-02482	0.00–0.33	ALLH	6 (U)	1.8 (U)
0435-97-0136	35-02482	2.80–3.20	ALLH	6.1 (U)	1.8 (U)
0435-97-0138	35-02483	0.00–0.50	ALLH	5.7 (U)	3.3
0435-97-0139	35-02483	2.30–2.60	ALLH	5.8 (U)	1.7 (U)
0435-97-0140	35-02484	0.00–0.50	ALLH	6.1 (U)	1.8 (U)
0435-97-0141	35-02484	2.00–2.50	ALLH	5.4 (U)	1.6 (U)
0435-97-0142	35-02485	3.25–3.75	ALLH	4.1 (U)	—
0435-97-0143	35-02486	4.00–4.50	ALLH	5.5 (U)	1.6 (U)

[a] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-6.3-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Metals
0435-97-0226	35-02466	4–5	Qbt3	3372R
0435-97-0229	35-02467	1.5–2.5	Qbt3	3372R
0435-97-0232	35-02468	1.5–2.5	Qbt3	3372R
0435-97-0235	35-02469	3.8–4.5	Qbt3	3372R
0435-97-0238	35-02470	1.5–2.5	Qbt3	3372R
0435-97-0242	35-02471	4–5	Qbt3	3396R
0435-97-0245	35-02472	1.5–2.5	Qbt3	3396R
0435-97-0249	35-02473	3.2–4.2	Qbt3	3396R
0435-97-0253	35-02474	1.5–2.7	Qbt3	3396R
0435-97-0260	35-02476	0.66–1.5	Qbt3	3406R
0435-97-0263	35-02477	0.67–1.5	Qbt3	3406R
0435-97-0266	35-02478	4–5	Qbt3	3406R
0435-97-0270	35-02479	1–2	Qbt3	3406R
0435-97-0273	35-02480	0.75–1.5	Qbt3	3406R
RE35-98-0005	35-02603	0–0.5	Qbt3	4327R
RE35-04-54219	35-22987	2.5–3.2	Qbt3	2389S
RE35-04-54222	35-22988	3.5–4	Qbt3	2389S
RE35-04-54226	35-22990	4–5	Qbt3	2386S
RE35-04-54228	35-22991	4–5	Qbt3	2386S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-4
Summary of Inorganic COPCs above BV or Detected in Tuff, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Chromium	Lead	Nickel	Silver
Qbt3, Qbt2 Background Value (mg/kg)				0.5	7.14	11.2	6.58	1
0435-97-0226	35-02466	4–5	Qbt3	—[b]	23	—	13	2.3 (U)
0435-97-0229	35-02467	1.5–2.5	Qbt3	—	9.5	—	—	2.2 (U)
0435-97-0232	35-02468	1.5–2.5	Qbt3	—	14	—	—	2.1 (U)
0435-97-0235	35-02469	3.8–4.5	Qbt3	—	39	—	20	2.2 (U)
0435-97-0238	35-02470	1.5–2.5	Qbt3	—	—	—	—	2.2 (U)
0435-97-0242	35-02471	4–5	Qbt3	11 (UJ)	48	16 (J-)	23	2.2 (UJ)
0435-97-0245	35-02472	1.5–2.5	Qbt3	11 (UJ)	51	18 (J-)	24	2.2 (UJ)
0435-97-0249	35-02473	3.2–4.2	Qbt3	11 (UJ)	59	—	29	2.2 (UJ)
0435-97-0253	35-02474	1.5–2.7	Qbt3	11 (UJ)	57	—	26	2.3 (UJ)
0435-97-0260	35-02476	0.67–1.5	Qbt3	6.8 (U)	—	—	—	2 (UJ)
0435-97-0263	35-02477	0.67–1.5	Qbt3	6.9 (U)	—	—	—	2 (UJ)
0435-97-0266	35-02478	4–5	Qbt3	6.5 (U)	11.5	—	7.5 (J)	1.9 (U)
0435-97-0270	35-02479	1–2	Qbt3	6.6 (U)	12.8	—	9.6	1.9 (U)
0435-97-0273	35-02480	0.75–1.5	Qbt3	6.4 (U)	—	—	—	1.9 (U)
RE35-98-0005	35-02603	0–0.5	Qbt3	—	—	—	—	—
RE35-04-54219	35-22987	2.5–3.2	Qbt3	—	—	—	—	—
RE35-04-54222	35-22988	3.5–4	Qbt3	—	—	—	—	—
RE35-04-54226	35-22990	4–5	Qbt3	—	—	—	—	—
RE35-04-54228	35-22991	4–5	Qbt3	—	—	—	—	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-6.3-5
Sediment Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Cyanide	Metals
CAMO-99-0034	MO-00056	0.33–0.95	SED	—[a]	—	5593R[b]
CAMO-99-0035	MO-00056	0.95–1.28	SED	—	—	5593R
CAMO-99-0036	MO-00057	0.89–1.9	SED	—	—	5593R
CAMO-99-0037	MO-00058	0–0.16	SED	—	—	5593R
CAMO-99-0038	MO-00059	0–0.16	SED	—	—	5593R
CAMO-99-0039	MO-00060	0–1.15	SED	—	—	5593R
CAMO-99-0040	MO-00060	2.17–2.79	SED	—	—	5593R
CAMO-99-0041	MO-00061	0–0.43	SED	—	—	5593R
CAMO-99-0042	MO-00062	0–0.69	SED	—	—	5593R
CAMO-99-0043	MO-00063	0.23–0.76	SED	—	—	5593R
CAMO-99-0044	MO-00063	0.76–1.41	SED	—	—	5593R
CAMO-04-53379	MO-22832	0–0.49	SED	—	2179S	2179S
CAMO-04-53383	MO-22836	0.43–1.08	SED	2179S	2179S	2179S
CAMO-04-53384	MO-22836	1.38–2.17	SED	2179S	2179S	2179S
CAMO-04-53385	MO-22838	0.23–1.44	SED	2179S	2179S	2179S
CAMO-04-53386	MO-22838	2.69–3.18	SED	2179S	2179S	2179S
CAMO-04-53387	MO-22840	0.26–1.31	SED	2179S	2179S	2179S
CAMO-04-53388	MO-22841	0–0.75	SED	2179S	2179S	2179S
CAMO-04-53389	MO-22841	1.02–1.31	SED	2179S	2179S	2179S
CAMO-04-53390	MO-22841	1.51–2.03	SED	2179S	2179S	2179S
CAMO-04-53391	MO-22845	0–1.64	SED	2179S	2179S	2179S
CAMO-04-53392	MO-22845	2.36–3.35	SED	2179S	2179S	2179S
CAMO-04-53393	MO-22846	0.26–1.25	SED	2179S	2179S	2179S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-6
Summary of Inorganic COPCs above BV or Detected in Sediment, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Chloride	Chromium	Copper	Fluoride	Lead	Mercury	Nitrate	Nitrite	Phosphorus	Selenium	Silver	Sulfate
Sediment Background Value (mg/kg)				17.1	10.5	11.2	na[a]	19.7	0.1	na	na	na	0.3	1	58.2
CAMO-99-0034	MO-00056	0.33–0.95	SED	—[b]	—	—	—	—	—	—	—	—	0.77	—	—
CAMO-99-0035	MO-00056	0.95–1.28	SED	—	—	—	—	—	—	—	—	—	0.5	—	—
CAMO-99-0036	MO-00057	0.89–1.90	SED	—	—	—	—	—	—	—	—	—	0.64	—	—
CAMO-99-0037	MO-00058	0.00–0.16	SED	—	—	—	—	—	—	—	—	—	0.56	—	—
CAMO-99-0039	MO-00060	0.00–1.15	SED	—	—	12.9	—	—	—	—	—	—	1.1	1.3	—
CAMO-99-0040	MO-00060	2.17–2.79	SED	—	—	15.4	—	—	—	—	—	—	0.31 (J)	—	—
CAMO-99-0041	MO-00061	0.00–0.43	SED	—	—	13.3	—	—	—	—	—	—	—	—	—
CAMO-99-0042	MO-00062	0.00–0.69	SED	—	—	27.2	—	—	0.37	—	—	—	0.72	6	—
CAMO-99-0043	MO-00063	0.23–0.76	SED	—	—	11.9	—	—	—	—	—	—	0.72	—	—
CAMO-99-0044	MO-00063	0.76–1.41	SED	—	—	—	—	—	—	—	—	—	0.75	—	—
CAMO-04-53383	MO-22836	0.43–1.08	SED	—	—	—	1.3	—	—	—	0.14 (J)	—	—	—	—
CAMO-04-53384	MO-22836	1.38–2.17	SED	—	—	18.8	6.2	—	—	0.43	0.25	—	—	—	—
CAMO-04-53385	MO-22838	0.23–1.44	SED	—	—	—	0.51 (J)	—	—	0.55	0.17 (J)	3.8 (J)	—	—	—
CAMO-04-53386	MO-22838	2.69–3.18	SED	—	—	—	2.1	—	—	1.9	0.26	—	0.35	—	—
CAMO-04-53387	MO-22840	0.26–1.31	SED	—	—	15.4	1.6	—	—	—	—	—	—	5.8	—
CAMO-04-53388	MO-22841	0.00–0.75	SED	—	—	18.1	1.8	—	—	0.54	0.32	2.4 (J)	—	—	—
CAMO-04-53389	MO-22841	1.02–1.31	SED	—	—	20.2	1.6	—	—	0.93	0.13 (J)	—	—	4.2	—
CAMO-04-53390	MO-22841	1.51–2.03	SED	—	22.3	48.1	1.7	29.2	0.86	1.5	0.26	—	0.47	42.8	—
CAMO-04-53391	MO-22845	0.00–1.64	SED	—	—	—	0.56 (J)	—	—	0.45	—	1.5 (J)	—	—	—
CAMO-04-53392	MO-22845	2.36–3.35	SED	126	—	—	1.1	—	—	—	—	—	—	—	827
CAMO-04-53393	MO-22846	0.26–1.25	SED	—	—	—	1.8	—	—	0.13 (J)	0.098 (J)	3.4 (J)	—	—	—

[a] na = Not available.

[b] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-6.3-7
EPCs for Inorganic Chemicals in the Ten Site Canyon Subarea

Analyte	Depth	EPC (mg/kg)	Distribution	EPC Method
Antimony	0–5	2.16	Nonparametric	95% Chebyshev (Mean, SD)
Chloride	0–5	43.0	Gamma	95% Approximate Gamma UCL
Chromium	0–5	16.751	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–5	9.643	Nonparametric	95% Chebyshev (Mean, SD)
Fluoride	0–5	2.837	Lognormal	95% H-UCL
Lead	0–5	10.245	Nonparametric	95% Chebyshev (Mean, SD)
Mercury	0–5	0.106	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–5	8.911	Nonparametric	95% Chebyshev (Mean, SD)
Nitrate	0–5	1.034	Gamma	95% Approximate Gamma UCL
Nitrite	0–5	0.222	Normal	95% Student's-t UCL
Phosphorous	0–5	2.985	Normal	95% Student's-t UCL
Selenium	0–5	0.365	Nonparametric	95% Chebyshev (Mean, SD)
Silver	0–5	3.739	Nonparametric	95% Chebyshev (Mean, SD)
Sulfate	0–5	405	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–5	29.166	Normal	95% Student's-t UCL

Table D-6.3-8
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
0435-95-0112	35-02193	0–1	FILL	—[a]	—	73[b]	—	73	—
0435-95-0113	35-02193	1–2	ALLH	—	—	73	—	73	—
0435-95-0115	35-02193	2–3	ALLH	73	—	73	—	73	—
0435-95-0118	35-02194	0–1	ALLH	—	—	73	—	73	—
0435-95-0120	35-02194	1–2	ALLH	—	—	73	—	73	—
0435-95-0122	35-02194	2–3	ALLH	—	—	73	—	73	—
0435-95-0123	35-02195	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0091	35-02198	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0093	35-02199	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0094	35-02200	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0095	35-02201	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0096	35-02202	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0097	35-02203	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0098	35-02204	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0099	35-02205	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0101	35-02206	0–0.5	ALLH	—	—	73	—	73	—
0435-95-0103	35-02207	0–0.5	ALLH	73	—	73	—	73	—
0435-97-0133	35-02481	0–0.5	FILL	3326R	—	3326R	3326R	3326R	3326R
0435-97-0134	35-02481	2–2.5	FILL	3326R	—	3326R	3326R	3326R	3326R
0435-97-0135	35-02482	0–0.33	ALLH	3292R	—	3292R	3292R	3292R	3292R
0435-97-0136	35-02482	2.8–3.2	ALLH	3292R	—	3292R	3292R	3292R	3292R
0435-97-0138	35-02483	0–0.5	ALLH	3292R	—	3292R	3292R	3292R	3292R
0435-97-0139	35-02483	2.3–2.6	ALLH	3292R	—	3292R	3292R	3292R	3292R
0435-97-0140	35-02484	0–0.5	ALLH	3292R	—	3292R	3292R	3292R	3292R
0435-97-0141	35-02484	2–2.5	ALLH	3292R	—	3292R	3292R	3292R	3292R
0435-97-0142	35-02485	3.25–3.75	ALLH	3326R	—	3326R	3326R	3326R	3326R

Table D-6.3-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
0435-97-0143	35-02486	4–4.5	ALLH	3292R	—	3292R	3292R	3292R	3292R
RE35-98-0012	35-02610	0–0.5	ALLH	4328R	4328R	4328R	—	—	4328R
RE35-98-0013	35-02611	0–0.5	ALLH	4328R	4328R	4328R	—	—	4328R
RE35-98-0014	35-02612	0–0.5	ALLH	4328R	4328R	4328R	—	—	4328R
RE35-98-0015	35-02613	0–0.5	ALLH	4328R	4328R	4328R	—	—	4328R
RE35-98-0016	35-02614	0–0.5	ALLH	4328R	4328R	4328R	—	—	4328R
RE35-98-0017	35-02615	0–0.5	ALLH	4328R	4328R	4328R	—	—	4328R
RE35-98-0018	35-02616	0–0.5	ALLH	4328R	—	—	—	—	—
RE35-98-0019	35-02617	0–0.5	ALLH	4328R	—	—	—	—	—
RE35-98-0020	35-02618	0–0.5	ALLH	4328R	—	—	—	—	—
RE35-98-0021	35-02619	0–0.5	ALLH	4328R	—	—	—	—	—

[a] — =Analysis not requested.
[b] Analytical request number.

Table D-6.3-9
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil and Fill, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Europium-152
			Soil/Fill Background/Fallout Value (pCi/g)	na[a]
0435-95-0115	35-02193	2.00–3.00	ALLH	0.259

[a] na = Not available.

Table D-6.3-10
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	SR_90
0435-97-0226	35-02466	4–5	Qbt3	—[a]	3373R[b]	3373R	—	3373R
0435-97-0229	35-02467	1.5–2.5	Qbt3	—	3373R	3373R	—	3373R
0435-97-0232	35-02468	1.5–2.5	Qbt3	—	3373R	3373R	—	3373R
0435-97-0235	35-02469	3.8–4.5	Qbt3	—	3373R	3373R	—	3373R
0435-97-0238	35-02470	1.5–2.5	Qbt3	—	3373R	3373R	—	3373R
0435-97-0242	35-02471	4–5	Qbt3	—	3397R	3397R	—	3397R
0435-97-0245	35-02472	1.5–2.5	Qbt3	—	3397R	3397R	—	3397R
0435-97-0249	35-02473	3.2–4.2	Qbt3	—	3397R	3397R	—	3397R
0435-97-0253	35-02474	1.5–2.7	Qbt3	—	3397R	3397R	—	3397R
0435-97-0260	35-02476	0.66–1.5	Qbt3	—	3407R	3407R	—	3407R
0435-97-0263	35-02477	0.67–1.5	Qbt3	—	3407R	3407R	—	3407R
0435-97-0266	35-02478	4–5	Qbt3	—	3407R	3407R	—	3407R
0435-97-0270	35-02479	1–2	Qbt3	—	3407R	3407R	—	3407R
0435-97-0273	35-02480	0.75–1.5	Qbt3	—	3407R	3407R	—	3407R
RE35-04-54226	35-22990	4–5	Qbt3	2387S	—	2387S	2387S	—
RE35-04-54228	35-22991	4–5	Qbt3	2387S	—	2387S	2387S	—
RE35-04-54231	35-22992	4–5	Qbt3	2387S	—	2387S	2387S	—
RE35-04-54234	35-22993	4–5	Qbt3	2379S	—	2379S	2379S	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-11
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Plutonium-239	Ruthenium-106	Strontium-90	Tritium	Uranium-235
Qbt3, Qbt2 Background/Fallout Value (pCi/g)				na[a]	na	na	na	0.09
0435-97-0229	35-02467	1.50–2.50	Qbt3	—[b]	—	—	0.307	—
0435-97-0235	35-02469	3.80–4.50	Qbt3	—	0.527	—	—	—
0435-97-0238	35-02470	1.50–2.50	Qbt3	—	—	—	0.388	—
0435-97-0242	35-02471	4.00–5.00	Qbt3	—	—	0.77	—	1.15
0435-97-0245	35-02472	1.50–2.50	Qbt3	—	—	1.41	—	—
0435-97-0260	35-02476	0.66–1.50	Qbt3	—	—	—	0.381	—
0435-97-0266	35-02478	4.00–5.00	Qbt3	—	—	—	3	—
0435-97-0273	35-02480	0.75–1.50	Qbt3	—	—	—	0.974	—
RE35-04-54226	35-22990	4.00–5.00	Qbt3	0.0365	—	—	—	—
RE35-04-54234	35-22993	4.00–5.00	Qbt3	0.0493	—	—	0.0727	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-6.3-12
Sediment Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
0435-95-0124	35-02196	0–0.5	SED	—[a]	—	73[b]	—	73	—
0435-95-0127	35-02197	0–1	SED	—	—	73	—	73	—
0435-95-0128	35-02197	1–2	SED	—	—	73	—	73	—
0435-95-0129	35-02197	2–3	SED	—	—	73	—	73	—
0435-95-0106	35-02235	0–0.5	SED	—	—	73	—	73	—
0435-95-0108	35-02236	0–0.5	SED	—	—	73	—	73	—
CAMO-99-0034	MO-00056	0.33–0.95	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0035	MO-00056	0.95–1.28	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0036	MO-00057	0.89–1.9	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0037	MO-00058	0–0.16	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0038	MO-00059	0–0.16	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0039	MO-00060	0–1.15	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0040	MO-00060	2.17–2.79	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0041	MO-00061	0–0.43	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0042	MO-00062	0–0.69	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0043	MO-00063	0.23–0.76	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-99-0044	MO-00063	0.76–1.41	SED	5595R	5595R	5595R	—	5595R	5595R
CAMO-04-53379	MO-22832	0–0.49	SED	—	—	2181S	2181S	—	—
CAMO-04-53383	MO-22836	0.43–1.08	SED	2181S	2179S	2181S	2181S	—	2181S

Table D-6.3-12 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_TH	ISO_U	SR_90
CAMO-04-53384	MO-22836	1.38–2.17	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53385	MO-22838	0.23–1.44	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53386	MO-22838	2.69–3.18	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53387	MO-22840	0.26–1.31	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53388	MO-22841	0–0.75	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53389	MO-22841	1.02–1.31	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53390	MO-22841	1.51–2.03	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53391	MO-22845	0–1.64	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53392	MO-22845	2.36–3.35	SED	2181S	2179S	2181S	2181S	—	2181S
CAMO-04-53393	MO-22846	0.26–1.25	SED	2181S	2179S	2181S	2181S	—	2181S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-13
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Sediment, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-134	Plutonium-238	Plutonium-239	Strontium-90	Tritium
Sediment Background/Fallout Value (pCi/g)				0.04	na[a]	0.006	0.068	1.04	0.093
0435-95-0124	35-02196	0.00–0.50	SED	—[b]	—	0.171	—	—	—
0435-95-0127	35-02197	0.00–1.00	SED	—	—	0.164	0.083	—	—
0435-95-0108	35-02236	0.00–0.50	SED	—	—	2.523	0.896	—	—
CAMO-99-0034	MO-00056	0.33–0.95	SED	—	—	1.021	0.369	—	—
CAMO-99-0035	MO-00056	0.95–1.28	SED	—	—	0.086	—	6.7	0.143
CAMO-99-0036	MO-00057	0.89–1.90	SED	—	—	1.52	0.596	1.89	—
CAMO-99-0037	MO-00058	0.00–0.16	SED	—	—	0.385	0.175	—	—
CAMO-99-0038	MO-00059	0.00–0.16	SED	—	—	0.14	—	—	0.106
CAMO-99-0039	MO-00060	0.00–1.15	SED	—	—	1.46	0.57	1.8	—
CAMO-99-0040	MO-00060	2.17–2.79	SED	—	—	0.094	—	—	0.134
CAMO-99-0041	MO-00061	0.00–0.43	SED	—	—	1.98	0.76	2.54	—
CAMO-99-0042	MO-00062	0.00–0.69	SED	—	—	1.351	0.554	2	—
CAMO-99-0043	MO-00063	0.23–0.76	SED	—	—	0.354	0.703	8.3	—
CAMO-99-0044	MO-00063	0.76–1.41	SED	—	—	0.034	—	—	—
CAMO-04-53379	MO-22832	0.00–0.49	SED	—	—	1.689	0.683	—	—
CAMO-04-53383	MO-22836	0.43–1.08	SED	—	0.062	0.53	0.456	—	—
CAMO-04-53384	MO-22836	1.38–2.17	SED	—	0.075	—	0.113	—	—
CAMO-04-53385	MO-22838	0.23–1.44	SED	—	—	0.684	0.509	—	—
CAMO-04-53386	MO-22838	2.69–3.18	SED	0.493	0.086	2.087	0.665	—	—
CAMO-04-53387	MO-22840	0.26–1.31	SED	—	0.099	0.476	0.271	—	—
CAMO-04-53388	MO-22841	0.00–0.75	SED	—	—	1.893	0.808	1.26	—

Table D-6.3-13 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-134	Plutonium-238	Plutonium-239	Strontium-90	Tritium
Sediment Background/Fallout Value (pCi/g)				0.04	na[a]	0.006	0.068	1.04	0.093
CAMO-04-53389	MO-22841	1.02–1.31	SED	0.302	0.074	1.061	0.399	1.55	—
CAMO-04-53390	MO-22841	1.51–2.03	SED	—	0.088	0.238	0.289	1.11	—
CAMO-04-53391	MO-22845	0.00–1.64	SED	—	—	—	0.246	1.79	—
CAMO-04-53392	MO-22845	2.36–3.35	SED	—	0.082	0.185	2.706	1.45	—
CAMO-04-53393	MO-22846	0.26–1.25	SED	—	0.065	—	5.237	1.74	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-6.3-14
EPCs for Radionuclide COPCs in the Ten Site Canyon Subarea

Analyte	Depth	EPC (pCi/g)	Distribution	EPC Method
Americium-241	0–5	0.082	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-134	0–5	0.036	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–5	0.067	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–5	0.622	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–5	0.644	Nonparametric	95% Chebyshev (Mean, SD)
Ruthenium-106	0–5	0.079	Nonparametric	95% Chebyshev (Mean, SD)
Strontium-90	0–5	1.757	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–5	0.412	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–5	0.123	Nonparametric	95% Chebyshev (Mean, SD)

Table D-6.3-15
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	VOC
0435-95-0113	35-02193	1–2	ALLH	—[a]	—	69[b]	—	—
0435-95-0118	35-02194	0–1	ALLH	—	—	—	69	—
0435-95-0120	35-02194	1–2	ALLH	—	—	—	—	69
RE35-98-0001	35-02204	0–0.5	ALLH	4329R	4329R	—	4329R	—
0435-95-0099	35-02205	0–0.5	ALLH	—	—	—	69	—
0435-95-0103	35-02207	0–0.5	ALLH	—	—	69	—	—
0435-97-0133	35-02481	0–0.5	FILL	3324R	—	—	3324R	—
0435-97-0134	35-02481	2–2.5	FILL	3324R	—	—	3324R	—
0435-97-0135	35-02482	0–0.33	ALLH	3290R	—	—	3290R	—
0435-97-0136	35-02482	2.8–3.2	ALLH	3290R	—	—	3290R	—
0435-97-0138	35-02483	0–0.5	ALLH	3290R	—	—	3290R	—
0435-97-0139	35-02483	2.3–2.6	ALLH	3290R	—	—	3290R	—
0435-97-0140	35-02484	0–0.5	ALLH	3290R	—	—	3290R	—

Table D-6.3-15 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	Pesticide-PCB	SVOC	VOC
0435-97-0141	35-02484	2–2.5	ALLH	3290R	—	—	3290R	—
0435-97-0142	35-02485	3.25–3.75	ALLH	3324R	—	—	3324R	—
0435-97-0143	35-02486	4–4.5	ALLH	3290R	—	—	3290R	—
RE35-98-0002	35-02600	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0003	35-02601	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0004	35-02602	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0006	35-02604	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0007	35-02605	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0008	35-02606	0–0.5	ALLH	4329R	4329R	—	4329R	—
RE35-98-0009	35-02607	0–0.5	ALLH	4329R	4329R	—	4329R	—
RE35-98-0010	35-02608	0–0.5	ALLH	4332R	4332R	—	4332R	—
RE35-98-0011	35-02608	0.5–1.5	ALLH	4332R	4332R	—	4332R	—
RE35-98-0012	35-02610	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0013	35-02611	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0014	35-02612	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0015	35-02613	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0016	35-02614	0–0.5	ALLH	4326R	4326R	—	4326R	—
RE35-98-0017	35-02615	0–0.5	ALLH	4326R	4326R	—	4326R	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-16
Summary of Organic Chemicals Detected
in Soil and Fill, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Di-n-butylphthalate
RE35-98-0001	35-02204	0.00–0.50	ALLH	—[a]	—	0.017 (J)
0435-97-0133	35-02481	0.00–0.50	FILL	—	—	0.036 (J)
0435-97-0135	35-02482	0.00–0.33	ALLH	—	0.049 (J)	—
0435-97-0139	35-02483	2.30–2.60	ALLH	—	0.11 (J)	—
RE35-98-0008	35-02606	0.00–0.50	ALLH	0.023 (J)	—	—
RE35-98-0009	35-02607	0.00–0.50	ALLH	—	0.058 (J)	0.022 (J)
RE35-98-0011	35-02608	0.50–1.50	ALLH	—	—	0.02 (J)

[a] — = Analyte not detected.

Table D-6.3-17
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	SVOC	VOC
0435-97-0226	35-02466	4–5	Qbt3	3371R	—	3371R	3371R
0435-97-0229	35-02467	1.5–2.5	Qbt3	3371R	—	3371R	3371R
0435-97-0232	35-02468	1.5–2.5	Qbt3	3371R	—	3371R	3371R
0435-97-0235	35-02469	3.8–4.5	Qbt3	3371R	—	3371R	3371R
0435-97-0238	35-02470	1.5–2.5	Qbt3	3371R	—	3371R	3371R
0435-97-0242	35-02471	4–5	Qbt3	3395R	—	3395R	3395R
0435-97-0245	35-02472	1.5–2.5	Qbt3	3395R	—	3395R	3395R
0435-97-0249	35-02473	3.2–4.2	Qbt3	3395R	—	3395R	3395R
0435-97-0253	35-02474	1.5–2.7	Qbt3	3395R	—	3395R	3395R
0435-97-0260	35-02476	0.66–1.5	Qbt3	3405R	—	3405R	3405R
0435-97-0263	35-02477	0.67–1.5	Qbt3	3405R	—	3405R	3405R
0435-97-0266	35-02478	4–5	Qbt3	3405R	—	3405R	3405R
0435-97-0270	35-02479	1–2	Qbt3	3405R	—	3405R	3405R
0435-97-0273	35-02480	0.75–1.5	Qbt3	3405R	—	3405R	3405R
RE35-98-0005	35-02603	0–0.5	Qbt3	4326R	4326R	4326R	—
RE35-04-54219	35-22987	2.5–3.2	Qbt3	2388S	2388S	—	—
RE35-04-54222	35-22988	3.5–4	Qbt3	2388S	2388S	—	—
RE35-04-54225	35-22989	2–2.5	Qbt3	2390S	2390S	—	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-18
Summary of Organic Chemicals Detected
in Tuff, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Aroclor-1260	Bis(2-ethylhexyl)phthalate	Toluene	Xylene (total)
0435-97-0238	35-02470	1.5–2.5	Qbt3	—[a]	0.052 (J)	0.004 (J+)	0.001 (J+)
0435-97-0253	35-02474	1.5–2.7	Qbt3	—	0.1 (J)	—	—
RE35-04-54225	35-22989	2–2.5	Qbt3	0.0063	—	—	—

[a] — = Analyte not detected.

Table D-6.3-19
Sediment Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PAH	PCB	Pesticide	SVOC	VOC
CAMO-99-0034	MO-00056	0.33–0.95	SED	—[a]	5593R[b]	5593R	5593R	—
CAMO-99-0035	MO-00056	0.95–1.28	SED	—	5593R	5593R	5593R	—
CAMO-99-0036	MO-00057	0.89–1.9	SED	—	5593R	5593R	5593R	—
CAMO-99-0037	MO-00058	0–0.16	SED	—	5593R	5593R	5593R	—
CAMO-99-0038	MO-00059	0–0.16	SED	—	5593R	5593R	5593R	—
CAMO-99-0039	MO-00060	0–1.15	SED	—	5593R	5593R	5593R	—
CAMO-99-0040	MO-00060	2.17–2.79	SED	—	5593R	5593R	5593R	—
CAMO-99-0041	MO-00061	0–0.43	SED	—	5593R	5593R	5593R	—
CAMO-99-0042	MO-00062	0–0.69	SED	—	5593R	5593R	5593R	—
CAMO-99-0043	MO-00063	0.23–0.76	SED	—	5593R	5593R	5593R	—
CAMO-99-0044	MO-00063	0.76–1.41	SED	—	5593R	5593R	5593R	—
CAMO-04-53379	MO-22832	0–0.49	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53383	MO-22836	0.43–1.08	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53384	MO-22836	1.38–2.17	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53385	MO-22838	0.23–1.44	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53386	MO-22838	2.69–3.18	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53387	MO-22840	0.26–1.31	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53388	MO-22841	0–0.75	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53389	MO-22841	1.02–1.31	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53390	MO-22841	1.51–2.03	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53391	MO-22845	0–1.64	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53392	MO-22845	2.36–3.35	SED	2178S	2178S	2178S	2178S	2178S
CAMO-04-53393	MO-22846	0.26–1.25	SED	2178S	2178S	2178S	2178S	2178S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-6.3-20
Summary of Organic Chemicals Detected in Sediment, 0-5 ft bgs, in the Ten Site Canyon Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Anthracene	Aroclor-1254	Aroclor-1260	Benzene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	BHC[alpha-]	BHC[beta-]	BHC[gamma-]	Bis(2-ethylhexyl)phthalate	Butanone[2-]
CAMO-99-0034	MO-00056	0.33–0.95	SED	—[a]	—	—	0.058	—	—	—	—	—	—	—	—	—	—	—
CAMO-99-0039	MO-00060	0–1.15	SED	—	—	—	0.067	—	—	—	—	—	—	—	—	—	—	—
CAMO-99-0041	MO-00061	0–0.43	SED	—	—	—	0.086	—	—	—	—	—	—	—	—	—	—	—
CAMO-99-0042	MO-00062	0–0.69	SED	—	—	—	0.04	—	—	—	—	—	—	—	—	—	—	—
CAMO-99-0043	MO-00063	0.23–0.76	SED	—	—	—	0.11	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53379	MO-22832	0–0.49	SED	0.067 (J)	0.026	—	0.096	0.00047 (J)	0.29	0.29	0.41	0.28	0.14	—	—	—	—	—
CAMO-04-53379 [b]	MO-22832	0–0.49	SED	—	—	—	—	—	0.21	0.38	0.32	0.23	0.39	—	—	—	—	—
CAMO-04-53383	MO-22836	0.43–1.08	SED	—	0.045	—	0.051	—	0.33	0.21	0.16	0.26	0.18	—	—	—	—	0.015 (J)
CAMO-04-53383 [b]	MO-22836	0.43–1.08	SED	—	—	—	—	—	0.17	0.38	0.36	0.16	0.16	—	—	—	—	—
CAMO-04-53384	MO-22836	1.38–2.17	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.0059 (J)
CAMO-04-53385	MO-22838	0.23–1.44	SED	—	—	—	0.051	—	0.13	0.14	—	0.1	—	—	—	—	—	0.019 (J)
CAMO-04-53385 [b]	MO-22838	0.23–1.44	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53386	MO-22838	2.69–3.18	SED	—	—	—	0.1	—	0.094	0.12	0.094	0.059	0.11	—	—	—	—	0.0081 (J)
CAMO-04-53386 [b]	MO-22838	2.69–3.18	SED	—	—	—	—	—	0.094	—	—	—	—	—	—	—	—	—
CAMO-04-53387	MO-22840	0.26–1.31	SED	0.1 (J)	—	—	0.1	—	0.066	0.087	0.074	0.053	0.079	—	—	—	—	—
CAMO-04-53387 [b]	MO-22840	0.26–1.31	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53388	MO-22841	0–0.75	SED	0.083 (J)	—	—	0.11	0.00048 (J)	0.15	0.16	0.22	0.12	0.2	—	—	—	—	0.013 (J)
CAMO-04-53388 [b]	MO-22841	0–0.75	SED	—	—	—	—	—	0.11	0.22	—	0.15	—	—	—	—	—	—
CAMO-04-53389	MO-22841	1.02–1.31	SED	0.097 (J)	—	—	0.16	—	—	—	—	0.05	—	—	—	—	—	0.021 (J)
CAMO-04-53389 [b]	MO-22841	1.02–1.31	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53390	MO-22841	1.51–2.03	SED	0.16 (J)	—	0.069	0.13	—	—	—	—	—	—	—	—	—	0.15 (J)	0.026 (J)
CAMO-04-53391	MO-22845	0–1.64	SED	0.064	—	—	0.035	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53392	MO-22845	2.36–3.35	SED	0.14	—	—	0.31	—	—	—	—	0.082	—	—	—	—	—	0.014 (J)
CAMO-04-53393	MO-22846	0.26–1.25	SED	0.054	—	—	0.034	0.00044 (J)	—	—	—	—	—	—	—	—	—	0.005 (J)

Table D-6.3-20 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Chrysene	DDD[4,4'-]	DDE[4,4'-]	Dibenz(a,h)anthracene	Fluoranthene	Indeno(1,2,3-cd)pyrene	Isopropyltoluene[4-]	Methoxychlor[4,4'-]	Methyl-2-pentanone[4-]	Phenanthrene	Pyrene	Toluene	Trichloroethene	Trichlorofluoromethane	Trimethylbenzene[1,2,4-]
CAMO-99-0034	MO-00056	0.33–0.95	SED	—	—	—	—	0.46 (J)	—	—	—	—	—	0.5 (J)	—	—	—	—
CAMO-99-0039	MO-00060	0–1.15	SED	—	—	—	—	—	—	—	—	—	—	0.31 (J)	—	—	—	—
CAMO-99-0041	MO-00061	0–0.43	SED	—	—	—	—	0.36 (J)	—	—	—	—	—	0.66 (J)	—	—	—	—
CAMO-99-0042	MO-00062	0–0.69	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-99-0043	MO-00063	0.23–0.76	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53379	MO-22832	0–0.49	SED	0.47	—	—	—	0.78	0.23	—	—	—	0.21	0.46	—	0.0003 (J)	—	—
CAMO-04-53379	MO-22832	0–0.49	SED	0.4	—	—	—	0.71	0.29	—	—	—	0.31	0.59	—	—	—	—
CAMO-04-53383	MO-22836	0.43–1.08	SED	0.25	—	—	0.1	0.88	0.28	—	—	—	0.16	0.36	—	—	—	—
CAMO-04-53383 [b]	MO-22836	0.43–1.08	SED	0.53	—	—	—	0.39	0.17	—	—	—	0.29	0.63	—	—	—	—
CAMO-04-53384	MO-22836	1.38–2.17	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53385	MO-22838	0.23–1.44	SED	0.2	—	—	—	0.097	0.12	—	—	—	0.09	0.084	—	—	—	0.00086 (J)
CAMO-04-53385 [b]	MO-22838	0.23–1.44	SED	—	—	—	—	0.3	—	—	—	—	—	0.21	—	—	—	—
CAMO-04-53386	MO-22838	2.69–3.18	SED	0.14	—	—	—	0.22	0.079	—	—	—	0.061	0.19	—	—	—	—
CAMO-04-53386 [b]	MO-22838	2.69–3.18	SED	0.13	—	—	—	0.21	0.098	—	—	—	—	0.15	—	—	—	—
CAMO-04-53387	MO-22840	0.26–1.31	SED	0.1	—	—	—	0.15	0.062	0.0038 (J)	—	—	0.042	0.11	0.0073	—	—	—
CAMO-04-53387 [b]	MO-22840	0.26–1.31	SED	0.11	—	—	—	0.16	0.07	—	—	—	—	0.14	—	—	—	—
CAMO-04-53388	MO-22841	0–0.75	SED	0.26	—	—	0.085	0.39	0.16	—	—	—	0.14	0.32	0.00089 (J)	—	—	—
CAMO-04-53388 [b]	MO-22841	0–0.75	SED	0.17	—	—	—	0.29	0.12	—	—	—	0.097	0.21	—	—	—	—
CAMO-04-53389	MO-22841	1.02–1.31	SED	—	—	—	—	0.16	—	—	—	—	0.061	0.12	—	0.00017 (J)	—	—
CAMO-04-53389 [b]	MO-22841	1.02–1.31	SED	—	—	—	—	—	—	—	—	—	—	0.12	—	—	—	—
CAMO-04-53390	MO-22841	1.51–2.03	SED	—	—	—	—	—	—	—	—	—	—	—	—	0.00028 (J)	—	0.001 (J)
CAMO-04-53391	MO-22845	0–1.64	SED	—	—	—	—	—	—	—	—	0.0043 (J+)	—	—	—	—	0.00037 (J)	—
CAMO-04-53392	MO-22845	2.36–3.35	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
CAMO-04-53393	MO-22846	0.26–1.25	SED	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

[a] — = Analyte not detected.
[b] Selected analytes were analyzed by both SVOC and VOC methods.

Table D-6.3-21
EPCs for Organic COPCs in the Ten Site Canyon Subarea

Analyte	Depth	EPC (mg/kg)	Distribution	EPC Method
Acetone	0–5	0.079	Nonparametric	95% Chebyshev (Mean, SD)
Anthracene	0–5	0.218	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–5	0.022	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1260	0–5	0.058	Nonparametric	95% Chebyshev (Mean, SD)
Benzene	0–5	0.003	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)anthracene	0–5	0.246	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(a)pyrene	0–5	0.263	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(b)fluoranthene	0–5	0.262	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(g,h,i)perylene	0–5	0.243	Nonparametric	95% Chebyshev (Mean, SD)
Benzo(k)fluoranthene	0–5	0.241	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic Acid	0–5	1.332	Nonparametric	95% Chebyshev (Mean, SD)
BHC[alpha-]	0–5	0.005	Nonparametric	95% Chebyshev (Mean, SD)
BHC[beta-]	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
BHC[gamma-]	0–5	0.005	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–5	0.226	Nonparametric	95% Chebyshev (Mean, SD)
Butanone[2-]	0–5	0.015	Nonparametric	95% Chebyshev (Mean, SD)
Chrysene	0–5	0.288	Nonparametric	95% Chebyshev (Mean, SD)
DDD[4,4'-]	0–5	0.005	Nonparametric	95% Chebyshev (Mean, SD)
DDE[4,4'-]	0–5	0.005	Nonparametric	95% Chebyshev (Mean, SD)
Dibenz(a,h)anthracene	0–5	0.219	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–5	0.228	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–5	0.343	Nonparametric	95% Chebyshev (Mean, SD)
Indeno(1,2,3-cd)pyrene	0–5	0.246	Nonparametric	95% Chebyshev (Mean, SD)
Isopropyltoluene[4-]	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Methoxychlor[4,4'-]	0–5	0.02	Nonparametric	95% Chebyshev (Mean, SD)
Methyl-2-pentanone[4-]	0–5	0.014	Nonparametric	95% Chebyshev (Mean, SD)
Phenanthrene	0–5	0.242	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–5	0.325	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Trichloroethene	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)
Trichlorofluoromethane	0–5	0.006	Nonparametric	95% Chebyshev (Mean, SD)
Trimethylbenzene[1,2,4-]	0–1	0.004	—[a]	Maximum detect
Xylene (total)	0–5	0.004	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-7.0-1
Soil, Fill, Tuff, and Sediment Samples Collected for Inorganic Chemical Analyses at East Ten Site Slope Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
04-001-99	0404-95-0096	04-02011	2-3	QBT3	—[a]	606[b]
	RE04-04-53865	04-02011	5-6	QBT3	—	2462S
	RE04-04-53866	04-02011	8-9	QBT3	—	2462S
	RE04-04-53867	04-02016	2-3	QBT3	—	2462S
	RE04-04-53868	04-02016	5-6	QBT3	—	2462S
	RE04-04-53869	04-02019	0-0.5	ALLH	—	2427S
	RE04-04-53870	04-02019	2-3	QBT3	—	2427S
	RE04-04-53871	04-02019	5-6	QBT3	—	2427S
	RE04-04-53872	04-02021	2-3	ALLH	—	2427S
	RE04-04-53873	04-02021	5-6	ALLH	—	2427S
	0404-95-0013	04-02023	0-0.5	ALLH	—	356
	0404-95-0017	04-02024	0-0.5	ALLH	—	385
	RE04-04-53863	04-02025	2-3	QBT3	—	2462S
	RE04-04-53864	04-02025	5.1-5.6	QBT3	—	2462S
	0404-95-0034	04-02027	2-3	FILL	—	485
	RE04-04-54741	04-23233	0-0.1	ALLH	—	2413S
	RE04-04-54742	04-23233	0.1-0.56	ALLH	—	2413S
	RE04-04-54743	04-23234	0-0.13	ALLH	—	2413S
	RE04-04-54744	04-23234	0.13-0.56	ALLH	—	2413S
	RE04-04-54745	04-23235	0-0.13	ALLH	—	2413S
	RE04-04-54746	04-23235	0.23-0.69	ALLH	—	2413S
	RE04-04-54760	04-23236	0-0.16	ALLH	—	2413S
	RE04-04-54747	04-23236	0.03-0.16	ALLH	—	2413S
	RE04-04-54748	04-23236	0.16-0.39	ALLH	—	2413S
	RE04-04-54749	04-23237	0-0.13	ALLH	—	2413S
	RE04-04-54750	04-23237	0.13-0.66	ALLH	—	2413S
	RE04-04-54751	04-23238	0-0.1	ALLH	—	2413S
	RE04-04-54752	04-23238	0.1-0.36	ALLH	—	2413S
	RE04-04-54756	04-23239	0-0.2	ALLH	—	2413S
	RE04-04-54753	04-23239	0.07-0.2	ALLH	—	2413S
	RE04-04-54754	04-23239	0.2-0.69	ALLH	—	2413S
05-001(a)-99	0405-95-0217	05-02007	1-2	FILL	—	596
	0405-95-0219	05-02007	3-4	FILL	—	596
	0405-95-0221	05-02007	5-6	QBT3	—	596
	0405-95-0224	05-02008	1-2	FILL	—	596
	0405-95-0225	05-02008	3-4	FILL	—	596
	0405-95-0226	05-02008	5-6	FILL	—	596
	0405-95-0007	05-02010	1-2	FILL	—	560
	RE05-04-53894	05-02012	2-3	FILL	—	2481S
	RE05-04-53895	05-02012	5-6	QBT3	—	2481S
	0405-95-0034	05-02018	0-0.5	ALLH	—	560
	0405-95-0085	05-02045	0-0.5	ALLH	—	532

Table D-7.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	0405-95-0087	05-02046	0-0.5	ALLH	—	532
	0405-95-0089	05-02047	0-0.5	ALLH	—	532
	0405-95-0092	05-02048	0-0.5	ALLH	—	532
	0405-95-0094	05-02049	0-0.5	ALLH	—	532
	0405-95-0058	05-02050	0-0.5	ALLH	—	555
	0405-95-0059	05-02051	0-0.5	ALLH	—	555
	RE05-04-53890	05-02051	2-3	QBT3	—	2465S
	RE05-04-53891	05-02051	5-6.1	QBT3	—	2465S
	0405-95-0060	05-02052	0-0.5	FILL	—	555
	0405-95-0061	05-02053	0-0.5	FILL	—	555
	0405-95-0062	05-02054	1-2	QBT3	—	555
	0405-95-0064	05-02054	5.5-6.5	QBT3	—	555
	0405-95-0066	05-02054	14-15	QBT3	—	555
	0405-95-0068	05-02054	18-19	QBT3	—	555
	0405-95-0069	05-02055	4-5	QBT3	—	555
	0405-95-0070	05-02055	9-10	QBT3	—	555
	0405-95-0071	05-02055	10-11	QBT3	—	555
	0405-95-0072	05-02055	19-20	QBT3	—	555
	0405-95-0073	05-02056	3.5-4.5	FILL	—	555
	0405-95-0074	05-02056	9-10	FILL	—	555
	0405-95-0076	05-02056	14-15	FILL	—	555
	0405-95-0077	05-02056	19-20	FILL	—	555
	RE05-07-75247	05-02056	22-22.5	QBT3	—	6894S
	RE05-07-75248	05-02056	24-24.5	QBT3	—	6894S
	0405-95-0079	05-02057	4-5	FILL	—	555
	0405-95-0081	05-02057	9-10	FILL	—	555
	0405-95-0082	05-02057	14-15	QBT3	—	555
	0405-95-0083	05-02057	19-20	QBT3	—	555
	0405-95-0192	05-02058	0-0.5	ALLH	—	544
	RE05-04-53886	05-02059	2-3	QBT3	—	2465S
	RE05-04-53887	05-02059	5-6	QBT3	—	2465S
	RE05-04-53888	05-02060	2-3	QBT3	—	2481S
	RE05-04-53889	05-02060	5-5.6	QBT3	—	2481S
	RE05-07-579	05-02060	5.6-6	QBT3	—	07-44
	RE05-07-580	05-02060	6-6.5	QBT3	—	07-44
	0405-95-0228	05-02068	0-0.5	ALLH	—	596
	0405-95-0230	05-02069	0-0.5	ALLH	—	596
	RE05-04-53892	05-22893	2-3	QBT3	—	2481S
	RE05-04-53893	05-22893	5-6	QBT3	—	2481S
	RE05-04-54762	05-23241	0.16-0.36	ALLH	—	2381S
	RE05-04-54763	05-23241	0.36-0.56	ALLH	—	2381S
	RE05-04-54764	05-23242	0.07-0.33	ALLH	—	2377S
	RE05-04-54765	05-23242	0.33-0.49	ALLH	—	2377S
	RE05-04-54766	05-23243	0.23-1.05	ALLH	—	2363S

Table D-7.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	RE05-04-54767	05-23243	1.05-2.03	ALLH	—	2363S
	RE05-04-54768	05-23244	0-0.62	ALLH	—	2363S
	RE05-04-54769	05-23244	0.98-1.64	ALLH	—	2363S
	RE05-04-54770	05-23245	0-0.34	ALLH	—	2384S
	RE05-04-54771	05-23245	0.34-0.66	ALLH	—	2384S
	RE05-04-54772	05-23246	0-0.2	ALLH	—	2384S
	RE05-04-54773	05-23246	0.2-0.46	ALLH	—	2383S
	RE05-04-54774	05-23247	0-0.23	ALLH	—	2381S
	RE05-04-54775	05-23247	0.23-0.52	ALLH	—	2381S
	RE05-04-54776	05-23248	0-0.16	ALLH	—	2381S
	RE05-04-54777	05-23248	0.16-0.59	ALLH	—	2381S
	RE05-04-54778	05-23249	0-0.39	ALLH	—	2363S
	RE05-04-54779	05-23249	0.39-0.66	ALLH	—	2363S
05-001(c)	0405-95-0253	05-02019	0-0.5	ALLH	—	612
	0405-95-0254	05-02020	0-0.5	ALLH	—	612
	0405-95-0256	05-02021	0-0.5	ALLH	—	612
	RE05-04-53900	05-02021	2-2.5	QBT3	—	2522S
	RE05-04-53901	05-02021	5.1-5.4	QBT3	—	2522S
	0405-95-0258	05-02022	0-0.5	ALLH	—	612
	0405-95-0259	05-02023	0-0.5	ALLH	—	612
	0405-95-0260	05-02024	0-0.5	ALLH	—	612
	RE05-04-53896	05-02024	2.2-2.9	QBT3	—	2522S
	RE05-04-53897	05-02024	5.1-5.6	QBT3	—	2522S
	0405-95-0261	05-02025	0-0.5	ALLH	—	612
	0405-95-0232	05-02026	0-1	QBT3	—	612
	0405-95-0234	05-02026	1-2	QBT3	—	612
	0405-95-0235	05-02026	2-3	QBT3	—	612
	0405-95-0237	05-02027	0-1	FILL	—	612
	0405-95-0238	05-02027	1-2	FILL	—	612
	0405-95-0239	05-02027	2-3	FILL	—	612
	0405-95-0240	05-02028	0-0.5	ALLH	—	612
	0405-95-0241	05-02029	0-0.5	ALLH	—	612
	0405-95-0243	05-02030	0-1	FILL	—	612
	0405-95-0244	05-02030	1-2	FILL	—	612
	0405-95-0245	05-02030	2-3	QBT3	—	612
	0405-95-0247	05-02031	0-1	ALLH	—	612
	0405-95-0248	05-02031	1-2	QBT3	—	612
	0405-95-0249	05-02031	2-3	QBT3	—	612
	0405-95-0263	05-02032	0-0.5	ALLH	—	612
	0405-95-0264	05-02033	0-0.5	ALLH	—	612
	0405-95-0266	05-02034	0-0.5	ALLH	—	612
	0405-95-0267	05-02035	0-0.5	ALLH	—	612
	0405-95-0268	05-02036	0-0.5	ALLH	—	612
	0405-95-0269	05-02037	0-0.5	ALLH	—	612

Table D-7.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	0405-95-0270	05-02038	0-0.5	ALLH	—	612
	RE05-04-53898	05-22894	2.1-2.5	SED	—	2533S
	RE05-04-53899	05-22894	5.2-6	QBT3	—	2533S
05-005(a)-00	0405-95-0217	05-02007	1-2	FILL	—	596
	0405-95-0219	05-02007	3-4	FILL	—	596
	0405-95-0221	05-02007	5-6	QBT3	—	596
	0405-95-0224	05-02008	1-2	FILL	—	596
	0405-95-0225	05-02008	3-4	FILL	—	596
	0405-95-0226	05-02008	5-6	FILL	—	596
	0405-95-0007	05-02010	1-2	FILL	—	560
	RE05-04-53894	05-02012	2-3	FILL	—	2481S
	RE05-04-53895	05-02012	5-6	QBT3	—	2481S
	0405-95-0228	05-02068	0-0.5	ALLH	—	596
	0405-95-0230	05-02069	0-0.5	ALLH	—	596
	RE05-04-53892	05-22893	2-3	QBT3	—	2481S
	RE05-04-53893	05-22893	5-6	QBT3	—	2481S
	RE05-04-54762	05-23241	0.16-0.36	ALLH	—	2381S
	RE05-04-54763	05-23241	0.36-0.56	ALLH	—	2381S
	RE05-04-54770	05-23245	0-0.34	ALLH	—	2384S
	RE05-04-54771	05-23245	0.34-0.66	ALLH	—	2384S
52-002(a)	0452-95-0003	52-02001	8-9	QBT3	464	—
	0452-95-0005	52-02001	19-20	QBT3	464	464
	0452-95-0011	52-02002	9-10	QBT3	464	—
	0452-95-0017	52-02002	19-20	QBT3	464	—
	0452-95-0022	52-02003	9-10	QBT3	475	—
	0452-95-0023	52-02003	14-15	QBT3	—	475
	0452-95-0027	52-02003	18.5-20	QBT3	475	—
	0452-95-0032	52-02004	6.5-7.5	QBT3	475	—
	0452-95-0034	52-02004	19-20	QBT3	475	—
	0452-95-0040	52-02006	9-10	QBT3	464	464
	RE52-04-53999	52-02006	9-10	QBT3	—	2432S
	RE52-04-54000	52-02006	14-15	QBT3	—	2432S
	0452-95-0045	52-02006	19-20	QBT3	464	—
	RE52-04-54001	52-02006	24-25	QBT3	—	2432S
	RE52-04-54002	52-02006	29-30	QBT3	—	2432S
	RE52-04-54007	52-02008	8.7-10	QBT3	—	2432S
	RE52-04-54008	52-02008	13.7-15	QBT3	—	2432S
	RE52-04-54009	52-02008	23.7-25	QBT3	—	2432S
	RE52-04-54010	52-02008	28.7-30	QBT3	—	2432S
	RE52-04-54789	52-23252	0.13-0.43	ALLH	—	2470S
	RE52-04-54790	52-23252	0.43-0.79	ALLH	—	2470S
	RE52-04-54797	52-23254	0-0.43	ALLH	—	2470S
	RE52-04-54793	52-23254	0.16-0.43	ALLH	—	2470S
	RE52-04-54794	52-23254	0.43-0.69	ALLH	—	2470S

Table D-7.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
52-003(a)	0452-95-0059	52-02009	19-20	QBT3	—	471
	RE52-04-54011	52-02010	24-25	QBT3	—	2448S
	RE52-04-54012	52-02010	29-30	QBT3	—	2448S
	RE52-04-54013	52-02010	34-35	QBT3	—	2448S
63-001(a)	0463-95-0002	63-02001	7.5-8.5	QBT3	391	391
	0463-95-0006	63-02001	14-15	QBT3	391	—
	0463-95-0007	63-02001	19-20	QBT3	391	—
	0463-95-0009	63-02002	8.5-9.5	FILL	391	—
	0463-95-0012	63-02002	12-13	QBT3	391	—
	0463-95-0013	63-02002	19-20	QBT3	391	—
	0463-95-0018	63-02003	4-5	FILL	394	—
	0463-95-0021	63-02003	7-8	QBT3	394	—
	0463-95-0024	63-02003	14-15	QBT3	394	—
	0463-95-0025	63-02003	19-20	QBT3	394	—
	0463-95-0026	63-02003	24-25	QBT3	394	—
	0463-95-0028	63-02003	29-30	QBT3	394	394
	0463-95-0031	63-02003	34-35	QBT3	394	—
	0463-95-0033	63-02003	39-40	QBT3	394	—
	0463-95-0034	63-02003	44-45	QBT3	394	—
	0463-95-0019	63-02003	49-50	QBT3	394	—
	0463-95-0116	63-02003	54-55	QBT3	394	—
	0463-95-0118	63-02003	59-60	QBT3	—	—
	0463-95-0038	63-02004	3-4	FILL	432	—
	0463-95-0045	63-02004	8-9	QBT3	432	—
	0463-95-0048	63-02004	14-15	QBT3	432	—
	0463-95-0049	63-02004	19-20	QBT3	432	—
	0463-95-0050	63-02004	24-25	QBT3	432	—
	0463-95-0051	63-02004	29-30	QBT3	432	—
	0463-95-0052	63-02004	30-31	QBT3	432	432
	0463-95-0054	63-02004	39-40	QBT3	432	—
	0463-95-0055	63-02004	44-45	QBT3	432	—
	0463-95-0040	63-02004	49-50	QBT3	432	—
	0463-95-0041	63-02004	54-55	QBT3	432	—
	0463-95-0042	63-02004	59-60	QBT3	432	—
63-001(b)	0463-95-0065	63-02005	8.7-9.7	QBT3	446	—
	0463-95-0059	63-02005	9-10	QBT3	446	—
	0463-95-0061	63-02005	14-15	QBT3	446	—
	0463-95-0062	63-02005	19-20	QBT3	446	—
	0463-95-0066	63-02006	13.5-14.5	QBT3	446	446
	0463-95-0070	63-02006	19-20	QBT3	446	—
	0463-95-0074	63-02007	4-5	QBT3	450	450
	0463-95-0082	63-02007	9-10	QBT3	450	—
	0463-95-0083	63-02007	14-15	QBT3	450	—
	0463-95-0084	63-02007	18.8-19.8	QBT3	450	—

Table D-7.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
	0463-95-0085	63-02007	23.5-24.5	QBT3	450	—
	0463-95-0087	63-02007	29-30	QBT3	450	—
	0463-95-0091	63-02007	34-35	QBT3	450	—
	0463-95-0092	63-02007	39-40	QBT3	450	—
	0463-95-0093	63-02007	43.5-44.5	QBT3	450	—
	0463-95-0078	63-02007	49-50	QBT3	450	—
	0463-95-0079	63-02007	54-55	QBT3	450	—
	0463-95-0081	63-02007	59-60	QBT3	450	—
	0463-95-0096	63-02008	3.5-4.5	QBT3	455	—
	0463-95-0102	63-02008	9-10	QBT3	455	—
	0463-95-0103	63-02008	13.5-15	QBT3	455	—
	0463-95-0107	63-02008	19-20	QBT3	455	—
	0463-95-0108	63-02008	24-25	QBT3	455	455
	0463-95-0110	63-02008	29-30	QBT3	455	—
	0463-95-0111	63-02008	34-35	QBT3	455	—
	0463-95-0112	63-02008	39-40	QBT3	455	—
	0463-95-0114	63-02008	41.5-42.5	QBT3	455	—
	0463-95-0097	63-02008	45-46	QBT3	455	—
	0463-95-0099	63-02008	52.5-53.5	QBT3	455	—
	0463-95-0101	63-02008	59-60	QBT3	455	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-7.0-2
Soil, Fill, Tuff, and Sediment Samples Collected for Radionuclide Analyses at East Ten Site Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
04-001-99	0404-95-0094	04-02011	0-1	FILL	—[a]	—	—	—	607[b]	—
	0404-95-0095	04-02011	1-2	FILL	—	—	—	—	607	—
	0404-95-0096	04-02011	2-3	QBT3	—	—	—	—	607	—
	RE04-04-53865	04-02011	5-6	QBT3	—	2463S	—	2463S	2463S	—
	RE04-04-53866	04-02011	8-9	QBT3	—	2463S	—	2463S	2463S	—
	0404-95-0099	04-02012	0-1	FILL	—	—	—	607	607	—
	0404-95-0100	04-02012	1-2	FILL	—	—	—	—	607	—
	0404-95-0102	04-02012	2-3	FILL	—	—	—	—	607	—
	0404-95-0105	04-02013	0-1	ALLH	—	607	—	607	607	—
	0404-95-0107	04-02013	1-2	QBT3	—	—	—	—	607	—
	0404-95-0108	04-02013	2-3	QBT3	—	—	—	—	607	—
	0404-95-0002	04-02014	0-0.5	ALLH	—	—	—	357	357	—
	0404-95-0004	04-02015	0-0.5	ALLH	—	—	—	357	357	—
	0404-95-0005	04-02016	0-0.5	ALLH	—	—	—	357	357	—
	RE04-04-53867	04-02016	2-3	QBT3	—	—	—	—	2463S	—
	RE04-04-53868	04-02016	5-6	QBT3	—	—	—	—	2463S	—
	0404-95-0006	04-02017	0-0.5	ALLH	—	—	—	357	357	—
	0404-95-0007	04-02018	0-0.5	ALLH	—	—	—	357	357	—
	0404-95-0008	04-02019	0-0.5	ALLH	—	—	—	357	357	—
	RE04-04-53869	04-02019	0-0.5	ALLH	—	—	—	2428S	2428S	—
	RE04-04-53870	04-02019	2-3	QBT3	—	—	—	2428S	2428S	—
	RE04-04-53871	04-02019	5-6	QBT3	—	—	—	2428S	2428S	—
	0404-95-0009	04-02020	0-0.5	ALLH	—	—	—	357	357	—
	0404-95-0010	04-02021	0-0.5	ALLH	—	—	—	357	357	—
	RE04-04-53872	04-02021	2-3	ALLH	—	2428S	—	—	2428S	—
	RE04-04-53873	04-02021	5-6	ALLH	—	2428S	—	—	2428S	—
	0404-95-0012	04-02022	10-13	ALLH	—	—	—	357	357	—
	0404-95-0013	04-02023	0-0.5	ALLH	—	—	—	357	357	—
	0404-95-0017	04-02024	0-0.5	ALLH	—	386	—	386	386	—
	0404-95-0020	04-02025	0-0.5	ALLH	—	—	—	386	386	—
	RE04-04-53863	04-02025	2-3	QBT3	—	—	—	—	2463S	—
	RE04-04-53864	04-02025	5.1-5.6	QBT3	—	—	—	—	2463S	—
	0404-95-0021	04-02026	0-0.5	ALLH	—	—	—	386	386	—
	0404-95-0034	04-02027	2-3	FILL	—	—	—	486	486	—
	0404-95-0036	04-02027	5-6	QBT3	—	—	—	486	486	—
	0404-95-0038	04-02027	14-15	QBT3	—	—	—	486	486	—
	0404-95-0039	04-02027	19-20	QBT3	—	—	—	486	486	—
	0404-95-0040	04-02028	3.5-4.5	FILL	—	—	—	486	486	—
	0404-95-0043	04-02028	9-10	QBT3	—	486	—	486	486	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0404-95-0046	04-02028	14-15	QBT3	—	—	—	486	486	—
	0404-95-0047	04-02028	19-20	QBT3	—	—	—	486	486	—
	0404-95-0022	04-02029	0-1	ALLH	—	—	—	386	386	—
	0404-95-0024	04-02029	1-2	ALLH	—	—	—	386	386	—
	0404-95-0025	04-02029	2-3	QBT3	—	—	—	386	386	—
	0404-95-0026	04-02030	0-1	ALLH	—	—	—	386	386	—
	0404-95-0027	04-02030	1-2	QBT3	—	—	—	386	386	—
	0404-95-0028	04-02030	2-3	QBT3	—	—	—	386	386	—
	0404-95-0029	04-02031	0-1	ALLH	—	—	—	386	386	—
	0404-95-0030	04-02031	1-2	QBT3	—	—	—	386	386	—
	0404-95-0032	04-02031	2-3	QBT3	—	—	—	386	386	—
	RE04-04-54741	04-23233	0-0.1	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54742	04-23233	0.1-0.56	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54743	04-23234	0-0.13	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54744	04-23234	0.13-0.56	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54745	04-23235	0-0.13	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54746	04-23235	0.23-0.69	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54760	04-23236	0-0.16	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54747	04-23236	0.03-0.16	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54748	04-23236	0.16-0.39	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54749	04-23237	0-0.13	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54750	04-23237	0.13-0.66	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54751	04-23238	0-0.1	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54752	04-23238	0.1-0.36	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54756	04-23239	0-0.2	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54753	04-23239	0.07-0.2	ALLH	2414S	2414S	—	2414S	2414S	—
	RE04-04-54754	04-23239	0.2-0.69	ALLH	2414S	2414S	—	2414S	2414S	—
05-001(a)-99	0405-95-0217	05-02007	1-2	FILL	—	—	—	597	597	—
	0405-95-0219	05-02007	3-4	FILL	—	—	—	597	597	—
	0405-95-0221	05-02007	5-6	QBT3	—	—	—	597	597	—
	0405-95-0224	05-02008	1-2	FILL	—	—	—	597	597	—
	0405-95-0225	05-02008	3-4	FILL	—	—	—	597	597	—
	0405-95-0226	05-02008	5-6	FILL	—	—	—	597	597	—
	0405-95-0002	05-02009	1-2	FILL	—	—	—	561	561	—
	0405-95-0003	05-02009	3-4	FILL	—	561	—	561	561	—
	0405-95-0006	05-02009	5-6	QBT3	—	—	—	561	561	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	561	561	—
	0405-95-0010	05-02010	3-4	FILL	—	—	—	561	561	—
	0405-95-0011	05-02010	4-5	FILL	—	—	—	561	561	—
	0405-95-0013	05-02011	1-2	FILL	—	—	—	561	561	—
	0405-95-0014	05-02011	3-4	FILL	—	—	—	561	561	—
	0405-95-0015	05-02011	5-6	FILL	—	—	—	561	561	—
	0405-95-0018	05-02012	1-2	FILL	—	—	—	561	561	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0405-95-0020	05-02012	3-4	FILL	—	—	—	561	561	—
	0405-95-0021	05-02012	5-6	QBT3	—	—	—	561	561	—
	RE05-04-53894	05-02012	2-3	FILL	—	—	—	2482S	—	—
	RE05-04-53895	05-02012	5-6	QBT3	—	—	—	2482S	—	—
	0405-95-0023	05-02013	1-2	FILL	—	561	—	561	561	—
	0405-95-0026	05-02013	3-4	FILL	—	—	—	561	561	—
	0405-95-0027	05-02013	4-5	FILL	—	—	—	561	561	—
	0405-95-0029	05-02014	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0030	05-02015	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0031	05-02016	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0033	05-02017	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0034	05-02018	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0085	05-02045	0-0.5	ALLH	—	—	—	534	534	—
	0405-95-0087	05-02046	0-0.5	ALLH	—	—	—	534	534	—
	0405-95-0089	05-02047	0-0.5	ALLH	—	—	—	534	534	—
	0405-95-0092	05-02048	0-0.5	ALLH	—	534	—	534	534	—
	0405-95-0094	05-02049	0-0.5	ALLH	—	—	—	534	534	—
	0405-95-0058	05-02050	0-0.5	ALLH	—	—	—	—	536	—
	0405-95-0059	05-02051	0-0.5	ALLH	—	—	—	—	536	—
	RE05-04-53890	05-02051	2-3	QBT3	—	—	—	—	2466S	—
	RE05-04-53891	05-02051	5-6.1	QBT3	—	—	—	—	2466S	—
	0405-95-0060	05-02052	0-0.5	FILL	—	—	—	536	536	—
	0405-95-0061	05-02053	0-0.5	FILL	—	—	—	536	536	—
	0405-95-0062	05-02054	1-2	QBT3	—	—	—	536	536	—
	0405-95-0064	05-02054	5.5-6.5	QBT3	—	—	—	—	536	—
	0405-95-0066	05-02054	14-15	QBT3	—	—	—	536	536	—
	0405-95-0068	05-02054	18-19	QBT3	—	—	—	—	536	—
	0405-95-0069	05-02055	4-5	QBT3	—	—	—	—	536	—
	0405-95-0070	05-02055	9-10	QBT3	—	—	—	536	536	—
	0405-95-0071	05-02055	10-11	QBT3	—	—	—	536	536	—
	0405-95-0072	05-02055	19-20	QBT3	—	—	—	536	536	—
	0405-95-0073	05-02056	3.5-4.5	FILL	—	—	—	536	536	—
	0405-95-0074	05-02056	9-10	FILL	—	—	—	536	536	—
	0405-95-0076	05-02056	14-15	FILL	—	—	—	536	536	—
	0405-95-0077	05-02056	19-20	FILL	—	—	—	536	536	—
	0405-95-0079	05-02057	4-5	FILL	—	536	—	536	536	—
	0405-95-0081	05-02057	9-10	FILL	—	—	—	536	536	—
	0405-95-0082	05-02057	14-15	QBT3	—	—	—	536	536	—
	0405-95-0083	05-02057	19-20	QBT3	—	—	—	536	536	—
	0405-95-0192	05-02058	0-0.5	ALLH	—	—	—	545	545	—
	0405-95-0194	05-02059	0-0.5	ALLH	—	545	—	545	545	—
	RE05-04-53886	05-02059	2-3	QBT3	—	—	—	—	2466S	—
	RE05-04-53887	05-02059	5-6	QBT3	—	—	—	—	2466S	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0405-95-0196	05-02060	0-0.5	ALLH	—	—	—	545	545	—
	RE05-04-53888	05-02060	2-3	QBT3	—	—	—	2482S	2482S	—
	RE05-04-53889	05-02060	5-5.6	QBT3	—	—	—	2482S	2482S	—
	0405-95-0197	05-02061	0-0.5	SED	—	—	—	545	545	—
	0405-95-0198	05-02062	0-0.5	ALLH	—	—	—	545	545	—
	0405-95-0199	05-02063	0-0.5	SED	—	—	—	545	545	—
	0405-95-0201	05-02064	0-1	ALLH	—	—	—	545	545	—
	0405-95-0202	05-02064	1-2	QBT3	—	—	—	545	545	—
	0405-95-0203	05-02064	2-3	QBT3	—	—	—	545	545	—
	0405-95-0204	05-02065	0-1	ALLH	—	—	—	545	545	—
	0405-95-0205	05-02065	1-2	ALLH	—	—	—	545	545	—
	0405-95-0206	05-02065	2-3	QBT3	—	—	—	545	545	—
	0405-95-0207	05-02066	0-1	ALLH	—	—	—	545	545	—
	0405-95-0209	05-02066	1-2	ALLH	—	—	—	545	545	—
	0405-95-0210	05-02066	2-3	QBT3	—	—	—	545	545	—
	0405-95-0211	05-02067	0-1	ALLH	—	—	—	545	545	—
	0405-95-0212	05-02067	1-2	QBT3	—	—	—	545	545	—
	0405-95-0214	05-02067	2-3	QBT3	—	—	—	545	545	—
	0405-95-0228	05-02068	0-0.5	ALLH	—	597	—	597	597	—
	0405-95-0230	05-02069	0-0.5	ALLH	—	—	—	597	597	—
	RE05-04-53892	05-22893	2-3	QBT3	—	—	—	2482S	2482S	—
	RE05-04-53893	05-22893	5-6	QBT3	—	—	—	2482S	2482S	—
	RE05-04-54762	05-23241	0.16-0.36	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54763	05-23241	0.36-0.56	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54764	05-23242	0.07-0.33	ALLH	2378S	2378S	—	2378S	2378S	—
	RE05-04-54765	05-23242	0.33-0.49	ALLH	2378S	2378S	—	2378S	2378S	—
	RE05-04-54766	05-23243	0.23-1.05	ALLH	2364S	2364S	—	2364S	2364S	—
	RE05-04-54767	05-23243	1.05-2.03	ALLH	2364S	2364S	—	2364S	2364S	—
	RE05-04-54768	05-23244	0-0.62	ALLH	2364S	2364S	—	2364S	2364S	—
	RE05-04-54769	05-23244	0.98-1.64	ALLH	2364S	2364S	—	2364S	2364S	—
	RE05-04-54770	05-23245	0-0.34	ALLH	2385S	2385S	—	2385S	2385S	—
	RE05-04-54771	05-23245	0.34-0.66	ALLH	2385S	2385S	—	2385S	2385S	—
	RE05-04-54772	05-23246	0-0.2	ALLH	2385S	2385S	—	2385S	2385S	—
	RE05-04-54773	05-23246	0.2-0.46	ALLH	2385S	2385S	—	2385S	2385S	—
	RE05-04-54774	05-23247	0-0.23	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54775	05-23247	0.23-0.52	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54776	05-23248	0-0.16	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54777	05-23248	0.16-0.59	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54778	05-23249	0-0.39	ALLH	2364S	2364S	—	2364S	2364S	—
	RE05-04-54779	05-23249	0.39-0.66	ALLH	2364S	2364S	—	2364S	2364S	—
05-001(c)	0405-95-0253	05-02019	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0254	05-02020	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0256	05-02021	0-0.5	ALLH	—	—	—	614	614	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	RE05-04-53900	05-02021	2-2.5	QBT3	—	—	—	2523S	2523S	—
	RE05-04-53901	05-02021	5.1-5.4	QBT3	—	—	—	2523S	2523S	—
	0405-95-0258	05-02022	0-0.5	ALLH	—	—	—	614	614	—
	RE05-04-53902	05-02022	2.1-2.6	QBT3	—	—	—	2523S	—	—
	RE05-04-53903	05-02022	5-5.5	QBT3	—	—	—	2523S	—	—
	0405-95-0259	05-02023	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0260	05-02024	0-0.5	ALLH	—	—	—	614	614	—
	RE05-04-53896	05-02024	2.2-2.9	QBT3	—	—	—	2523S	2523S	—
	RE05-04-53897	05-02024	5.1-5.6	QBT3	—	—	—	2523S	2523S	—
	0405-95-0261	05-02025	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0232	05-02026	0-1	QBT3	—	—	—	614	614	—
	0405-95-0234	05-02026	1-2	QBT3	—	—	—	614	614	—
	0405-95-0235	05-02026	2-3	QBT3	—	—	—	614	614	—
	0405-95-0237	05-02027	0-1	FILL	—	—	—	614	614	—
	0405-95-0238	05-02027	1-2	FILL	—	—	—	614	614	—
	0405-95-0239	05-02027	2-3	FILL	—	—	—	614	614	—
	0405-95-0240	05-02028	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0241	05-02029	0-0.5	ALLH	—	614	—	614	614	—
	0405-95-0243	05-02030	0-1	FILL	—	—	—	614	614	—
	0405-95-0244	05-02030	1-2	FILL	—	—	—	614	614	—
	0405-95-0245	05-02030	2-3	QBT3	—	—	—	614	614	—
	0405-95-0247	05-02031	0-1	ALLH	—	—	—	614	614	—
	0405-95-0248	05-02031	1-2	QBT3	—	—	—	614	614	—
	0405-95-0249	05-02031	2-3	QBT3	—	—	—	614	614	—
	0405-95-0263	05-02032	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0264	05-02033	0-0.5	ALLH	—	614	—	614	614	—
	0405-95-0266	05-02034	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0267	05-02035	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0268	05-02036	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0269	05-02037	0-0.5	ALLH	—	—	—	614	614	—
	0405-95-0270	05-02038	0-0.5	ALLH	—	—	—	614	614	—
	RE05-04-53898	05-22894	2.1-2.5	SED	—	—	—	2534S	2534S	—
	RE05-04-53899	05-22894	5.2-6	QBT3	—	—	—	2534S	2534S	—
	RE-05-07-75243	05-22894	6.2-6.7	QBT3	—	—	—	—	6890S	—
	RE-05-07-75244	05-22894	7.0-7.5	QBT3	—	—	—	—	6890S	—
05-005(a)-00	0405-95-0217	05-02007	1-2	FILL	—	—	—	597	597	—
	0405-95-0219	05-02007	3-4	FILL	—	—	—	597	597	—
	0405-95-0221	05-02007	5-6	QBT3	—	—	—	597	597	—
	0405-95-0224	05-02008	1-2	FILL	—	—	—	597	597	—
	0405-95-0225	05-02008	3-4	FILL	—	—	—	597	597	—
	0405-95-0226	05-02008	5-6	FILL	—	—	—	597	597	—
	0405-95-0002	05-02009	1-2	FILL	—	—	—	561	561	—
	0405-95-0003	05-02009	3-4	FILL	—	561	—	561	561	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0405-95-0006	05-02009	5-6	QBT3	—	—	—	561	561	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	561	561	—
	0405-95-0010	05-02010	3-4	FILL	—	—	—	561	561	—
	0405-95-0011	05-02010	4-5	FILL	—	—	—	561	561	—
	0405-95-0013	05-02011	1-2	FILL	—	—	—	561	561	—
	0405-95-0014	05-02011	3-4	FILL	—	—	—	561	561	—
	0405-95-0015	05-02011	5-6	FILL	—	—	—	561	561	—
	0405-95-0018	05-02012	1-2	FILL	—	—	—	561	561	—
	RE05-04-53894	05-02012	2-3	FILL	—	—	—	2482S	—	—
	0405-95-0020	05-02012	3-4	FILL	—	—	—	561	561	—
	0405-95-0021	05-02012	5-6	QBT3	—	—	—	561	561	—
	RE05-04-53895	05-02012	5-6	QBT3	—	—	—	2482S	—	—
	0405-95-0023	05-02013	1-2	FILL	—	561	—	561	561	—
	0405-95-0026	05-02013	3-4	FILL	—	—	—	561	561	—
	0405-95-0027	05-02013	4-5	FILL	—	—	—	561	561	—
	0405-95-0029	05-02014	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0030	05-02015	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0031	05-02016	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0033	05-02017	0-0.5	ALLH	—	—	—	561	561	—
	0405-95-0228	05-02068	0-0.5	ALLH	—	597	—	597	597	—
	0405-95-0230	05-02069	0-0.5	ALLH	—	—	—	597	597	—
	RE05-04-53892	05-22893	2-3	QBT3	—	—	—	2482S	2482S	—
	RE05-04-53893	05-22893	5-6	QBT3	—	—	—	2482S	2482S	—
	RE05-04-54762	05-23241	0.16-0.36	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54763	05-23241	0.36-0.56	ALLH	2382S	2382S	—	2382S	2382S	—
	RE05-04-54770	05-23245	0-0.34	ALLH	2385S	2385S	—	2385S	2385S	—
	RE05-04-54771	05-23245	0.34-0.66	ALLH	2385S	2385S	—	2385S	2385S	—
52-002(a)	0452-95-0002	52-02001	1.1-2.1	FILL	—	—	—	467	467	—
	0452-95-0003	52-02001	8-9	QBT3	—	—	—	467	467	—
	0452-95-0004	52-02001	14-15	QBT3	—	—	—	467	467	—
	0452-95-0005	52-02001	19-20	QBT3	—	—	—	467	467	—
	0452-95-0009	52-02002	2.5-3.5	QBT3	—	—	—	467	467	—
	0452-95-0011	52-02002	9-10	QBT3	—	—	—	467	467	—
	RE52-04-53995	52-02002	9-10	QBT3	—	—	2449S	2449S	—	2449S
	0452-95-0015	52-02002	14-15	QBT3	—	467	—	467	467	—
	RE52-04-53996	52-02002	14-15	QBT3	—	—	2449S	2449S	—	2449S
	0452-95-0017	52-02002	19-20	QBT3	—	—	—	467	467	—
	RE52-04-53997	52-02002	24-25	QBT3	—	—	2449S	2449S	—	2449S
	RE52-04-53998	52-02002	29-30	QBT3	—	—	2449S	2449S	—	2449S
	0452-95-0021	52-02003	3-4	QBT3	—	—	—	477	477	—
	0452-95-0022	52-02003	9-10	QBT3	—	—	—	477	477	—
	RE52-04-54003	52-02003	9-10	QBT3	—	—	2430S	2430S	—	2430S
	0452-95-0023	52-02003	14-15	QBT3	—	—	—	477	477	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	RE52-04-54004	52-02003	14-15	QBT3	—	—	2430S	2430S	—	2430S
	0452-95-0027	52-02003	18.5-20	QBT3	—	—	—	477	477	—
	RE52-04-54005	52-02003	24-25	QBT3	—	—	2430S	2430S	—	2430S
	RE52-04-54006	52-02003	29-30	QBT3	—	—	2430S	2430S	—	2430S
	0452-95-0030	52-02004	4-5	QBT3	—	—	—	477	477	—
	0452-95-0032	52-02004	6.5-7.5	QBT3	—	—	—	477	477	—
	0452-95-0033	52-02004	10.5-11.5	QBT3	—	—	—	477	477	—
	0452-95-0034	52-02004	19-20	QBT3	—	477	—	477	477	—
	0452-95-0039	52-02006	4-5	QBT3	—	—	—	467	467	—
	0452-95-0040	52-02006	9-10	QBT3	—	467	—	467	467	—
	RE52-04-53999	52-02006	9-10	QBT3	—	—	2433S	2433S	—	2433S
	0452-95-0044	52-02006	14-15	QBT3	—	—	—	467	467	—
	RE52-04-54000	52-02006	14-15	QBT3	—	—	2433S	2433S	—	2433S
	0452-95-0045	52-02006	19-20	QBT3	—	—	—	467	467	—
	RE52-04-54001	52-02006	24-25	QBT3	—	—	2433S	2433S	—	2433S
	RE52-04-54002	52-02006	29-30	QBT3	—	—	2433S	2433S	—	2433S
	0452-95-0047	52-02008	4-5	FILL	—	—	—	474	474	—
	RE52-04-54007	52-02008	8.7-10	QBT3	—	2433S	2433S	2433S	—	2433S
	0452-95-0048	52-02008	9-10	QBT3	—	—	—	474	474	—
	RE52-04-54008	52-02008	13.7-15	QBT3	—	2433S	2433S	2433S	—	2433S
	0452-95-0051	52-02008	14-15	QBT3	—	—	—	474	474	—
	0452-95-0052	52-02008	19-20	QBT3	—	—	—	474	474	—
	RE52-04-54009	52-02008	23.7-25	QBT3	—	2433S	2433S	2433S	—	2433S
	RE52-04-54010	52-02008	28.7-30	QBT3	—	2433S	2433S	2433S	—	2433S
	RE52-04-54787	52-23251	0.1-0.33	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54788	52-23251	0.33-0.75	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54789	52-23252	0.13-0.43	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54790	52-23252	0.43-0.79	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54796	52-23253	0-0.69	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54791	52-23253	0.1-0.69	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54792	52-23253	0.69-1.25	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54797	52-23254	0-0.43	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54793	52-23254	0.16-0.43	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
	RE52-04-54794	52-23254	0.43-0.69	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
52-003(a)	0452-95-0054	52-02009	3-4	FILL	—	—	—	474	474	—
	0452-95-0055	52-02009	7.5-8.5	FILL	—	—	—	474	474	—
	0452-95-0057	52-02009	14-15	QBT3	—	—	—	474	474	—
	0452-95-0059	52-02009	19-20	QBT3	—	—	—	474	474	—
	0452-95-0063	52-02010	4-5	FILL	—	—	—	474	474	—
	0452-95-0064	52-02010	8.5-9.5	FILL	—	—	—	474	474	—
	0452-95-0065	52-02010	14-15	QBT3	—	—	—	474	474	—
	0452-95-0067	52-02010	18-19	QBT3	—	474	474	474	474	—
	RE52-04-54011	52-02010	24-25	QBT3	—	—	2449S	2449S	—	2449S

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	RE52-04-54012	52-02010	29-30	QBT3	—	—	2449S	2449S	—	2449S
	RE52-04-54013	52-02010	34-35	QBT3	—	—	2449S	2449S	—	2449S
63-001(a)	0463-95-0002	63-02001	7.5-8.5	QBT3	—	—	—	392	392	—
	0463-95-0006	63-02001	14-15	QBT3	—	—	—	392	392	—
	0463-95-0007	63-02001	19-20	QBT3	—	—	—	392	392	—
	0463-95-0009	63-02002	8.5-9.5	FILL	—	—	—	—	392	—
	0463-95-0012	63-02002	12-13	QBT3	—	—	—	392	392	—
	0463-95-0013	63-02002	19-20	QBT3	—	—	—	392	392	—
	0463-95-0018	63-02003	4-5	FILL	—	—	—	395	395	—
	0463-95-0021	63-02003	7-8	QBT3	—	—	—	395	395	—
	0463-95-0024	63-02003	14-15	QBT3	—	—	—	395	395	—
	0463-95-0025	63-02003	19-20	QBT3	—	—	—	395	395	—
	0463-95-0026	63-02003	24-25	QBT3	—	—	—	395	395	—
	0463-95-0028	63-02003	29-30	QBT3	—	—	—	395	395	—
	0463-95-0031	63-02003	34-35	QBT3	—	—	—	395	395	—
	0463-95-0033	63-02003	39-40	QBT3	—	—	—	395	395	—
	0463-95-0034	63-02003	44-45	QBT3	—	—	—	395	395	—
	0463-95-0019	63-02003	49-50	QBT3	—	—	—	395	395	—
	0463-95-0116	63-02003	54-55	QBT3	—	—	—	395	395	—
	0463-95-0118	63-02003	59-60	QBT3	—	—	—	395	395	—
	0463-95-0038	63-02004	3-4	FILL	—	—	—	433	433	—
	0463-95-0045	63-02004	8-9	QBT3	—	—	—	433	433	—
	0463-95-0048	63-02004	14-15	QBT3	—	—	—	433	433	—
	0463-95-0049	63-02004	19-20	QBT3	—	—	—	433	433	—
	0463-95-0050	63-02004	24-25	QBT3	—	—	—	433	433	—
	0463-95-0051	63-02004	29-30	QBT3	—	—	—	433	433	—
	0463-95-0052	63-02004	30-31	QBT3	—	—	—	433	433	—
	0463-95-0054	63-02004	39-40	QBT3	—	—	—	433	433	—
	0463-95-0055	63-02004	44-45	QBT3	—	—	—	433	433	—
	0463-95-0040	63-02004	49-50	QBT3	—	—	—	433	433	—
	0463-95-0041	63-02004	54-55	QBT3	—	—	—	433	433	—
	0463-95-0042	63-02004	59-60	QBT3	—	—	—	433	433	—
63-001(b)	0463-95-0065	63-02005	8.7-9.7	QBT3	—	—	—	447	447	—
	0463-95-0059	63-02005	9-10	QBT3	—	—	—	447	447	—
	0463-95-0061	63-02005	14-15	QBT3	—	—	—	447	447	—
	0463-95-0062	63-02005	19-20	QBT3	—	—	—	447	447	—
	0463-95-0066	63-02006	13.5-14.5	QBT3	—	—	—	447	447	—
	0463-95-0070	63-02006	19-20	QBT3	—	—	—	447	447	—
	0463-95-0074	63-02007	4-5	QBT3	—	451	—	451	451	—
	0463-95-0082	63-02007	9-10	QBT3	—	—	—	451	451	—
	0463-95-0083	63-02007	14-15	QBT3	—	—	—	451	451	—
	0463-95-0084	63-02007	18.8-19.8	QBT3	—	—	—	451	451	—
	0463-95-0085	63-02007	23.5-24.5	QBT3	—	—	—	451	451	—

Table D-7.0-2 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium	Sr-90
	0463-95-0087	63-02007	29-30	QBT3	—	—	—	451	451	—
	0463-95-0091	63-02007	34-35	QBT3	—	—	—	451	451	—
	0463-95-0092	63-02007	39-40	QBT3	—	—	—	451	451	—
	0463-95-0093	63-02007	43.5-44.5	QBT3	—	—	—	451	451	—
	0463-95-0078	63-02007	49-50	QBT3	—	—	—	451	451	—
	0463-95-0079	63-02007	54-55	QBT3	—	—	—	451	451	—
	0463-95-0081	63-02007	59-60	QBT3	—	—	—	451	451	—
	0463-95-0096	63-02008	3.5-4.5	QBT3	—	—	—	460	460	—
	0463-95-0102	63-02008	9-10	QBT3	—	—	—	—	460	—
	0463-95-0103	63-02008	13.5-15	QBT3	—	—	—	460	460	—
	0463-95-0107	63-02008	19-20	QBT3	—	—	—	—	460	—
	0463-95-0108	63-02008	24-25	QBT3	—	—	—	—	460	—
	0463-95-0110	63-02008	29-30	QBT3	—	—	—	—	460	—
	0463-95-0111	63-02008	34-35	QBT3	—	—	—	—	460	—
	0463-95-0112	63-02008	39-40	QBT3	—	—	—	—	460	—
	0463-95-0114	63-02008	41.5-42.5	QBT3	—	460	—	—	460	—
	0463-95-0097	63-02008	45-46	QBT3	—	—	—	460	460	—
	0463-95-0099	63-02008	52.5-53.5	QBT3	—	—	—	—	460	—
	0463-95-0101	63-02008	59-60	QBT3	—	—	—	—	460	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-7.0-3
Soil, Fill, Tuff, and Sediment Samples Collected for Organic Chemical Analyses at East Ten Site Slope Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
04-001-99	RE04-04-53865	04-02011	5-6	QBT3	2461S[a]	2461S	2461S
	RE04-04-53866	04-02011	8-9	QBT3	2461S	2461S	2461S
	0404-95-0100	04-02012	1-2	FILL	—[b]	601	—
	0404-95-0108	04-02013	2-3	QBT3	—	—	601
	0404-95-0002	04-02014	0-0.5	ALLH	355	—	—
	RE04-04-53867	04-02016	2-3	QBT3	2461S	2461S	—
	RE04-04-53868	04-02016	5-6	QBT3	2461S	2461S	—
	RE04-04-53869	04-02019	0-0.5	ALLH	2426S	—	—
	RE04-04-53870	04-02019	2-3	QBT3	2426S	—	—
	RE04-04-53871	04-02019	5-6	QBT3	2426S	—	—
	RE04-04-53872	04-02021	2-3	ALLH	2426S	2426S	—
	RE04-04-53873	04-02021	5-6	ALLH	2426S	2426S	—
	RE04-04-53863	04-02025	2-3	QBT3	2461S	—	—
	RE04-04-53864	04-02025	5.1-5.6	QBT3	2461S	—	—
	0404-95-0040	04-02028	3.5-4.5	FILL	484	—	—
	0404-95-0022	04-02029	0-1	ALLH	367	—	—
	RE04-04-54741	04-23233	0-0.1	ALLH	2412S	2412S	—
	RE04-04-54742	04-23233	0.1-0.56	ALLH	2412S	2412S	—
	RE04-04-54743	04-23234	0-0.13	ALLH	2412S	2412S	—
	RE04-04-54744	04-23234	0.13-0.56	ALLH	2412S	2412S	—
	RE04-04-54745	04-23235	0-0.13	ALLH	2412S	2412S	2412S
	RE04-04-54746	04-23235	0.23-0.69	ALLH	2412S	2412S	2412S
	RE04-04-54760	04-23236	0-0.16	ALLH	2412S	2412S	—
	RE04-04-54747	04-23236	0.03-0.16	ALLH	2412S	2412S	—
	RE04-04-54748	04-23236	0.16-0.39	ALLH	2412S	2412S	—
	RE04-04-54749	04-23237	0-0.13	ALLH	2412S	2412S	—
	RE04-04-54750	04-23237	0.13-0.66	ALLH	2412S	2412S	—
	RE04-04-54751	04-23238	0-0.1	ALLH	2412S	2412S	—
	RE04-04-54752	04-23238	0.1-0.36	ALLH	2412S	2412S	—
	RE04-04-54756	04-23239	0-0.2	ALLH	2412S	2412S	—
	RE04-04-54753	04-23239	0.07-0.2	ALLH	2412S	2412S	—
	RE04-04-54754	04-23239	0.2-0.69	ALLH	2412S	2412S	—
05-001(a)-99	0405-95-0217	05-02007	1-2	FILL	595	—	—
	0405-95-0221	05-02007	5-6	QBT3	—	595	595
	0405-95-0007	05-02010	1-2	FILL	—	559	—
	0405-95-0015	05-02011	5-6	FILL	—	—	559
	RE05-04-53894	05-02012	2-3	FILL	2480S	2480S	2480S
	0405-95-0021	05-02012	5-6	QBT3	—	559	—
	RE05-04-53895	05-02012	5-6	QBT3	2480S	2480S	2480S
	0405-95-0023	05-02013	1-2	FILL	—	—	559
	0405-95-0089	05-02047	0-0.5	ALLH	533	—	—
	RE05-04-53890	05-02051	2-3	QBT3	2464S	2464S	—

Table D-7.0-3 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
	RE05-04-53891	05-02051	5-6.1	QBT3	2464S	2464S	—
	0405-95-0064	05-02054	5.5-6.5	QBT3	554	—	—
	RE05-04-53886	05-02059	2-3	QBT3	2464S	2464S	—
	RE05-04-53887	05-02059	5-6	QBT3	2464S	2464S	—
	RE05-04-53888	05-02060	2-3	QBT3	2480S	2480S	—
	RE05-04-53889	05-02060	5-5.6	QBT3	2480S	2480S	—
	0405-95-0212	05-02067	1-2	QBT3	543	—	—
	RE05-04-53892	05-22893	2-3	QBT3	2480S	2480S	2480S
	RE05-04-53893	05-22893	5-6	QBT3	2480S	2480S	2480S
	RE05-04-54762	05-23241	0.16-0.36	ALLH	2380S	2380S	2380S
	RE05-04-54763	05-23241	0.36-0.56	ALLH	2380S	2380S	2380S
	RE05-04-54764	05-23242	0.07-0.33	ALLH	2376S	2376S	—
	RE05-04-54765	05-23242	0.33-0.49	ALLH	2376S	2376S	—
	RE05-04-54766	05-23243	0.23-1.05	ALLH	2362S	2362S	—
	RE05-04-54767	05-23243	1.05-2.03	ALLH	2362S	2362S	—
	RE05-04-54768	05-23244	0-0.62	ALLH	2362S	2362S	—
	RE05-04-54769	05-23244	0.98-1.64	ALLH	2362S	2362S	—
	RE05-04-54770	05-23245	0-0.34	ALLH	2383S	2383S	2383S
	RE05-04-54771	05-23245	0.34-0.66	ALLH	2383S	2383S	2383S
	RE05-04-54772	05-23246	0-0.2	ALLH	2383S	2383S	—
	RE05-04-54773	05-23246	0.2-0.46	ALLH	2383S	2383S	—
	RE05-04-54774	05-23247	0-0.23	ALLH	2380S	2380S	—
	RE05-04-54775	05-23247	0.23-0.52	ALLH	2380S	2380S	—
	RE05-04-54776	05-23248	0-0.16	ALLH	2380S	2380S	—
	RE05-04-54777	05-23248	0.16-0.59	ALLH	2380S	2380S	—
	RE05-04-54778	05-23249	0-0.39	ALLH	2362S	2362S	—
	RE05-04-54779	05-23249	0.39-0.66	ALLH	2362S	2362S	—
05-001(c)	RE05-04-53900	05-02021	2-2.5	QBT3	2521S	2521S	—
	RE05-04-53901	05-02021	5.1-5.4	QBT3	2521S	2521S	—
	RE05-04-53902	05-02022	2.1-2.6	QBT3	2521S	2521S	—
	RE05-04-53903	05-02022	5-5.5	QBT3	2521S	2521S	—
	RE05-04-53896	05-02024	2.2-2.9	QBT3	2521S	2521S	—
	RE05-04-53897	05-02024	5.1-5.6	QBT3	2521S	2521S	—
	0405-95-0235	05-02026	2-3	QBT3	613	—	—
	0405-95-0270	05-02038	0-0.5	ALLH	613	—	—
	RE05-04-53898	05-22894	2.1-2.5	SED	—	2532S	—
	RE05-04-53899	05-22894	5.2-6	QBT3	—	2532S	—
05-005(a)-00	0405-95-0217	05-02007	1-2	FILL	595	—	—
	0405-95-0221	05-02007	5-6	QBT3	—	595	595
	0405-95-0007	05-02010	1-2	FILL	—	559	—
	0405-95-0015	05-02011	5-6	FILL	—	—	559
	RE05-04-53894	05-02012	2-3	FILL	2480S	2480S	2480S
	0405-95-0021	05-02012	5-6	QBT3	—	559	—
	RE05-04-53895	05-02012	5-6	QBT3	2480S	2480S	2480S

Table D-7.0-3 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
	0405-95-0023	05-02013	1-2	FILL	—	—	559
	RE05-04-53892	05-22893	2-3	QBT3	2480S	2480S	2480S
	RE05-04-53893	05-22893	5-6	QBT3	2480S	2480S	2480S
	RE05-04-54762	05-23241	0.16-0.36	ALLH	2380S	2380S	2380S
	RE05-04-54763	05-23241	0.36-0.56	ALLH	2380S	2380S	2380S
	RE05-04-54770	05-23245	0-0.34	ALLH	2383S	2383S	2383S
	RE05-04-54771	05-23245	0.34-0.66	ALLH	2383S	2383S	2383S
52-002(a)	0452-95-0011	52-02002	9-10	QBT3	—	465	465
	RE52-04-53995	52-02002	9-10	QBT3	—	2447S	—
	RE52-04-53996	52-02002	14-15	QBT3	—	2447S	—
	RE52-04-53997	52-02002	24-25	QBT3	—	2447S	—
	RE52-04-53998	52-02002	29-30	QBT3	—	2447S	—
	RE52-04-54003	52-02003	9-10	QBT3	—	2429S	—
	0452-95-0023	52-02003	14-15	QBT3	—	476	476
	RE52-04-54004	52-02003	14-15	QBT3	—	2429S	—
	RE52-04-54005	52-02003	24-25	QBT3	—	2429S	—
	RE52-04-54006	52-02003	29-30	QBT3	—	2429S	—
	0452-95-0040	52-02006	9-10	QBT3	—	—	465
	RE52-04-53999	52-02006	9-10	QBT3	—	2431S	—
	RE52-04-54000	52-02006	14-15	QBT3	—	2431S	—
	RE52-04-54001	52-02006	24-25	QBT3	—	2431S	—
	RE52-04-54002	52-02006	29-30	QBT3	—	2431S	—
	RE52-04-54007	52-02008	8.7-10	QBT3	—	2431S	2431S
	RE52-04-54008	52-02008	13.7-15	QBT3	—	2431S	2431S
	0452-95-0052	52-02008	19-20	QBT3	—	470	—
	RE52-04-54009	52-02008	23.7-25	QBT3	—	2431S	2431S
	RE52-04-54010	52-02008	28.7-30	QBT3	—	2431S	2431S
	RE52-04-54789	52-23252	0.13-0.43	ALLH	—	2469S	—
	RE52-04-54790	52-23252	0.43-0.79	ALLH	—	2469S	—
	RE52-04-54797	52-23254	0-0.43	ALLH	—	2469S	—
	RE52-04-54793	52-23254	0.16-0.43	ALLH	—	2469S	—
	RE52-04-54794	52-23254	0.43-0.69	ALLH	—	2469S	—
52-003(a)	0452-95-0055	52-02009	7.5-8.5	FILL	—	470	—
	0452-95-0065	52-02010	14-15	QBT3	—	—	470
	RE52-04-54011	52-02010	24-25	QBT3	—	2447S	2447S
	RE52-04-54012	52-02010	29-30	QBT3	—	2447S	2447S
	RE52-04-54013	52-02010	34-35	QBT3	—	2447S	2447S
63-001(a)	0463-95-0009	63-02002	8.5-9.5	FILL	—	390	—
	0463-95-0013	63-02002	19-20	QBT3	—	—	390
	0463-95-0021	63-02003	7-8	QBT3	—	—	393
	0463-95-0028	63-02003	29-30	QBT3	—	393	—
	0463-95-0042	63-02004	59-60	QBT3	—	431	431
63-001(b)	0463-95-0062	63-02005	19-20	QBT3	—	457	457
	0463-95-0074	63-02007	4-5	QBT3	—	458	—

Table D-7.0-3 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
	0463-95-0085	63-02007	23.5-24.5	QBT3	—	—	458
	0463-95-0097	63-02008	45-46	QBT3	—	—	456
	0463-95-0099	63-02008	52.5-53.5	QBT3	—	456	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-7.0-4
Summary of Inorganic COPCs above BV or Detected in Soil, Fill, Tuff, and Sediment at East Ten Site Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Nitrate	Nitrite	Selenium	Silver	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	1.83	na[a]	0.4	19.3	14.7	22.3	na	0.1	na	15.4	na	na	1.52	1	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	1.21	na	1.63	7.14	4.66	11.2	na	0.1	na	6.58	na	na	0.3	1	1.1	63.5
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	1.31	na	0.4	10.5	11.2	19.7	na	0.1	na	9.38	na	na	0.3	1	0.73	60.2
04-001-99	0404-95-0096	04-02011	2-3	QBT3	—	5.18 (U)	—[b]	—	—	—	—	9.61	—	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-53865	04-02011	5-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.499 (U)	—	—	—
	RE04-04-53866	04-02011	8-9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.501 (U)	—	—	—
	RE04-04-53867	04-02016	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.504 (U)	—	—	—
	RE04-04-53868	04-02016	5-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.507 (U)	—	—	—
	RE04-04-53870	04-02019	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.512 (U)	—	—	—
	RE04-04-53871	04-02019	5-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.512 (U)	—	—	—
	RE04-04-53873	04-02021	5-6	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	55.7
	0404-95-0013	04-02023	0-0.5	ALLH	—	5.1 (U)	—	—	—	—	0.61 (U)	—	—	—	—	0.2 (U)	—	—	—	—	—	—	—	—
	RE04-04-53863	04-02025	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.526 (U)	—	—	—
	RE04-04-53864	04-02025	5.1-5.6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.527 (U)	—	—	—
	RE04-04-54744	04-23234	0.13-0.56	ALLH	—	—	—	—	—	—	—	—	26.9	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-54760	04-23236	0-0.16	ALLH	—	—	—	—	—	—	—	—	26.2	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-54747	04-23236	0.03-0.16	ALLH	—	—	—	—	—	—	—	—	27.5	—	—	—	—	—	—	—	—	—	—	50
	RE04-04-54748	04-23236	0.16-0.39	ALLH	—	—	—	—	—	—	—	—	28.4	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-54749	04-23237	0-0.13	ALLH	—	—	—	—	—	—	—	—	16	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-54751	04-23238	0-0.1	ALLH	—	—	—	—	—	—	—	—	21.3	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-54752	04-23238	0.1-0.36	ALLH	—	—	—	—	—	—	—	—	15.5	—	—	—	—	—	—	—	—	—	—	—
05-001(a)-99	0405-95-0221	05-02007	5-6	QBT3	—	—	—	—	—	—	—	8.6	—	—	—	—	—	—	—	—	0.44 (U)	—	—	—
	0405-95-0224	05-02008	1-2	FILL	—	—	—	—	—	—	0.86 (J)	—	17.1 (U)	—	—	0.11 (U)	—	—	—	—	—	—	—	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	—	—	—	—	—	—	28.6	—	0.4	—	—	—	—	—	1.3 (U)	1.4 (U)	—
	RE05-04-53894	05-02012	2-3	FILL	—	—	—	—	—	—	—	—	17.1	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-53895	05-02012	5-6	QBT3	—	—	2.88	—	—	—	—	—	—	—	—	—	—	—	—	—	0.499 (U)	—	—	—
	0405-95-0034	05-02018	0-0.5	ALLH	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	—	1.4 (U)	1.4 (U)	—
	0405-95-0228	05-02068	0-0.5	ALLH	—	—	—	—	—	—	—	—	28.7	34.2	—	—	—	—	—	—	—	—	—	—
	0405-95-0230	05-02069	0-0.5	ALLH	—	—	—	—	—	—	1.8	—	31.5	28	—	—	—	—	—	—	—	—	—	—
	RE05-04-53892	05-22893	2-3	QBT3	16000	—	3.55	105	1.33	—	—	8.94 (J)	—	—	—	—	—	6.76	—	—	0.725	—	—	—
	RE05-04-53893	05-22893	5-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.503 (U)	—	—	—
	0405-95-0085	05-02045	0-0.5	ALLH	—	—	—	—	—	—	1.6	—	28.6	—	—	—	—	—	—	—	—	—	—	71.7
	0405-95-0087	05-02046	0-0.5	ALLH	—	—	—	—	—	—	0.7 (U)	—	—	30 (J-)	—	—	—	—	—	—	—	—	—	—
	0405-95-0089	05-02047	0-0.5	ALLH	—	—	—	—	—	—	3.2	—	—	—	—	—	—	—	—	—	—	—	—	—
	0405-95-0092	05-02048	0-0.5	ALLH	—	—	—	—	—	—	2.1	—	79	24.7 (J-)	—	—	—	—	—	—	—	—	—	—
	0405-95-0094	05-02049	0-0.5	ALLH	—	—	—	—	—	—	2.9	—	270	66.1 (J-)	—	—	—	—	—	—	—	—	—	66.3
	0405-95-0058	05-02050	0-0.5	ALLH	—	—	—	539	—	—	0.97 (J)	—	1050	655	—	0.11 (U)	—	—	—	—	—	1.3 (U)	1.3 (U)	141
	0405-95-0059	05-02051	0-0.5	ALLH	—	—	—	781	—	—	—	—	878	1040	—	0.11 (U)	—	—	—	—	—	1.3 (U)	1.3 (U)	88.1
	RE05-04-53890	05-02051	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.502 (U)	—	—	—
	RE05-04-53891	05-02051	5-6.1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.496 (U)	—	—	—
	0405-95-0060	05-02052	0-0.5	FILL	—	—	—	396	—	—	—	—	1500	218	—	0.11 (U)	—	—	—	—	—	1.3 (U)	1.3 (U)	69.1

Table D-7.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Nitrate	Nitrite	Selenium	Silver	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	1.83	na[a]	0.4	19.3	14.7	22.3	na	0.1	na	15.4	na	na	1.52	1	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	1.21	na	1.63	7.14	4.66	11.2	na	0.1	na	6.58	na	na	0.3	1	1.1	63.5
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	1.31	na	0.4	10.5	11.2	19.7	na	0.1	na	9.38	na	na	0.3	1	0.73	60.2
	0405-95-0061	05-02053	0-0.5	FILL	—	—	—	—	—	—	—	—	62.2	135	—	0.11 (U)	—	—	—	—	—	1.4 (U)	1.4 (U)	—
	0405-95-0062	05-02054	1-2	QBT3	20700	—	4.7	295	1.4	—	—	10.1	10.4	—	—	0.13 (U)	—	11.3	—	—	1.2 (UJ)	1.6 (U)	1.6 (U)	—
	0405-95-0064	05-02054	5.5-6.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	1 (UJ)	1.4 (U)	1.4 (U)	—
	0405-95-0066	05-02054	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	0.98 (UJ)	1.3 (U)	1.3 (U)	—
	0405-95-0068	05-02054	18-19	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	6.6 (J)	—	—	0.98 (UJ)	1.3 (U)	1.3 (U)	—
	0405-95-0069	05-02055	4-5	QBT3	—	—	—	48.3	—	—	—	—	5.9	—	—	—	—	—	—	—	0.97 (UJ)	1.3 (U)	1.4 (U)	—
	0405-95-0070	05-02055	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.99 (UJ)	1.3 (U)	1.4 (U)	—
	0405-95-0071	05-02055	10-11	QBT3	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	1 (UJ)	1.4 (U)	1.4 (U)	—
	0405-95-0072	05-02055	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.96 (UJ)	1.3 (U)	1.3 (U)	—
	0405-95-0073	05-02056	3.5-4.5	FILL	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	—	1.4 (U)	1.5 (U)	—
	0405-95-0074	05-02056	9-10	FILL	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	—	1.4 (U)	1.4 (U)	—
	0405-95-0076	05-02056	14-15	FILL	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	—	1.3 (U)	1.4 (U)	—
	0405-95-0077	05-02056	19-20	FILL	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	—	1.3 (U)	1.3 (U)	—
	RE05-07-75247	05-02056	22-22.5	QBT3	—	—	—	—	—	—	—	12 (J)	—	—	—	—	—	—	—	—	1.58 (U)	—	—	—
	RE05-07-75248	05-02056	24-24.5	QBT3	—	—	—	—	—	—	—	11.4 (J)	—	—	—	—	—	—	—	—	1.56 (U)	—	—	—
	0405-95-0079	05-02057	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.3 (U)	1.3 (U)	—
	0405-95-0081	05-02057	9-10	FILL	—	—	—	—	—	—	—	—	—	—	—	0.11 (U)	—	—	—	—	—	1.3 (U)	1.3 (U)	—
	0405-95-0082	05-02057	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 (UJ)	1.3 (U)	1.4 (U)	—
	0405-95-0083	05-02057	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 (UJ)	1.4 (U)	1.4 (U)	—
	0405-95-0192	05-02058	0-0.5	ALLH	—	—	—	—	—	—	069 (J)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-53886	05-02059	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.506 (U)	—	—	—
	RE05-04-53887	05-02059	5-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.306 (J)	—	—	—
	RE05-04-53888	05-02060	2-3	QBT3	—	—	—	—	—	—	—	7.56 (J)	—	62.7	—	—	—	—	—	—	0.504 (U)	—	—	—
	RE05-04-53889	05-02060	5-5.6	QBT3	—	—	—	—	—	—	—	—	—	97.1	—	—	—	—	—	—	0.499 (U)	—	—	—
	RE05-07-579	05-02060	5.6-6	QBT3	—	—	—	—	—	—	—	10.6	—	19.3	—	—	—	—	—	—	1.56 (U)	—	—	—
	RE05-07-580	05-02060	6-6.5	QBT3	—	—	—	—	—	—	—	12.7	—	13.6	—	—	—	—	—	—	1.57 (U)	—	—	—
	RE05-04-54762	05-23241	0.16-0.36	ALLH	—	—	—	—	—	—	0.558 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54763	05-23241	0.36-0.56	ALLH	—	—	—	—	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54766	05-23243	0.23-1.05	ALLH	—	—	—	—	—	—	0.497 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54767	05-23243	1.05-2.03	ALLH	—	—	—	—	—	—	0.496 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54768	05-23244	0-0.62	ALLH	—	—	—	—	—	—	0.513 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54769	05-23244	0.98-1.64	ALLH	—	—	—	—	—	—	0.502 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54770	05-23245	0-0.34	ALLH	—	—	—	—	—	—	0.507 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54771	05-23245	0.34-0.66	ALLH	—	—	—	—	—	—	0.552 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54772	05-23246	0-0.2	ALLH	—	—	—	—	—	—	—	—	165	22.9	—	—	—	—	—	—	—	—	—	—
	RE05-04-54773	05-23246	0.2-0.46	ALLH	—	—	—	—	—	—	0.548 (U)	—	—	25.6	—	—	—	—	—	—	—	—	—	—
	RE05-04-54774	05-23247	0-0.23	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54775	05-23247	0.23-0.52	ALLH	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Table D-7.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Nitrate	Nitrite	Selenium	Silver	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	1.83	na[a]	0.4	19.3	14.7	22.3	na	0.1	na	15.4	na	na	1.52	1	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	1.21	na	1.63	7.14	4.66	11.2	na	0.1	na	6.58	na	na	0.3	1	1.1	63.5
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	1.31	na	0.4	10.5	11.2	19.7	na	0.1	na	9.38	na	na	0.3	1	0.73	60.2
	RE05-04-54778	05-23249	0-0.39	ALLH	—	—	—	—	—	—	0.517 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54779	05-23249	0.39-0.66	ALLH	—	—	—	—	—	—	0.508 (U)	—	—	29.4	—	—	—	—	—	—	—	—	—	—
05-001(c)	0405-95-0254	05-02020	0-0.5	ALLH	—	—	—	—	—	—	—	—	44.8	—	—	—	—	—	—	—	—	—	—	—
	0405-95-0256	05-02021	0-0.5	ALLH	—	—	—	—	—	—	—	—	51.4	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-53900	05-02021	2-2.5	QBT3	—	—	—	—	—	—	—	—	10.1	—	—	—	—	—	—	—	0.353 (J)	—	—	—
	RE05-04-53901	05-02021	5.1-5.4	QBT3	9530 (J+)	—	3.24	—	—	—	—	11.5	8.39	—	—	—	—	—	—	—	0.47 (J)	—	—	—
	0405-95-0260	05-02024	0-0.5	ALLH	—	1.6 (J)	—	2030	—	—	—	—	941	539	—	—	—	—	—	—	—	—	—	90.2
	RE05-04-53896	05-02024	2.2-2.9	QBT3	—	—	—	—	—	—	—	—	9.13	12.4	—	—	—	—	—	—	0.5 (U)	—	—	—
	RE05-04-53897	05-02024	5.1-5.6	QBT3	—	—	—	—	—	—	—	—	—	13.6	—	—	—	—	—	—	0.495 (U)	—	—	—
	0405-95-0261	05-02025	0-0.5	ALLH	—	—	—	470	—	—	—	—	28.3	—	—	—	—	—	—	—	—	—	—	—
	0405-95-0232	05-02026	0-1	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.45 (U)	—	—	—
	0405-95-0234	05-02026	1-2	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.43 (U)	—	—	—
	0405-95-0235	05-02026	2-3	QBT3	—	—	—	—	—	—	—	—	16.3	—	—	—	—	—	—	—	0.43 (U)	—	—	—
	0405-95-0244	05-02030	1-2	FILL	—	—	—	—	—	—	—	29	—	—	—	—	—	16	—	—	—	—	—	—
	0405-95-0245	05-02030	2-3	QBT3	—	—	—	—	—	—	—	9.3	5.6	—	—	—	—	—	—	—	0.44 (U)	—	—	—
	0405-95-0248	05-02031	1-2	QBT3	—	0.55 (J)	—	—	—	—	—	7.2	—	—	—	—	—	—	—	—	0.46 (U)	—	—	—
	0405-95-0249	05-02031	2-3	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.44 (U)	—	—	—
	RE05-04-53898	05-22894	2.1-2.5	SED	—	—	—	—	—	—	0.498 (U)	—	—	—	—	—	—	—	—	—	0.498 (U)	—	—	—
	RE05-04-53899	05-22894	5.2-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.493 (U)	—	—	—
05-005(a)-00	0405-95-0221	05-02007	5-6	QBT3	—	—	—	—	—	—	—	8.6	—	—	—	—	—	—	—	—	0.44 (U)	—	—	—
	0405-95-0224	05-02008	1-2	FILL	—	—	—	—	—	—	0.86 (J)	—	17.1 (U)	—	—	0.11 (U)	—	—	—	—	—	—	—	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	—	—	—	—	—	—	28.6	—	0.4	—	—	—	—	—	1.3 (U)	1.4 (U)	—
	RE05-04-53894	05-02012	2-3	FILL	—	—	—	—	—	—	—	—	17.1	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-53895	05-02012	5-6	QBT3	—	—	2.88	—	—	—	—	—	—	—	—	—	—	—	—	—	0.499 (U)	—	—	—
	0405-95-0228	05-02068	0-0.5	ALLH	—	—	—	—	—	—	—	—	28.7	34.2	—	—	—	—	—	—	—	—	—	—
	0405-95-0230	05-02069	0-0.5	ALLH	—	—	—	—	—	—	1.8	—	31.5	28	—	—	—	—	—	—	—	—	—	—
	RE05-04-53892	05-22893	2-3	QBT3	16000	—	3.55	105	1.33	—	—	8.94 (J)	—	—	—	—	—	6.76	—	—	0.725	—	—	—
	RE05-04-53893	05-22893	5-6	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.503 (U)	—	—	—
	RE05-04-54762	05-23241	0.16-0.36	ALLH	—	—	—	—	—	—	0.558 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54763	05-23241	0.36-0.56	ALLH	—	—	—	—	—	—	0.555 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54770	05-23245	0-0.34	ALLH	—	—	—	—	—	—	0.507 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54771	05-23245	0.34-0.66	ALLH	—	—	—	—	—	—	0.552 (U)	—	—	—	—	—	—	—	—	—	—	—	—	—
52-002(a)	0452-95-0003	52-02001	8-9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.47	0.05	—	—	—	—
	0452-95-0005	52-02001	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	5	—	2.1 (J-)	—	0.28	0.05	—	—	—	—
	0452-95-0011	52-02002	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2	0.06	—	—	—	—
	0452-95-0017	52-02002	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.22	0.08	—	—	—	—
	0452-95-0022	52-02003	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.06	0.02 (J)	—	—	—	—
	0452-95-0023	52-02003	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	2.1	—	1.1 (J)	—	—	—	—	1.2 (U)	—	—

Table D-7.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Nitrate	Nitrite	Selenium	Silver	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	1.83	na[a]	0.4	19.3	14.7	22.3	na	0.1	na	15.4	na	na	1.52	1	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	1.21	na	1.63	7.14	4.66	11.2	na	0.1	na	6.58	na	na	0.3	1	1.1	63.5
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	1.31	na	0.4	10.5	11.2	19.7	na	0.1	na	9.38	na	na	0.3	1	0.73	60.2
	0452-95-0027	52-02003	18.5-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.1	0.14	—	—	—	—
	0452-95-0032	52-02004	6.5-7.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.06	—	—	—	—
	0452-95-0034	52-02004	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.05	0.04 (J)	—	—	—	—
	0452-95-0040	52-02006	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	0.73 (J)	—	2.7 (J-)	—	0.99	0.02 (J)	—	—	—	—
	RE52-04-54000	52-02006	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.513 (U)	—	—	—
	0452-95-0045	52-02006	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.41	0.02 (J)	—	—	—	—
	RE52-04-54001	52-02006	24-25	QBT3	—	—	2.97	—	—	—	—	—	—	—	—	—	—	—	—	—	0.501 (U)	—	—	—
	RE52-04-54002	52-02006	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.506 (U)	—	—	—
	RE52-04-54007	52-02008	8.7-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.503 (U)	—	—	—
	RE52-04-54008	52-02008	13.7-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.492 (U)	—	—	—
	RE52-04-54009	52-02008	23.7-25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.499 (U)	—	—	—
	RE52-04-54010	52-02008	28.7-30	QBT3	9560	—	—	64 (J+)	—	—	—	—	—	—	—	—	—	—	—	—	0.515 (U)	—	—	—
52-003(a)	0452-95-0059	52-02009	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	0.94 (J)	—	2.5 (J-)	—	—	—	—	—	—	—
	RE52-04-54011	52-02010	24-25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.517 (U)	—	—	—
	RE52-04-54012	52-02010	29-30	QBT3	8360	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.542 (U)	—	—	—
	RE52-04-54013	52-02010	34-35	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.53 (U)	—	—	—
63-001(a)	0463-95-0002	63-02001	7.5-8.5	QBT3	—	—	—	—	—	1.9	—	—	—	—	6	—	—	—	2.1	—	—	1.2 (U)	—	—
	0463-95-0006	63-02001	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.1	—	—	—	—	—
	0463-95-0007	63-02001	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.9	—	—	—	—	—
	0463-95-0009	63-02002	8.5-9.5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.6	—	—	—	—	—
	0463-95-0012	63-02002	12-13	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4.2	—	—	—	—	—
	0463-95-0013	63-02002	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.1	0.52	—	—	—	—
	0463-95-0018	63-02003	4-5	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.97	—	—	—	—	—
	0463-95-0021	63-02003	7-8	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.55	—	—	—	—	—
	0463-95-0024	63-02003	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.34	—	—	—	—	—
	0463-95-0025	63-02003	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.44	—	—	—	—	—
	0463-95-0026	63-02003	24-25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.44	—	—	—	—	—
	0463-95-0028	63-02003	29-30	QBT3	—	5.4 (U)	—	—	—	—	—	—	—	—	—	—	—	—	1.63	—	—	—	—	—
	0463-95-0031	63-02003	34-35	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.75	—	—	—	—	—
	0463-95-0033	63-02003	39-40	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.7	—	—	—	—	—
	0463-95-0034	63-02003	44-45	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.3	—	—	—	—	—
	0463-95-0019	63-02003	49-50	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	8.9	—	—	—	—	—
	0463-95-0116	63-02003	54-55	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.7	—	—	—	—	—
	0463-95-0038	63-02004	3-4	FILL	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.49	0.58	—	—	—	—
	0463-95-0045	63-02004	8-9	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	11.7	0.86	—	—	—	—
	0463-95-0048	63-02004	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.5	0.51	—	—	—	—
	0463-95-0049	63-02004	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	7.1	0.14 (J)	—	—	—	—
	0463-95-0050	63-02004	24-25	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.6	0.1 (J)	—	—	—	—

Table D-7.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Aluminum	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Copper	Lead	Lithium	Mercury	Molybdenum	Nickel	Nitrate	Nitrite	Selenium	Silver	Thallium	Zinc
Soil/Fill Background Value (mg/kg)					29200	0.83	8.17	295	1.83	na[a]	0.4	19.3	14.7	22.3	na	0.1	na	15.4	na	na	1.52	1	0.73	48.8
Qbt2/Qbt3 Background Value (mg/kg)					7340	0.5	2.79	46	1.21	na	1.63	7.14	4.66	11.2	na	0.1	na	6.58	na	na	0.3	1	1.1	63.5
Sediment Background Value (mg/kg)					15400	0.83	3.98	127	1.31	na	0.4	10.5	11.2	19.7	na	0.1	na	9.38	na	na	0.3	1	0.73	60.2
	0463-95-0051	63-02004	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.6	0.53	—	—	—	—
	0463-95-0052	63-02004	30-31	QBT3	—	—	—	—	—	—	—	—	—	—	3.2	—	—	—	6.6	0.32	—	1.2 (J)	—	—
	0463-95-0054	63-02004	39-40	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5.4	0.21	—	—	—	—
	0463-95-0055	63-02004	44-45	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	26	0.52	—	—	—	—
	0463-95-0040	63-02004	49-50	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	22.3	0.15 (J)	—	—	—	—
	0463-95-0041	63-02004	54-55	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	28.6	0.54	—	—	—	—
	0463-95-0042	63-02004	59-60	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16.1 (J)	0.13 (J)	—	—	—	—
63-001(b)	0463-95-0065	63-02005	8.7-9.7	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.15	—	—	—	—	—
	0463-95-0059	63-02005	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.28	0.05	—	—	—	—
	0463-95-0061	63-02005	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.2	0.23	—	—	—	—
	0463-95-0062	63-02005	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.13	0.03 (J)	—	—	—	—
	0463-95-0066	63-02006	13.5-14.5	QBT3	—	—	—	—	—	—	—	—	—	—	4.7	—	—	—	0.17	0.08	—	—	—	—
	0463-95-0070	63-02006	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.2	0.22	—	—	—	—
	0463-95-0074	63-02007	4-5	QBT3	—	—	—	—	—	—	—	—	—	—	1.1	—	1.3 (J-)	—	0.32	0.08	—	—	—	—
	0463-95-0082	63-02007	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.2	—	—	—	—	—
	0463-95-0083	63-02007	14-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.9	—	—	—	—	—
	0463-95-0084	63-02007	18.8-19.8	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.2	0.05	—	—	—	—
	0463-95-0085	63-02007	23.5-24.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	0.08	—	—	—	—
	0463-95-0087	63-02007	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3	0.05	—	—	—	—
	0463-95-0091	63-02007	34-35	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.1	0.13	—	—	—	—
	0463-95-0092	63-02007	39-40	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.4	0.08	—	—	—	—
	0463-95-0093	63-02007	43.5-44.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.99	0.06	—	—	—	—
	0463-95-0078	63-02007	49-50	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	2.6	—	—	—	—	—
	0463-95-0079	63-02007	54-55	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	0.04	—	—	—	—
	0463-95-0081	63-02007	59-60	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	—	—	—	—	—
	0463-95-0096	63-02008	3.5-4.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.27	0.07	—	—	—	—
	0463-95-0102	63-02008	9-10	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.66	0.08	—	—	—	—
	0463-95-0103	63-02008	13.5-15	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.74	0.05	—	—	—	—
	0463-95-0107	63-02008	19-20	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.8	0.07	—	—	—	—
	0463-95-0108	63-02008	24-25	QBT3	—	—	3	—	—	—	—	—	—	—	3.3	—	—	—	2.1	0.09	—	1.1 (U)	—	—
	0463-95-0110	63-02008	29-30	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3.8	0.11	—	—	—	—
	0463-95-0111	63-02008	34-35	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	0.72	0.35	—	—	—	—
	0463-95-0112	63-02008	39-40	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.5	0.41	—	—	—	—
	0463-95-0114	63-02008	41.5-42.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	0.68	—	—	—	—
	0463-95-0097	63-02008	45-46	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4	0.1	—	—	—	—
	0463-95-0099	63-02008	52.5-53.5	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.8	0.12	—	—	—	—
	0463-95-0101	63-02008	59-60	QBT3	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.3	0.06	—	—	—	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-7.0-5

Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil, Fill, Tuff, and Sediment at East Ten Site Slope Sites

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
04-001-99	0404-95-0099	04-02012	0-1	FILL	—[b]	—	—	0.02[c]	0.03[c]	—	—	—	—
	0404-95-0105	04-02013	0-1	ALLH	—	1.234	—	0.2	98	—	2.62	—	3.09
	0404-95-0005	04-02016	0-0.50	ALLH	—	—	—	—	—	—	86.77	3.76	89.61
	RE04-04-53867	04-02016	2-3	QBT3	—	—	—	—	—	—	39	2.11	10.6
	0404-95-0006	04-02017	0-0.50	ALLH	—	—	—	—	—	—	4.43	—	4.56
	0404-95-0008	04-02019	0-0.50	ALLH	—	—	—	—	0.062	—	4.83	—	5.33
	0404-95-0010	04-02021	0-0.50	ALLH	—	—	—	—	—	—	12.25	0.52	12.97
	0404-95-0012	04-02022	10-13	ALLH	—	—	—	—	0.029	—	—	—	—
	0404-95-0017	04-02024	0-0.50	ALLH	—	—	—	—	—	—	—	—	—
	0404-95-0020	04-02025	0-0.50	ALLH	—	—	—	—	—	—	7.252	0.275	7.374
	RE04-04-53863	04-02025	2-3	QBT3	—	—	—	—	—	—	3.65	0.229	2.1
	0404-95-0034	04-02027	2-3	FILL	—	—	—	0.002[c]	—	—	—	—	—
	0404-95-0043	04-02028	9-10	QBT3	—	—	—	—	—	—	—	—	—
	0404-95-0047	04-02028	19-20	QBT3	—	—	—	0.014	—	—	—	—	—
	0404-95-0022	04-02029	0-1	ALLH	—	—	—	0.02[c]	—	—	—	—	—
	0404-95-0024	04-02029	1-2	ALLH	—	—	—	0.005[c]	—	—	—	—	—
	0404-95-0026	04-02030	0-1	ALLH	—	—	—	0.014[c]	—	—	—	—	—
	0404-95-0027	04-02030	1-2	QBT3	—	—	—	0.007	—	—	—	—	—
	0404-95-0029	04-02031	0-1	ALLH	—	—	—	0.014[c]	—	—	—	—	—
	0404-95-0030	04-02031	1-2	QBT3	—	—	—	0.002	—	—	—	—	—
	0404-95-0032	04-02031	2-3	QBT3	—	—	—	0.009	—	—	—	—	—
	RE04-04-54741	04-23233	0-0.10	ALLH	0.128	—	—	—	—	—	—	—	—
	RE04-04-54742	04-23233	0.10-0.56	ALLH	—	0.904[c]	—	—	—	—	—	—	—
	RE04-04-54743	04-23234	0-0.13	ALLH	0.217 (J-)	—	0.801	—	0.365	—	—	—	—
	RE04-04-54744	04-23234	0.13-0.56	ALLH	4.469	0.909[c]	—	—	16.092	—	—	—	—
	RE04-04-54745	04-23235	0-0.13	ALLH	0.108 (J-)	—	—	—	—	—	—	—	—

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	RE04-04-54746	04-23235	0.23-0.69	ALLH	0.125 (J-)	1.039[c]	—	—	—	—	—	—	—
	RE04-04-54760	04-23236	0-0.16	ALLH	0.221 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54747	04-23236	0.03-0.16	ALLH	0.127 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54748	04-23236	0.16-0.39	ALLH	0.192 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54749	04-23237	0-0.13	ALLH	0.323 (J-)	—	—	—	0.137	—	—	—	—
	RE04-04-54750	04-23237	0.13-0.66	ALLH	0.218 (J-)	1.961	—	—	—	—	—	—	—
	RE04-04-54751	04-23238	0-0.10	ALLH	0.826 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54752	04-23238	0.10-0.36	ALLH	1.678 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54756	04-23239	0-0.20	ALLH	0.434 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54753	04-23239	0.07-0.20	ALLH	0.24 (J-)	—	—	—	—	—	—	—	—
	RE04-04-54754	04-23239	0.20-0.69	ALLH	0.178 (J-)	0.732	—	—	—	—	—	—	—
05-001(a)-99	0405-95-0217	05-02007	1-2	FILL	—	—	—	0.023[c]	—	—	—	—	—
	0405-95-0221	05-02007	5-6	QBT3	—	—	—	0.009	—	—	—	—	—
	0405-95-0224	05-02008	1-2	FILL	—	—	—	0.007[c]	0.009[c]	—	—	—	—
	0405-95-0225	05-02008	3-4	FILL	—	—	—	0.014[c]	0.005[c]	—	—	—	—
	0405-95-0226	05-02008	5-6	FILL	—	—	—	0.011[c]	—	—	—	—	—
	0405-95-0002	05-02009	1-2	FILL	—	—	—	—	—	—	2.601	—	—
	0405-95-0003	05-02009	3-4	FILL	—	—	—	—	—	—	4.117	—	—
	0405-95-0006	05-02009	5-6	QBT3	—	—	—	0.011	—	—	—	—	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	0.011[c]	—	—	—	—	—
	0405-95-0010	05-02010	3-4	FILL	—	—	—	0.023[c]	—	—	—	—	—
	0405-95-0011	05-02010	4-5	FILL	—	—	—	0.009[c]	—	—	—	—	—
	0405-95-0015	05-02011	5-6	FILL	—	—	—	0.002[c]	—	—	—	—	—
	0405-95-0020	05-02012	3-4	FILL	—	—	—	0.007[c]	—	—	—	—	—
	0405-95-0021	05-02012	5-6	QBT3	—	—	—	0.014	—	—	—	—	—
	0405-95-0023	05-02013	1-2	FILL	—	—	—	1.007[c]	—	—	—	—	—
	0405-95-0027	05-02013	4-5	FILL	—	—	—	0.014[c]	—	—	—	—	—

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	0405-95-0031	05-02016	0-0.50	ALLH	—	—	—	—	0.065	—	—	—	—
	0405-95-0085	05-02045	0-0.50	ALLH	—	—	—	—	—	—	4.19	0.24	4.51
	0405-95-0087	05-02046	0-0.50	ALLH	—	—	—	—	—	—	3.04	—	3.24
	0405-95-0089	05-02047	0-0.50	ALLH	—	—	—	—	—	—	3.51	—	3.74
	0405-95-0092	05-02048	0-0.50	ALLH	—	—	—	—	—	—	5.81	0.27	5.96
	0405-95-0094	05-02049	0-0.50	ALLH	—	—	—	—	—	—	9.23	0.38	9.2
	0405-95-0058	05-02050	0-0.50	ALLH	—	—	—	—	—	—	57.5	3.45	57
	0405-95-0059	05-02051	0-0.50	ALLH	—	—	—	—	—	—	68.9	4.21	69.8
	RE05-04-53891	05-02051	5-6.10	QBT3	—	—	—	—	—	—	—	0.106	—
	0405-95-0060	05-02052	0-0.50	FILL	—	—	—	—	—	—	22	1.91	22.4
	0405-95-0061	05-02053	0-0.50	FILL	—	—	—	—	—	—	9.51	0.81	9.37
	0405-95-0062	05-02054	1-2	QBT3	—	—	—	—	0.04	—	4.34	0.33	4.58
	0405-95-0068	05-02054	18-19	QBT3	—	—	—	—	—	—	2.09	0.18	2.11
	0405-95-0069	05-02055	4-5	QBT3	—	—	—	—	—	—	—	0.11	—
	0405-95-0070	05-02055	9-10	QBT3	—	—	—	—	—	—	—	0.11	—
	0405-95-0071	05-02055	10-11	QBT3	—	—	—	—	—	—	—	0.11	—
	0405-95-0073	05-02056	3.50-4.50	FILL	—	—	—	—	—	—	3.78	0.25	3.77
	0405-95-0079	05-02057	4-5	FILL	—	—	—	—	—	—	8.21	—	—
	0405-95-0082	05-02057	14-15	QBT3	—	—	—	—	—	—	—	0.11	—
	0405-95-0192	05-02058	0-0.50	ALLH	—	—	—	—	—	—	2.77	—	2.94
	0405-95-0194	05-02059	0-0.50	ALLH	—	—	—	—	—	—	9.77	0.56	10.17
	RE05-04-53887	05-02059	5-6	QBT3	—	—	—	—	—	—	—	0.112	—
	0405-95-0196	05-02060	0-0.50	ALLH	—	—	—	—	0.067	—	7.51	0.48	7.93
	0405-95-0198	05-02062	0-0.50	ALLH	—	—	—	—	—	—	3.26	—	3.35
	0405-95-0199	05-02063	0-0.50	SED	—	—	—	—	—	—	5.25	0.25	5.13
	0405-95-0207	05-02066	0-1	ALLH	—	—	—	—	0.013[c]	—	7.8	0.35	7.81
	0405-95-0209	05-02066	1-2	ALLH	—	—	—	—	—	—	—	—	2.67

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	0405-95-0211	05-02067	0-1	ALLH	—	—	—	—	0.013[c]	—	13.83	0.67	14.45
	0405-95-0212	05-02067	1-2	QBT3	—	—	—	—	—	—	3.64	—	3.53
	0405-95-0214	05-02067	2-3	QBT3	—	—	—	—	—	—	2.97	—	3.27
	0405-95-0228	05-02068	0-0.50	ALLH	—	—	—	—	—	—	—	—	2.502
	0405-95-0230	05-02069	0-0.50	ALLH	—	—	—	0.043	—	—	4.115	—	3.964
	RE05-04-54762	05-23241	0.16-0.36	ALLH	0.507 (J-)	—	—	—	0.175	—	—	—	—
	RE05-04-54763	05-23241	0.36-0.56	ALLH	0.233 (J-)	—	—	—	—	—	—	—	—
	RE05-04-54765	05-23242	0.33-0.49	ALLH	0.16	—	—	—	—	—	—	—	—
	RE05-04-54768	05-23244	0-0.62	ALLH	—	—	—	—	0.0271[c]	—	2.95	—	3.08
	RE05-04-54770	05-23245	0-0.34	ALLH	—	—	—	—	—	—	—	0.252 (J-)	—
	RE05-04-54772	05-23246	0-0.20	ALLH	0.173 (J-)	—	—	—	—	—	—	0.276 (J-)	2.326 (J-)
	RE05-04-54773	05-23246	0.20-0.46	ALLH	—	—	—	—	—	—	—	0.253 (J-)	—
	RE05-04-54774	05-23247	0-0.23	ALLH	0.106 (J-)	—	—	—	—	—	—	—	—
	RE05-04-54775	05-23247	0.23-0.52	ALLH	0.07 (J-)	—	—	—	—	—	—	—	—
	RE05-04-54776	05-23248	0-0.16	ALLH	0.071 (J-)	—	—	—	—	—	—	—	—
	RE05-04-54777	05-23248	0.16-0.59	ALLH	0.127 (J-)	0.425[c]	—	—	—	—	—	0.439 (J-)	—
	RE05-04-54778	05-23249	0-0.39	ALLH	—	—	—	—	0.0977	—	2.69	—	3.02
	RE05-04-54779	05-23249	0.39-0.66	ALLH	—	0.689[c]	—	—	0.097	—	6.05	0.36	6.49
	RE05-04-53893	05-22893	5-6	QBT3	—	—	—	—	—	—	—	0.128	—
05-001(c)	0405-95-0256	05-02021	0-0.50	ALLH	—	—	—	0.036	—	—	—	—	—
	0405-95-0258	05-02022	0-0.50	ALLH	—	—	—	0.04	—	—	—	—	—
	0405-95-0260	05-02024	0-0.50	ALLH	—	—	—	—	—	—	26	1.07	26.2
	0405-95-0261	05-02025	0-0.50	ALLH	—	—	—	—	—	—	9.77	0.423	9.83
	0405-95-0232	05-02026	0-1	QBT3	—	—	—	0.009	0.011	—	—	—	—
	0405-95-0234	05-02026	1-2	QBT3	—	—	—	0.007	—	—	—	—	—
	0405-95-0235	05-02026	2-3	QBT3	—	—	—	0.009	—	—	—	—	—
	0405-95-0237	05-02027	0-1	FILL	—	—	—	0.016[c]	0.011[c]	—	3.23	—	3.16

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	0405-95-0238	05-02027	1-2	FILL	—	—	—	0.002[c]	—	—	—	—	—
	0405-95-0239	05-02027	2-3	FILL	—	—	—	0.007[c]	—	—	—	—	—
	0405-95-0241	05-02029	0-0.50	ALLH	—	—	—	—	—	—	—	—	—
	0405-95-0243	05-02030	0-1	FILL	—	—	—	—	—	—	—	—	2.42
	0405-95-0245	05-02030	2-3	QBT3	—	—	—	0.002	—	—	—	—	—
	0405-95-0247	05-02031	0-1	ALLH	—	—	—	—	0.027[c]	—	—	—	—
	0405-95-0248	05-02031	1-2	QBT3	—	—	—	0.014	—	—	—	—	—
	0405-95-0249	05-02031	2-3	QBT3	—	—	—	0.014	—	—	—	—	—
	0405-95-0264	05-02033	0-0.50	ALLH	—	—	—	—	—	—	—	—	—
	0405-95-0266	05-02034	0-0.50	ALLH	—	—	—	—	—	—	—	—	2.34
	RE05-04-53898	05-22894	2.10-2.50	SED	—	—	—	—	—	—	2.8	—	2.93
	RE05-04-53899	05-22894	5.20-6	QBT3	—	—	—	—	—	—	11	0.539	11.7
05-005(a)-00	0405-95-0217	05-02007	1-2	FILL	—	—	—	0.023[c]	—	—	—	—	—
	0405-95-0221	05-02007	5-6	QBT3	—	—	—	0.009	—	—	—	—	—
	0405-95-0224	05-02008	1-2	FILL	—	—	—	0.007[c]	0.009[c]	—	—	—	—
	0405-95-0225	05-02008	3-4	FILL	—	—	—	0.014[c]	0.005[c]	—	—	—	—
	0405-95-0226	05-02008	5-6	FILL	—	—	—	0.011[c]	—	—	—	—	—
	0405-95-0002	05-02009	1-2	FILL	—	—	—	—	—	—	2.601	—	—
	0405-95-0003	05-02009	3-4	FILL	—	—	—	—	—	—	4.117	—	—
	0405-95-0006	05-02009	5-6	QBT3	—	—	—	0.011	—	—	—	—	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	0.011[c]	—	—	—	—	—
	0405-95-0010	05-02010	3-4	FILL	—	—	—	0.023[c]	—	—	—	—	—
	0405-95-0011	05-02010	4-5	FILL	—	—	—	0.009[c]	—	—	—	—	—
	0405-95-0015	05-02011	5-6	FILL	—	—	—	0.002[c]	—	—	—	—	—
	0405-95-0020	05-02012	3-4	FILL	—	—	—	0.007[c]	—	—	—	—	—
	0405-95-0021	05-02012	5-6	QBT3	—	—	—	0.014	—	—	—	—	—

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	0405-95-0023	05-02013	1-2	FILL	—	—	—	0.007[c]	—	—	—	—	—
	0405-95-0027	05-02013	4-5	FILL	—	—	—	0.014[c]	—	—	—	—	—
	0405-95-0031	05-02016	0-0.50	ALLH	—	—	—	—	0.065	—	—	—	—
	0405-95-0228	05-02068	0-0.50	ALLH	—	—	—	—	—	—	—	—	2.502
	0405-95-0230	05-02069	0-0.50	ALLH	—	—	—	0.043	—	—	4.115	—	3.964
	RE05-04-53893	05-22893	5-6	QBT3	—	—	—	—	—	—	—	0.128	—
52-002(a)	0452-95-0004	52-02001	14-15	QBT3	—	—	—	0.023	—	—	—	—	—
	0452-95-0005	52-02001	19-20	QBT3	—	—	—	0.011	—	—	—	—	—
	0452-95-0011	52-02002	9-10	QBT3	—	—	—	0.005	—	—	—	—	—
	0452-95-0015	52-02002	14-15	QBT3	—	—	—	0.009	0.005	—	—	—	—
	0452-95-0017	52-02002	19-20	QBT3	—	—	—	0.011	—	—	—	—	—
	0452-95-0022	52-02003	9-10	QBT3	—	—	—	0.0109	—	—	—	—	—
	0452-95-0023	52-02003	14-15	QBT3	—	—	—	0.00838	—	—	—	—	—
	RE52-04-54004	52-02003	14-15	QBT3	—	—	—	—	—	0.0143	—	—	—
	0452-95-0034	52-02004	19-20	QBT3	—	—	—	—	—	—	—	—	—
	0452-95-0039	52-02006	4-5	QBT3	—	—	—	0.005	—	—	—	—	—
	0452-95-0040	52-02006	9-10	QBT3	—	—	—	0.005	—	—	—	—	—
	0452-95-0044	52-02006	14-15	QBT3	—	—	—	0.009	—	—	—	—	—
	0452-95-0045	52-02006	19-20	QBT3	—	—	—	0.002	—	—	—	—	—
	0452-95-0047	52-02008	4-5	FILL	—	—	—	0.08286	0.0131	—	—	—	—
	0452-95-0048	52-02008	9-10	QBT3	—	—	—	0.09184	0.006732	—	—	—	—
	0452-95-0051	52-02008	14-15	QBT3	—	—	—	0.08926	—	—	—	—	—
	0452-95-0052	52-02008	19-20	QBT3	—	—	—	0.02818	—	—	—	—	—
	RE52-04-54787	52-23251	0.10-0.33	ALLH	—	—	—	—	0.0584	—	—	—	—
	RE52-04-54788	52-23251	0.33-0.75	ALLH	—	—	—	—	0.0349[c]	—	—	—	—
	RE52-04-54789	52-23252	0.13-0.43	ALLH	0.377	—	—	0.0764	10.4	—	—	—	2.8
	RE52-04-54796	52-23253	0-0.69	ALLH	—	0.0928[c]	—	—	0.0434[c]	—	—	—	—

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	RE52-04-54791	52-23253	0.10-0.69	ALLH	—	0.0426[c]	—	—	0.0315[c]	—	—	—	—
	RE52-04-54797	52-23254	0-0.43	ALLH	0.0566	—	—	—	0.258	—	2.71	—	3.71
	RE52-04-54793	52-23254	0.16-0.43	ALLH	—	—	—	—	0.114	—	—	—	2.34
	RE52-04-54794	52-23254	0.43-0.69	ALLH	—	—	—	—	0.0352[c]	—	—	—	—
52-003(a)	0452-95-0054	52-02009	3-4	FILL	—	—	—	0.1306	0.006684[c]	—	—	—	—
	0452-95-0055	52-02009	7.50-8.50	FILL	—	—	—	0.4281	—	—	—	—	—
	0452-95-0057	52-02009	14-15	QBT3	—	—	—	0.03717	—	—	—	—	—
	0452-95-0059	52-02009	19-20	QBT3	—	—	—	0.0753	—	—	—	—	—
	0452-95-0063	52-02010	4-5	FILL	—	—	—	0.08363	0.01815[c]	—	—	—	2.46
	0452-95-0064	52-02010	8.50-9.50	FILL	—	—	—	0.1119	0.007246[c]	—	—	—	—
	0452-95-0065	52-02010	14-15	QBT3	—	—	—	0.04002	—	—	—	—	—
	0452-95-0067	52-02010	18-19	QBT3	—	—	—	0.02564	—	0.331	—	—	—
	RE52-04-54013	52-02010	34-35	QBT3	—	—	—	—	—	0.0281	—	—	—
63-001(a)	0463-95-0002	63-02001	7.50-8.50	QBT3	—	—	—	0.011	0.013	—	—	—	—
	0463-95-0006	63-02001	14-15	QBT3	—	—	—	0.004	0.005	—	—	—	—
	0463-95-0007	63-02001	19-20	QBT3	—	—	—	0.008	—	—	—	—	—
	0463-95-0012	63-02002	12-13	QBT3	—	—	—	0.0018	—	—	—	—	—
	0463-95-0013	63-02002	19-20	QBT3	—	—	—	—	0.002	—	—	—	—
	0463-95-0018	63-02003	4-5	FILL	—	—	—	—	0.014[c]	—	—	—	—
	0463-95-0021	63-02003	7-8	QBT3	—	—	—	—	0.047	—	—	—	—
	0463-95-0034	63-02003	44-45	QBT3	—	—	—	—	—	—	—	—	—
	0463-95-0038	63-02004	3-4	FILL	—	—	—	—	0.015[c]	—	—	—	—
	0463-95-0045	63-02004	8-9	QBT3	—	—	—	—	0.018	—	—	—	—
	0463-95-0055	63-02004	44-45	QBT3	—	—	—	—	—	—	—	—	—
63-001(b)	0463-95-0074	63-02007	4-5	QBT3	—	—	—	—	—	—	—	—	—
	0463-95-0103	63-02008	13.50-15	QBT3	—	—	—	0.05	—	—	—	—	—
	0463-95-0107	63-02008	19-20	QBT3	—	—	—	—	—	—	—	0.15	—

Table D-7.0-5 (continued)

PRS	Sample ID	Location ID	Depth (ft)	Media Code	Americium-241	Cesium-137	Europium-152	Plutonium-238	Plutonium-239	Tritium	Uranium-234	Uranium-235	Uranium-238
Soil/Fill Background/Fallout Value (pCi/g)					0.013	1.65	na[a]	0.023	0.054	na	2.59	0.2	2.29
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					na	na	na	na	na	na	1.98	0.09	1.93
Sediment Background/Fallout Value (pCi/g)					0.04	0.9	na	0.006	0.068	0.093	2.59	0.2	2.29
	0463-95-0108	63-02008	24-25	QBT3	—	—	—	—	—	—	—	0.19	—
	0463-95-0110	63-02008	29-30	QBT3	—	—	—	—	—	—	—	0.13	—
	0463-95-0112	63-02008	39-40	QBT3	—	—	—	—	—	—	—	0.17	—
	0463-95-0114	63-02008	41.50-42.50	QBT3	—	—	—	—	—	—	—	—	—

[a] na = Not available.

[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-7.0-6
Summary of Organic Chemicals Detected in Soil, Fill, and Tuff at East Ten Site Slope Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dichloroethene[1,1-]	Di-n-butylphthalate	Fluoranthene	Methylene Chloride	Pyrene	Toluene	Trichlorofluoromethane	Xylene (Total)
04-001-99	RE04-04-53865	04-02011	5-6	QBT3	—[a]	—	—	—	—	—	—	0.0019 (J)	—	—	—	—
	RE04-04-53866	04-02011	8-9	QBT3	—	—	0.0525 (J)[b]	—	—	—	—	0.0022 (J)	—	—	—	—
	0404-95-0108	04-02013	2-3	QBT3	0.004 (J)	—	—	—	—	—	—	—	—	—	—	—
	RE04-04-53867	04-02016	2-3	QBT3	—	—	0.036 (J)	—	—	—	—	—	—	—	—	—
	RE04-04-53868	04-02016	5-6	QBT3	—	—	0.0404 (J)	—	—	—	—	—	—	—	—	—
	RE04-04-54743	04-23234	0-0.13	ALLH	—	0.102 (J)	—	—	—	—	—	—	—	—	—	—
	RE04-04-54744	04-23234	0.13-0.56	ALLH	—	0.188 (J)	—	—	—	—	—	—	—	—	—	—
	RE04-04-54746	04-23235	0.23-0.69	ALLH	—	0.0448 (J)	—	—	0.0011 (J)	—	—	0.002 (J)	—	—	—	—
	RE04-04-54760	04-23236	0-0.16	ALLH	—	0.0622 (J)	0.192 (J)	—	—	—	0.0211 (J)	—	—	—	—	—
	RE04-04-54747	04-23236	0.03-0.16	ALLH	—	0.202 (J)	4.03	—	—	—	—	—	—	—	—	—
	RE04-04-54748	04-23236	0.16-0.39	ALLH	—	0.369 (J)	—	—	—	—	—	—	—	—	—	—
	RE04-04-54749	04-23237	0-0.13	ALLH	—	0.123 (J)	—	—	—	0.155 (J)	0.0219 (J)	—	0.0213 (J)	—	—	—
	RE04-04-54750	04-23237	0.13-0.66	ALLH	—	0.105 (J)	—	—	—	0.108 (J)	—	—	—	—	—	—
	RE04-04-54751	04-23238	0-0.1	ALLH	—	0.0685 (J)	—	—	—	0.0608 (J)	—	—	—	—	—	—
	RE04-04-54752	04-23238	0.1-0.36	ALLH	—	0.242 (J)	—	—	—	—	—	—	—	—	—	—
	RE04-04-54756	04-23239	0-0.2	ALLH	—	0.42 (J)	—	—	—	—	—	—	—	—	—	—
	RE04-04-54753	04-23239	0.07-0.2	ALLH	—	0.0941 (J)	0.179 (J)	—	—	0.0494 (J)	—	—	—	—	—	—
	RE04-04-54754	04-23239	0.2-0.69	ALLH	—	0.153 (J)	—	—	—	—	—	—	—	—	—	—
05-001(a)-99	0405-95-0221	05-02007	5-6	QBT3	—	—	—	—	—	—	—	—	—	0.001 (J)	—	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	—	—	—	0.14 (J)	—	0.11 (J)	—	—	—
	0405-95-0015	05-02011	5-6	FILL	—	—	—	—	—	—	—	—	—	0.044	—	—
	RE05-04-53894	05-02012	2-3	FILL	—	—	—	0.0178 (J)	—	—	0.0364	0.0094 (J)	0.0489	—	0.0042 (J)	—
	RE05-04-53895	05-02012	5-6	QBT3	0.0185	—	—	—	—	—	—	—	—	—	—	—
	0405-95-0023	05-02013	1-2	FILL	—	—	—	—	—	—	—	—	—	0.011	—	—
	RE05-04-53892	05-22893	2-3	QBT3	0.0352	—	—	—	—	—	—	—	—	—	—	—
	RE05-04-54762	05-23241	0.16-0.36	ALLH	—	—	0.0742 (J)	—	—	—	—	—	—	—	0.0022	—
	RE05-04-54764	05-23242	0.07-0.33	ALLH	—	0.648 (J)	—	—	—	—	—	—	—	—	—	—
	RE05-04-54775	05-23247	0.23-0.52	ALLH	—	—	0.0708 (J)	—	—	—	—	—	—	—	—	—
05-005(a)-00	0405-95-0221	05-02007	5-6	QBT3	—	—	—	—	—	—	—	—	—	0.001 (J)	—	—
	0405-95-0007	05-02010	1-2	FILL	—	—	—	—	—	—	0.14 (J)	—	0.11 (J)	—	—	—
	0405-95-0015	05-02011	5-6	FILL	—	—	—	—	—	—	—	—	—	0.044	—	—
	RE05-04-53894	05-02012	2-3	FILL	—	—	—	0.0178 (J)	—	—	0.0364	0.0094 (J)	0.0489	—	0.0042 (J)	—
	RE05-04-53895	05-02012	5-6	QBT3	0.0185	—	—	—	—	—	—	—	—	—	—	—
	0405-95-0023	05-02013	1-2	FILL	—	—	—	—	—	—	—	—	—	0.011	—	—
	RE05-04-53892	05-22893	2-3	QBT3	0.0352	—	—	—	—	—	—	—	—	—	—	—
52-002(a)	0452-95-0011	52-02002	9-10	QBT3	—	—	—	—	—	0.11 (J)	—	—	—	—	—	—
	0452-95-0023	52-02003	14-15	QBT3	—	—	—	—	—	—	—	0.01 (J)	—	—	—	—
	RE52-04-53999	52-02006	9-10	QBT3	—	—	0.0825 (J)	—	—	—	—	—	—	—	—	—
	RE52-04-54000	52-02006	14-15	QBT3	—	—	0.0872 (J)	—	—	—	—	—	—	—	—	—
	RE52-04-54001	52-02006	24-25	QBT3	—	—	0.0909 (J)	—	—	—	—	—	—	—	—	—
	RE52-04-54002	52-02006	29-30	QBT3	—	—	0.0854 (J)	—	—	—	—	—	—	—	—	—
	RE52-04-54007	52-02008	8.7-10	QBT3	—	—	0.0844 (J)	—	—	—	—	—	—	—	—	—

Table D-7.0-6 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dichloroethene[1,1-]	Di-n-butylphthalate	Fluoranthene	Methylene Chloride	Pyrene	Toluene	Trichlorofluoromethane	Xylene (Total)
	RE52-04-54008	52-02008	13.7-15	QBT3	—	—	0.0833 (J)	—	—	—	—	0.0024 (J)	—	—	—	—
	RE52-04-54009	52-02008	23.7-25	QBT3	—	—	0.0857 (J)	—	—	—	—	—	—	—	—	—
	RE52-04-54010	52-02008	28.7-30	QBT3	—	—	0.0887 (J)	—	—	—	—	0.0024 (J)	—	—	—	—
	RE52-04-54789	52-23252	0.13-0.43	ALLH	—	0.485 (J)	—	—	—	—	—	—	—	—	—	—
	RE52-04-54790	52-23252	0.43-0.79	ALLH	—	0.477 (J)	—	—	—	—	—	—	—	—	—	—
52-003(a)	0452-95-0055	52-02009	7.5-8.5	FILL	—	—	0.041 (J)	—	—	0.32 (J)	—	—	—	—	—	—
	0452-95-0065	52-02010	14-15	QBT3	—	—	—	—	—	—	—	0.007	—	—	—	—
	RE52-04-54011	52-02010	24-25	QBT3	0.0199	—	—	—	—	—	—	0.0025 (J)	—	—	—	—
	RE52-04-54012	52-02010	29-30	QBT3	0.0057 (J)	—	—	—	—	—	—	0.0022 (J)	—	—	—	—
	RE52-04-54013	52-02010	34-35	QBT3	—	—	—	—	—	—	—	0.0021 (J)	—	—	—	—
63-001(a)	0463-95-0028	63-02003	29-30	QBT3	—	—	—	—	—	0.17 (J)	—	—	—	—	—	—
	0463-95-0042	63-02004	59-60	QBT3	—	—	—	—	—	0.096 (J)	—	—	—	—	—	0.001 (J)
63-001(b)	0463-95-0062	63-02005	19-20	QBT3	—	—	—	—	—	0.057 (J)	—	—	—	—	—	—
	0463-95-0074	63-02007	4-5	QBT3	—	—	0.18 (J)	—	—	—	—	—	—	—	—	—
	0463-95-0099	63-02008	52.5-53.5	QBT3	—	—	—	—	—	0.037 (J)	—	—	—	—	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-7.1-1
EPCs for Inorganic COPCs at Consolidated Unit 04-001-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Antimony	0–1	0.885	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.831	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	18.2	Gamma	95% Approximate Gamma UCL
	0–10	13.3	Gamma	95% Approximate Gamma UCL
Selenium	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.312	Nonparametric	95% Modified-t UCL

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.

Table D-7.1-2
EPCs for Radionuclide COPCs at Consolidated Unit 04-001-99

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Americium-241	0–1	1.62	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	1.29	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	1.09	Normal	95% Student's-t UCL
	0–10	0.911	Normal	95% Student's-t UCL
Europium-152	0–1	0.801	—[a]	Maximum detect
	0–10	0.419	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	0.039	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.027	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	16.1	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	11.4	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	14.90	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	10.16	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.247	Lognormal	95% H-UCL
	0–10	0.46	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	15.48	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	9.49	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-7.1-3
EPCs for Organic COPCs at Consolidated Unit 04-001-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.004	—[c]	Maximum detect
Benzoic acid	0–1	0.302	Gamma	95% Approximate Gamma UCL
	0–10	1.03	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	1.48	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	18.9	Nonparametric	95% Chebyshev (Mean, SD)
1,1-Dichloroethene	0–1	0.0011	—	Maximum detect
	0–10	0.0011	—	Maximum detect
Di-n-butylphthalate	0–1	0.198	Nonparametric	95% Modified-t UCL
	0–10	0.204	Nonparametric	95% Modified-t UCL
Fluoranthene	0–1	0.021	Normal	95% Student's-t UCL
	0–10	0.098	Nonparametric	95% Chebyshev (Mean, SD)
Methylene chloride	0–1	0.002	—	Maximum detect
	0–10	0.0022	—	Maximum detect
Pyrene	0–1	0.021	Normal	95% Student's-t UCL
	0–10	0.098	Nonparametric	95% Chebyshev (Mean, SD)

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.2-1
EPCs for Inorganic COPCs at Consolidated Unit 05-001(a)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aluminum	0–1	8625	Gamma	95% Approximate Gamma UCL
	0–10	8775	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–1	261.1	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	168	Nonparametric	95% Chebyshev (Mean, SD)
Cadmium	0–1	0.883	Normal	95% KM (t) UCL
	0–10	0.798	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	422.8	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	232	Nonparametric	95% Chebyshev (Mean, SD)
Lead	0–1	258.3	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	147	Nonparametric	95% Chebyshev (Mean, SD)
Mercury	0–1	0.0131	Normal	95% KM (t) UCL
	0–10	0.062	Nonparametric	95% Chebyshev (Mean, SD)
Nickel	0–1	4.503	Normal	95% KM (t) UCL
	0–10	4.34	Gamma	95% Approximate Gamma UCL
Selenium	0–1	0.62	Nonparametric	95% KM (t) UCL
	0–10	0.439	Nonparametric	95% Modified-t UCL
Silver	0–1	0.0398	Normal	95% KM (t) UCL
	0–10	0.377	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	0.134	Gamma	95% KM (t) UCL
	0–10	0.434	Nonparametric	95% Chebyshev (Mean, SD)
Zinc	0–1	48.69	Nonparametric	95% Student's-t UCL
	0–10	36.9	Gamma	95% Approximate Gamma UCL

Table D-7.2-2
EPCs for Radionuclide COPCs at Consolidated Unit 05-001(a)-99

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Americium-241	0–1	0.162	Gamma	95% KM (t) UCL
	0–10	0.227	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	0.56	Normal	95% KM (t) UCL
	0–10	0.595	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	0.00679	Normal	95% KM (t) UCL
	0–10	0.010	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.0379	Gamma	95% KM (t) UCL
	0–10	0.028	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	15.37	Lognormal	95% KM (Chebyshev) UCL
	0–10	8.65	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.964	Lognormal	95% KM (Chebyshev)
	0–10	0.52	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	15.64	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	8.64	Nonparametric	95% Chebyshev (Mean, SD)

Table D-7.2-3
EPCs for Organic COPCs at Consolidated Unit 05-001(a)-99

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.0352	—[c]	Maximum detect
Benzoic acid	0–1	0.648	—	Maximum detect
	0–10	0.552	Nonparametric	95% Modified-t UCL
Bis(2-ethylhexyl)phthalate	0–1	0.0742	—	Maximum detect
	0–10	0.176	Nonparametric	95% Modified-t UCL
Chrysene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0178	—	Maximum detect
Methylene chloride	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0094	—	Maximum detect
Fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.073	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.070	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.044	—	Maximum detect
Trichlorofluoromethane	0–1	0.0022	—	Maximum detect
	0–10	0.0042	—	Maximum detect

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.3-1
EPCs for Inorganic COPCs at AOC 05-001(c)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Antimony	0–1	0.700	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.542	Nonparametric	95% Chebyshev (Mean, SD)
Barium	0–1	601	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	372	Nonparametric	95% Chebyshev (Mean, SD)
Copper	0–1	88.3	Lognormal	95% Chebyshev (MVUE)
	0–10	50.1	Lognormal	95% Chebyshev (MVUE)
Lead	0–1	149	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	90.8	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.270	Nonparametric	95% Modified-t UCL

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.

Table D-7.3-2
EPCs for Radionuclide COPCs at AOC 05-001(c)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Plutonium-238	0–1	0.020	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.014	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.016	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.010	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-234	0–1	8.41	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	5.65	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-235	0–1	0.257	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	0.178	Lognormal	95% H-UCL
Uranium-238	0–1	8.52	Nonparametric	95% Chebyshev (Mean, SD)
	0–10	5.76	Nonparametric	95% Chebyshev (Mean, SD)

Table D-7.4-1
EPCs for Inorganic COPCs at Consolidated Unit 05-005(a)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aluminum	0–1	8365	Normal	95% Student's-t UCL
	0–10	7988	Normal	95% Student's-t UCL
Barium	0–1	70.2	Normal	95% Student's-t UCL
	0–10	71.2	Normal	95% Student's-t UCL
Copper	0–1	31.5	—[a]	Maximum detect
	0–10	12.03	Gamma	95% KM (BCA) UCL
Lead	0–1	26.7	Normal	95% Student's-t UCL
	0–10	17.8	Normal	95% Student's-t UCL
Mercury	0–1	0.0185	Normal	95% KM (t) UCL
	0–10	0.138	Lognormal	95% KM (Chebyshev) UCL
Selenium	0–1	0.621	—	Maximum detect
	0–10	0.763	Normal	95% KM (t) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-7.4-2
EPCs for Radionuclide COPCs at Consolidated Unit 05-005(a)-00

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Americium-241	0–1	0.507	—[a]	Maximum detect
	0–10	0.507	—	Maximum detect
Plutonium-238	0–1	0.0195	Normal	95% KM (t) UCL
	0–10	0.011	Gamma	95% KM (t) UCL
Plutonium-239	0–1	0.0821	Gamma	95% KM (t) UCL
	0–10	0.0245	Gamma	95% KM (t) UCL
Uranium-234	0–1	2.053	Normal	95% KM (t) UCL
	0–10	1.657	Approximate Gamma	95% KM (BCA) UCL
Uranium-235	0–1	0.153	Normal	95% KM (t) UCL
	0–10	0.123	Lognormal	95% KM (Chebyshev) UCL
Uranium-238	0–1	2.272	Gamma	95% Approximate Gamma UCL
	0–10	1.448	Approximate Gamma	95% KM (BCA) UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-7.4-3
EPCs for Organic COPCs at Consolidated Unit 05-005(a)-00

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–1	ND[a]	n/a[b]	Not a COPC for this depth
	0–10	0.0237	Nonparametric	95% KM (t) UCL
Bis(2-ethylhexyl)phthalate	0–1	0.0742	—[c]	Maximum detect
	0–10	0.0742	—	Maximum detect
Chrysene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0178	—	Maximum detect
Fluoranthene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0757	Nonparametric	95% KM (t) UCL
Methylene chloride	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0094	—	Maximum detect
Pyrene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0721	Nonparametric	95% KM (t) UCL
Toluene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0155	Normal	95% KM (t) UCL
Trichlorofluoromethane	0–1	0.0022	—	Maximum detect
	0–10	0.0042	—	Maximum detect

[a] ND = Not detected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.5-1
EPCs for Inorganic COPCs at SWMU 52-002(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Lithium	0–1	NA[a]	n/a[b]	Not a COPC for this depth
	0–10	0.73	—[c]	Maximum detect
Molybdenum	0–1	NA	n/a	Not a COPC for this depth
	0–10	2.7	—	Maximum detect
Nitrate	0–1	NA	n/a	Not a COPC for this depth
	0–10	2	—	Maximum detect
Nitrite	0–1	NA	n/a	Not a COPC for this depth
	0–10	0.06	—	Maximum detect
Selenium	0–1	0.881	—	Maximum detect
	0–10	0.881	—	Maximum detect

[a] NA = Not analyzed for this analyte in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.5-2
EPCs for Radionuclide COPCs at SWMU 52-002(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Americium-241	0–1	0.276	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.188	Nonparametric	95% Chebyshev (Mean, SD)
Cesium-137	0–1	0.285	Normal	95% KM (t) UCL
	0–10	0.368	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-238	0–1	0.0764	—[a]	Maximum detect
	0–10	0.036	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	5.671	Nonparametric	95% KM (Chebyshev) UCL
	0–10	2.16	Nonparametric	95% Chebyshev (Mean, SD)
Uranium-238	0–1	2.391	Gamma	95% Approximate Gamma UCL
	0–10	1.49	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-7.5-3
EPCs for Organic COPCs at SWMU 52-002(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Benzoic acid	0–1	0.485	—[a]	Maximum detect
	0–10	0.798	Nonparametric	95% Modified-t UCL
Bis(2-ethylhexyl)phthalate	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.239	Nonparametric	95% Chebyshev (Mean, SD)
Di-n-butylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.194	Nonparametric	95% Modified-t UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-7.6-1
EPCs for Radionuclide COPCs at SWMU 52-003(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Plutonium-238	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.428	—[c]	Maximum detect
Plutonium-239	0–1	NC	n/a	Not a COPC for this depth
	0–10	0.0182	—	Maximum detect
Uranium-238	0–1	NC	n/a	Not a COPC for this depth
	0–10	2.46	—	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.6-2
EPCs for Organic COPCs at SWMU 52-003(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Bis(2-ethylhexyl)phthalate	0–1	NC	n/a	Not a COPC for this depth
	0–10	0.041	—[c]	Maximum detect
Di-n-butylphthalate	0–1	NC	n/a	Not a COPC for this depth
	0–10	0.32	—	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.7-1
EPCs for Inorganic COPCs at SWMU 63-001(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Boron	0–1	NC	n/a	Not a COPC for this depth
	0–10	1.9	—[c]	Maximum detect
Lithium	0–1	NC	n/a	Not a COPC for this depth
	0–10	6	—	Maximum detect
Nitrate	0–1	NC	n/a	Not a COPC for this depth
	0–10	11.7	—	Maximum detect
Nitrite	0–1	NC	n/a	Not a COPC for this depth
	0–10	0.86	—	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.7-2
EPCs for Radionuclide COPCs at SWMU 63-001(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Plutonium-238	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.011	—[c]	Maximum detect
Plutonium-239	0–1	NC	n/a	Not a COPC for this depth
	0–10	0.047	—	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.8-1
EPCs for Inorganic COPCs at SWMU 63-001(b)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Lithium	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	1.1	—[c]	Maximum detect
Molybdenum	0–1	NC	n/a	Not a COPC for this depth
	0–10	1.3	—	Maximum detect
Nitrate	0–1	NC	n/a	Not a COPC for this depth
	0–10	3.2	—	Maximum detect
Nitrite	0–1	NC	n/a	Not a COPC for this depth
	0–10	0.08	—	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.8-2
EPCs for Radionuclide COPCs at SWMU 63-001(b)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Uranium-235	0–1	NC [a]	n/a [b]	Not a COPC for this depth
	0–10	0.05	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.8-3
EPCs for Organic COPCs at SWMU 63-001(b)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Bis(2-ethylhexyl)phthalate	0–1	NC[a]	n/a[b]	Not a COPC for this depth
	0–10	0.18	—[c]	Maximum detect

[a] NC = No sample collected in this depth range.
[b] n/a = Not applicable.
[c] — = Too few samples to determine distribution or calculate EPC.

Table D-7.9-1
Soil and Fill Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
RE04-04-53869	04-02019	0–0.5	ALLH	—[a]	2427S[b]
RE04-04-53872	04-02021	2–3	ALLH	—	2427S
0404-95-0013	04-02023	0–0.5	ALLH	—	356
0404-95-0017	04-02024	0–0.5	ALLH	—	385
0404-95-0034	04-02027	2–3	FILL	—	485
RE04-04-54741	04-23233	0–0.1	ALLH	—	2413S
RE04-04-54742	04-23233	0.1–0.56	ALLH	—	2413S
RE04-04-54743	04-23234	0–0.13	ALLH	—	2413S
RE04-04-54744	04-23234	0.13–0.56	ALLH	—	2413S
RE04-04-54745	04-23235	0–0.13	ALLH	—	2413S
RE04-04-54746	04-23235	0.23–0.69	ALLH	—	2413S
RE04-04-54760	04-23236	0–0.16	ALLH	—	2413S
RE04-04-54747	04-23236	0.03–0.16	ALLH	—	2413S
RE04-04-54748	04-23236	0.16–0.39	ALLH	—	2413S
RE04-04-54749	04-23237	0–0.13	ALLH	—	2413S
RE04-04-54750	04-23237	0.13–0.66	ALLH	—	2413S
RE04-04-54751	04-23238	0–0.1	ALLH	—	2413S
RE04-04-54752	04-23238	0.1–0.36	ALLH	—	2413S
RE04-04-54756	04-23239	0–0.2	ALLH	—	2413S
RE04-04-54753	04-23239	0.07–0.2	ALLH	—	2413S
RE04-04-54754	04-23239	0.2–0.69	ALLH	—	2413S
0405-95-0217	05-02007	1–2	FILL	—	596
0405-95-0219	05-02007	3–4	FILL	—	596
0405-95-0224	05-02008	1–2	FILL	—	596
0405-95-0225	05-02008	3–4	FILL	—	596
0405-95-0007	05-02010	1–2	FILL	—	560
RE05-04-53894	05-02012	2–3	FILL	—	2481S
0405-95-0034	05-02018	0–0.5	ALLH	—	560
0405-95-0253	05-02019	0–0.5	ALLH	—	612
0405-95-0254	05-02020	0–0.5	ALLH	—	612
0405-95-0256	05-02021	0–0.5	ALLH	—	612
0405-95-0258	05-02022	0–0.5	ALLH	—	612
0405-95-0259	05-02023	0–0.5	ALLH	—	612
0405-95-0260	05-02024	0–0.5	ALLH	—	612
0405-95-0261	05-02025	0–0.5	ALLH	—	612
0405-95-0237	05-02027	0–1	FILL	—	612
0405-95-0238	05-02027	1–2	FILL	—	612
0405-95-0239	05-02027	2–3	FILL	—	612
0405-95-0240	05-02028	0–0.5	ALLH	—	612
0405-95-0241	05-02029	0–0.5	ALLH	—	612
0405-95-0243	05-02030	0–1	FILL	—	612
0405-95-0244	05-02030	1–2	FILL	—	612
0405-95-0247	05-02031	0–1	ALLH	—	612
0405-95-0263	05-02032	0–0.5	ALLH	—	612
0405-95-0264	05-02033	0–0.5	ALLH	—	612

Table D-7.9-1 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
0405-95-0266	05-02034	0–0.5	ALLH	—	612
0405-95-0267	05-02035	0–0.5	ALLH	—	612
0405-95-0268	05-02036	0–0.5	ALLH	—	612
0405-95-0269	05-02037	0–0.5	ALLH	—	612
0405-95-0270	05-02038	0–0.5	ALLH	—	612
0405-95-0085	05-02045	0–0.5	ALLH	—	532
0405-95-0087	05-02046	0–0.5	ALLH	—	532
0405-95-0089	05-02047	0–0.5	ALLH	—	532
0405-95-0092	05-02048	0–0.5	ALLH	—	532
0405-95-0094	05-02049	0–0.5	ALLH	—	532
0405-95-0058	05-02050	0–0.5	ALLH	—	555
0405-95-0059	05-02051	0–0.5	ALLH	—	555
0405-95-0060	05-02052	0–0.5	FILL	—	555
0405-95-0061	05-02053	0–0.5	FILL	—	555
0405-95-0073	05-02056	3.5–4.5	FILL	—	555
0405-95-0079	05-02057	4–5	FILL	—	555
0405-95-0192	05-02058	0–0.5	ALLH	—	544
0405-95-0228	05-02068	0–0.5	ALLH	—	596
0405-95-0230	05-02069	0–0.5	ALLH	—	596
RE05-04-54762	05-23241	0.16–0.36	ALLH	—	2381S
RE05-04-54763	05-23241	0.36–0.56	ALLH	—	2381S
RE05-04-54764	05-23242	0.07–0.33	ALLH	—	2377S
RE05-04-54765	05-23242	0.33–0.49	ALLH	—	2377S
RE05-04-54766	05-23243	0.23–1.05	ALLH	—	2363S
RE05-04-54767	05-23243	1.05–2.03	ALLH	—	2363S
RE05-04-54768	05-23244	0–0.62	ALLH	—	2363S
RE05-04-54769	05-23244	0.98–1.64	ALLH	—	2363S
RE05-04-54770	05-23245	0–0.34	ALLH	—	2384S
RE05-04-54771	05-23245	0.34–0.66	ALLH	—	2384S
RE05-04-54772	05-23246	0–0.2	ALLH	—	2384S
RE05-04-54773	05-23246	0.2–0.46	ALLH	—	2383S
RE05-04-54774	05-23247	0–0.23	ALLH	—	2381S
RE05-04-54775	05-23247	0.23–0.52	ALLH	—	2381S
RE05-04-54776	05-23248	0–0.16	ALLH	—	2381S
RE05-04-54777	05-23248	0.16–0.59	ALLH	—	2381S
RE05-04-54778	05-23249	0–0.39	ALLH	—	2363S
RE05-04-54779	05-23249	0.39–0.66	ALLH	—	2363S
RE52-04-54789	52-23252	0.13–0.43	ALLH	—	2470S
RE52-04-54790	52-23252	0.43–0.79	ALLH	—	2470S
RE52-04-54797	52-23254	0–0.43	ALLH	—	2470S
RE52-04-54793	52-23254	0.16–0.43	ALLH	—	2470S
RE52-04-54794	52-23254	0.43–0.69	ALLH	—	2470S
0463-95-0018	63-02003	4–5	FILL	394	—
0463-95-0038	63-02004	3–4	FILL	432	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-7.9-2
Summary of Inorganic COPCs above BV or Detected
in Soil and Fill, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Barium	Cadmium	Copper	Lead	Mercury	Nitrate	Nitrite	Zinc
Soil, Fill Background Value (mg/kg)				295	0.4	14.7	22.3	0.1	na[a]	na	48.8
0404-95-0013	04-02023	0–0.5	ALLH	—	—	—	—	0.2 (U)	—	—	—
RE04-04-54744	04-23234	0.13–0.56	ALLH	—	—	26.9	—	—	—	—	—
RE04-04-54760	04-23236	0–0.16	ALLH	—	—	26.2	—	—	—	—	—
RE04-04-54747	04-23236	0.03–0.16	ALLH	—	—	27.5	—	—	—	—	50
RE04-04-54748	04-23236	0.16–0.39	ALLH	—	—	28.4	—	—	—	—	—
RE04-04-54749	04-23237	0–0.13	ALLH	—	—	16	—	—	—	—	—
RE04-04-54751	04-23238	0–0.1	ALLH	—	—	21.3	—	—	—	—	—
RE04-04-54752	04-23238	0.10–0.36	ALLH	—	—	15.5	—	—	—	—	—
0405-95-0224	05-02008	1–2	FILL	—	0.86 (J)	17.1 (U)	—	0.11 (U)	—	—	—
0405-95-0007	05-02010	1–2	FILL	—	—	—	28.6	0.4	—	—	—
RE05-04-53894	05-02012	2–3	FILL	—	—	17.1	—	—	—	—	—
0405-95-0034	05-02018	0–0.5	ALLH	—	—	—	—	0.11 (U)	—	—	—
0405-95-0254	05-02020	0–0.5	ALLH	—	—	44.8	—	—	—	—	—
0405-95-0256	05-02021	0–0.5	ALLH	—	—	51.4	—	—	—	—	—
0405-95-0260	05-02024	0–0.5	ALLH	2030	—	941	539	—	—	—	90.2
0405-95-0261	05-02025	0–0.5	ALLH	470	—	28.3	—	—	—	—	—
0405-95-0244	05-02030	1–2	FILL	—	—	—	—	—	—	—	—
0405-95-0085	05-02045	0–0.5	ALLH	—	1.6	28.6	—	—	—	—	71.7
0405-95-0087	05-02046	0–0.5	ALLH	—	0.7 (U)	—	30 (J-)	—	—	—	—
0405-95-0089	05-02047	0–0.5	ALLH	—	3.2	—	—	—	—	—	—
0405-95-0092	05-02048	0–0.5	ALLH	—	2.1	79	24.7 (J-)	—	—	—	—
0405-95-0094	05-02049	0–0.5	ALLH	—	2.9	270	66.1 (J-)	—	—	—	66.3
0405-95-0058	05-02050	0–0.5	ALLH	539	0.97 (J)	1050	655	0.11 (U)	—	—	141
0405-95-0059	05-02051	0–0.5	ALLH	781	—	878	1040	0.11 (U)	—	—	88.1
0405-95-0060	05-02052	0–0.5	FILL	396	—	1500	218	0.11 (U)	—	—	69.1
0405-95-0061	05-02053	0–0.5	FILL	—	—	62.2	135	0.11 (U)	—	—	—
0405-95-0073	05-02056	3.5–4.5	FILL	—	—	—	—	0.11 (U)	—	—	—
0405-95-0079	05-02057	4–5	FILL	—	—	—	—	—	—	—	—
0405-95-0192	05-02058	0–0.5	ALLH	—	0.69 (J)	—	—	—	—	—	—
0405-95-0228	05-02068	0–0.5	ALLH	—	—	28.7	34.2	—	—	—	—
0405-95-0230	05-02069	0–0.5	ALLH	—	1.8	31.5	28	—	—	—	—
RE05-04-54762	05-23241	0.16–0.36	ALLH	—	0.558 (U)	—	—	—	—	—	—
RE05-04-54763	05-23241	0.36–0.56	ALLH	—	0.555 (U)	—	—	—	—	—	—
RE05-04-54764	05-23242	0.07–0.33	ALLH	—	0.539 (U)	—	—	—	—	—	—
RE05-04-54765	05-23242	0.33–0.49	ALLH	—	0.51 (U)	—	—	—	—	—	—
RE05-04-54766	05-23243	0.23–1.05	ALLH	—	0.497 (U)	—	—	—	—	—	—
RE05-04-54767	05-23243	1.05–2.03	ALLH	—	0.496 (U)	—	—	—	—	—	—
RE05-04-54768	05-23244	0–0.62	ALLH	—	0.513 (U)	—	—	—	—	—	—
RE05-04-54769	05-23244	0.98–1.64	ALLH	—	0.502 (U)	—	—	—	—	—	—

Table D-7.9-2 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Barium	Cadmium	Copper	Lead	Mercury	Nitrate	Nitrite	Zinc
Soil, Fill Background Value (mg/kg)				295	0.4	14.7	22.3	0.1	na[a]	na	48.8
RE05-04-54770	05-23245	0–0.34	ALLH	—	0.507 (U)	—	—	—	—	—	—
RE05-04-54771	05-23245	0.34–0.66	ALLH	—	0.552 (U)	—	—	—	—	—	—
RE05-04-54772	05-23246	0–0.2	ALLH	—	—	165	22.9	—	—	—	—
RE05-04-54773	05-23246	0.20–0.46	ALLH	—	0.548 (U)	—	25.6	—	—	—	—
RE05-04-54774	05-23247	0–0.23	ALLH	—	0.536 (U)	—	—	—	—	—	—
RE05-04-54775	05-23247	0.23–0.52	ALLH	—	0.552 (U)	—	—	—	—	—	—
RE05-04-54776	05-23248	0–0.16	ALLH	—	0.526 (U)	—	—	—	—	—	—
RE05-04-54777	05-23248	0.16–0.59	ALLH	—	0.522 (U)	—	—	—	—	—	—
RE05-04-54778	05-23249	0–0.39	ALLH	—	0.517 (U)	—	—	—	—	—	—
RE05-04-54779	05-23249	0.39–0.66	ALLH	—	0.508 (U)	—	29.4	—	—	—	—
0463-95-0018	63-02003	4–5	FILL	—	—	—	—	—	2.97	—	—
0463-95-0038	63-02004	3–4	FILL	—	—	—	—	—	0.49	0.58	—

[a] na = Not available.

[b] — = Analyte not reported (detect or nondetect) above BV.

Table D-7.9-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Anions	Metals
0404-95-0096	04-02011	2-3	QBT3	—[a]	606[b]
RE04-04-53867	04-02016	2-3	QBT3	—	2462S
RE04-04-53870	04-02019	2-3	QBT3	—	2427S
RE04-04-53880 (FD)	04-02019	2-3	QBT3	—	2427S
RE04-04-53863	04-02025	2-3	QBT3	—	2462S
RE05-04-53900	05-02021	2-2.5	QBT3	—	2522S
RE05-04-53896	05-02024	2.2-2.9	QBT3	—	2522S
0405-95-0232	05-02026	0-1	QBT3	—	612
0405-95-0234	05-02026	1-2	QBT3	—	612
0405-95-0235	05-02026	2-3	QBT3	—	612
0405-95-0245	05-02030	2-3	QBT3	—	612
0405-95-0246 (FD)	05-02030	2-3	QBT3	—	612
0405-95-0248	05-02031	1-2	QBT3	—	612
0405-95-0249	05-02031	2-3	QBT3	—	612
0405-95-0251 (FD)	05-02031	2-3	QBT3	—	612
RE05-04-53890	05-02051	2-3	QBT3	—	2465S
0405-95-0062	05-02054	1-2	QBT3	—	555
0405-95-0069	05-02055	4-5	QBT3	—	555
RE05-04-53886	05-02059	2-3	QBT3	—	2465S
RE05-04-53888	05-02060	2-3	QBT3	—	2481S
RE05-04-53892	05-22893	2-3	QBT3	—	2481S
0463-95-0074	63-02007	4-5	QBT3	450	450
0463-95-0096	63-02008	3.5-4.5	QBT3	455	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-7.9-4
Summary of Inorganic COPCs above BV or Detected in Tuff, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media	Barium	Calcium	Copper	Lead	Lithium	Molybdenum	Nitrate	Nitrite	Selenium
Qbt2, Qbt3 Background Value (mg/kg)				**46**	**2200**	**4.66**	**11.2**	**na[a]**	**na**	**na**	**na**	**0.3**
RE04-04-53867	04-02016	2-3	QBT3	—[b]	—	—	—	—	—	—	—	0.504 (U)
RE04-04-53870	04-02019	2-3	QBT3	—	8050 (J+)	—	—	—	—	—	—	0.512 (U)
RE04-04-53863	04-02025	2-3	QBT3	—	—	—	—	—	—	—	—	0.526 (U)
RE05-04-53900	05-02021	2-2.5	QBT3	—	—	10.1	—	—	—	—	—	0.353 (J)
RE05-04-53896	05-02024	2.2-2.9	QBT3	—	—	9.13	12.4	—	—	—	—	0.5 (U)
0405-95-0232	05-02026	0-1	QBT3	—	—	—	—	—	—	—	—	0.45 (U)
0405-95-0234	05-02026	1-2	QBT3	—	—	—	—	—	—	—	—	0.43 (U)
0405-95-0235	05-02026	2-3	QBT3	—	—	16.3	—	—	—	—	—	0.43 (U)
0405-95-0245	05-02030	2-3	QBT3	—	—	5.6	—	—	—	—	—	0.44 (U)
0405-95-0248	05-02031	1-2	QBT3	—	—	—	—	—	—	—	—	0.46 (U)
0405-95-0249	05-02031	2-3	QBT3	—	—	—	—	—	—	—	—	0.44 (U)
RE05-04-53890	05-02051	2-3	QBT3	—	—	—	—	—	—	—	—	0.502 (U)
0405-95-0062	05-02054	1-2	QBT3	295	6060	10.4	—	—	—	—	—	1.2 (UJ)
0405-95-0069	05-02055	4-5	QBT3	48.3	—	5.9	—	—	—	—	—	0.97 (UJ)
RE05-04-53886	05-02059	2-3	QBT3	—	—	—	—	—	—	—	—	0.506 (U)
RE05-04-53888	05-02060	2-3	QBT3	—	—	—	62.7	—	—	—	—	0.504 (U)
RE05-04-53892	05-22893	2-3	QBT3	105	3880 (J+)	—	—	—	—	—	—	0.725
0463-95-0074	63-02007	4-5	QBT3	—	—	—	—	1.1	1.3 (J-)	0.32	0.08	—
0463-95-0096	63-02008	3.5-4.5	QBT3	—	—	—	—	—	—	0.27	0.07	—

[a] na = Not available.
[b] — = Analyted not reported (detect or nondetect) above BV.

Table D-7.9-5
Sediment Sample Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth	Media Code	Metals
RE05-04–53898	05-22894	2.1–2.5	SED	2533S[a]

[a] Analytical request number.

Table D-7.9-6
EPCs for Inorganic COPCS in the East Ten Site Slope Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Barium	0–5	189	Nonparametric	95% Chebyshev (Mean, Sd)
Cadmium	0–5	0.482	Nonparametric	95% Chebyshev (Mean, Sd)
Calcium	0–5	1627	Gamma	95% Approximate Gamma UCL
Copper	0–5	144	Nonparametric	95% Chebyshev (Mean, Sd)
Lead	0–5	91.0	Nonparametric	95% Chebyshev (Mean, Sd)
Lithium	0–5	1.1	—[a]	Maximum detect
Mercury	0–5	0.043	Nonparametric	95% Chebyshev (Mean, Sd)
Molybdenum	0–5	1.3	—	Maximum detect
Nitrate	0–5	2.97	—	Maximum detect
Nitrite	0–5	0.58	—	Maximum detect
Selenium	0–5	0.363	Nonparametric	95% Modified-t UCL
Zinc	0–5	32.2	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-7.9-7
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0404-95-0094	04-02011	0–1	FILL	—[a]	—	—	—	607[b]	—
0404-95-0095	04-02011	1–2	FILL	—	—	—	—	607	—
0404-95-0099	04-02012	0–1	FILL	—	—	—	607	607	—
0404-95-0100	04-02012	1–2	FILL	—	—	—	—	607	—
0404-95-0102	04-02012	2–3	FILL	—	—	—	—	607	—
0404-95-0105	04-02013	0–1	ALLH	—	607	—	607	607	—
0404-95-0002	04-02014	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0004	04-02015	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0005	04-02016	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0006	04-02017	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0007	04-02018	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0008	04-02019	0–0.5	ALLH	—	—	—	357	357	—
RE04-04-53869	04-02019	0–0.5	ALLH	—	—	—	2428S	2428S	—
0404-95-0009	04-02020	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0010	04-02021	0–0.5	ALLH	—	—	—	357	357	—
RE04-04-53872	04-02021	2–3	ALLH	—	2428S	—	—	2428S	—
0404-95-0013	04-02023	0–0.5	ALLH	—	—	—	357	357	—
0404-95-0017	04-02024	0–0.5	ALLH	—	386	—	386	386	—
0404-95-0020	04-02025	0–0.5	ALLH	—	—	—	386	386	—
0404-95-0021	04-02026	0–0.5	ALLH	—	—	—	386	386	—
0404-95-0034	04-02027	2–3	FILL	—	—	—	486	486	—
0404-95-0040	04-02028	3.5–4.5	FILL	—	—	—	486	486	—
0404-95-0022	04-02029	0–1	ALLH	—	—	—	386	386	—
0404-95-0024	04-02029	1–2	ALLH	—	—	—	386	386	—

Table D-7.9-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0404-95-0026	04-02030	0–1	ALLH	—	—	—	386	386	—
0404-95-0029	04-02031	0–1	ALLH	—	—	—	386	386	—
RE04-04-54741	04-23233	0–0.1	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54742	04-23233	0.1–0.56	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54743	04-23234	0–0.13	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54744	04-23234	0.13–0.56	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54745	04-23235	0–0.13	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54746	04-23235	0.23–0.69	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54760	04-23236	0–0.16	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54747	04-23236	0.03–0.16	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54748	04-23236	0.16–0.39	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54749	04-23237	0–0.13	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54750	04-23237	0.13–0.66	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54751	04-23238	0–0.1	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54752	04-23238	0.1–0.36	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54756	04-23239	0–0.2	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54753	04-23239	0.07–0.2	ALLH	2414S	2414S	—	2414S	2414S	—
RE04-04-54754	04-23239	0.2–0.69	ALLH	2414S	2414S	—	2414S	2414S	—
0405-95-0217	05-02007	1–2	FILL	—	—	—	597	597	—
0405-95-0219	05-02007	3–4	FILL	—	—	—	597	597	—
0405-95-0224	05-02008	1–2	FILL	—	—	—	597	597	—
0405-95-0225	05-02008	3–4	FILL	—	—	—	597	597	—
0405-95-0002	05-02009	1–2	FILL	—	—	—	561	561	—
0405-95-0003	05-02009	3–4	FILL	—	561	—	561	561	—
0405-95-0007	05-02010	1–2	FILL	—	—	—	561	561	—
0405-95-0010	05-02010	3–4	FILL	—	—	—	561	561	—
0405-95-0011	05-02010	4–5	FILL	—	—	—	561	561	—
0405-95-0013	05-02011	1–2	FILL	—	—	—	561	561	—
0405-95-0014	05-02011	3–4	FILL	—	—	—	561	561	—
0405-95-0018	05-02012	1–2	FILL	—	—	—	561	561	—
RE05-04-53894	05-02012	2–3	FILL	—	—	—	2482S	—	—
0405-95-0020	05-02012	3–4	FILL	—	—	—	561	561	—
0405-95-0023	05-02013	1–2	FILL	—	561	—	561	561	—
0405-95-0026	05-02013	3–4	FILL	—	—	—	561	561	—
0405-95-0027	05-02013	4–5	FILL	—	—	—	561	561	—
0405-95-0029	05-02014	0–0.5	ALLH	—	—	—	561	561	—
0405-95-0030	05-02015	0–0.5	ALLH	—	—	—	561	561	—
0405-95-0031	05-02016	0–0.5	ALLH	—	—	—	561	561	—
0405-95-0033	05-02017	0–0.5	ALLH	—	—	—	561	561	—
0405-95-0034	05-02018	0–0.5	ALLH	—	—	—	561	561	—
0405-95-0253	05-02019	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0254	05-02020	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0256	05-02021	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0258	05-02022	0–0.5	ALLH	—	—	—	614	614	—

Table D-7.9-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0405-95-0259	05-02023	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0260	05-02024	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0261	05-02025	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0237	05-02027	0–1	FILL	—	—	—	614	614	—
0405-95-0238	05-02027	1–2	FILL	—	—	—	614	614	—
0405-95-0239	05-02027	2–3	FILL	—	—	—	614	614	—
0405-95-0240	05-02028	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0241	05-02029	0–0.5	ALLH	—	614	—	614	614	—
0405-95-0243	05-02030	0–1	FILL	—	—	—	614	614	—
0405-95-0244	05-02030	1–2	FILL	—	—	—	614	614	—
0405-95-0247	05-02031	0–1	ALLH	—	—	—	614	614	—
0405-95-0263	05-02032	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0264	05-02033	0–0.5	ALLH	—	614	—	614	614	—
0405-95-0266	05-02034	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0267	05-02035	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0268	05-02036	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0269	05-02037	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0270	05-02038	0–0.5	ALLH	—	—	—	614	614	—
0405-95-0085	05-02045	0–0.5	ALLH	—	—	—	534	534	—
0405-95-0087	05-02046	0–0.5	ALLH	—	—	—	534	534	—
0405-95-0089	05-02047	0–0.5	ALLH	—	—	—	534	534	—
0405-95-0092	05-02048	0–0.5	ALLH	—	534	—	534	534	—
0405-95-0094	05-02049	0–0.5	ALLH	—	—	—	534	534	—
0405-95-0058	05-02050	0–0.5	ALLH	—	—	—	—	536	—
0405-95-0059	05-02051	0–0.5	ALLH	—	—	—	—	536	—
0405-95-0060	05-02052	0–0.5	FILL	—	—	—	536	536	—
0405-95-0061	05-02053	0–0.5	FILL	—	—	—	536	536	—
0405-95-0073	05-02056	3.5–4.5	FILL	—	—	—	536	536	—
0405-95-0079	05-02057	4–5	FILL	—	536	—	536	536	—
0405-95-0192	05-02058	0–0.5	ALLH	—	—	—	545	545	—
0405-95-0194	05-02059	0–0.5	ALLH	—	545	—	545	545	—
0405-95-0196	05-02060	0–0.5	ALLH	—	—	—	545	545	—
0405-95-0198	05-02062	0–0.5	ALLH	—	—	—	545	545	—
0405-95-0201	05-02064	0–1	ALLH	—	—	—	545	545	—
0405-95-0204	05-02065	0–1	ALLH	—	—	—	545	545	—
0405-95-0205	05-02065	1–2	ALLH	—	—	—	545	545	—
0405-95-0207	05-02066	0–1	ALLH	—	—	—	545	545	—
0405-95-0209	05-02066	1–2	ALLH	—	—	—	545	545	—
0405-95-0211	05-02067	0–1	ALLH	—	—	—	545	545	—
0405-95-0228	05-02068	0–0.5	ALLH	—	597	—	597	597	—
0405-95-0230	05-02069	0–0.5	ALLH	—	—	—	597	597	—
RE05-04-54762	05-23241	0.16–0.36	ALLH	2382S	2382S	—	2382S	2382S	—
RE05-04-54763	05-23241	0.36–0.56	ALLH	2382S	2382S	—	2382S	2382S	—
RE05-04-54764	05-23242	0.07–0.33	ALLH	2378S	2378S	—	2378S	2378S	—

Table D-7.9-7 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
RE05-04-54765	05-23242	0.33–0.49	ALLH	2378S	2378S	—	2378S	2378S	—
RE05-04-54766	05-23243	0.23–1.05	ALLH	2364S	2364S	—	2364S	2364S	—
RE05-04-54767	05-23243	1.05–2.03	ALLH	2364S	2364S	—	2364S	2364S	—
RE05-04-54768	05-23244	0–0.62	ALLH	2364S	2364S	—	2364S	2364S	—
RE05-04-54769	05-23244	0.98–1.64	ALLH	2364S	2364S	—	2364S	2364S	—
RE05-04-54770	05-23245	0–0.34	ALLH	2385S	2385S	—	2385S	2385S	—
RE05-04-54771	05-23245	0.34–0.66	ALLH	2385S	2385S	—	2385S	2385S	—
RE05-04-54772	05-23246	0–0.2	ALLH	2385S	2385S	—	2385S	2385S	—
RE05-04-54773	05-23246	0.2–0.46	ALLH	2385S	2385S	—	2385S	2385S	—
RE05-04-54774	05-23247	0–0.23	ALLH	2382S	2382S	—	2382S	2382S	—
RE05-04-54775	05-23247	0.23–0.52	ALLH	2382S	2382S	—	2382S	2382S	—
RE05-04-54776	05-23248	0–0.16	ALLH	2382S	2382S	—	2382S	2382S	—
RE05-04-54777	05-23248	0.16–0.59	ALLH	2382S	2382S	—	2382S	2382S	—
RE05-04-54778	05-23249	0–0.39	ALLH	2364S	2364S	—	2364S	2364S	—
RE05-04-54779	05-23249	0.39–0.66	ALLH	2364S	2364S	—	2364S	2364S	—
0452-95-0002	52-02001	1.1–2.1	FILL	—	—	—	467	467	—
0452-95-0047	52-02008	4–5	FILL	—	—	—	474	474	—
0452-95-0054	52-02009	3–4	FILL	—	—	—	474	474	—
0452-95-0063	52-02010	4–5	FILL	—	—	—	474	474	—
RE52-04-54787	52-23251	0.1–0.33	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54788	52-23251	0.33–0.75	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54789	52-23252	0.13–0.43	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54790	52-23252	0.43–0.79	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54796	52-23253	0–0.69	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54791	52-23253	0.1–0.69	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54792	52-23253	0.69–1.25	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54797	52-23254	0–0.43	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54793	52-23254	0.16–0.43	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
RE52-04-54794	52-23254	0.43–0.69	ALLH	2471S	2471S	2471S	2471S	2471S	2471S
0463-95-0018	63-02003	4–5	FILL	—	—	—	395	395	—
0463-95-0038	63-02004	3–4	FILL	—	—	—	433	433	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-7.9-8
Summary of Radionuclide COPCs Detected or Detected above BV/FV
in Soil and Fill, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Americium–241	Cesium–137	Europium–152	Plutonium–238	Plutonium–239	Uranium–234	Uranium–235	Uranium–238
Soil, Fill Background/Fallout Value (pCi/g)				0.013	1.65	na[a]	0.023	0.054	2.59	0.2	2.29
0404-95-0099	04-02012	0–1	FILL	—[b]	—	—	0.02[c]	0.03[c]	—	—	—
0404-95-0105	04-02013	0–1	ALLH	—	1.234[c]	—	0.2[c]	98	2.62	—	3.09
0404-95-0005	04-02016	0–0.5	ALLH	—	—	—	—	—	86.77	3.76	89.61
0404-95-0006	04-02017	0–0.5	ALLH	—	—	—	—	—	4.43	—	4.56
0404-95-0008	04-02019	0–0.5	ALLH	—	—	—	—	0.062	4.83	—	5.33
0404-95-0010	04-02021	0–0.5	ALLH	—	—	—	—	—	12.25	0.52	12.97
0404-95-0020	04-02025	0–0.5	ALLH	—	—	—	—	—	7.252	0.275	7.374
0404-95-0034	04-02027	2–3	FILL	—	—	—	0.002[c]	—	—	—	—
0404-95-0022	04-02029	0–1	ALLH	—	—	—	0.02[c]	—	—	—	—
0404-95-0024	04-02029	1–2	ALLH	—	—	—	0.005[c]	—	—	—	—
0404-95-0026	04-02030	0–1	ALLH	—	—	—	0.014[c]	—	—	—	—
0404-95-0029	04-02031	0–1	ALLH	—	—	—	0.014[c]	—	—	—	—
RE04-04-54741	04-23233	0–0.1	ALLH	0.128	—	—	—	—	—	—	—
RE04-04-54742	04-23233	0.1–0.56	ALLH	—	0.904[c]	—	—	—	—	—	—
RE04-04-54743	04-23234	0–0.13	ALLH	0.217 (J-)	—	0.801	—	0.365	—	—	—
RE04-04-54744	04-23234	0.13–0.56	ALLH	4.469	0.909[c]	—	—	16.092	—	—	—
RE04-04-54745	04-23235	0–0.13	ALLH	0.18 (J-)	—	—	—	—	—	—	—
RE04-04-54746	04-23235	0.23–0.69	ALLH	0.125 (J-)	1.039[c]	—	—	—	—	—	—
RE04-04-54760	04-23236	0–0.16	ALLH	0.221 (J-)	—	—	—	—	—	—	—
RE04-04-54747	04-23236	0.03–0.16	ALLH	0.127 (J-)	—	—	—	—	—	—	—
RE04-04-54748	04-23236	0.16–0.39	ALLH	0.192 (J-)	—	—	—	—	—	—	—
RE04-04-54749	04-23237	0–0.13	ALLH	0.323 (J-)	—	—	—	0.137	—	—	—
RE04-04-54750	04-23237	0.13–0.66	ALLH	0.218 (J-)	1.961	—	—	—	—	—	—
RE04-04-54751	04-23238	0–0.1	ALLH	0.826 (J-)	—	—	—	—	—	—	—
RE04-04-54752	04-23238	0.1–0.36	ALLH	1.678 (J-)	—	—	—	—	—	—	—
RE04-04-54756	04-23239	0–0.2	ALLH	0.434 (J-)	—	—	—	—	—	—	—
RE04-04-54753	04-23239	0.07–0.2	ALLH	0.24 (J-)	—	—	—	—	—	—	—
RE04-04-54754	04-23239	0.2–0.69	ALLH	0.178 (J-)	0.732[c]	—	—	—	—	—	—
RE05-04-54762	05-23241	0.16–0.36	ALLH	—	—	—	—	0.175	—	—	—
RE05-04-54768	05-23244	0–0.62	ALLH	—	—	—	—	0.0271	—	—	—
RE05-04-54778	05-23249	0–0.39	ALLH	—	—	—	—	0.0977	—	—	—
RE05-04-54779	05-23249	0.39–0.66	ALLH	—	—	—	—	0.097	—	—	—
0405-95-0217	05-02007	1–2	FILL	—	—	—	0.023		—	—	—
0405-95-0224	05-02008	1–2	FILL	—	—	—	0.007[c]	0.009[c]	—	—	—
0405-95-0225	05-02008	3–4	FILL	—	—	—	0.014[c]	0.005[c]	—	—	—
0405-95-0002	05-02009	1–2	FILL	—	—	—	—	—	2.601	—	—
0405-95-0003	05-02009	3–4	FILL	—	—	—	—	—	4.117	—	—

Table D-7.9-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Americium–241	Cesium–137	Europium–152	Plutonium–238	Plutonium–239	Uranium–234	Uranium–235	Uranium–238
Soil, Fill Background/Fallout Value (pCi/g)				0.013	1.65	na[a]	0.023	0.054	2.59	0.2	2.29
0405-95-0007	05-02010	1–2	FILL	—	—	—	0.011[c]	—	—	—	—
0405-95-0010	05-02010	3–4	FILL	—	—	—	0.023	—	—	—	—
0405-95-0011	05-02010	4–5	FILL	—	—	—	0.009[c]	—	—	—	—
0405-95-0020	05-02012	3–4	FILL	—	—	—	0.007[c]	—	—	—	—
0405-95-0023	05-02013	1–2	FILL	—	—	—	0.007[c]	—	—	—	—
0405-95-0027	05-02013	4–5	FILL	—	—	—	0.014[c]	—	—	—	—
0405-95-0031	05-02016	0–0.5	ALLH	—	—	—	—	0.065	—	—	—
0405-95-0256	05-02021	0–0.5	ALLH	—	—	—	0.036	—	—	—	—
0405-95-0258	05-02022	0–0.5	ALLH	—	—	—	0.04	—	—	—	—
0405-95-0260	05-02024	0–0.5	ALLH	—	—	—	—	—	26	1.07	26.2
0405-95-0261	05-02025	0–0.5	ALLH	—	—	—	—	—	9.77	0.423	9.83
0405-95-0237	05-02027	0–1	FILL	—	—	—	0.016[c]	0.011[c]	3.23	—	3.16
0405-95-0238	05-02027	1–2	FILL	—	—	—	0.002[c]	—	—	—	—
0405-95-0239	05-02027	2–3	FILL	—	—	—	0.007[c]	—	—	—	—
0405-95-0243	05-02030	0–1	FILL	—	—	—	—	—	—	—	2.42
0405-95-0247	05-02031	0–1	ALLH	—	—	—	—	0.027[c]	—	—	—
0405-95-0266	05-02034	0–0.5	ALLH	—	—	—	—	—	—	—	2.34
0405-95-0085	05-02045	0–0.5	ALLH	—	—	—	—	—	4.19	0.24	4.51
0405-95-0087	05-02046	0–0.5	ALLH	—	—	—	—	—	3.04	—	3.24
0405-95-0089	05-02047	0–0.5	ALLH	—	—	—	—	—	3.51	—	3.74
0405-95-0092	05-02048	0–0.5	ALLH	—	—	—	—	—	5.81	0.27	5.96
0405-95-0094	05-02049	0–0.5	ALLH	—	—	—	—	—	9.23	0.38	9.2
0405-95-0058	05-02050	0–0.5	ALLH	—	—	—	—	—	57.5	3.45	57
0405-95-0059	05-02051	0–0.5	ALLH	—	—	—	—	—	68.9	4.21	69.8
0405-95-0060	05-02052	0–0.5	FILL	—	—	—	—	—	22	1.91	22.4
0405-95-0061	05-02053	0–0.5	FILL	—	—	—	—	—	9.51	0.81	9.37
0405-95-0073	05-02056	3.5–4.5	FILL	—	—	—	—	—	3.78	0.25	3.77
0405-95-0079	05-02057	4–5	FILL	—	—	—	—	—	8.21	—	—
0405-95-0192	05-02058	0–0.5	ALLH	—	—	—	—	—	2.77	—	2.94
0405-95-0194	05-02059	0–0.5	ALLH	—	—	—	—	—	9.77	0.56	10.17
0405-95-0196	05-02060	0–0.5	ALLH	—	—	—	—	0.067	7.51	0.48	7.93
0405-95-0198	05-02062	0–0.5	ALLH	—	—	—	—	—	3.26	—	3.35
0405-95-0207	05-02066	0–1	ALLH	—	—	—	—	0.013[c]	7.8	0.35	7.81
0405-95-0209	05-02066	1–2	ALLH	—	—	—	—	—	—	—	2.67
0405-95-0211	05-02067	0–1	ALLH	—	—	—	—	0.013[c]	13.83	0.67	14.45
0405-95-0228	05-02068	0–0.5	ALLH	—	—	—	—	—	—	—	2.502
0405-95-0230	05-02069	0–0.5	ALLH	—	—	—	0.043	—	4.115	—	3.964
RE05-04-54762	05-23241	0.16–0.36	ALLH	0.507 (J-)	—	—	—	—	—	—	—
RE05-04-54763	05-23241	0.36–0.56	ALLH	0.233 (J-)	—	—	—	—	—	—	—

Table D-7.9-8 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	Americium–241	Cesium–137	Europium–152	Plutonium–238	Plutonium–239	Uranium–234	Uranium–235	Uranium–238
RE05-04-54765	05-23242	0.33–0.49	ALLH	0.16	—	—	—	—	—	—	—
RE05-04-54768	05-23244	0–0.62	ALLH	—	—	—	—	—	2.95	—	3.08
RE05-04-54770	05-23245	0–0.34	ALLH	—	—	—	—	—	—	0.252 (J-)	—
RE05-04-54772	05-23246	0–0.2	ALLH	0.173 (J-)	—	—	—	—	—	0.276 (J-)	2.326 (J-)
RE05-04-54773	05-23246	0.2–0.46	ALLH	—	—	—	—	—	—	0.253 (J-)	—
RE05-04-54774	05-23247	0–0.23	ALLH	0.16 (J-)	—	—	—	—	—	—	—
RE05-04-54775	05-23247	0.23–0.52	ALLH	0.07 (J-)	—	—	—	—	—	—	—
RE05-04-54776	05-23248	0–0.16	ALLH	0.071 (J-)	—	—	—	—	—	—	—
RE05-04-54777	05-23248	0.16–0.59	ALLH	0.127 (J-)	0.425 [c]	—	—	—	—	0.439 (J-)	—
RE05-04-54778	05-23249	0–0.39	ALLH	—	—	—	—	—	2.69	—	3.02
RE05-04-54779	05-23249	0.39–0.66	ALLH	—	0.689 [c]	—	—	—	6.05	0.36	6.49
0452-95-0047	52-02008	4–5	FILL	—	—	—	0.08286	0.0131 [c]	—	—	—
0452-95-0054	52-02009	3–4	FILL	—	—	—	0.1306	0.0067 [c]	—	—	—
0452-95-0063	52-02010	4–5	FILL	—	—	—	0.08363	0.01815 [c]	—	—	2.46
RE52-04-54787	52-23251	0.1–0.33	ALLH	—	—	—	—	0.0584	—	—	—
RE52-04-54788	52-23251	0.33–0.75	ALLH	—	—	—	—	0.0349 [c]	—	—	—
RE52-04-54789	52-23252	0.13–0.43	ALLH	0.377	—	—	0.0764	10.4	—	—	2.8
RE52-04-54796	52-23253	0–0.69	ALLH	—	0.0928 [c]	—	—	0.0434 [c]	—	—	—
RE52-04-54791	52-23253	0.1–0.69	ALLH	—	0.0426 [c]	—	—	0.0315 [c]	—	—	—
RE52-04-54797	52-23254	0–0.43	ALLH	0.0566	—	—	—	0.258	2.71	—	3.71
RE52-04-54793	52-23254	0.16–0.43	ALLH	—	—	—	—	0.114	—	—	2.34
RE52-04-54794	52-23254	0.43–0.69	ALLH	—	—	—	—	0.0352 [c]	—	—	—
0463-95-0018	63-02003	4–5	FILL	—	—	—	—	0.014 [c]	—	—	—
0463-95-0038	63-02004	3–4	FILL	—	—	—	—	0.015 [c]	—	—	—

[a] na = Not available.

[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

[c] Detected and the FV does not apply (subsurface samples).

Table D-7.9-9
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U	SR_90
0404-95-0096	04-02011	2-3	QBT3	—[a]	—	—	607[b]	—
0404-95-0098 (FD)	04-02011	2-3	QBT3	—	—	—	607	—
0404-95-0107	04-02013	1-2	QBT3	—	—	—	607	—
0404-95-0108	04-02013	2-3	QBT3	—	—	—	607	—
RE04-04-53867	04-02016	2-3	QBT3	—	—	—	2463S	—
RE04-04-53870	04-02019	2-3	QBT3	—	—	2428S	2428S	—
RE04-04-53880 (FD)	04-02019	2-3	QBT3	—	—	2428S	2428S	—
RE04-04-53863	04-02025	2-3	QBT3	—	—	—	2463S	—
0404-95-0025	04-02029	2-3	QBT3	—	—	386	386	—
0404-95-0027	04-02030	1-2	QBT3	—	—	386	386	—
0404-95-0028	04-02030	2-3	QBT3	—	—	386	386	—
0404-95-0030	04-02031	1-2	QBT3	—	—	386	386	—
0404-95-0032	04-02031	2-3	QBT3	—	—	386	386	—
RE05-04-53900	05-02021	2-2.5	QBT3	—	—	2523S	2523S	—
RE05-04-53902	05-02022	2.1-2.6	QBT3	—	—	2523S		—
RE05-04-53896	05-02024	2.2-2.9	QBT3	—	—	2523S	2523S	—
0405-95-0232	05-02026	0-1	QBT3	—	—	614	614	—
0405-95-0234	05-02026	1-2	QBT3	—	—	614	614	—
0405-95-0235	05-02026	2-3	QBT3	—	—	614	614	—
0405-95-0245	05-02030	2-3	QBT3	—	—	614	614	—
0405-95-0246 (FD)	05-02030	2-3	QBT3	—	—	614	614	—
0405-95-0248	05-02031	1-2	QBT3	—	—	614	614	—
0405-95-0249	05-02031	2-3	QBT3	—	—	614	614	—
0405-95-0251 (FD)	05-02031	2-3	QBT3	—	—	614	614	—
RE05-04-53890	05-02051	2-3	QBT3	—	—	—	2466S	—
0405-95-0062	05-02054	1-2	QBT3	—	—	536	536	—
0405-95-0069	05-02055	4-5	QBT3	—	—	—	536	—
RE05-04-53886	05-02059	2-3	QBT3	—	—	—	2466S	—
RE05-04-53888	05-02060	2-3	QBT3	—	—	2482S	2482S	—
0405-95-0202	05-02064	1-2	QBT3	—	—	545	545	—
0405-95-0203	05-02064	2-3	QBT3	—	—	545	545	—
0405-95-0206	05-02065	2-3	QBT3	—	—	545	545	—
0405-95-0210	05-02066	2-3	QBT3	—	—	545	545	—
0405-95-0212	05-02067	1-2	QBT3	—	—	545	545	—
0405-95-0214	05-02067	2-3	QBT3	—	—	545	545	—
RE05-04-53892	05-22893	2-3	QBT3	—	—	2482S	2482S	—
0452-95-0009	52-02002	2.5-3.5	QBT3	—	—	467	467	—
0452-95-0010 (FD)	52-02002	2.5-3.5	QBT3	—	—	467	467	—
0452-95-0021	52-02003	3-4	QBT3	—	—	477	477	—
0452-95-0030	52-02004	4-5	QBT3	—	—	477	477	—
0452-95-0039	52-02006	4-5	QBT3	—	—	467	467	—
0463-95-0074	63-02007	4-5	QBT3	451	—	451	451	—
0463-95-0096	63-02008	3.5-4.5	QBT3	—	—	460	460	—

a — = Analysis not requested.
b Analytical request number.

Table D-7.9-10
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Plutonium-238	Plutonium-239	Uranium-234	Uranium-235	Uranium-238
Qbt2, Qbt3 Background/Fallout Value (pCi/g)				na[a]	na	1.98	0.09	1.93
RE04-04-53867	04-02016	2.00-3.00	QBT3	—[b]	—	39	2.11	10.6
RE04-04-53863	04-02025	2.00-3.00	QBT3	—	—	3.65	0.229	2.1
0404-95-0027	04-02030	1.00-2.00	QBT3	0.007	—	—	—	—
0404-95-0030	04-02031	1.00-2.00	QBT3	0.002	—	—	—	—
0404-95-0032	04-02031	2.00-3.00	QBT3	0.009	—	—	—	—
0405-95-0232	05-02026	0.00-1.00	QBT3	0.009	0.011	—	—	—
0405-95-0234	05-02026	1.00-2.00	QBT3	0.007	—	—	—	—
0405-95-0235	05-02026	2.00-3.00	QBT3	0.009	—	—	—	—
0405-95-0245	05-02030	2.00-3.00	QBT3	0.002	—	—	—	—
0405-95-0248	05-02031	1.00-2.00	QBT3	0.014	—	—	—	—
0405-95-0249	05-02031	2.00-3.00	QBT3	0.014	—	—	—	—
0405-95-0062	05-02054	1.00-2.00	QBT3	—	0.04	4.34	0.33	4.58
0405-95-0069	05-02055	4.00-5.00	QBT3	—	—	—	0.11	—
0405-95-0212	05-02067	1.00-2.00	QBT3	—	—	3.64	—	3.53
0405-95-0214	05-02067	2.00-3.00	QBT3	—	—	2.97	—	3.27
0452-95-0039	52-02006	4.00-5.00	QBT3	0.005	—	—	—	—
0463-95-0074	63-02007	4.00-5.00	QBT3	—	—	—	—	—

[a] na = Not available.
[b] — = Analyte not reported (detect or nondetect) above BV/FV or not detected.

Table D-7.9-11
Sediment Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth	Media Code	Isotopic plutonium	Isotopic uranium
0405-95-0197	05-02061	0–0.5	SED	545[a]	545
0405-95-0199	05-02063	0–0.5	SED	545	545
RE05-04-53898	05-22894	2.1–2.5	SED	2534S	2534S

[a] Analytical request number.

Table D-7.9-12
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Sediment, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Uranium-234	Uranium-235	Uranium-238
Sediment Background/Fallout Value (pCi/g)				2.59	0.2	2.29
0405-95-0199	05-02063	0.00–0.50	SED	5.25	0.25	5.13
RE05-04-53898	05-22894	2.1–2.50	SED	2.8	—[a]	2.93

[a] — = Analyte not reported (detect or nondetect) above BV.

Table D-7.9-13
EPCs for Radionuclide COPCs in the East Ten Site Slope Subarea

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Americium-241	0–5	0.593	Nonparametric	95% Chebyshev (Mean, Sd)
Cesium-137	0–5	0.730	Nonparametric	95% Chebyshev (Mean, Sd)
Europium-152	0–5	0.151	Nonparametric	95% Chebyshev (Mean, Sd)
Plutonium-238	0–5	0.016	Nonparametric	95% Chebyshev (Mean, Sd)
Plutonium-239	0–5	3.33	Nonparametric	95% Chebyshev (Mean, Sd)
Uranium-234	0–5	6.69	Nonparametric	95% Chebyshev (Mean, Sd)
Uranium-235	0–5	0.355	Nonparametric	95% Chebyshev (Mean, Sd)
Uranium-238	0–5	6.52	Nonparametric	95% Chebyshev (Mean, Sd)

Table D-7.9-14
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
0404-95-0100	04-02012	1–2	FILL	—[a]	601[b]	—
0404-95-0002	04-02014	0–0.5	ALLH	355	—	—
RE04-04-53869	04-02019	0–0.5	ALLH	2426S	—	—
RE04-04-53872	04-02021	2–3	ALLH	2426S	2426S	—
0404-95-0040	04-02028	3.5–4.5	FILL	484	—	—
0404-95-0022	04-02029	0–1	ALLH	367	—	—
RE04-04-54741	04-23233	0–0.1	ALLH	2412S	2412S	—
RE04-04-54742	04-23233	0.1–0.56	ALLH	2412S	2412S	—
RE04-04-54743	04-23234	0–0.13	ALLH	2412S	2412S	—
RE04-04-54744	04-23234	0.13–0.56	ALLH	2412S	2412S	—
RE04-04-54745	04-23235	0–0.13	ALLH	2412S	2412S	2412S
RE04-04-54746	04-23235	0.23–0.69	ALLH	2412S	2412S	2412S
RE04-04-54760	04-23236	0–0.16	ALLH	2412S	2412S	—
RE04-04-54747	04-23236	0.03–0.16	ALLH	2412S	2412S	—
RE04-04-54748	04-23236	0.16–0.39	ALLH	2412S	2412S	—
RE04-04-54749	04-23237	0–0.13	ALLH	2412S	2412S	—
RE04-04-54750	04-23237	0.13–0.66	ALLH	2412S	2412S	—
RE04-04-54751	04-23238	0–0.1	ALLH	2412S	2412S	—
RE04-04-54752	04-23238	0.1–0.36	ALLH	2412S	2412S	—

Table D-7.9-14 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
RE04-04-54756	04-23239	0–0.2	ALLH	2412S	2412S	—
RE04-04-54753	04-23239	0.07–0.2	ALLH	2412S	2412S	—
RE04-04-54754	04-23239	0.2–0.69	ALLH	2412S	2412S	—
0405-95-0217	05-02007	1–2	FILL	595	—	—
0405-95-0007	05-02010	1–2	FILL	—	559	—
RE05-04-53894	05-02012	2–3	FILL	2480S	2480S	2480S
0405-95-0023	05-02013	1–2	FILL	—	—	559
0405-95-0270	05-02038	0–0.5	ALLH	613	—	—
0405-95-0089	05-02047	0–0.5	ALLH	533	—	—
RE05-04-54762	05-23241	0.16–0.36	ALLH	2380S	2380S	2380S
RE05-04-54763	05-23241	0.36–0.56	ALLH	2380S	2380S	2380S
RE05-04-54764	05-23242	0.07–0.33	ALLH	2376S	2376S	—
RE05-04-54765	05-23242	0.33–0.49	ALLH	2376S	2376S	—
RE05-04-54766	05-23243	0.23–1.05	ALLH	2362S	2362S	—
RE05-04-54767	05-23243	1.05–2.03	ALLH	2362S	2362S	—
RE05-04-54768	05-23244	0–0.62	ALLH	2362S	2362S	—
RE05-04-54769	05-23244	0.98–1.64	ALLH	2362S	2362S	—
RE05-04-54770	05-23245	0–0.34	ALLH	2383S	2383S	2383S
RE05-04-54771	05-23245	0.34–0.66	ALLH	2383S	2383S	2383S
RE05-04-54772	05-23246	0–0.2	ALLH	2383S	2383S	—
RE05-04-54773	05-23246	0.2–0.46	ALLH	2383S	2383S	—
RE05-04-54774	05-23247	0–0.23	ALLH	2380S	2380S	—
RE05-04-54775	05-23247	0.23–0.52	ALLH	2380S	2380S	—
RE05-04-54776	05-23248	0–0.16	ALLH	2380S	2380S	—
RE05-04-54777	05-23248	0.16–0.59	ALLH	2380S	2380S	—
RE05-04-54778	05-23249	0–0.39	ALLH	2362S	2362S	—
RE05-04-54779	05-23249	0.39–0.66	ALLH	2362S	2362S	—
RE52-04-54789	52-23252	0.13–0.43	ALLH	—	2469S	—
RE52-04-54790	52-23252	0.43–0.79	ALLH	—	2469S	—
RE52-04-54797	52-23254	0–0.43	ALLH	—	2469S	—
RE52-04-54793	52-23254	0.16–0.43	ALLH	—	2469S	—
RE52-04-54794	52-23254	0.43–0.69	ALLH	—	2469S	—

[a] — = Analysis not requested.

[b] Analytical request number.

Table D-7.9-15

Summary of Organic Chemicals Detected in Soil and Fill, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Chrysene	Dichloroethene[1,1–]	Di-n-butylphthalate	Fluoranthene	Methylene Chloride	Pyrene	Toluene	Trichlorofluoromethane
RE04-04-54743	04-23234	0–0.13	ALLH	0.12 (J)	—[a]	—	—	—	—	—	—	—	—
RE04-04-54744	04-23234	0.13–0.56	ALLH	0.188 (J)	—	—	—	—	—	—	—	—	—
RE04-04-54746	04-23235	0.23–0.69	ALLH	0.0448 (J)	—	—	0.0011 (J)	—	—	0.002 (J)	—	—	—
RE04-04-54760	04-23236	0–0.16	ALLH	0.0622 (J)	0.192 (J)	—	—	—	0.0211 (J)	—	—	—	—
RE04-04-54747	04-23236	0.03–0.16	ALLH	0.202 (J)	4.03	—	—	—	—	—	—	—	—
RE04-04-54748	04-23236	0.16–0.39	ALLH	0.369 (J)	—	—	—	—	—	—	—	—	—
RE04-04-54749	04-23237	0–0.13	ALLH	0.123 (J)	—	—	—	0.155 (J)	0.0219 (J)	—	0.0213 (J)	—	—
RE04-04-54750	04-23237	0.13–0.66	ALLH	0.15 (J)	—	—	—	0.18 (J)	—	—	—	—	—
RE04-04-54751	04-23238	0–0.1	ALLH	0.0685 (J)	—	—	—	0.0608 (J)	—	—	—	—	—
RE04-04-54752	04-23238	0.1–0.36	ALLH	0.242 (J)	—	—	—	—	—	—	—	—	—
RE04-04-54756	04-23239	0–0.2	ALLH	0.42 (J)	—	—	—	—	—	—	—	—	—
RE04-04-54753	04-23239	0.07–0.2	ALLH	0.0941 (J)	0.179 (J)	—	—	0.0494 (J)	—	—	—	—	—
RE04-04-54754	04-23239	0.20–0.69	ALLH	0.153 (J)	—	—	—	—	—	—	—	—	—
0405-95-0007	05-02010	1–2	FILL	—	—	—	—	—	0.14 (J)	—	0.11 (J)	—	—
RE05-04-53894	05-02012	2–3	FILL	—	—	0.0178 (J)	—	—	0.0364	0.0094 (J)	0.0489	—	0.0042 (J)
0405-95-0023	05-02013	1–2	FILL	—	—	—	—	—	—	—	—	0.011	—
RE05-04-54762	05-23241	0.16–0.36	ALLH	—	0.0742 (J)	—	—	—	—	—	—	—	0.0022
RE05-04-54764	05-23242	0.07–0.33	ALLH	0.648 (J)	—	—	—	—	—	—	—	—	—
RE05-04-54775	05-23247	0.23–0.52	ALLH	—	0.0708 (J)	—	—	—	—	—	—	—	—
RE52-04-54789	52-23252	0.13–0.43	ALLH	0.485 (J)	—	—	—	—	—	—	—	—	—
RE52-04-54790	52-23252	0.43–0.79	ALLH	0.477 (J)	—	—	—	—	—	—	—	—	—

[a] — = Analyte not detected.

Table D-7.9-16
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	HEXP	SVOC	VOC
0404-95-0108	04-02013	2–3	Qbt3	—[a]	—	601[b]
RE04-04-53867	04-02016	2–3	Qbt3	2461S	2461S	—
RE04-04-53870	04-02019	2–3	Qbt3	2426S	—	—
RE04-04-53863	04-02025	2–3	Qbt3	2461S	—	—
RE05-04-53900	05-02021	2–2.5	Qbt3	2521S	2521S	—
RE05-04-53902	05-02022	2.1–2.6	Qbt3	2521S	2521S	—
RE05-04-53896	05-02024	2.2–2.9	Qbt3	2521S	2521S	—
0405-95-0235	05-02026	2–3	Qbt3	613	—	—
RE05-04-53890	05-02051	2–3	Qbt3	2464S	2464S	—
RE05-04-53886	05-02059	2–3	Qbt3	2464S	2464S	—
RE05-04-53888	05-02060	2–3	Qbt3	2480S	2480S	—
0405-95-0212	05-02067	1–2	Qbt3	543	—	—
RE05-04-53892	05-22893	2–3	Qbt3	2480S	2480S	2480S
0463-95-0074	63-02007	4–5	Qbt3	—	458	—

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-7.9-17
Summary of Organic Chemicals Detected in Tuff, 0-5 ft bgs, in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Bis(2-ethylhexyl)phthalate
0404-95-0108	04-02013	2.00–3.00	Qbt3	0.004 (J)	—[a]
0463-95-0074	63-02007	4.00–5.00	Qbt3	—	0.18 (J)
RE04-04-53867	04-02016	2.00–3.00	Qbt3	—	0.036 (J)
RE05-04-53892	05-22893	2.00–3.00	Qbt3	0.0352	—

[a] — = Analyte not detected.

Table D-7.9-18
Sediment Sample Collected from 0-5 ft bgs for Organic Chemical Analyses in the East Ten Site Slope Subarea

Sample ID	Location ID	Depth	Media Code	SVOC
RE05-04-53898	05-22894	2.1–2.5	SED	2532S[a]

[a] Analytical request number.

Table D-7.9-19
EPCs for Organic COPCs in the East Ten Site Slope Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–5	0.017	Nonparametric	95% Chebyshev (Mean, Sd)
Benzoic acid	0–5	0.489	Nonparametric	95% Chebyshev (Mean, Sd)
Bis(2-ethylhexyl)phthalate	0–5	0.543	Nonparametric	95% Chebyshev (Mean, Sd)
Chrysene	0–5	0.063	Nonparametric	95% Chebyshev (Mean, Sd)
Dichloroethene[1,1–]	0–5	0.002	Nonparametric	95% Chebyshev (Mean, Sd)
Di–n–butylphthalate	0–5	0.205	Nonparametric	95% Chebyshev (Mean, Sd)
Fluoranthene	0–5	0.059	Nonparametric	95% Chebyshev (Mean, Sd)
Methylene chloride	0–5	0.006	Nonparametric	95% Chebyshev (Mean, Sd)
Pyrene	0–5	0.06	Nonparametric	95% Chebyshev (Mean, Sd)
Toluene	0–5	0.005	Nonparametric	95% Chebyshev (Mean, Sd)
Trichlorofluoromethane	0–5	0.004	Nonparametric	95% Chebyshev (Mean, Sd)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-8.0-1
Soil, Fill, and Tuff Samples Collected for Inorganic Chemical Analyses at Sigma Mesa Sites

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cyanide	Metals
60-004(e)	AAB5775	60-01014	0-1	FILL	—[a]	20203[b]
	AAB5790	60-01016	0-1	ALLH	—	20203
	AAB5793	60-01017	0-1	ALLH	—	20203
	RE60-04-54270	60-23013	1-2	ALLH	—	2491S
	RE60-04-54271	60-23013	3-3.5	QBT3	—	2491S
	RE60-04-54272	60-23014	1-1.7	ALLH	—	2491S
	RE60-04-54273	60-23014	3-3.5	QBT3	—	2491S
	RE60-04-54806	60-23258	0.03-0.33	ALLH	—	2459S
	RE60-04-54807	60-23258	0.66-1.02	ALLH	—	2459S
	RE60-04-54815	60-23259	0-0.3	ALLH	—	2459S
	RE60-04-54808	60-23259	0.1-0.3	ALLH	—	2459S
	RE60-04-54809	60-23259	0.3-0.69	ALLH	—	2459S
	RE60-04-54814 (FD)	60-23259	0.3-0.69	ALLH	—	2459S
	RE60-04-54810	60-23260	0.13-0.36	ALLH	—	2459S
	RE60-04-54811	60-23260	0.36-0.66	ALLH	—	2459S
	RE60-04-54812	60-23261	0-0.39	ALLH	—	2459S
	RE60-04-54813	60-23261	0.75-1.25	ALLH	—	2459S
60-005(a)	AAB5832 (FS)	60-01206	0-1	FILL	—	20219
	AAB5835	60-01206	0-1	FILL	—	20219
	AAB5807	60-01206	1-1.5	FILL	—	20219
	AAB5836	60-01207	0-1	FILL	—	20219
	AAB5805	60-01208	1-1.5	FILL	—	20219
	AAB5844	60-01211	0-1	ALLH	—	18955
	AAB5850	60-01211	1-1.5	ALLH	18955	—
	AAB5857 (CO)	60-01212	0-1	ALLH	—	18955
	AAB5845	60-01212	0-1	ALLH	—	18955

Table D-8.0-1 (continued)

SWMU/AOC/Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cyanide	Metals
	AAB5856 (FD)	60-01212	1-1.5	ALLH	18955	—
	AAB5851	60-01212	1-1.5	ALLH	18955	—
	AAB5846	60-01213	0-1	ALLH	—	18955
	AAB5852	60-01213	1-1.5	ALLH	18955	—
	AAB5847	60-01214	0-1	ALLH	—	18955
	AAB5853	60-01214	1-1.5	ALLH	18955	—
	AAB5848	60-01215	0-1	ALLH	—	18955
	AAB5854	60-01215	1-1.5	ALLH	18955	—
	AAB5849	60-01216	0-1	ALLH	—	18955
	AAB5855	60-01216	1-1.5	ALLH	18955	—
	RE60-04-54260	60-23008	4-5	QBT3	—	2487S
	RE60-04-54261	60-23008	9-10	QBT3	—	2487S
	RE60-04-54262	60-23009	4-5	QBT3	—	2487S
	RE60-04-54263	60-23009	9-10	QBT3	—	2487S
	RE60-04-54264	60-23010	4-5	QBT3	—	2487S
	RE60-04-54282 (FD)	60-23010	8.7-10	QBT3	—	2487S
	RE60-04-54265	60-23010	8.7-10	QBT3	—	2487S
	RE60-04-54266	60-23011	4-4.7	QBT3	—	2487S
	RE60-04-54267	60-23011	9.1-9.7	QBT3	—	2487S
	RE60-04-54268	60-23012	4-4.6	ALLH	—	2910S
	RE60-04-54269	60-23012	8.1-8.7	QBT3	—	2910S
	RE60-04-54802	60-23256	0-0.26	ALLH	—	2459S
	RE60-04-54803	60-23256	0.26-0.85	ALLH	—	2459S
	RE60-04-54804	60-23257	0-0.69	ALLH	—	2459S
	RE60-04-54805	60-23257	0.69-1.12	ALLH	—	2459S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-8.0-2
Soil, Fill, and Tuff Samples Collected for Radionuclide Analyses at Sigma Mesa Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Am-241	Gamma Spec	Tritium	Isotopic Plutonium	Isotopic Uranium
60-004(c)	AAB5821	60-01200	0-1	ALLH	—[a]	18991[b]	—	—	—
	AAB5823	60-01200	1-1.5	ALLH	—	18991	—	18991	18991
	AAB5822	60-01201	0-1	ALLH	—	18991	—	—	—
	AAB5826 (CO)	60-01201	0-1	ALLH	—	18991	—	—	—
	AAB5824	60-01201	1-1.5	ALLH	—	18991	—	18991	18991
	AAB5825 (FD)	60-01201	1-1.5	ALLH	—	18991	—	18991	18991
	AAB5829	60-01202	0-1	ALLH	—	18991	—	—	—
	AAB5827	60-01202	1-1.5	ALLH	—	18991	—	18991	18991
	AAB5830	60-01203	0-1	ALLH	—	18991	—	—	—
	AAB5828	60-01203	1-1.5	ALLH	—	18991	—	—	—
60-005(a)	AAB5832 (FS)	60-01206	0-1	FILL	—	19955	19955	—	—
	AAB5835	60-01206	0-1	FILL	—	19955	19955	—	—
	AAB5807	60-01206	1-1.5	FILL	—	19955	19955	—	—
	AAB5836	60-01207	0-1	FILL	—	19955	19955	—	—
	AAB5805	60-01208	1-1.5	FILL	—	19955	19955	—	—
	AAB5844	60-01211	0-1	ALLH	—	18991	—	—	—
	AAB5845	60-01212	0-1	ALLH	—	18991	—	—	—
	AAB5857 (CO)	60-01212	0-1	ALLH	—	18991	—	—	—
	AAB5846	60-01213	0-1	ALLH	—	18991	—	—	—
	AAB5847	60-01214	0-1	ALLH	—	18991	—	—	—
	AAB5848	60-01215	0-1	ALLH	—	18991	—	—	—
	AAB5849	60-01216	0-1	ALLH	—	18991	—	—	—
	RE60-04-54260	60-23008	4-5	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54261	60-23008	9-10	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54262	60-23009	4-5	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54263	60-23009	9-10	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54264	60-23010	4-5	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54265	60-23010	8.7-10	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54282 (FD)	60-23010	8.7-10	QBT3	—	—	2488S	2488S	2488S
	RE60-04-54266	60-23011	4-4.7	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54267	60-23011	9.1-9.7	QBT3	—	2488S	2488S	2488S	2488S
	RE60-04-54268	60-23012	4-4.6	ALLH	—	2911S	2911S	2911S	2911S
	RE60-04-54269	60-23012	8.1-8.7	QBT3	—	2911S	2911S	2911S	2911S
	RE60-04-54800	60-23255	0-0.26	ALLH	2460S	2460S	2460S	2460S	2460S
	RE60-04-54801	60-23255	0.79-1.25	ALLH	2460S	2460S	2460S	2460S	2460S
	RE60-04-54802	60-23256	0-0.26	ALLH	2460S	2460S	2460S	2460S	2460S
	RE60-04-54803	60-23256	0.26-0.85	ALLH	2460S	2460S	2460S	2460S	2460S
	RE60-04-54804	60-23257	0-0.69	ALLH	2460S	2460S	2460S	2460S	2460S
	RE60-04-54805	60-23257	0.69-1.12	ALLH	2460S	2460S	2460S	2460S	2460S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-8.0-3
Soil, Fill, and Tuff Samples Collected for Organic Chemical Analyses at Sigma Mesa Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	SVOC	VOC
60-004(c)	AAB5821	60-01200	0-1	ALLH	18036[a]	18036	18036	—[b]
	AAB5823	60-01200	1-1.5	ALLH	—	—	—	18036
	AAB5822	60-01201	0-1	ALLH	18036	18036	18036	—
	AAB5826 (CO)	60-01201	0-1	ALLH	18036	18036	18036	—
	AAB5824	60-01201	1-1.5	ALLH	—	—	—	18036
	AAB5825 (FD)	60-01201	1-1.5	ALLH	—	—	—	18036
	AAB5829	60-01202	0-1	ALLH	18036	18036	18036	—
	AAB5827	60-01202	1-1.5	ALLH	—	—	—	18036
	AAB5830	60-01203	0-1	ALLH	18036	18036	18036	—
	AAB5828	60-01203	1-1.5	ALLH	—	—	—	18036
60-004(e)	AAB5787	60-01009	1-1.5	ALLH	—	—	—	18086
	AAB5775	60-01014	0-1	FILL	18086	—	18086	—
	AAB5788 (FD)	60-01014	0-1	FILL	—	—	—	18086
	AAB5789	60-01014	0-1	FILL	—	—	—	18086
	AAB5790	60-01016	0-1	ALLH	—	—	18086	—
	AAB5793	60-01017	0-1	ALLH	18086	—	18086	18086
	RE60-04-54270	60-23013	1-2	ALLH	2490S	—	2490S	2490S
	RE60-04-54271	60-23013	3-3.5	QBT3	2490S	—	2490S	2490S
	RE60-04-54272	60-23014	1-1.7	ALLH	2490S	—	2490S	2490S
	RE60-04-54273	60-23014	3-3.5	QBT3	2490S	—	2490S	2490S
	RE60-04-54806	60-23258	0.03-0.33	ALLH	2458S	—	2458S	2458S
	RE60-04-54807	60-23258	0.66-1.02	ALLH	2458S	—	2458S	2458S
	RE60-04-54815	60-23259	0-0.3	ALLH	2458S	—	2458S	2458S
	RE60-04-54808	60-23259	0.1-0.3	ALLH	2458S	—	2458S	2458S
	RE60-04-54809	60-23259	0.3-0.69	ALLH	2458S	—	2458S	2458S
	RE60-04-54814 (FD)	60-23259	0.3-0.69	ALLH	2458S	—	2458S	2458S
	RE60-04-54810	60-23260	0.13-0.36	ALLH	2458S	—	2458S	2458S
	RE60-04-54811	60-23260	0.36-0.66	ALLH	2458S	—	2458S	2458S
	RE60-04-54812	60-23261	0-0.39	ALLH	2458S	—	2458S	2458S
	RE60-04-54813	60-23261	0.75-1.25	ALLH	2458S	—	2458S	2458S
60-005(a)	AAB5832 (FS)	60-01206	0-1	FILL	—	—	18160	18160
	AAB5835	60-01206	0-1	FILL	—	—	18160	18160
	AAB5807	60-01206	1-1.5	FILL	—	—	18160	18160
	AAB5836	60-01207	0-1	FILL	—	—	18160	18160
	AAB5805	60-01208	1-1.5	FILL	—	—	18160	18160
	AAB5844	60-01211	0-1	ALLH	—	—	18036	—
	AAB5845	60-01212	0-1	ALLH	—	—	18036	—
	AAB5857 (CO)	60-01212	0-1	ALLH	—	—	18036	—
	AAB5846	60-01213	0-1	ALLH	—	—	18036	—
	AAB5847	60-01214	0-1	ALLH	—	—	18036	—
	AAB5848	60-01215	0-1	ALLH	—	—	18036	—
	AAB5849	60-01216	0-1	ALLH	—	—	18036	—

Table D-8.0-3 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	PCB	PEST	SVOC	VOC
	RE60-04-54268	60-23012	4-4.6	ALLH	—	—	2909S	—
	RE60-04-54269	60-23012	8.1-8.7	QBT3	—	—	2909S	—
	RE60-04-54802	60-23256	0-0.26	ALLH	—	—	2458S	—
	RE60-04-54803	60-23256	0.26-0.85	ALLH	—	—	2458S	—
	RE60-04-54804	60-23257	0-0.69	ALLH	—	—	2458S	—
	RE60-04-54805	60-23257	0.69-1.12	ALLH	—	—	2458S	—

[a] Analytical request number.
[b] — = Analysis not requested.

Table D-8.0-4
Summary of Inorganic COPCs above BV or Detected in Soil, Fill, and Tuff at Sigma Mesa Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Calcium	Chromium	Lead	Manganese	Selenium	Thallium
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	6120	19.3	22.3	671	1.52	0.73
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	2200	7.14	11.2	482	0.3	1.10
60-004(e)	AAB5790	60-01016	0.00-1.00	ALLH	—[a]	—	1.4 (J-)	—	—	—	—	2.6 (J-)	2.2 (J-)
	RE60-04-54270	60-23013	1.00-2.00	ALLH	—	—	0.55 (U)	—	24.2 (J)	—	—	—	—
	RE60-04-54271	60-23013	3.00-3.50	QBT3	—	—	—	—	23.3 (J)	—	—	—	—
	RE60-04-54272	60-23014	1.00-1.70	ALLH	—	—	0.549 (U)	—	—	—	—	—	—
	RE60-04-54273	60-23014	3.00-3.50	QBT3	—	65.8	—	2590 (J+)	44.1 (J)	—	—	0.519 (U)	—
	RE60-04-54806	60-23258	0.03-0.33	ALLH	—	—	0.616 (U)	—	—	—	—	—	—
	RE60-04-54807	60-23258	0.66-1.02	ALLH	—	—	0.606 (U)	—	—	—	—	—	—
	RE60-04-54815	60-23259	0.00-0.30	ALLH	—	—	0.582 (U)	—	—	—	—	—	—
	RE60-04-54808	60-23259	0.10-0.30	ALLH	—	—	0.53 (U)	—	—	—	—	—	—
	RE60-04-54809	60-23259	0.30-0.69	ALLH	—	—	0.598 (U)	—	—	—	—	—	—
	RE60-04-54810	60-23260	0.13-0.36	ALLH	—	—	0.57 (U)	—	—	—	—	—	—
	RE60-04-54811	60-23260	0.36-0.66	ALLH	—	—	0.58 (U)	—	—	—	—	—	—
	RE60-04-54813	60-23261	0.75-1.25	ALLH	—	—	0.538 (U)	—	—	—	—	—	—
60-005(a)	AAB5832	60-01206	0.00-1.00	FILL	2 (UJ)	—	—	—	—	—	—	3.2 (UJ)	3.1 (UJ)
	AAB5835	60-01206	0.00-1.00	FILL	0.94 (UJ)	—	—	—	—	—	—	—	1.5 (UJ)
	AAB5807	60-01206	1.00-1.50	FILL	3.1 (UJ)	—	—	—	—	—	—	5 (UJ)	4.8 (UJ)
	AAB5836	60-01207	0.00-1.00	FILL	—	—	—	—	—	—	—		0.85 (UJ)
	AAB5805	60-01208	1.00-1.50	FILL	3.7 (UJ)	—	0.41 (UJ)	—	—	—	—	6 (UJ)	5.8 (UJ)
	AAB5844	60-01211	0.00-1.00	ALLH	5.6 (U)	—	—	—	—	—	—	—	—
	AAB5845	60-01212	0.00-1.00	ALLH	4.4 (U)	—	—	—	—	—	—	—	—
	AAB5857	60-01212	0.00-1.00	ALLH	4.4 (U)	—	—	—	—	—	—	—	—
	AAB5846	60-01213	0.00-1.00	ALLH	4.5 (U)	—	—	—	—	—	—	—	—
	AAB5847	60-01214	0.00-1.00	ALLH	4.4 (U)	—	—	—	—	—	—	—	—
	AAB5848	60-01215	0.00-1.00	ALLH	4.4 (U)	—	—	—	—	—	—	—	—
	AAB5849	60-01216	0.00-1.00	ALLH	4.5 (U)	—	—	—	—	—	—	—	—
	RE60-04-54260	60-23008	4.00-5.00	QBT3	—	—	—	—	—	—	—	0.499 (U)	—
	RE60-04-54262	60-23009	4.00-5.00	QBT3	—	—	—	—	—	13.3	632	0.511 (U)	—

Table D-8.0-4 (continued)

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Barium	Cadmium	Calcium	Chromium	Lead	Manganese	Selenium	Thallium
Soil/Fill Background Value (mg/kg)					0.83	295	0.4	6120	19.3	22.3	671	1.52	0.73
Qbt2/Qbt3 Background Value (mg/kg)					0.5	46	1.63	2200	7.14	11.2	482	0.3	1.10
	RE60-04-54263	60-23009	9.00-10.00	QBT3	—	—	—	—	—	—	—	0.503 (U)	—
	RE60-04-54264	60-23010	4.00-5.00	QBT3	—	—	—	—	—	—	—	0.506 (U)	—
	RE60-04-54265	60-23010	8.70-10.00	QBT3	—	—	—	—	—	—	—	0.508 (U)	—
	RE60-04-54266	60-23011	4.00-4.70	QBT3	—	—	—	—	11.5 (J)	13.4	—	0.449 (J)	—
	RE60-04-54267	60-23011	9.10-9.70	QBT3	—	—	—	—	27.7 (J)	—	—	0.511 (U)	—
	RE60-04-54269	60-23012	8.10-8.70	QBT3	—	—	—	—	—	—	—	0.687 (U)	—
	RE60-04-54803	60-23256	0.26-0.85	ALLH	—	—	0.555 (U)	—	—	—	—	—	—
	RE60-04-54804	60-23257	0.00-0.69	ALLH	—	—	0.572 (U)	—	—	—	—	—	—
	RE60-04-54805	60-23257	0.69-1.12	ALLH	—	—	0.574 (U)	—	—	—	—	—	—

[a] — Indicates analyte not reported (detect or nondetect) above BV or not detected.

Table D-8.0-5
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil, Fill, and Tuff at Sigma Mesa Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Cesium-137	Cobalt-60	Europium-152	Plutonium-238	Plutonium-239	Tritium
Soil/Fill Background/Fallout Value (pCi/g)					1.65	na[a]	na	0.023	0.054	0.76
Qbt2/Qbt3 Background/Fallout Value (pCi/g)					0.1	na	na	0.05	0.05	0.3
60-004(c)	AAB5823	60-01200	1.00-1.50	ALLH	—[b]	—	0.484	0.002 (J)[c]	—	—
	AAB5829	60-01202	0.00-1.00	ALLH	0.133[c]	—	—	—	—	—
	AAB5827	60-01202	1.00-1.50	ALLH	—	—	—	0.009 (J)[c]	—	—
60-005(a)	AAB5835	60-01206	0.00-1.00	FILL	0.925[c]	—	—	—	—	—
	AAB5807	60-01206	1.00-1.50	FILL	0.976[c]	—	—	—	—	—
	AAB5836	60-01207	0.00-1.00	FILL	0.165[c]	0.039	—	—	—	0.6230373[c]
	AAB5805	60-01208	1.00-1.50	FILL	2.09	—	—	—	—	—
	AAB5846	60-01213	0.00-1.00	ALLH	—	—	0.292	—	—	—
	AAB5848	60-01215	0.00-1.00	ALLH	—	—	0.163	—	—	—
	AAB5849	60-01216	0.00-1.00	ALLH	0.11[c]	—	—	—	—	—
	RE60-04-54261	60-23008	9.00-10.00	QBT3	—	—	—	—	—	0.0108[c]
	RE60-04-54264	60-23010	4.00-5.00	QBT3	—	—	—	—	—	0.0133[c]
	RE60-04-54265	60-23010	8.70-10.00	QBT3	—	—	—	—	—	0.0239[c]
	RE60-04-54282	60-23010	8.70-10.00	QBT3	—	—	—	—	—	0.0253[c]
	RE60-04-54801	60-23255	0.79-1.25	ALLH	0.239[c]	—	—	—	0.0418[c]	—
	RE60-04-54802	60-23256	0.00-0.26	ALLH	—	—	—	—	0.0563	—
	RE60-04-54803	60-23256	0.26-0.85	ALLH	0.0729[c]	—	—	—	0.0582	—
	RE60-04-54804	60-23257	0.00-0.69	ALLH	0.137[c]	—	—	—	0.0787	—

[a] na = Not available.
[b] — Indicates analyte not reported (detect or nondetect) above BV/FV or not detected.
[c] Detected and the FV does not apply (subsurface samples).

Table D-8.0-6
Summary of Organic Chemicals Detected in Soil, Fill, and Tuff at Sigma Mesa Sites

SWMU/AOC/ Consolidated Unit	Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Aniline	Aroclor-1254	Aroclor-1260	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Butanone[2-]	Butylbenzylphthalate	Fluoranthene	Fluorene	Hexanone[2-]	Isopropyltoluene[4-]	Methyl-2-pentanone[4-]	Pyrene	Toluene	Xylene (Total)
60-004(e)	AAB5788	60-01014	0-1	FILL	—[a]	—	—	—	—	—	0.24[b]	—	—	—	—	—	0.079 (J)	—	0.015 (J)	0.035 (J)
	AAB5789	60-01014	0-1	FILL	—	—	—	—	—	—	—	—	—	—	0.2 (J)	—	0.041 (J)	—	0.004 (J)	0.006 (J)
	RE60-04-54270	60-23013	1-2	ALLH	—	—	0.0012 (J)	—	—	0.0468 (J)	—	—	—	—	—	—	—	—	—	—
	RE60-04-54271	60-23013	3-3.5	QBT3	—	—	—	—	—	0.082 (J)	—	—	—	—	—	—	—	—	—	—
	RE60-04-54272	60-23014	1-1.7	ALLH	0.0288	—	—	—	—	—	—	—	—	—	—	0.00099	—	—	—	—
	RE60-04-54273	60-23014	3-3.5	QBT3	—	—	—	0.0021 (J)	—	0.0865 (J)	—	—	—	—	—	—	—	—	—	—
	RE60-04-54806	60-23258	0.03-0.33	ALLH	0.0073	—	—	0.0041 (J)	—	—	—	—	0.0297 (J)	—	—	—	—	0.0327 (J)	—	—
	RE60-04-54807	60-23258	0.66-1.02	ALLH	0.126	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	RE60-04-54815	60-23259	0-0.3	ALLH	—	—	—	0.0019 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	RE60-04-54809	60-23259	0.3-0.69	ALLH	—	—	—	0.004	—	—	—	—	—	—	—	—	—	—	0.00076 (J)	—
	RE60-04-54810	60-23260	0.13-0.36	ALLH	—	—	0.005	0.0041	—	0.0448 (J)	—	—	—	—	—	—	—	—	—	—
	RE60-04-54811	60-23260	0.36-0.66	ALLH	—	—	—	0.0019 (J)	—	—	—	—	—	—	—	—	—	—	—	—
	RE60-04-54812	60-23261	0-0.39	ALLH	—	—	—	0.0059	—	0.0488 (J)	—	—	—	—	—	—	—	—	—	—
	RE60-04-54813	60-23261	0.75-1.25	ALLH	—	—	—	—	—	0.0491 (J)	—	—	—	—	—	—	—	—	—	—
60-005(a)	AAB5805	60-01208	1-1.5	FILL	—	—	—	—	—	—	—	4.4	—	—	—	—	—	—	—	—
	RE60-04-54268	60-23012	4-4.6	ALLH	—	—	—	—	0.026 (J)	0.0828 (J)	—	—	—	0.0056 (J)	—	—	—	—	—	—
	RE60-04-54269	60-23012	8.1-8.7	QBT3	—	—	—	—	—	0.102 (J)	—	—	—	—	—	—	—	—	—	—
	RE60-04-54802	60-23256	0-0.26	ALLH	—	0.248 (J)	—	—	0.239 (J)	—	—	—	0.0214 (J)	—	—	—	—	0.0279 (J)	—	—

[a] — Indicates analyte not detected.
[b] All values in mg/kg.

Table D-8.1-1
EPCs for Radionuclide COPCs at AOC 60-004(c)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Cesium-137	0–1	0.133	—[a]	Maximum detect
	0–10	0.133	—	Maximum detect
Europium-152	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.484	—	Maximum detect
Plutonium-238	0–1	NA[d]	n/a	Not a COPC for this depth
	0–10	0.009	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.
[d] NA = Not analyzed for this analyte in this depth range.

Table D-8.2-1
EPCs for Inorganic COPCs at AOC 60-004(e)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Barium	0–1	66.29	Normal	95% Student's-t UCL
	0–10	70.9	Normal	95% Student's-t UCL
Chromium	0–1	3.485	Normal	95% Student's-t UCL
	0–10	39.4	Nonparametric	95% Chebyshev (Mean, SD)
Selenium	0–1	2.6	—[a]	Maximum detect
	0–10	1.14	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	1.029	Nonparametric	95% KM (Chebyshev) UCL
	0–10	0.459	Lognormal	95% Chebyshev (MVUE)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-8.2-2
EPCs for Organic COPCs at AOC 60-004(e)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–1	0.126	—[a]	Maximum detect
	0–10	0.049	Nonparametric	95% Chebyshev (Mean, SD)
Aroclor-1254	0–1	0.005	—	Maximum detect
	0–10	0.003	Nonparametric	95% Modified-t UCL
Aroclor-1260	0–1	0.00401	Normal	95% KM (t) UCL
	0–10	0.008	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	0.0485	Normal	95% KM (t) UCL
	0–10	9.62	Nonparametric	95% Chebyshev (Mean, SD)
2-Butanone	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	0.083	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	0.0297	—	Maximum detect
	0–10	9.57	Nonparametric	95% Chebyshev (Mean, SD)
2-Hexanone	0–1	0.2	—	Maximum detect
	0–10	0.069	Nonparametric	95% Chebyshev (Mean, SD)
4-Isopropyltoluene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.0007	Nonparametric	95% Modified-t UCL
4-Methyl-2-pentanone	0–1	0.041	—	Maximum detect
	0–10	0.031	Nonparametric	95% Chebyshev (Mean, SD)
Pyrene	0–1	0.0327	—	Maximum detect
	0–10	9.57	Nonparametric	95% Chebyshev (Mean, SD)
Toluene	0–1	0.004	—	Maximum detect
	0–10	0.063	Nonparametric	95% Chebyshev (Mean, SD)
Xylene (total)	0–1	0.006	—	Maximum detect
	0–10	0.035	—	Maximum detect

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-8.3-1
EPCs for Inorganic COPCs at SWMU 60-005(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Antimony	0–1	5.6(U)	n/a[a]	Maximum detection limit
	0–10	5.6(U)	n/a	Maximum detection limit
Chromium	0–1	7.242	Normal	95% Student's-t UCL
	0–10	8.39	Gamma	95% Approximate Gamma UCL
Selenium	0–1	ND[b]	n/a	Not a COPC for this depth
	0–10	1.41	Nonparametric	95% Chebyshev (Mean, SD)
Thallium	0–1	0.0981	Normal	95% KM (t) UCL
	0–10	1.01	Nonparametric	95% Chebyshev (Mean, SD)

[a] n/a = Not applicable.
[b] ND = Not detected in this depth range.

Table D-8.3-2
EPCs for Radionuclide COPCs at SWMU 60-005(a)

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Cesium-137	0–1	0.293	Gamma	95% KM (t) UCL
	0–10	0.597	Nonparametric	95% Chebyshev (Mean, SD)
Cobalt-60	0–1	0.039	—[a]	Maximum detect
	0–10	0.017	Nonparametric	95% Chebyshev (Mean, SD)
Europium-152	0–1	0.292	—	Maximum detect
	0–10	0.110	Nonparametric	95% Chebyshev (Mean, SD)
Plutonium-239	0–1	0.066	Normal	95% KM (t) UCL
	0–10	0.049	Nonparametric	95% Chebyshev (Mean, SD)
Tritium	0–1	0.623037	—	Maximum detect
	0–10	0.478	Nonparametric	95% Chebyshev (Mean, SD)

[a] — = Too few samples to determine distribution or calculate EPC.

Table D-8.3-3
EPCs for Organic COPCs at SWMU 60-005(a)

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Aniline	0–1	0.248	—[a]	Maximum detect
	0–10	0.575	Nonparametric	95% Chebyshev (Mean, SD)
Benzoic acid	0–1	0.239	—	Maximum detect
	0–10	5.26	Nonparametric	95% Chebyshev (Mean, SD)
Bis(2-ethylhexyl)phthalate	0–1	ND[b]	n/a[c]	Not a COPC for this depth
	0–10	1.84	Nonparametric	95% Chebyshev (Mean, SD)
Butylbenzylphthalate	0–1	ND	n/a	Not a COPC for this depth
	0–10	1.65	Nonparametric	95% Chebyshev (Mean, SD)
Fluoranthene	0–1	0.0214	—	Maximum detect
	0–10	0.434	Gamma	95% Approximate Gamma UCL
Fluorene	0–1	ND	n/a	Not a COPC for this depth
	0–10	0.440	Gamma	95% Approximate Gamma UCL
Pyrene	0–1	0.0279	—	Maximum detect
	0–10	0.432	Gamma	95% Approximate Gamma UCL

[a] — = Too few samples to determine distribution or calculate EPC.
[b] ND = Not detected in this depth range.
[c] n/a = Not applicable.

Table D-8.4-1
Soil and Fill Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cyanide	Metals
AAB5769	60-01000	0–1	ALLH	—[a]	18958[b]
AAB5875	60-01003	0–1	ALLH	—	18958
AAB5775	60-01014	0–1	FILL	—	20203
AAB5790	60-01016	0–1	ALLH	—	20203
AAB5793	60-01017	0–1	ALLH	—	20203
AAB5804	60-01019	0–1	ALLH	—	20203
AAB5801	60-01025	0–1	ALLH	—	20203
AAB5835	60-01206	0–1	FILL	—	20219
AAB5807	60-01206	1–1.5	FILL	—	20219
AAB5836	60-01207	0–1	FILL	—	20219
AAB5805	60-01208	1–1.5	FILL	—	20219
AAB5844	60-01211	0–1	ALLH	—	18955
AAB5850	60-01211	1–1.5	ALLH	18955	—
AAB5845	60-01212	0–1	ALLH	—	18955
AAB5851	60-01212	1–1.5	ALLH	18955	—
AAB5846	60-01213	0–1	ALLH	—	18955
AAB5852	60-01213	1–1.5	ALLH	18955	—
AAB5847	60-01214	0–1	ALLH	—	18955
AAB5853	60-01214	1–1.5	ALLH	18955	—
AAB5848	60-01215	0–1	ALLH	—	18955
AAB5854	60-01215	1–1.5	ALLH	18955	—
AAB5849	60-01216	0–1	ALLH	—	18955
AAB5855	60-01216	1–1.5	ALLH	18955	—
RE60-04-54268	60-23012	4–4.6	ALLH	—	2910S
RE60-04-54270	60-23013	1–2	ALLH	—	2491S
RE60-04-54272	60-23014	1–1.7	ALLH	—	2491S
RE60-04-54802	60-23256	0–0.26	ALLH	—	2459S
RE60-04-54803	60-23256	0.26–0.85	ALLH	—	2459S
RE60-04-54804	60-23257	0–0.69	ALLH	—	2459S
RE60-04-54805	60-23257	0.69–1.12	ALLH	—	2459S
RE60-04-54806	60-23258	0.03–0.33	ALLH	—	2459S
RE60-04-54807	60-23258	0.66–1.02	ALLH	—	2459S
RE60-04-54815	60-23259	0–0.3	ALLH	—	2459S
RE60-04-54808	60-23259	0.1–0.3	ALLH	—	2459S
RE60-04-54809	60-23259	0.3–0.69	ALLH	—	2459S
RE60-04-54810	60-23260	0.13–0.36	ALLH	—	2459S
RE60-04-54811	60-23260	0.36–0.66	ALLH	—	2459S
RE60-04-54812	60-23261	0–0.39	ALLH	—	2459S
RE60-04-54813	60-23261	0.75–1.25	ALLH	—	2459S

[a] — Analysis not requested.
[b] Analytical request number.

Table D-8.4-2
Summary of Inorganic COPCs above BV or Detected in Soil and Fill, 0-5 ft bgs, in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Antimony	Selenium	Thallium
Soil, Fill Background Value (mg/kg)				0.83	1.52	0.73
AAB5769	60-01000	0–1	ALLH	5.04 (U)	—[a]	—
AAB5875	60-01003	0–1	ALLH	5.02 (U)	—	—
AAB5790	60-01016	0–1	ALLH	—	2.6 (J-)	2.2 (J-)
AAB5835	60-01206	0–1	FILL	0.94 (UJ)	—	1.5 (UJ)
AAB5807	60-01206	1–1	FILL	3.1 (UJ)	5 (UJ)	4.8 (UJ)
AAB5836	60-01207	0–1	FILL	—	—	0.85 (UJ)
AAB5805	60-01208	1–1	FILL	3.7 (UJ)	6 (UJ)	5.8 (UJ)
AAB5844	60-01211	0–1	ALLH	5.6 (U)	—	—
AAB5845	60-01212	0–1	ALLH	4.4 (U)	—	—
AAB5846	60-01213	0–1	ALLH	4.5 (U)	—	—
AAB5847	60-01214	0–1	ALLH	4.4 (U)	—	—
AAB5848	60-01215	0–1	ALLH	4.4 (U)	—	—
AAB5849	60-01216	0–1	ALLH	4.5 (U)	—	—

[a] — = Analyte not reported (detect or nondetect) above BV.

Table D-8.4-3
Tuff Samples Collected from 0-5 ft bgs for Inorganic Chemical Analyses in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Metals
RE60-04-54260	60-23008	4–5	Qbt3	2487S[a]
RE60-04-54262	60-23009	4–5	Qbt3	2487S
RE60-04-54264	60-23010	4–5	Qbt3	2487S
RE60-04-54266	60-23011	4–4.7	Qbt3	2487S
RE60-04-54271	60-23013	3–3.5	Qbt3	2491S
RE60-04-54273	60-23014	3–3.5	Qbt3	2491S

[a] Analytical request number.

Table D-8.4-4
Summary of Inorganic COPCs above BV or Detected in Tuff, 0-5 ft bgs, in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Barium	Chromium
Qbt2, Qbt3 Background Value (mg/kg)				46	7.14
RE60-04-54260	60-23008	4–5	Qbt3	—[a]	—
RE60-04-54262	60-23009	4–5	Qbt3	—	—
RE60-04-54264	60-23010	4–5	Qbt3	—	—
RE60-04-54266	60-23011	4–4	Qbt3	—	11.5 (J)
RE60-04-54271	60-23013	3–3	Qbt3	—	23.3 (J)
RE60-04-54273	60-23014	3–3	Qbt3	65.8	44.1 (J)

[a] — = Analyte not reported (detect or nondetect) above BV or not detected.

Table D-8.4-5
EPCs for Inorganic COPCs in the Sigma Mesa Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Antimony	0–5	1.823	Nonparametric	95% Chebyshev (Mean, Sd)
Barium	0–5	45.9	Normal	95% Student's-t UCL
Calcium	0–5	1501	Gamma	95% Approximate Gamma UCL
Chromium	0–5	11.618	Nonparametric	95% Chebyshev (Mean, Sd)
Selenium	0–5	1.052	Nonparametric	95% Chebyshev (Mean, Sd)
Thallium	0–5	0.774	Nonparametric	95% Chebyshev (Mean, Sd)

Table D-8.4-6
Soil and Fill Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	AM_241	GAMMA_SPEC	Tritium	ISO_PU	ISO_U
AAB5821	60-01200	0–1	ALLH	—[a]	18991[b]	—	—	—
AAB5823	60-01200	1–1.5	ALLH	—	18991	—	18991	18991
AAB5822	60-01201	0–1	ALLH	—	18991	—	—	—
AAB5824	60-01201	1–1.5	ALLH	—	18991	—	18991	18991
AAB5829	60-01202	0–1	ALLH	—	18991	—	—	—
AAB5827	60-01202	1–1.5	ALLH	—	18991	—	18991	18991
AAB5830	60-01203	0–1	ALLH	—	18991	—	—	—
AAB5828	60-01203	1–1.5	ALLH	—	18991	—	—	—
AAB5835	60-01206	0–1	FILL	—	19955	19955	—	—
AAB5807	60-01206	1–1.5	FILL	—	19955	19955	—	—
AAB5836	60-01207	0–1	FILL	—	19955	19955	—	—
AAB5805	60-01208	1–1.5	FILL	—	19955	19955	—	—
AAB5844	60-01211	0–1	ALLH	—	18991	—	—	—
AAB5845	60-01212	0–1	ALLH	—	18991	—	—	—
AAB5846	60-01213	0–1	ALLH	—	18991	—	—	—
AAB5847	60-01214	0–1	ALLH	—	18991	—	—	—
AAB5848	60-01215	0–1	ALLH	—	18991	—	—	—
AAB5849	60-01216	0–1	ALLH	—	18991	—	—	—
RE60-04-54268	60-23012	4–4.6	ALLH	—	2911S	2911S	2911S	2911S
RE60-04-54800	60-23255	0–0.26	ALLH	2460S	2460S	2460S	2460S	2460S
RE60-04-54801	60-23255	0.79–1.25	ALLH	2460S	2460S	2460S	2460S	2460S
RE60-04-54802	60-23256	0–0.26	ALLH	2460S	2460S	2460S	2460S	2460S
RE60-04-54803	60-23256	0.26–0.85	ALLH	2460S	2460S	2460S	2460S	2460S
RE60-04-54804	60-23257	0–0.69	ALLH	2460S	2460S	2460S	2460S	2460S
RE60-04-54805	60-23257	0.69–1.12	ALLH	2460S	2460S	2460S	2460S	2460S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-8.4-7
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Soil and Fill, 0-5 ft bgs, in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Cesium-137	Cobalt-60	Europium-152	Plutonium-239	Tritium
Soil, Fill Background/Fallout Value (pCi/g)				1.65	na[a]	na	0.054	na
AAB5823	60-01200	1-1.5	ALLH	—[b]	—	0.484	—	—
AAB5829	60-01202	0-1	ALLH	0.133	—	—	—	—
AAB5835	60-01206	0-1	FILL	0.925	—	—	—	—
AAB5807	60-01206	1-1	FILL	0.976	—	—	—	—
AAB5836	60-01207	0-1	FILL	0.165	0.039	—	—	0.623
AAB5805	60-01208	1-1	FILL	2.09	—	—	—	—
AAB5846	60-01213	0-1	ALLH	—	—	0.292	—	—
AAB5848	60-01215	0-1	ALLH	—	—	0.163	—	—
AAB5849	60-01216	0-1	ALLH	0.11	—	—	—	—
RE60-04-54801	60-23255	0.79-1.25	ALLH	0.239	—	—	0.0418	—
RE60-04-54802	60-23256	0-0.26	ALLH	—	—	—	0.0563	—
RE60-04-54803	60-23256	0.26-0.85	ALLH	0.0729	—	—	0.0582	—
RE60-04-54804	60-23257	0-0.69	ALLH	0.137	—	—	0.0787	—

[a] na = Not available.
[b] — = Analyte not detected.

Table D-8.4-8
Tuff Samples Collected from 0-5 ft bgs for Radionuclide Analyses in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	GAMMA_SPEC	Tritium	ISO_PU	ISO_U
RE60-04-54260	60-23008	4–5	Qbt3	2488S[a]	2488S	2488S	2488S
RE60-04-54262	60-23009	4–5	Qbt3	2488S	2488S	2488S	2488S
RE60-04-54264	60-23010	4–5	Qbt3	2488S	2488S	2488S	2488S
RE60-04-54266	60-23011	4–4.7	Qbt3	2488S	2488S	2488S	2488S

[a] Analytical request number.

Table D-8.4-9
Summary of Radionuclide COPCs Detected or Detected above BV/FV in Tuff, 0-5 ft bgs, in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Tritium
		Qbt2, Qbt3 Background/Fallout Value (pCi/g)		na[a]
RE60-04-54264	60-23010	4-5	Qbt3	0.0133

[a] na = Not available.

Table D-8.4-10
EPCs for Radionuclide COPCs in the Sigma Mesa Subarea

Analyte	Depth (ft)	EPC (pCi/g)	Distribution	EPC method
Cesium-137	0–5	0.543	Nonparametric	95% Chebyshev (Mean, Sd)
Cobalt-60	0–5	0.009	Nonparametric	95% Chebyshev (Mean, Sd)
Europium-152	0–5	0.14	Nonparametric	95% Chebyshev (Mean, Sd)
Plutonium-239	0–5	0.0548	Nonparametric	95% Chebyshev (Mean, Sd)
Tritium	0–5	1.078	Nonparametric	95% Chebyshev (Mean, Sd)

Table D-8.4-11
Soil and Fill Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	SVOC	VOC
AAB5787	60-01009	1–1.5	ALLH	—[a]	—	—	18086[b]
AAB5775	60-01014	0–1	FILL	18086	—	18086	—
AAB5789	60-01014	0–1	FILL	—	—	—	18086
AAB5790	60-01016	0–1	ALLH	—	—	18086	—
AAB5793	60-01017	0–1	ALLH	18086	—	18086	18086
AAB5804	60-01019	0–1	FILL	18086	—	18086	—
AAB5794	60-01019	0–1	FILL	—	—	—	18086
AAB5796	60-01021	0–1	ALLH	—	—	—	18086
AAB5799	60-01024	0–1	ALLH	—	—	—	18086
AAB5801	60-01025	0–1	ALLH	18086	—	18086	18086
AAB5806	60-01026	0–1	ALLH	18086	—	—	18086
AAB5821	60-01200	0–1	ALLH	18036	18036	18036	—
AAB5823	60-01200	1–1.5	ALLH	—	—	—	18036
AAB5822	60-01201	0–1	ALLH	18036	18036	18036	—
AAB5824	60-01201	1–1.5	ALLH	—	—	—	18036
AAB5829	60-01202	0–1	ALLH	18036	18036	18036	—
AAB5827	60-01202	1–1.5	ALLH	—	—	—	18036
AAB5830	60-01203	0–1	ALLH	18036	18036	18036	—
AAB5828	60-01203	1–1.5	ALLH	—	—	—	18036
AAB5835	60-01206	0–1	FILL	—	—	18160	18160
AAB5807	60-01206	1–1.5	FILL	—	—	18160	18160
AAB5836	60-01207	0–1	FILL	—	—	18160	18160
AAB5805	60-01208	1–1.5	FILL	—	—	18160	18160
AAB5844	60-01211	0–1	ALLH	—	—	18036	—
AAB5845	60-01212	0–1	ALLH	—	—	18036	—
AAB5846	60-01213	0–1	ALLH	—	—	18036	—
AAB5847	60-01214	0–1	ALLH	—	—	18036	—
AAB5848	60-01215	0–1	ALLH	—	—	18036	—
AAB5849	60-01216	0–1	ALLH	—	—	18036	—
RE60-04-54268	60-23012	4–4.6	ALLH	—	—	2909S	—
RE60-04-54270	60-23013	1–2	ALLH	2490S	—	2490S	2490S

Table D-8.4-11 (continued)

Sample ID	Location ID	Depth (ft)	Media Code	PCB	Pesticide	SVOC	VOC
RE60-04-54272	60-23014	1–1.7	ALLH	2490S	—	2490S	2490S
RE60-04-54802	60-23256	0–0.26	ALLH	—	—	2458S	—
RE60-04-54803	60-23256	0.26–0.85	ALLH	—	—	2458S	—
RE60-04-54804	60-23257	0–0.69	ALLH	—	—	2458S	—
RE60-04-54805	60-23257	0.69–1.12	ALLH	—	—	2458S	—
RE60-04-54806	60-23258	0.03–0.33	ALLH	2458S	—	2458S	2458S
RE60-04-54807	60-23258	0.66–1.02	ALLH	2458S	—	2458S	2458S
RE60-04-54815	60-23259	0–0.3	ALLH	2458S	—	2458S	2458S
RE60-04-54808	60-23259	0.1–0.3	ALLH	2458S	—	2458S	2458S
RE60-04-54809	60-23259	0.3–0.69	ALLH	2458S	—	2458S	2458S
RE60-04-54810	60-23260	0.13–0.36	ALLH	2458S	—	2458S	2458S
RE60-04-54812	60-23261	0–0.39	ALLH	2458S	—	2458S	2458S
RE60-04-54811	60-23260	0.36–0.66	ALLH	2458S	—	2458S	2458S
RE60-04-54813	60-23261	0.75–1.25	ALLH	2458S	—	2458S	2458S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-8.4-12
Summary of Organic Chemicals Detected in Soil and Fill, 0-5 ft bgs, in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Acetone	Aniline	Aroclor-1254	Aroclor-1260	Benzoic Acid	Bis(2-ethylhexyl)phthalate	Fluoranthene	Fluorene	Isopropyltoluene[4-]	Pyrene	Toluene
AAB5789	60-01014	0–1	FILL	—[a]	—	—	—	—	—	—	—	—	—	0.004 (J)
AAB5803	60-01024	0–1	ALLH	—	—	—	0.45	—	—	—	—	—	—	—
AAB5805	60-01208	1–1.5	FILL	—	—	—	—	—	—	—	—	—	—	—
RE60-04-54268	60-23012	4–4.6	ALLH	—	—	—	—	0.026 (J)	0.0828 (J)	—	0.0056 (J)	—	—	—
RE60-04-54270	60-23013	1–2	ALLH	—	—	0.0012 (J)	—	—	0.0468 (J)	—	—	—	—	—
RE60-04-54272	60-23014	1–1.7	ALLH	0.0288	—	—	—	—	—	—	—	0.00099	—	—
RE60-04-54802	60-23256	0–0.26	ALLH	—	0.248 (J)	—	—	0.239 (J)	—	0.0214 (J)	—	—	0.0279 (J)	—
RE60-04-54806	60-23258	0.03–0.33	ALLH	0.0073	—	—	0.0041 (J)	—	—	0.0297 (J)	—	—	0.0327 (J)	—
RE60-04-54807	60-23258	0.66–1.02	ALLH	0.126	—	—	—	—	—	—	—	—	—	—
RE60-04-54815	60-23259	0–0.3	ALLH	—	—	—	0.0019 (J)	—	—	—	—	—	—	—
RE60-04-54809	60-23259	0.30–0.69	ALLH	—	—	—	0.004	—	—	—	—	—	—	0.00076 (J)
RE60-04-54810	60-23260	0.13–0.36	ALLH	—	—	0.005	0.0041	—	0.0448 (J)	—	—	—	—	—
RE60-04-54811	60-23260	0.36–0.66	ALLH	—	—	—	0.0019 (J)	—	—	—	—	—	—	—
RE60-04-54812	60-23261	0–0.39	ALLH	—	—	—	0.0059	—	0.0488 (J)	—	—	—	—	—
RE60-04-54813	60-23261	0.75–1.25	ALLH	—	—	—	—	—	0.0491 (J)	—	—	—	—	—

Table D-8.4-13
Tuff Samples Collected from 0-5 ft bgs for Organic Chemical Analyses in the Sigma Mesa Subarea

Sample ID	Location ID	Depth	Media Code	PCB	SVOC	VOC
RE60-04-54271	60-23013	3–3.5	Qbt3	2490S	2490S	2490S
RE60-04-54273	60-23014	3–3.5	Qbt3	2490S	2490S	2490S

[a] — = Analysis not requested.
[b] Analytical request number.

Table D-8.4-14
Summary of Organic Chemicals Detected in Tuff, 0-5 ft bgs, in the Sigma Mesa Subarea

Sample ID	Location ID	Depth (ft)	Media Code	Aroclor-1260	Bis(2-ethylhexyl)phthalate
RE60-04-54271	60-23013	3.00–3.50	Qbt3	—[a]	0.082 (J)
RE60-04-54273	60-23014	3.00–3.50	Qbt3	0.0021 (J)	0.0865 (J)

[a] — = Analyte not detected.

Table D-8.4-15
EPCs for Organic COPCs in the Sigma Mesa Subarea

Analyte	Depth (ft)	EPC (mg/kg)	Distribution	EPC method
Acetone	0–5	0.033	Nonparametric	95% Chebyshev (Mean, Sd)
Aniline	0–5	0.414	Nonparametric	95% Chebyshev (Mean, Sd)
Aroclor-1254	0–5	0.017	Nonparametric	95% Chebyshev (Mean, Sd)
Aroclor-1260	0–5	0.17	Nonparametric	95% Chebyshev (Mean, Sd)
Benzoic acid	0–5	2.595	Nonparametric	95% Chebyshev (Mean, Sd)
Bis(2-ethylhexyl)phthalate	0–5	0.366	Nonparametric	95% Chebyshev (Mean, Sd)
Fluoranthene	0–5	0.348	Nonparametric	95% Chebyshev (Mean, Sd)
Fluorene	0–5	0.363	Nonparametric	95% Chebyshev (Mean, Sd)
Hexanone(2-)	0–5	0.049	Nonparametric	95% Chebyshev (Mean, Sd)
Isopropyltoluene[4-]	0–5	0.01	Nonparametric	95% Chebyshev (Mean, Sd)
Pyrene	0–5	0.364	Nonparametric	95% Chebyshev (Mean, Sd)
Toluene	0–5	0.009	Nonparametric	95% Chebyshev (Mean, Sd)

Appendix E

Analytical Suites and Results,
Chain-of-Custody Forms, and Sample-Collection Logs
(on DVDs included with this document)

Appendix F

Risk Assessment

EXECUTIVE SUMMARY

Between 1993 and 2007, Los Alamos National Laboratory's (LANL's or the Laboratory's) Environmental Programs Directorate (formerly the Environmental Restoration Project) conducted investigation activities at Technical Areas (TAs) 04, 05, 35, 52, 60, and 63 within the Middle Mortandad/Ten Site Aggregate to determine the nature and extent of contamination from past activities. Various corrective actions were also implemented at some sites to remove structures, lines, and/or contaminated soil and tuff. In 2002, a sampling and analysis plan (SAP) identified all remaining data needs for solid waste management units (SWMUs) and areas of concern (AOCs) in the TA-35 portion of the Middle Mortandad/Ten Site Aggregate. In 2004, an addendum to the SAP addressed additional SWMUs and AOCs from other TAs within the aggregate. The aggregate SAP and SAP addendum were implemented in 2004–2005 and 2007 when samples were collected.

This appendix contains the screening assessments for human health and ecological risk and accompanies the investigation report evaluating the data for all the SWMUs and AOCs for samples collected from 1994 to 2007. To characterize the nature and extent of residual contamination, analyses were conducted of soil, fill, tuff, and sediment samples that were collected within and outside of each SWMU/AOC. Particular emphasis was placed on identifying areas where post-Laboratory-age sediment was deposited in drainage channels leading to the bottom of the canyons in order to determine the downslope extent of contaminants that may have been transported by surface water runoff.

For the purposes of the investigation, Middle Mortandad/Ten Site is divided into the following seven subareas: Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, Ten Site Canyon, East Ten Site Slope, and Sigma Mesa. The entire Middle Mortandad/Ten Site Aggregate is currently under Laboratory (institutional) control and is expected to remain so for the reasonably foreseeable future. The primary land use of the aggregate is industrial, with limited recreational use by Laboratory employees in some of the slope and canyon areas. As a result, the human health screening assessments use industrial or recreational land-use scenarios using data from 0–1-ft-depth range. Residential scenarios are provided using data from 0–10-ft depth, and are used for decision making purposes.

The 2004–2005 and 2007 investigation activities have defined the nature and extent of the contamination.

Human health and ecological screening assessments of the seven subareas indicate that, for all of the SWMUs, AOCs, and consolidated units, no potential unacceptable risk to human health or the environment exists. Specifically, most of the calculated risks are below the target levels established by the New Mexico Environment Department, and the radiological doses are less than the U.S. Department of Energy's target dose.

No further characterization or remediation activities are warranted for the SWMUs, AOCs, or consolidated units in the Middle Mortandad/Ten Site Aggregate.

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Acronyms and Abbreviations

AOC	area of concern
ATSDR	Agency for Toxic Substances and Disease Registry
AUF	area use factor
BCG	Bioconcentration Guide
bgs	below ground surface
BHC	benzene hexachloride
BV	background value
CMP	corrugated metal pipe
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
D&D	decontamination and decommissioning
DDD	dichlorodiphenyldichloroethane
DDE	dichlorodiphenyldichloroethylene
DDT	1,1'-dichlorodiphenyltrichloroethane
DOE	U.S. Department of Energy
DRO	diesel range organics
Eh	decreasing oxidation-reduction potential
EP	Environmental Programs Directorate
EPA	U.S. Environmental Protection Agency
EPC	exposure point concentration
EQL	estimated quantitation limit

ER	environmental restoration
ESL	ecological screening level
FV	fallout value
HE	high explosive(s)
HI	hazard index
HQ	hazard quotient
HR	home range
HSDB	Hazardous Substances Databank (U.S. National Library of Medicine)
HSWA	Hazardous and Solid Waste Amendments
HWB	Hazardous Waste Bureau
K_{ow}	octanol/water partition coefficient
LANL	Los Alamos National Laboratory
LASCP	Los Alamos Site Characterization Program
LD_{50}	Lethal dose for 50% of the population
LOAEL	lowest-observed-adverse-effect level
MDA	material disposal area
NFA	no further action
NN	Nuclear Nonproliferation Division
NMED	New Mexico Environment Department
NNSA	National Nuclear Security Administration
NOAEL	no-observed-adverse-effect level
NPDES	National Pollutant Discharge Elimination System
NTS	Nevada Test Site
OLASO	Office of Los Alamos Site Operations
OU	operable unit
PAH	polycyclic aromatic hydrocarbon
PAUF	population area-use factor
PCB	polychlorinated biphenyl
pCi/g	picocuries per gram
pH	potential of hydrogen
RAGS	Risk Assessment Guidance for Superfund
RCRA	Resource Conservation and Recovery Act
RDA	recommended daily allowance
RESRAD	residual radioactive material (computer code)

RfD	reference dose
RFI	RCRA facility investigation
SAL	screening action level
SAP	sampling and analysis plan
SF	slope factor
SSL	soil screening level
SVOC	semivolatile organic compound
SWMU	solid waste management unit
SWSC	Sanitary Wastewater System Consolidation
TA	technical area
T&E	threatened and endangered
TAL	target analyte list
TPH	total petroleum hydrocarbons
TRV	toxicity reference value
UCL	upper confidence limit
UHTREX	Ultra-High-Temperature Reactor Experiment
UST	underground storage tanks
VCA	voluntary corrective action
VOC	volatile organic compound
WWTP	wastewater treatment plant

F-1.0 INTRODUCTION

This appendix presents the results of the screening assessments conducted for human health and ecological risk, and accompanies the investigation report for an aggregate of solid waste management units (SWMUs) and areas of concern (AOCs) in Technical Areas (TAs) 04, 05, 35, 52, 60, and 63 (see Figure 1.0-1 of the investigation report) at Los Alamos National Laboratory (LANL or the Laboratory). The SWMUs, AOCs, and consolidated units addressed in the report make up a large portion of the Middle Mortandad/Ten Site Aggregate (Figure 1.0-2 in the report). Although the SWMUs, AOCs, and consolidated units were previously sampled, additional data were needed to define the nature and extent of potential contamination, to evaluate the risk associated with residual contamination, and to evaluate the need for possible corrective action(s).

The SWMUs, AOCs, and consolidated units occupy a narrow mesa (Ten Site Mesa), adjacent slopes between Mortandad and Ten Site Canyons, and the floor of a small tributary canyon to Ten Site Canyon (informally named Pratt Canyon). Industrial Laboratory operations in the Middle Mortandad/Ten Site Aggregate (the Aggregate) date back to the mid-1940s and continue to the present day. Because of the industrial nature of much of the Aggregate, previous Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) work at this site found low levels of industrial contaminants at many locations on the mesa top. The chemicals and radionuclides found at TA-35 include zinc, nickel, copper, cadmium, polyaromatic hydrocarbons (PAHs), and plutonium-239. Commonly detected constituents at other, less industrialized, areas of the Aggregate include metals and uranium isotopes. By characterizing the Aggregate as a whole, an overall assessment of environmental and human-health risks/dose can be performed.

The Environmental Programs (EP) Directorate (formerly the Environmental Restoration [ER] Project) evaluated existing data, assessed potential impacts, and defined additional data needs for SWMUs and AOCs at TA-35 in the sampling and analysis plan (SAP) for the Middle Mortandad/Ten Site Aggregate (LANL 2002, 073092). Data needs for other areas (TAs 04, 05, 52, 60, and 63) were addressed in an addendum to the "Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate" (LANL 2004, 086540). Where a potential release to the environment may have occurred, the assessment of existing data focused on defining data needs. The implementation of the Aggregate SAP (LANL 2002, 073092) and the SAP addendum (LANL 2004, 086540) was intended to address the data needs. The Aggregate SAP was developed to determine the locations of additional samples needed with the participation of the U.S. Department of Energy (DOE)/National Nuclear Security Administration (NNSA) Office of Los Alamos Site Operations (OLASO) and the New Mexico Environment Department's (NMED's) Hazardous Waste Bureau (NMED-HWB).

The investigation sought to define the nature and extent of potential contamination at the sites and to determine whether potential unacceptable risks/dose to human health or the environment exist as a result of contamination. The recommendations for the disposition of the SWMUs, AOCs, and consolidated units are based on the data assessments and the calculated risks/doses from contamination.

F-2.0 BACKGROUND

In May 1992, a RFI work plan for Operable Unit (OU) 1129 (LANL 1992, 007666) was submitted to the U.S. Environmental Protection Agency (EPA). The OU 1129 work plan and a subsequent addendum (LANL 1994, 039932) identified SWMUs and AOCs to be investigated at TA-35, -04, -05, -52, and -63 as well as other TAs not included here. Investigation activities for SWMUs and AOCs at TA-60 were defined

in the RFI work plan for OU 1114 (LANL 1993, 020947), which was approved by the EPA on January 7, 1994 (EPA 1994, 038813).

The OU 1129 and OU 1114 work plans specified numerous investigation activities that were executed as a series of RFIs from 1993 through 1998. Results of those investigations have been detailed in various RFI reports and SAPs. The March 2002 Aggregate SAP (LANL 2002, 073092, pp. 14–16) summarizes the documents that have been submitted to the regulatory authorities and the history of RFI activities at TA-35. The March 2004 addendum (LANL 2004, 086540, pp. 5–6) summarizes documents and correspondence related to the investigations of sites at TA-04, -05, -52, -60, and -63. The previous investigations left a number of data needs, and the nature and extent of potential contamination had not been defined. The most recent investigation, conducted in 2004–2005 and 2007, was intended to address the data needs.

This appendix and the investigation report organizes the SWMUs and AOCs into the following seven subareas: Mesa Top, Ten Site Slope, Mortandad Slope, Pratt Canyon, Ten Site Canyon, East Ten Site Slope, and Sigma Mesa (Figure 2.0-1 in the report). The subareas were established by considering one or more of the following criteria:

- Potentially different land-use and exposure scenarios (mesa top and adjacent upper portion of the slopes = industrial; middle and lower slopes, canyons = recreational)
- Different ecological habitats (slopes/canyons versus mesa top)
- Different contaminant release scenarios (mesa top = subsurface or surface liquid releases that would predominantly percolate to the subsurface; slopes/canyons = surface releases)
- Different contaminant transport mechanisms (mesa top = infiltration; mesa top/slopes = runoff; slopes/canyons = runoff and sorbed to sediment)
- The adjacent slope or canyon each SWMU, AOC, or consolidated unit potentially affects.

Table 2.0-1 in the report lists the SWMUs, AOCs, and consolidated units included in the investigation report and evaluated in this appendix, with a brief description of each site and the subarea in which each is included. The SWMUs are listed in the Hazardous and Solid Waste Amendments (HSWA) module of the Laboratory's Hazardous Waste Facility Permit. The number and locations of the SWMUs and AOCs investigated include

- 21 SWMUs, 5 AOCs in the Mesa Top Subarea
- 9 SWMUs, 7 AOCs in the Ten Site Slope Subarea
- 7 SWMUs, 3 AOCs in the Mortandad Slope Subarea
- 6 SWMUs, 2 AOCs in the Pratt Canyon Subarea
- 4 SWMUs, 2 AOCs in the Ten Site Canyon Subarea
- 13 SWMUs, 3 AOCs in the East Ten Site Slope Subarea
- 1 SWMU, 2 AOCs in the Sigma Mesa Subarea

The number of SWMUs and AOCs reflect original, unconsolidated SWMUs and AOCs. Also listed in Table 2.0-1 in the report are consolidated units, where multiple SWMUs and/or AOCs have been combined. The consolidated unit numbers are used in this appendix, but to clarify previous samples collected for individual SWMUs and AOCs, the individual SWMU and AOC numbers are also included.

The following paragraphs present brief summaries of the TAs and some of the SWMUs and AOCs included in the investigation. More complete descriptions and operational histories can be found in the OU 1129 and OU 1114 work plans (LANL 1992, 007666; LANL 1993, 020947), the Aggregate SAP (LANL 2002, 073092), and the SAP addendum (LANL 2004, 086540).

TA-04, Alpha Site. Former TA-04, also known as Alpha Site (Consolidated Unit 04-001-99), is located on Puye Road and lies within the current boundaries of TA-52. Alpha Site is located on Mesita del Buey, a small finger mesa that extends east from the main Pajarito Mesa. It is bounded on the north by Ten Site Canyon and on the south by Cañada del Buey. Alpha Site was established in 1944 as a test firing site associated with the Manhattan Project. The firing site was used for small charge implosion studies using the electric method of detonation wave determination. Maximum charges fired were 200 lb. Other documented studies at Alpha Site included smaller tests of methods studying implosion experiments (LANL 1992, 007666; LANL 1994, 039932). In 1985, Alpha Site underwent decontamination and decommissioning (D&D) as part of the Los Alamos Site Characterization Program (LASCP) (NUS Corporation 1990, 012571).

TA-05, Beta Site. Beta Site, established in 1944 as an adjunct test firing site to Alpha Site, consists of two small firing sites [SWMUs 05-001(a) and 05-001(b)], the debris from the two firing sites [SWMUs 05-002 and 05-006(h)], and the larger Far Point site [AOC 05-001(c)]. The two smaller firing sites were used for hydro shots using pin-type implosion diagnostics. Initially, 50- to 600-lb high explosives (HE) shots were fired at these smaller sites; however, no HE was stored at either site (LANL 1992, 007666; LANL 1994, 039932). Far Point was used briefly during 1944 and 1945 for half-scale mockup tests of the Trinity device. Former sanitary waste system [SWMU 05-005(a)], a French drain associated with former control building (Building 05-04), was removed in 1985 during the LASCP cleanup. Both SWMUs 05-006(b) and 05-006(e) are areas of soil contamination associated with former TA-05 firing site support structures. Firing activities at Beta Site ceased in 1947. The site was then used to support a variety of projects and experiments, including the study of hydrogen fires, animal radiation experiments, and beryllium combustion experiments. In 1959, the experimental reactors Little Eva and Godiva operated at Beta Site. Beta Site officially ceased general operations in 1959 but was used for periodic testing until the 1970s. The site underwent D&D in 1985 as part of the LASCP (NUS Corporation 1990, 012571). TA-05 is currently used as a security buffer zone and contains physical support facilities, such as an electrical substation, test wells, several archeological sites, and environmental monitoring and buffer areas.

TA-35. The original Ten Site Laboratory building (Building 35-02) was constructed in 1951. Through the 1970s, the principal activities at TA-35 were associated with developing radioactive lanthanum sources for weapons testing and research involving various radionuclides, particularly plutonium and tritium (LANL 1992, 007666). Wastewater associated with these activities was processed at the TA-35 wastewater treatment facility until 1963 when TA-35 industrial wastewater was piped to the Laboratory's centralized wastewater facility at TA-50. In the 1970s, research activities at TA-35 shifted to laser technology, optics, and nuclear safeguards. These activities continue at TA-35 to the present day. Documented discharges of contamination to the environment are associated with the industrial operational activities listed above and with drainlines and outfalls that handled wastewater, stormwater, and cooling water; tanks and structures used to store dielectric oils for the laser facilities; sanitary septic systems; container storage areas; and areas on the mesa top used for debris disposal.

TA-52, Reactor Development Site. TA-52 housed the historical Ultra-High-Temperature Reactor Experiment (UHTREX) facility (Building 52-01), which involved the using high-temperature, gas-cooled reactor technology and the research and development of new fuels. Plans to operate UHTREX with uranium-thorium fuel elements and other fuels with a high yield of fission products did not materialize.

UHTREX was used for reactor experiments from 1965 to 1968. Criticality was attained in August 1967, and the reactor operated for about 1 yr (LANL 1992, 007666; LANL 1994, 039932). In 1970, the reactor was shut down, and the fuel was removed. In 1989, the contaminated equipment was removed and the building was decontaminated (Salazar and Elder 1992, 012021).

Currently, the Laboratory's Nuclear Nonproliferation (NN) Division offices and laboratories are housed within Building 52-01 (LANL 1992, 007666; LANL 1994, 039932). A wide variety of theoretical and computational activities occurs at TA-52 related to nuclear reactor performance and safety. The site also houses the occurrence investigation group, part of the radiation protection group, and the Security Division policy group.

Building 52-01 also had a septic system [SWMU 52-002(a)] for sanitary waste from the building. The former septic system includes an inactive 2580-gal. septic tank (structure 52-03) and the associated distribution box (structure 52-04) and tile drainfield. These components were installed in 1965 when Building 52-01 was built. The system is located north of Building 52-01, approximately 30 ft north of Puye Road and 10 ft east of Building 52-02. Overflow from the tank was channeled to a 300-ft-long tile drainfield trench that splits west and east near the edge of Ten Site Canyon. The septic system has been inactive since 1992 when sanitary wastelines from Building 52-01 were connected to the TA-46 Sanitary Wastewater System Consolidation (SWSC) Plant.

Building 52-02 was the waste neutralization and pumping facility [AOC 52-003(a)] designed for caustic pretreatment of UHTREX liquid acid wastes. The process neutralized wastewater before it was piped by industrial wasteline No. 66 [AOC 52-003(b)] to TA-50, the Laboratory's radioactive liquid waste treatment facility.

TA-60, Sigma Mesa. TA-60 contains Laboratory support and maintenance operations and contractor service facilities. The Nevada Test Site (NTS) test fabrication facility and test tower lie at the western end of TA-60. Several small inactive experimental areas, including a solar pond and test drill hole, and a former recyclable asphalt area (currently the location of an asphalt batch plant under construction), are also located along the middle and eastern end of the mesa. Most of TA-60 consists of undeveloped mesa top. The areas are served by a single gravel road that is secured by a locked gate at the middle of the mesa. Sigma Mesa Subarea is part of the Middle Mortandad/Ten Site Aggregate within the Mortandad 2.0 to 5.0 and contains one SWMU and two AOCs that are located on the south side of the mesa toward the eastern end. Two of the sites are related; a former empty drum storage area [AOC 60-004(c)] is located within the fenced area of a former surface impoundment [solar pond experiment SWMU 60-005(a)]. The third site is a former outdoor scrap equipment area [AOC 60-004(e)]. This AOC contains physical support and infrastructure facilities, including the Test Fabrication Facility and Rack Assembly and the Alignment Complex.

TA-63. TA-63 includes two inactive sanitary septic systems—structure 63-12 [SWMU 63-001(a)] and structure 63-14 [SWMU 63-001(b)]—that formerly served modular office buildings/trailers(Buildings 63-01, 63-03, 63-04, 63-05, and 63-06) before the septic systems were removed from service in 1993 and the sanitary wastelines from the buildings were connected to the TA-46 SWSC Plant. The area now designated as TA-63 has undergone several redesignations. It was part of TA-04 during the 1950s and part of TA-00 during the 1960s and 1970s. In 1983, nine structures on the site had TA-00 building designations. The site has also been defined as part of TA-52. The western part of TA-52 was redesignated as TA-63 in 1989. The dates of the redesignations from TA-04 to TA-00 and from TA-00 to TA-52 are unknown. This area at the Laboratory contains expanding environmental and waste management functions and facilities.

F-2.1 Environmental Fate and Transport

The evaluation of environmental fate addresses the chemical processes affecting the persistence of a chemical in the environment, and the evaluation of transport addresses the physical processes affecting mobility along a migration pathway. Seepage into soils and tuff depends on the rate of precipitation or snowmelt, antecedent soil moisture status, depth of soil, and soil hydraulic properties. Seepage into the tuff also depends on the unsaturated flow properties of the tuff. Joints and fractures in the tuff may provide additional pathways for moisture to enter the subsurface regime.

The most important factor with respect to the potential for chemicals of potential concern (COPCs) to migrate to groundwater is the presence of saturated conditions. Downward migration in the vadose zone is also limited by a lack of hydrostatic pressure, as well as the lack of a source for the continued release of contamination. Without sufficient moisture and a source, there is little or no potential migration of materials through the vadose zone to groundwater.

Contamination at depth is addressed in the discussion of nature and extent. Results from the deepest samples collected showed either no detected concentrations of COPCs or low/trace level concentrations of only a few inorganic, radionuclide, and/or organic COPCs in tuff. There is also no source(s) that continues to release contamination into the subsurface beneath the subareas. Because vertical extent is limited for the SWMUs/AOCs within the Middle Mortandad/Ten Site Aggregate, no migration to groundwater is apparent. The limited extent of contamination is related to the absence of the key factors that facilitate migration as presented in the previous paragraph. Given how long the contamination has been present in the subsurface, the information in the fate and transport section related to soil/tuff partitioning, water solubility, vapor pressure, the lack of a source for continued releases into the subsurface, and the absence of saturated conditions (low percent moisture), the potential for contaminant migration to groundwater is very low.

The NMED SSLs (NMED 2006, 092513) contain screening levels that consider the potential for contaminants in soil to result in groundwater contamination. These screening levels consider equilibrium partitioning of contaminants between solid, aqueous, and vapor phases and account for dilution and attenuation in groundwater through the use of dilution attenuation factors (DAFs). These SSLs can be used to identify chemical concentrations in soil that have the potential to contaminate ground water (EPA 1996, 059902). Screening contaminant concentrations in soil against these SSLs does not, however, provide an indication of the potential for contaminants to migrate to groundwater. In fact, the assumptions used in the development of these SSLs include an assumption of uniform contaminant concentrations from the contaminant source to the water table (i.e., it is assumed that migration to groundwater has already occurred). Further, this assumption is inappropriate for cases, such as Middle Mortandad/Ten Site Aggregate Area, where sampling has shown that contamination is vertically bounded near the surface and there is a large distance from the surface to the water table. For these reasons, screening of contaminant concentrations in soil against the DAF SSLs was not performed.

The best indication of the potential for future contaminant migration to groundwater is the current vertical distribution of contaminants in the subsurface. Most releases at the Middle Mortandad/Ten Site Aggregate Area are historical (i.e., having occurred decades ago). The depth to the regional aquifer at the aggregate area is also quite large, on the order of 1000 ft. Therefore, for migration of contaminants to occur from shallow soil to the regional aquifer in a meaningful time frame (e.g., 100 to 1000 yr), significant vertical migration (e.g., tens to hundreds of feet) should already have occurred. Sampling has shown that this migration has not occurred, indicating a very low potential for future contaminant migration to groundwater.

In addition to hydrologic characteristics of the site described above, the potential for contaminant migration also depends on physical and chemical properties of the contaminants. This section includes all of the COPCs identified by the data review in Appendix D for the Middle Mortandad/Ten Site Aggregate subareas. COPCs for each SWMU, AOC, consolidated unit, and subarea include radionuclides, inorganic chemicals, and organic chemicals, and the COPCs for the entire aggregate are discussed below.

F-2.1.1 Inorganic Chemicals

Based on the data review in Appendix D of this investigation report, antimony, arsenic, boron, bromide, cadmium, chromium, cobalt, copper, fluoride, lead, lithium, manganese, mercury, molybdenum, nickel, oxalate, perchlorate, selenium, silicon, silver, strontium, thallium, titanium, and zinc were retained as COPCs in the soil, sediment, and tuff. In general, in a semiarid climate, inorganic chemicals are not highly soluble or mobile in the environment, although there are some exceptions. The relative retention of metals by soil is lead > antimony > copper > chromium > zinc > nickel > cobalt > cadmium. Information about the fate and transport properties of some inorganic chemicals was obtained from individual chemical profiles published by the Agency for Toxic Substances and Disease Registry (ATSDR) (1997, 056531). The information for these organic chemicals is also available from the agency's website at http://www.atsdr.cdc.gov/toxprofiles.

Antimony. Antimony is a natural constituent of soil. The speciation and physicochemical state of antimony are important to its behavior in the environment and availability to biota. For example, the antimony incorporated in mineral lattices is inert and unlikely to be bioavailable. While the total amount of antimony may be known, the nature of the antimony compounds and whether they are adsorbed to other material are not. This information, which is critical in determining antimony's liability and availability, usually is site-specific.

Little is known about the adsorption of antimony to soil. Limited studies indicate that antimony may be fairly mobile under diverse environmental conditions. Since antimony forms anionic species, adsorption should be greatest under weakly acidic conditions. Antimony's adsorption to soil and sediment is primarily correlated with the iron, manganese, and aluminum content; it coprecipitates with hydroxylated oxides of these elements.

Arsenic. Arsenic is a naturally occurring element in the earth's crust. In soil it may be transported by wind or runoff or may leach into the subsurface soil. However, because many arsenic compounds tend to partition to soil or sediment under oxidizing conditions, leaching usually does not transport arsenic to any great depth.

The arsenic cycle in soils is complex, with many biotic and abiotic processes controlling its overall fate and environmental impact. Arsenic in soil exists in various oxidation states and chemical species, depending upon soil potential of hydrogen (pH) and redox potential. Transformations between the various oxidation states and species of arsenic occur as a result of biotic or abiotic processes.

Transport and partitioning of arsenic in water depends upon the chemical form (oxidation state and counter ion) of the arsenic and interactions with other materials present. Arsenic may be transported by leaching into rainfall or snowmelt. However, because many arsenic compounds tend to adsorb to soils or sediments, leaching usually results in transportation in soil over short distances only.

Terrestrial plants may accumulate arsenic by root uptake from the soil or by absorption of airborne arsenic deposited on the leaves, and certain species may accumulate substantial levels. Even when plants are grown in highly polluted soil or soil naturally high in arsenic, they take up arsenic at relatively low levels.

Barium. Barium is a naturally occurring element found in small but widely distributed amounts in the earth's crust, especially in igneous rocks, sandstone, shale, and coal. It is a highly reactive metal that occurs naturally only in a combined state, primarily inorganic complexes.

Barium is not very mobile in most soil systems. Its rate of transportation in soil depends on the characteristics of the soil material. In fine-textured mineral soils or soils with high organic matter content, its mobility is limited by adsorption. Barium is strongly adsorbed by clay minerals. It is more mobile and more likely to be leached from soils in the presence of chloride because of the increased solubility of barium chloride over other chemical forms of barium. Also, barium complexes with fatty acids (e.g., in acidic landfill leachate) is much more mobile in the soil because of the lower charge of these complexes and the subsequent reduction in adsorption capacity.

Barium enters the environment naturally through the weathering of rocks and minerals. Barium leaches naturally from geological formations to groundwater. In water, barium is likely to precipitate out of solution as an insoluble salt. Waterborne barium may also adsorb to suspended particulate matter.

Relative to the amount of barium found in soil, little is bioconcentrated by plants. Barium bioconcentrates in certain plants and aquatic organisms, but the extent to which plants bioconcentrate barium from soil or to which uptake occurs in terrestrial animals is not well characterized.

Boron. Boron is a naturally occurring element found combined with other elements throughout the environment. Boron is neither transformed nor degraded in the environment, although changes in the specific form of boron and its transport may occur, depending on environmental conditions. It is estimated that natural weathering is a significant source of environmental boron.

Most boron compounds are transformed to borates in soil because of the presence of moisture. Borates are not further degraded in soil. Waterborne boron may be adsorbed by soils and sediments. Adsorption/desorption reactions influence the fate of boron in water. The extent of boron adsorption depends on the pH of the water and the chemical composition of the soil. The adsorption of boron may not be reversible in some soils because of its solid-phase formation on mineral surfaces and/or the slow release of boron by diffusion from the interior of clay minerals.

It is unlikely that boron is significantly bioconcentrated by organisms from water. Boron in water is completely absorbed by the human system, but it does not accumulate in body tissues.

Cadmium. Cadmium is an element that occurs naturally in the earth's crust. It is most often present in nature as complex oxides, sulfides, and carbonates in zinc, lead, and copper ores. The cadmium metal itself does not break down in the environment, but it can change into different forms.

In surface water and groundwater, cadmium can exist as the hydrated ion or as ionic complexes with other inorganic or organic substances. While soluble forms may migrate in water, cadmium is relatively immobile in insoluble complexes or adsorbed to sediments.

Cadmium is taken up and retained by aquatic and terrestrial plants, and is concentrated in the liver and kidney of animals that eat the plants.

Chromium. Chromium is a naturally occurring element found in rocks, animals, plants, and soil and in volcanic dust and gases. Chromium is present in the environment in several different forms. The most common forms are chromium(0); trivalent [or chromium(III)], a noncarcinogen; and hexavalent [or chromium(VI)], a carcinogen. Chromium(III) occurs naturally in the environment and is an essential nutrient required by the human body to promote the action of insulin in body tissues so that sugar, protein, and fat can be used by the body. Chromium(VI) (used for chrome plating, the manufacture of

dyes and pigments, leather tanning, and wood preserving) and chromium(0) (a steel-gray solid with a high melting point, used mainly for making steel and other alloys) are generally produced by industrial processes.

In most soils, chromium is present predominantly in the chromium(III) state. This form has very low solubility and low reactivity, resulting in low mobility in the environment and low toxicity in living organisms. Chromium can attach strongly to soil, and is therefore not very mobile. The movement of chromium in soil depends on the type and condition of the soil and other environmental factors. Organic matter in soil is expected to convert soluble chromate, chromium(VI) to insoluble chromium(III) oxide. The reduction of chromium(VI) to chromium(III) is facilitated by low pH.

Although higher concentrations of chromium have been reported in plants growing in high chromium-containing soils compared with plants growing in normal soils, most of the increased uptake in plants is retained in roots, and only a small fraction is translocated in the above-ground part of edible plants.

Cobalt. Cobalt is a naturally occurring element that has properties, similar to those of iron and nickel. A biochemically important cobalt compound is the vitamin B_{12}, essential for good health in animals and humans.

Cobalt deposited on soil is often strongly attached to soil particles and therefore will not travel very far into the ground. However, the form of the cobalt and the nature of the soil at a particular site will affect how far cobalt penetrates the soil. Both in soil and sediment, the amount of cobalt that is mobile increases under more acidic conditions. Ultimately, most cobalt ends up in the soil or sediment.

Cobalt released into water may sorb to particles in the water column or be sorbed directly by the sediment, or remain in the water column in ionic form. The specific fate of cobalt depends on many factors, such as the chemistry of the water and sediment at a site, as well as the cobalt concentration and water flow.

While cobalt may be taken up from soil by plants, the translocation of cobalt from roots to above-ground parts of plants is not significant in most soils. Animals that eat these plants accumulate cobalt; however, cobalt is not known to biomagnify up the food chain.

Copper. Copper is a naturally occurring metal in rock, soil, water, sediment, and, at low levels, in air. It is an essential element for all known living organisms at low levels of intake. Elemental copper does not break down in the environment.

Most copper deposited in soil is strongly adsorbed and remains in the upper few centimeters of soil. Copper binds strongly to soils with high organic content. In general, copper adsorbs to organic matter, carbonate minerals, clay minerals, or hydrous iron and manganese oxides. Sandy soils with low pH have the greatest potential for leaching.

Copper may dissolve into water or bind to the suspended particles and may also enter the groundwater. Copper eventually collects in the sediments of rivers, lakes, and estuaries. Copper can be taken up by plants and animal, and, at high concentrations, in filter feeders, such as mussels and oysters.

A low potential for bioconcentration exists in fish, and a higher potential in filter feeders such as mollusks (i.e., oysters) and squid. At the lowest levels of the food chain, there is little evidence of copper bioaccumulation and no biomagnification.

Fluoride. Fluoride occurs in soil in a variety of minerals and complexes with aluminum, iron, and calcium. Atmospheric precipitation weathers crustal rocks and soil, but dissolves out very little fluoride; most of the fluoride mobilized during weathering is bound to solids such as clays.

Fluorides may be taken up from soil and accumulate in plants. The amount of fluorides accumulated depends on the type of plant and soil and the concentration and form of fluoride in the soil. Fluorides may also be deposited on aboveground surfaces of the plant and absorbed.

Lead. Lead is a naturally occurring metal found in small amounts in the earth's crust. It can combine with other chemicals to form what are usually known as lead compounds or lead salts. Higher levels in soil can be measured near roadways. This accumulation comes from car exhaust because of the past use of leaded fuel.

Most lead is retained strongly in soil, and very little is transported into surface water or groundwater. Lead is strongly sorbed to organic matter in soil, and although not subject to leaching, it may enter surface waters as a result of erosion of lead-containing soil particulates. Lead may be converted to lead sulfate at the soil surface, which is relatively soluble when compared with lead carbonate or phosphate. Inorganic lead may be bound into crystalline matrices of rocks, and remain essentially immobile.

Metallic lead does not dissolve in water. Movement of lead from soil particles into underground water or drinking water is unlikely unless the water is acidic.

The levels of lead may build up in plants and animals from areas where air, water, or soil are contaminated with lead. If animals eat lead-contaminated plants or animals, most of the lead will pass through their bodies.

Lithium. Lithium occurs mainly as salts and is very soluble. It does not absorb readily to soil. The ionic nature of lithium makes it essentially nonvolatile; as a result, it exists only in the particulate phase in air, and does not volatilize from soil.

Manganese. Manganese is a naturally occurring essential trace element.

Manganese in soil migrates as particulate matter in air or water, or soluble compounds may be dissolved by water and leach from the soil. The extent of leaching is determined mainly by the characteristics of the soil and is highly variable. The tendency of soluble manganese compounds to adsorb on soils and sediments depends mainly on the cation exchange capacity and the organic composition of the soil

Some manganese compounds dissolve in water. Manganese is easily transported in water and is found in rivers, lakes, and groundwater.

Manganese in water may be significantly bioconcentrated at lower trophic levels. The human body typically contains small quantities of manganese, and, under normal circumstances, the body controls these amounts so that neither too little nor too much is present.

Mercury. Mercury occurs naturally in the environment and exists in several forms that fall into three categories: metallic mercury (also known as elemental mercury), inorganic mercury, and organic mercury (the most common is methylmercury). Metallic mercury is a shiny, silver-white metal that is a liquid at room temperature and not likely to be found in soil. Inorganic mercury compounds (also known as salts) occur when mercury combines with elements such as chlorine, sulfur, or oxygen. When mercury combines with carbon, the compounds formed are called organic mercury compounds or organomercurials. Mercury is transformed in the environment by biotic and abiotic oxidation and reduction, bioconversion of inorganic and organic forms, and photolysis of organomercurials. Inorganic

mercury can be methylated by microorganisms indigenous to soils, fresh water, and salt water under both aerobic and anaerobic conditions.

The dominant process controlling the distribution of mercury compounds in the environment appears to be the sorption of nonvolatile forms to soil and sediment particulates, with little resuspension from the sediments back into the water column. Most of the mercury deposited on soil is absorbed to the soil and does not leach down into the groundwater.

Low pH and high mercury sediment concentrations favor the formation of methylmercury, which has greater bioavailability potential for aquatic organisms than inorganic mercury compounds. Methylmercury and other mercury fractions are strongly bound to organic matter in water, and may be transported in runoff water.

Methylmercury in surface waters is rapidly accumulated by aquatic organisms; concentrations in carnivorous fish at the top of both freshwater and marine food chains are biomagnified on the order of 10,000 to 100,000 times the concentrations found in ambient waters.

Nickel. Nickel combined with other elements (oxygen or sulfur as oxides or sulfides) occurs naturally in the earth's crust.

Nickel is strongly adsorbed by soil. Its mobility in soil is site-specific, depending mainly on soil type and pH; its mobility increases at low pH.

Nickel may be transported into streams and waterways from the natural weathering of soil and from anthropogenic discharges and runoff. This nickel accumulates in sediment.

Nickel does not appear to concentrate in fish. Studies show that some plants can take up and accumulate nickel. However, nickel does not accumulate in small animals living on land treated with nickel-containing sludge. Nickel is not biomagnified in the food chain.

Nitrate and Nitrite. Nitrate and nitrite are naturally occurring ions composed of nitrogen and oxygen. Nitrogen is one of the most abundant elements. About 80% of the air is nitrogen. It is found in the cells of all living things and is a major component of proteins. Nitrite is the reduced form of nitrate and is usually found in nature at much lower levels than nitrate.

Nearly all metal nitrates are readily soluble in water; for this reason, they are often used when a water-soluble salt is needed. Bacteria in water quickly convert nitrites to nitrates. Water carries nitrates to surface water systems in runoff, unsaturated flow, and groundwater flow. Nitrites in soil are readily oxidized to nitrate. They do not readily sorb to soil particles, and can be removed quickly from the soil. Microbial action in soil or water decomposes wastes containing organic nitrogen first into ammonia, which is then oxidized to nitrite and nitrate. Because nitrite is easily oxidized to nitrate, the latter is predominantly found in groundwater and surface waters.

Phosphorus. Phosphorus is an essential element that cycles through the ecosystem. It begins as phosphate ions in rocks. Phosphates are removed from the rocks during rainstorms and distributed in soils and some remain in water. Plants take in the inorganic phosphorous compounds from the soil.

Selenium. Selenium is a naturally occurring, solid substance that is widely, but unevenly, distributed in the earth's crust, and is commonly found in rocks and soil. Selenium is not often found in the environment in its elemental form but is usually combined with sulfide minerals or with silver, copper, lead, and nickel minerals.

In general, elemental selenium is stable in soils. The primary factor that controls selenium concentrations in soil is the selenium content of the parent bedrock materials that release selenium by weathering processes and leaching. In soils, pH and Eh (decreasing oxidation-reduction potential) are determining factors in the transport and partitioning of selenium. Heavy metal selenides and selenium sulfides predominate in low pH soils. In soils with pH greater than 7.5, selenates, which have high solubility and a low tendency to adsorb onto soil particles, are the major selenium species, and are very mobile.

Selenium is found at low levels in water because of its ability to coprecipitate with sediments. However, sodium selenate is one of the most mobile selenium compounds in the environment because of its high solubility and inability to adsorb onto soil particles.

Soluble selenates are readily taken up by plants and converted to organic compounds. Selenium is bioaccumulated by aquatic organisms and may also biomagnify in aquatic organisms.

Silver. Silver sorbs onto soil and sediments, and tends to form complexes with inorganic chemicals and humic substances in soils. The presence of organic matter complexes with silver and reduces its mobility. Silver tends to be removed from well-drained soils.

Rain washes silver compounds out of many soils so that it eventually moves into the groundwater.

Silver is bioconcentrated to a moderate extent in fish and invertebrates.

Thallium. Thallium is a natural element that is relatively stable in the environment because it is neither transformed nor biodegraded. It tends to be sorbed to soils and sediments.

Compounds of thallium (e.g., thallium chloride, sulfate, carbonate, bromide, and hydroxide) are generally soluble in water. Thallium may precipitate from water as solid mineral phases.

Thallium tends to bioconcentrate in aquatic plants, invertebrates, and fish. Terrestrial plants can also absorb thallium from soil.

Zinc. Zinc is one of the most common elements in the earth's crust. Most of the zinc in soil is bound to the soil and does not dissolve in water.

Most of the zinc in lakes or rivers settles on the bottom. However, a small amount may remain either dissolved in water or as fine suspended particles. Fish collect zinc in their bodies from water containing zinc, and bioconcentration is higher in crustaceans and bivalve species than in fish. Animals take up zinc by eating soil or drinking water containing zinc, but it does not concentrate in plants and does not biomagnify through terrestrial food chains.

F-2.1.2 Radionuclides

Several of the radionuclide COPCs are actinides and have similar chemical properties. In general, the actinides form comparatively insoluble compounds in the environment, and are not biologically mobile. The actinides are transported in ecosystems by physical and, sometimes, chemical processes. Uptake of actinides by plants from soil is generally low (Whicker and Schultz 1982, 058209).

Americium-241. Americium-241, an anthropogenic radioactive element, is formed from the radioactive decay of plutonium-241, which is produced from uranium-238. There are no naturally occurring or stable isotopes of americium. Americium-241 gives off alpha particles and decays into neptunium-237. The half-life of americium-241 is 432 yr. Low levels of americium-241 may be found in environmental media

worldwide from atmospheric nuclear weapons test; these levels are referred to as fallout background levels.

Americium-241 deposited on soil strongly attaches to soil particles, and does not travel very far into the ground. Ultimately, most americium ends up in soil or sediment.

Americium-241 released into water adsorbs to particulate matter in the water or sediment. The particulate matter to which americium-241 adsorbs may migrate distances by runoff or migrate into the deeper layers of soil.

While plants may take up americium-241 from the soil, the amount taken up is small, especially in the parts of the plant that are most often eaten (i.e., the fruit, grain, and seeds). Aquatic organisms can bioaccumulate americium-241 by intake from the water or ingestion of sediment or organisms lower on the food scale. While fish may take up americium-241, the amount that builds up in the flesh is very small. Americium-241 found in shellfish like shrimp or mussels is primarily concentrated in the shell rather than in the edible parts of the animal.

Cesium. Cesium is a naturally occurring element found in rocks, soil, and dust at low concentrations. Natural cesium is present in the environment in only one stable form, as the isotope cesium-133. The radioactive forms of cesium are unstable, and eventually change into other more stable elements through the process of radioactive decay. The two most important radioactive isotopes of cesium are cesium-134 and cesium-137. The half-life of cesium-134 is about 2 yr, and the half-life of cesium-137 is about 30 yr.

Cesium has very low mobility in soil. Clay minerals and soils rich in exchangeable potassium adsorb cesium.

Cesium compounds are generally very soluble in water. Cesium does not volatilize from water. Most of the cesium released to water will adsorb to suspended solids in the water column and, ultimately, be deposited in the sediment.

Cesium deposited on plants and trees by wet and dry deposition can be absorbed into flora through its foliage. Cesium can bioconcentrate, and has been shown to bioaccumulate in both terrestrial and aquatic food chains.

Cobalt-60. Cobalt is a naturally occurring element that has properties similar to those of iron and nickel. The half-life of Cobalt-60 is 5.27 yr.

Cobalt deposited on soil is often strongly attached to soil particles, and therefore does not travel very far into the ground. Both in soil and sediment, the amount of cobalt that is mobile will increase under more acidic conditions. Ultimately, most cobalt ends up in the soil or sediment.

Soluble cobalt released into water sorbs to particles, and may settle into the sediment or be sorbed directly by sediment. It may also sorb to or complex with, humic acid substances in the water. Cobalt can be transported in dissolved form or as suspended sediment.

Cobalt may be taken up from soil by plants, but the translocation of cobalt from roots to aboveground parts of plants is generally not significant in most soils. While animals that eat these plants will accumulate cobalt, cobalt does not biomagnify up the food chain.

Europium-152. Europium is a rare earth element (the lanthanide series on the table of elements). Rare earths are generally strongly retained by soils, and uptake by terrestrial plants is very low, usually lower than the uptake of strontium, cesium, and ruthenium.

In aquatic environments, the rare earths form mainly hydroxides and occur as insoluble particulate forms. These nuclides, however, attach readily to biological surfaces, and may be ingested by filter-feeding aquatic organisms. But the concentrations usually diminish at higher tropic levels.

Stable isotopes of the rare earths occur in trace quantities in nature, and apparently no essential biological role has been demonstrated. Because of the insolubility and lack of biological function, the rare earth nuclides generally exhibit low biotic uptake and minimal food chain transport (Whicker and Schultz 1982, 058209, p. 157).

Plutonium. The most common plutonium isotopes are plutonium-238 and plutonium-239. The half-lives of plutonium-238 and plutonium-239 are about 90 yr and about 24,000, respectively.

Plutonium sorption to soils or sediment is the primary environmental fate of plutonium. The highest concentrations of plutonium are likely to be in fine silt-clay particle size range.

Plutonium can be taken up into plants and animals; however, no evidence of bioconcentration through the food chain has been found. Plutonium was found to bioaccumulate in aquatic organisms, primarily at the lower end of the food chain.

Ruthenium-106. Ruthenium-106 is a high-yield, intermediate-lived fission product that exhibits some mobility and biological concentration. In general, ruthenium appears to exhibit substantially greater mobility through soils and groundwater than other fissions products; however, its mobility is strongly influenced by its chemical form.

Stable ruthenium is a rare element in the environment, and it does not appear to have significant biological function. As a result, radioisotopes of ruthenium are not considered as having essential nutrient analogs, even though they are absorbed to some extent by living tissues. Ruthenium has a moderate assimilation fraction in mammals, and fairly rapid biological elimination (Whicker and Schultz 1982, 058209, p. 156).

Strontium-90. Strontium-90 gives off beta particles and decays into yttrium-90. The half-life of strontium-90 is 29 yr. Radiostrontium does not degrade by environmental processes, such as hydrolysis or biodegradation.

A major portion of stable and radioactive strontium in soil dissolves in water, so it can move deeper into the ground and enter groundwater. However, strontium compounds may stay in the soil for years without migrating into groundwater.

While strontium-90 dissolves in water, some is suspended in water.

Strontium is easily absorbed by plants to satisfy the metabolic requirement for calcium. Strontium can be absorbed directly into the plant through leaves. Because strontium and calcium are chemically similar, the concentration of calcium in water can influence the bioaccumulation of strontium in biota.

Isotopic Thorium. Thorium is a naturally occurring, radioactive metal. Small amounts of thorium are present in all rocks, soil, surface and groundwater, plants, and animals. More than 99% of natural thorium exists in the form thorium-232. The half-life of thorium-232 is 14 billion yr.

In most cases, thorium is strongly sorbed to soil, and its mobility is very low.

Most thorium compounds commonly found in the environment do not dissolve easily in water. Thorium is present in suspended matters and sediment, and concentration of soluble thorium is low.

Thorium has been found to significantly bioconcentrate in lower trophic animals in water, but the bioconcentration factors decrease as the trophic level of aquatic animals increases.

Tritium. The lightest and most ubiquitously distributed radionuclide is tritium. It is continuously produced in the atmosphere by cosmic rays and by nuclear reactors and nuclear detonations. Tritium closely follows the reactions of ordinary hydrogen. Most environmental tritium exists in the form of tritiated water. Its initial behavior in the environment is determined by the source. If it is released as a gas or vapor to the atmosphere, substantial dispersion can be expected, and the rapidity of deposition is dependent on climatic factors. If tritium is released in liquid form, the tritium is diluted in surface waters, and is subject to physical dispersion, percolation, and evaporation (Whicker and Schultz 1982, 058209, p. 147).

In aqueous bodies, it does not have the tendency to adsorb to sediments or biotic surfaces. Tritium enters plants through the roots, leaves, and stems with high efficiency. It enters animals through ingestion, inhalation, and direct absorption through the skin. Tritium is lost from land plants through transpiration. It is lost from animals through exhalation, secretions, excretions, and surface evaporation (Whicker and Schultz 1982, 058209, p. 148).

Isotopic Uranium. Uranium is a natural and commonly occurring radioactive element that is present in nearly all rocks and soils. It is found in very small amounts in nature in the form of minerals. Natural uranium is a mixture of three isotopes of uranium: uranium-234, uranium-235, and uranium-238. All three isotopes behave the same chemically, but they are different radioactive materials with different radioactive properties. The half-lives of uranium isotopes are very long (244,000 yr for uranium-234, 710 million yr for uranium-235, and 4.5 billion yr for uranium-238).

Uranium can undergo oxidation-reduction reactions to form complexes with organic matter. Migration of uranium in soil is limited.

The transport and dispersion of uranium in surface and groundwater are affected by adsorption and desorption of uranium on aquatic sediments. In most waters, sediments act as a sink for uranium, and the concentrations in sediments and suspended solids are several orders of magnitude higher than in surrounding water.

Little or no uranium enters plants through leaves or roots. Bioconcentration in fish is low.

F-2.1.3 Organic Chemicals

Table F-2.1-1 shows physiochemical properties of the organic COPCs. The physiochemical properties of organic chemicals are important when evaluating the fate and transport. Information in the following paragraphs about the physiochemical properties of site organic COPCs is presented to illustrate some aspects of the fate and transport tendencies of the COPCs. The information is summarized from Ney (1995, 058210).

Water solubility is perhaps the most important chemical characteristic used to assess mobility of organic chemicals. The higher the water solubility of a chemical, the more likely it is to be mobile, and the less likely it is to accumulate, bioaccumulate, volatilize, or persist in the environment. A highly soluble chemical (water solubility greater than 1000 mg/L) is prone to biodegradation and metabolism that may detoxify the parent chemical. Acetone, aniline, benzene, benzoic acid, 2-butanone, 4-chloro-3-methylphenol, 4-chloroaniline, 1,1-dichloroethene, cis-1,2-dichloroethene, dimethyl phthalate, 2-hexanone, methylene chloride, methyl-2-pentanone, 4-methylphenol, phenol, trichloroethene, and trichlorofluoromethane have water solubilities greater than 1000 mg/L.

The lower the water solubility of a chemical (especially lower than 10 mg/L), the more likely it will be immobilized by adsorption. Chemicals with lower water solubilities tend to be more likely to accumulate or bioaccumulate and persist in the environment, to be slightly prone to biodegradation, and may be metabolized in plants and animals. Acenaphthene; acenaphthylene; aldrin; anthracene; Aroclor-1242; Aroclor-1248; Aroclor-1254; Aroclor-1260; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(g,h,i)perylene; benzo(k)fluoranthene; benzene hexachloride (BHC) [alpha-, beta-, gamma-]; bis(2-ethylhexyl)phthalate; sec-butylbenzene; chrysene; 4,4'-dichlorodiphenyldichloroethane (DDD); 4,4'-dichlorodiphenyldichloroethylene (DDE); 4,4'-dichlorodiphenyltrichloroethane (DDT); dibenz(a,h)anthracene; dibenzofuran; dieldrin; di-n-octylphthalate; endosulfan I; endosulfan II; endrin; fluoranthene; fluorene; indeno(1,2,3-cd)pyrene; 4,4'-methoxychlor; pentachlorophenol; phenanthrene; and pyrene have water solubilities less than 10 mg/L. The water solubility of di-n-butyl phthalate, also an organic COPC at the site, is 10.8 mg/L, which is slightly greater than 10 mg/L, and indicates that di-n-butyl phthalate is likely to be immobile.

Vapor pressure is a chemical characteristic used to evaluate the tendency of organic chemicals to volatize. Chemicals with vapor pressure greater than 0.01 mm Hg are acetone, aldrin, benzene, 2-butanone, sec-butylbenzene, 4-chloroaniline, 1,1-dichloroethene, cis-1,2dichloroethene, ethylbenzene, 2-hexanone, methylene chloride, 2-methylnaphthalene, 4-methylphenol, sec-butylbenzene, tetrachloroethene, toluene, 1,2,2-trifluoroethane, trichloroethene, trichlorofluoromethane, 1,3,5-trimethylbenzene, 1,2-xylene, and xylene (total).

Chemicals with vapor pressures less than 0.000001 mm Hg are less likely to volatilize; and therefore, tend to remain immobile. Organic COPCs with vapor pressures less than 0.000001 mm Hg are anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, 4,4'-DDE, 4,4'-DDE, 4,4'-DDT, dibenz(a,h)anthracene, dieldrin, di-n-butylphthalate, di-n-octylphthalate, endosulfan I, endosulfan II, endrin, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene, 4,4'-methoxychlor, pentachlorophenol, and pyrene. The vapor pressures of acenaphthene, diethylphthalate, (4.93×10^{-6} and 2.17×10^{-6} respectively) are not much greater than 0.000001 mmHg, and these chemicals, which are also site organic COPCs, will tend to be immobile.

The octanol/water partition coefficient (K_{ow}) is an indicator of a chemical's potential to bioaccumulate or bioconcentrate in the fatty tissues of living organisms. The unitless K_{ow} value is an indicator of water solubility, mobility, sorption and bioaccumulation. The higher the K_{ow} value above 1000, the greater the affinity the chemical has for bioaccumulation/bioconcentration in the food chain, the greater its potential for sorption in the soil, and the lower its mobility (Ney 1995, 058210). Di-n-octylphthalate and 4-methylphenol are the organic chemicals with highest K_{ow} values (1.26×10^{8} and 1.82×10^{10}, respectively).

A K_{ow} of less than 500 indicates high water solubility, mobility, little to no affinity for bioaccumulation, and degradability by microbes, plants, and animals. Organic COPCs identified that have lowest K_{ow} values (less than 500) are acetone, aniline, Aroclor-1242, BCH (alpha-, beta-), benzene, benzoic acid, 2-butanone, 4-chloroaniline, 1,1-dichloroethene, cis-1,2-dichloroethene, dimethyl phthalate, 2-hexanone, methyl-2-pentanone, methylene chloride, phenol, toluene, trichloroethene, and trichlorofluoromethane.

F-3.0 MESA TOP SUBAREA

F-3.1 Site Descriptions

Ten Site Mesa, which lies at elevations between 6950 ft and 7250 ft above sea level, is bounded by Mortandad Canyon to the north, Pratt Canyon to the east, and Ten Site Canyon to the south (LANL 1992, 007666). Most structures associated with TA-35 are located on Ten Site Mesa.

The mesa top is industrial, and most of the land surface is paved; a few small, unpaved areas currently are present. It is one of the most highly used technical areas at the Laboratory, and covers an area of approximately 150 acres (61 hectares [ha]).

F-3.1.1 Surface Conditions

Surface conditions in the Mesa Top Subarea reflect the industrial nature of TA-35. The majority of the subarea is either covered with buildings, or consists of paved roads, parking areas, and sidewalks. Buildings include several large permanent structures, numerous smaller permanent structures, and several transportable buildings. In addition to occupied buildings, numerous transportainers and other portable structures are used for storage at various locations around the subarea. Only limited areas of unpaved ground exist as isolated patches among the buildings and paved areas.

The original vegetation of Ten Site Mesa probably consisted of a piñon-juniper woodland (Dick-Peddie 1993, 070062; Foxx et al. 1997, 070061, Figure 3; Koch et al. 1997, 062882). However, before the establishment of the Laboratory, much of the mesa top had been cleared for cropland (Foxx et al. 1997, 070061). Small patches of bare soil or grass have been landscaped to some extent, and patches contain native and nonnative trees, shrubs, forbs, and grasses. These patches provide limited habitat for invertebrates and small vertebrates (birds and small mammals), particularly those species associated with human habitation and disturbance. The area along the edge of the mesa still retains some portion of the original vegetative cover, primarily of piñon-juniper with some ponderosa pine mixed in (Dunham 1992, 031276).

F-3.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Mesa Top Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207) and has been further defined using geologic logs from boreholes drilled at or near the site.

The predominant rock unit at the surface is unit 3 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick on the mesa top. Below unit 3 is Unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30–40 ft thick. The lowest unit encountered is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once in the investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lie the Guaje Pumice Bed (approximately 35 ft thick) followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area.

Subsurface human-made structures in the Mesa Top Subarea consist of utility lines, including electrical, natural gas, water, sewer, and telephone locations (Figure F-3.2-1). In addition, SWMU 35-001 consists

of two sodium coolant storage tanks entombed in concrete (structure 35-43). The underground structure contains the two 4-in.-diameter, 125-ft-long tanks, oriented vertically. The structure is located near the edge of the mesa south of the southeast corner of Building 35-02, and is marked by a concrete block and metal monument. SWMU 35-001 is not part of the investigation.

F-3.1.3 Groundwater Conditions

Groundwater occurs in three distinct modes on the Pajarito Plateau:

1. the deep regional aquifer, the upper surface of which is typically contained within the conglomerates and sandstones of the Puye Formation;
2. intermediate-depth saturated horizons; and
3. shallow alluvial groundwater found in canyon-bottom alluvium (LANL 1998, 058841).

The top of the regional aquifer at TA-35 is estimated to be at least 1200 ft below the mesa surface. In characterization well R-14, in Ten Site Canyon just to the east of the Mesa Top Subarea, groundwater was encountered at a depth of 1182 ft below ground surface (bgs) (LANL 2003, 076062, p. 5).

The regional aquifer is the only known aquifer in the Los Alamos area capable of producing a municipal and industrial water supply. The direction of groundwater flow in the regional aquifer is to the east-southeast, toward the Rio Grande. The velocity of groundwater flow ranges from about 20 ft/yr to 250 ft/yr (LANL 1998, 058841, pp. 2-7). Details of depths to the regional aquifer, flow directions and rates, and well locations are presented in previous Laboratory reports (Purtymun 1995, 045344; LANL 1997, 055622; LANL 2000, 066802).

F-3.1.4 Surface Water Conditions

No permanent surface water exists on the Mesa Top Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Surface runoff on the mesa top is generally diverted from pavement and building roofs into storm drains that direct the flow to the mesa edge.

Surface water site assessments were performed for the mesa-top SWMUs and AOCs between 1997 and 2004. These assessments use subscores for site factors, such as topographic location, slope, evidence of runoff, and run-on to arrive at a single score (ranging from 0 to 100) for each site. This score is an indicator of the potential for erosion and sediment transport, with lower scores indicating lower potential for erosion. The SWMUs and AOCs in the Mesa Top Subarea received scores between 3.6 and 50.8, indicating low to moderate potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H (on CD included with this report).

F-3.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-3.2 Sampling Results

The sampling results for the Mesa Top Subarea SWMUs, AOCs, and consolidated units are described in detail in section 6.0 and Appendix D of the report and are summarized here.

The data used to define the nature and extent of contamination in the Mesa Top Subarea were obtained from environmental samples collected in 1993–1994, 1995–1996, 1997, and 2004–2005. Figure F-3.2-1 is an index map of the Mesa Top Subarea, which is divided into five areas (A, B, C, D, and E) for a more appropriate scale. Figures F-3.2-2 through F-3.2-6 show the SWMUs, AOCs, and consolidated units in each of five map areas within Mesa Top Subarea, with sampling locations identified.

F-3.2.1 Summary of Results

The sampling data for the Mesa Top Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide background values (BVs) and fallout values (FVs), where available, are from "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 059730).

The representative exposure point concentrations (EPCs) used for the screening assessments are either the 95% upper confidence level (UCL) of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used because the ProUCL program cannot handle negative values. The UCLs were calculated using data from soil, sediment, and tuff at depths of 0–1 ft for the industrial scenario. The UCLs were calculated using data from soil, sediment, and tuff at depths of 0–10 ft for the residential scenario. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. A summary of the procedure for UCL calculation is described in Appendix D, section D-1.2. Appendix D Tables D-2.1-1 through D-2.11-3 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 5.2-1 in the main text. Figures F-3.2-7 through F-3.2-11 show the locations of soil and tuff samples in which inorganic chemicals were detected above BVs or were detected without BVs.

Radionuclides

The radionuclide COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 5.2-1 in the main text. Figures F-3.2-12 through F-3.2-15 show the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected but do not have BVs, or were detected at depths greater than 6 in. (americium-241; plutonium-238, -239; strontium-90; and tritium).

Organic Chemicals

Identification of organic COPCs is based on detection status. For each SWMU, AOC, and consolidated unit, the COPCs are presented in Table 5.2-1 in the main text. Figures F-3.2-16 through F-3.2-20 show the organic COPCs.

F-3.2.2 History of Releases

The SWMUs, AOCs, and consolidated units in this subarea include components of the former wastewater treatment plant (WWTP), former container storage areas, an area of surface deposition from stack emissions, oil spills, septic tanks, and former oil-handling facilities.

SWMUs 35-004(a) and 35-004(h) are small, localized spills associated with container storage areas. The storage areas in this category are small, typically from a single drum to a few ft^2, and located on flat, paved portions of the mesa top. Releases at these sites are limited to relatively small volumes (i.e., less than 55 gal.); as a result, the potential for extensive lateral migration of contaminants away from the immediate region of the storage area is low. Contaminants associated with the storage areas potentially include dielectric oils (polychlorinated biphenyl [PCB]-containing) and other oils and organic chemicals.

Consolidated Unit 35-003(j)-99 and SWMUs 35-011(d), 35-014(f), 35-015(a), and 35-018(a) are oil spills associated with oil-handling facilities, generators, transformers, aboveground storage tanks, and underground storage tanks (USTs). While the volumes associated with these releases are not known, the releases are large because the volumes of liquid handled by the structures were significant. The category includes aboveground and underground structures located either in unpaved areas or on paved areas located adjacent to, or near, unpaved areas. Contaminants in this category are associated with dielectric oils.

The WWTP [Consolidated Unit 35-003(a)-99] and the septic system [SWMU 35-009(a)] were liquid releases. Volumes associated with these releases are undocumented, and may range from slow seeps to leaks of unknown proportions. These aboveground and underground structures were located in formerly unpaved areas. Contaminants associated with the TA-35 WWTP include radionuclides.

SWMU 35-014(a) consists of stack emissions from a glovebox facility in Building 35-02. Several thousands curies of tritium were released annually between 1954 and 1979.

SWMU 35-002 is soil contamination from Los Alamos Power reactors. Material Disposal Area (MDA) X consists of previously contaminated material that remained from reactor components removed during a 1990 D&D. The area lies under a parking lot near the southeast corner of Building 35-02.

F-3.2.3 Nature and Extent

The Aggregate SAP (LANL 2002, 073092) approved by NMED (2003, 078145) stipulated additional sampling at the following SWMUs/AOCs to define nature and extent of contamination. The locations sampled in 2004 and 2005 were determined by NMED and Laboratory personnel to define nature and extent. Figure F-3.2-1 is the index map for the five areas in the Mesa Top Subarea.

Consolidated Unit 35-003(a)-99 and Collocated SWMU 35-002

Consolidated Unit 35-003(a)-99, the former WWTP components, needed samples collected and analyzed for target analyte list (TAL) metals, semivolatile organic compounds (SVOCs), volatile organic compounds (VOCs), PCBs, and radionuclides (alpha and gamma spectroscopy, tritium, and strontium-90) to determine the extent of contamination (Figures F-3.2-4 and F-3.2-6). In accordance with the approved Aggregate SAP (LANL 2002, 073092), the following samples were collected from seven boreholes during the 2004 field campaign to determine extent (samples collected at location 35-22958 were analyzed for

inorganic chemicals only, and those at location 35-24415 were analyzed for both inorganic chemicals and radionuclides):

- location 35-22936, samples collected at 19–20 ft bgs and 29–30 ft bgs
- location 35-22941, samples collected at 4–5 ft bgs, 14–15 ft bgs, and 29–30 ft bgs
- location 35-22950, samples collected at 4–5 ft bgs, 14–15 ft bgs, and 29–30 ft bgs
- location 35-22958, samples collected at 4-5 ft bgs, 9-10 ft bgs, 14-15 ft bgs, and 19.2–20 ft bgs
- location 35-24414, samples collected at 4–5 ft bgs, 14–15 ft bgs, and 29–30 ft bgs
- location 35-24415, samples collected at 4–5 ft bgs, 14–15 ft bgs, and 29–30 ft bgs
- location 35-24416, samples collected at 15.5–16.5 ft bgs and 16.5–17.5 ft bgs

SWMU 35-002 is collocated with Consolidated Unit 35-003(a)-99, and those data are used to assess both sites.

Inorganic Chemicals. Inorganic chemicals are detected at concentrations greater than BVs infrequently across the site, and extent is defined vertically and laterally (Figures F-3.2-9 and F-3.2-11). The inorganic chemicals detected at locations 35-02303, 35-02304, 35-02305, 35-02306, 35-02307, 35-02308, 35-02309, and 35-02529 included boron, fluoride, silicon, and titanium, which are naturally occurring elements that do not have BVs. These inorganic chemicals demonstrated either a decrease in concentration from the shallowest sample to the deepest sample, or showed no substantial change in concentration with depth, indicating naturally occurring levels in tuff.

The other inorganic chemicals detected above their BVs are antimony, barium, cadmium, chromium, copper, lead, nickel, selenium, thallium, and zinc. Antimony (mg/kg, location 35-02303), cadmium (0.99 mg/kg, location 35-02446), and thallium (1.7 mg/kg, location 35-02273) were detected above their BVs in one sample each. These inorganic chemicals were below BVs in the deeper sample at the location detected, were detected at concentrations within the range of background concentrations at the location detected, or were not detected above background concentrations in deeper samples at adjacent locations. Selenium was detected in two samples (0.39 mg/kg, location 35-02307 and 0.456 mg/kg, location 35-24415), which are similar to the BV (0.3 mg/kg). Chromium, copper, nickel, and zinc were detected above their BV in three sampling locations each. At two of the locations, chromium, copper, and nickel were detected within the range of their background concentrations. Zinc was detected at location 35-02274 (54.3 mg/kg at 17–18 ft) within the range of background concentrations. Although zinc was detected in the bottom of borehole location 35-02272 (204 mg/kg at 12–12.5 ft on Figure F-3.2-9), it was not detected above its BV at location 35-02275 from the same depth, approximately 6 ft away, nor was it detected above its BV at location 35-22941, approximately 40 ft southwest. Location 35-22941 was sampled from 4–5 ft, 14–15, and 29–30 ft. Lead was detected above its BV in four sample locations. At location 35-02309, lead was detected at a concentration of 12.6 mg/kg from 4.5–5.5-ft depth but was not detected above its BV in the deeper sample. Lead was not detected in the deeper samples at locations 35-02446 or 35-02441. Although it was detected in the bottom of the borehole at location 35-02274 (81.6 mg/kg from 17–18-ft depth), it was not detected at location 35-24415, located less than 10 ft away.

The 2004–2005 samples define extent both laterally and vertically of the older data. Although chromium was detected at location 35-22941 at the bottom of the borehole, the concentration of 7.23 mg/kg is within the range of background concentrations. Therefore, the nature and extent of inorganic chemicals have been defined at SWMU 35-002 and Consolidated Unit 35-003(a)-99.

Radionuclides. The 2004/2005 sampling data define the lateral and vertical extent of strontium-90 (Figure F-3.2-15). Although strontium-90 was detected at the bottom of some of the previous boreholes (locations 35-02295, 35-02303, 35-02307, 35-02308, 35-02440, 35-02437, 35-02440, 35-02441, and 35-02442), the surrounding deeper boreholes show a decreasing trend or no detected concentrations of strontium-90. Tritium is detected at low concentrations across SWMU 35-009(a), but, overall, shows a decreasing trend with depth. The maximum detected concentration of tritium was 9.73 pCi/g at location 35-02439 from a depth of 0–1 ft, but it was not detected in the sample from 4 to 5 ft at the same location. All of the tritium sample results greater than 10 ft bgs were less than 0.4 pCi/g.

Location 35-24416 was sampled to a depth of 17.5 ft. At that depth, cesium-137 (0.4 pCi/g), plutonium-239 (0.07 pCi/g), strontium-90 (2.61 pCi/g), and tritium (0.18 pCi/g) were detected. At location 35-02528, which is less than 17 ft away in the Pratt Canyon Subarea within Consolidated Unit 35-003(d)-00 (Figure F-6.2-6), the sample collected at 19.7 ft did not detect cesium-137 or plutonium-239. Strontium-90 was detected at 0.44 pCi/g, and tritium was detected at the same concentration as in location 35-24416 (0.18 pCi/g). Therefore, the extent of radionuclides has been defined for SWMU 35-002 and Consolidated Unit 35-003(a)-99.

Organic Chemicals. Within the 2004–2005 samples, only location 35-22941 had any detected organic chemicals (Figure F-3.2-20). At location 35-22941, Aroclor-1260 was detected at a concentration of 1.49 mg/kg at a depth of 4–5 ft, and decreased to 0.025 mg/kg at a depth of 14–15 ft. Aroclor-1260 was not detected in the 29–30 ft sample. Within the older data, the organic chemicals are detected infrequently across the site, and extent is defined vertically and laterally by the 2004–2005 samples. Only one SVOC was detected at a concentration greater than the estimated quantitation limit (EQL). Bis(2-ethylhexyl)phthalate was detected at a maximum concentration of 0.57 mg/kg (0.0–1.0 ft) at location 35-02437, but decreased to less than the EQL in the sample from 4 to 5 ft bgs. Therefore, the extent of organic chemicals at SWMU 35-002 and Consolidated Unit 35-003(a)-99 has been defined.

Consolidated Unit 35-003(j)-99

Consolidated Unit 35-003(j)-99, aboveground oil storage tanks and releases, needed additional samples collected and analyzed for SVOCs, VOCs, and PCBs (Figure F-3.2-5). In accordance with the approved Aggregate SAP (LANL 2002, 073092), the following samples were collected from one borehole during the 2004 field campaign to determine vertical extent (Figure F-3.2-2): location 35-22957, samples collected at depths of 8.8–10 ft bgs and 19–20 ft bgs.

Inorganic Chemicals. Samples were not analyzed for inorganic chemicals in 2004 (Figure F-3.2-10). The older data showed that inorganic COPCs were detected at two locations (35-02288 and 35-02291). At location 35-02288, barium (48.9 mg/kg from 3 to 4 ft and 237 mg/kg from 6–7 ft) and nickel (7.2 mg/kg) were detected from 6–7 ft but were not detected in the sample from 9–10 ft. At location 35-02291, copper (15.5 mg/kg), lead (42.3 mg/kg), and mercury (0.55 mg/kg) were detected from 1 to 2 ft, but were not detected in the samples from 3–4 ft, 6 to 7 ft, or 9–10 ft. Because the inorganic chemicals were detected only in two locations, the vertical and lateral extent has been defined for Consolidated Unit 35-003(j)-99.

Radionuclides. Samples were not analyzed for radionuclides in 2004 (Figure F-3.2-14). The older data showed that uranium-234 was detected in two locations (locations 35-02089 and 35-02086), uranium-235 in three locations (locations 35-02089, 35-02086, and 35-02090), uranium-238 in one location (35-02086), and plutonium-239 in one location (35-02090). Although the radionuclides were detected at the deepest samples in the locations, the vertical extent has been defined by neighboring sampling locations that did not detect any radionuclides at deeper depths. Location 35-02288, approximately 10 ft northwest of location 35-02089, was sampled to a depth of 10 ft, and had no detected radionuclides.

Location 35-02291, approximately 10 ft south of location 35-02090, was sampled to a depth of 10 ft, and had no detected radionuclides. The lateral extent of the radionuclides has been defined because the sampling locations adjacent to locations 35-02089, 35-02086, and 35-02090 had no detected radionuclides.

Organic Chemicals. The samples from location 35-22957 had no detected concentration of total petroleum hydrocarbons diesel range organic (TPH-DRO). Bis(2-ethylhexyl)phthalate (0.052 mg/kg) was detected in one sample at the 9–10-ft-depth interval (Figure F-3.2-19) and was not detected in the deeper sample (19–20 ft). Previously, the highest concentration for TPH-DRO was 7700 mg/kg at location 35-02291 from the 1–2-ft-depth interval, which is bounded by locations 35-02292, 35-02294, and 35-02293. Samples from locations 35-02292 and 35-02293, which are approximately 15 ft from location 35-02291, did not show detections of TPH-DRO at 10 ft bgs. Therefore, the lateral and vertical extent of contamination have been defined for Consolidated Unit 35-003(j)-99.

SWMU 35-004(a)

SWMU 35-004(a), a former outdoor container storage area used to store containers of organic chemicals and oil, was not sampled previously for inorganic chemicals or organic chemicals. In accordance with the approved Aggregate SAP (LANL 2002, 073092), the following samples were collected from one borehole during the 2004 field campaign and analyzed for TAL metals, SVOCs, VOCs, pesticides/PCBs, and tritium to determine the nature and extent of contamination (Figure F-3.2-4): location 35-22922, samples collected at depths of 4–5 ft bgs and 9–10 ft bgs.

Inorganic Chemicals. No inorganic chemicals were detected at concentrations greater than their respective BVs (Figure F-3.2-9). However, selenium had detection limits greater than the BV (0.5 mg/kg versus 0.3 mg/kg). Further sampling is not warranted for selenium. The nature and extent of inorganic chemicals greater than BV have been defined at SWMU 35-004(a).

Radionuclides. The samples were analyzed for tritium to define the lateral extent of tritium at SWMU 35-014(a) (Figure F-3.2-13). The tritium results are discussed above for SWMU 35-014(a).

Organic Chemicals. No organic chemicals were detected (Figure F-3.2-18). The nature and extent of organic chemicals have been defined at SWMU 35-004(a).

SWMU 35-004(h)

No additional samples needed to be collected at SWMU 35-004(h), a former container storage area, because it was excavated during D&D in 1996 (LANL 1996, 054763, p. 5-23; LANL 1997, 056820, p. 5-18).

SWMU 35-009(a)

Additional samples needed to be collected at SWMU 35-009(a), a septic system, and analyzed for TAL metals and SVOCs to determine vertical extent of contamination. The approved Aggregate SAP (LANL 2002, 073092) required collecting additional data from this borehole (Figure F-3.2-4): location 35-22960, samples collected at depths of 6–7 ft bgs, 10–11 ft bgs, and 14–15 ft bgs.

Inorganic Chemicals. Mercury was the only inorganic chemical detected at concentration greater than BV at 6–7 ft at location 35-22960 (Figure F-3.2-9). It was detected below BV in deeper samples. Therefore, the vertical extent of inorganic chemicals at SWMU 35-009(a) has been defined.

Radionuclides. Samples were not analyzed for radionuclides in 2004. Radionculides were not detected in the older sample data at concentrations greater than their BVs. Extent has been defined for radionuclides for SWMU 35-009(a).

Organic Chemicals. No SVOCs were detected (Figure F-3.2-18) in any of the samples collected for SWMU 35-009(a). The vertical extent of organic chemicals has been defined for SWMU 35-009(a).

AOC 35-011(d)

AOC 35-011(d), which consists of two former underground storage tanks, was not sampled previously for RCRA constituents. In accordance with the approved Aggregate SAP (LANL 2002, 073092), the following samples were collected from one borehole during the 2004 field campaign (Figure F-3.2-2): location 35-22961, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 24–25 ft bgs.

Inorganic Chemicals. The only inorganic COPC detected in the borehole (location 35-22961) at a concentration greater than its BV was selenium (0.435 mg/kg) at 19–20 ft. Selenium was not detected in the deeper sample (24–25 ft; Figure F-3.2-7). Therefore, the vertical extent of inorganic chemicals at AOC 35-011(d) has been defined.

Radionuclides. Samples collected from location 35-22961 were not analyzed for radionuclides.

Organic Chemicals. TPH-DRO was detected at a concentration of 1.2 mg/kg, less than the EQL (1.9 mg/kg), at the 19–20-ft-depth interval. TPH-DRO was not detected in the deeper sample at the bottom of the borehole (24–25 ft) (Figure F-3.2-16). Acetone was detected slightly above the EQL of 0.005 mg/kg at the 19–20-ft-depth interval (0.007 mg/kg) and below the EQL at the 24–25-ft-depth interval (0.004 mg/kg). The vertical extent of contamination has been defined at AOC 35-011(d).

SWMU 35-014(a)

Additional samples needed to be collected at SWMU 35-014(a), former stack emissions from Building 35-07, and analyzed for tritium and strontium-90 to define vertical extent of tritium beyond a 3-ft depth (Figure F-3.2-4). The approved Aggregate SAP (LANL 2002, 073092) required that additional data be collected from two hand-auger holes at locations 35-22930 and 35-22922 (Figure F-3.2-4):

- location 35-22930, samples collected at depths of 4–5 ft bgs and 9–9.5 ft bgs
- location 35-22922, samples collected at depths of 4–5 ft bgs and 9–10 ft bgs

Inorganic Chemicals. Samples collected within SWMU 35-014(a) were not analyzed for inorganic chemicals.

Radionuclides. Tritium and strontium-90 were not detected in either of the samples collected at location 35-22930 (Figure F-3.2-13). Samples were collected at location 35-22922 at adjacent SWMU 35-004(a) to determine extent of tritium. Tritium was detected at a concentration of 0.04 pCi/g at 9–10 ft. Because tritium was detected at a concentration lower than or equivalent to the concentrations detected in the shallower depth samples, and was not detected at 9.5 ft in location 35-22930, the extent of contamination has been defined for SWMU 35-014(a).

Organic Chemicals. Samples collected within SWMU 35-014(a) were not analyzed for organic chemicals.

AOC 35-014(f)

Additional samples needed to be collected at AOC 35-014(f), a former oil spill, and analyzed for TAL metals, SVOCs, and VOCs to complete the data set (Figure F-3.2-2). Samples were collected in 1996 to the 2–3-ft-depth interval. The approved Aggregate SAP (LANL 2002, 073092) required additional sampling at location 35-02364 to a depth of 10 ft bgs and analyzing the samples for TAL metals, SVOCs, TPH-DRO, and VOCs: location 35-02364, samples collected at depth intervals of 4–5 ft bgs and 9–10 ft bgs.

Inorganic Chemicals. TAL metals (chromium, nickel, and selenium) were detected, or had detection limits, in samples (4–5 ft and 9–10 ft), at concentrations greater than their respective BVs at location 35-02364 (Figure F-3.2-7). With the exception of selenium, the concentrations of all metals were less than BV in samples collected below 3 ft. The detection limit of selenium (0.5 mg/kg) was slightly greater than the BV (0.3 mg/kg) at 10 ft bgs. At location 35-02393, chromium and nickel were detected from 2–3 ft. The samples from location 35-02364 bound the vertical extent of chromium and nickel at location 35-02393. Therefore, the extent of inorganic chemicals has been defined at AOC 35-014(f).

Radionuclides. Samples were not analyzed for radionuclides.

Organic Chemicals. SVOCs and VOCs were detected infrequently at two locations (Figure F-3.2-16) and at low concentrations (Tables D-2.9-3 and D-2.10-3). At location 35-02393 (Figure F-3.2-16), bis(2-ethylhexyl)phthalate was detected at 0.65 mg/kg at the 0–1-ft-depth interval, and at a lower concentration below the EQL in the deeper sample (0.098, 2–3-ft-depth interval). At location 35-02364, bis(2-ethylhexyl)phthalate was detected at a concentration of 0.75 mg/kg in the sample from 0–1 ft, but it was not detected in the deeper samples (4–5 ft or 9–10-ft-depth intervals).

Tetrachloroethene and toluene were detected at location 35-02393 at low concentrations (0.002 mg/kg and 0.002 mg/kg, respectively) at the 0–1-ft-depth interval, and not at the 2–3-ft-depth interval. Trichloroethene was detected at location 35-02364 at a low concentration in the 0–1 ft-depth interval (0.019 mg/kg), and not at the 2–3-ft-depth interval. Trichloroethene was detected at location 35-02393 at a low concentration in the 0–1-ft-depth interval (0.015 mg/kg), and at a lower concentration (0.002 mg/kg) in the 2–3-ft-depth interval. Acetone was detected at 0.0054 mg/kg, which is slightly above the EQL (0.005 mg/kg) at location 35-02364 (9–10-ft-depth interval).

TPH-DRO was detected mainly at three locations at AOC 35-014(f), locations 35-02429, 35-02393, and 35-02428, with much lower concentrations detected at locations 35-02364 and 35-02405. The maximum concentration of 7000 mg/kg was from location 35-02393 at a depth of 0–1 ft, but the sample collected from the 2–3-ft-depth interval at the same location had a TPH-DRO concentration of 740 mg/kg, indicating a decreasing trend. At location 35-02364, TPH-DRO was detected at 1.5 mg/kg at a depth of 9–10 ft. The lateral extent of TPH-DRO contamination has been defined to the north by a low concentration at location 35-02405 (81 mg/kg, 0–0.5 ft), and location 35-02364 (1.2 mg/kg, 4–5 ft, and 1.5 mg/kg, 9–10 ft). TPH-DRO was not detected at locations 35-02431 and 35-02430. The lateral extent of TPH-DRO has been defined to the south by the data from samples collected at location 35-22961 [AOC 35-011(d)], located approximately 20 ft south of the boundary of AOC 35-014(f). TPH-DRO was only detected at 1.2 mg/kg at the 19–20-ft-depth interval, and was not detected in the 24–25 ft sample in this 25-ft-deep borehole. The space between Building 35-0188 to the west and Buildings 35-0372 and 35-0373 to the east is approximately 20 ft, precluding the possibility of drilling boreholes to determine the extent of TPH-DRO laterally to the east and west. Based on the data, the distribution of organic COPCs, and the decreasing concentrations laterally and with depth at several locations, the extent of contamination at AOC 35-014(f) has been defined.

SWMU 35-015(a)

Additional samples needed to be collected at SWMU 35-015(a), the former waste oil treatment facility (Figure F-3.2-3), and analyzed for TAL metals, SVOCs, and VOCs to complete the data set. In accordance with the approved Aggregate SAP (LANL 2002, 073092), the following samples were collected from one auger hole during the 2004 field campaign to determine the vertical extent of contamination: location 35-22928, samples collected at 4–4.5 ft bgs and 9–9.5 ft bgs.

Inorganic Chemicals. Within the entire SWMU 35-015(a) data set for TAL metals, cadmium, chromium, copper, and nickel were detected at concentrations greater than BV, usually within the range of the background concentrations (Figure F-3.2-8). Because the data from sampling location 35-02496, located on the northern edge of SWMU 35-015(a), indicated that no inorganic chemicals were detected at concentrations greater than their BVs, the lateral extent of contamination has been determined to the north. Lateral extent to the west is defined by structures. Lateral extent to the east is defined by sampling locations 35-02497 and 35-02501, where inorganic chemicals were detected either less than their respective BVs or within the range of background concentrations. The lateral extent of inorganic chemicals, with the exception of chromium at location 35-22928, has been defined on the south by concentrations less than BV or within the range of the background concentrations at locations 35-22928 and 35-02501. The data for chromium shows a very slight increasing trend to the south. At location 35-02286, chromium was detected at a concentration less than BV. Approximately 5 ft south, at location 35-02500, chromium was detected in the 0.83–2-ft-depth interval at 30.8 mg/kg, a concentration greater than BV (7.14 mg/kg) and the range of the background concentration (0.25–13 mg/kg). A deeper sample to define the vertical extent at this location was not collected at location 35-02500. However, within approximately 10 ft southeast of location 35-02500 is location 35-22928, which was sampled in 2004. Chromium was detected in the 4–4.5-ft-depth interval at 38.4 mg/kg, a concentration greater than the BV (7.14 mg/kg) and the range of the background concentrations (0.25–13 mg/kg), but was not detected at a concentration greater than BV in the 9–9.5 ft sample at this location. As a result, vertical and lateral extent of inorganic chemicals have been defined at SWMU 35-015(a).

Radionuclides. Only two radionuclides were detected at concentrations greater than their BVs within SWMU 35-015(a) (Figure F-3.2-12). Europium-152 was detected in only one sample at a concentration of 0.34 pCi/g (location 35-02497, 1–2 ft) but was not detected in the field duplicate sample. Plutonium-239 was detected at a concentration of 0.03 pCi/g (location 35-02496, 0–1 ft). Plutonium-239 was not detected in the deeper sample (1–2 ft) from this location. Therefore, vertical extent of radionuclides has been defined. The lateral extent has been defined also because sampling locations at the northern end of SWMU 35-015(a), which is the direction of runoff to the slope, did not detect any radionuclides above background/fallout concentrations.

Organic Chemicals. Within the 2004 samples at location 35-22928, pesticides and VOCs were detected at the 4–5-ft depth, but only acetone was detected at 9–9.5 ft (Figure F-3.2-17) at a concentration an order of magnitude lower. Bis(2-ethylhexyl)phthalate was detected in seven samples at four locations within SWMU 35-015(a). Concentrations either decreased with depth (location 35-02497), increased slightly with depth (locations 35-02499, 35-02500, and 35-02286), or are near EQLs (location 35-02501). The location with the deepest samples (location 35-22928) did not show a detection of bis(2-ethylhexyl)phthalate at 4–4.5 ft and 9–9.5 ft.

PAHs were detected at one location (location 35-02285) at concentrations below the EQL. VOCs were detected at four locations (locations 35-02496, 35-02182, 35-02500, and 35-22928) and included acetone (two locations), toluene (one location), 1,1,2-trichloro-1,2,2-trifluoroethane (two locations), and trichlorofluoromethane (two locations) at concentrations near or below the EQL. Although two locations (locations 35-02286, 2–3 ft and 35-02285, 1–1.8 ft) detected TPH-DRO at depth, adjacent locations

(locations 35-02500 and 35-02497) within 1–2 ft of the TPH-DRO locations did not detect TPH-DRO at similar depths. As a result, the vertical and lateral extents of contamination at SWMU 35-015(a) have been defined by the data and the distribution of the organic COPCs.

AOC 35-018(a)

Additional samples needed to be collected at AOC 35-018(a), a former site of a leaking transformer, and analyzed for PCBs and SVOCs (Figure F-3.2-5). The approved SAP (LANL 2002, 073092) required that samples be collected from one auger hole to determine the vertical extent of contamination: location 35-22926, samples collected at a depth of 6–7 ft bgs.

Inorganic Chemicals. Samples were not analyzed for inorganic chemicals in 2004 (Figure F-3.2-10). Inorganic COPCs were detected at one location (location 35-02268) in the older data. Cadmium (1.1 mg/kg) and zinc (59.9 mg/kg) were detected at 2–3 ft bgs, but both are within their range of background concentrations. Therefore, the vertical and lateral extent has been defined for inorganic chemicals at AOC 35-018(a).

Radionuclides. Samples were not analyzed for radionuclides in 2004. Tritium was detected once (0.034 pCi/g) at location 35-02262 from 0–1 ft bgs. No other radionuclides were detected; therefore, the extent is defined for AOC 35-018(a).

Organic Chemicals. Within AOC 35-018(a), PAHs, Aroclor-1260, and SVOCs were detected (Figure F-3.2-19).

The only SVOC detected at a concentration greater than EQLs (0.3 mg/kg) is dibenzofuran (1 mg/kg, 0–0.5 ft) at location 35-02353 and (0.74 mg/kg, 0–0.5 ft) at location 35-02355. Dibenzofuran decreased to 0.31 mg/kg at location 35-02356 (0–0.5 ft), which is located within 25 ft of locations 35-02353 and 35-02355. Dibenzofuran was either detected below the EQL or not detected in other samples. The highest detected concentration of Aroclor-1260 was at location 35-02406 at a concentration of 12 mg/kg at 3.5 ft. Aroclor-1260 decreases to 0.74 mg/kg at location 35-22926 at 6–7 ft, which is approximately 5 ft away. Laterally, the concentration of Aroclor-1260 decreases with distance from this location.

PAHs were detected at several locations in surface samples collected below or adjacent to the asphalt parking lot. No PAHs were detected at location 35-02294 from 2–2.5 ft, which defines the extent of the PAHs detected at locations 35-02268, 35-02294, 35-02353, 35-02354, 35-02355, and 35-2256. Sample location 35-02268 is located at the southern edge of AOC 35-018(a). Within the samples at this location, PAHs were detected, but at concentrations less than the EQLs (0.3 mg/kg); therefore, the lateral extent is defined in this direction, and the lateral and vertical extent of organic chemicals are defined for AOC 35-018(a).

F-3.3 Conceptual Site Model

The conceptual site model for the Mesa Top Subarea SWMUs/AOCs is described in the Aggregate SAP (LANL 2002, 073092) and is shown in Figure F-3.3-1. With the exception of SWMU 35-014(a), all the SWMUs are associated with liquid releases consisting of either oil spills of varying scale of radioactive liquids associated with the TA-35 WWTP. The similarities in both the behavior of such releases and the mesa-top environmental setting support several fundamental elements of the conceptual model.

Surface releases are likely to result in infiltration of contaminants into surface soils and through cracks in asphalt into backfill soils and possibly the underlying tuff. Contaminants associated with surface releases may be transported laterally to nearby unpaved areas or mesa-top drainages, either as release-driven surface flow or by stormwater runoff. Contaminants transported to surface soils or drainages either may

be contained locally or transported as sorbed species on soil particles by stormwater runoff. Soluble contaminants may be transported by stormwater runoff to the hillslopes and canyon floor.

Subsurface releases are likely to result in infiltration of contaminants into backfill soils and underlying tuff. The vertical and lateral migration within the tuff may occur through unsaturated flow or fracture flow.

Airborne releases associated with stack emissions may have resulted in the deposition of contaminants on paved and unpaved portions of the mesa top and possibly, the slope subareas. It is hypothesized that contaminants associated with the emissions were deposited near the location of the stack at Building 35-02, and that any potential residual contamination is likely limited to the soil contained by concrete curbs adjacent to the building. Because of the effects of wind dispersal on airborne releases and the soluble nature of tritium, it is expected that distal deposits on the mesa-top and/or the slope subareas were transported into the canyons by storm events.

The land use for the Mesa Top Subarea is currently industrial, and is expected to remain industrial for the reasonably foreseeable future. The potential receptor is therefore a site worker with exposure pathways for dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1). The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment within the subarea is low to moderate because most of the contaminants are beneath asphalt. Exposure would occur if the asphalt is removed and subarea is excavated.

The construction worker is not evaluated for the Mesa Top Subarea because the exposure is assumed to be from the surface (0–1 ft). If activities at the site change to include construction or other intrusive activities, EP will work with facility management to ensure workers are protected. The human health screening assessment will be reevaluated if the activity warrants a construction worker assessment.

The Mesa Top Subarea is a developed area, consisting primarily of asphalt, buildings, and other structure footprints, and gravel. Bare areas consist primarily of fill. Open areas within the developed area contain native and nonnative grasses, forbs, trees, and shrubs, but these areas provide limited and fragmented habitat. The area is nominally within the core habitat for the Mexican spotted owl, a threatened and endangered (T&E) species, but industrial development of the mesa-top limits the value of the area. If exposure occurs, the pathways to biota include root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-3.4 Human Health Screening Assessment

F-3.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the “Technical Background Document for Development of Soil Screening Levels, Revision 4” (NMED 2006, 092513). Sample data for COPCs from 0–1 ft bgs were used because media (soil, sediment, and tuff) from that depth could be encountered by a Laboratory (industrial) worker. Sample data from 0–10 ft bgs were used for the residential assessment.

The COPCs for each SWMU, AOC, or consolidated unit are evaluated further in this section by comparing the representative concentrations with the soil screening level (SSL) for each chemical and the screening action levels (SALs) for radionuclides. The chemical SSLs are provided in Tables 4.0-1 and 4.0-2 in the report. The SALs are provided in Table 4.0-3 in the report.

The industrial and residential chemical SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a SSL for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The

SSLs for carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a hazard quotient (HQ) of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5}, risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr, and are derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD (residual radioactive material [computer code]), Version 6.21 (see Table 4.0-3 in the report).

The parameters used to derive the industrial and residential SSLs for chemicals are presented in Table F-3.4-1. The parameters used in deriving the residential and industrial SALs for radionuclides are presented in Tables F-3.4-2 and F-3.4-3.

F-3.4.2 Human Health Screening Assessment Results

The representative concentration for each COPC was compared with the respective residential and industrial SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessments are presented in Tables D-2.1-1 through D-2.11-3 in Appendix D.

SWMU 35-002

Based on a residential scenario, the HI (1) is equivalent to NMED's target level of 1.0 (Table F-3.4-4), the carcinogenic risk (7×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-3.4-4), and the dose (0.002 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-5).

The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-002 under a residential scenario.

Consolidated Unit 35-003(a)-99

Based on an industrial scenario, the HI (0.06) is less than NMED's target level of 1.0 (Table F-3.4-6), the carcinogenic risk (3×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-3.4-7), and the dose (4 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-8).

The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-003(a)-99 under an industrial scenario.

Consolidated Unit 35-003(j)-99

Based on an industrial scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-3.4-9), the carcinogenic risk (8×10^{-5}) is above the NMED target level of 1×10^{-5} (Table F-3.4-10), and the dose (0.2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-11). The results for Consolidated Unit 35-003(j)-99 are discussed in the uncertainty section.

SWMU 35-004(a)

Based on a residential scenario, the dose (0.001 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-12).

The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-004(a) under a residential scenario.

SWMU 35-004(h)

Based on a residential scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-3.4-13), the dose (0.005 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-14).

The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-004(h) under a residential scenario.

SWMU 35-009(a)

Based on an industrial scenario, the HI (0.3) is less than NMED's target level of 1.0 (Table F-3.4-15), the carcinogenic risk (2×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-3.4-16), and the dose (0.2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-17).

The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(a) under an industrial scenario.

SWMU 35-014(a)

Based on a residential scenario, the dose (3 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-18). Therefore, the screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-014(a) under a residential scenario.

Based on an industrial scenario, the dose (0.8 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-18). Therefore, the screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-014(a) under an industrial scenario.

SWMU 35-014(f)

Based on a residential scenario, the hazard index (HI) (0.2) is less than NMED's target level of 1.0 (Table F-3.4-19) and the carcinogenic risk (7×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-3.4-20).

The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-014(f) under a residential scenario.

Based on an industrial scenario, the HI (0.01) is less than NMED's target level of 1.0 (Table F-3.4-19), and the carcinogenic risk (2×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-3.4-20). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-014(f) under an industrial scenario.

SWMU 35-015(a)

Based on an industrial scenario, the HI (0.02) is less than NMED's target level of 1.0 (Table F-3.4-21), the carcinogenic risk (6×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-3.4-22), and the dose (0.002 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-23).

The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-015(a) under an industrial scenario.

AOC 35-018(a)

Based on an industrial scenario, the HI (0.006) is less than NMED's target level of 1.0 (Table F-3.4-24), the carcinogenic risk (3×10^{-5}) is slightly above the NMED target level of 1×10^{-5} (Table F-3.4-25), and the dose (0.000001 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-3.4-26). The results for AOC 35-018(a) are discussed in the uncertainty section.

F-3.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with the background data, data evaluation, exposure assessment, and toxicity assessment. Each or all of these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk screening assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs does not affect the assessment.

Another data evaluation uncertainty relates to the use of the 95% UCL as the representative concentration for each COPC. Use of the 95% UCL may result in an overestimation of risk for analytes that have elevated detection limits. In the assessment for SWMU 35-015(a), for example, the PAHs have elevated detection limits. If the maximum detected concentration is used in the residential screening assessment instead of the 95% UCL, then the total excess cancer risk is reduced from 1×10^{-4} to 1×10^{-6}, and this site would pass residential screening assessment.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

The receptor used in the assessment (site worker) is subject to exposures in a different manner than the exposure assumptions used to derive the industrial SSLs. Assumptions for the SSLs are that the potentially exposed individual is an industrial worker who is outside for 8 h/d for 225 d/yr (NMED 2006, 092513). Most Laboratory workers at TA-35 are not outside for 8 h/d but instead spend part of their time indoors or elsewhere on Laboratory property. By using the industrial scenario, the exposure and risk/dose are overestimated and is protective of a Laboratory worker.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. As a result, uncertainties in the

assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be expected reasonably.

Analytical data from the 0–1 ft bgs depth range were used in the screening assessment, which includes data from 0.5–1.5 ft bgs and 0.83–2 ft bgs, but the receptor cannot be exposed to the samples from greater than 4 in. unless the worker digs in the area. Using the analytical data from 0–1 ft bgs depth range may overestimate the potential risk to receptors. In addition, most of the Mesa Top Subarea from which samples were collected is either asphalt or gravel, which limits the risk of exposure to Laboratory workers. Therefore, exposure and risk to COPCs across the Mesa Top Subarea are overestimated.

At Consolidated Unit 35-003(j)-99, 90% of the cancer risk is from PAHs, a component of the asphalt that covers much of the mesa top (Table F-3.4-10). The PAHs were detected at concentrations greater than 1 mg/kg within 0–0.5 ft bgs. These detected concentrations of PAHs are likely to be from the asphalt overlying the sampling locations. If the PAHs are removed from the screening assessment, the cancer risk is 6×10^{-6}, which is less than the NMED target level of 1×10^{-5}. In addition, there is no complete exposure pathway to workers for the COPCs located under asphalt.

At AOC 35-018(a), 85% of the cancer risk is from PAHs, a component of the asphalt that covers much of the mesa top (Table F-3.4-25). The PAHs were detected at concentrations greater than 1 mg/kg within 0–0.5 ft bgs. In addition, there is no complete exposure pathway to workers for the COPCs located under asphalt.

Toxicity Values

The primary uncertainty associated with the screening values relates to derivation of screening values from EPA toxicity values (reference doses [RfDs] and slope factors [SFs]) (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in eight areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, (3) interindividual variability in the human population, (4) the derivation of RfDs and SFs, (5) revision of SFs and RfDs, (6) chemical form of the COPC, (7) additive approach, and (8) use of surrogate chemicals.

Extrapolation from animals to humans. The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in an over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures, and in determining the no-observed-adverse-effect level (NOAEL). The NOAEL/uncertainty factor approach incorporates a factor of 10 to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Derivation of RfDs and SFs. The RfDs and SFs for different chemicals are derived from experiments conducted by different laboratories with different accuracy and precision, thus leading to an over- or underestimation of the risk.

Revision of SFs and RfDs. The SFs and RfDs, or dose-response relationships, of chemicals are frequently updated and revised, which can lead to over- or under-estimation of risks. The uncertainty associated with the toxicity factors for noncarcinogens is measured by the uncertainty factor, the modifying factor, and the confidence level. For carcinogens, the weight of evidence classification indicates the likelihood a contaminant is a human carcinogen. Toxicity values with high uncertainties may change as new information is evaluated. For example, the uncertainty factor for antimony is 1000, and may be subject to change.

Chemical form of the COPC. COPCs can be bound to the environment matrix and not available for absorption into the human body. However, it is assumed that the COPCs are bioavailable. This assumption can lead to an overestimation of the total risk.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of potential risk to receptors. For noncarcinogens, the effects of a mixture of chemicals generally are unknown, and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. As a result, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively, but that act by different mechanisms and on different target organs.

Use of surrogate chemicals. The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, surrogates were used to establish toxicity values for the following because of structural similarity (NMED 2003, 081172):

- benzo(g,h,i)perylene
- 2-hexanone
- 4-isopropyltoluene
- 2-methylnaphthalene

Bromide and silicon, both naturally occurring elements, have no published SSLs. Bromide was detected in 1 of 34 samples at a concentration of 0.3 mg/kg. Silicon, which occurs in 27% of the earth's crust, was detected in 34 samples at concentrations ranging from 13.8–79.1 mg/kg

F-3.4.4 Interpretation

Based on a residential scenario, the maximum HI (1) for SWMUs 35-002, 35-004(a), 35-004(h), 35-011(d), 35-014(a), and 35-014(f) is equivalent to NMED's target level of 1.0. The maximum cancer risk (7×10^{-6}) for SWMUs 35-002, 35-004(a), 35-004(h), 35-011(d), 35-014(a), and 35-014(f) is less than the NMED target level of 1×10^{-5}. The maximum dose (3.0 mrem/yr) for SWMUs 35-002, 35-004(a), 35-004(h), 35-011(d), 35-014(a), and 35-014(f) is less than the DOE's target dose of 15 mrem/yr. The total dose range for a residential user for SWMUs 35-002, 35-004(a), 35-004(h), 35-011(d), 35-014(a), and 35-014(f) is equivalent to a total risk range between 4×10^{-8} to 2×10^{-5}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml).

Based on an industrial scenario, the maximum HI (0.3) for SWMUs 35-009(a) and 35-015(a) and Consolidated Unit 35-003(a)-99 is less than NMED's target level of 1.0. The maximum cancer risk (2×10^{-6}) for SWMUs 35-009(a) and 35-015(a) and Consolidated Unit 35-003(a)-99 is less than the NMED target level of 1×10^{-5}. The maximum dose (4 mrem/yr) for SWMUs 35-009(a) and 35-015(a) and Consolidated Unit 35-003(a)-99 is less than DOE's target dose of 15 mrem/yr. The total dose range for an industrial outdoor worker for SWMUs 35-009(a), 35-011(d), and 35-015(a) and Consolidated Unit 35-003(a)-99 is equivalent to a total risk range between 2×10^{-9} to 4×10^{-5} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml).

Based on an industrial scenario for Consolidated Unit 35-003(j)-99, the HI (0.1) is less than NMED's target level of 1.0, the carcinogenic risk (8×10^{-5}) is slightly above the NMED target level of 1×10^{-5}, and the dose (0.2 mrem/yr) is less than DOE's target dose of 15 mrem/yr. The total dose for an industrial outdoor worker for Consolidated Unit 35-003(j)-99 is equivalent to a total risk of 3×10^{-6} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml).

Based on an industrial scenario for AOC 35-018(a), the HI (0.007) is less than NMED's target level of 1.0, the carcinogenic risk (3×10^{-5}) is slightly above the NMED target level of 1×10^{-5}, and the dose (0.000001 mrem/yr) is less than DOE's target dose of 15 mrem/yr. The total dose for an industrial outdoor worker for AOC 35-018(a) is equivalent to a total risk of 2×10^{-11} based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml).

The following sites pass residential screening: SWMU 35-002, SWMU 35-004(a), SWMU 35-004(h), SWMU 35-011(d), SWMU 35-014(a), and SWMU 35-014(f).

The following sites pass industrial screening: SWMU 35-009(a), SWMU 35-015(a), and Consolidated Unit 35-003(a)-99.

The estimated cancer risks are the result of PAHs, which are located under or adjacent to asphalt. The cancer risks are confined to areas of Consolidated Unit 35-003(j)-99 and AOC 35-018(a) where the industrial scenario does not reflect a realistic exposure. Given the uncertainties related to exposure and use, the cancer risks are overestimated and do not pose potential unacceptable risks to human health.

F-3.5 Ecological Risk

F-3.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods, Revision 2" (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present in the Mesa Top Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors include the following:

- a plant
- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)

- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and avian carnivore [surrogate for T&E species])

The rationale for these receptors is presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The ecological screening levels (ESLs) are derived for each of these receptors where information was available. The ESLs are based on similar species, and derived from experimentally determined NOAELs, lowest-observed-adverse-effect levels (LOAELs), or doses lethal to 50% of the population (LD_{50}). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and toxicity reference values (TRVs), is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on the general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the Mesa Top Subarea.

The Mesa Top Subarea is located in a developed area, and the cover consists primarily of asphalt, building and other structure footprints, and gravel. Bare areas consist primarily of fill. Open areas within the developed area contain native and nonnative grasses, forbs, trees, and shrubs, but these areas provide limited and fragmented habitat. The area is nominally within the core habitat for the Mexican spotted owl, a T&E species, but industrial development of the mesa-top limits the value of the area.

Because of the extensive development of the Mesa Top Subarea, the surface is highly impermeable. Some areas collect water and contribute to relatively large volumes of runoff into the canyons to the north, south, and east. Large amounts of fill required to level the developed area contribute to a high erodibility at the mesa edges. To the north, surface water transport terminates on a bench above the bottom of Mortandad Canyon. To the south, surface water transport terminates in the bottom of Ten Site Canyon. There is no potential for exposure to aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head. The potential contact with contaminants is by root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation.

F-3.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between 0–5 ft bgs (LANL 2004, 087630) from the Mesa Top Subarea SWMUs, AOCs, and consolidated units (Appendix D Tables D-2.12-5, D-2.12-12, and D-2.12-17). Tuff was included in the screening assessment because some of it may be crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify chemicals of potential ecological concern (COPECs) for the Mesa Top Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the representative concentrations (95% UCLs or maximum detected concentrations) to the ESLs. The hazard index (HI) is a sum of HQs. An HI greater than 1.0 is an indication of potential adverse impacts. The COPCs with HQs greater than 0.3 are identified as COPECs, and are evaluated further. The ESLs for terrestrial receptors were obtained from the ECORISK Database, Version 2.2 (LANL 2005, 090032), and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentration with the final (minimum) ESL for the Mesa Top Subarea are shown in Table F-3.5-1. Barium, boron, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, titanium, zinc, acenaphthene, Aroclor-1248, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, bis(2-ethylhexyl)phthalate, chrysene, 4,4'-DDT, di-n-butylphthalate, 2-methylnaphthalene, naphthalene, and phenol had HQs greater than 0.3 and are retained as COPECs.

There are no ESLs for ethylbenzene; 4-isopropyltoluene; 4-methyl-2-pentanone; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; trichlorofluoromethane; 1,2,4-trimethylbenzene; and

1,3,5-trimethylbenzene. As a result, these analytes are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-3.5-2. The HQ for each COPEC/receptor combination, as well as the HIs for each receptor, was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

F-3.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the Mesa Top Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Mesa Top Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPCs was not determined as part of the investigation, largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species not likely found in the environment. The inorganic, radionuclide, and organic COPECs are generally not 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathways

Most of the Mesa Top Subarea is covered with buildings, paved for roads and parking lots, or gravel for roads and parking lots. As a result, very little area is available to ecological receptors. This results in an overestimation of the potential risk because most of the concentrations of COPECs are unavailable to ecological receptors.

The representative concentrations used in the calculations of HQs were the 95% UCLs or the maximum detected concentration in the soil/tuff to a depth of 5 ft, thereby conservatively estimating the representative concentrations of each COPC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This results in an overestimation of the potential exposure and risk because COPECs varied across the site and were generally infrequently detected.

Background Concentrations

The ecological screening assessment is based on the exposure of ecological receptors to contamination at a depth of 0–5 ft bgs. Table F-3.5-3 shows the range of tuff and soil background concentrations for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the EPC and the range of background concentrations, barium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc are similar to background and are eliminated as COPECs.

Area Use Factors

In addition to the direct comparison of the representative concentration with the ESL, area use factors (AUFs) are used to account for the amount of time that a receptor is likely to spend within the contaminated areas based on the size of the receptor's HR. The AUFs for individuals were developed by dividing the size of the area (1.66 ha) of the site by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF for the Mexican spotted owl is 0.0045. Based on the application of the AUF for the Mexican spotted owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.1).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations, rather than on an individual basis, except in the case of T&E species (EPA 1999, 070086), specifically the Mexican spotted owl. One approach to address the potential effects on populations on the Mesa Top Subarea is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. This calculation is based on the individual receptor home range (HR) and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. As a result, the population area can be derived by $\pi(3.6\sqrt{HR})^2$ or approximately 40HR.

The area of the Mesa Top Subarea is approximately 7.45 ha, but the area related to the SWMUs is a combined 1.66 ha, or 22% of the total area. The population area use factors (PAUFs) for each receptor are estimated by dividing the SWMU-related area by the population area of each receptor population (Table F-3.5-4). The resulting factor is multiplied by the receptor HI to evaluate the population (Table F-3.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-3.5-5).The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. Based on the PAUF assessment, the adjusted HIs for the Mesa Top Subarea are <0.01 for the red fox, 0.01 for the kestrel, 0.3 for the herbivorous robin, 5 for the omnivorous robin, 9 for the insectivorous robin, 0.04 for the cottontail, 2 for the shrew, and 5 for the deer mouse (Table F-3.5-5). The HIs for the red fox, the kestrel, the herbivorous robin, and the cottontail are less than 1.0; as a result, these receptors are not adversely affected by the COPECs.

COPECs Contributing to PAUF-Adjusted HIs Greater Than 1

Use of the PAUF does not take into account a few elevated concentrations at some of the sampling locations; instead, it assumes the COPECs are uniformly distributed across the site. COPECs detected once or only in a few locations are unlikely to impact a receptor population. These COPECs include Aroclor-1248, Aroclor-1254, 4,4'-DDT, phenol, and di-n-butylphthalate.

Aroclor-1248. Aroclor-1248 was detected once (0.072 mg/kg, location 35-02535, 3–4 ft) in 53 samples within 0–5 ft bgs. This location is covered by asphalt, indicating that there is no complete pathway to ecological receptors. Aroclor-1248 is eliminated as a COPEC.

Aroclor-1254. Aroclor-1254 was detected once (1.3 mg/kg, location 35-02568, 0.5–1.5 ft) in 53 samples within 0–5 ft bgs. This location is covered by asphalt, indicating that there is no complete pathway to ecological receptors. Aroclor-1254 is eliminated as a COPEC.

DDT[4,4'-]. DDT[4,4'-] was detected once (0.10 mg/kg, location 35-22928, 4–4.5 ft) in seven samples within 0–5 ft bgs. This location is covered by asphalt, indicating that there is no complete pathway to ecological receptors. DDT[4,4'-] is eliminated as a COPEC.

Phenol. Phenol was detected once (0.048 mg/kg, location 35-02534, 1–2 ft bgs) in 100 samples within 0–5 ft bgs. The EPC (0.857 mg/kg) is greater than the detected concentration (0.048 mg/kg). If the detected concentration is used in the ecological screening, the maximum HQ is 0.06, which indicates that phenol does not pose a potential risk to ecological receptors. Additionally, location 35-02534 is covered by asphalt, indicating that there is no complete pathway to ecological receptors. Phenol is eliminated as a COPEC.

Di-n-butylphthalate. Di-n-butylphthalate was detected twice in 100 samples (0.15 mg/kg, location 35-02534, 1–2 ft, and 0.052 mg/kg, location 35-02290, 1–2 ft). The EPC is 0.58 mg/kg, which is higher than the maximum detected concentration (0.15 mg/kg). If the maximum detected concentration is used in the ecological screening, the maximum HQ is 7 for the omnivorous robin. Locations 35-02534 and 35-02290 are covered by asphalt, indicating that there is no complete pathway to ecological receptors. Additionally, the maximum detected concentration for di-n-butylphthalate is less than concentrations reported in Mortandad Canyon as part of the Mortandad Canyon investigation report (LANL 2006, 094161). The maximum di-n-butylphthalate concentration in Mortandad Canyon investigation report was reported as 3 mg/kg (LANL 2006, 094161), which is greater than the maximum detected concentration in the Mesa Top Subarea (0.15 mg/kg). Field studies on avian populations of Southwestern willow flycatcher and bluebirds in Mortandad Canyon were conducted, and no differences in population density, eggshell thickness, or reproductive classes were noted in the report. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon. Therefore, no potential adverse ecological effects from di-n-butylphthalate to avian species are likely. Di-n-butylphthalate is eliminated as a COPEC.

Naphthalene. Naphthalene was detected in five out of 102 samples at a maximum concentration of 5.4 mg/kg. The remaining four samples were less than 0.7 mg/kg. The one detect of 5.4 mg/kg is unlikely to affect ecological populations. The concentrations of the remaining four samples are less than concentrations reported in Mortandad Canyon as part of the Mortandad Canyon investigation report (LANL 2006, 094161). The maximum naphthalene concentration in Mortandad Canyon was reported as 1.2 mg/kg, which is greater than the maximum detected concentration in the Mesa Top Subarea. Field studies on small mammalian populations in Mortandad Canyon were conducted, and no differences in population density, sex ratio, or reproductive classes were noted in the report. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon.

Therefore, no potential adverse ecological effects from naphthalene to small mammals are likely. Naphthalene is eliminated as a COPEC.

Boron. Boron was detected in four of five samples at a maximum concentration of 4.7 mg/kg. Boron is a naturally occurring element found throughout the environment. Therefore, boron is eliminated as a COPEC.

Acenaphthylene. Acenaphthylene was detected in eight of 100 samples. The EPC for acenaphthylene (1.31 mg/kg) is similar to concentrations reported in Mortandad Canyon as part of the Mortandad Canyon investigation report (LANL 2006, 094161). The maximum acenaphthylene concentration in Mortandad Canyon was reported as 1.8 mg/kg, which is greater than the EPC concentration. Field studies on plant populations in Mortandad Canyon were conducted, and no differences in abundance, diversity, seedling germination, and growth were noted in the report. The results of the plant studies indicated no adverse ecological effects from contaminants in Mortandad Canyon. Therefore, no potential adverse ecological effects from acenaphthylene to plants are likely. Acenaphthylene is eliminated as a COPEC.

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected in 30 of 100 samples. The EPC for bis(2-ethylhexyl)phthalate (0.71 mg/kg) is similar to concentrations reported in Mortandad Canyon as part of the Mortandad Canyon Investigation Report (LANL 2006, 094161) and Acid Canyon as part of the Los Alamos and Pueblo Canyons investigation report (LANL 2005, 091818). The maximum bis(2-ethylhexyl)phthalate concentration in Mortandad Canyon was reported as 0.55 mg/kg. The maximum bis(2-ethylhexyl)phthalate concentration in Acid Canyon was reported as 2 mg/kg. Field studies on avian and small mammal populations were conducted, and no adverse ecological effects from contaminants were detected. Therefore, no potential adverse ecological effects from bis(2-ethylhexyl)phthalate to avian populations or small mammals are likely. Bis(2-ethylhexyl)phthalate is eliminated as a COPEC.

Table F-3.5-6 shows the remaining COPECs and receptors with the HQs adjusted for PAUF. The PAUF-adjusted HIs for the robin, the cottontail, the shrew, deer mouse, the earthworm, and the plant are less than 1.0, indicating that there is no potential ecological risk to these receptors. The plant ESL is not a good indicator of potential risk because where there is no asphalt, vegetation is abundant and does not appear stressed. The remaining COPECs were also detected under either asphalt or gravel, providing no complete pathway to ecological receptors and were detected infrequently (14% or fewer samples).

Combined Population Areas

Use of the combined SWMU and AOC areas (1.66 ha) as the population area overestimates the risk because it assumes that the receptors remain in the smaller area within the Mesa Top Subarea. In addition, the SWMUs are spread out across the subarea (Figure F-3.2-1 presents an index map of the Mesa Top Subarea). The SWMUs are also separated by buildings and paved and gravel areas, thereby overestimating the exposure to COPECs.

DOE Tier 1 Bioconcentration Guides

The DOE Tier I Bioconcentration Guide (BCG) is a lower value for cesium-137 (20.8 pCi/g) than the ECORISK Database final ESL (680 pCi/g). If the DOE Tier I BCG is used, the HQ increases from <0.01 (using LANL 2004, 087630) to 0.01 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more

representative than the BCG comparison. In addition, within this subarea, cesium-137 is under an asphalt-and-gravel parking area, resulting in limited or no exposure.

The DOE Tier I BCG is a lower value for strontium-90 (22.5 pCi/g) than the ECORISK Database final ESL (560 pCi/g). If the DOE Tier I BCG is used, the HQ increases from 0.23 (using LANL 2004, 087630) to 5.8 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison. In addition, within this subarea, strontium-90 is under an asphalt-and-gravel parking area, resulting in limited or no exposure.

Chemicals without ESLs

There are no ESLs for ethylbenzene, and this chemical cannot be assessed quantitatively for potential ecological risk. Ethylbenzene was detected in one of 53 samples within 0–5 ft bgs (0.002 mg/kg, location 35-02535, 3–4 ft). If benzene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that ethylbenzene does not pose a potential risk to receptors.

There are no ESLs for 4-isopropyltoluene, and this chemical cannot be assessed quantitatively for potential ecological risk. Isopropyltoluene[4-] was detected in one of 41 samples within 0–5 ft bgs (0.002 mg/kg, location 35-02535, 3–4 ft). If toluene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that 4-isopropyltoluene does not pose a potential risk to receptors.

There are no ESLs for 4-methyl-2-pentanone, and this chemical cannot be assessed quantitatively for potential ecological risk. Methyl-2-pentanone(4-) was detected in one of 53 samples within 0–5 ft bgs (0.0125 mg/kg, location 35-22928, 4–4.5 ft). The NMED residential SSL is 5510 mg/kg, which indicates low potential toxicity from this chemical. As a result, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for TPH-DRO, and this chemical cannot be assessed quantitatively for potential ecological risk. TPH-DRO was detected in 14 of 55 samples within 0–5 ft bgs, and the EPC is 73.8 mg/kg. The TPH-DRO is detected infrequently under the asphalt. As a result, TPH-DRO does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 1,1,2-trichloro-1,2,2-trifluoroethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichloro-1,2,2-trifluoroethane(1,1,2-) was detected in one of 41 samples within 0–5 ft bgs (0.002 mg/kg, location 35-02496, 1–2 ft). The NMED residential SSL is 3280 mg/kg, which indicates low potential toxicity from this chemical. As a result, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for trichlorofluoromethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichlorofluoromethane was detected in nine of 53 samples at concentrations less than 0.017 mg/kg. The NMED residential SSL is 588 mg/kg, which indicates low potential toxicity from this chemical. As a result, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 1,2,4-trimethylbenzene, and this chemical cannot be assessed quantitatively for potential ecological risk. Trimethylbenzene(1,2,4-) was detected in one of 41 samples within 0–5 ft bgs (0.003 mg/kg, location 35-02535, 3–4 ft). If benzene is used as a surrogate, a maximum HQ of <0.01 is

generated for all receptors, indicating that 1,2,4-trimethylbenzene does not pose a potential risk to receptors.

There are no ESLs for 1,3,5-trimethylbenzene, and this chemical cannot be assessed quantitatively for potential ecological risk. Trimethylbenzene(1,3,5-) was detected in one of 41 samples within 0–5 ft bgs (0.002 mg/kg, location 35-02535, 3–4 ft). If benzene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that 1,3,5-trimethylbenzene does not pose a potential risk to receptors.

F-3.5.4 Interpretation

Based on the ecological screening assessment for the Mesa Top Subarea, 32 COPECs (including 8 COPECs without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the lack of complete exposure pathways, the area of contamination, the relative toxicity of related compounds, and the infrequency of detected concentrations.

F-4.0 TEN SITE SLOPE SUBAREA

F-4.1 Site Descriptions

The Ten Site Canyon slope below TA-35 faces south and is relatively steep, decreasing from 7200 ft to 7090 ft over 100–200 horizontal ft (LANL 1997, 056835). The upper slope consists of fill material several yards deep that was added to level the mesa top for industrial development. The fill material is heavily eroded in places as a result of heavy runoff from asphalt parking lots, roads, roof tops, and facility discharges. About 10–25% of the upper slope is bare tuff outcrops or bare fill. The area along the edge of the mesa still retains some of the original vegetative cover.

F-4.1.1 Surface Conditions

The Ten Site Canyon slope is south-facing with several deeply incised drainage channels. The slope varies from near-vertical cliffs to slopes of approximately 20%. The surface material consists of mostly thin soils and colluvium over tuff, with abundant sediment in the drainages and in alluvial fans and terraces near the bottom of the slope. Exposed bedrock is common, especially on the upper parts of the slope.

Much of the slope is sparsely vegetated, with higher vegetation density in the drainages. Vegetation consists of piñon pine, juniper, and oak, with an understory community of native grasses and forbs. Ponderosa pines are also present in limited numbers.

F-4.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Ten Site Slope Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207), and has been further determined using geologic logs from boreholes drilled at or near the site.

The predominant rock unit at the surface is unit 3 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100–150 ft thick on the mesa top. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is

approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below Qbt 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30–40 ft thick. The lowest unit encountered is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lie the Guaje Pumice Bed (approximately 35 ft thick) followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area.

There are no known subsurface human-made structures in the Ten Site Slope Subarea.

F-4.1.3 Groundwater Conditions

The top of the regional aquifer is approximately 1100–1200 ft bgs in the Ten Site Slope Subarea (see section 5.1.4 in the report for more discussion of groundwater conditions). Characterization well R-14, in Ten Site Canyon, a short distance east of the Ten Site Slope Subarea, encountered groundwater at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

F-4.1.4 Surface Water Conditions

No permanent surface water exists in the Ten Site Slope Subarea. Occasional surface runoff occurs as a result of snowmelt and seasonal thunderstorms that can produce significant rainfall in short time periods. Surface runoff from the mesa top is also discharged from storm drains at several points along the length of the slope. Surface runoff on the slope is generally concentrated in shallow drainage channels with steep gradients. A narrow, well-defined ephemeral channel at the bottom of the canyon drains from west to east and forms the lower boundary of the Ten Site Slope Subarea.

Surface water site assessments were performed for the Ten Site Slope SWMUs, AOCs, and consolidated units between 1997 and 2004. These assessments use subscores for site factors, such as topographic location, slope, evidence of runoff, and run-on to arrive at a single score (ranging from 0–100) for each site. This score indicates the potential for erosion and sediment transport, with lower scores indicating lower potential for erosion. The SWMUs, AOCs, and consolidated units in the Ten Site Slope Subarea received scores between 3.6 and 96, indicating low to high potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

F-4.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-4.2 Sampling Results

The sampling results for the Ten Site Slope Subarea are described in detail in section 6.0 and Appendix D of the report, and are summarized here.

The data used to define the nature and extent of contamination in the Ten Site Slope Subarea were obtained from environmental samples collected in 1993–1994, 1995–1996, 1997, and 2004–2005. Figure F-4.2-1 is an index map of the Ten Site Slope Subarea, which is divided into two map areas (A and B) for a more appropriate scale. Figures F-4.2-2 and 4.2-3 show the SWMUs, AOCs, and consolidated units in each of two map areas within Ten Site Subarea, with sampling locations identified.

F-4.2.1 Summary of Results

The sampling data for the Ten Site Slope Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide BVs and FVs, where available, are from "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 059730).

The representative concentrations used for the screening assessments are either the 95% UCL of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used because the ProUCL program cannot handle negative values. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. The human health risk assessment for the Ten Site Slope Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–1 ft bgs for recreational user and 0–10 ft for the residential user; the ecological risk assessment for the Ten Site Slope Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–5 ft bgs. Appendix D Tables D-3.1-1 through D-3.9-3 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 6.2-1 in the main text. Figures F-4.2-4 and F-4.2-5 show the locations of soil, sediment, and tuff samples in which inorganic chemicals were detected above BVs or were detected without BVs.

Radionuclides

The radionuclide COPCs for each SWMU, AOC, and consolidated unit, and the subarea are presented in Table 6.2-1 in the main text. Figures F-4.2-6 and F-4.2-7 show the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected but do not have BVs, or were detected at depths greater than 6 in. (americium-241; plutonium-238, -239; strontium-90; and tritium).

Organic Chemicals

The identification of COPCs for organic chemicals is based on detection status, and for each SWMU, AOC, and consolidated unit, and the subarea are presented in Table 6.2-1 in the main text. Figures F-4.2-8 and F-4.2-9 show the organic COPCs.

F-4.2.2 History of Releases

SWMUs 35-016(j) and 35-016(n) are liquid/steam releases associated with stormwater outfalls and surface drainages; Consolidated Unit 35-016(c)-00, 35-016(a)-00 and SWMUs 35-016(b) are cooling water and process outfalls; and SWMUs 35-009(a,b,e) are septic systems and drainlines that released

liquids to the hillslopes. The volumes associated with these releases are undocumented. Liquid releases potentially discharge contaminants associated with a process, or remobilize surface contaminants associated with other SWMUs. Storm-water-related releases are tied to storm and snowmelt events.

Consolidated Unit 35-004(g)-00 [consisting of SWMUs 35-004(g) and 35-004(m)], container storage areas, and Consolidated Unit 35-014(g)-00 [consisting of SWMUs 35-014(g1) and 35-014(g2)], a small localized oil spill, occurred on asphalt-paved areas. They range in size from a few ft^2 to several hundred ft^2. Based on the evidence of staining present at these sites, the releases have been limited to relatively small volumes; therefore, the potential for extensive lateral migration of contaminants away from the immediate region of the storage area is low. Potential contaminants associated with the storage areas and stains collectively include dielectric and other oils, rags, alcohol, organic chemicals, and iron pellets.

AOC 35-014(g3) is an oil spill associated with oil-handling facilities of an unknown volume; however, the volume may be large, considering the size of the associated structures and the extent of physical staining present at the site. This spill has impacted relatively large areas on the mesa top (several hundred ft^2), and flow onto the adjacent hillslopes may have been both sheet flow and flow confined to drainages. The potential contaminants associated with this spill include PCB-containing dielectric oils.

F-4.2.3 Nature and Extent

The Aggregate SAP (LANL 2002, 073092), approved by NMED (2003, 078145), stipulated additional sampling at the following SWMUs to complete the data set and determine the nature and extent of contamination. The Ten Site Slope Subarea was mapped to distinguish 11 separate drainage channels. Figure F-4.2-1 is the index map for the two sampling areas in Ten Site Slope Subarea (Figures F-4.2-2 and F-4.2-3).

Consolidated Unit 35-004(g)-00

Additional samples needed to be collected at Consolidated Unit 35-004(g)-00, consisting of SWMU 35-009(b), a former septic system, and SWMU 35-004(g), a former outdoor storage area, and analyzed for TAL metals, SVOCs, VOCs, PCBs, and alpha and gamma spectroscopy, especially at the channel's alluvial fan and within the old leach field, to complete the data set (Figure F-4.2-3). Additional samples needed to be collected from the south end of the leach field. Four boreholes were advanced and sampled in the leach field to a 30-ft depth to determine vertical and lateral extent of contamination. In accordance with the approved Aggregate SAP (LANL 2002, 073092), one transect was sampled at the base of the slope in the alluvial fan to determine the vertical and lateral extent of contamination.

The following locations were sampled in 2004:

- borehole 35-22937, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- borehole 35-22938, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- borehole 35-22939, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- borehole 35-22940, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- auger hole 35-02100 was resampled at 1–1.5 ft bgs
- transect 35-23284, samples collected at 0–0.59 ft bgs and 1.31–1.64 ft bgs

Inorganic Chemicals. Zinc was the only inorganic chemical detected at a concentration greater than BV at Consolidated Unit 35-004(g)-00 in the earlier samples (Figure F-4.2-5). Copper was detected in only one

of the 2004 samples (12.8 mg/kg, location 35-22938, 19–20 ft) greater than its BV (4.66 mg/kg), but it was not detected at a concentration greater than its BV in the deeper sample at this location. None of the transect samples reported any inorganic chemicals detected ay concentrations greater than their respective BVs. Cadmium was reported with a detection limit greater than BV at location 35-23284. However, the detection limit is only slightly above the BV (0.56 mg/kg versus 0.4 mg/kg), and does not affect extent. Therefore, nature and extent are defined for the inorganic chemicals.

Radionuclides. Radionuclides were detected in the 1994 and 1997 samples greater than their BVs or FVs (Figure F-4.2-7). Of the 12 samples collected within the 2004 boreholes, only 1 sample had a detection of uranium-235 (0.1 pCi/g, location 35-22939, 9–10 ft), which is above the tuff BV of 0.09 pCi/g but below the BV in the deeper samples. None of the 2004 samples within the site boundary reported detected concentrations of plutonium-239. At transect location 35-23284, plutonium-239 (0.16 pCi/g, 0–0.59 ft) and uranium-238 (2.82 pCi/g, 0–0.59 ft) were detected in the surface sample but not in the deeper sample. The concentrations of plutonium-239 and uranium-238 are slightly above sediment FV or BV, at 0.068 and 2.29 pCi/g, respectively. No additional sampling for extent down the drainage is warranted. Because the 2004 boreholes are sampled deeper than the 1994 and 1997 boreholes, vertical extent of the radionuclides is defined.

Organic Chemicals. No pesticides, PAHs, VOCs, or SVOCs were detected in the 2004 leachfield samples (locations 35-22937, 35-22938, 35-22939, and 35-22940) (Figure F-4.2-9). Aroclor-1254 was detected (0.0021 mg/kg) at 19–20 ft at location 35-22937, but it was not detected in the deeper sample. Two PCBs (Aroclor-1254 and Aroclor-1260) and two PAHs (fluoranthene and pyrene) were detected at trace levels (0.006 and 0.0055 mg/kg, and 0.0234 and 0.0199 mg/kg, respectively) in the surface sample at location 35-23284, but all concentrations were less than the EQL (0.3 mg/kg). Because the organic chemicals were detected infrequently and at low concentrations, nature and extent of contamination are defined for Consolidated Unit 35-004(g)-00.

SWMU 35-009(a)

Additional samples needed to be collected at SWMU 35-009(a), a sanitary septic system, and analyzed for TAL metals, SVOCs, PCBs, and alpha and gamma spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-4.2-3). Three boreholes were advanced south of the old septic system and sampled to a depth of 30 ft. Two transects, shown in Figure 3.2-4 in the approved SAP (LANL 2002, 073092, p. 149), were sampled to define vertical and lateral extent.

Samples were collected in 2004 from the following locations:

- borehole location 35-22942, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- borehole location 35-22943, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- borehole location 35-22959, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- location 35-23280, samples collected at 0.43–1.41 ft bgs and 1.41–1.84 ft bgs
- location 35-23282, samples collected at 0–0.62 ft bgs and 0.62–1.31 ft bgs

Inorganic Chemicals. To define extent of the inorganic chemicals, the 2004 boreholes were sampled at greater depths than the 1993, 1994, and 1997 samples (Figure F-4.2-5). Only one of the boreholes, location 35-22943, had detected concentrations of inorganic chemicals greater than their respective BVs. Mercury (0.12 mg/kg) was detected greater than its BV from the 9–10-ft-depth interval, but was not detected in the deeper samples. Lead (27.7 mg/kg) was detected above its BV (11.2 mg/kg) from the 29–30-ft-depth interval, but it was not detected in any of the other boreholes. One of the transects,

location 35-23280, had detected concentrations of chromium (13.5 mg/kg), copper (101 mg/kg), mercury (1.05 mg/kg), silver (4.51 mg/kg), and zinc (96.3 mg/kg) greater than their BVs in the 0.43–1.41 ft sample, but only copper (43 mg/kg), mercury (0.38 mg/kg), and zinc (72.1 mg/kg) were detected at concentrations greater than their respective BVs but at lower concentrations in the sample from 1.41–1.84 ft. This location is near the Ten Site channel, and the extent of copper, mercury, and zinc will be addressed by sampling in Mortandad Canyon. No inorganic chemicals were detected at concentrations greater than their respective BVs in the transect at location 35-23282. Thus, nature and extent have been defined for inorganic chemicals at SWMU 35-009(a).

Radionuclides. Radionuclides were detected in the 1994 and 1997 samples, as well as in the 2004 samples (Figure F-4.2-7). No radionuclides were detected at concentrations greater than their respective BVs in the western-most borehole, location 35-22942. In the central borehole, location 35-22959, tritium was detected at low concentrations at the 9–10-ft-depth interval (0.04 pCi/g), at the 19–20-ft-depth interval (0.06 pCi/g), and at the 29–30-ft-depth interval (0.19 mg/kg); uranium-235 was detected (0.10 pCi/g) above BV (0.09 pCi/g) once at the 19–20-ft-depth interval, and was not detected greater than BV in the deepest sample (29–30 ft). Plutonium-239, strontium-90, americium-241, cesium-134, cesium-137, ruthenium-106, europium-152, and sodium-22 were detected in the 1994 and/or the 1997 samples, but were not detected or were not detected greater than BVs in the 2004 samples. Sample data from 1997 indicated radionuclides were detected greater than their respective BVs in the eastern boreholes, mainly at location 35-02538. In borehole location 35-22943, located slightly downgradient of location 35-02538, only uranium-235 (0.1 pCi/g) was detected greater than its BV (0.09 pCi/g). The vertical extent of the radionuclides has been defined, based either on detected concentrations at the bottom of each borehole or very low detected concentrations in the 2004 samples.

Transect locations 35-23280 and 35-23282 had detected concentrations of plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 above BVs. The samples from location 35-23282, located downgradient of location 35-23280, had lower detected concentrations of plutonium-238 (0.03 pCi/g), plutonium-239 (0.28 pCi/g), uranium-234 (3.97 pCi/g), and uranium-235 (0.21 pCi/g), indicating a decreasing trend. These analytes were not detected in the deeper sample (0.62–1.31 ft). Additional sampling is not warranted because the Mortandad Canyon investigation report defined extent of radionuclides (LANL 2006, 094161).

Organic Chemicals. PCBs were detected within the 2004 boreholes (Figure F-4.2-9) but at low concentrations (less than 0.05 mg/kg). Aroclor-1254 was detected only at location 35-22959 (0.013 mg/kg, 29–30 ft) and at location 35-22942 (0.039 mg/kg, 29–30 ft). Aroclor-1260 was detected at location 35-22942 (0.05 mg/kg, 29–30 ft) but was not detected in borehole location 35-22943. Because the PCBs were detected at concentrations below the EQLs (0.3 mg/kg), the vertical extent of PCBs has been defined.

Aroclor-1260 was detected in transect location 35-23280 (1.26 mg/kg, 0.4–1.41 ft and 0.89 mg/kg, 1.4–4.84 ft) and at location 35-23282 (0.01 mg/kg, 0–0.62 ft). Aroclor-1254 was detected in transect location 35-23280 (0.39 mg/kg, 0.4–1.41 ft and 0.25 mg/kg, 1.4–4.84 ft) and at location 35-23282 (0.002 mg/kg, 0–0.62 ft). The concentrations indicate a decreasing trend toward the Ten Site channel, defining lateral extent into the canyon. Sampling will be conducted in Mortandad Canyon.

Concentrations of VOCs were not detected within the borehole samples. Acetone was detected within a sample from transect location 35-23280 (0.11 mg/kg, 0.4–1.41 ft), and was not detected at transect location 35-23282. Isopropyltoluene[4-] was detected in samples from location 35-23280 (0.094 mg/kg, 0.4–1.41 ft and 0.003 mg/kg, 1.4–1.84 ft) and in samples from location 35-23282, but at concentrations less than the EQL (0.005 mg/kg). Toluene and 1,1-dichloroethene were detected at locations 35-23280

and 35-23282, but at concentrations less than the EQLs (0.005 mg/kg). Nature and extent have been defined for the VOCs at SWMU 35-009(a).

Bis(2-ethylhexyl)phthalate was detected at a concentration of 4.8 mg/kg (location 35-02035, 1.5–2.5 ft) in the 1994 data. In the 2004 data set, bis(2-ethylhexyl)phthalate was detected at location 35-22942 (0.054 mg/kg, 9–10 ft) but not in the deeper samples or in the other boreholes. It was also detected at location 35-23280 (0.20 mg/kg, 0.43–1.41 ft), which is less than the EQL (0.3 mg/kg). Other SVOCs were detected at concentrations less than the EQLs (0.3 mg/kg). The nature and extent of the SVOCs are defined.

SWMU 35-009(e)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at SWMU 35-009(e), a former outfall from floor drains and sanitary toilet in TA-35-25, and analyzed for TAL metals, SVOCs, PCBs, and alpha and gamma spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-4.2-3).

Samples were collected in 2004 from the following two transects:

- location 35-22966, samples collected at 0–0.5 ft bgs
- location 35-22931, samples collected at 0.25–0.6 ft bgs
- location 35-22967, samples collected at 0–0.4 ft bgs and 0.4–1.08 ft bgs

Inorganic Chemicals. Inorganic chemicals were detected at the 2004 sampling locations (Figure F-4.2-5). The samples from location 35-22931 had detected concentrations of copper (19.7 mg/kg), lead (30.5 mg/kg), mercury (0.6 mg/kg), and zinc (85.9 mg/kg) greater than their respective BVs. The associated transect sampling location 35-22966 had detected concentrations of copper (22.3 mg/kg), lead (33.2 mg/kg), mercury (0.13 mg/kg), selenium (0.55 mg/kg), and zinc (96.9 mg/kg) greater than their respective BVs. The samples from the downgradient location 35-22967 had detected concentrations of copper (35 mg/kg, 0.4–1.08 ft), mercury (0.45 mg/kg, 0–0.4 ft, and 0.18 mg/kg, 0.4–1.08 ft), silver (2.87 mg/kg, 0–0.4 ft), and zinc (94.2 mg/kg, 0–0.4 ft) greater than their respective BVs. The vertical extent at these three locations has been defined because underlying the samples is tuff bedrock, and transport is downslope rather than into the tuff.

The lateral extent of the inorganic chemicals has not been defined by these samples. Sampling location 35-23290, associated with Consolidated Unit 35-016(c)-00, is located farther down the drainage from location 35-22967 that was used to determine extent of the inorganic chemicals. At location 35-23290, copper (13.5 mg/kg, 1.97–2.3 ft) and mercury (0.9 mg/kg, 1.97–2.3 ft) were detected greater than their respective BVs, but, with the exception of mercury, these concentrations are less than the concentrations from the upslope samples. As stated above, this location is near the Ten Site channel, and the extent of mercury will be addressed by sampling in Mortandad Canyon.

Radionuclides. Radionuclides were detected, or were detected above their respective BVs, in the 1995 and 1997 samples, as well as above their respective BVs or FVs in the 2004 samples (Figure F-4.2-7). Within one of the transect locations (35-22931) at the top of the slope, cesium-137 (0.68 pCi/g), plutonium-238 (0.02 pCi/g), plutonium-239 (0.4 pCi/g), and uranium-238 (3.12 pCi/g) were detected at concentrations greater than their respective BVs or FVs, but were not detected above BVs or FVs in the surface sample (location 35-22966). The transect downgradient (location 35-22967) at the edge of SWMU 35-009(e) also had concentrations of cesium-137 (0.13 pCi/g, 0.4–1.08 ft), plutonium-239 (0.29 pCi/g, 0–0.4 ft, and 0.09 pCi/g, 0.4–1.08 ft), and uranium-238 (2.41 pCi/g, 0.4–1.08 ft) detected or

detected greater than their respective BVs or FVs. These samples showed a decreasing trend in the concentrations of radionuclides with distance from the outfall. In addition, the samples from location 35-23290, located farther down the drainage, had no radionuclides detected or detected greater than BVs or FVs. Thus, nature and extent have been defined by the distribution and concentrations of radionuclides.

Organic Chemicals. Organic chemicals were not detected in previous sampling campaigns, but PCBs, PAHs, and one VOC were detected in the samples collected in 2004 (Figure F-4.2-9). The PCBs Aroclor-1254 and Aroclor-1260 decreased in concentration from the upper transect (locations 35-22966 and 35-22931) to the lower transect (location 35-22967). Aroclor-1254 decreased from 2.18 mg/kg (location 35-22931) to 0.04 mg/kg (location 35-22967, 0.4–1.08 ft), and Aroclor-1260 decreased from 10.6 mg/kg (location 35-22931) to 0.28 mg/kg (location 35-22967, 0.4–1.08 ft). Acetone was detected at location 35-22931 (0.0086 mg/kg) but not at locations 35-22967 or 35-22966. Pyrene was detected (0.051 mg/kg) at location 35-22966, but not at location 35-22967. Benzo(g,h,i)perylene (0.019 mg/kg) was detected at location 35-22967 at a concentration below the EQL (0.3 mg/kg). The extent has been defined by the distribution and concentrations of organic chemicals.

Consolidated Unit 35-014(g)-00

Consolidated Unit 35-014(g)-00 [consisting of SWMU 35-014(g1), AOC 35-004(m), AOC 35-014(g2), and AOC 35-016(n)], a stormwater outfall, a storage area, and former oil spills/stained areas, needed additional samples collected and analyzed for TAL metals, SVOCs, and alpha spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-4.2-2). In accordance with the approved Aggregate SAP (LANL 2002, 073092), transects were proposed to determine the vertical and lateral extent of contamination.

Samples were collected in 2004 from the following three transects:

- location 35-23209, samples collected at 0–0.33 ft bgs and 0.72–1.21 ft bgs
- location 35-22974, samples collected at 0.07–0.23 ft bgs and 0.23–0.39 ft bgs
- location 35-22975, samples collected at 0–0.36 ft bgs and 0.36–0.85 ft bgs

Inorganic Chemicals. The 1995 and 1998 samples detected several inorganic chemicals at concentrations greater than BVs in one surface sample (location 35-02170), and only zinc was detected at a concentration greater than BV in one other surface sample (location 35-02569) (Figure F-4.2-4). The vertical extent of inorganic chemicals at locations 35-02169 and 35-02170 is defined by either nondetects or concentrations below BV in the deepest samples at upslope location 35-02596 (2.5-3.5 ft) and the downslope location 35-02287 (1–2 ft). At location 35-02596, zinc was detected above BV only in the surface sample, but was detected below BV in deeper depth samples at this location. In the 2004 samples, inorganic chemicals were detected greater than BVs at location 35-22975 (cadmium, copper, lead, mercury, and zinc), with concentrations decreasing with depth. Zinc was detected above BV at location 35-22974 (58 mg/kg, 0.07–0.23 ft) but was not above BV in the deeper sample. Inorganic chemicals were not detected at concentrations greater than BV at sampling locations 35-23209 and 35-02599, at the toe of the slope. Therefore, the nature and extent have been defined for inorganic chemicals at Consolidated Unit 35-014(g)-00.

Radionuclides. From 1995 to 1998, 33 samples were collected and analyzed for isotopic uranium, and 14 samples were collected and analyzed for isotopic plutonium (Figure F-4.2-6). Radionculides were detected at levels greater than their respective BVs/FVs in these samples collected at eight locations. Uranium-234 (36.4 pCi/g, location 35-02595, 0–0.5 ft and 49.24 pCi/g, location 35-02167, 0–0.5 ft) and

uranium-235 (1.04 pCi/g, location 35-02595, 0–0.5 ft and 1.53 pCi/g, location 35-02167, 0–0.5 ft) were detected in two locations at the top of the slope but were not detected greater than their BVs/FVs in the drainage sample. The drainage sample (location 35-02599) had a detection of plutonium-239 (0.17 pCi/g, 0–0.5 ft) greater than its FV. The alluvial fan transect (location 35-23209) had lower concentrations of plutonium-239 than in the sample from location 35-02599 and had a low concentration of plutonium-239 detected in both sample depths, (0.12 pCi/g and 0.07 pCi/g), which decreased with depth. Thus, extent has been defined for the radionuclides at Consolidated Unit 35-014(g)-00.

Organic Chemicals. No PCBs or VOCs were detected at the origin of the oil spill; therefore, the extent has been defined for PCBs and VOCs. VOCs were detected in one sample at location 35-23209 (Figure F-4.2-8) at concentrations near or below the EQLs (0.005 mg/kg). SVOCs were detected infrequently and at low concentrations (less than 0.7 mg/kg for benzoic acid and less than 0.06 mg/kg for the PAHs). Benzoic acid was detected in only one sample, and the number and concentrations of PAHs were fewer at location 35-23209 than at the top of the slope. TPH-DRO was detected at low concentrations; on the mesa, it was detected at 580 mg/kg, but at the bottom of the drainage (location 35-23209) it was detected at 49.8 mg/kg. The concentrations decreased with depth at the bottom of the drainage. The extent of organic chemical contaminants has been defined by the distribution and concentrations of organic chemicals.

AOC 35-014(g3)

Additional samples needed to be collected at AOC 35-014(g3), a former oil spill (Figure F-4.2-2), and analyzed for TAL metals, SVOCs, and VOCs, especially at the channel's alluvial fan, to complete the data set in accordance with the approved Aggregate SAP (LANL 2002, 073092).

Samples were collected in 2004 from the following five transects:

- location 35-23200, samples collected at 0–0.66 ft bgs and 0.66–1.35 ft bgs
- location 35-23201, samples collected at 0–0.46 ft bgs and 0.46–0.89 ft bgs
- location 35-23203, samples collected at 0–0.2 ft bgs and 0.2–0.49 ft bgs
- location 35-22968, samples collected at 0–0.23 ft bgs and 0.23–0.92 ft bgs
- location 35-22969, samples collected at 0.33–0.62 ft bgs and 0.62–0.98 ft bgs

Inorganic Chemicals. Samples for TAL metals analysis were collected previously at the top of the slope from the 0–12 in. depth (Figure F-4.2-4). Chromium was detected (7.5 mg/kg, location 35-02183, 2–3 ft) at a concentration greater than its BV (7.14 mg/kg) in one sample but within the range of background concentrations (0.25–13 mg/kg). Chromium was not detected greater than BV in any other samples. Zinc was detected in four samples from two of the 2004 sampling locations (73.6 mg/kg, location 35-22968, 0–0.23 ft; 66.7 mg/kg, location 35-22968, 0.23–0.92 ft; 90.5 mg/kg, location 35-23200, 0–0.66 ft; 76.4 mg/kg, location 35-23200, 0.66–1.35 ft) at concentrations greater than BV (60.2 mg/kg), but zinc was not detected greater than its BV in samples farther downslope. No other inorganic chemicals were detected at concentrations greater than their BVs, and the extent of zinc and chromium contamination has been defined; therefore, the nature and extent have been defined for inorganic chemicals at AOC 35-014(g3).

Radionuclides. Radionuclides were detected infrequently and at low levels in the 1995 and 1997 samples, and in the 2004 samples no radionuclides were detected or were detected greater than their BVs/FVs (Figure F-4.2-6). Europium-152 was detected at two locations (0.57 pCi/g, location 35-02489, 1-1.5 ft, and 0.26 pCi/g, location 35-02491, 0–0.5 ft). Cesium-137 was detected twice (0.24 pCi/g, location 35-02487,

1–2 ft and 0.1 pCi/g, location 35-02491, 0.5–1.0 ft). Plutonium-238 was detected in one sample (0.002 pCi/g, location 35-02185, 2–3 ft). The 2004 samples and the 1997 samples farther downslope did not report any detected radionuclides. Therefore, the nature and extent of radionuclides has been defined for AOC 35-014(g3).

Organic Chemicals. The TPH-DRO concentrations from the 2004 samples indicated the maximum TPH-DRO concentration was 11,500 mg/kg (location 35-22969, 0.33–0.62 ft) and decreased with depth to 5800 mg/kg (location 35-22969, 0.62–0.98 ft) (Figure F-4.2-8). The samples collected downslope at location 35-23203 had concentrations of TPD-DRO approximately 2 orders of magnitude less than the concentrations from location 35-22969. Within the western fan, TPH-DRO was detected at a maximum concentration of 147 mg/kg (location 35-23200), and in the middle fan TPH-DRO was detected at a maximum concentration of 4.3 mg/kg (location 35-23201). According to the old and new data, TPH-DRO was not detected in the downslope locations 35-02490 and 35-02492. The extent of the TPH-DRO is defined.

In 1995, two samples were collected for pesticides/PCBs near the top of the slope (locations 35-02183 and 35-02188), and 4,4'-DDT, endrin, aldrin, dieldrin, and endosulfan-I were detected at low concentrations (<0.02 mg/kg), which is less than the EQLs (0.3 mg/kg). The approved SAP did not require additional sampling for pesticides/PCBs because they were detected at trace concentrations, and their concentrations decreased down the drainage to either nondetect or trace levels in location 35-02188. Therefore, the extent has been defined for pesticides/PCBs.

PAHs were detected in the 1997 and 2004 samples. However, water that flows in the drainages is run-off from asphalt roads and parking lots. The PAHs detected at location 35-23201 are fewer, and at lower concentrations, than at location 35-23200. The concentrations are not detected in the deeper sample at this location. PAH concentrations at location 35-02490 are lower than at locations 35-23200 and 35-23201 by as much as one-fifth or are not detected. Based on the distribution of PAHs and the detected concentrations, extent has been defined.

Previously, SVOCs were detected in samples, but vertical extent had not been defined, and there was no SVOC data from one of the three fans at the toe of the slope. Bis(2-ethylhexyl)phthalate was detected approximately 25 ft north of the slope edge at one depth from location 35-22968 (19.5 mg/kg, 0.23–0.92 ft). Bis(2-ethylhexyl)phthalate also was detected approximately at the slope edge at two depths from location 35-22969 (11.2 mg/kg, 0.33–0.62 ft and 9.33 mg/kg, 0.62–0.98 ft). It was not detected in the samples at location 35-23203 but was detected at location 35-0292 at concentrations less than the upgradient samples (locations 35-22968 and 35-22969). Bis(2-ethylhexyl)phthalate also was detected at concentrations below the EQL in the other drainage and decreased downslope.

Benzoic acid was not detected in the 1997 samples, but was detected in 2004 samples. It was detected at a maximum concentration of 1.45 mg/kg (location 35-22968, 0–0.23 ft), and decreased at the down-drainage toe (0.77 mg/kg, location 35-23203, 0–0.2 ft); it was also detected in the other drainage at location 35-23200 (0.64 mg/kg, 0–0.66 ft, and 0.79 mg/kg, 0.66–1.35 ft), but was not detected in down-drainage samples at location 35-02490. Other SVOCs (4-chloro-3-methylphenol, dibenzofuran, diethylphthalate, and phenol) were each detected at only one location in the 2004 samples at concentrations less than the EQLs (0.3 mg/kg). Based on the distribution and concentration of SVOCs, extent has been defined.

In 2004, VOCs were detected infrequently and in low concentrations in the three alluvial fans. At sampling location 35-23200 in the western-most fan, acetone was detected at a concentration of 0.102 mg/kg, and 2-butanone was detected at a concentration of 0.0086 mg/kg, which is less than the EQL (0.005 mg/kg). At sampling location 35-23201 in the middle fan, the following concentrations of VOCs were detected:

acetone at 0.116 mg/kg, 2-butanone at 0.0086 mg/kg, 4-isopropyltoluene at 0.0195 mg/kg, styrene at 0.00053 mg/kg, and toluene at 0.0016 mg/kg. At sampling location 35-23203 in the eastern-most fan of AOC 35-014(g3), the following concentrations of VOCs were detected: acetone at 0.0058 mg/kg, 1,1-dichloroethene at 0.00082 mg/kg, 4-isopropyltoluene at 0.0015 mg/kg and 0.0017 mg/kg, and toluene at 0.00097 mg/kg. Within AOC 35-014(g3), all of the VOC concentrations decrease downslope to nondetects at locations 35-02490 and 35-02492, and are at trace levels (near or below the EQLs) when detected. Therefore, the nature and extent of the VOCs have been defined.

Consolidated Unit 35-016(a)-00

Consolidated Unit 35-016(a)-00 consists of two SWMUs: 35-016(a), an inactive noncontact cooling water outfall, and 35-016(q), an active stormwater outfall (Figure F-4.2-3). In accordance with the approved Aggregate SAP (LANL 2002, 073092), SWMU 35-016(a) needed additional samples collected and analyzed for TAL metals and alpha spectroscopy within the existing outfall channels to complete the data set.

Samples were collected in 2004 from the following three transects:

- location 35-22970, samples collected at 0–0.15 ft bgs
- location 35-22971, samples collected at 0–0.7 ft bgs and 0.7–0.9 ft bgs
- location 35-22972, samples collected at 0–0.85 ft bgs and 0.85–2.0 ft bgs

Additional samples needed to be collected at SWMU 35-016(q) and analyzed for TAL metals, SVOCs, PCBs, and alpha and gamma spectroscopy at the channel's alluvial fan to complete the data set. Samples were collected from one transect to determine the vertical and lateral extent of contamination at the base of the slope within the alluvial fan.

Samples were collected in 2004 from the following transect: location 35-23292, samples collected at 0–0.79 ft bgs, 0.79–1.57 ft bgs, and 1.57–2.03 ft bgs.

Inorganic Chemicals. At Consolidated Unit 35-016(a)-00 (Figure F-4.2-5), inorganic chemicals were detected above their respective BVs in the 2004 transects at the top of the slope (locations 35-23270, 35-23271, and 35-23272) but were not detected at the base of the slope (location 35-23292). In location 35-22970, cadmium (0.58 mg/kg), copper (18.8 mg/kg), lead (25.6 mg/kg), and zinc (113 mg/kg) were detected from 0–0.85 ft. Only zinc (65.1 mg/kg) was detected in the deeper sample (0.85–2 ft), slightly above the range of background concentrations (9-56.2 mg/kg). The samples from the downgradient location (location 35-22971) demonstrated detected concentrations of cadmium (0.88 mg/kg), copper (27.4 mg/kg), lead (32.2 mg/kg), and zinc (167 mg/kg) in the deeper sample (0.7–0.9 ft). The samples from location 35-02395 showed these inorganic chemicals decreased in concentration with depth to within the range of background concentrations. Location 35-02395 was sampled to a depth of 2–3 ft, which is deeper than either location 35-22972 or location 35-22973 was sampled.

Cadmium was reported as not detected at location 35-23292, but with detection limits greater than BV (0.5 mg/kg versus 0.4 mg/kg). The concentration of cadmium decreased at location 35-23292 from concentrations of cadmium in the transects at the top of the slope at location 35-22971 (0.88 mg/kg). The slight difference between the detection limits and the BV does not warrant additional sampling to determine the extent of cadmium. Thus, the nature and extent of inorganic chemicals has been defined.

Radionuclides. No radionuclides were detected, or detected at concentrations greater than their respective BVs, in the 2004 samples; therefore, the nature and extent of radionuclides have been defined.

Organic Chemicals. The organic chemicals at Consolidated Unit 35-016(a)-00 (Figure F-4.2-9) were detected at trace concentrations, most at concentrations less than the EQLs. Bis(2-ethylhexyl)phthalate was detected once at location 35-02107 (0.98 mg/kg, 0–1 ft) but was not detected above the EQL in any other sample. Acetone (0.0068 mg/kg) was detected above the EQL at location 35-23292 (0–0.79 ft) but was not detected in the deeper samples (0.79–1.57 ft and 1.57–2.03 ft). Aroclor-1260 was detected at location 35-23292 only and decreased from 0.036 mg/kg (0.79–1.57 ft) to 0.022 mg/kg (1.57–2.03 ft). Aroclor-1254 was detected at location 35-23292 only and decreased from 0.007 mg/kg (0.79–1.57 ft) to 0.001 mg/kg (1.57–2.03 ft). Because the organic chemicals were detected at trace concentrations, the nature and extent have been defined.

AOC 35-016(b)

Additional samples needed to be collected at AOC 35-016(b), an active photoprocessing effluent outfall, and analyzed for TAL metals, SVOCs, cyanide, and alpha and gamma spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-4.2-3). In accordance with the approved Aggregate SAP (LANL 2002, 073092), two transects were proposed to define vertical and lateral extent of contamination.

The following transects were sampled in 2004:

- location 35-23207 at the base of the slope in the alluvial fan, samples collected at 0–0.39 bgs ft, 0.39–1.05 ft bgs, and 2.95–3.44 ft bgs
- location 35-23205 upslope of 35-23207, samples collected at 0–0.3 ft bgs and 0.3–0.66 ft bgs

Inorganic Chemicals. Lead was detected above its BV inthe only sample collected in 1995 at location 35-02190 (Figure F-4.2-5). The 2004 transects were sampled in sediment deposits. Silver was detected (1.1 mg/kg at 0–0.3 ft and 2.6 mg/kg at 0.3–0.66 ft) at concentrations greater than its BV in samples from location 35-23205. Within the transect at the base of the slope (location 35-23207), copper, lead, silver, and zinc were detected at concentrations greater than their respective BVs in the shallower sample. All but silver were not detected above their respective BVs in the deeper sample. Silver was detected at a lower concentration (approximately half) and only slightly above the BV (1.4 versus 1) in the deeper sample. The extent of inorganic chemical contamination has been defined at AOC 35-016(b).

Radionuclides. Radionuclides (uranium-234, uranium-235, and uranium-238) were detected above their BVs/FVs at one sampling location (35-02549) from 1997, but these radionuclides were not detected in the 2004 sampling location downslope (35-23207) (Figure F-4.2-7). Sample data from location 35-23207 reported that plutonium-238 was detected (0.04 pCi/g, 0.39–1.05 ft, and 0.07 pCi/g, 2.95–3.44 ft). Because uranium-234, uranium-235, and uranium-238 were detected in only one sample each, and not at concentrations greater than BVs in the samples farther downslope, and because plutonium-238 was detected at very low concentrations, the extent of these radionuclides has been defined at AOC 35-016(b).

Organic Chemicals. Organic chemicals were detected in the 2004 samples (Figure F-4.2-9). Bis(2-ethylhexyl)phthalate was detected at a concentration of 0.084 mg/kg in the shallow sample at location 35-23205, and decreased to 0.038 mg/kg in the deeper sample. In addition, PAHs and butylbenzylphthalate were detected in the surface sample at this location, but not in the deeper sample.

At location 35-23207, the deepest sample (2.95–3.44 ft) had the lowest detected concentration (0.075 mg/kg) of bis(2-ethylhexyl)phthalate. PAHs (fluoranthene and pyrene) were detected in the middle sample (0.39–1.05 ft) but not in the deeper sample (2.95–3.44 ft). Thus, the nature and extent of the organic chemicals have been defined at AOC 35-016(b).

Consolidated Unit 35-016(c)-00

As discussed in the approved Aggregate SAP (LANL 2002, 073092), Consolidated Unit 35-016(c)-00, which consists of SWMUs 35-016(c) and 35-016(d) and inactive noncontact cooling water outfalls, needed additional samples collected and analyzed for TAL metals, SVOCs, and alpha and gamma spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-4.2-3).

Samples were collected in 2004 from the following five transects:

- location 35-23287, samples collected at 0–0.1 ft bgs and 0.1–0.89 ft bgs
- location 35-23288, samples collected at 0–0.07 ft bgs and 0.07–0.2 ft bgs
- location 35-23289, samples collected at 0–0.13 ft bgs and 0.36–0.75 ft bgs
- location 35-23290, samples collected at 0–0.49 ft bgs and 1.97–2.3 ft bgs
- location 35-23291, samples collected at 0.46–0.85 ft bgs and 0.85–1.25 ft bgs

Inorganic Chemicals. Inorganic chemicals were detected at concentrations greater than their respective BVs in samples from 1995, 1996, and 2004 (Figure F-4.2-5). The 2004 data from location 35-23287 in the western drainage demonstrate a decreasing trend with depth. Copper (12.1 mg/kg), selenium (0.31 mg/kg), and zinc (60.3 mg/kg) were detected in the surface sample, but only zinc (52.7 mg/kg) was detected in the deeper sample (0.1–0.89 ft) within the range of background concentrations (14-75.5 mg/kg). In the 2004 samples, chromium (12.6 mg/kg, 0–0.07 ft), mercury (0.12 mg/kg, 0.07-0.2 ft), and selenium (0.36 mg/kg, 0.07–0.2 ft) were detected in the transect sample collected from the middle drainage (location 35-23288). Immediately below this soil layer (0.07–0.2 ft) was bedrock, indicating that vertical extent at this location has been defined. No inorganic chemicals were detected greater than BVs in the eastern drainage sampling location 35-23291. Farther downslope, no inorganic chemicals were detected greater than BVs at location 35-23289.

The only inorganic chemicals detected greater than BVs in the bottom of the slope at location 35-23290 were copper (13.5 mg/kg, 1.97–2.3 ft) and mercury (0.9 mg/kg, 1.97–2.3 ft). This location is near the Ten Site channel, and the extent of copper and mercury will be addressed by sampling in Mortandad Canyon.

Radionuclides. Radionuclides were detected in samples collected in 1995 and 1996 in the western portion of Consolidated Unit 35-016(c)-00 at concentrations greater than their BVs and FVs (Figure F-4.2-7). At three locations (35-02396, 35-02397, and 35-02400), the radionuclides were detected, or were detected above their BV/FV, only in the surface sample and not in the deeper sample. For the 2004 samples, radionuclides were detected only at location 35-23291. Plutonium-238 (0.08 pCi/g, 0.46–0.85 ft, and 1.4 pCi/g, 0.85–1.25 ft) and plutonium-239 (0.32 pCi/g, 0.46–0.85 ft, and 0.59 pCi/g, 0.85–1.25 ft) were detected in the surface sample, and their concentrations increased slightly in the deeper sample. Uranium-238 (2.86 pCi/g) was detected in the surface sample above its BV (2.59 pCi/g), but not in the deeper sample. Below the 0.85–1.25 ft sample is tuff bedrock. Sediment transport is more likely to be downslope rather than into the tuff; therefore, the vertical extent has been defined at location 35-23291. None of the radionuclides were detected, or were detected above their BVs/FVs, downgradient at the bottom of the slope in samples from location 35-023290. Therefore, the vertical and lateral extent of radionuclide contamination has been defined.

Organic Chemicals. Organic chemicals were detected infrequently and at low concentrations (Figure F-4.2-9). The maximum concentration for VOCs was 0.014 mg/kg for acetone in the 0.46–0.85 ft sample at location 35-23291, but was not detected in the deeper sample. At location 35-23290 at the bottom of the slope, styrene was detected in the surface sample at a concentration of 0.00054 mg/kg but was not detected in the deeper sample. Isopropyltoluene[4-] was detected in the deeper sample at a concentration of 0.0016 mg/kg; both are below the EQLs (0.005 mg/kg). Other VOCs detected at Consolidated Unit 35-016(c)-00 are 1,1-dichloroethene and toluene but both were detected at concentrations less than the EQLs (0.005 mg/kg).

In the 2004 samples, no PAHs or SVOCs were detected. These 2004 samples define the extent of SVOCs and PAHs detected in the 1995 samples at location 35-02111. In addition, the samples from locations 35-02398 and 35-02399 detected PAHs, but at concentrations less than the EQLs (0.3 mg/kg). The nature and extent of the organic chemicals have been defined for Consolidated Unit 35-016(c)-00.

AOC 35-016(j)

Additional samples needed to be collected at AOC 35-016(j), roof drains and fire-protection outfall water, and analyzed for TAL metals, SVOCs, and alpha and gamma spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-4.2-2). In accordance with the approved Aggregate SAP (LANL 2002, 073092), two transects were sampled—one at the top of the slope and one at the bottom in the alluvial fan—with samples to be collected at two depths to determine both vertical and lateral extent of contaminants.

Samples were collected in 2004 from the following transects:

- location 35-22973, samples collected at 0.03–0.3 ft bgs and 0.3–0.98 ft bgs,
- location 35-23208, samples collected at 0–0.2 ft bgs,
- location 35-23210, samples collected at 0.1–0.66 ft bgs.

Inorganic Chemicals. The sample data from 1995 indicated that arsenic (3 mg/kg, location 35-02192, 2–3 ft) and chromium (10.4 mg/kg, location 35-02192, 2–3 ft) were detected above their BVs, but within the range of background concentrations (Figure F-4.2-4). Copper (12.6 mg/kg, location 35-22973, 0.03-0.3 ft) and selenium (0.307 mg/kg, location 35-23210, 0.1–0.66 ft) were detected above their BVs in the 2004 samples. Copper was slightly above the range of background concentrations. Selenium does not have a range of background concentrations for sediment, but the one detected sample value does not indicate a release. Cadmium was reported as not detected but with detection limits greater than BV (0.5 mg/kg versus 0.4 mg/kg). Cadmium was not detected above BV in the 1995 samples, and the slight difference between the detection limits and the BV does not warrant additional sampling for extent of cadmium. The nature and extent of inorganic chemicals at AOC 35-016(j) are defined.

Radionuclides. Previously, plutonium-239 was detected in one sample (0.08 pCi/g, location 35-02580, 0.67–1.67 ft), but none of the 2004 samples detected any radionuclides (Figure F-4.2-6). Therefore, the nature and extent of radionuclides at AOC 35-016(j) are defined.

Organic Chemicals. The PAHs detected in the 1995 and 2004 samples typically are found in asphalt or tar roofing material over which water traveled before discharging to the outfall (Figure F-4.2-8). In addition to the PAHs, SVOCs and PCBs were detected. Aroclor-1260 (0.003 mg/kg, location 35-23208, 0–0.2 ft) was detected once, at a concentration less than the EQL (0.3 mg/kg).

The PAHs decrease down the drainage from location 35-22973 to locations 35-23208 and 35-23210. In addition, the PAHs decrease with depth at both locations. Benzoic acid is detected at 0.3–0.98 ft at location 35-22973, but not in the shallower sample (0.03–0.3 ft) or downgradient. Bis(2-ethylhexyl)phthalate was detected at locations 35-23208 and 35-23210 at similar concentrations to location 35-22973. The nature and extent for AOC 35-016(j) are defined by the distribution of the organic chemicals and the low concentrations, particularly at locations 35-23208 and 35-23210.

F-4.3 Conceptual Site Model

The conceptual site model for the Ten Site Slope Subarea is described in the Aggregate SAP (LANL 2002, 073092) and is shown in Figure F-3.3-1. With the exception of the engineered subsurface leachfields associated with the septic systems, the SWMUs associated with the hillslope setting can be categorized as surface releases. Two scenarios address contaminant migration: infiltration of contaminants into surface soils and possibly the underlying tuff, and transport of contaminants from surface soils and paved areas on the mesa top to the hillslope drainages.

By design, septic system leachfields release sanitary effluent into a shallow subsurface bed constructed of porous crushed tuff and fill material to facilitate infiltration. Contaminants discharged to sanitary septic systems are likely to have infiltrated underlying tuff, which can then be transported vertically and laterally by saturated flow, unsaturated flow, or fracture flow to greater depths.

The sites associated with the oil spills potentially may have impacted relatively broad areas on the mesa top and hillslopes, and contaminants may not be confined to existing drainage channels. These releases may have resulted in infiltration of contaminants into surface soils and underlying tuff. Contaminants in the surface soils may be transported onto the hillslopes and to the canyon floor. Contaminants in the underlying tuff may be transported vertically and laterally by saturated flow, unsaturated flow, or fracture flow.

Distribution of contaminants associated with these releases on the hillslopes is driven primarily by stormwater and outfall discharge, and is confined predominantly to defined drainage channels. Understanding the physical and chemical process affecting hillslope drainages provides an effective tool for predicting the likely present location of residual contaminants. Contaminants with high solubilities may have been transported beyond the hillslope into the canyon by surface flow. Contaminants with lower solubilities are more likely to sorb onto soils and sediments, preferentially to finer grained particles. Soils and sediments may be deposited in localized “pockets” within drainages. These pockets are areas of accumulation that may represent present contaminant inventory within the drainage. Soils and sediments within the drainage may be subsequently remobilized during higher energy stormwater or discharge events, and deposited preferentially in sediment fans located at the toe of the drainage slope.

The land use in the Ten Site Slope Subarea is currently industrial (LANL 1995, 057224) and recreational, and is expected to remain recreational and industrial for the reasonably foreseeable future. Hiking and biking trails cross through the subarea, and any exposure, would be of relatively short duration. The receptor is a recreational user (hiker or trail user) with exposure pathways for dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1).

Ten Site Slope Subarea is located in a ponderosa pine forest on a south facing, fairly steep, dry slope. The top of the slope consists of foreign fill that has been added to level out the topography for industrial development, and in this area the pines are younger, and nonnative trees and shrubs are more common. Downslope, a more mature ponderosa pine forest exists. The area is within the core habitat for the Mexican spotted owl, a T&E species. Exposure pathways to biota include root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-4.4 Human Health Screening Assessment

F-4.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the "Technical Background Document for Development of Soil Screening Levels, Revision 4" (NMED 2006, 092513). Sample data from 0–1 ft bgs were used in this evaluation, as media (soil, sediment, and tuff) from that depth could be encountered by a recreational user. Sample data from 0–10 ft bgs were used for the residential assessment.

Land use within the Ten Site Slope Subarea is currently industrial (LANL 1995, 057224) and recreational and is expected to remain recreational and industrial for the reasonably foreseeable future. The screening assessment uses a recreational scenario. Although the subarea is designated for industrial use, any industrial use would be periodic and short-term. The industrial worker is assumed to work 8 h/d for 225 d/yr, which is not realistic for the actual use of the subarea. The use of a recreational scenario is more realistic, assuming 1 h/d for 200 d/yr.

The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment at the site is moderate because the site has a steep slope in some areas, making parts of it difficult to use as a hiking or biking trail. Toward the bottom of the slope is a trail that runs essentially parallel to the drainage channel in the bottom of the canyon. During the work day, the site is open to Laboratory workers who may be in this area.

The COPCs are evaluated by comparing the representative concentration with the SSL for each chemical and the SALs for radionuclides. The chemical SSLs are provided in Tables 4.0-1 and 4.0-2 in the investigation report. The SALs are provided in Table 4.0-3 in the report.

The recreational SSLs are derived according to Laboratory guidance (LANL 2007, 094496). The residential SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a screening value for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The SSLs for carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a HQ of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5} risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr, and derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD Version 6.21 (see Table 4.0-3 in the report).

The parameters used to derive the recreational and residential SSLs for chemicals are presented in Table F-4.4-1. The parameters used in deriving the residential and recreational SALs for radionuclides are presented in Tables F-4.4-2 and F-4.4-3.

F-4.4.2 Human Health Screening Assessment Results

The representative concentration for each COPC was compared with the respective residential and recreational SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessment are presented in Appendix D Tables D-3.1-1 through D-3.9-3.

Consolidated Unit 35-004(g)-00

Based on a residential scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-4.4-4), the carcinogenic risk (7×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-5), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-6).

The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-004(g)-00 under a residential scenario.

Based on a recreational scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-4.4-4), the carcinogenic risk (1×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-5), and the dose (0.04 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-6). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-004(g)-00.

SWMU 35-009(a)

Based on a recreational scenario, the HI (0.3) is less than NMED's target level of 1.0 (Table F-4.4-7), the carcinogenic risk (2×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-8), and the dose (0.1 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(a) under a recreational scenario.

SWMU 35-009(e)

Based on a recreational scenario, the HI (1) is equivalent to NMED's target level of 1.0 (Table F-4.4-10), the carcinogenic risk (1×10^{-5}) is equivalent to the NMED target level of 1×10^{-5} (Table F-4.4-11), and the dose (0.1 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-12). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(e) under a recreational scenario.

Consolidated Unit 35-014(g)-00

Based on a residential scenario, the HI (0.2) is less than NMED's target level of 1.0 (Table F-4.4-13), the carcinogenic risk (4×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-14), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-15). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-014(g)-00 under a residential scenario.

Based on a recreational scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-4.4-13), the carcinogenic risk (7×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-14), and the dose (0.2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-15). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-014(g)-00.

AOC 35-014(g3)

Based on a recreational scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-4.4-16), the carcinogenic risk (7×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-17), and the dose (0.05 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-18). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 35-014(g3) under a recreational scenario.

Consolidated Unit 35-016(a)-00

Based on a residential scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-4.4-19), the carcinogenic risk (9×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-20), and the dose (0.5 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-21). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-016(a)-00 under a residential scenario.

Based on a recreational scenario, the HI (0.05) is less than NMED's target level of 1.0 (Table F-4.4-19), the carcinogenic risk (2×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-20), and the dose (0.02 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-21). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-016(a)-00.

AOC 35-016(b)

Based on a residential scenario, the HI (0.2) is less than NMED's target level of 1.0 (Table F-4.4-22), the carcinogenic risk (1×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-23), and the dose (0.4 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-24). The screening assessments indicate no potential for unacceptable risk/dose to human health at AOC 35-016(b) under a residential scenario.

Based on a recreational scenario, the HI (0.04) is less than NMED's target level of 1.0 (Table F-4.4-22), the carcinogenic risk (2×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-23), and the dose (0.01 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-24). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 35-016(b) under a recreational scenario.

Consolidated Unit 35-016(c)-00

Based on a recreational scenario, the HI (0.06) is less than NMED's target level of 1.0 (Table F-4.4-25), the carcinogenic risk (4×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-26), and the dose (0.1 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-27). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-016(c)-00 under a recreational scenario.

AOC 35-016(j)

Based on a recreational scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-4.4-28), the carcinogenic risk (6×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-4.4-29), and the dose (0.003 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-4.4-30). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 35-016(j) under a recreational scenario.

F-4.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs did not affect the assessment.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

The receptor and scenario (recreational) used in the assessment are subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the recreational SSLs are that the potentially exposed individual is a recreational user who is outside for 1 h/d for 200 d/yr for 50 w/yr (LANL 2007, 094496), and assumes that the Laboratory worker (the only recreational user legally allowed in the area) spends the entire hour within the contaminated area. It is unlikely that the recreational user runs or walks within the contaminated area for an entire hour; therefore, the screening assessment overestimates the exposure. As a result, risk, hazard, and dose may be overestimated.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the reasonably expected range.

Toxicity Values

The primary uncertainty associated with screening values relates to derivation of screening values from EPA toxicity values RfDs and SFs (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in the following five areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, (3) interindividual variability in the human population, (4) additive approach, and (5) use of surrogate chemicals.

Extrapolation from animals to humans. The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures, and in determining the NOAEL. The NOAEL/uncertainty factor approach incorporates a factor of 10 to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals generally are unknown, and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects may be overestimated for chemicals that are addressed additively, but that act by different mechanisms and on different target organs.

Use of surrogate chemicals. The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, surrogates were used to establish toxicity values for the following based on structural similarity (NMED 2003, 081172):

- acenaphthylene
- benzo(g,h,i)perylene
- endosulfan I
- 4-isopropyltoluene
- 2-methylnaphthalene

The surrogate chlorophenol is structurally similar to 4-chloro-3-methylphenol.

F-4.4.4 Interpretation

Based on a residential scenario, the maximum HI (0.2) for Consolidated Unit 35-004(g)-00, Consolidated Unit 35-014(g)-00, Consolidated Unit 35-016(a)-00, and AOC 35-016(b) is less than NMED's target level of 1.0. The maximum cancer risk (9×10^{-6}) for Consolidated Unit 35-004(g)-00, Consolidated Unit 35-014(g)-00, Consolidated Unit 35-016(a)-00, and AOC 35-016(b) is less than the NMED target level of 1×10^{-5}. The maximum dose (2 mrem/yr) for Consolidated Unit 35-004(g)-00, Consolidated Unit 35-014(g)-00, Consolidated Unit 35-016(a)-00, and AOC 35-016(b) is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user from Consolidated Unit 35-004(g)-00, Consolidated Unit 35-014(g)-00, Consolidated Unit 35-016(a)-00, and AOC 35-016(b) is equivalent to a total risk range from 2×10^{-6} to 1×10^{-5}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential unacceptable risk/dose to human health within the Ten Site Slope Subarea.

Based on a recreational scenario, the maximum HI (1) for Consolidated Unit 35-016(c)-00, SWMU 35-009(a), SWMU 35-009(e), AOC 35-014(g3), and AOC 35-016(j) is equivalent to NMED's target level of 1.0. The maximum cancer risk (1×10^{-5}) for Consolidated Unit 35-016(c)-00, SWMU 35-009(a),

SWMU 35-009(e), AOC 35-014(g3), and AOC 35-016(j) is equivalent to the NMED target level of 1×10^{-5}. The maximum dose (0.1 mrem/yr) for Consolidated Unit 35-016(c)-00, SWMU 35-009(a), SWMU 35-009(e), AOC 35-014(g3), and AOC 35-016(j) is less than DOE's target dose of 15 mrem/yr. The total dose range for a recreational user from Consolidated Unit 35-016(c)-00, SWMU 35-009(a), SWMU 35-009(e), AOC 35-014(g3), and AOC 35-016(j) is equivalent to a total risk range from 1×10^{-9} to 1×10^{-7}, based on conversion from dose using RESRAD 6.21. The screening assessments indicate no potential unacceptable risk/dose to human health within the Ten Site Slope Subarea.

The following sites pass residential screening: Consolidated Unit 35-004(g)-00, Consolidated Unit 35-014(g)-00, Consolidated Unit 35-016(a)-00, and AOC 35-016(b).

The following sites pass recreational screening: Consolidated Unit 35-016(c)-00, SWMU 35-009(a), SWMU 35-009(e), AOC 35-014(g3), and AOC 35-016(j).

F-4.5 Ecological Risk

F-4.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present on the Ten Site Slope Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors included the following:

- a plant
- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and flesh eater [surrogate for T&E species])

The rationale for these receptors is presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available. The ESLs are based on similar species, and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population (LD_{50}). The derivation of ESLs is based on the approach presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs, is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant, and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species may also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints may be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on these general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the Ten Site Slope Subarea.

Ten Site Slope Subarea is located in a ponderosa pine forest on a south facing, fairly steep, dry slope. The top of the slope consists of foreign fill that has been added to level out the topography for industrial development. In this area, the pines are younger, and nonnative trees and shrubs are more common. Downslope, a more mature ponderosa pine forest exists. The area is within the core habitat for the Mexican spotted owl, a T&E species.

Surface water is the dominant transport mechanism here because of the large surface area of asphalt and rooftops that drain from the mesa top onto this slope. Runoff terminates at the floor of Ten Site Canyon. There is no potential for contamination of aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head.

F-4.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between 0–5 ft bgs (LANL 2004, 087630) from the Ten Site Slope Subarea SWMUs, AOCs, and consolidated units (Appendix D Tables D-3.10-7, D-3.10-14, and D-3.10-21). Tuff was included in the screening assessment because some of it may be crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify COPECs for the Ten Site Slope Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the representative concentrations (95% UCLs or maximum detected concentration) to the ESLs. The HI is the sum of HQs. COPCs with HQs greater than 0.3 are identified as COPECs, and are evaluated further. ESLs for terrestrial receptors were obtained from the ECORISK Database, Version 2.2 (LANL 2005, 090032) and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentrations with the final soil ESLs for Ten Site Slope Subarea are presented in Table F-4.5-1. Antimony, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc are retained as inorganic COPECs. Acenaphthene; Aroclor-1254; Aroclor-1260; benzoic acid, bis(2-ethylhexyl)phthalate; 4-chloro-3-methylphenol; 4,4'-DDE; dieldrin; di-n-butylphthalate; di-n-octylphthalate, endrin; naphthalene; and phenol are retained as organic COPECs.

There are no ESLs for lithium; aldrin; 4,4'-DDD; diethylphthalate; ethylbenzene; 4-isopropyltoluene; styrene; 1,1,2-trichloro-1,2,2-trifluoroethane; and TPH-DRO. These analytes are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-4.5-2. The HQ for each COPEC/receptor combination, as well as the HIs for each receptor, was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected, and provides information on T&E species.

According to Table F-4.5-2, all of the receptors may be potentially impacted by COPECs because they have HIs greater than 1.0.

F-4.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis may result in either adding or removing chemicals from the list of COPECs for the Ten Site Slope Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Ten Site Slope Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation, largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic, radionuclide, and organic COPECs are generally not 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils) or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathways

The representative concentrations used in the calculations of HQs were the 95% UCLs or the maximum detected concentrations in the sediment/soil/tuff to a depth of 5 ft, thereby conservatively estimating the site concentrations of each COPC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This assumption results in an overestimation of the potential risk because COPECs varied across the site and were generally infrequently detected.

Background Concentrations

The ecological screening is based on the exposure of ecological receptors to contamination to a depth of 5 ft bgs. Table F-4.5-3 shows the range of soil, sediment, and tuff background concentrations for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the representative concentrations and the range of background concentrations, antimony, barium, cadmium, chromium, copper, lead, mercury, selenium, and silver are similar to background, and are eliminated as COPECs. The EPC concentration of zinc is twice, or less than twice, background, and therefore, is eliminated as a COPEC.

Area Use Factors

In addition to the direct comparison of the EPC or the maximum detected concentration to the ESL, AUFs are used to account for the amount of time that the receptor is likely to spend within the contaminated areas based on the size of the receptor's HR. The AUFs for individuals were developed by dividing the size of the area (4.1 ha) of the site by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF is 0.011 ha. Based on the application of the AUF for the Mexican spotted owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.7).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations in the Ten Site Slope Subarea is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular, and the dispersal distance is

the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$, or approximately 40HR.

The area of the Ten Site Slope Subarea is approximately 4.1 ha. The PAUFs are estimated by dividing the area by the population area of each receptor population (Table F-4.5-4). The resulting factor is multiplied by the receptor HI to determine if there is a potential impact on the population (Table F-4.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-4.5-5).The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. The HI for the deer mouse is not adjusted because the population area for the deer mouse is smaller than the subarea. Based on the reassessment, the adjusted HIs for the Ten Site Slope Subarea are <0.01 for the red fox, 0.06 for the carnivorous kestrel, 0.05 for the omnivorous kestrel, 0.07 for the cottontail, 1 for the herbivorous robin, 22 for the omnivorous robin, 43 for the insectivorous robin, and 3 for the shrew (Table F-4.5-5). The HIs for the red fox, the kestrel, the cottontail, and the herbivorous robin are less than or equivalent to 1.0; therefore, these receptors are not adversely affected by the COPECs.

COPECs Contributing to PAUF-Adjusted HIs Greater Than 1

Use of the PAUF does not take into account a few high concentrations at some of the sampling locations; instead, it assumes that the COPECs are distributed uniformly across the site. COPECs detected once, or only in a few locations, are unlikely to impact a receptor population.

4-Chloro-3-methylphenol. Chloro-3-methylphenol[4-] was detected in 1 of 96 samples at a concentration of 0.33 mg/kg. Because 4-chloro-3-methylphenol was detected only once, it is not likely to affect adversely ecological receptors. Therefore, 4-chloro-3-methylphenol is eliminated as a COPEC.

Di-n-octylphthalate. Di-n-octylphthalate was detected in 1 of 97 samples at a concentration of 0.018 mg/kg. If the detected concentration is used, the HQs are <0.01 for the red fox and the cottontail, 0.02 for the shrew, and 0.01 for the deer mouse. Additionally, because di-n-octylphthalate was detected only once, it is not likely to affect adversely ecological receptors. Di-n-octylphthalate is eliminated as a COPEC.

Naphthalene. Naphthalene was detected in 3 of 96 samples at a maximum concentration of 0.09 mg/kg. If the maximum detected concentration is used, the HQs are <0.01 or 0.01 for the red fox, kestrel, and the robin; 0.2 for the cottontail; 0.09 for the shrew and the plant; and 0.3 for the deer mouse. Because the HQs are less than 0.3 and infrequently detected, naphthalene is not likely to pose a potential risk to ecological receptors. Naphthalene is eliminated as a COPEC.

4,4'-DDE. DDE[4,4'-] was detected in 1 of 19 samples at a concentration of 0.0002 mg/kg. If the detected concentration is used, the HQs are less than 0.3, indicating that 4,4'-DDE is not likely to pose a potential risk to populations of robins. DDE[4,4'-] is eliminated as a COPEC.

Dieldrin. Dieldrin was detected in 1 of 19 samples at a concentration of 0.019 mg/kg, which is slightly higher than the EPC (0.012 mg/kg). Because dieldrin was detected only once, it is not likely to pose a potential risk to populations of ecological receptors, and it is eliminated as a COPEC.

Endrin. Endrin was detected in 1 of 19 samples at a concentration of 0.016 mg/kg, which is slightly higher than the EPC (0.012 mg/kg). Because endrin was detected only once, it is not likely to pose a potential risk to populations of ecological receptors, and it is eliminated as a COPEC.

Phenol. Phenol was detected in 2 of 96 samples at a maximum concentration of 0.16 mg/kg. If the detected concentration is used, the HQs are 0.2 for the plant and 0.09 for the earthworm. Because the HQs are less than 0.3, phenol is not likely to pose a potential risk to populations of plants or earthworms. Phenol is eliminated as a COPEC.

Benzoic Acid. Benzoic Acid was detected in only 6 of 94 samples at concentrations of 0.79 mg/kg, 0.64 mg/kg, 1.45 mg/kg, 0.77 mg/kg, 0.70 mg/kg, and 0.57 mg/kg. The EPC for benzoic acid (1.44 mg/kg) is due to 40 nondetects with detection limits greater than 1.6 mg/kg. The average of the detected concentrations (0.82 mg/kg) generates an HQ of 0.8 for the shrew and 0.6 for the deer mouse. Because benzoic acid was infrequently detected and the HQs are less than 1, it is not likely to impact populations. Benzoic acid is eliminated as a COPEC.

Acenaphthene. Acenaphthene was detected in only 9 of 96 samples at a maximum concentration of 0.36 mg/kg. The EPC for acenaphthene (0.37 mg/kg) generates an HQ of 1.5 for the plant, which is not likely to impact the population. The plant ESL also may not be a good indicator of risk to receptors at the site for acenaphthene because vegetation at the site was abundant and did not appear stressed. Therefore, acenaphthene is eliminated as a COPEC.

Aroclor-1254. Aroclor-1254 was identified as a COPEC in the ecological risk assessment for Mortandad Canyon. The EPC for Aroclor-1254 (0.41 mg/kg) is similar to concentrations reported in the Mortandad Canyon Investigation (0.57 mg/kg) (LANL 2006, 094161) and less than the maximum concentration reported in the Los Alamos and Pueblo Canyons Investigation (6.2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1254 to avian populations are likely in Ten Site Slope Subarea. Aroclor-1254 is eliminated as a COPEC.

Aroclor-1260. Aroclor-1260 was identified as a COPEC in the ecological risk assessment for Mortandad Canyon. The EPC for Aroclor-1260 (1.93 mg/kg) is similar to concentrations reported in the Mortandad Canyon Investigation (1.37 mg/kg) (LANL 2006, 094161) and less than the maximum concentrations reported in the Los Alamos and Pueblo Canyons investigation report (3.3 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1260 to avian populations are likely in Ten Site Slope Subarea. Aroclor-1260 is eliminated as a COPEC.

Di-n-butylphthalate. Di-n-butylphthalate was detected in 13 of 96 samples at a maximum concentration of 0.88 mg/kg. The UCL for di-n-butylphthalate (0.68 mg/kg) is less than the concentrations reported in the Mortandad Canyon investigation report (LANL 2006, 094161). The maximum di-n-butylphthalate concentration from this investigation was reported as 3 mg/kg. Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161). Therefore, no potential adverse ecological effects from di-n-butylphthalate to avian populations are likely in Ten Site Slope Subarea. Di-n-butylphthalate is eliminated as a COPEC.

Table F-4.5-6 shows the remaining COPEC and receptors with HQs adjusted for PAUF. The insectivorous robin and the deer mouse have HIs of 2.

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected in 28 of 97 samples at a maximum concentration of 19.5 mg/kg. Dourson and Stara (1983, 073474) conducted a study of uncertainty factors incorporated in calculating ESLs for ecological receptors. Based on their study, the LOAEL to NOAEL adjustment indicates that HIs up to 10 may not adversely affect ecological receptors. To maintain conservatism, they state that HIs less than 3 do not adversely affect ecological receptors. Therefore, bis(2-ethylhexyl)phthalate does not present a potential risk to ecological receptors within the areas of highest concentrations, and this COPEC is not retained for Ten Site Slope Subarea.

DOE Tier I Bioconcentration Guides

The DOE Tier I BCG is a lower value for cesium-137 (20.8 pCi/g) than the ECORISK Database final ESL (680 pCi/g). If the DOE Tier I BCG is used, the HQ increases from 2.2E-04 (using LANL 2004, 087630) to 7.12E-03 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison.

Chemicals without ESLs

There are no ESLs for lithium, and this chemical cannot be considered quantitatively for potential ecological risk. Lithium was detected in six samples within 0–5 ft bgs. The EPA Region 6 residential SSL is 1600 mg/kg, which indicates relatively low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for aldrin, and this chemical cannot be assessed quantitatively for potential ecological risk. Aldrin was detected in 2 of 19 samples within 0–5 ft bgs at concentrations of 0.0016 mg/kg and 0.00262 mg/kg. The NMED residential SSL is 0.284 mg/kg, which is 2 orders of magnitude higher than the detected concentration. This chemical was detected infrequently across the site and at trace levels. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 4,4'-DDD, and this chemical cannot be assessed quantitatively for potential ecological risk. DDD[4,4'-] was detected in one of 19 samples at a concentration of 0.009 mg/kg. If 4,4'-DDE is used as a surrogate, a maximum HQ of 0.58 is generated for all receptors. This chemical was detected infrequently across the site and at trace levels. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for diethylphthalate, and this chemical cannot be assessed quantitatively for potential ecological risk. Diethylphthalate was detected in two of 96 samples within 0–5 ft bgs at concentrations of 0.02 mg/kg and 0.0203 mg/kg. If dimethylphthalate is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that diethylphthalate does not pose a potential risk to receptors.

There are no ESLs for ethylbenzene, and this chemical cannot be assessed quantitatively for potential ecological risk. Ethylbenzene was detected in one of 41 samples within 0–5 ft bgs at a concentration of 0.002 mg/kg. If benzene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that ethylbenzene does not pose a potential risk to receptors.

There are no ESLs for 4-isopropyltoluene, and this chemical cannot be assessed quantitatively for potential ecological risk. Isopropyltoluene[4-] was detected in 14 of 41 samples at concentrations less than 0.195 mg/kg. If toluene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that 4-isopropyltoluene does not pose a potential risk to receptors.

There are no ESLs for styrene, and this chemical cannot be assessed quantitatively for potential ecological risk. Styrene was detected in three of 41 samples within 0–5 ft bgs at concentrations of 0.00054 mg/kg, 0.00068 mg/kg, and 0.00053 mg/kg. The NMED residential SSL is 100 mg/kg, which is a saturation value and indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 1,1,2-trichloro-1,2,2-trifluoroethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichloro-1,2,2-trifluoroethane(1,1,2-) was detected in one of 37 samples within 0–5 ft bgs at a concentration of 0.002 mg/kg. The NMED residential SSL is 3280 mg/kg, which indicates low potential toxicity from this chemical. This chemical was detected infrequently across the site and at trace levels. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

F-4.5.4 Interpretation

Based on the ecological screening assessment for the Ten Site Slope Subarea, 31 COPECs (including 9 COPECs without ESLs) were identified. All of these COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the area of contamination, the relative toxicity of related compounds, and the infrequency of detected concentrations.

F-5.0 MORTANDAD SLOPE SUBAREA

F-5.1 Site Descriptions

Mortandad Canyon is a narrow, east-southeast trending canyon that extends approximately 10 miles from the southern part of TA-03 to the confluence with the Rio Grande. Middle Mortandad Canyon is the deep, narrow part of the canyon that extends eastward from the confluence of Effluent Canyon. The area of Mortandad Canyon below TA-35 consists of several different physical environmental settings, which, in turn, contain ecological habitats or communities that reflect changes in elevation, climate, and moisture. The environmental settings include a steep, north-facing slope below TA-35, a bench area, and a deep, narrow ravine containing an ephemeral stream channel.

F-5.1.1 Surface Conditions

The Mortandad Canyon slope is north-facing with several moderately incised drainage channels. The slope varies from near-vertical cliffs at the upper slope, to slopes of approximately 10% on the bench. At the base of the slope is a near-vertical drop of approximately 30–50 ft to the bottom of Mortandad Canyon. The surface material consists of moderately thick soils and colluvium over tuff, with abundant sediment in the drainages and abundant bare tuff on the lower slope.

Vegetation on the Mortandad Canyon slope is dominated by ponderosa pine, with lesser amounts of piñon pine, juniper, and oak shrubs. The understory consists of various native grasses and forbs. The Mortandad Slope Subarea is considerably more shaded than the Ten Site Slope Subarea because of the thicker overstory of large trees.

F-5.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Mortandad Slope Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207), and has been further defined using geologic logs from boreholes drilled at or near the site.

The predominant rock unit at the surface is unit 3 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick in this area. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30–40 ft thick. The lowest unit encountered is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once in the investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lies the Guaje Pumice Bed (approximately 35 ft thick) followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area.

There are no known subsurface human-made structures in the Mortandad Slope Subarea.

F-5.1.3 Groundwater Conditions

The top of the regional aquifer is approximately 1100–1200 ft bgs in the Mortandad Slope Subarea (see section 5.1.4 in the report for a discussion of groundwater conditions). There is no known perched or alluvial groundwater in the area. Regional well R-14 in Ten Site Canyon, approximately 0.5 mi east-southeast of the Mortandad Slope Subarea, encountered groundwater at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

F-5.1.4 Surface Water Conditions

No permanent surface water exists in the Mortandad Slope Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff from the mesa top discharges from storm drains at multiple points along the length of the Mortandad Slope Subarea. Surface runoff on the Mortandad Slope Subarea is most likely to occur as channelized flow in steep, moderately incised drainage channels.

Surface water site assessments were performed for the Mortandad Slope SWMUs, AOCs, and consolidated units between 1997 and 2004. The SWMUs, AOCs, and consolidated units in the Mortandad Slope Subarea received scores between 3.6 and 76.5, indicating low to high potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

F-5.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-5.2 Sampling Results

The sampling results for the Mortandad Slope Subarea are described in detail in section 6.0 and Appendix D of the investigation report, and are summarized here.

The data used to define the nature and extent of contamination in the Mortandad Slope Subarea were obtained from environmental samples collected in 1993–1994, 1995–1996, 1997, 2004–2005, and 2007. Figure F-5.2-1 is an index map of the Mortandad Slope Subarea, which is divided into two map areas (A and B) for a more appropriate scale. Figures F-5.2-2 and F-5.2-3 show the SWMUs and AOCs in each of two map areas within Mortandad Slope Subarea, with sampling locations identified.

F-5.2.1 Summary of Results

The sampling data for the Mortandad Slope Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide BVs and FVs, where available, are from "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 059730).

The representative concentrations used for the screening assessments are either the 95% UCL of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used because the ProUCL program cannot handle negative values. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. The human health risk assessment for the Mortandad Slope Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–1 ft bgs for the recreational user and 0–10 ft for the residential user; the ecological risk assessment for the Mortandad Slope Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–5 ft bgs. Appendix D Tables D-4.1-1 through D-4.8-3 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 7.2-1 in the main text. Figures F-5.2-4 and F-5.2-5 show the locations of soil, sediment, and tuff samples in which inorganic chemicals were detected above BVs or were detected but do not have BVs.

Radionuclides

The radionuclide COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 7.2-1 in the main text. Figures F-5.2-6 and F-5.2-7 show the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected but do not have BVs, or were detected at depths greater than 6 in. (americium-241; plutonium-238, -239; strontium-90; and tritium).

Organic Chemicals

Identification of COPCs for organic chemicals is based on detection status, and the COPCs are presented in Table 7.2-1 in the main text. Figures F-5.2-8 and F-5.2-9 show the organic COPCs.

F-5.2.2 History of Releases

SWMU 35-004(b) is a former chemical storage area located outside of Building 35-85. The storage area is asphalt-paved and has been used to store organic chemical solutions, oils, and rags since 1977. No releases of hazardous materials have been documented at this site, but oil stains on the storage pad itself were reported during an ER Project site reconnaissance in 1988.

Consolidated Unit 35-008-00 consists of SWMU 35-008 and SWMU 35-014(e). SWMU 35-008 is a canyon-side debris pile once reported to contain scrap metal, pipe, paint cans, a 55-gal. drum, concrete, asphalt, conduits, and rebar. The disposal site covers an area of the upper Mortandad Slope measuring approximately 100 ft by 100 ft. SWMU 35-014(e) is a dielectric oil spill that was bulldozed off the mesa top. The oil spill occurred when a forklift punctured an aboveground oil storage tank. Potential contaminants include organic chemicals, inorganic chemicals, and TPH.

SWMU 35-009(c) is an abandoned, inactive septic system located north of TA-35-02. The septic system consisted of a 1290-gal. steel-lined reinforced concrete tank, a distribution box, a manhole cleanout, and a leach field. The leach field covers an area of 1600 ft^2 and is located under an east-west dirt access road that lies along the mesa edge, west of Building 35-261. It was cleaned up in the 1996 voluntary corrective action (VCA) when the system was cleaned out and then filled with concrete.

AOC 35-016(e) is a former outfall that discharged noncontact cooling water from the Chemical Laser Facility, Building 35-85. The outfall was detected from the National Pollutant Discharge Elimination System (NPDES) Permit No. 04A090 in April 1987. The volume of water released is not documented, but the erosion below the outfall indicates significant amounts of water were released.

AOC 35-016(f) is an active stormwater drain located north of Chemical Laser Facility, Building 35-85. The outfall consists of an 18-in.-diamater corrugated metal pipe (CMP) that discharges into a small channel cut into backfill material on the south slope of Mortandad Canyon. Documented releases consisting of oil spills have occurred near the source areas for the storm drain. The volumes of the spills are not documented.

Consolidated Unit 35-016(i)-00 consists of SWMU 35-014(e2) and SWMU 35-016(i). SWMU 35-014(e2) is the site of a former oil spill that originated from overflows of a waste-oil impoundment that was decommissioned in 1989. SWMU 35-014(e2) is located northeast of Building 35-85. SWMU 35-016(i) is an active stormwater discharge channel that handles stormwater runoff from the area between the east end of Building 35-85 and the main parking lot for this building. The outfall is a CMP, 18 in. in diameter. Discharge from the outfall has eroded a small channel in the mesa slope to approximately 3 ft below the outfall and into the tuff bedrock.

SWMU 35-016(o) are four active stormwater drains located north of Building 35-261. SWMU 35-016(o) also possibly handled TA-35-02 floor drain effluents from the following rooms:

- A10, in which floor drains received leaks and overflow from two 2000-gal. tanks containing low-level radioactive/acid liquid wastes;
- A13, which contained floor drains and four 55-gal. drums of PCB-contaminated waste oil; and

- A22, the high-velocity projectile testing room.

The four outfalls comprising SWMU 35-016(o) are located on the eastern side of the mesa, on the south slope of Mortandad Canyon, approximately 20 ft below the mesa edge. The outfalls consist of cast-iron drainpipes.

SWMU 35-016(p) is a cooling water outfall located north of Building 35-27. It was established in 1968 to discharge noncontact cooling water condensate from TA-35-27, the Nuclear Safeguards Research Building. No documented releases of hazardous materials have occurred at this outfall.

F-5.2.3 Nature and Extent

The Aggregate SAP (LANL 2002, 073092), approved by NMED (2003, 078145), stipulated additional sampling at the following SWMUs to complete the data set and determine the nature and extent for the Mortandad Slope Subarea. Figure F-5.2-1 is the index map for the two sampling areas in Mortandad Slope Subarea (Figures F-5.2-2 and F-5.2-3).

SWMU 35-004(b)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at SWMU 35-004(b), an outdoor drum storage area outside TA-35-85, and analyzed for TAL metals, SVOCs, and VOCs to complete the data set (Figure F-5.2-2).

In 2004, the following sampling location was hand-augered through the asphalt and base course to sample the underlying material: location 35-22921, sample collected at 0.5–1.0 ft bgs and 2.0–2.5 ft bgs.

Inorganic Chemicals. No inorganic chemicals were detected at concentrations greater than their respective BVs at SWMU 35-004(b) (Figure F-5.2-4). Therefore, the nature and extent have been defined for inorganic chemicals.

Radionuclides. In accordance with the approved Aggregate SAP (LANL 2002, 073092), no radionuclides were collected based on process knowledge at SWMU 35-004(b) (Figure F-5.2-6). Therefore, nature and extent have been defined for radionuclides.

Organic Chemicals. Previous sampling at SWMU 35-004(b) demonstrated that organic chemicals were not detected (Figure F-5.2-8). The 2004 sample data indicated that VOCs and PAHs were detected at two depths at location 35-22921.

The VOCs acetone and isopropyltoluene[4-] were detected at trace levels (near or below the EQLs) concentrations in the 0.5–1-ft-depth interval, and not detected in the deeper sample at location 35-22921. Methylene chloride was detected at trace amounts (less than the EQL) in the deeper sample.

Low concentrations of PAHs [benzo(a)pyrene (0.019 mg/kg), benzo(b)fluoranthene (0.035 mg/kg), fluoranthene (0.051 mg/kg), phenanthrene (0.039 mg/kg), and pyrene (0.045 mg/kg)] were detected beneath the asphalt from the 2–2.5-ft-depth interval. These PAHs are attributed to the overlying asphalt and not a release from the SWMU.

The nature and extent of organic chemicals have been defined.

Consolidated Unit 35-008-00 and AOC 35-016(e)

Consolidated Unit 35-008-00 consists of SWMU 35-014(e1), a former dielectric oil spill north of Building 35-85, and SWMU 35-008, a former canyon-side disposal area north of TA-35-06. As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at Consolidated Unit 35-008-00 and analyzed for TAL metals, SVOCs, and alpha and gamma spectroscopy, especially at the channel's alluvial fan, to complete the data set (Figure F-5.2-2).

AOC 35-016(e), noncontact cooling water outfall from TA-35-85, is collocated with Consolidated Unit 35-008-00 and is therefore assessed with that unit. The data from the 11 transects collected for Consolidated Unit 35-008-00 were used to characterize AOC 35-016(e). Based on the data from Consolidated Unit 35-008-00, nature and extent have been defined.

Samples were collected in 2004 at the following eleven transects:

- location 35-23144, samples collected at 0–6.69 in. bgs and 6.69–11.42 in. bgs
- location 35-23145, samples collected at 0.46–0.79 ft bgs and 0.79–1.05 ft bgs
- location 35-23146, samples collected at 0–0.3 ft bgs and 0.3–0.69 ft bgs
- location 35-23147, samples collected at 0–0.36 ft bgs and 0.36–0.69 ft bgs
- location 35-23148, samples collected at 0.23–0.69 ft bgs and 0.69–1.21 ft bgs
- location 35-23149, samples collected at 0–0.46 ft bgs and 0.46–1.25 ft bgs
- location 35-23150, samples collected at 0–0.23 ft bgs and 0.23–0.56 ft bgs
- location 35-23151, samples collected at 0–0.43 ft bgs and 0.43–0.82 ft bgs
- location 35-23152, samples collected at 0–0.33 ft bgs and 0.69–0.98 ft bgs
- location 35-23153, samples collected at 0.52–1.31 ft bgs and 1.31–2.46 ft bgs
- location 35-23154, samples collected at 0.03–0.59 ft bgs and 1.48–2.46 ft bgs

Inorganic Chemicals. Inorganic chemicals were infrequently detected greater than their respective BVs, and at low concentrations in the 1994, 1997, and 2004 samples (Figure F-5.2-4). The sample data from 1994 and 1997 indicated that antimony, chromium, copper, lead, lithium, nickel, thallium, and zinc were detected at concentrations greater than their BVs, but the concentrations of chromium (9.6 mg/kg, location 35-02455, 2–3 ft) and lead (11.7 mg/kg, location 35-02455, 2–3 ft) are within the range of background concentrations. Chromium (34 mg/kg) and nickel (17.5 mg/kg) were detected at location 35-02456 (2–3 ft) but not in the 2004 samples downslope (locations 35-23146, 35-23150, 35-23147, and 35-23151). Within the 2004 transect samples, lead (21.7 mg/kg, location 35-23152, 0–0.33 ft), copper (13.7 mg/kg, location 35-23144, 0–0.56 ft), and zinc (84.7 mg/kg, location 35-23145, 0.46–0.79 ft and 67.7; location 35-23150, 0–0.23 ft) were the only inorganic chemicals detected above BVs. Lead was in the range of the background concentrations (2–25.6 mg/kg) and only slightly above the BV. Copper was only slightly above the range of background concentrations (0.77–12 mg/kg). Zinc was not detected in samples downslope (location 35-23151), and, at location 35-23150, zinc was not detected in the deeper sample (0.23–0.56 ft). Therefore, the nature and extent of inorganic chemicals have been defined at Consolidated Unit 35-008-00.

Radionuclides. Radionuclides were detected above their BVs or FVs at three locations in the 2004 sample locations (Figure F-5.2-6) at Consolidated Unit 35-008-00. These locations, 35-23152, 35-23153, and 35-23154, are located within the Mortandad channel. Several radionuclides were detected at low

levels and infrequently on the slope. Plutonium-239 was detected at location 35-02250 (0.03 pCi/g at 1–2 ft). Ruthenium-106 was detected at location 35-02453 (0.561 pCi/g at 0–1 ft). Uranium-235 was detected at location 35-02457 (0.242 pCi/g at 2-3 ft). Because no more radionuclides were detected on the slope between these locations and the three channel locations at the base of the slope, the radionuclides in the channel may not be related to Consolidated Unit 35-008-00 but instead may be related to upstream processes. Therefore, the nature and extent of radionuclides associated with Consolidated Unit 35-008-00 have been defined.

Organic Chemicals. TPH-DRO was detected at locations 35-02282 and 35-02283 at concentrations greater than 15,000 mg/kg. Concentrations of TPH-DRO decreased to less than 30 mg/kg at locations downslope and was not detected at location 35-02456 (Figure F-5.2-8).

Four SVOCs were detected: benzoic acid; bis(2-ethylhexyl)phthalate; di-n-butylphthalate; and phenol. Benzoic acid was detected in nine samples at concentrations less than 0.52 mg/kg, but not at the base of the slope in samples from locations 35-23152, 35-23153, and 35-23154. Bis(2-ethylhexyl)phthalate was detected at 10 locations; at the locations near the top of the slope, the concentrations of bis(2-ethylhexyl)phthalate are in the range of 1–9 mg/kg, but at the locations farther downslope the concentrations are 0.6 mg/kg or less. Bis(2-ethylhexyl)phthalate was not detected in two of the three samples locations at the base of the slope (locations 3523152 and 35-23153). Di-n-butylphthalate was detected in six samples at concentrations less than 0.5 mg/kg. Di-n-butylphthalate was detected at locations 35-23152 and 35-23153 at concentrations less than the EQL (0.3 mg/kg), and was not detected at location 35-23154. Phenol was detected only once at a concentration of 0.06 mg/kg.

Toluene was detected in six samples at trace concentrations of 0.008 mg/kg or less and not at the base of the slope.

The PAHs also were detected infrequently and at low concentrations (less than 0.11 mg/kg), and are from stormwater runoff from the asphalt parking areas. PAHs were detected at three locations (35-23145, 35-23149, and 35-23152) with the number of PAHs and concentrations decreasing downslope. Fluoranthene and pyrene were detected at location 35-23152 at concentrations less than the EQL. The nature and extent of organic chemicals have been defined.

SWMUs 35-009(c) and 35-016(o)

SWMU 35-009(c), an abandoned inactive septic system north of TA-35-02, is collocated with SWMU 35-016(o), the stormwater drains north of TA-35-26 (Figure F-5.2-3). In accordance with the approved Aggregate SAP (LANL 2002, 073092), these SWMUs were sampled and analyzed for TAL metals, SVOCs, PCBs, alpha and gamma spectroscopy, and tritium analyses to complete the data set.

Samples were collected in 2004 from the following three locations and eight transects:

- location 35-22923, samples collected at 2–2.5 ft bgs, 3.9–4.4 ft bgs, and 7–7.5 ft bgs
- location 35-22924, samples collected at 0.5–1 ft bgs, 8.5–9.5 ft bgs, and 14–15 ft bgs
- location 35-22925, samples collected at 1.2–1.7 ft bgs and 4.5–5 ft bgs
- transect 35-23178, samples collected at 0.07–0.26 ft bgs and 0.26–0.66 ft bgs
- transect 35-23180, samples collected at 0.2–0.39 ft bgs and 0.95–1.18 ft bgs
- transect 35-23182, samples collected at 0–0.59 ft bgs and 1.21–1.54 ft bgs
- transect 35-23183, samples collected at 0–0.95 ft bgs and 1.48–1.97 ft bgs

- transect 35-23184, samples collected at 0–0.33 ft bgs and 0.79–1.21 ft bgs
- transect 35-23185, samples collected at 0–0.3 ft bgs and 0.3–0.69 ft bgs
- transect 35-23186, samples collected at 0.1–0.33 ft bgs and 0.33–0.49 ft bgs
- transect 35-23187, samples collected at 0.16–0.66 ft bgs and 0.66–1.51 ft bgs

Transect locations 35-23182, 35-23183, 35-23185, 35-23187, and 35-23191 are located a few feet above the main Mortandad Canyon channel, and the sediment from these samples may have contaminants from up canyon processes.

Soil from the following locations below the outfall was excavated in 2007:

- location 35-02043, soil excavated from 0.0 ft–2.2 ft bgs
- location 35-02254, soil excavated from 0.0 ft–2.3 ft bgs
- location 35-02255, soil excavated from 0.0 ft–1.7 ft bgs
- location 35-02508, soil excavated from 0.0 ft–2.5 ft bgs
- location 35-02091, soil excavated from 0.0 ft–1.8 ft bgs
- location 35-02092, soil excavated from 0.0 ft–2.3 ft bgs

The soil from these locations was excavated because the data from previous sampling indicated that these locations had concentrations of elevated PAHs. After the soil was excavated, the following downslope confirmatory samples were collected:

- location 35-02255, sample was collected from 1.7-1.9 ft bgs
- location 35-02508, sample was collected from 2.5-2.8 ft bgs.

Samples were collected in 2007 from the following locations on the bench:

- location 35-27423, samples collected at 0.0–0.3 ft bgs and 0.3–0.8 ft bgs
- location 35-27424, samples collected at 0.0–0.3 ft bgs and 0.4–0.8 ft bgs
- location 35-27425, samples collected at 0.0–0.3 ft bgs and 0.3–0.7 ft bgs
- location 35-27426, samples collected at 0.0–0.3 ft bgs and 0.3–0.8 ft bgs
- location 35-27427, samples collected at 0.0–0.2 ft bgs and 0.2–0.6 ft bgs
- location 35-27428, samples collected at 0.0–0.5 ft bgs and 0.5–1.0 ft bgs
- location 35-27434, samples collected at 0.0–0.2 ft bgs and 0.2–0.6 ft bgs
- location 35-27435, samples collected at 0.0–0.2 ft bgs and 0.2–0.5 ft bgs

Inorganic Chemicals. Inorganic chemicals were detected above their respective BVs at SWMUs 35-009(c) and 35-016(o) (Figure F-5.2-5). The 2004 sediment samples collected within the drainages had very few inorganic chemicals detected greater than their respective BVs, and the concentrations decrease with depth to either nondetect or lower concentrations slightly above BVs. Lead (26.6 mg/kg) was detected at location 35-22923 (3.9–4.4 ft), and this value is within the range of soil BVs (2–28 mg/kg). At the same location, in the deeper sample, lead was detected at 17.7 mg/kg from 7–7.5 ft, which is below the maximum background concentration for tuff (25.6 mg/kg). Nature and extent of inorganic chemicals have been defined.

Radionuclides. The 2004 sampling locations within the drainages from SWMU 35-016(o) reported detected concentrations of plutonium-239 and uranium-238 greater than their respective BVs or FVs (Figure F-5.2-7). Location 35-23186 had detected concentrations of cesium-137 (1.06 pCi/g, 0.1–0.33 ft and 1.04 pCi/g, 0.33–0.49 ft) and cobalt-60 (0.28 pCi/g, 0.1–0.33 ft); however, no cesium-137 or cobalt-60 were detected in the downslope location 35-23187. Cesium-137 was detected at concentrations greater than its BV at location 35-23183 (9.83 pCi/g, 0.0–0.95 ft and 1.4 pCi/g, 1.48–1.97 ft). Additionally, location 35-23183 had detected concentrations of americium-241 (3.45 pCi/g, 0.0–0.95 ft and 1.59 pCi/g, 1.48–1.97 ft). Samples from locations 35-23182, 35-23183, and 35-23187 indicated plutonium-239, tritium, and uranium-238 were detected at concentrations greater than their respective BVs or FVs; however, these samples may represent contaminants from up-canyon sources. The drainage channel sampling locations were collected in post-Laboratory sediment overlying tuff.

On the mesa top, tritium was detected at locations 35-02553 and 35-02552, at the bottom of the boreholes. At location 35-02552, tritium was detected at a concentration of 0.62 pCi/g (5–5.5 ft) and decreased to 0.09 pCi/g (11.5–12.5 ft). At location 35-02553, tritium was detected at a concentration of 0.31 pCi/g (5–5.5 ft) and decreased to 0.3 pCi/g (11.5–12.5 ft). Isotopic plutonium was detected at locations 35-02049, 35-02055, and 35-02056, and decreased in concentration with depth, with nondetected concentrations at 20 ft at locations 35-02049 and 35-02056. At location 35-02055, plutonium-239 was detected at a concentration of 0.014 pCi/g (4-5 ft), but was not detected in the deeper samples at that location. Additional sampling is not warranted at SWMUs 35-009(c) and 35-016(o) because the sampling conducted for the Mortandad Canyon investigation determined extent (LANL 2006, 094161).

Organic chemicals. Within the 2004 drainage sediment samples, the concentrations of the detected PCBs, pesticides, TPH-DRO, SVOCs, and PAHs decrease with distance from the SWMU boundaries (Figure F-5.2-9).

PAHs were detected in the pre-2004 samples at the top of each of the drainages at high concentrations, but the soil from these locations was excavated in 2007. The confirmatory samples had very low concentrations (<0.25 mg/kg) of PAHs, and decreased downslope. The samples collected in 2007 on the bench had only five detected concentrations in two samples of PAHs. Sample location 35-27427 reported benzo(g,h,i)perylene at a concentration of 0.0086 mg/kg and pyrene at a concentration of 0.028 mg/kg at a depth of 0–0.2 ft bgs, but no PAHs were detected in the deeper sample at that location. At location 35-27424, chrysene (0.035 mg/kg), fluoranthene (0.069 mg/kg), and pyrene (0.062 mg/kg) were detected at a depth of 0.0–0.30 ft bgs, but no PAHs were detected in the deeper sample. Two locations 35-02505 and 35-02509 have elevated concentrations of PAHs in the shallower sample, but the concentrations decreased with depth.

Aroclor-1254 was detected at a maximum detected concentration of 1.4 mg/kg (location 35-02505, 0–1 ft), but the concentration decreased to 0.83 mg/kg with depth (location 35-02505, 1–2 ft). Farther downslope at location 35-23180, Aroclor-1254 was detected at a concentration of 0.016 mg/kg, which is less than the EQL (0.3 mg/kg), and was not detected at location 35-23182, decreasing downslope. At location 35-02508, which is at the top of the slope, Aroclor-1254 was detected at a concentration of 0.15 mg/kg, which is less than the EQL (0.3 mg/kg). Farther down the drainage, Aroclor-1254 was not detected at location 35-23184, indicating a decreasing trend.

Aroclor-1260 was detected at a maximum concentration of 0.27 mg/kg (location 35-23187, 0.16–0.66 ft), but this location is within the Mortandad stream channel, indicating this location may have been affected by up-canyon processes. At location 35-23178, Aroclor-1260 was detected at a concentration of 0.21 mg/kg (0.07–0.26 ft), which is less than the EQL (0.3 mg/kg). Aroclor-1260 was detected at a concentration of 0.10 mg/kg in the deeper sample (0.26–0.66 ft), indicating a decreasing trend.

DDT[4,4'-] was detected at location 35-23180 (0.002 mg/kg, 0.95–1.18 ft) and at location 35-23182 (0.003 mg/kg, 0–0.59 ft). DDE[4,4'-] was detected at location 35-23180 (0.0006 mg/kg, 0.95–1.18 ft) and at location 35-23182 (0.001 mg/kg, 0–0.59 ft). These pesticides were detected at trace levels and at only two locations.

TPH-DRO was detected at a concentration of 120 mg/kg (location 35-02509, 0–1 ft). At location 35-02505, which is midway down the slope on the west side, TPH-DRO was detected at a concentration of 170 mg/kg (0–1 ft). Farther down this drainage, TPH-DRO was detected at a concentration of 17 mg/kg (location 35-02507, 0–1 ft), indicating a decreasing trend.

Aniline, benzoic acid, bis(2-ethylhexyl)phthalate, 4-chloroaniline, dibenzofuran, di-n-butylphthalate, and pentachlorophenol were detected in samples from SWMUs 35-009(c) and 35-016(o). Aniline, benzoic acid, bis(2-ethylhexyl)phthalate, 4-chloroaniline, and pentachlorophenol were detected at concentrations less than the EQLs. Di-n-butylphthalate was detected at low concentrations at six locations, and not in the downcanyon samples. At location 35-02509, di-n-butylphthalate was detected at a maximum concentration of 0.41 mg/kg and decreased downslope to 0.096 mg/kg at location 35-02510. The other concentrations of di-n-butylphthalate were less than the EQL.

AOC 35-016(f)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at AOC 35-016(f), a stormwater drain north of TA-35-85, and analyzed for TAL metals, SVOCs, and PCB analysis, especially at the channel's alluvial fan, to complete the data set (Figure F-5.2-2).

Samples were collected in 2004 at the following locations:

- location 35-23164 near the top of the slope in the drainage channel, samples collected at 0.07–0.49 ft bgs and 0.49–0.92 ft bgs
- location 35-23165 in the middle of the drainage, samples collected at 0.13–0.39 ft bgs and 0.39–1.21 ft bgs
- location 35-23166 in the middle of the drainage, samples collected at 0.10–0.39 ft bgs and 0.39–0.89 ft bgs
- location 35-23167 at the base of the drainage slope, samples collected at 0–0.26 ft bgs and 0.26–0.46 ft bgs

Inorganic Chemicals. No inorganic chemicals were detected at concentrations greater than their respective BVs (Figure F-5.2-4). Therefore, the nature and extent of inorganic chemicals have been defined at AOC 35-016(f).

Radionuclides. Following the approved SAP, analyses for radionuclides were not conducted based on process knowledge.

Organic Chemicals. Aroclor-1254 and Aroclor-1260 were detected in samples at locations 35-23164 (maximum concentration of 0.005 mg/kg) and 35-23165 (maximum concentration of 0.01 mg/kg). Farther downslope, only Aroclor-1260 was detected in samples from locations 35-23166 (maximum concentration of 0.005 mg/kg) and 35-23167 (maximum concentration of 0.004 mg/kg) (Figure F-5.2-8). The concentrations are low and indicate a decreasing trend with distance from AOC 35-016(f).

Bis(2-ethylhexyl)phthalate, di-n-butylphthalate, and benzoic acid were detected at three sampling locations, 35-02284, 35-23164, and 35-23165, at concentrations less than the EQL (0.3 mg/kg). The

SVOCs were not detected in samples farther down the drainage; therefore, the extent has been defined for these SVOCs.

The PAHs from the asphalt parking area were detected at concentrations near, or below, the EQLs. Of the nine PAHs detected in samples collected near the top of the slope, only two PAHs, fluoranthene and pyrene, were detected in samples collected at the base of the drainage slope (location 35-23167) and at concentrations lower than at the top and below the EQLs. Therefore, the extent of PAHs has been defined.

Consolidated Unit 35-016(i)-00

Consolidated Unit 35-016(i)-00 consists of SWMU 35-016(i), a stormwater outfall, and AOC 35-014(e2), a former oil spill in the former impoundment area northeast of TA-35-85. As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at Consolidated Unit 35-016(i)-00 and analyzed for TAL metals, SVOCs, and PCBs, especially at the channel's alluvial fan, to complete the data set (Figure F-5.2-2).

Samples were collected in 2004 from the following transects:

- location 35-23156, sample collected at 0–0.59 ft bgs
- location 35-23168, sample collected at 0–0.49 ft bgs
- location 35-23157, samples collected at 0.07–0.56 ft bgs and 0.56–0.92 ft bgs
- location 35-23158, samples collected at 0.1–0.3 ft bgs and 0.3–0.49 ft bgs
- location 35-23160, samples collected at 0–0.39 ft bgs and 0.39–0.95 ft bgs
- location 35-23162, samples collected at 0–0.75 ft bgs and 0.75–1.15 ft bgs
- location 35-23163, samples collected at 0–0.33 ft bgs and 0.33–0.85 ft bgs

The following location was hand-augered in 2004 through the asphalt and base course: location 35-22929, samples collected at 0.5–1.0 ft bgs, 4–4.5 ft bgs, and 7–7.5 ft bgs.

Inorganic Chemicals. Inorganic chemicals were detected at concentrations greater than their respective BVs in samples from only two locations (35-22929 and 35-23160; Figure F-5.2-4). At location 35-23160, selenium was the only inorganic chemical detected at a concentration greater than BV. Selenium was detected (0.45 mg/kg) slightly greater than the BV (0.3 mg/kg), and was not detected above BV downslope (location 35-23162). At location 35-22929, three inorganic chemicals, chromium, lead, and mercury, were detected at concentrations greater than their respective BVs, and were not detected above BVs in any of the downslope locations. Lead, with a detected concentration within the range of background concentrations, and mercury were detected in the shallowest sample (0.5–1 ft), but not in the deeper samples. Chromium was detected at all three depths with concentrations of 66.6 mg/kg (0.5–1.0 ft), 8.36 mg/kg (4–4.5 ft), and 15.2 mg/kg (7–7.5 ft). Chromium concentrations are within, or slightly above, background concentrations (0.25–13 mg/kg) in the deeper samples. The nature and extent of inorganic chemicals have been defined at Consolidated Unit 35-016(i)-00.

Radionuclides. No radionuclides were detected, or were detected at concentrations greater than their respective BVs or FVs, in the earlier samples; therefore, the nature and extent are defined (Figure F-5.2-6).

Organic Chemicals. Aroclor-1254 was detected once (location 35-22929, 0.091 mg/kg, 0.5–1 ft) and not detected in deeper samples. Aroclor-1260 was detected in nine samples at five locations (Figure F-5.2-8). In the borehole at location 35-22929, concentrations of Aroclor-1260 decreased from 0.44 mg/kg at the 0.5–1-ft depth to trace levels (0.007 mg/kg) at the 7–7.5-ft depth. Aroclor-1260 decreased from 0.44 mg/kg on the mesa top to trace levels on the slope (0.003 mg/kg) and at the base of the drainage (0.003 mg/kg).

Two SVOCs, benzoic acid and bis(2-ethylhexyl)phthalate, were detected at three locations. Benzoic acid was detected once at 0.5 mg/kg at location 35-23168, and not detected in downslope samples. Bis(2-ethylhexyl)phthalate was detected in the shallow sample (0.5–1 ft) of borehole location 35-22929 at 0.26 mg/kg and in the sample at the base of the drainage at 0.042 mg/kg, which are below the EQL.

PAHs were detected at low concentrations in the shallow sample (0.5–1 ft) of borehole location 35-22929 and at sampling locations within the drainage. Concentrations of PAHs decreased to nondetect at the deeper depth in the borehole. Concentrations of PAHs were less than the EQL within the samples from the drainage and within the samples at the base of the drainage. The nature and extent of organic chemicals have been defined at Consolidated Unit 35-016(i)-00.

SWMU 35-016(p)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at SWMU 35-016(p), a cooling water outfall north of TA-35-27, and analyzed for TAL metals and SVOCs to complete the data set (Figure F-5.2-3).

Samples were collected in 2004 from the following three transects:

- location 35-23188, samples collected at 0–0.3 ft bgs and 0.3–0.59 ft bgs
- location 35-23189, samples collected at 0.23–0.49 ft bgs and 0.49–0.85 ft bgs
- location 35-23191, samples collected at 0–0.39 ft bgs and 0.39–1.38 ft bgs

Soil from the following locations below the outfall was excavated in 2007:

- location 35-02095, soil excavated from 0.0 ft–1.3 ft bgs
- location 35-02096, soil excavated from 0.0 ft–2.1 ft bgs
- location 35-23188, soil excavated from 0.0 ft–1.0 ft bgs

The soil from these locations was excavated because the data from previous sampling indicated that these locations had concentrations of elevated PAHs. After the soil was excavated, the following samples were collected:

- location 35-02096, sample collected from 2.2–2.5 ft bgs
- location 35-23188, sample collected from 1.0–1.5 ft bgs
- location 35-600908, sample collected from 0.5–0.6 ft bgs
- location 35-600909, sample collected from 0.5–0.6 ft bgs

Samples were collected in 2007 from the following locations on the bench:

- location 35-27429, samples collected at 0.0-0.5 ft bgs and 0.5-1.0 ft bgs
- location 35-27430, samples collected at 0.0-0.4 ft bgs and 0.4-1.0 ft bgs

- location 35-27431, samples collected at 0.0-0.4 ft bgs and 0.4-0.8 ft bgs
- location 35-27432, samples collected at 0.0-0.4 ft bgs and 0.4-1.0 ft bgs
- location 35-27433, samples collected at 0.0-0.5 ft bgs and 0.7-1.0 ft bgs

Inorganic Chemicals. Inorganic chemicals were detected at concentrations greater than BV at locations 35-23189 and 35-23191 (Figure F-5.2-5). At location 35-23189, arsenic (3.99 mg/kg) was detected in one sample (0.49-0.85 ft) but was not detected in any other sample. At location 35-23191, selenium (0.58 mg/kg) was detected above BV but may not be related to site processes because the location is within the Mortandad drainage channel. Inorganic chemicals were not detected above their BVs in the samples collected in 2007. Therefore, the nature and extent of inorganic chemicals has been defined at SWMU 35-016(p) based on the data available.

Radionuclides. Cesium-137 was detected at location 35-02584 in 1997 at 0.8 pCi/g (Figure F-5.2-7). No other radionuclides were detected or were detected above their BVs/FVs; therefore, the nature and extent of radionuclides have been defined at SWMU 35-016(p).

Organic Chemicals. PAHs were detected in the 1994, 2004, and 2007 samples (Figure F-5.2-9). The concentrations of the PAHs decrease with distance down the slope. At location 35-23189 chrysene (0.034 mg/kg at 0.49–0.85 ft bgs), fluoranthene (0.032 mg/kg at 0.23–0.49 ft bgs and 0.058 mg/kg at 0.49–0.85 ft bgs), and pyrene (0.024 mg/kg at 0.23–0.49 ft bgs and 0.052 mg/kg at 0.49–0.85 ft bgs) were detected at trace concentrations. No PAHs were detected in the 2007 samples collected on the bench.

Benzoic acid was detected at location 35-23189 at a concentration of 1.6 g/kg, and the concentration decreased to 0.16 mg/kg at downslope location 35-23191. The nature and extent of organic chemicals have been defined at SWMU 35-016(p).

F-5.3 Conceptual Site Model

The conceptual site model for the Mortandad Slope Subarea is described in the Aggregate SAP (LANL 2002, 073092) and is shown in Figure F-3.3-1. With the exception of the engineered subsurface leachfields associated with the septic systems, the SWMUs associated with the hillslope setting can be categorized as surface releases. Two scenarios address contaminant migration: infiltration of contaminants into surface soils and, possibly, the underlying tuff, and transport of contaminants from surface soils and paved areas on the mesa top to the hillslope drainages.

By design, septic system leachfields release sanitary effluent into a shallow subsurface bed constructed of porous crushed tuff and fill material to facilitate infiltration. Contaminants discharged to sanitary septic systems are likely to have infiltrated underlying tuff, and to be transported vertically and laterally by saturated flow, unsaturated flow, or fracture flow to greater depths.

The sites associated with the oil spills potentially may have impacted relatively broad areas on the mesa top and hillslopes, and contaminants may not be confined to existing drainage channels. These releases may have resulted in infiltration of contaminants into surface soils and underlying tuff. Contaminants in the surface soils may be transported onto the hillslopes and to the canyon floor. Contaminants in the underlying tuff may be transported vertically and laterally by saturated flow, unsaturated flow, or fracture flow.

Distribution of contaminants associated with the releases on the hillslopes is driven primarily by stormwater and outfall discharge, and is confined predominantly to defined drainage channels.

Understanding the physical and chemical process affecting hillslope drainages provides an effective tool for predicting the likely location of residual contaminants. Contaminants with high solubilities may have been transported beyond the hillslope into the canyon by surface flow. Contaminants with lower solubilities are more likely to sorb onto soils and sediments, preferentially to finer grained particles. Soils and sediments may be deposited in local "pockets" within drainages. These pockets are areas of accumulation that may represent present contaminant inventory within the drainage. Soils and sediments within the drainage may be remobilized subsequently during higher energy stormwater or discharge events and deposited preferentially in sediment fans located at the toe of the drainage slope.

The land use within the Mortandad Slope Subarea is currently industrial (LANL 1995, 057224) and recreational, and is expected to remain recreational and industrial for the reasonably foreseeable future. Hiking and biking trails cross through the subarea, and any exposure would be of relatively short duration. The receptor is a recreational user (hiker or trail user) with exposure pathways for dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1).

Mortandad Slope Subarea is located in a mixed conifer forest, the upper slope of the canyon is ponderosa pine and Douglas fir, and the lower slope is fir and oak. Mortandad Slope is a north facing, fairly steep, dry slope. The area is within the core habitat for the Mexican spotted owl, a T&E species. Exposure pathways to biota include root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-5.4 Human Health Screening Assessment

F-5.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the "Technical Background Document for Development of Soil Screening Levels, Revision 4" (NMED 2006, 092513). Sample data from 0–1 ft bgs were used in this evaluation, as media (soil, sediment, and tuff) from that depth could be encountered by a recreational user.

Land use at the Mortandad Slope Subarea is currently industrial (LANL 1995, 057224) and recreational and is expected to remain recreational and industrial for the reasonably foreseeable future. The screening assessment uses a recreational scenario. Although the subarea is designated for industrial use, any industrial use would be periodic and short-term. The industrial worker is assumed to work 8 h/d for 225 d/yr, which is not realistic for the actual use of the subarea. The use of a recreational scenario is more realistic, assuming 1 h/d for 200 d/yr.

The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment at the site is moderate because the site has a steep slope in some areas, making parts of it difficult to use as a hiking or biking trail. Towards the bottom of the slope is a trail that runs essentially parallel to the drainage channel in the bottom of the canyon. During the work day, the site is open to Laboratory workers who may be in this area. Sample data from 0–10 ft bgs were used for the residential scenario. Screening for the residential scenario is presented for comparison purposes only.

COPCs are evaluated by comparing the representative concentration with the SSL for each chemical and the SALs for radionuclides. The chemical SSLs are provided in Tables 4.0-1 and 4.0-2 in the report. The SALs are provided in Table 4.0-3 in the report.

The recreational SSLs are derived according to Laboratory guidance (LANL 2007, 094496). The residential SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a screening value for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The SSLs for

carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a HQ of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5} risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr and derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD Version 6.21 (see Table 4.0-3 in the report).

The parameters used to derive the recreational and residential SSLs for chemicals are presented in Table F-5.4-1. The parameters used in deriving the residential and recreational SALs for radionuclides are presented in Tables F-5.4-2 and F-5.4-3.

F-5.4.2 Human Health Screening Assessment Results

The representative concentrations for each COPC were compared with their respective residential and recreational SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessment are presented in Appendix D Tables D-4.1-1 through D-4.8-3.

SWMU 35-004(b)

Based on a residential scenario, the HI (0.00008) is less than NMED's target level of 1.0 (Table F-5.4-4), and the cancer risk (4×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-5). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-004(b) under a residential scenario.

Based on a recreational scenario, the HI (0.00001) is less than NMED's target level of 1.0 (Table F-5.4-4). There were no carcinogenic chemicals detected within 0–1-ft depth (Table F-5.4-5). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-004(b) under a recreational scenario.

Consolidated Unit 35-008-00

Based on a residential scenario, the HI (0.7) is less than NMED's target level of 1.0 (Table F-5.4-6), the carcinogenic risk (9×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-7), and the dose (3 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-8). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-008-00 under a residential scenario.

Based on a recreational scenario, the HI (0.07) is less than NMED's target level of 1.0 (Table F-5.4-6), the carcinogenic risk (1×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-7), and the dose (0.2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-8). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-008-00 under a recreational scenario.

SWMU 35-009(c)

Based on a residential scenario, the HI (0.3) is less than NMED's target level of 1.0 (Table F-5.4-9), the carcinogenic risk (5×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-10), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-11). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(c) under a residential scenario.

Based on a recreational scenario, the HI (0.08) is less than NMED's target level of 1.0 (Table F-5.4-9), the carcinogenic risk (1×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-10), and the dose (1 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-11). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(c) under a recreational scenario.

AOC 35-016(e)

AOC 35-016(e) is collocated with Consolidated Unit 35-008-00 and screening assessments are discussed in that section.

AOC 35-016(f)

Based on a residential scenario, the HI (0.02) is less than NMED's target level of 1.0 (Table F-5.4-12) and the cancer risk (8×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-13). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 35-016(f) under a residential scenario.

Based on a recreational scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-5.4-12) and the cancer risk (2×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-13). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 35-016(f) under a recreational scenario.

Consolidated Unit 35-016(i)-00

Based on a residential scenario, the HI (0.2) is less than NMED's target level of 1.0 (Table F-5.4-14) and the carcinogenic risk (4×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-15). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-016(i)-00 under a residential scenario.

Based on a recreational scenario, the HI (0.03) is less than NMED's target level of 1.0 (Table F-5.4-14) and the carcinogenic risk (1×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-15). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-016(i)-00 under a recreational scenario.

SWMU 35-016(o)

Based on a recreational scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-5.4-16), the carcinogenic risk (9×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-17), and the dose (0.4 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-18). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-016(o) under a recreational scenario.

SWMU 35-016(p)

Based on a residential scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-5.4-19), the carcinogenic risk (1×10^{-6}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-20), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-21). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-016(p) under a residential scenario.

Based on a recreational scenario, the HI (0.0002) is less than NMED's target level of 1.0 (Table F-5.4-19), the carcinogenic risk (2×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-5.4-20), and the dose (0.06 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-5.4-21). The screening assessments indicate no potential for unacceptable risk/dose to human health at SWMU 35-016(p) under a recreational scenario.

F-5.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all of these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs did not affect the assessment.

Another data evaluation uncertainty relates to the use of the 95% UCL as the representative concentration for each COPC. Use of the 95% UCL may result in an overestimation of risk for analytes that have elevated detection limits. In the assessment for Consolidated Unit 35-008-00, for example, benzo(k)anthracene had detection limits of greater than 0.34 mg/kg for 15 samples, but the highest detected concentration of benzo(k)anthracene was 0.05 mg/kg. Because the 95% UCL uses one-half the detection limit, the elevated detection limits bias the 95% UCL high and overestimates the potential risk for benzo(k)anthracene.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

The receptor used in the assessment (a recreational user) is subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the SSL are that the potentially exposed individual is a recreational user who is outside for 1 h/d for 200 d/yr for 50 w/yr (LANL 2007, 094496), assuming that the Laboratory worker (the only recreational user legally allowed in the area) spends the entire hour within the contaminated area. It is unlikely that the recreational user runs or walks within the contaminated area for an entire hour; therefore, the screening assessment overestimates the exposure. As a result, risk, hazard, and dose are overestimated.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be expected reasonably.

Toxicity Values

The primary uncertainty associated with the screening values relates to derivation of screening values from EPA toxicity values (RfDs and SFs) (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in five areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, and (3) interindividual variability in the human population, (4) additive approach, and (5) the use of surrogate chemicals.

Extrapolation from animals to humans. The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often can contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in an over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures and in determining the NOAEL. The NOAEL/uncertainty factor approach incorporates a factor of 10 to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals generally are unknown, and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively, but that act by different mechanisms and on different target organs.

Use of surrogate chemicals. The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, surrogates were used to establish toxicity values based on structural similarity for the following (NMED 2003, 081172):

- benzo(g,h,i)perylene
- 4-isopropyltoluene
- 2-methylnaphthalene

No published SSLs are available for bromide, a naturally occurring element, was detected in one sample within 0–1 ft bgs at a concentration of 0.723 mg/kg. Bromide is not a potential risk to human health because it was detected at naturally occurring levels.

F-5.4.4 Interpretation

Based on a residential scenario, the maximum HI (0.7) for SWMU 35-004(b), Consolidated Unit 35-008-00, SWMU 35-009(c), AOC 35-016(f), Consolidated Unit 35-016(i)-00, and SWMU 35-016(p) is less than NMED's target level of 1.0. The maximum carcinogenic risk (5×10^{-6}) for SWMU 35-004(b), Consolidated Unit 35-008-00, SWMU 35-009(c), AOC 35-016(f), Consolidated Unit 35-016(i)-00, and SWMU 35-016(p) is less than the NMED target level of 1×10^{-5}. The maximum dose (3 mrem/yr) for SWMU 35-004(b), Consolidated Unit 35-008-00, SWMU 35-009(c), AOC 35-016(f), Consolidated Unit 35-016(i)-00, and SWMU 35-016(p) is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user in the Mortandad Slope Subarea is equivalent to a total risk range from 1×10^{-6} to 1×10^{-5}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml).

Based on a recreational scenario, the HI (0.1) for SWMU 35-016(o) is less than NMED's target level of 1.0. The maximum carcinogenic risk (9×10^{-6}) for SWMU 35-016(o) is less than the NMED target level of 1×10^{-5} and the dose (0.4 mrem/yr) for SWMU 35-016(o) is less than DOE's target dose of 15 mrem/yr. The total dose for a recreational user in the Mortandad Slope Subarea is equivalent to a total risk of 1×10^{-6}, based on a conversion using RESRAD Version 6.21.

The following sites pass residential screening: SWMU 35-004(b), Consolidated Unit 35-008-00, SWMU 35-009(c), AOC 35-016(f), Consolidated Unit 35-016(i)-00, and SWMU 35-016(p).

SWMU 35-016(o) passes recreational screening.

F-5.5 Ecological Risk

F-5.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods, Revision 2" (LANL 2004, 087630).

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present on the Mortandad Slope Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors included the following:

- a plant
- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and flesh eater [surrogate for T&E species])

The rationale for these receptors is presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available.

The ESLs are based on similar species and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population (LD_{50}). The derivation of ESLs is based on the approach presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs, is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on these general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the Mortandad Slope Subarea.

Mortandad Slope Subarea is located in a mixed conifer forest. The upper slope of the canyon is ponderosa pine and Douglas fir, and the lower slope is fir and oak. Mortandad Slope is a north-facing, fairly steep, dry slope. The area is within the core habitat for the Mexican spotted owl, a T&E species.

Surface water is the dominant transport mechanism here because of the large surface area of asphalt and rooftops that drain from the mesa top onto this slope. Runoff terminates at the floor of Mortandad Canyon. There is no potential for exposure to aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head.

F-5.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between 0–5 ft bgs (LANL 2004, 087630) from the Mortandad Slope Subarea SWMUs, AOCs, and consolidated units, including data from the Mortandad Watershed (Appendix D Tables D-4.9-7, D-4.9-14, and D-4.9-21). Tuff was included in the screening assessment because some of it is crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify COPECs for the Mortandad Slope Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the representative concentrations (EPCs) to the ESLs. The HI is the sum of HQs. COPCs with HQs greater than 0.3 are identified as COPECs and are evaluated further. ESLs for terrestrial receptors were obtained from the Laboratory's ECORISK Database, Version 2.2 (LANL 2005, 090032), and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentrations with the final soil ESLs for Mortandad Slope Subarea are presented in Table F-5.5-1. Antimony, chromium, copper, mercury, nickel, selenium, thallium, and zinc are retained as inorganic COPECs; plutonium-238 is retained as a radionuclide COPEC; and acenaphthene, Aroclor-1242, Aroclor-1254, Aroclor-1260, benzo(a)anthracene, benzoic acid, bis(2-ethylhexyl)phthalate, chrysene, 4,4'-DDE, dibenzofuran, di-n-butylphthalate, fluorene, 2-methylnaphthalene, naphthalene, pentachlorophenol, and phenol, are retained as organic COPECs.

There are no ESLs for bromide, lithium, perchlorate, ruthenium-106, aniline, 4-chloroaniline, 4-isopropyltoluene, TPH-DRO, and trichlorofluoromethane. Therefore, these analytes are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-5.5-2. The HQ for each COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-5.5-2, all of the receptors may be potentially impacted by COPECs because they have HIs greater than 1.0.

F-5.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the Mortandad Slope Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Mortandad Slope Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPCs was not determined as part of the investigation, largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic, radionuclide, and organic COPECs are not generally 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils) or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathway

The representative concentrations used in the calculations of HQs were the 95% UCLs or maximum detected concentrations in the sediment/soil/tuff to a depth of 5 ft, thereby conservatively estimating the concentrations of each COPC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This approach results in an overestimation of the potential risk because COPCs varied across the site and were generally infrequently detected.

Background Concentrations

The ecological screening is based on the exposure of ecological receptors to contamination to a depth of 5 ft bgs. Table F-5.5-3 shows the range of soil, sediment, and tuff background concentrations for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the representative concentrations and the range of background concentrations, antimony, chromium, copper, mercury, nickel, selenium, thallium, and zinc are similar to background concentrations and are not retained as COPECs.

Area Use Factors

In addition to the direct comparison of the EPC with the ESL, AUFs are used to account for the amount of time the individual is likely to spend within the contaminated areas based on the size of the receptor's HR. AUFs for individuals were developed by dividing the size of the area of the site (5.53 ha) by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF for the Mexican spotted owl is 0.015 ha. Based on the application of the AUF for the Mexican spotted owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.97).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations in the Mortandad Slope Subarea is to estimate the spatial extent of the area inhabited by the

local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HRarea). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$, or approximately 40HR.

The area of the Mortandad Slope Subarea is approximately 5.53 ha. The PAUFs are estimated by dividing the area by the population area of each receptor population (Table F-5.5-4). The resulting factor is multiplied by the receptor HI to determine if there is a potential impact on the population (Table F-5.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-5.5-5). The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. The HI for the deer mouse is not adjusted by PAUFs because the population area for the deer mouse is smaller than the subarea. Based on the reassessment, the adjusted HIs for the Mortandad Slope Subarea are <0.01 for the red fox, 0.08 for the carnivorous kestrel, 0.09 for the omnivorous kestrel, 2 for the herbivorous robin, 47 for the omnivorous robin, 92 for the insectivorous robin, 0.3 for the cottontail, and 8 for the shrew (Table F-5.5-5). The HIs for the red fox, the kestrel and the cottontail are less than 1; therefore, these receptors are not adversely affected by the COPECs.

COPECs Contributing to PAUF-Adjusted HIs Greater Than 1

Use of the PAUF does not take into account a few high concentrations at some of the sampling locations. Instead, it assumes that the COPECs are distributed uniformly across the site. COPECs detected once, or only in a few locations, are unlikely to impact a receptor population.

Aroclor-1242. Aroclor-1242 was detected in 1 of 64 samples at a concentration of 0.0085 mg/kg. If the detected concentration is used, the HQs are less than 0.3 for all receptors, indicating that Aroclor-1242 is not likely to present a risk to receptor populations. Aroclor-1242 is eliminated as a COPEC.

Pentachlorophenol. Pentachlorophenol was detected in 1 of 120 samples at a concentration of 0.23 mg/kg. If the detected concentration of 0.23 mg/kg is used, then the HQs are less than 0.6 for all receptors. Because pentachlorophenol was detected only once, it is not likely to pose a potential risk to ecological receptors; it is eliminated as a COPEC.

Phenol. Phenol was detected in 4 of 120 samples at a maximum detected concentration of 0.18 mg/kg. If the maximum detected concentration is used, the HQ is less than 0.3 for all receptors, indicating that phenol is not likely to present a risk to receptor populations. Phenol is eliminated as a COPEC.

4,4'-DDE. DDE[4,4'-] was detected in 3 of 47 samples at a maximum detected concentration of 0.002 mg/kg. If the maximum detected concentration is used, the HQs are less than 0.3 for all receptors, indicating that 4,4'-DDE is not likely to present a risk to receptor populations. DDE[4,4'-] is eliminated as a COPEC.

2-Methylnaphthalene. Methylnaphthalene[2-] was detected in 5 of 120 samples at a maximum detected concentration of 0.47 mg/kg. If the maximum detected concentration is used, the HQ is less than 0.3 for

all receptors, indicating that 2-methylnaphthalene is not likely to present a risk to receptor populations. Methylnaphthalene[2-] is eliminated as a COPEC.

Acenaphthylene. Acenaphthylene was detected in 13 of 147 samples at maximum detected concentration of 3.2 mg/kg. The EPC for acenaphthylene (1.47 mg/kg) is similar to concentrations reported in the Mortandad Canyon investigation report (1.8 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (1.6 mg/kg) (LANL 2005, 091818). Field studies on plants were conducted, and no differences in abundance, diversity, seedling germination, and growth were noted in the reports. The results of the plant studies indicated no adverse ecological effects from contaminants in Mortandad (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from acenaphthylene to plants are likely in Mortandad Slope Subarea. Acenaphthylene is eliminated as a COPEC.

Aroclor-1254. Aroclor-1254 was detected in 18 of 64 samples at a maximum detected concentration of 1.4 mg/kg. The EPC for Aroclor-1254 (0.18 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (0.57 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (6.2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1254 to avian populations are likely in Mortandad Slope Subarea. Aroclor-1254 is eliminated as a COPEC.

Aroclor-1260. Aroclor-1260 was detected in 37 of 64 samples at a maximum detected concentration of 0.44 mg/kg. The EPC for Aroclor-1260 (0.086 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (1.37 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (3.3 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1260 to avian populations are likely in Mortandad Slope Subarea. Aroclor-1260 is eliminated as a COPEC.

Benzo(a)anthracene. Benzo(a)anthracene was detected in 16 of 147 samples at a maximum detected concentration of 11 mg/kg. The EPC for benzo(a)anthracene (1.66 mg/kg) is similar to concentrations reported in the Mortandad Canyon investigation report (1.86 mg/kg) (LANL 2006, 094161) and less than the concentrations reported in the Los Alamos and Pueblo Canyons investigation report (5.6 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from benzo(a)anthracene to small mammals are likely in Mortandad Slope Subarea. Benzo(a)anthracene is eliminated as a COPEC.

Benzoic Acid. Benzoic acid was detected in 17 of 118 samples at a maximum detected concentration of 1.6 mg/kg. The EPC for benzoic acid (7.25 mg/kg) is elevated as a result of 30 nondetects greater than 2 mg/kg. The maximum detected concentration of benzoic acid is similar to concentrations reported in the Mortandad Canyon investigation report (5.7 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (3.5 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The

results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from benzoic acid to small mammals are likely in Mortandad Slope Subarea. Benzoic acid is eliminated as a COPEC.

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected in 25 of 117 samples at a maximum detected concentration of 8.6 mg/kg. The EPC for bis(2-ethylhexyl)phthalate (1.80 mg/kg) is similar to concentrations reported in the Mortandad Canyon investigation report (0.55 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from bis(2-ethylhexyl)phthalate to avian populations are likely in Mortandad Slope Subarea. Bis(2-ethylhexyl)phthalate is eliminated as a COPEC.

Chrysene. Chrysene was detected in 34 of 147 samples at a maximum detected concentration of 11 mg/kg. The EPC for chrysene (1.71 mg/kg) is similar to concentrations reported in the Mortandad Canyon investigation report (1.64 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons Investigation (5.3 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from chrysene to small mammals are likely in Mortandad Slope Subarea. Chrysene is eliminated as a COPEC.

Di-n-butylphthalate. Di-n-butylphthalate was detected in 15 of 118 samples at a maximum detected concentration of 0.45 mg/kg. The EPC for di-n-butylphthalate (1.80 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (3 mg/kg) (LANL 2006, 094161). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161). Therefore, no potential adverse ecological effects from di-n-butylphthalate to avian populations are likely in Mortandad Slope Subarea. Di-n-butylphthalate is eliminated as a COPEC.

Naphthalene. Naphthalene was detected in five of 147 samples at a maximum detected concentration of 1.5 mg/kg. The EPC for naphthalene (1.45 mg/kg) is similar to concentrations reported in the Mortandad Canyon investigation report (1.2 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (2.4 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from naphthalene to small mammals are likely in Mortandad Slope Subarea. Naphthalene is eliminated as a COPEC.

Table F-5.5-6 shows the remaining COPECs and receptors with the HQs adjusted for PAUF. The HIs for the robin, shrew, deer mouse, earthworm, and plant are less than 1, indicating that no potential adverse ecological effects are likely at Mortandad Slope.

DOE Tier I Bioconcentration Guides

The DOE Tier I BCG is a lower value for cesium-137 (20.8 pCi/g) than the ECORISK Database final ESL (680 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 0.2 (using LANL 2004, 087630) to 5.2 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicates that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison, and there are no potential impacts from cesium-137 on receptors.

The DOE Tier I BCG is a lower value for strontium-90 (22.5 pCi/g) than the ECORISK Database final ESL (560 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 0.01 (using LANL 2004, 087630) to 0.21 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison, and there are no potential impacts from strontium-90 on receptors.

Chemicals without ESLs

There are no ESLs for bromide, and this chemical cannot be assessed quantitatively for potential ecological risk. Bromide was detected in two samples within 0–5 ft bgs at a maximum concentration of 0.723 mg/kg. As discussed in section F-5.4-2, bromide is naturally occurring and was detected at natural levels. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for lithium, and this chemical cannot be assessed quantitatively for potential ecological risk. Lithium was detected in three samples within 0–5 ft bgs at concentrations of 6.5, 6.8, and 7 mg/kg. The EPA Region 6 residential SSL is 1600 mg/kg, which indicates low potential toxicity from this chemical. Therefore, lithium does not pose a potential ecological risk to receptors at this site.

There are no ESLs for perchlorate, and this chemical cannot be assessed quantitatively for potential ecological risk. Perchlorate was detected in two samples within 0–5 ft bgs at a maximum concentration of 0.064 mg/kg. The EPA Region 6 residential SSL is 55 mg/kg, which is 2 orders of magnitude above the maximum detected concentration. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for ruthenium-106, and this radionuclide cannot be assessed quantitatively for potential ecological risk. Ruthenium-106 was detected in one of 85 samples within 0–5 ft bgs at a concentration of 0.56 pCi/g. The residential SAL is 20 pCi/g, which is almost 2 orders of magnitude above the maximum detected concentration, and indicates low potential toxicity from this radionuclide. Therefore, ruthenium-106 does not pose a potential ecological risk to receptors at this site.

There are no ESLs for aniline, and this chemical cannot be assessed quantitatively for potential ecological risk. Aniline was detected in one of 118 samples within 0–5 ft bgs at a concentration of 0.21 mg/kg. The EPA Region 6 residential SSL is 850 mg/kg, which indicates low potential toxicity from this chemical. Therefore, aniline does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 4-chloroaniline, and this chemical cannot be assessed quantitatively for potential ecological risk. Chloroaniline[4-] was detected in one of 118 samples within 0–5 ft bgs at a concentration of 0.14 mg/kg. The EPA Region 6 residential SSL is 240 mg/kg, which indicates low potential toxicity from this chemical. Therefore, 4-chloroaniline does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 4-isopropyltoluene, and this chemical cannot be assessed quantitatively for potential ecological risk. Isopropyltoluene[4-] was detected in 3 of 16 samples within 0–5 ft bgs at concentrations less than 0.0034 mg/kg. If toluene is used as a surrogate, a maximum HQ of <0.01 is generated for all the receptors, indicating that 4-isopropyltoluene does not pose a potential risk to receptors.

There are no ESLs for trichlorofluoromethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichlorofluoromethane was detected in 5 of 15 samples within 0–5 ft bgs at concentrations less than of 0.0021 mg/kg. The NMED residential is 588 mg/kg, which indicates low potential toxicity from this chemical. Therefore, trichlorofluoromethane does not pose a potential ecological risk to receptors at this site.

There are no ESLs for TPH-DRO, and this chemical cannot be assessed quantitatively for potential ecological risk. TPH-DRO was less than 200 mg/kg in all but three locations. Based on the generally low levels, TPH-DRO does not pose a potential ecological risk to receptor populations.

F-5.5.4 Interpretation

Based on the ecological screening assessment for the Mortandad Slope Subarea, 34 COPECs (including 9 COPECs without ESLs) were identified. Most of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and the infrequency of detected concentrations. The remaining COPECs do not present a potential ecological risk to receptors at this site.

F-6.0 PRATT CANYON SUBAREA

F-6.1 Site Descriptions

Pratt Canyon, a small tributary canyon of Ten Site Canyon, is located at the eastern end of TA-35 and received treated wastewater containing radionuclides from the former WWTP. This canyon extends approximately 0.25 mi from the TA-35 mesa edge to its confluence with Ten Site Canyon, with an elevation change of approximately 100–120 ft. The subarea consists of a steep slope below TA-35, and a gently sloping bench containing an ephemeral drainage channel.

The Pratt Canyon Subarea is made up of eight SWMUs and one AOC. These include outfalls, former wastewater WWTP components, an abandoned septic system, and Pratt Canyon itself, which received planned and unplanned discharges from the WWTP that operated from 1951 until 1963.

F-6.1.1 Surface Conditions

Pratt Canyon drains from west to east, beginning at the east end of the Mesa Top Subarea. The canyon includes steep, north-facing and south-facing slopes that adjoin a relatively flat canyon bottom. The canyon bottom contains distinct floodplain terraces above a channel that is moderately incised in the upper portion of the canyon but becomes less well defined in the lower portion of the canyon. The extreme upper part of Pratt Canyon is an area that has been backfilled and modified with erosion control features.

The vegetation in Pratt Canyon is dominated by ponderosa pine, with an understory of gambel oak, some juniper and fir on the slopes, and willow and native grasses in the floodplain terrace areas. A small area near the confluence with Ten Site Canyon has supported cattails in previous years.

F-6.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Pratt Canyon Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207), and has been further defined using geologic logs from boreholes drilled at or near the site.

The predominant rock unit at the surface is unit 3 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick in Pratt Canyon. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30–40 ft thick. The lowest unit encountered is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once in the investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lie the Guaje Pumice Bed (approximately 35 ft thick) followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area.

There are no known subsurface human-made structures in the Pratt Canyon Subarea.

F-6.1.3 Groundwater Conditions

The top of the regional aquifer is approximately 1100–1200 ft bgs in the Pratt Canyon Subarea (see section 5.1.4 for a discussion of groundwater conditions). There is no known perched or alluvial groundwater in the area. Regional well R-14 in Ten Site Canyon, approximately 0.2 mi east-southeast of the Pratt Canyon Subarea, encountered groundwater at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

F-6.1.4 Surface Water Conditions

No permanent surface water exists in the Pratt Canyon Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff from the eastern end of the mesa top discharges from storm drains into the upper part of Pratt Canyon. Surface runoff in the upper part of Pratt Canyon occurs mostly as channelized flow in steep, moderately incised drainage channels. The lower portion of the subarea is a broader canyon with a lower gradient, where surface flow is slower and some areas exhibit poor drainage and occasional retention of standing water.

Surface water site assessments were performed for the Pratt Canyon SWMUs and AOC in 1997. The SWMUs and AOC in the Pratt Canyon Subarea received scores between 18.3 and 87, indicating low to high potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

F-6.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-6.2 Sampling Results

The sampling results for the Pratt Canyon Subarea are described in detail in section 6.0 and Appendix D of the report, and are summarized here.

The data used to define the nature and extent of contamination in the Pratt Canyon Subarea were obtained from environmental samples collected in 1993–1994, 1995–1996, 1997, 2004–2005, and 2007. Figure F-6.2-1 is an index map of the Pratt Canyon Subarea, which is divided into two map areas (A and B) for a more appropriate scale. Figures F-6.2-2 and 6.2-3 show the SWMUs and AOCs in each of two map areas within Pratt Canyon Subarea, with sampling locations identified.

F-6.2.1 Summary of Results

The sampling data for the Pratt Canyon Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide BVs and FVs, where available, are from "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 059730).

The representative concentrations used for the screening assessments are either the 95% UCL of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used because the ProUCL program cannot handle negative values. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. The human health risk assessment for the Pratt Canyon Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–1 ft bgs for recreational user and 0–10 ft bgs for the residential user; the ecological risk assessment for the Pratt Canyon Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–5 ft bgs. Appendix D Tables D-5.1-1 through D-5.4-2 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 8.2-1 of the report. Figures F-6.2-4 and F-6.2-5 show the locations of soil, sediment, and tuff samples in which inorganic chemicals were detected above BVs or were detected without BVs.

Radionuclides

The radionuclide COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 8.2-1 of the report. Figures F-6.2-6 and F-6.2-7 show the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected without BVs, or were detected at depths greater than 0.5 ft (americium-241; plutonium-238, plutonium-239; strontium-90; and tritium).

Organic Chemicals

Identification of COPCs for organic chemicals is based on detection status, and are presented in Table 8.2-1 of the report. Figures F-6.2-8 and F-6.2-9 show the organic COPCs.

F-6.2.2 History of Releases

Consolidated Unit 35-003(a)-99, which consists of SWMU 35-003(e), is the former WWTP's surge tank, structure 35-36. This SWMU is discussed in the Mesa Top Subarea.

Consolidated Unit 35-003(d)-00, which consists of SWMUs 35-003(d), 35-003(l), 35-003(q), and 35-003(r), is the former WWTP's holding tank, pump pit, pipe trench, and canyon disposal area for liquid sludge. SWMU 35-003(d) is the former liquid-waste holding tank building, which was a rectangular, reinforced concrete structure composed of four separate 50,000-gal. tanks (structure 35-10). Each tank was 35 ft wide by 85 ft long and was situated primarily below ground level, with the top portions exposed. All liquids were pumped out through a pipe trench and pump hose to Building 35-07 for treatment and discharge from the WWTP. SWMU 35-003(l) is the former pump pit (structure 35-08) that was adjacent to the pipe trench and the liquid-waste holding tanks. The pump pit was approximately 10 ft wide by 14 ft long and housed two large capacity electric pumps and associated valves and piping to transfer liquid waste between the holding tanks and to Building 35-07. SWMU 35-003(q) is the former pipe trench (structure 35-09) that connected Buildings 35-02, 35-03, and 35-07 to the former WWTP and connected the pump pit to the waste holding tanks. The trench was approximately 60 ft long and 10 ft wide. SWMU 35-003(r) is the site of the canyon disposal area for liquid sludge effluent associated with the former WWTP.

SWMU 35-009(d) is an abandoned septic system. The tank was located at the northeast corner of Ten Site Mesa, and the leach field extended from the tank towards the east. The leach field covered an area of approximately 1800 ft^2 and consisted of fine- to coarse-grained sandstone and cobble filter bed material. The system was pumped out, filled with concrete, and left in place during a 1996 VCA.

Consolidated Unit 35-016(k)-00 consists of SWMU 35-016(k), an inactive outfall that handled cooling water from TA-35-29, and AOC 35-016(l), an active, open-air, surface stormwater discharge channel. SWMU 35-016(k) discharged noncontact cooling water from the Gas Laser Building (Building 35-29). The outfall discharged into a steep channel lined with a riprap apron into Pratt Canyon. The channels associated with AOC 35-016(l) were established in 1961 to discharge rainwater runoff from TA-35-29 and water leaks from an ultraviolet water sterilizer in TA-35-29. Stained areas from past dielectric oil spills are present in the source areas for these channels.

SWMU 35-016(m) is an inactive cooling tower outfall located north of Building 35-33. The outfall was included on NPDES permit No. 03A039, and was intended for discharging treated cooling tower blowdown from two planned reactors in Building 35-33. The reactors were never installed, the cooling tower was never operated, and the outfall never served its intended purpose; instead, it discharged stormwater runoff from parking areas at the east end of the TA-35 mesa top.

F-6.2.3 Nature and Extent

The Aggregate SAP (LANL 2002, 073092), approved by NMED (2003, 078145), stipulated additional sampling at the following SWMUs to complete the data set and determine the nature and extent of the contaminants. Figure F-6.2-1 is the index map for the two areas in Pratt Canyon Subarea.

Consolidated Unit 35-003(d)-00

Consolidated Unit 35-003(d)-00 consists of SWMUs 35-003(d,l,q), a former WWTP holding tank building, pump pit, and trench, and SWMU 35-003(r), the former WWTP effluent-receiving canyon (Figures F-6.2-2 and F-6.2-3). Additional samples needed to be collected at Consolidated Unit 35-003(d)-00 and analyzed for TAL metals, SVOCs, PCBs, alpha spectroscopy, and strontium-90 analyses to complete the data set. In accordance with the approved Aggregate SAP (LANL 2002, 073092), five boreholes were sampled in 2004 to define vertical and lateral extent.

Samples were collected in 2004–2005 at the following locations:

- location 35-24400, samples collected at 5–5.6 ft bgs and 8–8.6 ft bgs
- location 35-24410, samples collected at 9.5–10 ft bgs and 11–12 ft bgs
- location 35-24411, samples collected at 19–20 ft bgs, 39–40 ft bgs, 59–60 ft bgs, 79–80 ft bgs, and 99–100 ft bgs
- location 35-24412, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- location 35-24413, samples collected at 9–10 ft bgs, 19–20 ft bgs, and 29–30 ft bgs
- transect location 35-24401, samples collected at 0–0.43 ft bgs and 0.43–1.02 ft bgs
- transect location 35-24402, samples collected at 0–0.82 ft bgs, 0.82–1.28 ft bgs, and 1.94–2.2 ft bgs
- transect location 35-24404, samples collected at 0–0.82 ft bgs and 0.82–1.28 ft bgs
- transect location 35-24405, samples collected at 0–0.92 ft bgs and 0.92–1.94 ft bgs
- transect location 35-24406, samples collected at 0–0.59 ft bgs

Samples were collected in 2007 at the following locations:

- location 35-24402, samples collected at 2.5-3.0 ft bgs and 4.0-4.5 ft bgs
- location 35-24405, samples collected at 2.5-3.0 ft bgs and 4.0-4.1 ft bgs

Inorganic Chemicals. Inorganic chemicals were detected above their respective BVs infrequently and at low concentrations at Consolidated Unit 35-003(d)-00 (Figures F-6.2-4 and F-6.2-5). Selenium was detected (0.6 mg/kg, location 35-24412, 19–20 ft, and 0.73 mg/kg, location 35-24411, 79–80 ft) above its BV once in two of the three diversion channel boreholes but was not detected in the deeper samples. Selenium was not detected above its BV within the Pratt Canyon stream channel in the two boreholes or the Pratt Canyon stream samples (the locations starting with "MO-"). However, selenium was detected above its BV in three of the 2004 transects (location 35-24404, 0.96 mg/kg, 0.82–1.28 ft, location 35-24401, 0.45 mg/kg, 0.43–1.02 ft, and location 35-24405, 0.66 mg/kg, 0.92–1.94 ft). Mercury was detected above its BV in sediment samples in the Pratt Canyon drainage but at low concentrations (0.15 mg/kg to 0.29 mg/kg). Mercury was not detected at a concentration greater than its BV in the two

transects (35-24405 and 35-24406) located downstream. Nature and extent have been defined for inorganic chemicals at Consolidated Unit 35-003(d)-00.

Radionuclides. Radionuclides were detected at concentrations greater than their respective BVs and FVs in the samples collected from 1994, 1997, 2004–2005, and 2007 (Figures F-6.2-6 and F-6.2-7). The 2004 samples collected in the diversion channel (locations 35-24412 and 35-24413) reported that only strontium-90 was detected (location 35-24412, 13.9 pCi/g, 9–10 ft, 1.46 pCi/g, 19–20 ft, and 0.64 pCi/g, 29–30 ft) and decreased with depth. Only uranium-235 was detected at concentrations greater than BV at location 35-24411 (0.157 pCi/g, 19–20 ft, 0.0914 pCi/g, 59–60 ft, and 0.0941 pCi/g, 99–100 ft), and decreased to approximately the BV. No radionuclides were detected at concentrations greater than BV at location 35-24413, the borehole sampled on the southern edge of Consolidated Unit 35-003(d)-00 to a depth of 30 ft, indicating that vertical and lateral extent have been defined in this direction.

At location 35-24410, americium-241 (0.075 pCi/g), cesium-137 (0.97 pCi/g), plutonium-239 (0.28 pCi/g), and strontium-90 (8.32 pCi/g) were detected or were detected greater than BVs in the sample from 9.5–10 ft. The concentrations of these radionuclides decreased with depth to the 11–12-ft sample. Although americium-241, cesium-137, plutonium-239, and strontium-90 were detected in the sample at the bottom of the borehole, the vertical extent can be defined by the samples from downslope borehole location 35-02028, which was sampled to a depth of 300 ft. Americium-241, cesium-137, plutonium-239, and strontium-90 were not detected in any of the samples from location 35-02028.

At location 35-24400, cesium-137 (0.161 pCi/g) and strontium-90 (0.448 pCi/g) were detected in the sample from 5–5.6 ft; but were not detected from 8–8.6 ft. Therefore, vertical extent is defined at this location.

The concentrations of strontium-90 increased from location 35-24401 to downstream location 35-24402. From location 35-24402 to downstream location 35-24404, there was no change in the strontium-90 concentrations. From location 35-24404 to location 35-24405, the concentration of strontium-90 decreased, and at location 35-24406 the concentration of strontium-90 was less than the BV.

At transect location 35-24401, strontium-90 was detected at 1.77 pCi/g (0-0.43 ft) and decreased to 1.5 pCi/g (0.43–1.02 ft). At location 35-24402, strontium-90 was detected at 34.1 pCi/g (0.82-1.28 ft) and 36.8 pCi/g (1.94–2.2 ft), then decreased to 11.4 pCi/g (2.5–3.0 ft) and 2.2 pCi/g (4.0–4.5 ft) in the deeper samples. At location 35-24404, strontium-90 was detected in only one sample depth (0.82–1.28 ft) at a concentration of 34.6 pCi/g. At location 35-24405, the concentration of strontium-90 increased slightly from 1.47 pCi/g (0.0–0.92 ft) to 5.95 pCi/g (0.92–1.94 ft), and increased to 16.9 pCi/g (2.503.00 ft), then decreased to 4.87 pCi/g (4.0–4.10 ft). At location 35-24406, the concentration of strontium-90 was less than BV.

Cesium-137 was detected at upstream location 35-02370 at a concentration of 5.38 pCi/g at the 3–5 ft deep interval, and was not detected in the deeper samples. The concentrations of cesium-137 decreased in the downstream direction: location 35-24402, 1.56 pCi/g (0.8–1.28 ft) and 1.04 pCi/g (1.94–2.2 ft); location 35-24404, 1.16 pCi/g (0.82–1.28 ft); farther downstream locations 35-24405 and 35-24406 samples had concentrations approximately equal to 0.2 pCi/g. Plutonium-238 and plutonium-239 were detected at low concentrations (less than 1 pCi/g) within the Pratt Canyon drainage. Additional sampling at Consolidated Unit 35-003(d)-00 is not warranted because samples for radionuclide analysis will be collected in Mortandad Canyon.

Organic chemicals. PCBs were detected within the Pratt Canyon drainage. Aroclor-1254 was detected in six samples at concentrations less than 0.013 mg/kg (Figures F-6.2-8 and F-6.2-9). Aroclor-1260 was detected in 24 samples, at concentrations less than 0.7 mg/kg. The samples from transect locations

35-24404, 35-24405, and 35-24406, just above the confluence with Ten Site Canyon drainage indicated concentrations of Aroclor-1260 less than 0.07 mg/kg, indicating a decreasing trend in the downstream direction. PAHs were detected within Consolidated Unit 35-003(d)-00 but at low concentrations. The 2004–2005 sample results for PAHs were equal to or less than 0.2 mg/kg and decreased to 0.04 mg/kg at location 35-24405. Di-n-butylphthalate was detected in two locations (locations 35-24411 and 35-24412) at concentrations less than the EQL (0.3 mg/kg). Benzoic acid was detected at four locations and increased from 0.37 mg/kg (location 35-24413) to 0.53 mg/kg (locations 35-24404 and 35-24405). Additional sampling at Consolidated Unit 35-003(d)-00 is not warranted because samples will be collected in Mortandad Canyon for analysis of organic chemicals.

SWMU 35-003(e)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), no additional samples needed to be collected at SWMU 35-003(e), a former WWTP storage tank, to complete the data set. SWMU 35-003(e) is part of Consolidated Unit 35-003(a)-99, which was discussed in the Mesa Top Subarea.

SWMU 35-009(d)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at SWMU 35-009(d), an abandoned septic system, and analyzed for TAL metals, VOCs, tritium and strontium-90 to complete the data set (Figure F-6.2-2).

Samples were collected in 2004 at the following location: location 35-22944, samples collected at depths of 4–5 ft bgs, 9–10 ft bgs, and 14–15 ft bgs.

Inorganic Chemicals. Copper was detected (location 35-02057, 5.3 mg/kg, 5–8 ft) at a concentration greater than its BV (4.66 mg/kg); however, the concentration is within the range of the copper background concentrations (Figure F-6.2-4). Selenium was detected (location 35-22944, 0.39 mg/kg, 9–10 ft) at a concentration greater than its BV (0.3 mg/kg) but was not detected greater than BV in the deeper sample. Lithium was detected at four 1994 locations: 35-02048, 35-02057, 35-02059, and 35-02062 at concentrations of 2.8 mg/kg, 10.8 mg/kg, 3.4 mg/kg, and 3.5 mg/kg, respectively. Lithium was not detected at location 35-02559, downslope from all the SWMU 35-009(d) locations. Zinc was detected (location 35-22944, 51.3 mg/kg, 4–5 ft) but not within the deeper samples (9–10 ft and 14–15 ft). At location 35-02057, cadmium (1.7 mg/kg) and chromium (11.9 mg/kg) were detected in the sample from 5–8 ft but not in the adjacent samples from location 35-02059. Cadmium is slightly above its background range (0.1–1.5 mg/kg), and chromium was detected in the range of background concentrations (0.25–13 mg/kg). The nature and extent have been defined for inorganic chemicals.

Radionuclides. Radionuclides were detected at five locations at SWMU 35-009(d) (Figure F-6.2-6). In the 2004 borehole, location 35-22944, tritium was detected at low concentrations at the three depths sampled, and with concentrations decreasing with depth (0.031 pCi/g, 4–5 ft; 0.25 pCi/g, 9–10 ft; 0.14 pCi/g, 14–15 ft). Plutonium-238 and plutonium-239 were detected (0.09 pCi/g and 0.011 pCi/g, respectively) at location 35-02062 and not detected in deeper samples at this location. Plutonium-238 was detected at locations 35-02058 (0.018 pCi/g, 5–8 ft) and 35-02061 (0.018 pCi/g, 14–15 ft). Plutonium-238 and plutonium-239 were not detected in the 2004 borehole (location 35-22944), which was sampled to a depth of 15 ft. These radionuclides were not detected in the sample collected downslope, location 35-02559. However, one radionuclide, cesium-137, was detected at location 35-02559 (0.34 pCi/g, 0–1 ft), which is less than the FV, and was not detected in the deeper sample at that location. Nature and extent have been defined for radionuclides at SWMU 35-009(d).

Organic Chemicals. Acetone was detected at two locations (35-02277, 0.007 mg/kg, 8–10 ft, and 35-22944, 0.004 mg/kg, 9–10 ft), at concentrations less than the EQL (0.005 mg/kg) (Figure F-6.2-8). No other organic chemicals were detected in the samples from SWMU 35-009(d); therefore, nature and extent have been defined.

Consolidated Unit 35-016(k)-00

Consolidated Unit 35-016(k)-00 consists of SWMUs 35-016(k), a former cooling water outfall, and SWMU 35-016(l), a stormwater outfall (Figure F-6.2-2). As discussed in the approved Aggregate SAP (LANL 2002, 073092), Consolidated Unit 35-016(k)-00 needed additional samples collected and analyzed for TAL metals, SVOCs, PCBs, and strontium-90 to complete the data set.

Samples were collected in 2004–2005 at the following locations:

- location 35-22927, samples collected at 1.5–2 ft bgs and 4.5–5 ft bgs
- transect location 35-24407, samples collected at 0–0.98 ft bgs and 0.98–1.38 ft bgs
- transect location 35-24408, samples collected at 0–0.56 ft bgs

Samples were collected in 2007 at the following locations:

- location 35-27421, samples collected at 0.0-1.0 ft bgs and 2.0–2.5 ft bgs
- location 35-27422, samples collected at 0.0–1.0 ft bgs and 2.0–2.5 ft bgs
- location 35-02214, samples collected at 2.0–2.5 ft bgs and 3.0–3.5 ft bgs
- location 35-02502, samples collected at 2.0–2.5 ft bgs and 3.0–3.5 ft bgs
- location 35-02503, samples collected at 2.0–2.5 ft bgs and 3.0–3.5 ft bgs

Inorganic Chemicals. Previous sampling at Consolidated Unit 35-016(k)-00 detected inorganic chemicals at concentrations greater than their respective BVs, but extent has not been defined below 2 ft (Figure F-6.2-4). However, in the 2004 borehole (location 35-22927), drilled to a depth of 5 ft, only chromium was detected (30.8 mg/kg, 4.5–5 ft), but the duplicate sample reported a concentration of 16.1 mg/kg, which is slightly above the range of background concentrations (0.25–13 mg/kg). Sampling results from the transect locations indicated mercury at one location (1.04 mg/kg, location 35-24408, 0–0.56 ft) and selenium at another (0.31 mg/kg, location 35-24407, 0.98–1.38 ft). Nature and extent have been defined for inorganic chemicals.

Radionuclides. In 1997, plutonium-239 was detected at a concentration of 0.028 pCi/g from location 35-02502 (0–1 ft), but was not detected in the deeper sample (1–2 ft) (Figure F-6.2-6). Strontium-90 was detected (2.05 pCi/g) in the surface sample (0–0.98 ft) at location 35-24407, but was not detected in the deeper sample (0.98–1.38 ft). Because this location is also downgradient of Consolidated Unit 35-003(d)-00, the detected strontium-90 may be associated with that SWMU. No radionuclides were detected in the 2004 borehole (location 35-22927) or in the 2004 transect (location 35-24408). The nature and extent of radionuclides have been defined at Consolidated Unit 35-016(k)-00.

Organic Chemicals. The pre-2004 sampling at Consolidated Unit 35-016(k)-00 detected organic chemicals, but extent was not defined deeper than 2 ft (Figure F-6.2-8). In 1997, Aroclor-1260 was detected in the four samples from Consolidated Unit 35-016(k)-00, but extent was not defined deeper than 2 ft. Aroclor-1260 was detected in the 2004 samples (0.002 mg/kg) at location 35-22927 in the 4.5–5 ft sample, but it was two orders of magnitude less than the 1997 samples and less than the EQL.

Aroclor-1254 was detected at location 35-24408 (0.10 mg/kg, 0–0.56 ft) but was not detected in the downslope sample at location 35-24407. Trichlorofluoromethane and 1,1,2-trichloro-1,2,2-trifluoroethane were detected in two of the 1997 samples, but were not detected in any of the 2004 samples. PAHs were detected in samples at six locations, and show decreasing concentrations with depth at each location. At location 35-02503, acetone, pyrene, and toluene were detected in the samples collected in 2007. Acetone was detected at a concentration of 0.0049 mg/kg (2.0–2.5 ft), and decreased to 0.0035 mg/kg (3.0–3.5 ft) in the deeper sample. Pyrene was detected at a concentration of 0.023 mg/kg (2.0-2.5 ft), but was not detected in the deeper sample. Toluene was detected at a very low concentration (0.00049 mg/kg). The 2007 samples defined the extent of PAHs; no PAHs were detected in samples from location 35-27421, and none were detected at depths greater than 2 ft from location 35-02214. The PAHs that were detected in the 2007 samples from 2.0–2.5 ft and 3.0–3.5 ft at location 35-02502 were at lower concentrations than the 1997 samples from 0.0–1.0 ft and 1.0–2.0 ft. The nature and extent of organic chemicals has been defined at Consolidated Unit 35-016(k)-00.

SWMU 35-016(m)

As discussed in the approved Aggregate SAP (LANL 2002, 073092), additional samples needed to be collected at SWMU 35-016(m), a former cooling water outfall, and analyzed for TAL metals and SVOCs to complete the data set (Figure F-6.2-2).

Samples were collected in 2004–2005 at the following location: transect location 35-24409, collected at 0–1.08 ft bgs and 1.08–2.13 ft bgs.

Inorganic Chemicals. Previously, no inorganic chemicals were detected at concentrations greater than their respective BVs, and no inorganic chemicals were detected at concentrations greater than their respective BVs in the 2004 transect samples (Figure F-6.2-4). Therefore, nature and extent have been defined for the inorganic chemicals at SWMU 35-016(m).

Radionuclides. Previously, plutonium-238 and plutonium-239 were detected (0.014 pCi/g and 0.245 pCi/g, respectively) at location 35-02094 in the surface sample (Figure F-6.2-6). Following the approved SAP, the samples collected in 2004 were not analyzed for radionuclides. Because plutonium-238 and plutonium-239 were detected at such low concentrations, and were not detected in the 2004 transect location (location 35-24409), the nature and extent have been defined.

Organic Chemicals. In the 1994 sample, fluoranthene was detected at a concentration of 0.43 mg/kg at location 35-02094 (0–1 ft) (Figure F-6.2-8). The results from the 2004 surface transect sampling (location 35-24409) detected PAHs at concentrations less than the EQL (0.3 mg/kg): fluoranthene (0.105 mg/kg), phenanthrene (0.078 mg/kg), and pyrene (0.118 mg/kg). The 2004 subsurface transect sample reported two SVOCs as detected: diethylphthalate (0.435 mg/kg) and benzoic acid (33.8 mg/kg). Because benzoic acid was not detected at either of the 1994 locations (35-02093 and 35-02094), it is probably not related to the SWMU activities. In addition, benzoic acid was not detected in samples from locations MO-00033 or MO-00032, downstream samples in the Pratt Canyon drainage. Nature and extent have been defined for the organic chemicals at SWMU 35-016(m).

F-6.3 Conceptual Site Model

The conceptual site model for the Pratt Canyon Subarea is described in the Aggregate SAP (LANL 2002, 073092) and is shown in Figure F-3.3-1. Surface releases are likely to result in infiltration of contaminants into surface soils and through cracks in asphalt into backfill soils and possibly into the underlying tuff. Contaminants associated with surface releases also may be transported laterally to nearby unpaved

areas or mesa-top drainages, either as release-driven surface flow or by stormwater runoff. Contaminants transported to surface soils or drainages may be locally contained or transported as sorbed species on soil particles by stormwater runoff. Soluble contaminants may be transported by stormwater runoff as dissolved species to the Pratt Canyon slope and canyon floor.

Subsurface releases are likely to result in the infiltration of contaminants into backfill soils and underlying tuff. Vertical and lateral migration within the tuff or along the soil/tuff interface may have occurred through saturated flow, unsaturated flow, or fracture flow.

The land use within the Pratt Canyon Subarea is currently industrial (LANL 1995, 057224) and recreational and is expected to remain recreational and industrial for the reasonably foreseeable future. Hiking and biking trails cross through the subarea and any exposure would be of relatively short duration. The receptor is a recreational user (hiker or trail user) with exposure pathways for dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1).

Pratt Canyon Subarea is located in a ponderosa pine habitat with an understory of gambel oak. Some juniper and fir trees grow on the slopes, and some willow and grasses grow in the channel area. In previous years, a small area near the confluence with Ten Site Canyon supported cattails. The area is within the core habitat for the Mexican spotted owl, a T&E species. Exposure pathways to biota include root uptake, food-web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-6.4 Human Health Screening Assessment

F-6.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the “Technical Background Document for Development of Soil Screening Levels, Revision 4” (NMED 2006, 092513). Sample data from 0–1 ft bgs were used in this evaluation, as media (soil, sediment, and tuff) from that depth could be encountered by a recreational user.

Land use at the Pratt Canyon Subarea is currently industrial (LANL 1995, 057224) and recreational and is expected to remain recreational and industrial for the reasonably foreseeable future. The screening assessment uses a recreational scenario. Although the subarea is designated for industrial use, any industrial use would be periodic and short-term. The industrial worker is assumed to work 8 h/d for 225 d/yr, which is not realistic for the actual use of the subarea. The use of a recreational scenario is more realistic, assuming 1 h/d for 200 d/yr.

The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment at the site is moderate because the site has a steep slope in some areas, making parts of it difficult to use as a hiking or biking trail. Toward the bottom of the slope is a trail that runs essentially parallel to the drainage channel in the bottom of the canyon. During the work day, the site is open to Laboratory workers who may be in this area. Sample data from 0–10 ft bgs were considered for the residential scenario.

The COPCs are evaluated by comparing the representative concentration with the SSL for each chemical and the SALs for radionuclides. The chemical SSLs are provided in Tables 4.0-1 and 4.0-2 in the report.

The recreational SSLs are derived according to Laboratory guidance (LANL 2007, 094496). The residential SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a screening value for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The SSLs for carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a

HQ of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5} risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr and derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD Version 6.21 (see Table 4.0-3 in the report).

The parameters used to derive the recreational and residential SSLs for chemicals are presented in Table F-6.4-1. The parameters used in deriving the residential and recreational SALs for radionuclides are presented in Tables F-6.4-2 and F-6.4-3.

F-6.4.2 Human Health Screening Assessment Results

The representative concentration for each COPC was compared with the respective residential and recreational SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessment are presented in Appendix D Tables D-5.1-1 through D-5.4-2.

Consolidated Unit 35-003(d)-99

Based on a recreational scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-6.4-4), the carcinogenic risk (8×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-6.4-5), and the dose (0.3 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-6.4-6). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-003(d)-99 under a recreational scenario.

SWMU 35-009(d)

Based on a residential scenario, the HI (0.4) is less than NMED's target level of 1.0 (Table F-6.4-7), the carcinogenic risk (1×10^{-5}) is similar to the NMED target level of 1×10^{-5} (Table F-6.4-8), and the dose (0.3 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-6.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(d) under a residential scenario.

Based on a recreational scenario, the HI (0.03) is less than NMED's target level of 1.0 (Table F-6.4-7), the carcinogenic risk (4×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-6.4-8), and the dose (0.02 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-6.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-009(d) under a recreational scenario.

Consolidated Unit 35-016(k)-00

Based on a recreational scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-6.4-10), the carcinogenic risk (1×10^{-5}) is similar to the NMED target level of 1×10^{-5} (Table F-6.4-11), and the dose (0.01 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-6.4-12). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-016(k)-00 under a recreational scenario.

SWMU 35-016(m)

Based on a residential scenario, the HI (0.0006) is less than NMED's target level of 1.0 (Table F-6.4-13) and the dose (0.9 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-6.4-14). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-016(m) under a residential scenario.

Based on a recreational scenario, the HI (0.00004) is less than NMED's target level of 1.0 (Table F-6.4-13) and the dose (0.04 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-6.4-14). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 35-016(m) under a recreational scenario.

F-6.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all of these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs did not affect the assessment.

The maximum detected concentration of arsenic (5.4 mg/kg) at SWMU 35-009(d) from 0–10 ft is similar to background values. Because arsenic is the only carcinogenic COPC, there is no risk to human health at this site.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

The receptor and scenario (recreational) used in the assessment are subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the SSL are that the potentially exposed individual is a recreational user who is outside for 1 h/d for 200 d/yr for 50 w/yr (LANL 2007, 094496), assuming the Laboratory worker (the only recreational user legally allowed in the area) will spend the entire hour within the contaminated area. It is unlikely that the recreational user will run or walk within the contaminated area for an entire hour; therefore, the screening assessment overestimates the exposure. As a result, risk, hazard, and dose are overestimated.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be expected reasonably.

Toxicity Values

The primary uncertainty associated with the screening values relates to derivation of screening values from EPA toxicity values (RfDs and SFs) (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in five areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, (3) interindividual variability in the human population, (4) additive approach, and (5) use of surrogates.

Extrapolation from animals to humans. The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often can contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in an over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures and in determining the NOAEL. The NOAEL/uncertainty factor approach incorporates a factor of ten to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals generally are unknown and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively but that act by different mechanisms and on different target organs.

Use of surrogate chemicals. The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, surrogates were used to establish toxicity values based on structural similarity (NMED 2003, 081172) for the following:

- acenaphthylene
- benzo(g,h,i)perylene
- endosulfan II
- 2-methylnaphthalene

The surrogate, 2-chlorophenol, is structurally similar to 4-methylphenol.

There are no published SSLs for bromide, oxalate, and silicon. These elements are naturally occurring. Bromide was detected in two of 30 samples at concentrations of 0.28 and 0.37 mg/kg. Oxalate was detected once at a concentration of 0.42 mg/kg. Silicon, which occurs in 27% of the earth's crust, was

detected in 29 samples at concentrations ranging from 11–57 mg/kg. These inorganic chemicals are not a potential risk to human health because they were detected at naturally occurring levels.

F-6.4.4 Interpretation

Based on a residential scenario, the maximum HI (0.4) for SWMUs 35-009(d) and 35-016(m) is less than NMED's target level of 1.0. The maximum carcinogenic risk (1×10^{-5}) for SWMUs 35-009(d) and 35-016(m) is less than the NMED target level of 1×10^{-5}. The maximum dose (0.9 mrem/yr) for SWMUs 35-009(d) and 35-016(m) is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user in the Pratt Canyon Subarea is equivalent to a total risk range from 2×10^{-6} to 6×10^{-6}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential for unacceptable risk/dose to human health exists at the Pratt Canyon Subarea.

Based on a recreational scenario, the maximum HI (0.1) for Consolidated Unit 35-003(d)-00 and Consolidated Unit 35-016(k)-00 is less than NMED's target level of 1.0. The maximum carcinogenic risk (1×10^{-5}) for Consolidated Unit 35-003(d)-00 and Consolidated Unit 35-016(k)-00 is equivalent to the NMED target level of 1×10^{-5}. The maximum dose (0.3 mrem/yr) for Consolidated Unit 35-003(d)-00 and Consolidated Unit 35-016(k)-00 is less than DOE's target dose of 15 mrem/yr. The total dose range for a recreational user in the Pratt Canyon Subarea is equivalent to a total risk range from 2×10^{-8} to 9×10^{-7} and, based on a conversion using RESRAD 6.21. The screening assessments indicate no potential for unacceptable risk/dose to human health exists at the Pratt Canyon Subarea.

SWMU 35-009(d) and SWMU 35-016(m) pass residential screening.

Consolidated Unit 35-003(d)-00 and Consolidated Unit 35-016(k)-00 pass recreational screening.

F-6.5 Ecological Risk

F-6.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present on the Pratt Canyon Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors included the following:

- a plant
- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and flesh eater [surrogate for T&E species])

The rationale for these receptors is presented in “Screening Level Ecological Risk Assessment Methods” (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available. The ESLs are based on similar species and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population (LD_{50}). The derivation of ESLs is based on the approach presented in “Screening Level Ecological Risk Assessment Methods” (LANL 2004, 087630). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs are presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints are designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on these general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the Pratt Canyon Subarea.

Pratt Canyon Subarea is located in a ponderosa pine habitat with an understory of gambel oak. Some juniper and fir grow on the slopes, and some willow and grasses grow in the channel area. The area is within the core habitat for the Mexican spotted owl, a T&E species.

Surface water is the dominant transport mechanism because of the large surface area of asphalt and rooftops that drain from the mesa top onto this slope. Runoff terminates at the floor of Ten Site Canyon. There is no potential for contamination of aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head. The potential contact with contaminants is by root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation.

F-6.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between 0–5 ft bgs (LANL 2004, 087630) from the Pratt Canyon Subarea SWMUs and Consolidated Units, including data from the Mortandad Watershed (Appendix D Tables D-5.5-7, D-5.5-14, and D-5.5-21). Tuff was included in the screening assessment because some of it is crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify COPECs for the Pratt Canyon Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the representative concentrations (EPCs) to the ESLs. The HI is the sum of HQs. COPCs with HQs greater than 0.3 are identified as COPECs and are evaluated further. ESLs for terrestrial receptors were obtained from the Laboratory's ECORISK Database, Version 2.2 (LANL 2005, 090032) and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentrations with the final soil ESLs for Pratt Canyon Subarea are presented in Table F-6.5-1. Antimony, boron, cadmium, chromium, copper, mercury, selenium, thallium, titanium, and zinc are retained as inorganic COPECs and acenaphthene, Aroclor-1254, Aroclor-1260, benzoic acid, bis(2-ethylhexyl)phthalate, chrysene, dieldrin, and naphthalene are retained as organic COPECs.

There are no ESLs for bromide; lithium; oxalate; perchlorate; diethylphthalate; 4-methylphenol; TPH-DRO; 1,1,2-trichloro-1,2,2-trifluoroethane; and trichlorofluoromethane. As a result, these analytes are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-6.5-2. The HQ for each COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-6.5-2, all of the receptors may be potentially impacted by COPECs because they have HIs greater than 1.0.

F-6.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the Pratt Canyon Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Pratt Canyon Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation, largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic, radionuclide, and organic COPECs are not generally 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathways

The representative concentrations used in the calculations of HQs were the 95% UCL or maximum detected concentration in the sediment/soil/tuff to a depth of 5 ft, thereby conservatively estimating the concentrations of each COPEC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This results in an overestimation of the potential risk because COPECs varied across the site and were generally infrequently detected.

Background Concentrations

The ecological screening is based on the exposure of ecological receptors to contamination to a depth of 5 ft bgs. Table F-6.5-3 shows the range of soil, sediment, and tuff background values for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the representative concentration and the range of background concentrations, antimony, cadmium, chromium, and copper are similar to background concentrations and are eliminated as COPECs.

Area Use Factors

In addition to the direct comparison of the representative concentration with the ESL, AUFs are used to account for the amount of time that a receptor is likely to spend within the contaminated areas based on the size of the receptor's HR. The AUFs for individuals were developed by dividing the size of the area (1.96 ha) of the site by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF for the Mexican spotted owl is 0.0053. Based on the application of the AUF for the Mexican spotted

owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.12).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations in the Pratt Canyon Subarea is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$, or approximately 40HR.

The area of the Pratt Canyon Subarea is approximately 1.96 ha. The PAUFs are estimated by dividing the SWMU area by the population area of each receptor population (Table F-6.5-4). The resulting factor is multiplied by the receptor HI to determine if there is a potential impact on the population (Table F-6.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-6.5-5). The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. Based on the reassessment, the adjusted HIs for the Pratt Canyon Subarea are <0.01 for the red fox, 0.01 for the kestrel, 1 for the herbivorous robin, 5 for the omnivorous robin, 10 for the insectivorous robin, 0.07 for the cottontail, 12 for the shrew, and 31 for the deer mouse (Table F-6.5-5). The adjusted HIs for the red fox, the kestrel, and the herbivorous robin, and the cottontail are less than or approximately 1.0; therefore, these receptors are not adversely affected by the COPECs.

COPECs Contributing to HIs Greater Than 1.0

Use of the PAUF does not take into account a few high concentrations at some of the sampling locations; instead, it assumes that the COPECs are uniformly distributed across the site. COPECs that were detected once or only in a few locations are unlikely to impact a receptor population.

Boron. Boron was detected in 1 of 10 samples at a concentration of 2.3 mg/kg. Boron is a naturally occurring element found throughout the environment. Because it was detected in only one sample, boron is not likely to present a risk to receptor populations. Boron is eliminated as a COPEC.

Selenium. Selenium was detected in 5 of 35 samples within 0-5 ft bgs at a maximum detected concentration of 0.96 mg/kg. The EPC (1.00 mg/kg) is greater than the detected concentrations (0.96 mg/kg, 0.66 mg/kg, 0.45 mg/kg, 0.31 mg/kg, and 0.28 mg/kg). If the detected concentrations are averaged, the value for selenium is 0.53 mg/kg, which is similar to background. Selenium is eliminated as a COPEC.

Titanium. Titanium was detected in one sample at a concentration of 158 mg/kg. Titanium is unlikely to present a risk to receptor populations. Titanium is eliminated as a COPEC.

Dieldrin. Dieldrin was detected in 1 of 11 samples at a concentration of 0.006 mg/kg. Because dieldrin was detected in only one sample, it is not likely to pose a potential risk to ecological receptors. Dieldrin is eliminated as a COPEC.

Benzoic Acid. Benzoic acid was detected in 4 of 36 samples within 0–5 ft bgs. As discussed in section 6.2.3, "Nature and Extent," one sample indicated a detected concentration of 33.8 mg/kg, while the other three detected concentrations were approximately 0.5 mg/kg. The value of 33.8 mg/kg is not representative of concentrations across the site, and benzoic acid is not likely to adversely affect populations of deer mice. Additionally, if 0.5 mg/kg was used in the screening evaluation, the maximum HQ is less than 0.5 for all receptors. Benzoic acid is eliminated as a COPEC.

Thallium. Thallium was detected in 16 of 35 samples within 0–5 ft bgs at a maximum detected concentration of 0.19 mg/kg, which is similar to background for thallium. Thallium is eliminated as a COPEC.

Zinc. Zinc was detected once at a concentration of 573 mg/kg (location 35-02112, 0.0-0.5 ft) and once at a concentration of 114 mg/kg (location 35-02502, 0.0–1.0 ft); the remaining 30 detected concentrations are similar to background concentrations (less than 83 mg/kg). These locations are less than 3 ft apart in a small area within the larger exposure area. The concentration of 573 mg/kg is not representative of concentrations across the site, and zinc is not likely to pose a potential risk to populations of ecological receptors. The remaining zinc concentrations are within twice the background values. Zinc is eliminated as a COPEC.

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected in six of 35 samples at a concentration of 1.8 mg/kg. The EPC for bis(2-ethylhexyl)phthalate (0.73 mg/kg) is similar to concentrations reported in the Mortandad Canyon investigation report (0.55 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from bis(2-ethylhexyl)phthalate to avian populations are likely in Pratt Canyon Subarea. Bis(2-ethylhexyl)phthalate is eliminated as a COPEC.

Mercury. Mercury was detected at a maximum concentration of 1.6 mg/kg. The EPC for mercury (0.48 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (2.7 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (7.2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from mercury to avian populations are likely in Pratt Canyon Subarea. Mercury is eliminated as a COPEC.

Acenaphthylene. Acenaphthylene was detected in 10 out of 47 samples at maximum detected concentration of 6.4 mg/kg. The EPC for acenaphthylene (0.62 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (1.8 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (1.6 mg/kg) (LANL 2005, 091818). Field studies on plants were conducted, and no differences in abundance, diversity, seedling germination, and growth were noted in the reports. The results of the plant studies indicated no adverse ecological effects from contaminants in Mortandad (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005,

091818). Therefore, no potential adverse ecological effects from acenaphthylene to plants are likely in Pratt Canyon Subarea. Acenaphthylene is eliminated as a COPEC.

Aroclor-1254. Aroclor-1254 was detected in 4 out of 31 samples at a maximum detected concentration of 0.101 mg/kg. The maximum detected concentration for Aroclor-1254 is less than the concentrations reported in the Mortandad Canyon investigation report (0.57 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (6.2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1254 to avian populations are likely in Pratt Canyon Subarea. Aroclor-1254 is eliminated as a COPEC.

Aroclor-1260. Aroclor-1260 was detected in 28 out of 31 samples at a maximum detected concentration of 0.91 mg/kg. The EPC for Aroclor-1260 (0.25 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (1.37 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (3.3 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1260 to avian populations are likely in Pratt Canyon Subarea. Aroclor-1260 is eliminated as a COPEC.

Chrysene. Chrysene was detected in 19 out of 47 samples at a maximum detected concentration of 7.6mg/kg. The EPC for chrysene (0.74 mg/kg) is less than concentrations reported in the Mortandad Canyon Investigation (2.22 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (5.3 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from chrysene to small mammals are likely in Pratt Canyon Subarea. Chrysene is eliminated as a COPEC.

Naphthalene. Naphthalene was detected in 8 out of 48 samples at a maximum detected concentration of 7 mg/kg. The EPC for naphthalene (0.55 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (1.2 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (2.4 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from naphthalene to small mammals are likely in Pratt Canyon Subarea. Naphthalene is eliminated as a COPEC.

All of the COPECs are eliminated, indicating no potential ecological risk to receptors within the Pratt Canyon Subarea.

DOE Tier I Bioconcentration Guides

The DOE Tier I BCG is a lower value for cesium-137 (20.8 pCi/g) than the ECORISK Database final ESL (680 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 0.04 (using LANL 2004, 087630) to 1.4 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of

magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicates that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison, and there are no potential impacts from cesium-137 on receptors.

The DOE Tier I BCG is a lower value for strontium-90 (22.5 pCi/g) than the ECORISK Database final ESL (560 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 0.10 (using LANL 2004, 087630) to 2.5 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison, and there are no potential impacts from strontium-90 on receptors.

Chemicals without ESLs

There are no ESLs for bromide, and this chemical cannot be assessed quantitatively for potential ecological risk. Bromide was detected in one of two samples within 0–5 ft bgs at a concentration of 0.37 mg/kg. As discussed in section F-6.4-2, bromide is naturally occurring and was detected at natural levels. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for lithium, and this chemical cannot be assessed quantitatively for potential ecological risk. Lithium was detected in three of three samples within 0–5 ft bgs at concentrations of 2.8, 4.2, and 4.3 mg/kg. The EPA Region 6 residential SSL is 1600 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for oxalate, and this chemical cannot be assessed quantitatively for potential ecological risk. Oxalate was detected in one sample within 0–5 ft bgs at a concentration of 0.412 mg/kg. As discussed in section F-6.4.2, oxalate is naturally occurring and was detected at natural levels. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for perchlorate, and this chemical cannot be assessed quantitatively for potential ecological risk. Perchlorate was detected in one sample within 0–5 ft bgs at a concentration of 0.063 mg/kg. The EPA Region 6 residential SSL is 55 mg/kg, which is 2 orders of magnitude above the detected concentration and indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for diethylphthalate, and this chemical cannot be assessed quantitatively for potential ecological risk. Diethylphthalate was detected in one of 35 samples within 0–5 ft bgs at a concentration of 0.44 mg/kg. If dimethylphthalate is used as a surrogate, a maximum HQ of 0.04 is generated for all receptors, indicating that diethylphthalate does not pose a potential risk to receptors.

There are no ESLs for 4-methylphenol, and this chemical cannot be assessed quantitatively for potential ecological risk. Methylphenol[4-] was detected in one of 35 samples within 0–5 ft bgs at a concentration of 0.038 mg/kg. If phenol is used as a surrogate, a maximum HQ of 0.05 is generated for all receptors, indicating that 4-methylphenol does not pose a potential risk to receptors.

There are no ESLs for 1,1,2-trichloro-1,2,2-trifluoroethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichloro-1,2,2-trifluoroethane[1,1,2-] was detected in one of four samples within 0–5 ft bgs at a concentration of 0.001 mg/kg. The NMED residential SSL is

3280 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for trichlorofluoromethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichlorofluoromethane was detected in two of four samples within 0–5 ft bgs at concentrations of 0.002 and 0.009 mg/kg. The NMED residential SSL is 588 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for TPH-DRO, and this chemical cannot be assessed quantitatively for potential ecological risk. TPH-DRO was detected in three of nine samples within 0–5 ft bgs, and the EPC is 470 mg/kg. This chemical does not pose a potential ecological risk to receptors at this site.

F-6.5.4 Interpretation

Based on the ecological screening assessment for the Pratt Canyon Subarea, 27 COPECs (including 9 COPECs without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and the infrequency of detected concentrations.

F-7.0 TEN SITE CANYON SUBAREA

F-7.1 Site Descriptions

Ten Site Canyon has an ephemeral stream channel. This stream channel runs parallel to TA-35 and eventually joins with the Mortandad Canyon stream channel east of the mesa. The Ten Site Canyon Subarea, designated as the sludge drying beds on a level bench below Pratt Canyon, is an east-trending canyon at an elevation of approximately 7090 ft.

F-7.1.1 Surface Conditions

The Ten Site Canyon Subarea is located on a relatively flat bench surface above, and to the north, of the main channel of Ten Site Canyon (Figure F-7.2-1). Material at the surface consists of alluvial sediment, soils, colluvium, or exposed bedrock tuff. Three human-made lagoons [SWMUs 35-010(a,b,c)] are present in the western portion of the subarea. The lagoons are constructed with earthen berms that consist of fill material, including crushed tuff and soil.

Vegetation in the subarea consists of widely scattered ponderosa pine with an understory of grasses, forbs, and shrubs. A single unpaved road leads from the mesa top south of Ten Site Canyon to the north side of the lagoons.

F-7.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Ten Site Canyon Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207), and has been further defined using geologic logs from regional well R-14 (LANL 2003, 076062).

The predominant rock unit at the surface is unit 2 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 2 of the Tshirege Member (Qbt 2) is approximately 80 ft thick

in Ten Site Canyon. Below unit 2 are unit 1v of the Tshirege Member (Qbt 1v), and unit 1g of the Tshirege Member (Qbt 1g); the combined thickness of units Qbt 1v and Qbt 1g is 140 ft in well R-14. Below unit 1g is the Cerro Toledo interval, a zone of reworked tuff approximately 24 ft thick. Below the Cerro Toledo interval is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once in the investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); in regional well R-14, it is 290 ft thick. The base of the Otowi Member includes the Guaje Pumice Bed, approximately 12 ft thick. The Otowi Member is underlain by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at over 700 ft.

There are no known subsurface human-made structures in the Ten Site Canyon Subarea, except for well R-14.

F-7.1.3 Groundwater Conditions

No groundwater has been confirmed in the Ten Site Canyon Subarea, except for the regional aquifer. In well R-14, the regional aquifer was encountered at a depth of 1182 ft bgs (LANL 2003, 076062).

F-7.1.4 Surface Water Conditions

No permanent surface water exists in the Ten Site Canyon Subarea. Occasional surface runoff from the slopes occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Precipitation can accumulate in the lagoons at Consolidated Unit 35-010(a)-99, resulting in occasional and temporary standing water. Surface runoff in the Ten Site Canyon Subarea is most likely to occur as overland sheet flow or as channelized flow in small, shallow drainage channels that drain after short runs into the main Ten Site Canyon drainage channel.

Surface water site assessments were performed for the Ten Site Canyon SWMUs and AOC in 1997. The SWMUs and AOC in the Ten Site Canyon Subarea received scores between 15.6 and 39.5, indicating low to moderate potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

F-7.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-7.2 Sampling Results

The sampling results for the Ten Site Canyon Subarea are described in detail in section 6.0 and Appendix D of the report, and are summarized here.

The data used to define the nature and extent of contamination in the Ten Site Canyon Subarea were obtained from environmental samples collected in 1994, 1995, 1996, 1997, 1998, 1999, and 2004. Figure F-7.2-1 is an index map of the Ten Site Canyon Subarea, which is divided into two map areas (A and B) for a more appropriate scale. Figures F-7.2-2 and F-7.2-3 show the consolidated unit and AOC in each of two map areas within Ten Site Canyon Subarea, with sampling locations identified.

F-7.2.1 Summary of Results

The sampling data for the Ten Site Canyon Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide BVs and FVs, where available, are from "Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory" (LANL 1998, 059730).

The representative concentrations used for the screening assessments are either the 95% UCL of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance "Calculating Exposure Point Concentrations at Hazardous Waste Sites" (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used because the ProUCL program cannot handle negative values. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. The human health risk assessment for the Ten Site Canyon Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–1 ft bgs for recreational user and 0-10 ft for the residential user; the ecological risk assessment for the Ten Site Canyon Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–5 ft bgs. Appendix D Tables D-6.1-1 through D-6.2-2 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each AOC, consolidated unit, and the subarea are presented in Table 9.2-1 in the main text. Figures F-7.2-4 and F-7.2-5 show the locations of soil, sediment, and tuff samples in which inorganic chemicals were detected above BVs or were detected without BVs.

Radionuclides

The radionuclide COPCs for each AOC, consolidated unit, and the subarea are presented in Table 9.2-1 in the main text. Figures F-7.2-6 and F-7.2-7 show the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected without BVs, or were detected greater than 0.5 ft (americium-241, cesium-137, plutonium-238, -239; strontium-90; and tritium).

Organic Chemicals

Identification of COPCs for organic chemicals is based on detection status, and are presented in Table 9.2-1 in the main text. Figures F-7.2-8 and F-7.2-9 show the organic COPCs.

F-7.2.2 History of Releases

Consolidated Unit 35-010(a)-99 consists of liquid discharges associated with former sanitary wastewater treatment facility components, and SWMU 35-009(b) is a septic system. The wastewater treatment facility structures are located on a tuff bench above the Ten Site Canyon floor. A clay liner was installed in the lagoons [SWMUs 35-010(a,b,c)]; however, previous RFIs revealed that the liner was thin or absent in some sampling locations. The liner in the sand filter beds [SWMU 35-010(d)] is of a poly sheeting or

Hypalon-type composition, and was observed to be intact. Treated liquids were discharged from the sand filter beds through NPDES-permitted outfall EPA-SSS-10S [SWMU 35-010(e)].

AOC 35-007 are sand and gravel piles potentially created by cleanout maintenance of the sand filter beds. The sand and gravel material may consist of clean material for use in the filters and/or used materials removed from the filters.

F-7.2.3 Nature and Extent

The Aggregate SAP (LANL 2002, 073092), approved by NMED (2003, 078145), stipulated additional sampling at the following SWMUs to complete the data set and determine nature and extent. Figure F-7.2-1 is the index map for the two areas in the Ten Site Canyon Subarea. Figures F-7.2-4 through F-7.2-9 show sediment sampling locations, inorganic chemicals and radionuclides detected above BVs, and organic chemicals detected in this subarea. These samples probably have contributions of contaminants from sources other than just the SWMUs within the Ten Site Canyon Subarea.

AOC C-35-007

AOC C-35-007 is the sand once used in the sand filter beds at SWMU 35-010(d) (Figure F-7.2-3). In accordance with the approved Aggregate SAP (LANL 2002, 073092), no additional samples were needed at AOC C-35-007 to determine the nature and extent.

Inorganic Chemicals. No inorganic chemicals were detected at AOC C-35-007. The nature and extent have been defined for inorganic chemicals at AOC C-35-007.

Radionuclides. Plutonium-238 (2.52 pCi/g) and plutonium-239 (0.9 pCi/g) were detected at location 35-02236 from 0–0.5 ft (Figure F-7.2-7). Although a deeper sample was not collected at location 35-02236, no other radionuclides were detected at concentrations greater than their respective BVs or FVs at AOC C-35-007. Therefore, nature and extent have been defined.

Organic Chemicals. VOCs were not analyzed for based on process knowledge. SVOCs were detected in five samples at four locations (Figure F-7.2-9). Bis(2-ethylhexyl)phthalate was detected at location 35-02607 at a concentration of 0.058 mg/kg; benzoic acid was detected at location 35-02606 at a concentration of 0.023 mg/kg; and di-n-butylphthalate was detected at locations 35-02204 (0.017 mg/kg), location 35-02607 (0.022 mg/kg), and location 35-02608 (0.02 mg/kg). All of the SVOCs were detected below the EQL (0.3 mg/kg). The nature and extent have been defined at AOC C-35-007.

Consolidated Unit 35-010(a)-99

Consolidated Unit 35-010(a)-99 consists of SWMUs 35-010(a,b,c), WWTP lagoons; 35-010(d), sand filter beds; and SWMU 35-010(e), discharges from sand filter beds (Figure F-7.2-2).

In accordance with the approved Aggregate SAP (LANL 2002, 073092), the following eight boreholes were drilled and sampled in 2004 within Consolidated Unit 35-010(a)-99 to determine the vertical and lateral extent of contamination:

- borehole 35-22986, samples collected at 0–0.5 ft bgs and 7–7.5 ft bgs
- borehole 35-22987, samples collected at 0–0.3 ft bgs, 0.3–0.6 ft bgs, and 2.5–3.2 ft bgs
- borehole 35-22988, samples collected at 0–0.15 ft bgs, 1.5–2.0 ft bgs, and 3.5–4.0 ft bgs

- borehole 35-22989, samples collected at 0–0.1 ft bgs, 0.1–0.5 ft bgs, and 2–2.5 ft bgs
- borehole 35-22990, samples collected at 4–5 ft bgs and 8.5–10 ft bgs
- borehole 35-22991, samples collected at 4–5 ft bgs and 9–10 ft bgs
- borehole 35-22992, samples collected at 0–0.3 ft bgs, 4–5 ft bgs, and 9–10 ft bgs
- borehole 35-22993, samples collected at 0–0.125 ft bgs, 4–5 ft bgs, and 9–10 ft bgs

Inorganic Chemicals. Inorganic chemicals were detected at concentrations greater than their respective BVs in the previous data (Figure F-7.2-4). The samples collected in 2004 (locations 35-22988 and 35-22987 in the north lagoon, and locations 35-22990 and 35-22991 in the southeast lagoon) had no inorganic chemicals detected above their respective BVs.

In the north lagoon, chromium was detected at four locations (locations 35-02467, 35-02466, 35-02468, and 35-02469), and nickel was detected at two locations (locations 35-02466 and 35-02469) above their BVs. Location 35-02216 was sampled to a depth of 10 ft for inorganic chemicals, and at that depth only lithium (2.5 mg/kg) was detected, indicating that vertical extent has been defined for chromium and nickel.

In the southeast lagoon, chromium and nickel were detected at two locations (locations 35-02478 and 35-02479) above their BVs, but these COPCs has been defined vertically and laterally by the new locations 35-22990 and 35-22991.

In the southwest lagoon, chromium and nickel were detected at five locations (locations 35-02471, 35-02472, 35-02473, 35-02474, and 35-02475), lead was detected at two locations (locations 35-02471 and 35-02472), and copper was detected at one location (35-02474) above their BVs. Location 35-02069 was sampled to a depth of 10 ft for inorganic chemicals, and at that depth only lithium (0.8 mg/kg) was detected, indicating that vertical extent has been defined for chromium, copper, lead, and nickel.

At SWMU 35-010(d), only two inorganic chemicals were detected at concentrations greater than their BVs (Figure F-7.2-5). Mercury (0.13 mg/kg) and silver (3.3 mg/kg) were detected at location 35-02483 (0–0.5 ft), but neither were detected above their respective BVs in the deeper sample. The nature and extent have been defined for inorganic chemicals at SWMU 35-010(d).

Radionuclides. The radionuclide data collected in 1997 indicated plutonium-238, plutonium-239, strontium-90, tritium, and uranium-235 were detected above BVs/FVs or were detected (Figure F-7.2-6). In 2004, additional samples were collected and analyzed for radionuclides at location 35-22986 in the southwest lagoon and locations 35-22990, 35-22991, 35-22992, and 35-22993 in the southeast lagoon.

In the north lagoon, plutonium-238 and plutonium-239 were detected in samples at location 35-02216, tritium was detected at two locations (locations 35-02467 and 35-02470), and ruthenium-106 was detected at one location (location 35-02469). But tritium and ruthenium-106 were not detected in the deeper samples collected at location 35-02216; therefore, their vertical extent is defined. Neither plutonium-238 nor plutonium-239 was detected in the deepest sample (49–50 ft) at location 35-02216; therefore, the vertical extent is defined.

In the southeast lagoon, plutonium-239 was detected (0.04 pCi/g, 4–5 ft) at location 35-22990, and plutonium-239 was detected (0.049 pCi/g. 4–5 ft) at location 35-22993. Neither was detected in the deeper sample. Tritium was detected in two of the samples from location 35-22993 (4–5 ft and 9–10 ft), each at approximately 0.1 pCi/g. Tritium was not detected in the other 2004 samples, which were also sampled to a depth of 10 ft.

In the southwest lagoon, the 2004 samples, location 35-22986, was analyzed for strontium-90, but was not detected. In the previous samples, strontium-90 was detected at three locations. The 2004 sample was collected deeper than the previous 1997 samples; therefore, strontium-90 has been defined vertically. Plutonium-238 and plutonium-239 were detected in the 50-ft borehole (location 35-02069), but not in the deepest samples (49–50 ft); therefore, the vertical extent has been defined.

At SWMU 35-010(d) and 35-010(e) (Figure F-7.2-7), europium-152 was detected at one location (35-02196, 0.26 pCi/g, 2–3 ft); plutonium-238 was detected at two locations (35-02196, 0.17 pCi/g, 0–0.5 ft and 35-02197, 0.16 pCi/g, 0–1 ft); and plutonium-239 was detected at one location (35-02197, 0.08 pCi/g, 0–1 ft). The extent of europium-152 is defined because it was not detected in any other sample. The extent of plutonium-238 and plutonium-239 is defined vertically because neither radionuclide was detected in the 2–3 ft sample at location 35-02197 and laterally because they were not detected in samples at location 35-02235.

Organic Chemicals. Organic chemicals were detected infrequently and at low concentrations (Figures F-7.2-8 and F-7.2-9). Toluene was detected at two locations (35-02470, 1.5–2.5 ft and 35-02474, 1.5–2.7 ft) at concentrations of 0.004 mg/kg, which is below the EQL of 0.005 mg/kg. Bis(2-ethylhexyl)phthalate was detected at four locations (35-02470, 0.05 mg/kg, 1.5–2.5 ft; 35-02474, 0.1 mg/kg, 1.5–2.7 ft; 35-02482, 0.05 mg/kg, 0–033 ft; and 35-02483, 0.1 mg/kg, 2.3–2.6 ft). Di-n-butylphthalate was detected once at a low concentration (location 35-02481, 0.04 mg/kg, 0–0.5 ft). Both of these SVOCs were detected below the EQL of 0.3 mg/kg. The PCB Aroclor-1260 was detected once at a concentration of 0.006 mg/kg (location 35-22989, 2–2.5 ft). Nature and extent have been defined.

F-7.3 Conceptual Site Model

The conceptual site model for the Ten Site Canyon Subarea is described in the Aggregate SAP (LANL 2002, 073092) and is shown in Figure F-3.3-1. Contamination potentially present in the pile material may be transported as sorbed or dissolved species by stormwater flow to the main Ten Site Canyon channel. Sand and gravel from the piles may be present in depositional “pockets” within the two engineered drainages constructed to divert stormwater around the sand filter beds.

The land use within the Ten Site Canyon Subarea is currently industrial (LANL 1995, 057224) and recreational, and is expected to remain recreational and industrial for the reasonably foreseeable future. Hiking and biking trails cross through the subarea, and any exposure would be of relatively short duration. The receptor is a recreational user (hiker or trail user), with exposure pathways for dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1).

Ten Site Canyon Subarea is located in a ponderosa pine forest with an ephemeral stream in the canyon bottom. The area is within the core habitat for the Mexican spotted owl, a T&E species. Exposure pathways to biota include root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-7.4 Human Health Screening Assessment

F-7.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the “Technical Background Document for Development of Soil Screening Levels, Revision 4” (NMED 2006, 092513). Sample data from 0 to 1 ft bgs were used in this evaluation, as media (soil, sediment, and tuff) from that depth could be encountered by a recreational user.

Land use at the Ten Site Canyon Subarea is currently industrial (LANL 1995, 057224) and recreational, and is expected to remain recreational and industrial for the reasonably foreseeable future. The screening assessment uses a recreational scenario. Although the subarea is designated for industrial use, any industrial use would be periodic and short-term. The industrial worker is assumed to work 8 h/d for 225 d/yr, which is not realistic for the actual use of the Subarea. The use of a recreational scenario is more realistic, assuming 1 h/d for 200 d/yr.

The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment at the site is low because a hiking or biking trail that goes through the site is not in the former impoundments. During the work day, the site is open to Laboratory workers who may be in this area. Sample data from 0–10 ft bgs were used for the residential scenario.

The COPCs are evaluated by comparing the representative concentration with the SSL for each chemical and the SALs for radionuclides. The chemical SSLs are provided in Tables 4.0-1 and 4.0-2 in the report.

The recreational SSLs are derived according to Laboratory guidance (LANL 2007, 094496). The residential SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a screening value for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The SSLs for carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a HQ of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5} risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr and derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD Version 6.21 (see Table 4.0-3 in the report).

The parameters used to derive the recreational and residential SSLs for chemicals are presented in Table F-7.4-1. The parameters used in deriving the residential and recreational SALs for radionuclides are presented in Tables F-7.4-2 and F-7.4-3.

F-7.4.2 Human Health Screening Assessment Results

The representative concentration for each COPC was compared with the respective residential and recreational SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessment are presented in Appendix D Tables D-6.1-1 through D-6.2-2.

AOC C-35-007

Based on a residential scenario, the HI (0.00005) is less than NMED's target level of 1.0 (Table F-7.4-4), the carcinogenic risk (5×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-7.4-5), and the dose (0.5 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-7.4-6). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC C- 35-007 under a residential scenario.

Based on a recreational scenario, the HI (0.0000008) is less than NMED's target level of 1.0 (Table F-7.4-4), the carcinogenic risk (3×10^{-10}) is less than the NMED target level of 1×10^{-5} (Table F-7.4-5), and the dose (0.05 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-7.4-6). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC C-35-007 under a recreational scenario.

Consolidated Unit 35-010(a)-99

Based on a residential scenario, the HI (0.7) is less than NMED's target level of 1.0 (Table F-7.4-7), the carcinogenic risk (4×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-7.4-8), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-7.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-010(a)-99 under a residential scenario.

Based on a recreational scenario, the HI (0.03) is less than NMED's target level of 1.0 (Table F-7.4-7), the carcinogenic risk (4×10^{-10}) is less than the NMED target level of 1×10^{-5} (Table F-7.4-8), and the dose (0.01 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-7.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 35-010(a)-99 under a recreational scenario.

F-7.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all of these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs did not affect the assessment.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) Identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

The receptor used in the assessment (recreational user) is subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the SSL are that the potentially exposed individual is a recreational user who is outside for 1 h/d for 200 d/yr for 50 w/yr (LANL 2007, 094496). This assumes that the Laboratory worker (the only recreational user legally allowed in the area) spends the entire hour within the contaminated area. It is unlikely that the recreational user runs or walks within the contaminated area for an entire hour, especially within the former lagoons; therefore, the screening assessment overestimates the exposure. As a result, risk, hazard, and dose are overestimated.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate may exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be reasonably expected.

Toxicity Values

The primary uncertainty associated with screening values relates to derivation of screening values from EPA toxicity values (RfDs and SFs) (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in five areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, (3) interindividual variability in the human population, (4) additive approach, and (5) use of surrogates.

Extrapolation from animals to humans. The SFs and RfDs are often defined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often can contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in an over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures and in determining the NOAEL. The NOAEL/uncertainty factor approach incorporates a factor of ten to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals generally are unknown, and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively, but that act by different mechanisms and on different target organs.

Use of surrogate chemicals. The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, surrogates were used to establish toxicity values for the following based on structural similarity (NMED 2003, 081172):

- benzo(g,h,i)perylene
- 4-isopropyltoluene

F-7.4.4 Interpretation

Based on a residential scenario, the maximum HI (0.7) for AOC C-35-007 and Consolidated Unit 35-010(a)-99 is less than NMED's target level of 1.0. The maximum carcinogenic risk (4×10^{-7}) for AOC C-35-007 and Consolidated Unit 35-010(a)-99 is less than the NMED target level of 1×10^{-5}. The maximum dose (2 mrem/yr) for AOC C-35-007 and Consolidated Unit 35-010(a)-99 is less than DOE's target dose of 15 mrem/yr. The dose range for a residential user in AOC C-35-007 and Consolidated Unit 35-010(a)-99 is equivalent to a total risk range from 4×10^{-7} to 5×10^{-6}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml).

The screening assessments indicate no potential for unacceptable risk/dose to human health within the Ten Site Canyon Subarea.

Based on a recreational scenario, the maximum HI (0.03) for AOC C-35-007 and Consolidated Unit 35-010(a)-99 is less than NMED's target level of 1.0. The maximum carcinogenic risk (4×10^{-10}) for AOC C-35-007 and Consolidated Unit 35-010(a)-99 is less than the NMED target level of 1×10^{-5}. The maximum dose (0.05 mrem/yr) for AOC C-35-007 and Consolidated Unit 35-010(a)-99 is less than DOE's target dose of 15 mrem/yr. The dose range for a recreational user in AOC C-35-007 and Consolidated Unit 35-010(a)-99 is equivalent to a total risk range from 4×10^{-9} to 2×10^{-8}, based on a conversion using RESRAD 6.21. The screening assessments indicate no potential for unacceptable risk/dose to human health within the Ten Site Canyon Subarea.

AOC C-35-007 and Consolidated Unit 35-010(a)-99 pass residential screening assessments.

F-7.5 Ecological Risk

F-7.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present on the Ten Site Canyon Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors included the following:

- a plant
- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and flesh eater [surrogate for T&E species])

The rationale for these receptors is presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available. The ESLs are based on similar species and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population (LD_{50}). The derivation of ESLs is based on the approach presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs, is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on these general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the Ten Site Canyon Subarea.

Ten Site Canyon Subarea is located in a ponderosa pine forest, with an ephemeral stream in the canyon bottom. The area is within the core habitat for the Mexican spotted owl, a T&E species.

Surface water is the dominant transport mechanism here because of the large surface area of asphalt and rooftops that drain from the mesa top onto this slope. Runoff terminates at the floor of Ten Site Canyon. There is no potential for exposure to aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head.

F-7.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between the ground surface and a depth of 5 ft (LANL 2004, 087630) from the Ten Site Canyon Subarea AOC and Consolidated Unit, including data from the Mortandad Watershed (Appendix D Tables D-6.3-7, D-6.3-14, and D-6.3-21). Tuff was included in the screening assessment because some of it is crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify COPECs for the Ten Site Canyon Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the representative concentrations (95% UCL or maximum detected concentration) to the ESLs. The HI is the sum of HQs. COPCs with HQs greater than 0.3 are identified as COPECs and are evaluated further. ESLs for terrestrial receptors were obtained from the Laboratory's ECORISK Database, Version 2.2 (LANL 2005, 090032) and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentrations with the final soil ESLs for Ten Site Canyon Subarea are presented in Table 7.5-1. Antimony, chromium, copper, lead, mercury, nickel, selenium, and silver are retained as inorganic COPECs. Aroclor-1254, Aroclor-1260, benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate are retained as organic COPECs.

There are no ESLs for chloride, nitrate, nitrite, phosphorous, sulfate, ruthenium-106; 4-isopropyltoluene; 4-methyl-2-pentanone; trichlorofluoromethane; and 1,2,4-trimethylbenzene. Therefore, these analytes are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-7.5-2. The HQ for each COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected. and provides information on T&E species.

According to Table F-7.5-2, the kestrel, robin, cottontail, shrew, deer mouse, earthworm, and plant may be potentially impacted because they have HIs greater than 1.0. The fox has an HI less than 1.0 indicating this receptor is not potentially affected by the COPECs.

F-7.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the Ten Site Canyon Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Ten Site Canyon Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative. and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential

risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation, largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic, radionuclide, and organic COPECs are not generally 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathways

The representative concentrations used in the calculations of HQs were the 95% UCLs or maximum detected concentrations in the sediment/soil/tuff to a depth of 5 ft, thereby conservatively estimating the site concentrations of each COPC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This results in an overestimation of the potential risk because COPCs varied across the site and were generally infrequently detected.

Background Concentrations

The ecological screening is based on the exposure of ecological receptors to contamination to a depth of 5 ft bgs. Table F-7.5-3 shows the range of soil, sediment, and tuff background concentrations for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the representative concentrations and the range of background concentrations, chromium, copper, lead, mercury, nickel, and selenium are similar to background concentrations and are eliminated as COPECs.

Area Use Factors

In addition to the direct comparison of the representative concentration with the ESL, AUFs are used to account for the amount of time that a receptor is likely to spend within the contaminated areas based on the size of the receptor's HR. The AUFs for individuals were developed by dividing the size of the area (2.23 ha) of the site by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF for the Mexican spotted owl is 0.0061. Based on the application of the AUF for the Mexican spotted owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.05).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations in the Ten Site Canyon Subarea is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can

disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$, or approximately 40HR.

The area of the Ten Site Canyon Subarea is approximately 2.23 ha. The PAUFs are estimated by dividing the SWMU area by the population area of each receptor population (Table F-7.5-4). The resulting factor is multiplied by the receptor HI to determine if there is a potential impact on the population (Table F-7.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-7.5-5). The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. Based on the reassessment, the adjusted HIs for the Ten Site Canyon Subarea are <0.01 for the kestrel, 0.1 for the herbivorous robin, 2 for the omnivorous robin, 4 for the insectivorous robin, 0.02 for the cottontail, 1 for the shrew, and 4 for the deer mouse (Table F-7.5-5). The adjusted HIs for the kestrel, herbivorous robin, and the cottontail are less than 1; therefore, these receptors are not adversely affected by the COPECs.

COPECs Contributing to PAUF-Adjusted HIs Greater Than 1.0

Use of the PAUF does not take into account a few high concentrations at some of the sampling locations; instead, it assumes that the COPECs are uniformly distributed across the site. COPECs detected once or only in a few locations are unlikely to impact a receptor population.

Antimony. Antimony was detected in seven of 65 samples at a maximum detected concentration of 0.73 mg/kg. The EPC (2.16 mg/kg) is a result of elevated detection limits. The maximum detected concentration is similar to background concentrations (Table F-7.5-3). Antimony is eliminated as a COPEC.

Aroclor-1254. Aroclor-1254 was detected in 1 of 69 samples at a concentration of 0.069 mg/kg. The maximum detected concentration for Aroclor-1254 is less than the concentrations reported in the Mortandad Canyon investigation report (0.57 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (6.2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1254 to avian populations are likely in Ten Site Canyon Subarea. Aroclor-1254 is eliminated as a COPEC.

Aroclor-1260. Aroclor-1260 was detected in 17 of 69 samples at a maximum detected concentration of 0.31 mg/kg. The EPC for Aroclor-1260 (0.06 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (1.37 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (3.3 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from Aroclor-1260 to avian populations are likely in Ten Site Canyon Subarea. Aroclor-1260 is eliminated as a COPEC.

Benzoic Acid. Benzoic acid was detected in one of 66 samples within 0–5 ft bgs at a maximum concentration of 0.023 mg/kg. Because benzoic acid was detected only once, it is not likely to pose a potential risk to populations of ecological receptors. The maximum detected concentration of benzoic acid is less than concentrations reported in the Mortandad Canyon investigation report (5.7 mg/kg) (LANL

2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (3.5 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted, and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from benzoic acid to small mammals are likely in the Ten Site Canyon Subarea. Benzoic acid is eliminated as a COPEC.

Silver. The EPC for silver (3.74 mg/kg) generates an HQ of 74.8 for the plant and HQs of less than 1.0 for the other receptors. Silver was only detected above BV in six samples within 0–5 ft bgs. The plant ESL may not be a good indicator of risk to the receptors at the site for silver because vegetation at the site is abundant and does not appear stressed. Silver is eliminated as a COPEC.

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected in 6 of 66 samples at a maximum detected concentration of 0.15 mg/kg. The EPC for bis(2-ethylhexyl)phthalate (0.23 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (0.55 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from bis(2-ethylhexyl)phthalate to avian populations are likely in Ten Site Canyon Subarea. Bis(2-ethylhexyl)phthalate is eliminated as a COPEC.

Di-n-butylphthalate. Di-n-butylphthalate was detected in four of 66 samples at a maximum detected concentration of 0.036 mg/kg. The EPC for di-n-butylphthalate (0.23 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (3 mg/kg) (LANL 2006, 094161). Field studies on avian populations were conducted, and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161). Therefore, no potential adverse ecological effects from di-n-butylphthalate to avian populations are likely in the Ten Site Canyon Subarea. Di-n-butylphthalate is eliminated as a COPEC.

All of the COPECs are eliminated, indicating no potential ecological risk to receptors within the Ten Site Canyon Subarea.

DOE Tier I Bioconcentration Guides

The DOE Tier I BCG is a lower value for cesium-134 (11.3 pCi/g) than the ECORISK Database final ESL (320 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 1.13E-04 (using LANL 2004, 087630) to 3.19E-03 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison.

The DOE Tier I BCG is a lower value for cesium-137 (20.8 pCi/g) than the ECORISK Database final ESL (680 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 3.8E-04 (using LANL 2004, 087630) to 0.01 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at Laboratory indicates that bioaccumulation factors are not as high as those used by DOE

(Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison.

The DOE Tier I BCG is a lower value for strontium-90 (22.5 pCi/g) than the ECORISK Database final ESL (560 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 3.14E-03 (using LANL 2004, 087630) to 0.08 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison.

Chemicals without ESLs

There are no ESLs for nitrate or nitrite, and these inorganic chemicals cannot be assessed quantitatively for potential ecological risk. As discussed in section F-2.1.1, nitrate and nitrite are naturally occurring ions composed of nitrogen and oxygen, and are unlikely to contribute to potential ecological risk.

There are no ESLs for chloride, and this inorganic chemical cannot be assessed quantitatively for potential ecological risk. Chloride was detected in one sample at a concentration of 126 mg/kg, but the rest of the 22 samples were less than the BV. It is unlikely that one sample will contribute to potential ecological risk.

There are no ESLs for sulfate, and this inorganic chemical cannot be assessed quantitatively for potential ecological risk. Sulfate was detected in one sample at a concentration of 827 mg/kg, but the rest of the 22 samples were less than the BV. It is unlikely that one sample will contribute to potential ecological risk.

There are no ESLs for phosphorous, and this inorganic chemical cannot be assessed quantitatively for potential ecological risk. As discussed in section F-2.1.1, phosphorous is an essential element, and is unlikely to contribute to potential ecological risk.

There are no ESLs for ruthenium-106, and this radionuclide cannot be assessed quantitatively for potential ecological risk. Ruthenium-106 was detected in one of 58 samples within 0–5 ft bgs at a concentration of 0.53 pCi/g. The residential SAL is 20 pCi/g, which indicates low potential toxicity from this radionuclide. Therefore, ruthenium-106 does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 4-isopropyltoluene, and this chemical cannot be assessed quantitatively for potential ecological risk. Isopropyltoluene[4-] was detected in 1 of 27 samples within 0–5 ft bgs at a concentration of 0.0038 mg/kg, which is less than its EQL. If toluene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that 4-isopropyltoluene does not pose a potential risk to receptors.

There are no ESLs for trichlorofluoromethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichlorofluoromethane was detected in 1 of 27 samples within 0–5 ft bgs at a concentration of 0.00037 mg/kg, which is less than its EQL. The NMED residential is 588 mg/kg, which indicates low potential toxicity from this chemical. Therefore, trichlorofluoromethane does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 1,2,4-trimethylbenzene, and this chemical cannot be assessed quantitatively for potential ecological risk. Trimethylbenzene[1,2,4-] was detected in 2 of 27 samples within 0–5 ft bgs at

concentrations of 0.00086 mg/kg and 0.001 mg/kg. If benzene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that 1,2,4-trimethylbenzene does not pose a potential risk to receptors.

F-7.5.4 Interpretation

Based on the ecological screening assessment for the Ten Site Canyon Subarea, 23 COPECs (including 10 COPECs without ESLs) were identified. All COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), the relative toxicity of related compounds, and the infrequency of detected concentrations.

F-8.0 EAST TEN SITE SLOPE SUBAREA

F-8.1 Site Descriptions

East Ten Site Slope Subarea is the south slope (north-facing) of Ten Site Canyon, which extends south and east of Ten Site Mesa. TA-63 is the western-most TA on Mesita del Buey. Puye Road is centered on this mesa and traverses through TA-63, TA-52, and TA-05 from west to east. The difference in elevation from the mesa top (7150 ft) to the bottom of Ten Site and Mortandad Canyons (6850 ft) in this area ranges from 200–300 ft. The slope has a very steep middle section, with flatter bench sections above and below.

F-8.1.1 Surface Conditions

The East Ten Site Slope Subarea includes areas of sloping mesa top and steeper north-facing slopes above the incised main channel of Ten Site Canyon. Material at the surface includes shallow soils, minor colluvium, sediment in minor drainages, and exposed bedrock tuff.

Vegetation in the mesa-top areas includes piñon-juniper woodland with broad grassy areas and limited areas of ponderosa pine. The slope areas include more ponderosa pine with an open canopy, and an understory of grasses, forbs, and shrubs, including gambel oak.

F-8.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the East Ten Site Canyon Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207), and has been further defined using geologic logs from regional well R-15 (Longmire et al. 2001, 070103).

The predominant rock unit at the surface is unit 2 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 2 of the Tshirege Member (Qbt 2) is approximately 50 ft thick in Ten Site Canyon. Below unit 2 are unit 1v of the Tshirege Member (Qbt 1v) and unit 1g of the Tshirege Member (Qbt 1g); the combined thickness of units Qbt 1v and Qbt 1g is 140 ft in well R-15. Below unit 1g is the Cerro Toledo interval, a zone of reworked tuff approximately 54 ft thick. Below the Cerro Toledo interval is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once in the investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); in regional well R-15, it is 300 ft thick. The base of the Otowi Member includes the Guaje Pumice Bed, approximately 52 ft thick. The Otowi Member is underlain by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of approximately 492 ft.

There are no known subsurface human-made structures in the East Ten Site Canyon Subarea, except for water supply well PM-5.

F-8.1.3 Groundwater Conditions

No groundwater has been confirmed beneath the East Ten Site Slope Subarea, except for the regional aquifer. In well R-15, the regional aquifer was encountered at a depth of 964 ft bgs (Longmire et al. 2001, 070103). In water supply well PM-5, the regional aquifer is at a depth of approximately 1200 ft bgs.

F-8.1.4 Surface Water Conditions

No permanent surface water exists in the East Ten Site Slope Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff from the narrow mesa top may contribute minor amounts of flow to surface runoff on the slope. Surface runoff on the East Ten Site slope is most likely to occur as channelized flow in moderately steep, moderately incised drainage channels.

Surface water site assessments were performed for the East Ten Site Slope SWMUs, AOCs, and consolidated units between 1997 and 2004. The SWMUs, AOCs, and consolidated units in the East Ten Site Slope Subarea received scores between 3.6 and 73.5, indicating low to high potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

F-8.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-8.2 Sampling Results

The sampling results for East Ten Site Slope Subarea are described in detail in section 6.0 and Appendix D of the report, and are summarized here.

The data used to define the nature and extent of contamination in the East Ten Site Slope Subarea were obtained from environmental samples collected in 1995, 1996, 2001, and 2004. Figure F-8.2-1 is an index map of the East Ten Site Slope Subarea, which is divided into three map areas (A, B, and C) for a more appropriate scale. Figures F-8.2-2 through F-8.2-4 show the SWMUs and AOCs in each of three map areas within East Ten Site Slope Subarea, with sampling locations identified.

F-8.2.1 Summary of Results

The sampling data for the East Ten Site Slope Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide BVs and FVs, where available, are from “Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory” (LANL 1998, 059730).

The representative concentrations used for the screening assessments are either the 95% UCL of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance “Calculating Exposure Point Concentrations at Hazardous Waste Sites” (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using

normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used because the ProUCL program cannot handle negative values. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. The human health risk assessment for the East Ten Site Slope Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–1 ft bgs for industrial user and 0–10 ft for the residential user; the ecological risk assessment for the East Ten Site Slope Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–5 ft bgs. Appendix D Tables D-7.1-1 through D-7.8-3 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 10.2-1 of the report. Figures F-8.2-5, F-8.2-6, and F-8.2-7 show the locations of soil, sediment, and tuff samples in which inorganic chemicals were detected above BVs or detected without BVs.

Radionuclides

The radionuclide COPCs for each SWMU, AOC, and consolidated unit, and the subarea are presented in Table 10.2-1 of the report. Figures F-8.2-8, F-8.2-9, and F-8.2-10 show the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected without BVs, or were detected greater than 0.5 ft (americium-241; cesium-137; plutonium-238, -239; strontium-90; and tritium).

Organic Chemicals

Identification of COPCs for organic chemicals is based on detection status, and the COPCs are presented in Table 10.2-1 of the report. Figures F-8.2-11, F-8.2-12, and F-8.2-13 show the organic COPCs.

F-8.2.2 History of Releases

SWMUs 04-001, 05-001(a), and 05-001(b) and AOC 05-001(c) are former firing sites, and SWMUs 04-002 and 05-002 are the associated disposal areas. The firing sites used HE as an energy source for implosion tests. The total number of tests or quantity of material used is unknown, but test shots ranged from 0.5 lb–2000 lb of HE. The disposal areas were created by bulldozing the accumulated debris from the shots over the edge of the mesa, creating the potential for lateral migration of contaminants. Contaminants associated with the firing pits and disposal areas include HE, radionuclides, and inorganic chemicals.

SWMUs 05-006(h), 05-006(b), and 05-006(e) and AOC 52-003(a) are contaminated soil beneath former buildings. The footprints of decommissioned support structures have undergone D&D activities. Release volumes for these sites are unknown. Contaminants associated with soil below former buildings include radionuclides and inorganic chemicals.

SWMUs 52-002(a), 63-001(a), and 63-001(b) are liquid releases from former septic systems. The septic systems include septic tanks and associated drainlines and seepage pits that served various structures within the associated TAs. Volumes associated with these releases are undocumented, and may range from slow seeps to leaks of unknown quantities. Contaminants associated with the septic systems include inorganic chemicals, SVOCs, VOCs, and radionuclides [radionuclides only for SWMU 52-002(a)].

SWMUs 04-003(b) and 05-005(a) are liquid releases from outfalls. These releases include liquid release from control buildings at the firing sites. Release volumes associated with these SWMUs are unknown. Contaminants associated with the outfalls include SVOCs, VOCs, inorganic chemicals, and radionuclides.

AOC 52-003(b) is industrial wastelines that potentially contaminated soil. Release volumes are not known. The industrial wasteline underwent D&D activities, and screening results indicated little residual contamination. This site was approved for no further action (NFA) by EPA (EPA 2005, 088464) after the SAP addendum (LANL 2004, 086540) was submitted and approved. As a result, no additional work was conducted.

F-8.2.3 Nature and Extent

The SAP addendum (LANL 2004, 086540), approved by NMED (2004, 087284), stipulated additional sampling at the following SWMUs/AOCs to complete the data sets and determine nature and extent of contamination. Figure F-8.2-1 is the index map for the three areas in the East Ten Site Slope Subarea (Figures F-8.2-2 through F-8.2-4).

Consolidated Unit 04-001-99

Consolidated Unit 04-001-99 consists of SWMU 04-001, a former firing pit; SWMU 04-002, a former surface disposal site; and SWMU 04-003(b), a former drainline and outfall. In accordance with the approved SAP addendum (LANL 2004, 086540), additional samples for TAL metals, SVOCs, VOCs, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy were collected and analyzed (Figure F-8.2-3).

Samples were collected in 2004 from the following locations:

- location 04-02011, samples collected at 5–6 ft bgs and 8–9 ft bgs
- location 04-02016, samples collected at 2–3 ft bgs and 5–6 ft bgs
- location 04-02019, samples collected at 0–0.5 ft bgs, 2–3 ft bgs, and 5–6 ft bgs
- location 04-02021, samples collected at 2–3 ft bgs and 5–6 ft bgs
- location 04-02025, samples collected at 2–3 ft bgs and 5.1–5.6 ft bgs
- location 04-23233, samples collected at 0–0.1 ft bgs and 0.1–0.56 ft bgs
- transect 04-23234, samples collected at 0–0.13 ft bgs and 0.13–0.56 ft bgs
- transect 04-23235, samples collected at 0–0.13 ft bgs and 0.23–0.69 ft bgs
- transect 04-23236, samples collected at 0–0.16 ft bgs, 0.03–0.16 ft bgs, and 0.16–0.39 ft bgs
- transect 04-23237, samples collected at 0–0.13 ft bgs and 0.13–0.66 ft bgs
- transect 04-23238, samples collected at 0–0.1 ft bgs and 0.1–0.36 ft bgs
- transect 04-23239, samples collected at 0–0.2 ft bgs, 0.07–0.2 ft bgs, and 0.2–0.69 ft bgs

Inorganic Chemicals. Chromium, copper, and zinc were detected above their respective BVs (Figure F-8.2-6). Chromium (9.61 mg/kg) was detected at only one location (04-02011) above its BV (7.14 mg/kg), but the chromium value was within the range of tuff background concentrations (0.25–13 mg/kg). Zinc (56.7 mg/kg) was detected at only one location (04-02021) above its BV (48.8 mg/kg), but the zinc value was within the range of tuff background concentrations (14–75.5 mg/kg). Copper was detected at concentrations greater than its BV at four locations on the slope. The maximum detected concentration of copper was 28.4 mg/kg (location 04-23236, 0.16–0.39 ft). Farther downslope, the concentration of copper decreases to 16 mg/kg (location 04-23237, 0–0.13 ft), and copper was not detected in the deeper sample at this location. The extent of chromium and zinc has been defined because they were not detected in any other sampling location. Copper decreased in concentration downslope towards the drainage. Additional sampling for copper is not warranted because samples collected in Mortandad Canyon will analyzed for TAL metals.

Radionuclides. Radionuclides detected at Consolidated Unit 04-001-99 included americium-241, cesium-137, europium-152, plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 (Figure F-8.2-9). The 2004 borehole samples on the mesa defined the vertical extent of the radionuclides because these samples were collected at depths greater than previous locations; no concentrations were detected or were detected greater than BVs in the deeper samples.

At location 04-23234, the concentration of americium-241 increases from 0.22 pCi/g (0–0.13 ft) to 4.47 pCi/g (0.13–0.56 ft), and the concentration of plutonium-239 increases from 0.36 pCi/g (0–0.13 ft) to 16.09 pCi/g (0.13–0.56 ft). At location 04-23238, the concentration of americium-241 increases from 0.83 pCi/g (0–0.10 ft) to 1.68 pCi/g (0.10–0.36 ft). Underlying the samples at both locations is tuff bedrock. The contaminants in the sediment are more likely to move laterally rather than vertically; therefore, the vertical extent has been defined. On the slope, the extent of the radionuclide COPCs has been defined to the Ten Site channel.

Organic Chemicals. At Consolidated Unit 04-001-99, the organic chemicals detected were SVOCs, VOCs, and PAHs (Figure F-8.2-12). The SVOCs detected greater than the EQL (0.3 mg/kg) included benzoic acid and bis(2-ethylhexyl)phthalate. Benzoic acid was detected at locations 04-23236 (0.37 mg/kg, 0.03–0.16 ft) and 04-23239 (0.42 mg/kg, 0–0.20 ft) but was either not detected in the deeper sample or not detected greater than the EQL (0.6 mg/kg). Bis(2-ethylhexyl)phthalate was detected at a concentration of 4.03 mg/kg at location 04-23236 (0.03–0.16 ft) but was not detected in the deeper sample (0.16–0.39 ft). Bis(2-ethylhexyl)phthalate was not detected in any samples down gradient from Consolidated Unit 04-001-99. VOCs were detected at three locations: acetone (0.004 mg/kg), dichloroethene[1,1-] (0.0011 mg/kg), and methylene chloride (maximum concentration of 0.0022 mg/kg). All of the VOCs were detected at concentrations less than the EQL (0.005 mg/kg). Nature and extent have been defined.

Consolidated Unit 05-001(a)-99

Consolidated Unit 05-001(a)-99 consists of SWMU 05-001(a,b), former firing sites, SWMU 05-002, a former canyon-side disposal site; and SWMU 05-006(h), soil contamination. In accordance with the approved SAP addendum (LANL 2004, 086540), additional samples for TAL metals, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy were collected and analyzed (Figure F-8.2-4).

Samples were collected in 2004 from the following locations:

- location 05-02051, samples collected at 2–3 ft bgs and 5–6.1 ft bgs
- location 05-02059, samples collected at 2–3 ft bgs and 5–6 ft bgs

- location 05-02060, samples collected at 2–3 ft bgs and 5–5.6 ft bgs
- location 05-23242, samples collected at 0.07–0.33 ft bgs and 0.33–0.49 ft bgs
- location 05-23243, samples collected at 0.23–1.05 ft bgs and 1.05–2.03 ft bgs
- location 05-23244, samples collected at 0–0.62 ft bgs and 0.98–1.64 ft bgs
- location 05-23246, samples collected at 0–0.2 ft bgs and 0.2–0.46 ft bgs
- location 05-23247, samples collected at 0–0.23 ft bgs and 0.23–0.52 ft bgs
- location 05-23248, samples collected at 0–0.16 ft bgs and 0.16–0.59 ft bgs
- location 05-23249, samples collected at 0–0.39 ft bgs and 0.39–0.66 ft bgs

Samples were collected in 2007 from the following locations:

- location 05-02056, samples collected at 22.0–22.5 ft bgs and 24.0–24.5 ft bgs
- location 05-02060, samples collected at 5.6-6.0 ft bgs and 6.0-6.5 ft bgs

Inorganic Chemicals. The inorganic chemicals detected at concentrations greater than their respective BVs included arsenic, barium, chromium, copper, lead, nickel, selenium, and zinc (Figure F-8.2-7). On the mesa top, arsenic, barium, chromium, copper, lead, nickel, and selenium were detected at concentrations greater than BVs in surface and near-surface samples. Vertical extent for these inorganic COPCs was defined by locations 05-02055 and 05-02057, which were sampled to a depth of 20 ft and had no detected inorganic chemicals at this depth; and by location 05-02056, which was sampled to a depth of 24.5 ft, and had only chromium detected within the range of background concentrations. Laterally on the mesa, extent is defined on the south by the road. Sampling locations 05-02047 and 05-02008 had no concentrations of inorganic chemicals detected greater than BVs; therefore, the lateral extent to the west has been defined.

Copper was detected in samples from four mesa top locations (05-02049, 05-02050, 05-02051, 05-02052) at concentrations greater than 100 mg/kg. The extent of the elevated concentrations of copper is defined to the north and to the west by sample values that are less than 35 mg/kg. Lead was detected at the same locations as copper was detected. The extent of copper and lead have been defined to the south by the road, and to the east by sampling location 05-02053, which indicated decreasing concentrations of copper and lead. Extent was defined to the north by sample locations 05-02058, 05-02059, and 05-02060, which demonstrated that lead decreased with depth to within the range of background concentrations.

Radionuclides. Radionuclides detected at Consolidated Unit 05-001(a)-99 included americium-241, cesium-137, plutonium-239, uranium-234, uranium-235, and uranium-238 (Figure F-8.2-10). Americium-241 was detected within samples from four locations (05-23241, 05-23246, 05-23247, and 05-23248) with a maximum concentration of 0.17 pCi/g. These locations are on the slope, but not on the mesa top, and the concentrations decreased or remained the same with depth. Plutonium-239 was detected at a maximum concentration of 0.18 pCi/g at location 05-23241 (0.16–0.36 ft) but was not detected in the deeper sample (0.36–0.56 ft).

Uranium-234 was detected at a maximum concentration of 68.9 pCi/g (location 05-02051, 0–05 ft) but was not detected in the deeper sample (5–6 ft) at the same location. Uranium-234 was detected in many surface or near-surface samples on the mesa top but either decreased in concentration or was not detected in the deeper sample. At the locations where only one sample was collected, surrounding locations were sampled at greater depths. At locations 05-02056 and 05-02057, which were sampled to a

depth of 20 ft, no radionuclides were detected or were detected at concentrations greater than BVs. Uranium-235 was detected at a maximum concentration of 4.21 pCi/g (location 05-02051, 0–05 ft), and decreased to 0.11 pCi/g in the 5–6 ft sample. Uranium-238 was detected at a maximum value of 69.8 pCi/g (location 05-02051, 0–05 ft), but was not detected in the deeper sample (5–6 ft). The concentrations of uranium-235 and uranium-238 follow the same pattern as uranium-234. Vertical extent has been defined for radionuclides on the mesa top.

Radionuclides were detected on the slope, but the concentrations of isotopic uranium decreases in concentration from the mesa top to the slope. Additional sampling is not warranted because the samples for radionuclide analysis will be collected in Mortandad Canyon.

Organic Chemicals. No organic chemicals were detected above the EQLs at Consolidated Unit 05-001(a)-99 (Figure F-8.2-13). Nature and extent have been defined.

AOC 05-001(c)

As discussed in the approved SAP addendum (LANL 2004, 086540), AOC 05-001(c)**,** an inactive firing site, needed additional samples for TAL metals, HE, isotopic plutonium, and isotopic uranium (Figure F-8.2-4).

Samples were collected in 2004 at the following locations:

- location 05-02021 was resampled at 2–2.5 ft bgs and 5.1–5.4 ft bgs
- location 05-02022 was resampled at 2.1–2.6 ft bgs and 5–5.5 ft bgs
- location 05-02024 was resampled at 2–2.9 ft bgs and 5.1–5.4 ft bgs
- location 05-22894 was sampled at 2.1–2.5 ft bgs and 5.2–6 ft bgs

Samples were collected in 2007 at the following location:

- location 05-22894 was sampled at 6.2-6.7 ft bgs and 7.0-7.5 ft bgs

Inorganic Chemicals. Inorganic chemicals detected at concentrations greater than their respective BVs included antimony, arsenic, barium, chromium, copper, lead, nickel, selenium, and zinc (Figure F-8.2-7). Antimony (1.6 mg/kg, location 05-02024, 0–0.5 ft) was detected in soil at a concentration greater than its BV (0.83 mg/kg), and it was detected (0.55 mg/kg, location 05-02031, 1–2 ft) in tuff at a concentration greater than its BV (0.5 mg/kg). At both locations, antimony was not detected at a concentration greater than its BV in the deeper samples. Arsenic (3.24 mg/kg, location 05-02021, 5.1–5.5 ft) was detected once within its range of background concentrations (0.25–5 mg/kg). Chromium was detected at three locations, with a maximum concentration of 29 mg/kg, which exceeds the BV of 19.3 mg/kg. But it was within the range of background concentrations for soil (1.9–36.5 mg/kg). Chromium was detected greater than its BV within samples collected from the bottom of three auger holes (locations 05-02021, 05-02030, and 05-02031), but the concentrations were within the range of background concentrations for tuff (0.25–13 mg/kg). Chromium was not detected downslope at location 05-02022.

Copper was detected in six locations, with a maximum concentration of 941 mg/kg (location 05-02024, 0–0.5 ft). It was detected at a concentration of 9.13 mg/kg from the sample from 2.2–2.9 ft at the same location, and was not detected greater than its BV in the deeper sample (5.1–5.6 ft). The sample from location 05-02025, located within 40 ft of sampling location 05-02024, had copper detected in the surface sample at a concentration of 28.3 mg/kg, indicating that the elevated copper concentration has been defined. Additionally, the sample from location 05-02029 did not have a detected concentration of copper

greater than its BV. Copper was detected at concentrations greater than its BV from three samples at location 05-02021; the surface sample indicated a concentration of 51.4 mg/kg, and the concentration decreased to 8.4 mg/kg (5.1–5.4 ft). Copper was not detected at concentrations greater than its BV within samples from locations collected farther down the drainage (locations 05-02022, 05-02028, 05-02033, and 05-02035).

Nickel was detected once (16 mg/kg, location 05-02030, 1–2 ft) within the range of the background concentrations for soil (1–29 mg/kg). Selenium was detected at concentrations greater than its BV at one location (location 05-02021) at 0.35 mg/kg (2–2.5 ft) and 0.47 mg/kg (5.1–5.4 ft); both concentrations are slightly greater than the BV of 0.3 mg/kg. Lead was detected at one location (location 05-02024) at 539 mg/kg (0–0.5 ft), 12.4 mg/kg (2.2–2.9 ft), and 13.6 mg/kg (5.1–5.6 ft). Although lead was detected at the bottom of the auger hole, it was within the range of background concentrations (1.6–15.5 mg/kg). Nature and extent have been defined for inorganic chemicals at AOC 05-001(c).

Radionuclides. Radionuclides detected, or detected at concentrations greater than their BVs or FVs, within AOC 05-001(c) included plutonium-238, uranium-234, uranium-235, and uranium-238 (Figure F-8.2-10). Isotopic plutonium showed a decreasing trend with depth in the samples collected in 2004. Isotopic plutonium was not detected in samples from locations 05-02028, 05-02033, 05-02035, 05-02036, 05-02037, and 05-02038, indicating that lateral extent has been defined.

Vertical extent has been defined for uranium-234, uranium-235, and uranium-238. In the 2004 samples from location 05-22894, these analytes show an increasing trend with depth to 6 ft. The concentrations of uranium-234, uranium-235, and uranium-237 were less than their respective BVs in the deeper samples collected at this location in 2007. Lateral extent has been defined for isotopic uranium because it was not detected in samples at locations (locations 05-02021 and 05-02022).

Organic Chemicals. No organic chemicals were detected in the data set for AOC 05-001(c).

Consolidated Unit 05-005(a)-00

Consolidated Unit 05-005(a)-00 consists of SWMU 05-005(a), a former French drain from the former control Building 05-04; and SWMUs 05-006(b) and 05-006(e), both areas of soil contamination (Figure F-8.2-4). In accordance with the approved SAP addendum (LANL 2004, 086540), additional samples were collected and analyzed for TAL metals, SVOCs, VOCs, HE, isotopic plutonium, isotopic uranium, and gamma spectroscopy.

Samples were collected in 2004 at the following locations:

- location 05-02012 was resampled at 2–3 ft bgs and 5–6 ft bgs
- location 05-23244 was sampled at 0.07–0.33 ft bgs and 0.33–0.49 ft bgs
- location 05-22893 was sampled at 2–3 ft bgs and 5–6 ft bgs

Inorganic Chemicals. Inorganic chemicals detected at concentrations greater than their respective BVs at Consolidated Unit 05-005(a)-00 included arsenic, barium, chromium, copper, lead, mercury, nickel, and selenium (Figure F-8.2-7). Arsenic was detected twice with a maximum concentration of 3.55 mg/kg, which exceeds the BV (2.79 mg/kg) but is within the range of the background concentrations (0.25–5 mg/kg). Chromium was detected in two samples with a maximum concentration of 8.94 mg/kg, which exceeds its BV (7.14 mg/kg) but is within the range of the background concentrations (0.25–13 mg/kg). Copper was detected in three samples with a maximum concentration of 31.5 mg/kg compared with the BV of 14.7 mg/kg but was not detected greater than its BV at depth (5–6 ft) at location

05-22893. Mercury was detected in one sample at a concentration of 0.4 mg/kg, which exceeds its BV of 0.1 mg/kg. Nickel (6.76 mg/kg) was detected once (location 05-22893 from 2–3 ft), at a concentration which exceeds its BV of 6.58 mg/kg but is within the range of background concentrations (0.5–7 mg/kg). Selenium (0.72 mg/kg) was detected in one sample (location 05-22893, 2–3 ft) at a concentration that exceeds the BV (0.3 mg/kg) but was not detected greater than its BV in the deeper sample (5–6 ft). Lead was detected in three locations at a maximum concentration of 34.2 mg/kg, which slightly exceeds its background concentrations (2–28 mg/kg). The samples from 2004 at location 05-02012 defined the vertical and lateral extent of the lead because the samples were collected to a depth of 6 ft, and lead was not detected at concentrations greater than its BV. Inorganic chemicals were not detected at concentrations greater than their respective BVs within the samples downgradient (locations 05-23245 and 05-23241). Extent has been defined.

Radionuclides. Radionuclides detected at Consolidated Unit 05-005(a)-00 were plutonium-238, plutonium-239, uranium-234, uranium-235, and uranium-238 (Figure F-8.2-10). Plutonium-238 was detected at a maximum concentration of 0.043 pCi/g at location 05-02069 (0–0.5 ft). No radionuclides were detected or were detected at concentrations greater than BVs in the deepest samples (greater than 5 ft) on the mesa top, defining the vertical extent of radionuclides.

Organic Chemicals. Benzoic acid was the only SVOC detected at a concentration greater than the EQL (0.3 mg/kg), and was detected at a concentration of 0.65 mg/kg at location 05-23242 (0.07–0.33 ft). No VOCs were detected above EQLs (0.005 mg/kg). Nature and extent are defined for Consolidated Unit 05-005(a)-00.

SWMU 52-002(a) and AOC 52-003(a)

Additional samples needed to be collected at SWMU 52-002(a), a former septic system for the UHTREX, and analyzed for TAL metals, SVOCs, VOCs, isotopic plutonium, isotopic uranium, strontium-90, tritium, and gamma spectroscopy (Figure F-8.2-2).

As discussed in the approved SAP addendum (LANL 2004, 086540), additional samples needed to be collected at AOC 52-003(a), a former waste neutralization and pumping facility (TA-52-02) for liquid wastes from the former UHTREX facility, and analyzed for TAL metals, SVOCs, VOCs, isotopic plutonium, isotopic uranium, strontium-90, and tritium to complete the data set.

SWMU 52-002(a) and AOC 52-003(a) are collocated and are discussed as a single unit.

Samples were collected in 2004 at the following locations:

- location 52-02002, samples collected at 9–10 ft bgs, 14–15 ft bgs, 24–25 ft bgs, and 29–30 ft bgs
- location 52-02003, samples collected at 9–10 ft bgs, 14–15 ft bgs, 24–25 ft bgs, and 29–30 ft bgs
- location 52-02006, samples collected at 9–10 ft bgs, 14–15 ft bgs, 24–25 ft bgs, and 29–30 ft bgs
- location 52-02008, samples collected at 8.7–10 ft bgs, 13.7–15 ft bgs, 23.7–25 ft bgs, and 28.7–30 ft bgs
- location 52-02010, samples collected at 24–25 ft bgs, 29–30 ft bgs, and 34–35 ft bgs
- location 52-23251, samples collected at 0.1–0.33 ft bgs and 0.33–0.75 ft bgs
- location 52-23252, samples collected at 0.13–0.43 ft bgs and 0.43–0.79 ft bgs

- location 52-23253, samples collected at 0.1–0.69 ft bgs, 0.69–1.25 ft bgs, and 0–0.69 ft bgs
- location 52-23254, samples collected at 0.16–0.43 ft bgs, 0.43–0.69 ft bgs, and 0–0.43 ft bgs

Inorganic Chemicals. The inorganic chemicals detected, or detected above their respective BVs, were arsenic, lithium, molybdenum, and strontium (Figure F-8.2-5). Arsenic (2.97 mg/kg) was detected at location 52-02006 (24–25 ft) at a concentration greater than its BV (2.79 mg/kg), but is within the range of background concentrations (0.25–5 mg/kg). Lithium (maximum concentration of 5 mg/kg) and molybdenum (maximum concentration of 2.7 mg/kg) were detected at four locations (52-02001, 19–20 ft; 52-02009, 19–20 ft; 52-02006, 9–10 ft; and 52-02003, 14–15 ft). No inorganic chemicals were detected downgradient from the SWMU/AOCs. Therefore, nature and extent have been defined.

Radionuclides. The radionuclides detected, or detected at concentrations greater than BVs/FVs, included americium-241, cesium-137, plutonium-238, tritium, uranium-234, and uranium-238 (Figure F-8.2-8). On the mesa top, the concentrations of isotopic plutonium, uranium-238, and tritium decreased with depth in the boreholes. At the deepest borehole, only tritium (0.028 pCi/g) was detected in the 34–35 ft sample; therefore, vertical extent is defined. Down the slope, plutonium-238 decreases to nondetected concentrations. Although plutonium-239 increases in concentration down the slope, additional sampling is not warranted because the Mortandad Canyon sampling will collect samples for radionuclides to determine extent.

Organic Chemicals. SVOCs were detected at five locations, and VOCs were detected at three locations (Figure F-8.2-11). All of the SVOCs were detected at concentrations less than the EQL, except for benzoic acid and di-n-butylphthalate. Benzoic acid was detected at location 52-23252 (0.48 mg/kg from 0.13–0.43 ft and 0.48 mg/kg from 0.43–0.79 ft), but was not detected farther downslope. Di-n-butylphthalate was detected with a maximum concentration of 0.32 mg/kg at location 52-02009 in the sample from 7.5–8.5 ft bgs but was not detected in the deeper samples. The VOCs detected at concentrations greater than the EQL (0.005 mg/kg) were acetone, with a maximum concentration of 0.020 mg/kg, and methylene chloride, with a maximum concentration of 0.01 mg/kg. Acetone was detected samples from location 52-02010 at 24–25 ft bgs and 29–30 ft bgs but was not detected at 34-35 ft bgs. Methylene chloride was detected in a sample from location 52-02003 from 14–15 ft bgs, but was not detected in deeper samples. Methylene chloride also was detected at location 52-02010 from 14-15 ft bgs, but was not detected in the deeper samples. None of the VOCs were detected in the downslope samples. Extent has been defined.

SWMU 63-001(a)

SWMU 63-001(a) is an inactive 1000-gal. septic tank and its associated seepage pit and drainline (Figure F-8.2-2). In accordance with the approved SAP addendum (LANL 2004, 086540), no additional samples were collected in 2004.

Inorganic Chemicals. Inorganic chemicals were detected, or were detected above their respective BVs, at SWMU 63-001(a) (Figure 8.2-5). Boron (1.9 mg/kg) and lithium (6 mg/kg) were detected at location 63-02001, from a sample collected at a depth of 7.5–8.5 ft, but were not detected in the deeper samples (14–15 ft and 19–20 ft). Lithium (3.2 mg/kg) and silver (1.2 mg/kg) were detected at location 63-02004, from a depth of 30–31 ft, but were not detected in the deeper samples (to 60 ft). Therefore, the nature and extent of the inorganic chemicals have been defined.

Radionuclides. Radionuclides were detected at SWMU 63-001(a) (Figure 8.2-8). From the samples at location 63-02001, plutonium-238 and plutonium-239 were detected at concentrations of 0.013 pCi/g or less. Although plutonium-238 was detected (0.008 pCi/g) at the bottom of the borehole, plutonium-238

was not detected in samples from location 63-02003, which was sampled to a depth of 60 ft. Plutonium-239 (0.002 pCi/g, 12–13 ft and 0.002 pCi/g, 19–20 ft) was detected in samples from location 63-02002. The samples from location 63-02003 defined the extent of the plutonium-239 because it was not detected in samples collected at location 63-02002 at a depth below 20 ft. Plutonium-239 also was detected twice (0.014 pCi/g, 4–5 ft, and 0.047 pCi/g, 7–8 ft) in samples from location 63-02003 but was not detected in the deeper samples. The nature and extent of the radionuclides have been defined.

Organic Chemicals. Di-n-butylphthalate (0.17 mg/kg, location 63-02003, 29–30 ft and 0.096 mg/kg, location 63-02004, 59–60 ft) was detected twice, and total xylene (0.001 mg/kg, location 63-02004, 59–60 ft) was detected once (Figure F-8.2-11). Di-n-butylphthalate and total xylene were detected at a concentration less than the EQL. Nature and extent have been defined.

SWMU 63-001(b)

SWMU 63-001(b) is a 920-gal. inactive septic tank and its associated drainlines and seepage pit (Figure 8.2-2). In accordance with the approved SAP addendum (LANL 2004, 086540), no additional samples were collected in 2004.

Inorganic Chemicals. Inorganic chemicals were detected, or were detected above their respective BVs, at SWMU 63-001(b) (Figure 8.2-5). Arsenic (3 mg/kg) and lithium (3.3 mg/kg) were detected at location 63-02008, from a depth of 24–25 ft but were not detected in the deeper samples (to 60 ft). Lithium (1.1 mg/kg) and molybdenum (1.3 mg/kg) were detected at location 63-02007, from a depth of 4–5 ft but were not detected in the deeper samples (to 60 ft). Lithium (4.7 mg/kg) was detected at location 63-02006, from a depth of 13.5–14.5 ft, but was not detected in the deeper sample (to 20 ft). Nature and extent of the inorganic chemicals have been defined.

Radionuclides. Radionuclides were detected, or were detected above their respective BVs, at SWMU 63-001(b) (Figure 8.2-8). Plutonium-238 (0.05 pCi/g, 13.5–15 ft) was detected once at location 63-02008, and was not detected in the deeper samples (to 60 ft). Uranium-235 (0.15 pCi/g, 19–20 ft; 0.19 pCi/g, 24–25 ft; 0.13 pCi/g, 29–30 ft; and 0.17 pCi/g, 39–40 ft) was detected greater than its BV in four samples at location 63-02008 but was not detected greater than BV in the deeper samples (to 60 ft). No radionuclides were detected, or were detected above their BVs/FVs, in the three other sampling locations. The nature and extent of the radionuclides have been defined.

Organic Chemicals. Di-n-butylphthalate (0.057 mg/kg, location 63-02005, 19–20 ft and 0.037 mg/kg, location 63-02008, 52.5–53.5 ft) and bis(2-ethylhexyl)phthalate (0.18 mg/kg, location 63-02007, 4–5 ft) were detected (Figure F-8.2-11). All concentrations were less than the EQLs and were not detected in deeper samples collected at locations 63-02008 and 63-02007. Nature and extent have been defined.

F-8.3 Conceptual Site Model

The conceptual site model for East Ten Site Slope SWMUs and AOCs is shown in Figure F-3.3-1. The SWMUs and AOCs in East Ten Site Slope Subarea are former firing sites and their associated surface disposal areas. Septic systems, wastelines, and outfalls are included also within the subarea.

Surface releases are likely to result in infiltration of contaminants into surface soils, or may be transported laterally to unpaved areas or mesa-top drainages. Contaminants transported to surface soils or drainages either may be contained locally or transported as sorbed species on soil particles by stormwater runoff. Soluble contaminants may be transported by stormwater runoff as dissolved species to the hillslopes and canyon floor.

Subsurface releases are likely to result in infiltration of contaminants into the underlying tuff. Vertical and lateral migration within the tuff may occur through unsaturated flow or fracture flow.

Airborne releases from the firing sites may result in deposition of contaminants on the mesa top and possibly the slopes.

Land use at the East Ten Site Slope Subarea is currently industrial and recreational, and is expected to remain recreational and industrial for the reasonably foreseeable future. The potential receptor is therefore a site worker because TA-52 and -63 are currently in use. The potential exposure pathways for a worker are dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1).

The construction worker is not evaluated because the exposure is assumed to be from the surface (0–1 ft). If activities at the site change to include construction or other intrusive activities, EP will work with facility management to ensure workers are protected. The human health screening assessment may be reevaluated if the activity warrants a construction worker assessment.

East Ten Site Slope Subarea is located in a mixed conifer forest; the upper slope of the canyon is ponderosa pine and Douglas fir, and the lower slope is fir and oak. Mortandad Slope is a north-facing, fairly steep, dry slope. The area is within the core habitat for the Mexican spotted owl, a T&E species. If exposure occurs, the pathways to biota include root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-8.4 Human Health Screening Assessment

F-8.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the "Technical Background Document for Development of Soil Screening Levels, Revision 4" (NMED 2006, 092513). Sample data from 0–1 ft bgs were used in this evaluation because media (soil, sediment, and tuff) from that depth could be encountered by an industrial (Laboratory) user. Sample data from 0–10 ft bgs were used for the residential scenario.

Land use at the East Ten Site Slope Subarea is currently industrial and recreational and is expected to remain recreational and industrial for the reasonably foreseeable future. The screening assessment uses an industrial scenario because TA-52 and -63 are in use currently. The potential for human exposure to residual concentrations of chemicals and radionuclides in the environment at the site is high to low because some of the sites are close to buildings. Some sites are within a fenced area. During the work day, the site is open to Laboratory workers.

The industrial and residential SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a screening value for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The SSLs for carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a HQ of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5} risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr and derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD Version 6.21 (Table 4.0-3 in the report).

The parameters used to derive the industrial and residential SSLs for chemicals are presented in Table F-8.4-1. The parameters used in deriving the residential and industrial SALs for radionuclides are presented in Tables F-8.4-2 and F-8.4-3.

F-8.4.2 Human Health Screening Assessment Results

The representative concentration for each COPC was compared with the respective industrial and residential SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessment are presented in Appendix D Tables D-7.1-1 through D-7.8-3.

Consolidated Unit 04-001-99

Based on a residential scenario, the HI (0.03) is less than NMED's target level of 1.0 (Table F-8.4-4), the carcinogenic risk (5×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-5), and the dose (13 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-6). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 04-001-99 under a residential scenario.

Based on an industrial scenario, the HI (0.002) is less than NMED's target level of 1.0 (Table F-8.4-4), the carcinogenic risk (1×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-5), and the dose (4 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-6). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 04-001-99 under an industrial scenario.

Consolidated Unit 05-001(a)-99

Based on a residential scenario, the HI (0.7) is less than NMED's target level of 1.0 (Table F-8.4-7), the carcinogenic risk (6×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-8), and the dose (4 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 05-001(a)-99 under a residential scenario.

Based on an industrial scenario, the HI (0.4) is less than NMED's target level of 1.0 (Table F-8.4-7), the carcinogenic risk (4×10^{-10}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-8), and the dose (1 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 05-001(a)-99 under an industrial scenario.

AOC 05-001(c)

Based on a residential scenario, the HI (0.3) is less than NMED's target level of 1.0 (Table F-8.4-10) and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-11). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 05-001(c) under a residential scenario.

Based on an industrial scenario, the HI (0.2) is less than NMED's target level of 1.0 (Table F-8.4-10) and the dose (0.4 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-11). The screening assessments indicate no potential unacceptable risk/dose to human health at AOC 05-001(c) under an industrial scenario.

Consolidated Unit 05-005(a)-00

Based on a residential scenario, the HI (0.2) is less than NMED's target level of 1.0 (Table F-8.4-12), the carcinogenic risk (3×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-13), and the dose (0.8 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-14). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 05-005(a)-00 under a residential scenario.

Based on an industrial scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-8.4-12), the carcinogenic risk (5×10^{-10}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-13), and the dose (0.2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-14). The screening assessments indicate no potential unacceptable risk/dose to human health at Consolidated Unit 05-005(a)-00 under an industrial scenario.

SWMU 52-002(a)

Based on a residential scenario, the HI (0.01) is less than NMED's target level of 1.0 (Table F-8.4-15), the carcinogenic risk (7×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-16), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-17). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 52-002(a) under a residential scenario.

Based on an industrial scenario, the HI (0.0002) is less than NMED's target level of 1.0 (Table F-8.4-15) and the dose (0.7 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-17). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 52-002(a) under an industrial scenario.

SWMU 52-003(a)

Based on a residential scenario the HI (0.00005) is less than NMED's target level of 1.0 (Table F-8.4-18), the carcinogenic risk (1×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-19), and the dose (0.6 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-20). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 52-003(a) under a residential scenario.

SWMU 63-001(a)

Based on a residential scenario, the HI (0.004) is less than NMED's target level of 1.0 (Table F-8.4-21) and the dose (0.03 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-22). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 63-001(a) under a residential scenario.

SWMU 63-001(b)

Based on a residential scenario, the HI (0.004) is less than NMED's target level of 1.0 (Table F-8.4-23), the carcinogenic risk (5×10^{-9}) is less than the NMED target level of 1×10^{-5} (Table F-8.4-24), and the dose (0.04 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-8.4-25). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 63-001(b) under a residential scenario.

F-8.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all of these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs did not affect the assessment.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

The receptor used in the assessment (site worker) is subject to exposures in a different manner than the exposure assumptions used to derive the SSLs. Assumptions for the SSL are that the potentially exposed individual is an industrial worker who is outside for 8 h/d for 225 d/yr (NMED 2006, 092513). Most Laboratory workers are not outside for 8 h/d, but instead spend part of their time indoors or elsewhere on Laboratory property. By using the industrial worker scenario to assess risk/dose, the screening assessment overestimates the exposure, and is protective of a Laboratory worker. As a result, risk, hazard, and dose are overestimated.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be expected reasonably.

Toxicity Values

The primary uncertainty associated with screening values relates to derivation of screening values from EPA toxicity values (RfDs and SFs) (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in four areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, (3) interindividual variability in the human population, and (4) additive approach.

Extrapolation from animals to humans. The SFs and RfDs are often determined based on extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often can contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in an over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures, and in determining the NOAEL. The NOAEL/uncertainty factor approach incorporates a factor of 10 to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals generally are unknown and possible interactions could be synergistic or antagonistic. Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively, but that act by different mechanisms and on different target organs.

F-8.4.4 Interpretation

Based on a residential scenario, the maximum HI (0.7) for Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) is less than NMED's target level of 1.0. The maximum cancer risk (5×10^{-7}) for Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) is less than the NMED target level of 1×10^{-5}. The maximum dose (13 mrem/yr) for Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) is less than DOE's target dose of 15 mrem/yr. The total dose range for a residential user in the East Ten Site Slope Subarea is equivalent to a total risk range from 2×10^{-8} to 5×10^{-5}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential for unacceptable risk/dose to human health at the East Ten Site Slope Subarea.

Based on an industrial scenario, the maximum HI (0.4) for Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) is less than NMED's target level of 1.0. The maximum cancer risk (1×10^{-8}) for Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) is less than the NMED target level of 1×10^{-5}. The maximum dose (4 mrem/yr) for Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) is less than DOE's target dose of 15 mrem/yr. The total dose range for an industrial user in the East Ten Site Slope Subarea is equivalent to a total risk range from 2×10^{-6} to 3×10^{-5}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential for unacceptable risk/dose to human health at the East Ten Site Slope Subarea.

Consolidated Unit 04-001-99, Consolidated Unit 05-001(a)-99, AOC 05-001(c), Consolidated Unit 05-005(a)-00, SWMU 52-002(a), SWMU 52-003(a), SWMU 63-001(a), and SWMU 63-001(b) pass residential screening assessments.

F-8.5 Ecological Risk

F-8.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, an uncertainty analysis, and an interpretation of the results.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present in the East Ten Site Slope Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors included:

- a plant
- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and avian carnivore [surrogate for T&E species])

The rationale for these receptors is presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available. The ESLs are based on similar species, and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population (LD_{50}). The derivation of ESLs is based on the approach presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs, is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant, and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be

protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on these general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the East Ten Site Slope Subarea.

East Ten Site Slope Subarea is located in a mixed conifer forest; the upper slope of the canyon is ponderosa pine and Douglas fir, and the lower slope is fir and oak. Mortandad Slope is a north facing, fairly steep, dry slope. The area is within the core habitat for the Mexican spotted owl, a T&E species.

Surface water is the dominant transport mechanism here because of the large surface area of asphalt and rooftops that drain from the mesa top onto this slope. Runoff terminates at the floor of Ten Site Canyon. There is no potential for exposure to aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs), and the semiarid environment of this region provides minimal hydrologic head.

F-8.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between the ground surface and a depth of 5 ft (LANL 2004, 087630) from the East Ten Site Slope Subarea SWMUs, AOCs, and Consolidated Units, including data from the Mortandad Watershed (Appendix D Tables D-7.9-6, D-7.9-13, and D-7.9-19). Tuff was included in the screening assessment because some of it is crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify COPECs for the East Ten Site Slope Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL

2004, 087630). The HQs are the ratios of the representative concentrations (95% UCLs or maximum detected concentration) to the ESLs. COPCs with HQs greater than 0.3 are identified as COPECs, and are evaluated further. ESLs for terrestrial receptors were obtained from the Laboratory's ECORISK Database Version 2.2 (LANL 2005, 090032), and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentrations with the final ESLs for East Ten Site Slope Subarea are presented in Table F-8.5-1. Barium, cadmium, copper, lead, mercury, selenium, and zinc are retained as inorganic COPECs. Benzoic acid, bis(2-ethylhexyl)phthalate, and di-n-butylphthalate are retained as organic COPECs.

There are no ESLs for lithium, molybdenum, and trichlorofluoromethane. Therefore, these analytes are retained as COPECs and discussed in the uncertainty section.

The COPECs were evaluated further in Table F-8.5-2. The HQ for the COPEC/receptor combination and HIs for each receptor were calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-8.5-2, all of the receptors, except the red fox and the cottontail, potentially may be impacted by COPECs because they have HIs greater than 1.0.

F-8.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the East Ten Site Slope Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the East Ten Site Slope Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative, and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation. This is largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic, radionuclide, and organic COPECs are not generally 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathways

The representative concentrations used in the calculations of HQs were the 95% UCLs or maximum detected concentrations in the sediment/soil/tuff from 0–5 ft bgs, thereby conservatively estimating the site concentrations of each COPEC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed to be constant throughout the exposure area. This results in an overestimation of the potential risk because COPECs varied across the site, and were generally infrequently detected.

Background Concentrations

The ecological screening is based on the exposure of ecological receptors to contamination to a depth of 5 ft bgs. Table F-8.5-3 shows the range of soil, sediment, and tuff background concentrations for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the representative concentrations, and the range of background concentrations, barium, cadmium, mercury, selenium, and zinc are similar to background concentrations, and are eliminated as COPECs.

Area Use Factors

In addition to the direct comparison of the representative concentration with the ESL, AUFs are used to account for the amount of time that a receptor is likely to spend within the contaminated areas based on the size of the receptor's HR. The AUFs for individuals were developed by dividing the size of the area (13.2 ha) of the site by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF for the Mexican spotted owl is 0.036. Based on the application of the AUF for the Mexican spotted owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.6).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations in the East Ten Site Slope Subarea is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$, or approximately 40HR.

The area of the East Ten Site Slope Subarea is approximately 81.63 ha, but the area that is within the SWMU boundaries is a combined 13.2 ha, or 16% of the total area. The PAUFs are estimated by dividing the SWMU areas by the population area of each receptor population (Table F-8.5-4). The resulting factor is multiplied by the receptor HI to determine if there is a potential impact on the population (Table F-8.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-8.5-4). The HIs for the plant and earthworm are not adjusted by PAUFs

because these receptors do not have HRs. The HI for the deer mouse is also not adjusted by PAUFs because the HR of the deer mouse is smaller than the SWMU area. Based on the reassessment, the adjusted HIs for the East Ten Site Slope Subarea are 0.05 for the carnivorous and omnivorous kestrel, 8 for the herbivorous robin, 30 for the omnivorous robin, 51 for the insectivorous robin, and 6 for the shrew (Table F-8.5-5). The adjusted HIs demonstrate that there is no potential risk to the kestrel because the HIs are less than 1; therefore, these receptors are not adversely affected by the COPECs.

Use of the combined SWMU and AOC areas (13.2 ha) as the PAUF overestimates the risk to ecological receptors because it assumes that the receptors remain in one area, the potentially contaminated area, instead of roaming over the entire mesa, an area of 81.63 ha. It also assumes that the receptors forage in the SWMU areas only, and do not forage in the remainder of the mesa top. The SWMU areas are spread out across the subarea (see Figure F-8.2-1, Index Map of the East Ten Site Slope Subarea). The SWMU areas are also separated by buildings, paved and gravel areas, and vegetated non-SWMU areas, thereby overestimating the exposure and the potential risk.

COPECs Contributing to PAUF-Adjusted HIs Greater Than 1.0

Bis(2-ethylhexyl)phthalate. Bis(2-ethylhexyl)phthalate was detected in 7 out of 53 samples at a maximum detected concentration of 4.03 mg/kg. The EPC for bis(2-ethylhexyl)phthalate (0.54 mg/kg) is similar to the concentrations reported in the Mortandad Canyon investigation report (0.55 mg/kg) (LANL 2006, 094161) and less than the concentrations reported in the Los Alamos and Pueblo Canyons investigation report (2 mg/kg) (LANL 2005, 091818). Field studies on avian populations were conducted and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from bis(2-ethylhexyl)phthalate to avian populations are likely in the East Ten Site Subarea. Bis(2-ethylhexyl)phthalate is eliminated as a COPEC.

Di-n-butylphthalate. Di-n-butylphthalate was detected in 4 out of 53 samples at a maximum detected concentration of 0.155 mg/kg. The EPC for di-n-butylphthalate (0.21 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (3 mg/kg) (LANL 2006, 094161). Field studies on avian populations were conducted and no differences in population density, eggshell thickness, and reproductive classes were noted in the reports. The results of the avian studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161). Therefore, no potential adverse ecological effects from di-n-butylphthalate to avian populations are likely in the East Ten Site Subarea. Di-n-butylphthalate is eliminated as a COPEC.

Benzoic Acid. Benzoic Acid was detected in 16 of 53 samples within 0–5 ft bgs at a maximum concentration of 0.65 mg/kg. The EPC for benzoic acid (0.49 mg/kg) is less than concentrations reported in the Mortandad Canyon investigation report (5.7 mg/kg) (LANL 2006, 094161) and in the Los Alamos and Pueblo Canyons investigation report (3.5 mg/kg) (LANL 2005, 091818). Field studies on small mammals were conducted and no differences in abundance and reproductive status were noted in the reports. The results of the small mammal studies indicated no adverse ecological effects from contaminants in Mortandad Canyon (LANL 2006, 094161) or Los Alamos and Pueblo Canyons (LANL 2005, 091818). Therefore, no potential adverse ecological effects from benzoic acid to small mammals are likely in the East Ten Site Subarea. Benzoic acid is eliminated as a COPEC

Copper. The EPC for copper (144 mg/kg) generates HQs greater than 0.3 for the omnivorous kestrel, the robin, the cottontail, the shrew, the deer mouse, the earthworm, and the plant.

Lead. The EPC for lead (91 mg/kg) generates HQs greater than 0.3 for the omnivorous kestrel, the robin, the shrew, the deer mouse, and the plant.

Because the EPCs for copper and lead were elevated across the subarea, HQs were calculated for each SWMU or AOC based on 95% UCLs or maximum detected concentrations. These results are discussed below, and shown in Tables F-8.5-6 through F-8.5-11.

Consolidated Unit 04-001-99. Table F-8.5-6 shows the EPCs for copper and lead which generate HQs between 1 and 2 for the robin, while the copper concentration results in HQs of 1 and 2 for the earthworm and plant, respectively. The red fox, kestrel, cottontail, shrew, and deer mouse have HIs less than 1.0. The area of Consolidated Unit 04-001-99 is approximately 1.8 ha, which is used to calculate a PAUF for the robin (0.11). The PAUF-adjusted HIs for the robin are less than 1.0 (Table F-8.5-6). The copper and lead EPCs are also similar to background concentrations (Table F-8.5-3). Copper and lead were eliminated as COPECs at Consolidated Unit 04-001-99.

Consolidated Unit 05-001(a)-99. Table F-8.5-7 shows the EPCs for copper and lead and the resultant HQs and HIs. The EPCs for copper and lead generates HIs greater than 1.0 for all the receptors, except the red fox and the carnivorous kestrel. The HIs for the other receptors are greater than 1.0, and are approximately 23 to 54 for the robin, 2 for the cottontail, 15 for the shrew, 8 for the deer mouse, 32 for the earthworm, and 42 for the plant. The area of Consolidated Unit 05-001(a)-99 is approximately 5.4 ha, which is used to calculate PAUFs for the robin (0.31), shrew (0.33), cottontail (0.042), and the kestrel (0.049). The PAUF-adjusted HIs for the kestrel and cottontail are less than 1.0 (Table F-8.5-7), indicating no potential risk to these receptors. The robin, the shrew, the deer mouse, the earthworm, and the plant have HIs greater than 1.0.

Of the 5.4 ha, only 0.21 ha has elevated copper and lead concentrations and is less than 4% of the total area. Using the smaller area results in PAUFs for the robin (0.0125), shrew (0.013), and deer mouse (0.07). The HIs are less than, or approximately 1.0, for the robin, shrew, and deer mouse using this smaller contaminated area. The HI for the earthworm is 32, and the HI for the plant is 42. The plant ESL may not be a good indicator of risk because vegetation at this site is abundant and does not appear stressed.

AOC 05-001(c). Table F-8.5-8 shows the EPCs for copper and lead and the resultant HQs and HIs. The EPCs for copper and lead generate HIs greater than 1.0 for all the receptors, except the red fox, the carnivorous kestrel, and the cottontail. The area of AOC 05-001(c) is approximately 4.8 ha, which is used to calculate PAUFs for the robin (0.29), and shrew (0.31). The PAUF-adjusted HIs for the robin are between 1 and 4, while the adjusted HIs for the shrew and deer mouse are less than or approximately 1.0 (Table F-8.5-8). The plant and earthworm HIs are 5 and 6, respectively. The plant ESL may not be a good indicator of risk to the receptors at the site because vegetation at the site is abundant and does not appear stressed.

Dourson and Stara (1983, 073474) conducted a study of uncertainty factors incorporated in calculating ESLs for ecological receptors. Based on their study, the LOAEL to NOAEL adjustment indicates that HIs up to 10 may not adversely affect ecological receptors. To maintain conservatism, they state that HIs less than 3 do not adversely affect ecological receptors. Based on this study, copper and lead are eliminated as COPECs at AOC 05-001(c).

Consolidated Unit 05-005(a)-00. Table F-8.5-9 shows the EPCs for copper and lead and the resultant HQs and HIs. The EPCs for copper and lead generates HIs less than or equivalent to 1.0 for the fox, kestrel, cottontail, shrew, deer mouse, and earthworm. The HIs for the robin and plant are between 1.0

and 3.0. The EPCs for copper and lead are also similar to background concentrations (Table F-8.5-3). Copper and lead are eliminated as COPECs at Consolidated Unit 05-005(a)-00.

SWMU 52-002(a). The maximum detected concentration for copper (7.57 mg/kg) and lead (16.1 mg/kg) are similar to background concentrations (Table F-8.5-3). Copper and lead are eliminated as COPECs at SWMU 52-002(a).

SWMU 63-001(a). The maximum detected concentration for copper (1.1 mg/kg) is similar to background concentrations (Table F-8.5-3). Copper is eliminated as a COPEC at SWMU 63-001(a).

DOE Tier I Bioconcentration Guides

The DOE Tier I BCG is a lower value for cesium-137 (20.8 pCi/g) than the ECORISK Database final ESL (680 pCi/g). If the DOE Tier I BCG is used, then the HQ increases from 1.05E-03 (using LANL 2004, 087630) to 0.03 for the wildlife receptors. The DOE BCG incorporates bioaccumulation factors that are orders of magnitude higher than those in the ECORISK Database. Environmental surveillance and monitoring at the Laboratory indicate that bioaccumulation factors are not as high as those used by DOE (Bennett et al. 1996, 056035). Therefore, the ESL comparison is more representative than the BCG comparison.

Chemicals without ESLs

These COPECs were also detected infrequently across the site and at low levels.

There are no ESLs for lithium, and this chemical cannot be assessed quantitatively for potential ecological risk. Lithium was detected in one sample within 0–5 ft bgs at a concentration of 1.1 mg/kg. The EPA Region 6 residential SSL is 1600 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for molybdenum, and this chemical cannot be assessed quantitatively for potential ecological risk. Molybdenum was detected in one sample within 0–5 ft bgs at a concentration of 1.3 mg/kg. The NMED residential SSL is 391 mg/kg, which indicates low potential toxicity from this chemical. Therefore, molybdenum does not pose a potential ecological risk to receptors at this site.

There are no ESLs for trichlorofluoromethane, and this chemical cannot be assessed quantitatively for potential ecological risk. Trichlorofluoromethane was detected in two to 10 samples within 0–5 ft bgs at concentrations less than 0.0042 mg/kg. The NMED residential SSL is 588 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

F-8.5.4 Interpretation

Based on the ecological screening assessment for the East Ten Site Slope Subarea, 13 COPECs (including 3 COPECs without ESLs) were identified. The COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the analysis for potential effects to populations (individuals for T&E species), areas of contamination, the relative toxicity of related compounds, and the infrequency of detected concentrations.

F-9.0 SIGMA MESA SUBAREA

F-9.1 Site Descriptions

Most of TA-60 consists of an undeveloped mesa top. SWMU 60-005(a) and AOCs 60-004(c) and AOC 60-004(e) are located on the south side of a gravel road, toward the eastern end.

F-9.1.1 Surface Conditions

The Sigma Mesa Subarea is located in the mesa-top area of Sigma Mesa. Material at the surface consists of shallow soils and exposed bedrock tuff. Vegetation is sparse in the area of the SWMUs and AOCs, consisting of grasses, forbs, and few shrubs.

F-9.1.2 Subsurface Conditions

The general stratigraphy of the bedrock beneath the Sigma Mesa Subarea can be inferred from regional geology (Broxton and Eller 1995, 058207), and has been further defined using geologic logs from boreholes drilled at or near the site. Moreover, the stratigraphy of Sigma Mesa is generally similar to that at Ten Site Mesa (the Mesa Top Subarea).

The predominant rock unit at the surface is unit 3 of the Tshirege Member of Bandelier Tuff, a series of volcanic ashfall and ashflow deposits. Unit 3 of the Tshirege Member (Qbt 3) is approximately 100 ft thick on the mesa top. Below unit 3 is unit 2 of the Tshirege Member (Qbt 2), which is approximately 30–40 ft thick in the vicinity of TA-35. Below unit 2 is unit 1v of the Tshirege Member (Qbt 1v), which is approximately 40 ft thick. Next is unit 1g of the Tshirege Member (Qbt 1g), which is approximately 80 ft thick. Below unit 1g is approximately 2 ft of pumice (the Tsankawi Pumice), followed by the Cerro Toledo interval, a zone of reworked tuff approximately 30–40 ft thick. The lowest unit encountered is the Otowi Member of Bandelier Tuff (Qbo). The Otowi Member was encountered only once in the investigation (in the Pratt Canyon Subarea, sample depth 298–299 ft); it is typically 120–180 ft thick. Below the Otowi Member lie the Guaje Member bed (approximately 35 ft thick) followed by the Puye Formation and the Cerros del Rio basalts, with a combined thickness of at least 680 ft in this area.

Subsurface human-made structures in the Sigma Mesa Subarea consist of utility lines, including electrical, natural gas, water, sewer, and telephone locations (Figure F-9.2-1).

F-9.1.3 Groundwater Conditions

The top of the regional aquifer at Sigma Mesa is estimated to be at least 1200 ft below the mesa surface. In regional well R-14 in Ten Site Canyon to the southeast, groundwater was encountered only at a depth of 1182 ft bgs (LANL 2003, 076062, p. 5).

F-9.1.4 Surface Water Conditions

No permanent surface water exists in the Sigma Mesa Subarea. Occasional surface runoff occurs as a result of usually brief, but often intense, seasonal thunderstorms that can produce significant rainfall in short time periods. Runoff may be generated during the winter as fluctuating temperatures cause snow to melt. Runoff in the Sigma Mesa Subarea is most likely to occur as overland sheet flow, with lesser amounts of channelized runoff in narrow, shallow drainage channels or swales.

Surface water site assessments were performed for the Sigma Mesa SWMU and AOCs between 1999 and 2004. The SWMU and AOCs in the Sigma Mesa Subarea received scores between 15.3 and 32.5,

indicating low to moderate potential for erosion. The surface water site assessments are included with the ecological scoping checklists in Appendix H.

F-9.1.5 Ecological Features

Figure F-3.1-1 shows the ecological vegetation communities of the seven subareas. Observed and expected wildlife receptors are discussed in the ecological scoping checklists in Appendix H.

F-9.2 Sampling Results

The sampling results for the Sigma Mesa Subarea are described in detail in section 6.0 and Appendix D of the report, and are summarized here.

The data used to define the nature and extent of contamination in the Sigma Mesa Subarea were obtained from environmental samples collected in 1994, 1995, and 2004–2005. Figure F-9.2-1 is an index map of the Sigma Mesa Subarea, which is divided into two map areas (A and B) for a more appropriate scale Figures F-9.2-2 and 9.2-3 show the SWMUs and AOCs in each of two map areas within Sigma Mesa Subarea, with sampling locations identified.

F-9.2.1 Summary of Results

The sampling data for the Sigma Mesa Subarea are reviewed in Appendix D. The inorganic chemical and radionuclide BVs and FVs, where available, are from “Inorganic and Radionuclide Background Data for Soils, Canyon Sediments, and Bandelier Tuff at Los Alamos National Laboratory” (LANL 1998, 059730).

The representative concentrations used for the screening assessments are either the 95% UCL of the mean or the maximum detected concentration. The 95% UCLs were calculated following EPA guidance “Calculating Exposure Point Concentrations at Hazardous Waste Sites” (EPA 2002, 073593) and using the EPA ProUCL program (http://www.epa.gov/nerlesd1/tsc/form.htm). The UCLs were calculated using normal, lognormal, gamma, or nonparametric tests, depending on which distribution provided the best fit to the data for that COPC. Nondetected concentrations of inorganic and organic chemicals in the data set were included in the calculation using one-half of the detection limit (EPA 1989, 008021). The radionuclide data were used as reported if all of the results (detects and nondetects) were reported as positive results. If any of the radionuclide results were reported as a negative value in the data set, the absolute value was used, because the ProUCL program cannot handle negative values. The maximum detected concentrations were used as the representative concentration if there were too few samples to calculate a 95% UCL. The human health risk assessment for the Sigma Mesa Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–1 ft bgs for recreational user and 0–10 ft for the residential user; the ecological risk assessment for the Sigma Mesa Subarea used the concentrations for soil, sediment, and tuff samples collected from 0–5 ft bgs. Appendix D Tables D-8.1-1 through D-8.3-3 present the inorganic chemical, radionuclide, and organic chemical representative concentrations (EPCs).

Inorganic Chemicals

The inorganic COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 11.2-1 in the main text. Figures F-9.2-4 and F-9.2-5 show the locations of soil, sediment, and tuff samples in which inorganic chemicals were detected above BVs or detected without BVs.

Radionuclides

The radionuclide COPCs for each SWMU, AOC, consolidated unit, and the subarea are presented in Table 11.2-1 in the main text. Figure F-9.2-6 shows the locations of soil, sediment, and tuff samples in which radionuclides were detected above BVs and FVs, were detected but do not have BVs, or were detected at depths greater than 6 in. (plutonium-238, -239; and tritium).

Organic Chemicals

Identification of COPCs for organic chemicals is based on detection status, and the COPCs are presented in Table 11.2-1 in the main text. Figures F-9.2-7 and F-9.2-8 show the organic COPCs.

F-9.2.2 History of Releases

Former surface impoundment [SWMU 60-005(a)] was a solar pond at the east end of Sigma Mesa. Although the impoundment held a total of approximately 140,000 gal. of treated effluent throughout its operation, release volumes were limited because the liner was intact at the time of the evaporation experiments. The liner has decomposed over time, and the sludge dried and rehydrated with precipitation. There are no recorded releases from the impoundment. Contaminants associated with the surface impoundment include radionuclides, organic chemicals, and inorganic chemicals.

AOC 60-004(c) was a storage area located outside of the surface impoundment, and was used as a storage area for empty used containers. The volumes associated with these releases are not known but are fairly limited because the barrels were emptied before storage. The SAP addendum (LANL 2004, 086540) states that no contaminants are associated with AOC 60-004(c).

AOC 60-004(e) is soil contamination from PCB transformer storage areas. Volumes associated with releases at this site are unknown. Contaminants associated with the storage area include inorganic chemicals, PCBs, SVOCs, and VOCs.

F-9.2.3 Nature and Extent

The SAP addendum (LANL 2004, 086540), approved by NMED (2004, 087284) called for additional sampling at the following SWMU/AOCs to complete the data set and determine nature and extent of contaminants. Figure F-9.2-1 is the index map for the two areas (A and B) in the Sigma Mesa Subarea.

AOC 60-004(c) and SWMU 60-005(a)

SWMU 60-005(a) is an inactive Hypalon-lined solar pond (Figure F-9.2-2). In accordance with the approved SAP addendum (LANL 2004, 086540), additional samples were collected and analyzed for TAL metals, SVOCs, isotopic plutonium, isotopic uranium, gamma spectroscopy, and tritium to complete the data set.

AOC 60-004(c) is a former container storage area for approximately 125 empty 55-gal. drums inside the fence surrounding the former surface impoundment SWMU 60-005(a) (Figure F-9.2-2). AOC 60-004(c) is collocated with SWMU 60-005(a); therefore, the data are used to assess both areas.

Samples were collected in 2004 at the following locations:

- locations 60-23008 and 60-23009, samples collected at 4–5 ft bgs and 9–10 ft bgs

- location 60-23010, samples collected at 4–5 ft bgs and 8.7–10 ft bgs
- location 60-23011, samples collected at 4–4.7 ft bgs and 9.1–9.7 ft bgs
- location 60-23012, samples collected at 4–4.6 ft bgs and 8.1–8.7 ft bgs
- transect location 60-23255, collected at 0–0.26 ft bgs and 0.79–1.25 ft bgs
- transect location 60-23256, collected at 0–0.26 ft bgs and 0.26–0.85 ft bgs
- transect location 60-23257, collected at 0–0.69 ft bgs and 0.69–1.12 ft bgs

Inorganic Chemicals. For TAL metals, chromium, lead, selenium, and manganese were detected at concentrations greater than their respective BVs (Figure F-9.2-4). At location 60-23011, chromium was detected (11.5 mg/kg, 4–4.7 ft and 27.7 mg/kg, 9.1–9.7 ft) above its BV (7.14 mg/kg). Although vertical extent does not appear to be defined at location 60-23011, chromium was not detected greater than BV in downslope samples. Lead was detected twice (13.3 mg/kg, location 60-23009, 4–5 ft and 13.4 mg/kg, location 60-23011, 4–4.7 ft) at concentrations greater than the BV (11.2 mg/kg). The lead values are within the range of background concentrations (1.6–15.5 mg/kg), and lead was not detected above its BV in the deeper samples at each location. Selenium was detected once at a concentration of 0.45 mg/kg (location 60-23011, 4–4.7 ft) greater than the BV (0.3 mg/kg), but was not detected (detection limit of 0.51 mg/kg) in the deeper sample (9.1–9.7 ft). At location 60-23009, manganese was detected (632 mg/kg, 4–5 ft) at a concentration exceeding its BV (482 mg/kg) but within the range of background concentrations (22–752 mg/kg), and was not detected in the deeper sample. No inorganic chemicals were detected at concentrations greater than their BVs downslope. Extent has been defined for inorganic chemicals at AOC 60-004(c) and SWMU 60-005(a).

Radionuclides. Radionuclides detected included europium-152, cobalt-60, and tritium (Figure F-9.2-6). Europium-152 was detected at three locations from the samples collected in 1994. It was detected at 0–1 ft, 1–1.5 ft at locations 60-01215 and 60-01200 (maximum concentration of 0.48 pCi/g, location 60-01200), but was not detected in the nearby location 60-23009 in deeper samples (10 ft). Europium-152 also was detected at location 60-01213 from 0–1.0 ft (0.29 pCi/g), but was not detected in deeper samples at locations 60-23010, 60-023011, and 60-23012. Cobalt-60 was detected at location 60-01207 (0.039 pCi/g, 0–1 ft), but was not detected in other shallow and deeper samples. Tritium was detected at two of the 1994 locations at a maximum concentration of 2.69 pCi/g (location 60-01206, 0-1 ft). Tritium also was detected in samples collected in 2004 samples but at lesser concentrations, with a maximum concentration of 0.024 pCi/g (location 60-23010, 8.7–10 ft). Radionuclides were not detected in the samples collected in the drainage channel. Vertical and lateral extent has been defined.

Organic Chemicals. Organic chemicals were detected at two sampling locations, 60-23256, in the drainage, and 60-23012, on the mesa top (Figure F-9.2-7). The PAHs detected were fluoranthene (0.0214 mg/kg), fluorene (0.0056 mg/kg), and pyrene (0.0279 mg/kg); they were not detected at depth at locations 60-23012 and 60-23256. PAHs also were not detected at locations 60-23255 and 60-23257. The SVOCs detected were bis(2-ethylhexyl)phthalate, benzoic acid, and aniline. Bis(2-ethylhexyl)phthalate was detected at one location, 60-23012 (0.08 mg/kg, 4–4.6 ft and 0.1 mg/kg, 8.1–8.7 ft) at concentrations less than the EQL. At location 60-23256, benzoic acid (0.24 mg/kg, 0–0.26 ft) and aniline (0.25 mg/kg, 0–0.26 ft) were detected in the surface sample, but not within the deeper sample, and were not detected in samples at locations 60-23255 and 60-23257. Nature and extent are defined.

AOC 60-004(e)

As discussed in the approved SAP addendum (LANL 2004, 086540), additional samples needed to be collected at AOC 60-004(e), a former 100-ft^2 outdoor storage area, and analyzed for TAL metals, SVOCs, and VOCs to complete the data set (Figure F-9.2-3).

Samples were collected in 2004 at the following locations:

- location 60-23013, samples collected at 1–2 ft bgs and 3–3.5 ft bgs
- location 60-23014, samples collected at 1–1.7 ft bgs and 3–3.5 ft bgs
- transect location 60-23258, collected at 0.03–0.33 ft bgs and 0.66–1.02 ft bgs
- transect location 60-23259, collected at 0–0.3 ft bgs, 0.1–0.3 ft bgs, 0.3–0.69 ft bgs
- transect location 60-23260, collected at 0.13–0.36 ft bgs and 0.36–0.66 ft bgs
- transect location 60-23261, collected at 0–0.39 ft bgs and 0.75–1.25 ft bgs

Inorganic Chemicals. Antimony, chromium, selenium, and thallium were detected at concentrations greater than their respective BVs (Figure F-9.2-5). Antimony was detected at location 60-01016 (0.43 mg/kg, 0–1.0 ft), but was within the range of background concentrations. Selenium and thallium were detected (2.6 mg/kg and 2.2 mg/kg, respectively) in the surface sample (0–1 ft) at location 60-01016, but were not detected at concentrations greater than their BVs in other samples. Chromium was detected at location 60-23013 (24.2 mg/kg, 1–2 ft in soil and 23.3 mg/kg, 3–3.5 ft in tuff) at concentrations greater than its BV (19.3 mg/kg in soil and 7.14 mg/kg in tuff), but was within the range of background concentrations (1.9–36.5 mg/kg in soil). Chromium was detected at location 60-23014 (44.1 mg/kg, 3–3.5 ft) at concentrations greater than its BV (7.14 mg/kg). Although chromium was detected within the deepest samples, it was not detected at concentrations greater than BV in the drainage samples. AOC 60-004(e) was a storage area, and if a liquid leak had occurred, other inorganic chemicals would have been detected at concentrations much greater than their respective BVs. Nature and extent are defined for inorganic chemicals.

Radionuclides. Based on process knowledge, no analyses for radionuclides were conducted.

Organic Chemicals. PAHs, PCBs, SVOCs, and VOCs were detected at locations 60-23013, 60-23014, 60-23258, 60-23259, 60-23260, and 60-23261 (Figure F-9.2-8). All of the PAHs and SVOCs were detected at concentrations less than EQLs (0.3 mg/kg). The VOCs detected above EQLs (0.005 mg/kg) were acetone (maximum concentration of 0.126 mg/kg), 2-butanone (0.24 mg/kg), 2-hexanone (0.2 mg/kg), methyl-2-pentanone (maximum concentration of 0.079 mg/kg), total xylene (0.035 mg/kg), and toluene (concentration 0.015 mg/kg). VOCs were detected at location 60-23014 in the 1.0–1.7 ft sample but were not detected in the deeper sample (3–3.5 ft). Acetone was detected at both depths at location 60-23258 (0.0073 mg/kg, 0.03–0.33 ft and 0.126 mg/kg, 0.66–1.02 ft) but was not detected at nearby locations 60-23261 and 60-23260. PCBs detected were Aroclor-1254 and Aroclor-1260, but they were detected at concentrations less than the EQLs (0.3 mg/kg). Nature and extent have been defined for organic chemicals.

F-9.3 Conceptual Site Model

The conceptual site model for Sigma Mesa SWMU/AOCs is shown in Figure F-3.3-1. The two AOCs are former outdoor drum storage areas, and the SWMU was a former surface impoundment.

Surface releases are likely to result in infiltration of contaminants into surface soils, or may be transported laterally to unpaved areas or mesa-top drainages. Contaminants transported to surface soils or drainages either may be contained locally or transported as sorbed species on soil particles by stormwater runoff. Soluble contaminants may be transported by stormwater runoff as dissolved species to the hillslopes and canyon floor.

Subsurface releases are likely to result in infiltration of contaminants into the underlying tuff. Vertical and lateral migration within the tuff may occur through unsaturated flow or fracture flow.

The land use within the Sigma Mesa Subarea is currently industrial (LANL 1995, 057224) and recreational and is expected to remain recreational and industrial for the reasonably foreseeable future. Hiking and biking trails cross through the subarea, and any exposure will be of relatively short duration. The receptor is a site worker with exposure pathways for dust inhalation, ingestion of soil, dermal contact, and external irradiation (Figure F-3.3-1).

Sigma Mesa Subarea is located in a mixed conifer forest; the upper slope of the canyon is ponderosa pine and Douglas fir, and the lower slope is fir and oak. The slope from Sigma Mesa is a south-facing, fairly steep slope. The area is within the core habitat for the Mexican spotted owl, a T&E species. Exposure pathways to biota include root uptake, food web transport, soil ingestion, external irradiation, and dust inhalation (Figure F-3.3-1).

F-9.4 Human Health Screening Assessment

F-9.4.1 Screening Levels

The human health screening assessment was performed according to guidance in the "Technical Background Document for Development of Soil Screening Levels, Revision 4" (NMED 2006, 092513). Sample data from 0–1 ft bgs were used in this evaluation, as media (soil, sediment, and tuff) from that depth could be encountered by a Laboratory (industrial) worker. Sample data from 0–10 ft bgs were used for the residential assessment.

The COPCs for each SWMU or AOC are evaluated further in this section by comparing the representative concentration with the SSL for each chemical and the SALs for radionuclides. The chemical SSLs are provided in Tables 4.0-1 and 4.0-2 in the report.

The industrial and residential chemical SSLs are from NMED guidance (NMED 2006, 092513), but if NMED does not have a screening value for a chemical, EPA Region 6 (EPA 2006, 094321) values are used. The SSLs for carcinogens are based on the NMED target risk level of 10^{-5} and SSLs for noncarcinogens are based on a HQ of 1.0 (NMED 2006, 092513). The EPA Region 6 screening values for carcinogens are adjusted from a 10^{-6} risk level to meet NMED's risk goal of 10^{-5} risk level for carcinogens. The SALs for radionuclides are based on a dose of 15 mrem/yr and derived according to the "Derivation and Use of Radionuclide Screening Action Levels, Revision 1" (LANL 2005, 088493) using RESRAD Version 6.21 (see Table 4.0-3 in the report).

The parameters used to derive the industrial and residential SSLs for chemicals are presented in Table F-9.4-1. The parameters used in deriving the residential and industrial SALs for radionuclides are presented in Tables F-9.4-2 and F-9.4-3.

F-9.4.2 Human Health Screening Assessment Results

The representative concentration for each COPC was compared with the respective residential and industrial SSL/SAL for carcinogens, noncarcinogens, and radionuclides. The representative concentrations used in the screening assessment are presented in Appendix D Tables D-8.1-1 though D-8.3-3.

SWMU 60-004(c)

Based on a residential scenario, the dose (3 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-9.4-4). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 60-004(c) under a residential scenario.

Based on an industrial scenario, the dose (0.09 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-9.4-4). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 60-004(c) under an industrial scenario.

SWMU 60-004(e)

Based on a residential scenario, the HI (0.1) is less than NMED's target level of 1.0 (Table F-9.4-5) and the carcinogenic risk (5×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-9.4-6). The screening assessments indicate no potential unacceptable risk to human health at SWMU 60-004(e) under a residential scenario.

Based on an industrial scenario, the HI (0.01) is less than NMED's target level of 1.0 (Table F-9.4-5) and the carcinogenic risk (2×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-9.4-6). The screening assessments indicate no potential unacceptable risk to human health at SWMU 60-004(e) under an industrial scenario.

SWMU 60-005(a)

Based on a residential scenario, the HI (0.4) is less than NMED's target level of 1.0 (Table F-9.4-7), the carcinogenic risk (1×10^{-7}) is less than the NMED target level of 1×10^{-5} (Table F-9.4-8), and the dose (2 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-9.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 60-005(a) under a residential scenario.

Based on an industrial scenario, the HI (0.01) is less than NMED's target level of 1.0 (Table F-9.4-7), the carcinogenic risk (2×10^{-8}) is less than the NMED target level of 1×10^{-5} (Table F-9.4-8), and the dose (0.7 mrem/yr) is less than DOE's target dose of 15 mrem/yr (Table F-9.4-9). The screening assessments indicate no potential unacceptable risk/dose to human health at SWMU 60-005(a) under an industrial scenario.

F-9.4.3 Uncertainty Analysis

The analysis in this human health screening assessment is subject to uncertainties associated with data evaluation, exposure assessment, and toxicity assessment. Each or all of these uncertainties may affect the assessment results.

Data Evaluation

Data evaluation uncertainties may include errors in sampling, laboratory analysis, and data analysis. Because concentrations used in this risk assessment were less than estimated quantitation limits, data evaluation uncertainties are expected to have little effect on the assessment results. The J (estimated) qualification of detected concentrations of some organic COPCs did not affect the assessment.

Exposure Assessment

The following four exposure assessment uncertainties were identified for the risk assessment: (1) Identification of receptors, (2) the applicability of user scenarios, (3) the assumptions underlying the exposure pathways, and (4) the availability of the data.

Assumptions underlying the exposure pathways for parameter, route of exposure, amount of contaminated media available for exposure, and intake rates for routes of exposure are consistent with EPA-approved parameters and default values (EPA 2003, 081724). In the absence of site-specific data, several upper-bound values for the assumptions may be combined to estimate exposure for any one pathway, and the resulting risk estimate can exceed the 99th percentile. Therefore, uncertainties in the assumptions underlying the exposure pathways may contribute to risk assessments that exceed the range that would be reasonably expected.

Toxicity Values

The primary uncertainty associated with the screening values relates to derivation of screening values from EPA toxicity values (RfDs and SFs) (EPA 1997, 058968; EPA 2001, 070109). Uncertainties were identified in five areas with respect to the toxicity values: (1) extrapolation from animals to humans, (2) extrapolation from one route of exposure to another route of exposure, (3) interindividual variability in the human population, (4) additive approach, and (5) use of surrogates.

Extrapolation from animals to humans. The SFs and RfDs are often determined by extrapolation from animal data to humans, which may result in uncertainties in toxicity values because differences exist in chemical absorption, metabolism, excretion, and toxic response between animals and humans. The EPA takes into account differences in body weight, surface area, and pharmacokinetic relationships between animals and humans to minimize the potential to underestimate the dose-response relationship. However, more conservatism is usually incorporated in these steps.

Extrapolation from one route of exposure to another route of exposure. The SFs and RfDs often can contain extrapolations from one route of exposure to another. The extrapolation from the oral route to the inhalation and/or the dermal route is used in the derivation of some screening values. Differences in chemical absorption and/or toxicity between the two exposure routes could result in an over- or underestimation of risk or hazard.

Interindividual variability in the human population. For noncarcinogenic effects, the amount of human variability in physical characteristics is important in determining the risks that can be expected at low exposures and in determining the NOAEL. The NOAEL/uncertainty factor approach incorporates a factor of 10 to reflect the possible interindividual variability in the human population; it is generally considered a conservative estimate.

Additive approach. Another uncertainty related to toxicity assessment is the assumption of additivity, which may result in an overestimate or underestimate of risk. For noncarcinogens, the effects of a mixture of chemicals generally are unknown and possible interactions could be synergistic or antagonistic.

Additionally, the RfDs for different chemicals are not based on the same severity, effect, or target organ. Therefore, the potential for occurrence of noncarcinogenic effects can be overestimated for chemicals that are addressed additively, but that act by different mechanisms and on different target organs.

Use of surrogate chemicals. The use of surrogates for some chemicals that do not have EPA-approved or provisional toxicity values also contributes to uncertainty in risk assessment. In this assessment, a surrogate was used to establish toxicity for the following based on structural similarity (NMED 2003, 081172):

- 2-hexanone and
- 4-isopropyltoluene

F-9.4.4 Interpretation

Based on a residential scenario, the maximum HI (0.4) for AOC 60-004(c), AOC 60-004(e), and SWMU 60-005(a) is less than NMED's target level of 1.0. The maximum carcinogenic risk (5×10^{-7}) for AOC 60-004(c), AOC 60-004(e), and SWMU 60-005(a) is less than the NMED target level of 1×10^{-5}. The maximum dose (3 mrem/yr) for AOC 60-004(c) and SWMU 60-005(a) is less than DOE's target dose of 15 mrem/yr. The total dose for an industrial user within the AOCs and SWMUS in Sigma Mesa Subarea is equivalent to a total risk of 1×10^{-5}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate no potential for unacceptable risk/dose to human health at the Sigma Mesa Subarea.

Based on an industrial scenario, the maximum HI (0.01) for AOC 60-004(c), AOC 60-004(e), and SWMU 60-005(a) is less than NMED's target level of 1.0. The maximum carcinogenic risk (2×10^{-8}) for AOC 60-004(c), AOC 60-004(e), and SWMU 60-005(a) is less than the NMED target level of 1×10^{-5}. The maximum dose (0.7 mrem/yr) for AOC 60-004(c) and SWMU 60-005(a) is less than DOE's target dose of 15 mrem/yr. The total dose range for an industrial user within the AOCs and SWMUS in Sigma Mesa Subarea is equivalent to a total risk between 1×10^{-6} and of 7×10^{-6}, based on a comparison with EPA preliminary remediation goals for radionuclides (http://epa-prgs.ornl.gov/radionuclides/prg_search.shtml). The screening assessments indicate potential for unacceptable risk/dose to human health at the Sigma Mesa Subarea.

AOC 60-004(c), AOC 60-004(e), and SWMU 60-005(a) pass residential screening assessments.

F-9.5 Ecological Risk

F-9.5.1 Screening Levels

The approach for conducting ecological assessments is described in the "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The assessment consists of four parts: a scoping evaluation, a screening evaluation, and uncertainty analysis, and an interpretation of the results.

The scoping portion of the assessment indicated that terrestrial receptors were appropriate for evaluating the concentrations of contaminants in soil, sediment, and tuff. Aquatic receptors were not evaluated because there are no aquatic communities present in the Sigma Mesa Subarea. This process evaluated eight terrestrial receptors representing several trophic levels. These receptors included the following:

- a plant

- soil dwelling invertebrates (represented by the earthworm)
- the deer mouse (mammalian omnivore)
- the vagrant shrew (mammalian insectivore)
- desert cottontail (mammalian herbivore)
- red fox (mammalian carnivore)
- American robin (avian insectivore, avian omnivore, and avian herbivore)
- American kestrel (avian invertebrate and avian carnivore [surrogate for T&E species])

The rationale for these receptors is presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). The ESLs are derived for each of these receptors where information was available. The ESLs are based on similar species, and derived from experimentally determined NOAELs, LOAELs, or doses lethal to 50% of the population (LD_{50}). The derivation of ESLs is based on the approach presented in "Screening Level Ecological Risk Assessment Methods" (LANL 2004, 087630). Relevant information necessary to calculate ESLs, including concentration equations, dose equations, bioconcentration factors, transfer factors, and TRVs, is presented in the ECORISK Database, Version 2.2 (LANL 2005, 090032).

Assessment Endpoints

An assessment endpoint is an explicit expression of the environmental value to be protected. These endpoints are ecologically relevant, and help sustain the natural structure, function, and biodiversity of an ecosystem or its components (EPA 1998, 062809). In a screening-level assessment, assessment endpoints are any adverse effects on ecological receptors, where receptors are populations and communities (EPA 1997, 059370).

The ecological screening assessment is designed to protect populations and communities of biota rather than individual organisms, except for listed or candidate T&E species or treaty-protected species (EPA 1999, 070086). The protection of individuals within these designated protected species could also be protected at the population level; the populations of these species tend to be small, and the loss of an individual adversely affects the species.

In accordance with this guidance, the Laboratory developed generic assessment endpoints (LANL 1999, 064137) to ensure that values at all levels of ecological organization are considered in the ecological screening process. These general assessment endpoints can be measured using impacts on reproduction, growth, and survival to represent categories of effects that may adversely impact populations. In addition, specific receptor species were chosen to represent each functional group. The receptor species were chosen because of their presence at the site, their sensitivity to the COPCs, and their potential for exposure to those COPCs. These categories of effects, and the chosen receptor species, were used to select the types of effects seen in toxicity studies considered in the development of the TRVs. Toxicity studies used in the development of TRVs included only studies in which the adverse effect evaluated affected reproduction, survival, and/or growth.

The selection of receptors and assessment endpoints is designed to be protective of the representative species used as screening receptors, the other species within their feeding guilds, and the overall food web for the terrestrial and aquatic ecosystems. Focusing the assessment endpoints on these general characteristics of species that affect populations (rather than the biochemical and behavioral changes that may affect only the studied species) also ensures the applicability to the ecosystem of concern.

Scoping Evaluation

The scoping evaluation establishes the breadth and focus of the screening assessment. The ecological scoping checklist, which is included in Appendix H, is a useful tool for organizing existing ecological information. The information was used to determine whether ecological receptors might be affected, identify the types of receptors that might be present, and develop the ecological site conceptual model for the Sigma Mesa Subarea.

Sigma Mesa Subarea is located in a mixed conifer forest; the upper slope of the canyon is ponderosa pine and Douglas fir, and the lower slope is fir and oak. The slope from Sigma Mesa is a south facing, fairly steep slope. The area is within the core habitat for the Mexican spotted owl, a threatened and endangered species.

Surface water is the dominant transport mechanism here because of the large surface area of asphalt and rooftops that drain from the mesa top onto this slope. Runoff terminates at the floor of Mortandad Canyon. There is no potential for exposure to aquatic receptors because there is no persistent aquatic habitat. Transport to groundwater is not feasible because of the depth of the regional aquifer (approximately 1200 ft bgs) and the semiarid environment of this region provides minimal hydrologic head.

F-9.5.2 Ecological Risk Screening Results

Representative concentrations are determined from samples collected between the ground surface and a depth of 5 ft (LANL 2004, 087630) from the Sigma Mesa Subarea SWMU and AOCs (Appendix D Tables D-8.4-5, D-8.4-10, and D-8.4-15). Tuff was included in the screening assessment because some of it is crushed tuff, which is easier to burrow into than welded tuff. In addition, some plant roots are able to extend into the tuff, and their root system will break up small sections of it, thereby gradually allowing easier access for ecological receptors.

The purpose of the ecological screening evaluation is to identify COPECs for the Sigma Mesa Subarea. The evaluation involves the calculation of HQs for all COPCs and all screening receptors (LANL 2004, 087630). The HQs are the ratios of the representative concentrations to the ESLs. The HI is a sum of HQs. COPCs with HQs greater than 0.3 are identified as COPECs, and are evaluated further. ESLs for terrestrial receptors were obtained from the Laboratory's ECORISK Database version 2.2 (LANL 2005, 090032), and are presented in Table 4.0-4 of the report.

Results of the comparison of the representative concentrations with the final soil ESLs for the Sigma Mesa Subarea are presented in Table F-9.5-1. Antimony, chromium, selenium, and thallium are retained as inorganic COPECs. Aroclor-1254, Aroclor-1260, benzoic acid, and bis(2-ethylhexyl)phthalate are retained as organic COPECs.

There are no ESLs for aniline; and 4-isopropyltoluene. As a result, these analytes are retained as COPECs, and discussed in the uncertainty section.

The COPECs were evaluated further Table F-9.5-2. The HQ for the COPEC/receptor combination as well as the HIs for each receptor was calculated. The HI is the sum of HQs for chemicals with common toxicological endpoints for a given receptor. For the purposes of ecological screening, it is assumed that nonradionuclides have common toxicological effects. The HI analysis provides a clearer picture of potential adverse impacts by determining how many receptors may be affected and provides information on T&E species.

According to Table F-9.5-2, all of the receptors may be potentially impacted by COPECs because they have HIs greater than 1.0.

F-9.5.3 Uncertainty Analysis

The uncertainty analysis describes the key sources of uncertainty related to the screening assessment. This analysis can result in either adding or removing chemicals from the list of COPECs for the Sigma Mesa Subarea. This narrative contains a qualitative uncertainty analysis of the issues relevant to evaluating the potential ecological risk at the Sigma Mesa Subarea.

Chemical Form

The assumptions used in the ESL derivations were conservative, and not necessarily representative of actual conditions. These assumptions include maximum chemical bioavailability, maximum receptor ingestion rates, minimum bodyweight, and additive effects of multiple COPECs. Most of these factors tend to result in conservative estimates of the ESLs, which may lead to an overestimation of the potential risk. The assumption of additive effects for multiple COPECs may result in an over- or underestimation of the potential risk to receptors.

The chemical form of the individual COPECs was not determined as part of the investigation. This is largely a limitation on analytical quantitation of individual chemical species. Toxicological data are typically based on the most toxic and bioavailable chemical species, which are not likely found in the environment. The inorganic, radionuclide, and organic COPECs are not generally 100% bioavailable to receptors in the natural environment because of the adsorption of chemical constituents to matrix surfaces (e.g., soils), or rapid oxidation or reduction changes that render harmful chemical forms unavailable to biotic processes. The ESLs were calculated to ensure a conservative indication of potential risk (LANL 2004, 087630), and the values were biased toward overestimating the potential risk to receptors.

Exposure Pathways

The representative concentrations used in the calculations of HQs were the 95% UCLs or maximum detected concentrations in the sediment/soil/tuff to a depth of 5 ft, thereby conservatively estimating the site concentrations of each COPEC. As a result, the exposure of individuals within a population was evaluated using this specific concentration, which was assumed constant throughout the exposure area. This results in an overestimation of the potential risk because COPECs varied across the site and were generally infrequently detected.

Background Concentrations

The ecological screening is based on the exposure of ecological receptors to contamination to a depth of 5 ft bgs. Table F-9.5-3 shows the range of soil, sediment, and tuff background concentrations for inorganic chemicals (LANL 1998, 059730). Based on a comparison of the representative concentrations and the range of background concentrations, antimony, chromium, selenium, and thallium are similar to background concentrations and are eliminated as COPECs.

Area Use Factors

In addition to the direct comparison of the representative concentration with the ESL, AUFs are used to account for the amount of time that a receptor is likely to spend within the contaminated areas based on

the size of the receptor's HR. The AUFs for individuals were developed by dividing the size of the area (1.13 ha) of the site by the HR for that receptor. The HR for the Mexican spotted owl is 366 ha, and the AUF for the Mexican spotted owl is 0.0031. Based on the application of the AUF for the Mexican spotted owl to the HI for the carnivorous kestrel, which is a surrogate for the owl, there is no potential for ecological risk to the Mexican spotted owl (HI = 0.03).

Population Area Use Factors

EPA guidance is to manage the ecological risk to populations rather than to individuals, with the exception of T&E species (EPA 1999, 070086). One approach to address the potential effects on populations in the Sigma Mesa Subarea is to estimate the spatial extent of the area inhabited by the local population that overlaps with the contaminated area. The population area for a receptor is based on the individual receptor HR and its dispersal distance (Bowman et al. 2002, 073475). Bowman et al. (2002, 073475) estimate that the median dispersal distance for mammals is 7 times the linear dimension of the HR (i.e., the square root of the HR area). If only the dispersal distances for the mammals with HRs within the range of the screening receptors are used (Bowman et al. 2002, 073475), the median dispersal distance becomes 3.6 times the square root of the HR ($R^2 = 0.91$). If it is assumed that the receptors can disperse the same distance in any direction, the population area is circular and the dispersal distance is the radius of the circle. Therefore, the population area can be derived by $\pi(3.6\sqrt{HR})^2$, or approximately 40HR.

The area of the Sigma Mesa Subarea is approximately 1.1 ha. The PAUFs are estimated by dividing the area by the population area of each receptor population (Table F-9.5-4). The resulting factor is multiplied by the receptor HI to determine if there is a potential impact on the population (Table F-9.5-5).

The HIs are recalculated, minus the inorganic COPECs eliminated, based on similarity to background and adjusted by the PAUFs (Table F-9.5-5).The HIs for the plant and earthworm are not adjusted by PAUFs because these receptors do not have HRs. Based on the reassessment, the adjusted HIs for the Sigma Mesa Subarea are <0.01 for the red fox, the kestrel, the cottontail, and the herbivorous robin, 0.6 for the omnivorous robin, 1 for the insectivorous robin, and 0.2 for the shrew (Table F-4.5-5). All of the PAUF-adjusted HIs are approximately 1.0 or less than 1.0.; therefore, there is no potential risk to ecological receptors at the Sigma Mesa Subarea.

Chemicals without ESLs

There are no ESLs for aniline, and this chemical cannot be assessed quantitatively for potential ecological risk. Aniline was detected in one of 38 samples within 0–5 ft bgs at a concentration of 0.25 mg/kg. The EPA Region 6 residential SSL is 430 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

There are no ESLs for 4-isopropyltoluene, and this chemical cannot be assessed quantitatively for potential ecological risk. Isopropyltoluene[4-] was detected in one of 21 samples within 0–5 ft bgs at a concentration less than 0.001 mg/kg. If toluene is used as a surrogate, a maximum HQ of <0.01 is generated for all receptors, indicating that 4-isopropyltoluene does not pose a potential risk to receptors.

There are no ESLs for 4-methyl-2-pentanone, and this chemical cannot be assessed quantitatively for potential ecological risk. Methyl-2-pentanone(4-) was detected in 2 of 30 samples within 0–5 ft bgs at a maximum concentration of 0.079 mg/kg. The NMED residential SSL is 5510 mg/kg, which indicates low potential toxicity from this chemical. Therefore, this chemical does not pose a potential ecological risk to receptors at this site.

F-9.5.4 Interpretation

Based on the ecological screening assessment for the Sigma Mesa Subarea, 10 COPECs (including 2 COPECs without ESLs) were identified. All of the COPECs were eliminated in the uncertainty analysis by considering a number of factors including background concentrations, the relative toxicity of related compounds, and the infrequency of detected concentrations.

F-10.0 CONCLUSIONS AND RECOMMENDATIONS

Table F-10.0-1 presents a summary of human health screening results for each of the consolidated units, SWMUs, and AOCs within the seven subareas. The risk screening assessments determined that no potential unacceptable human health risk exists in any of the seven subareas, with the following exception:

- Excess potential cancer risk exists as a result of elevated concentrations of PAHs beneath or adjacent to the asphalt at Consolidated Unit 35-003(j)-99 and AOC 35-018(a) within the Mesa Top Subarea.

For all seven subareas, and for each SWMU, AOC, and consolidated unit, the nature and extent of contamination have been determined.

Based on human health risk screening assessments, the following 30 SWMUs, AOCs, and consolidated units pose no unacceptable risk to human health under a residential scenario:

- Consolidated Unit 04-001-99
- Consolidated Unit 05-001(a)-99
- AOC 05-001(c)
- Consolidated Unit 05-005(a)-00
- SWMU 35-002
- SWMU 35-004(a)
- SWMU 35-004(b)
- Consolidated Unit 35-004(g)-00
- SWMU 35-004(h)
- AOC C-35-007
- Consolidated Unit 35-008-00
- SWMU 35-009(a)
- SWMU 35-009(c)
- SWMU 35-009(d)
- Consolidated Unit 35-010(a)-99
- SWMU 35-014(a)
- Consolidated Unit 35-014(g)-00
- Consolidated Unit 35-016(a)-00
- AOC 35-016(b)
- AOC 35-016(f)

- Consolidated Unit 35-016(i)-00
- SWMU 35-016(m)
- SWMU 35-016(p)
- SWMU 52-002(a)
- SWMU 52-003(a)
- SWMU 60-004(c)
- SWMU 60-004(e)
- SWMU 60-005(a)
- SWMU 63-001(a)
- SWMU 63-001(b)

Based on human health risk screening assessments, the following two SWMUs and one consolidated unit pose no unacceptable risk to human health under an industrial scenario:

- Consolidated Unit 35-003(a)-99
- SWMU 35-009(a)
- SWMU 35-015(a)

Based on human health risk screening assessments, the following eight SWMUs, AOCs, and consolidated units pose no unacceptable risk to human health under a recreational scenario:

- Consolidated Unit 35-003(d)-00
- SWMU 35-009(a)
- SWMU 35-009(e)
- AOC 35-014(g3)
- Consolidated Unit 35-016(c)-00
- AOC 35-016(j)
- Consolidated Unit 35-016(k)-00
- SWMU 35-016(o)

The estimated cancer risks are the result of PAHs, which are located under or adjacent to asphalt. The cancer risks are confined to areas of Consolidated Unit 35-003(j)-99 and AOC 35-018(a) where the industrial scenario does not reflect a realistic exposure. Given the uncertainties related to exposure and use, the cancer risks are overestimated and do not pose potential unacceptable risks to human health.

No additional investigation or remediation activities are required at any of the preceding 42 SWMUs, AOCs, or consolidated units. The 11 identified as passing recreational or industrial screening will be limited to nonintrusive industrial or recreational use.

The ecological screening assessments did not retain any COPECs that could potentially impact receptor populations. In addition, no COPECs were retained that might affect the Mexican spotted owl.

Table F-10.0-2 presents the results of the screening assessments and the evaluation of nature and extent for each SWMU, AOC, or consolidated unit used to determine the final recommendations for each site.

Based on the results of human health and ecological screening assessments, no further characterization or corrective actions are warranted for the remainder of the seven subareas within the Middle Mortandad/Ten Site Aggregate.

F-11.0 REFERENCES

The following list includes all documents cited in this appendix. Parenthetical information following each reference provides the author(s), publication date, and ER ID number. This information is also included in text citations. ER ID numbers are assigned by the Environmental Programs Directorate's Records Processing Facility (RPF) and are used to locate the document at the RPF and, where applicable, in the master reference set.

Copies of the master reference set are maintained at the NMED Hazardous Waste Bureau; the U.S. Department of Energy–Los Alamos Site Office; the U.S. Environmental Protection Agency, Region 6; and the Directorate. The set was developed to ensure that the administrative authority has all material needed to review this document, and it is updated with every document submitted to the administrative authority. Documents previously submitted to the administrative authority are not included.

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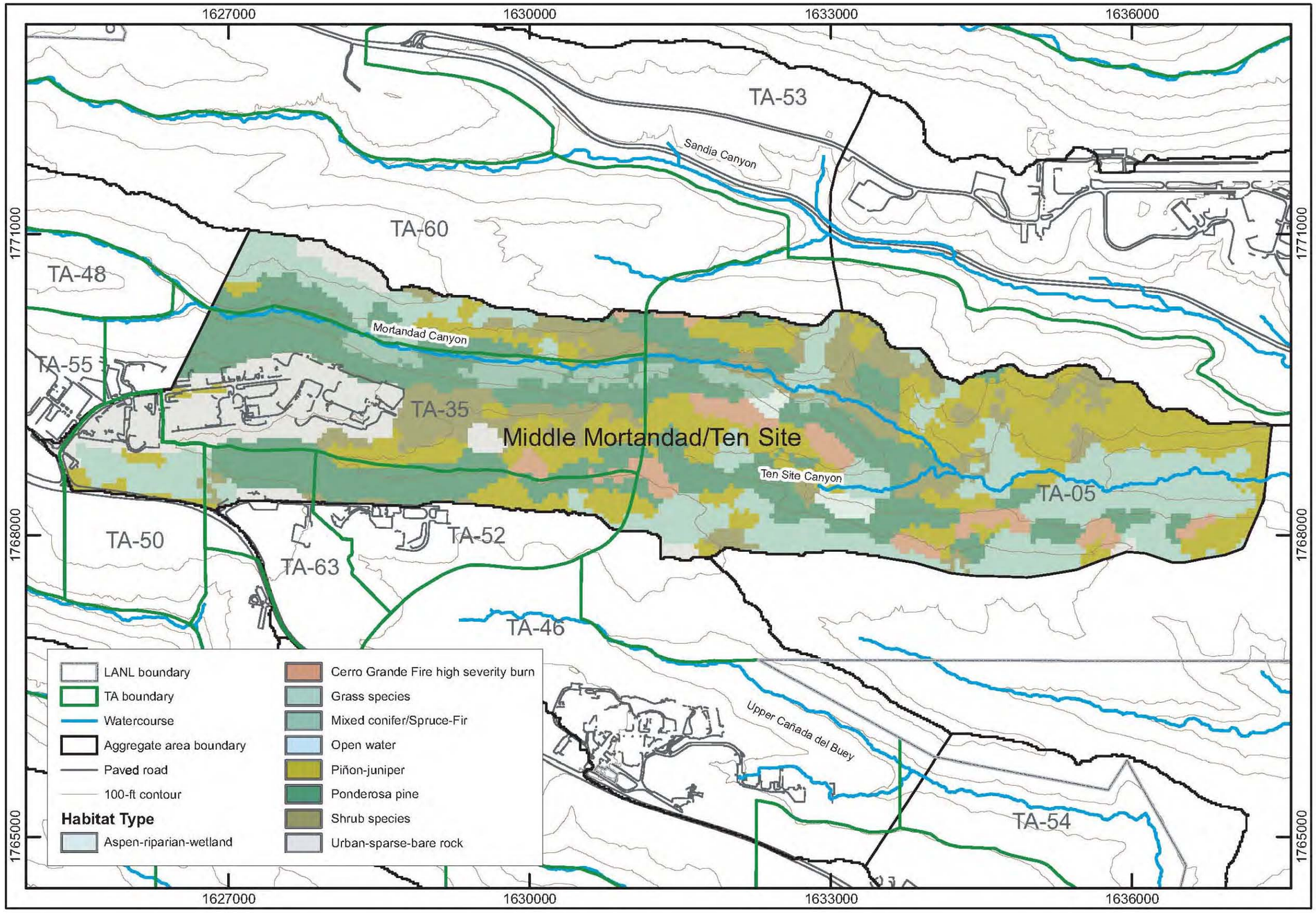
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Feet

State Plane Coordinate System
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NAD 1983, US Feet

Map R05036
Environmental Remediation and Surveillance
Cartography: Miriam Oudejans
July 27, 2005

Figure F-3.1-1 Habitat types of the Middle Mortandad/Ten Site Aggregate

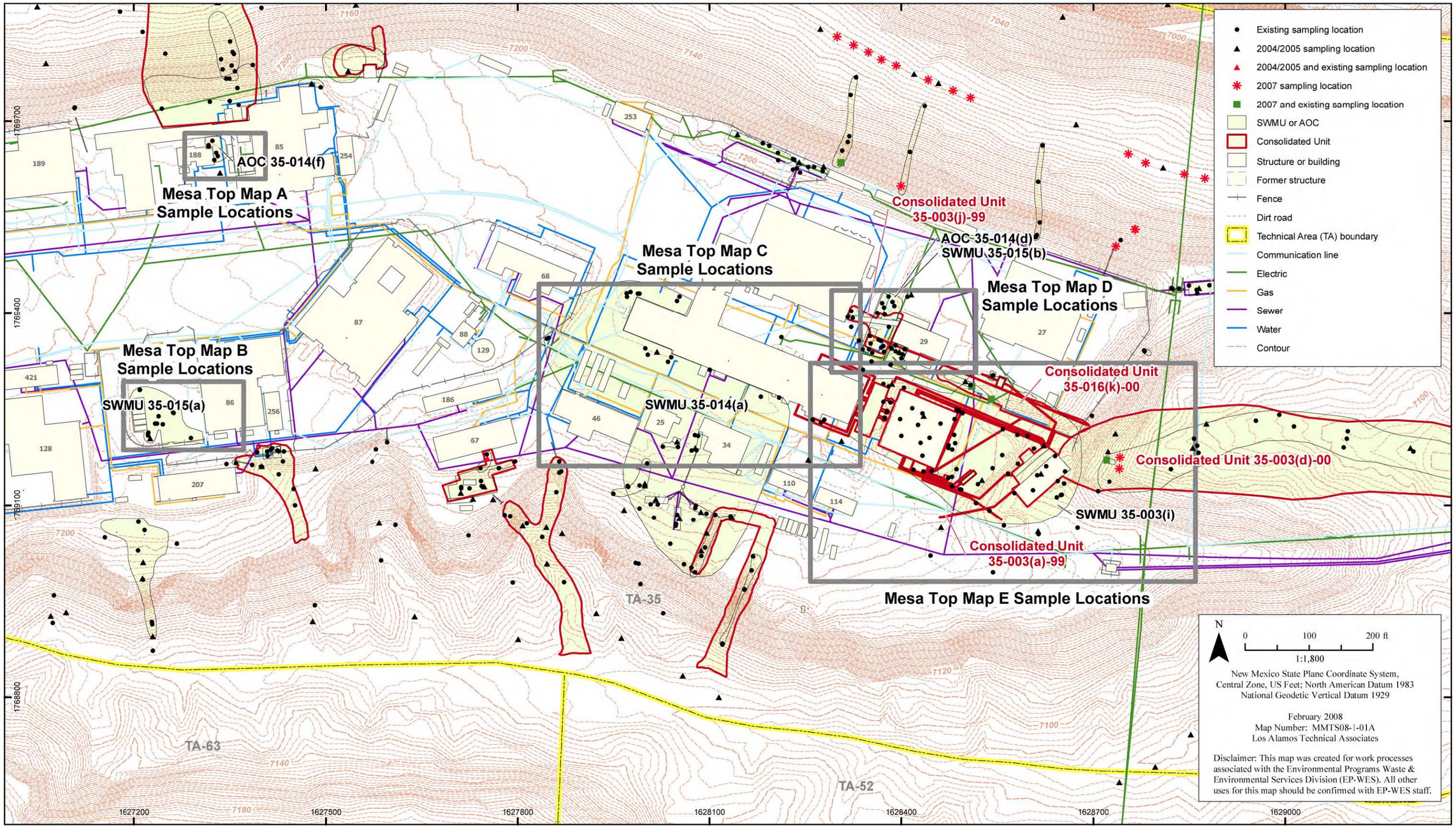


Figure F-3.2-1 Index map of the Mesa Top Subarea



Figure F-3.2-2 Mesa Top Area A sampling locations

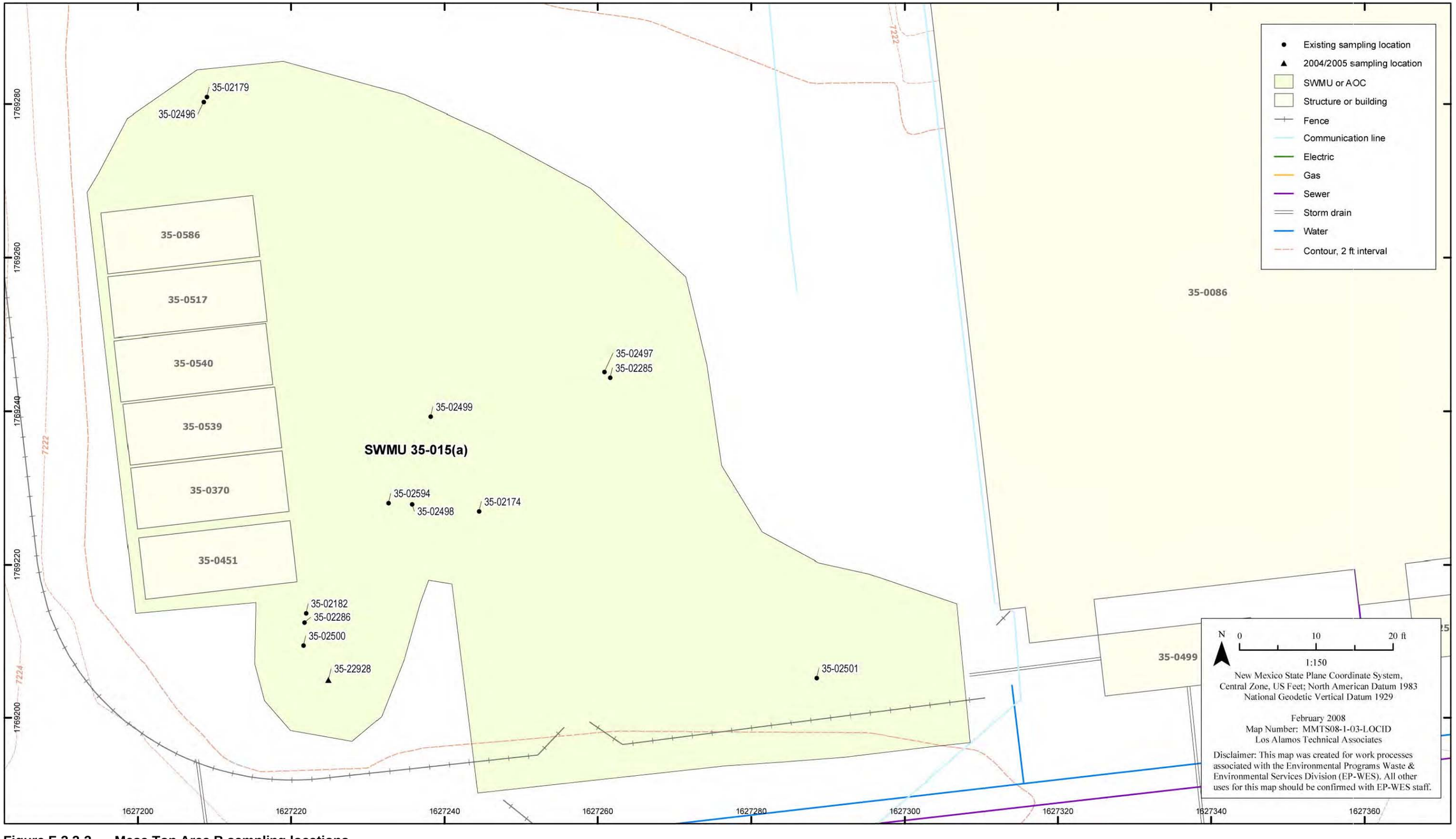


Figure F-3.2-3 Mesa Top Area B sampling locations

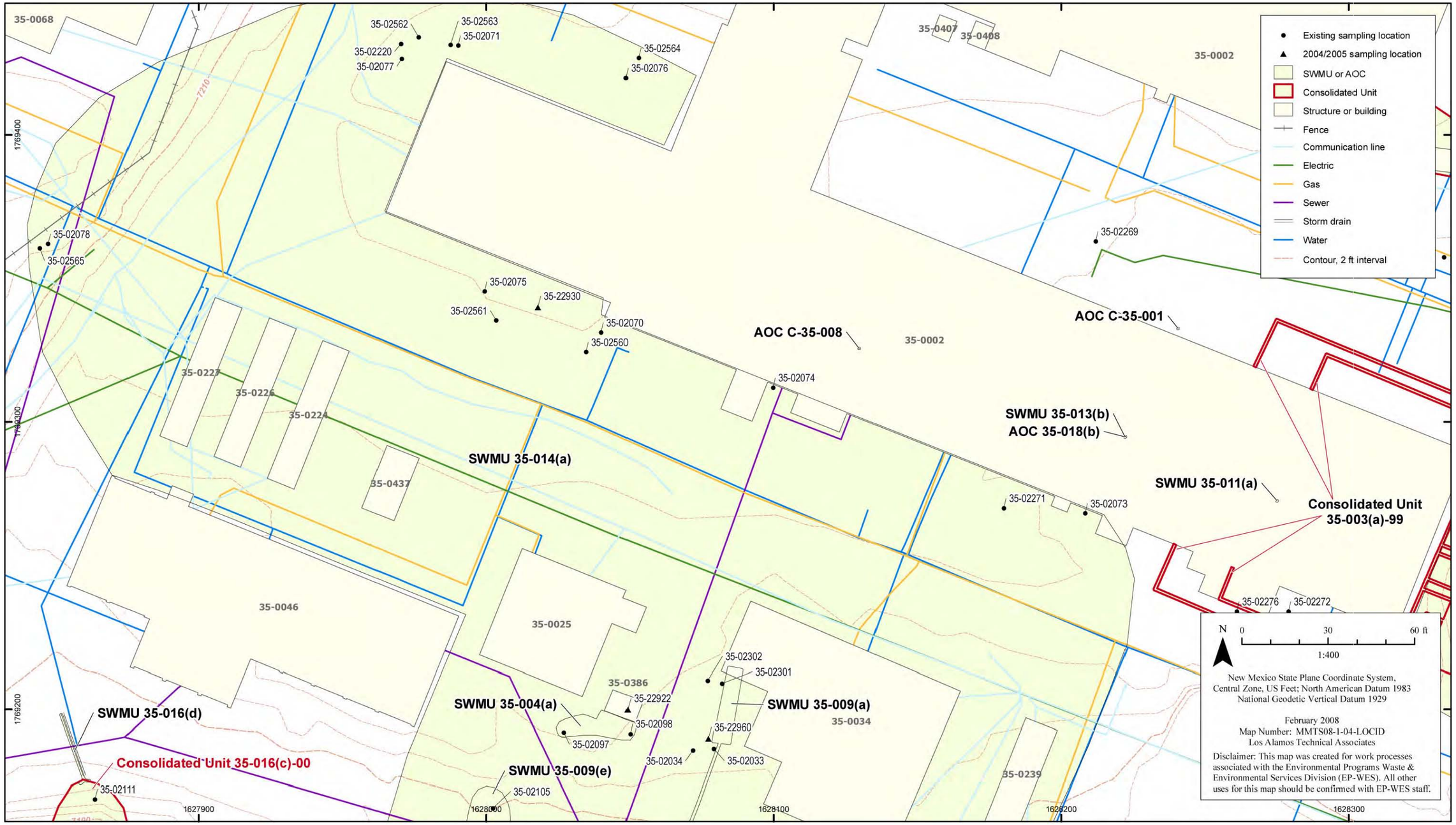


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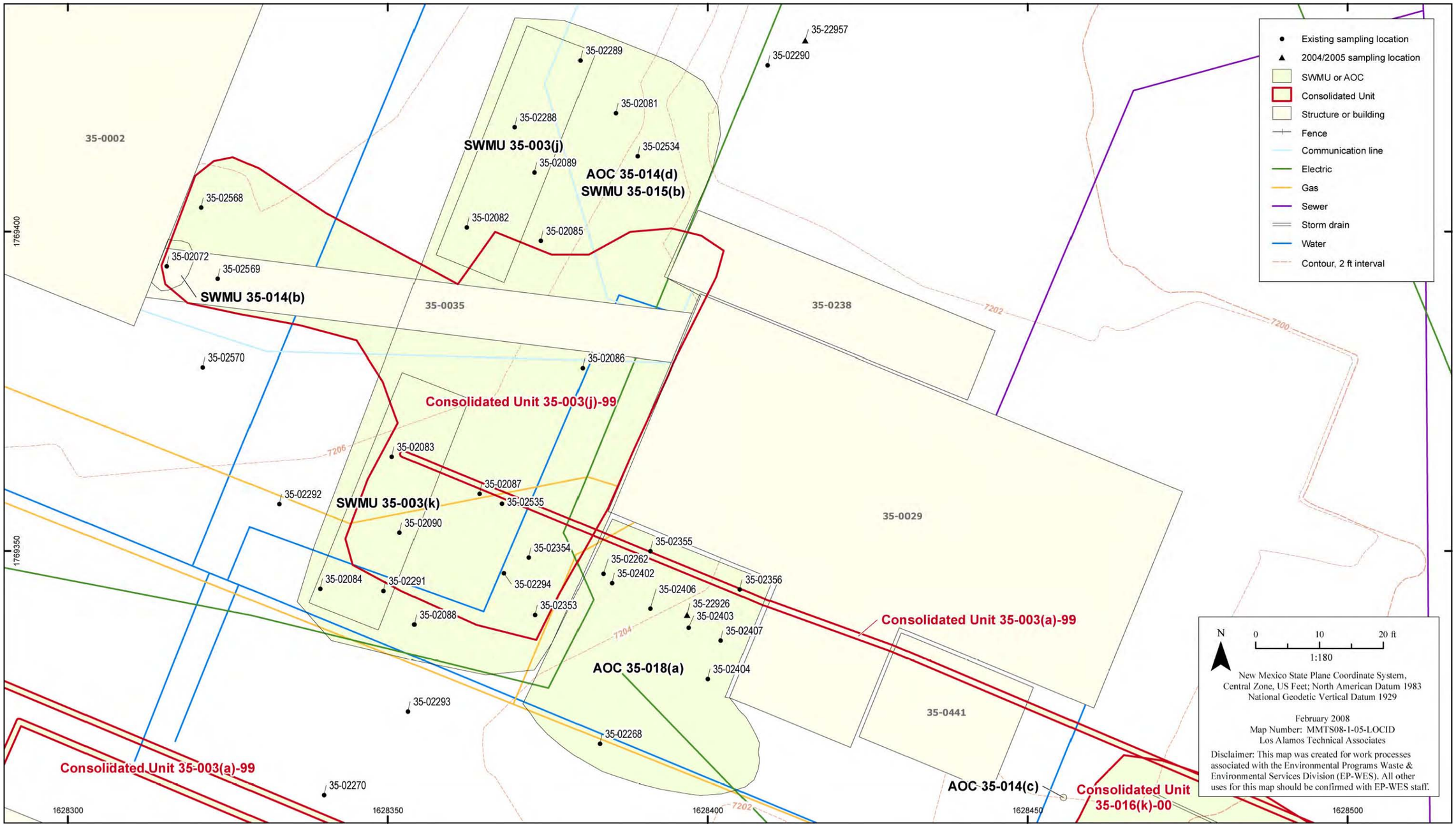


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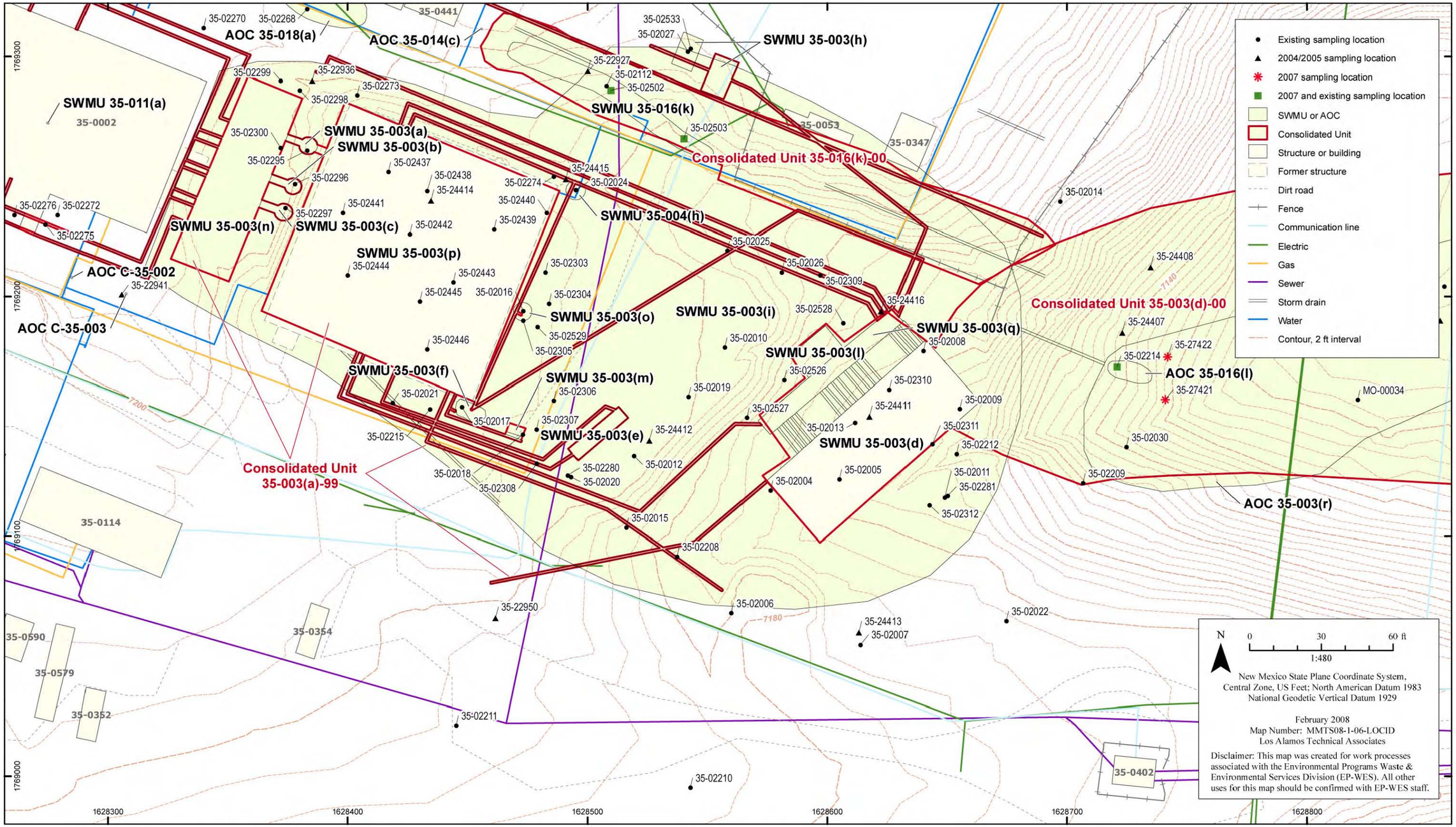


Figure F-3.2-6 Mesa Top Area E sampling locations



Figure F-3.2-7 Mesa Top Area A inorganic COPCs detected above background values in all media

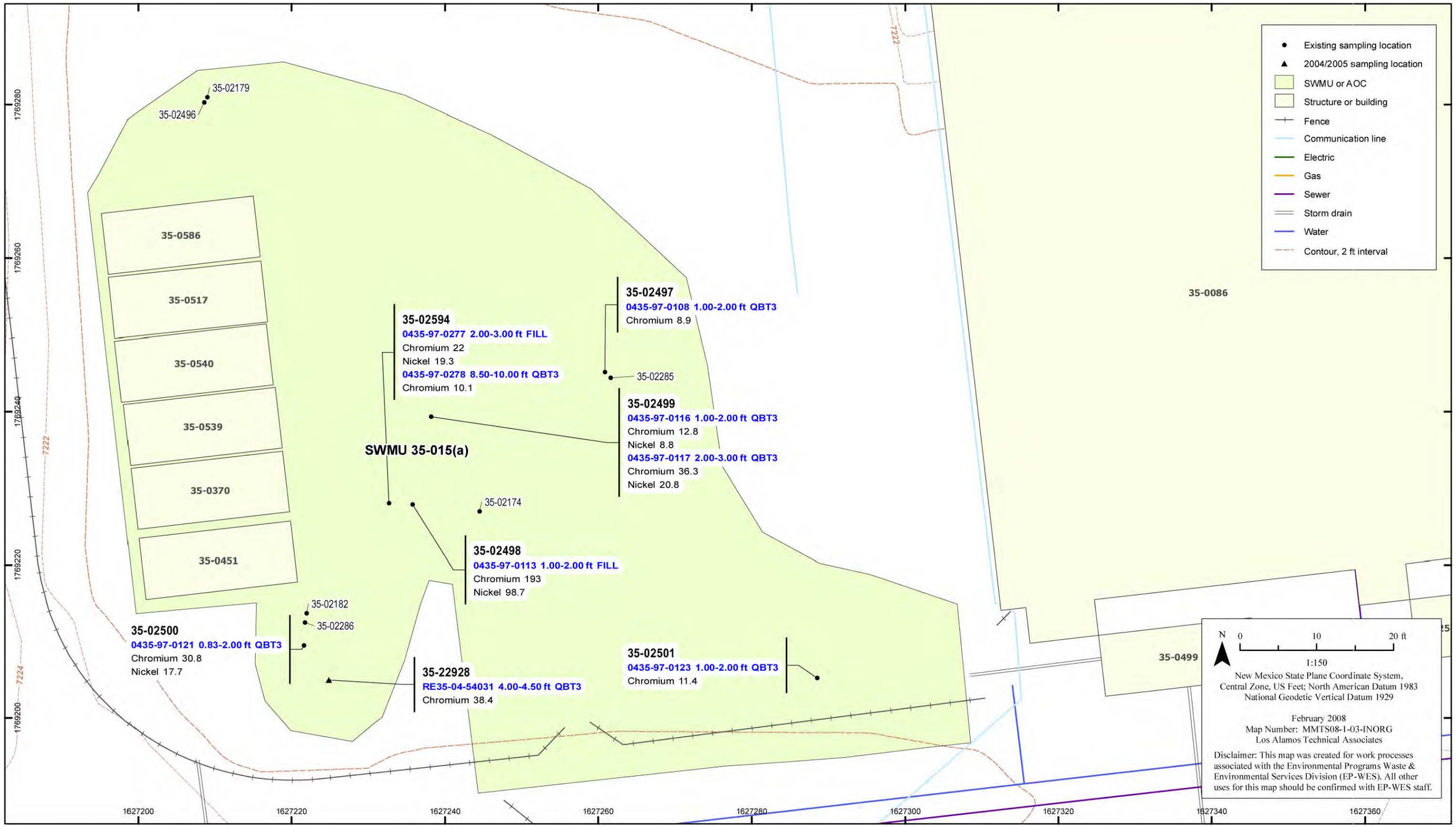


Figure F-3.2-8 Mesa Top Area B inorganic COPCs detected above background values in all media

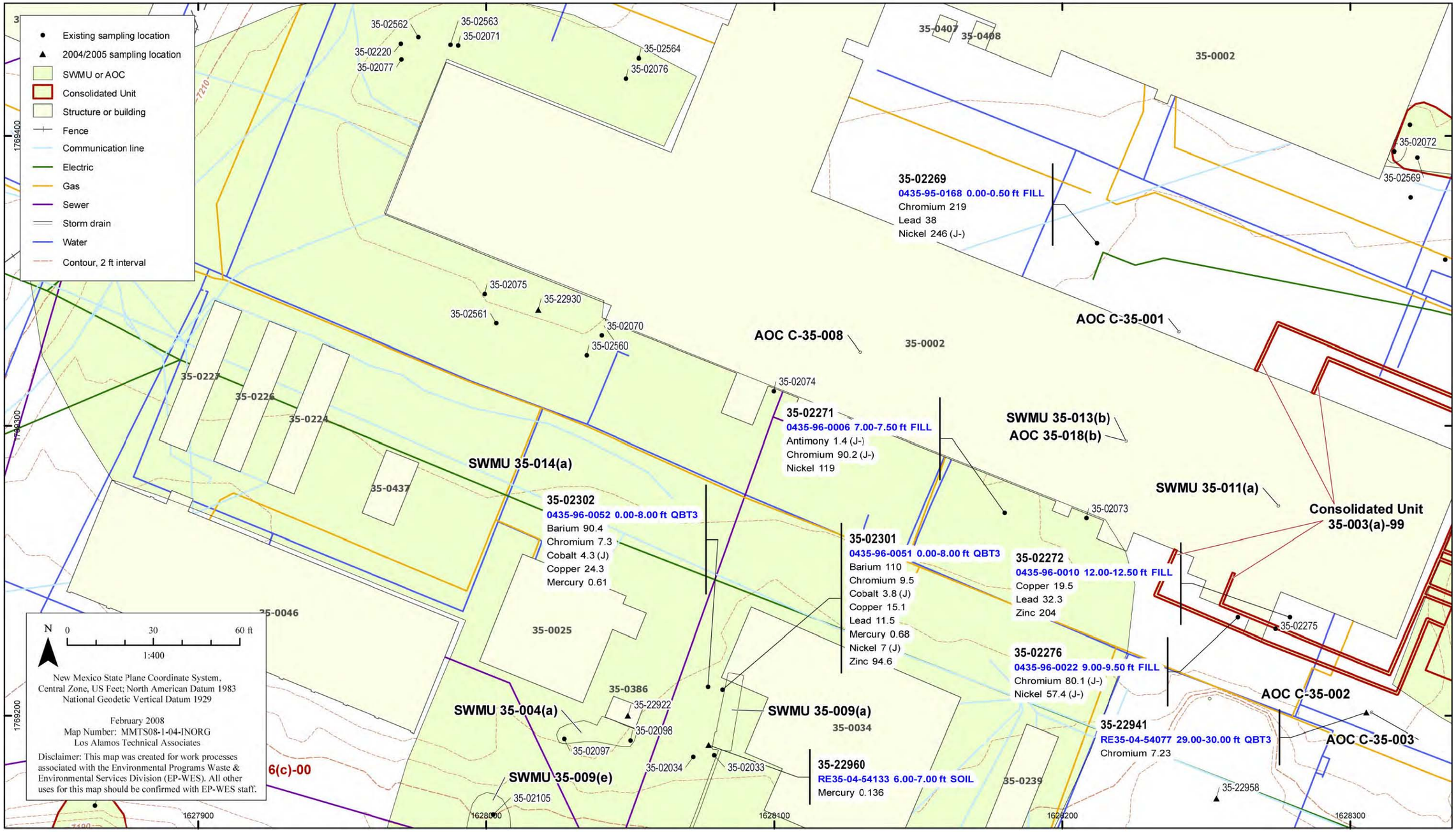


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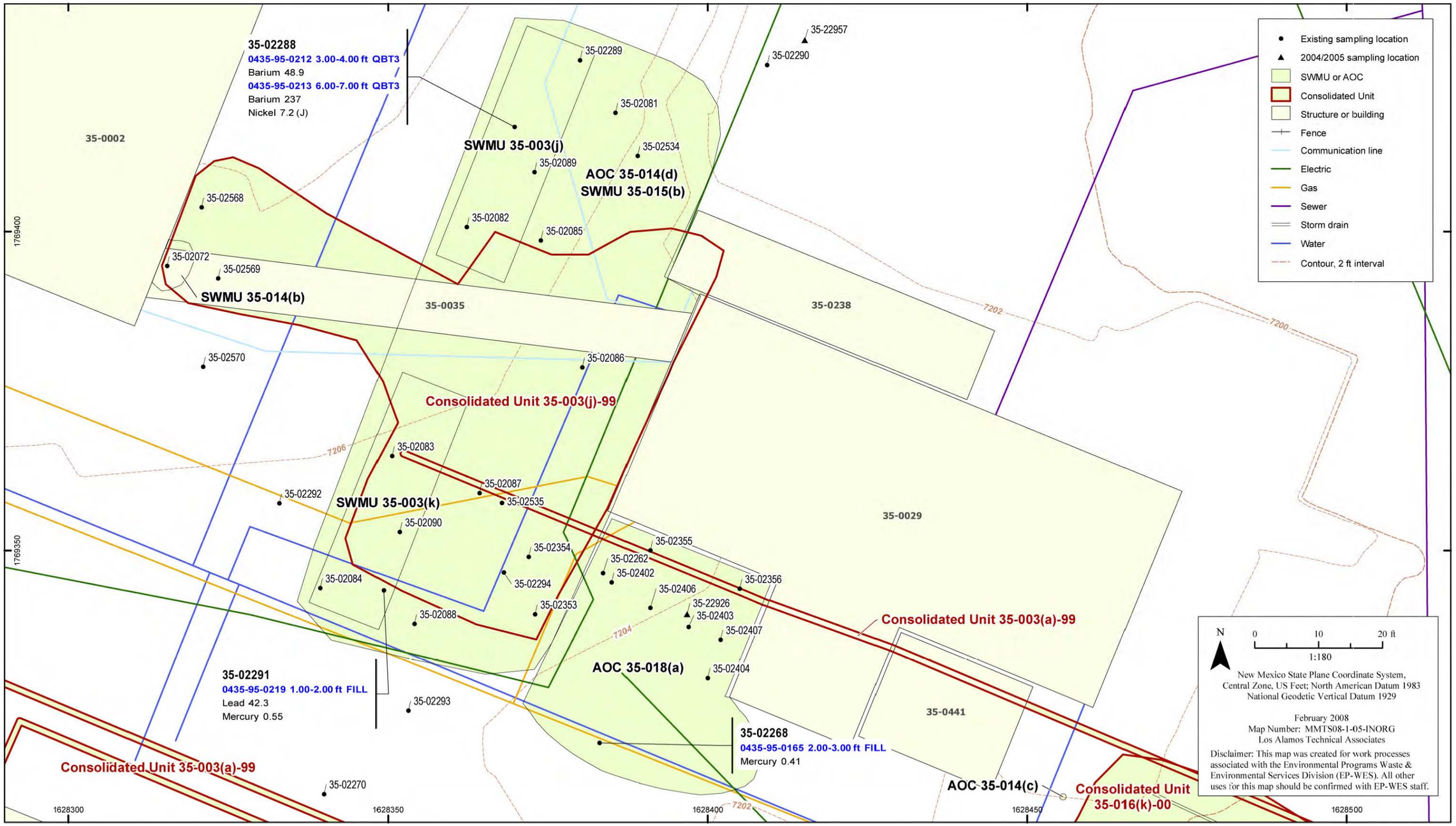


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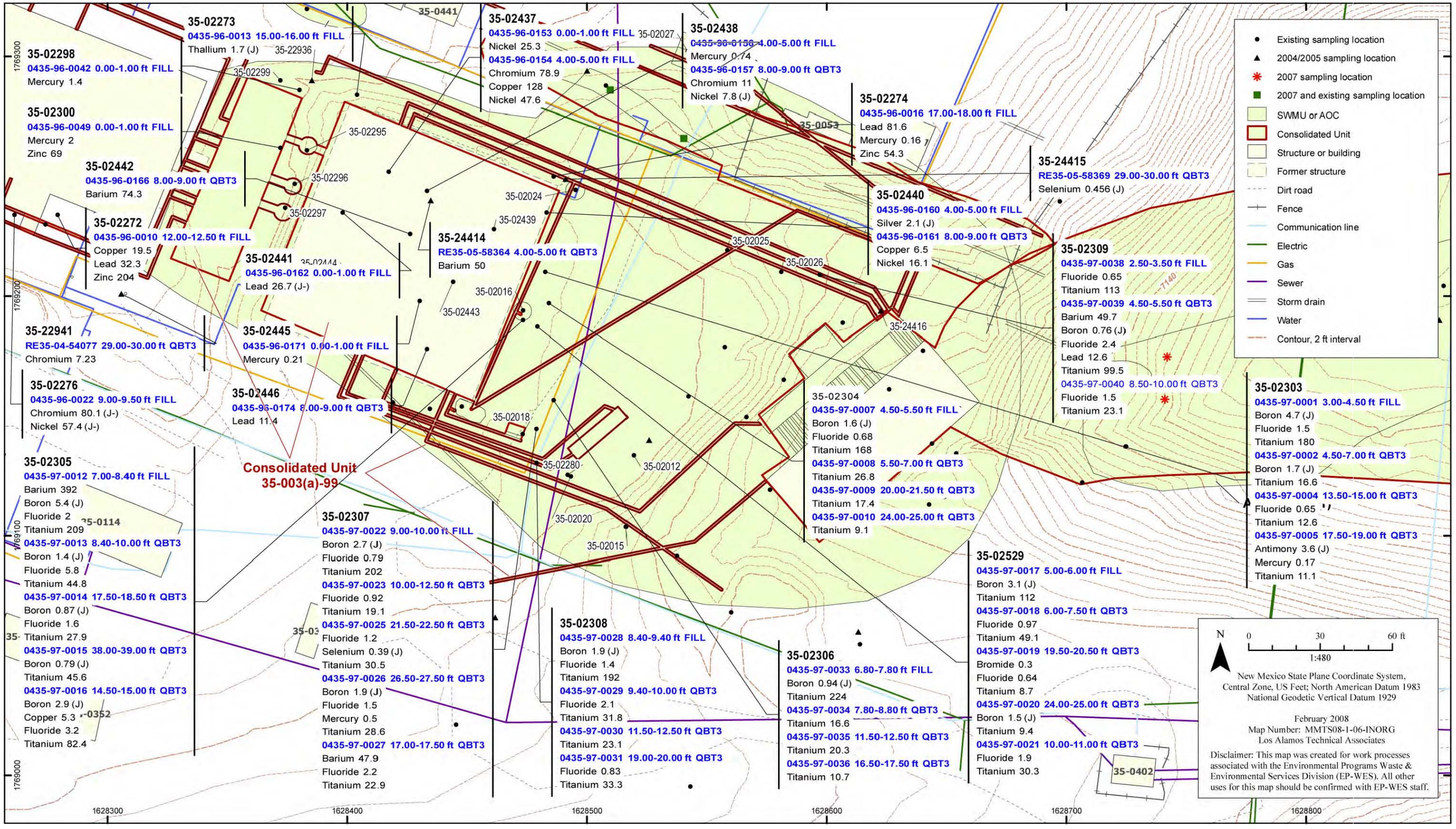


Figure F-3.2-11 Mesa Top Area E inorganic COPCs detected above background values in all media

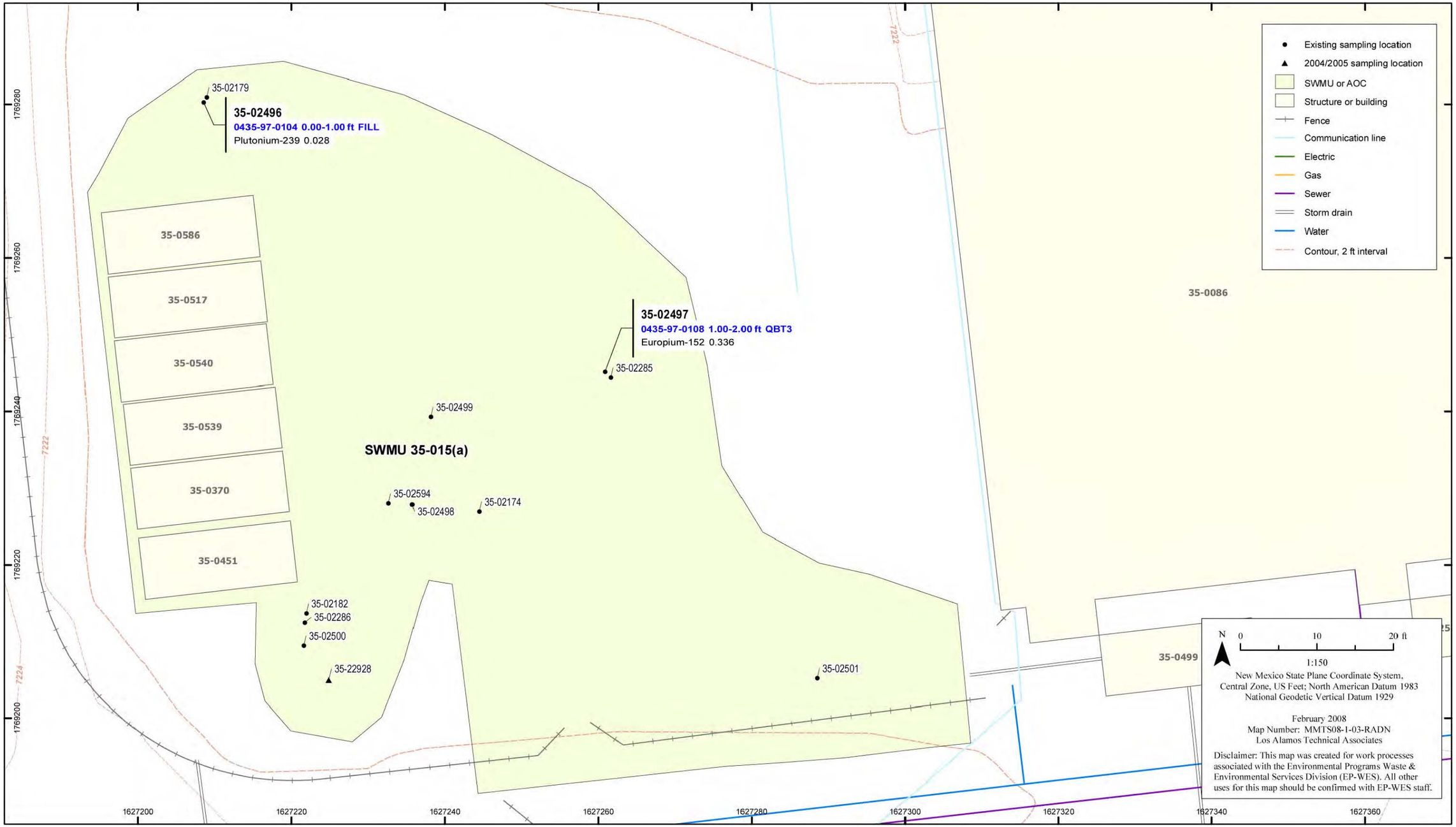


Figure F-3.2-12 Mesa Top Area B radionuclide COPCs detected above background values in all media

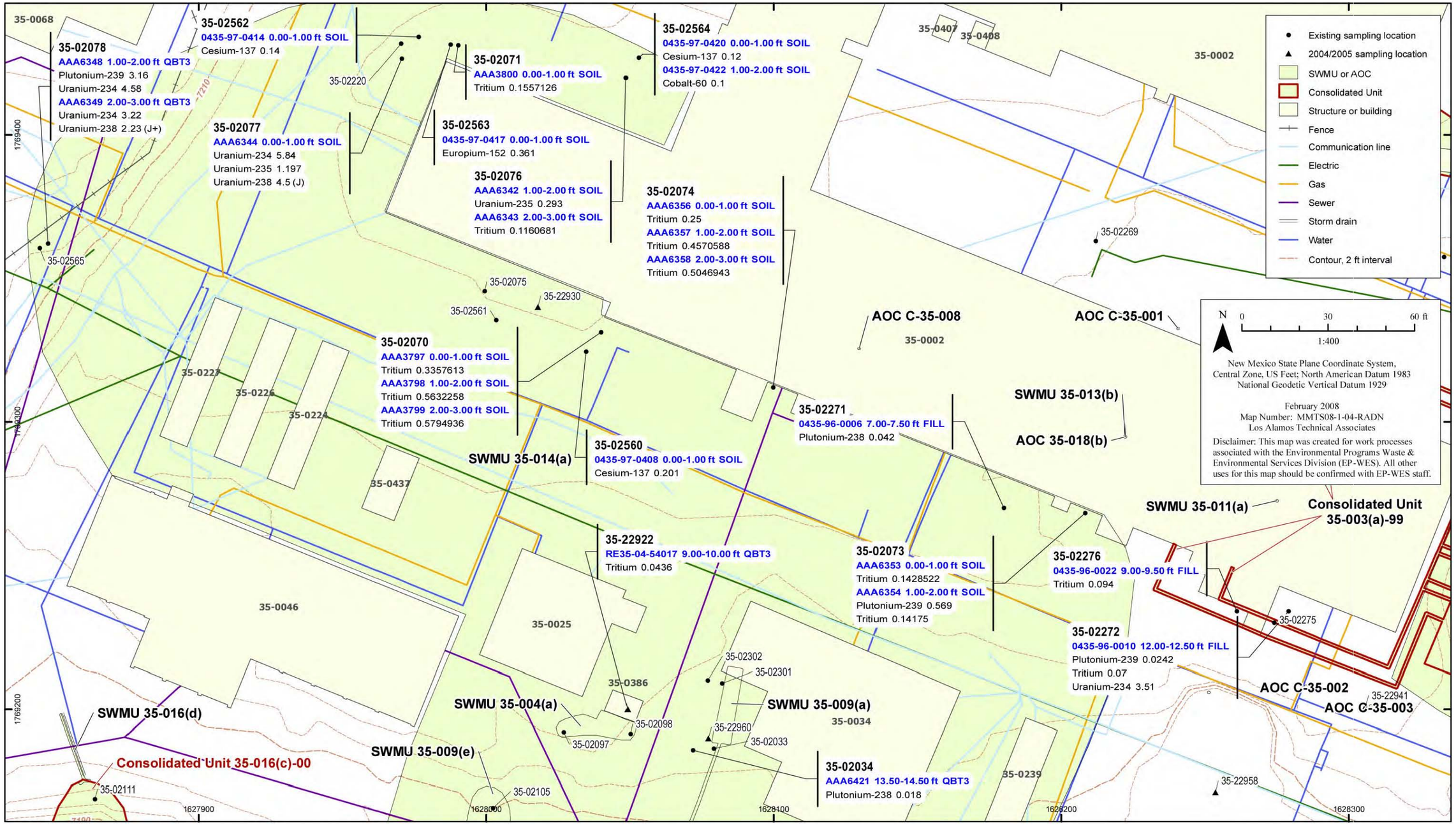


Figure F-3.2-13 Mesa Top Area C radionuclide COPCs detected above background values in all media

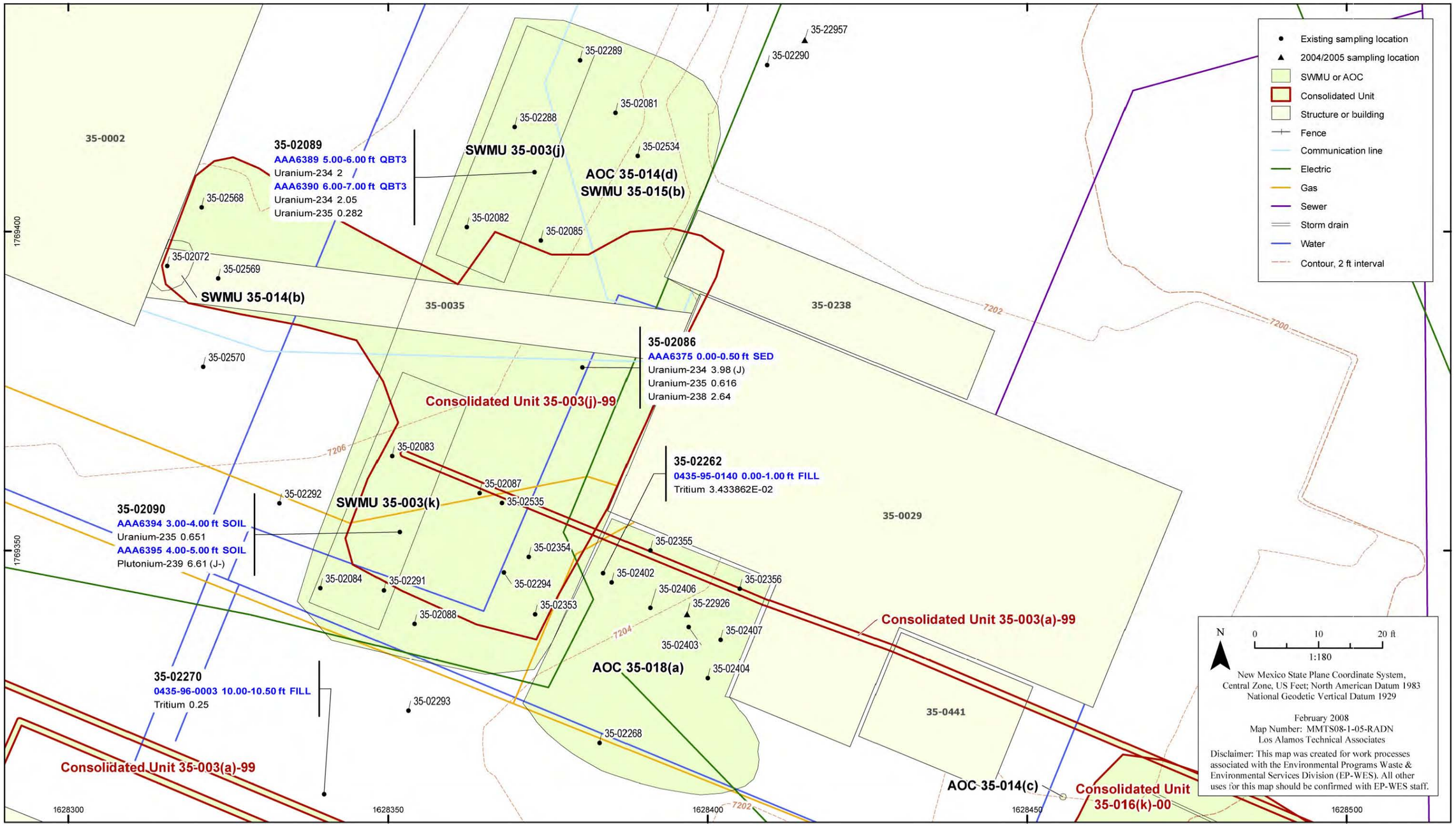


Figure F-3.2-14 Mesa Top Area D radionuclide COPCs detected above background values in all media

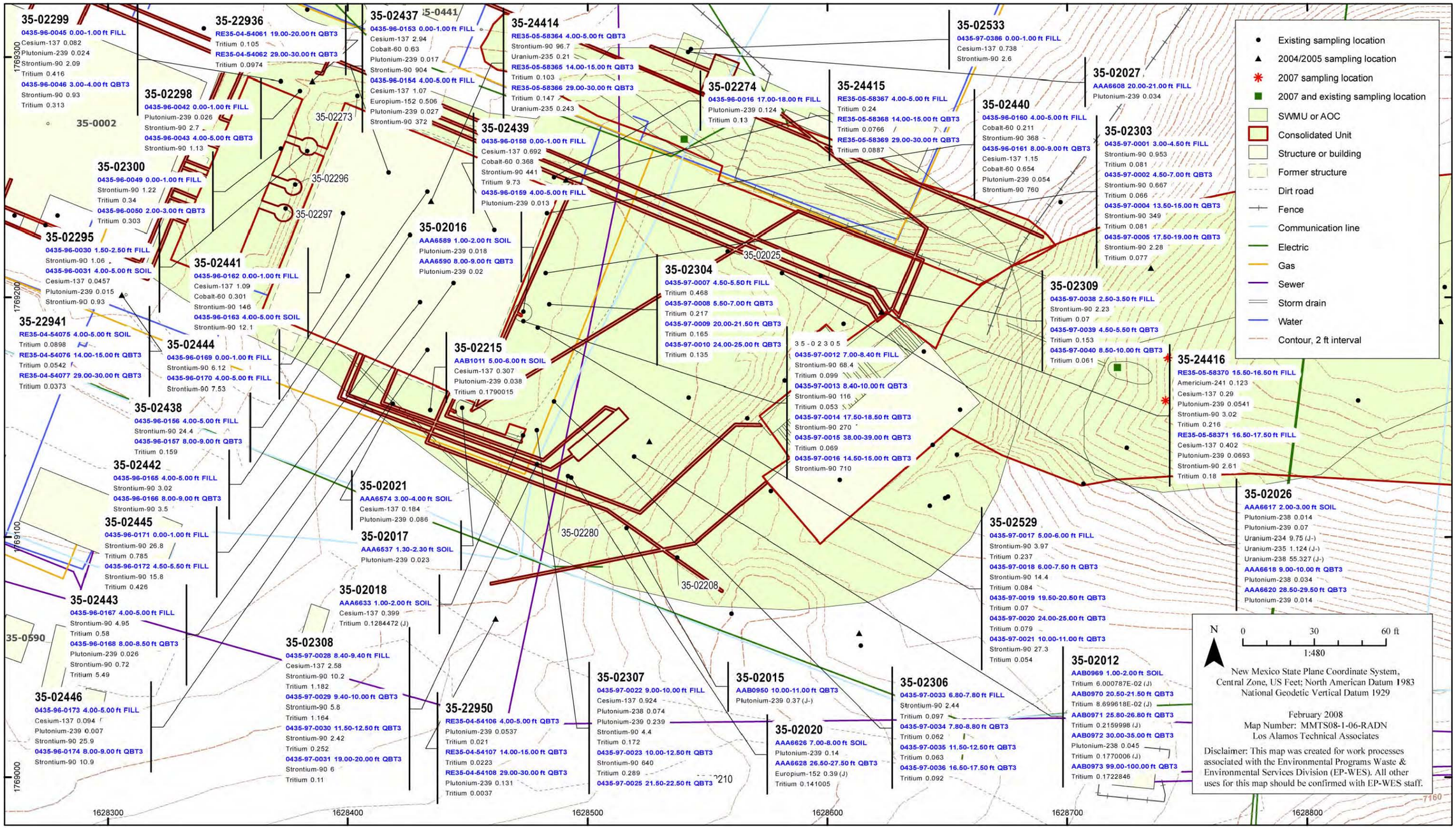


Figure F-3.2-15 Mesa Top Area E radionuclide COPCs detected above background values in all media (1 of 2)

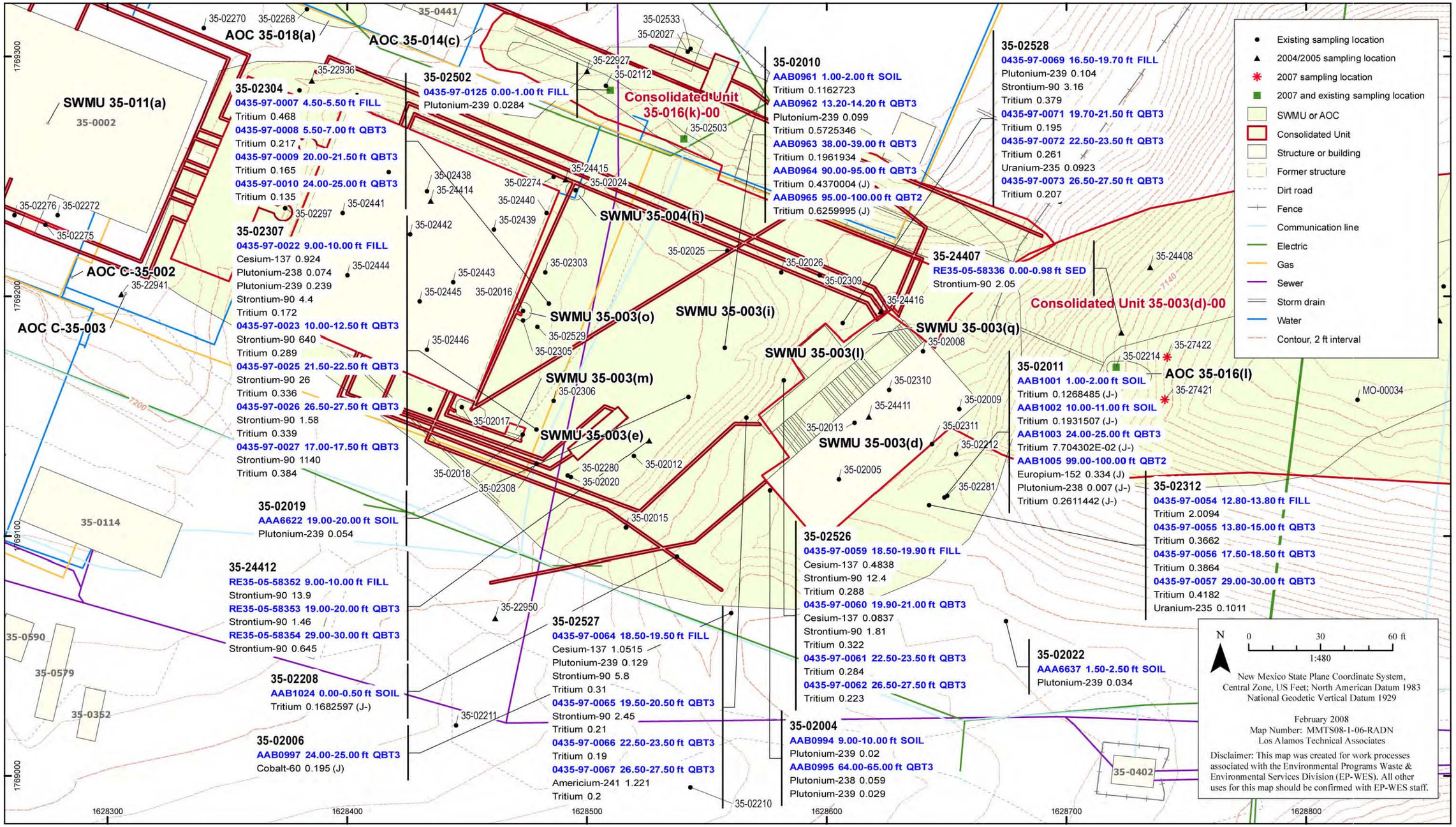


Figure F-3.2-15 Mesa Top Area E radionuclide COPCs detected above background values in all media (2 of 2)

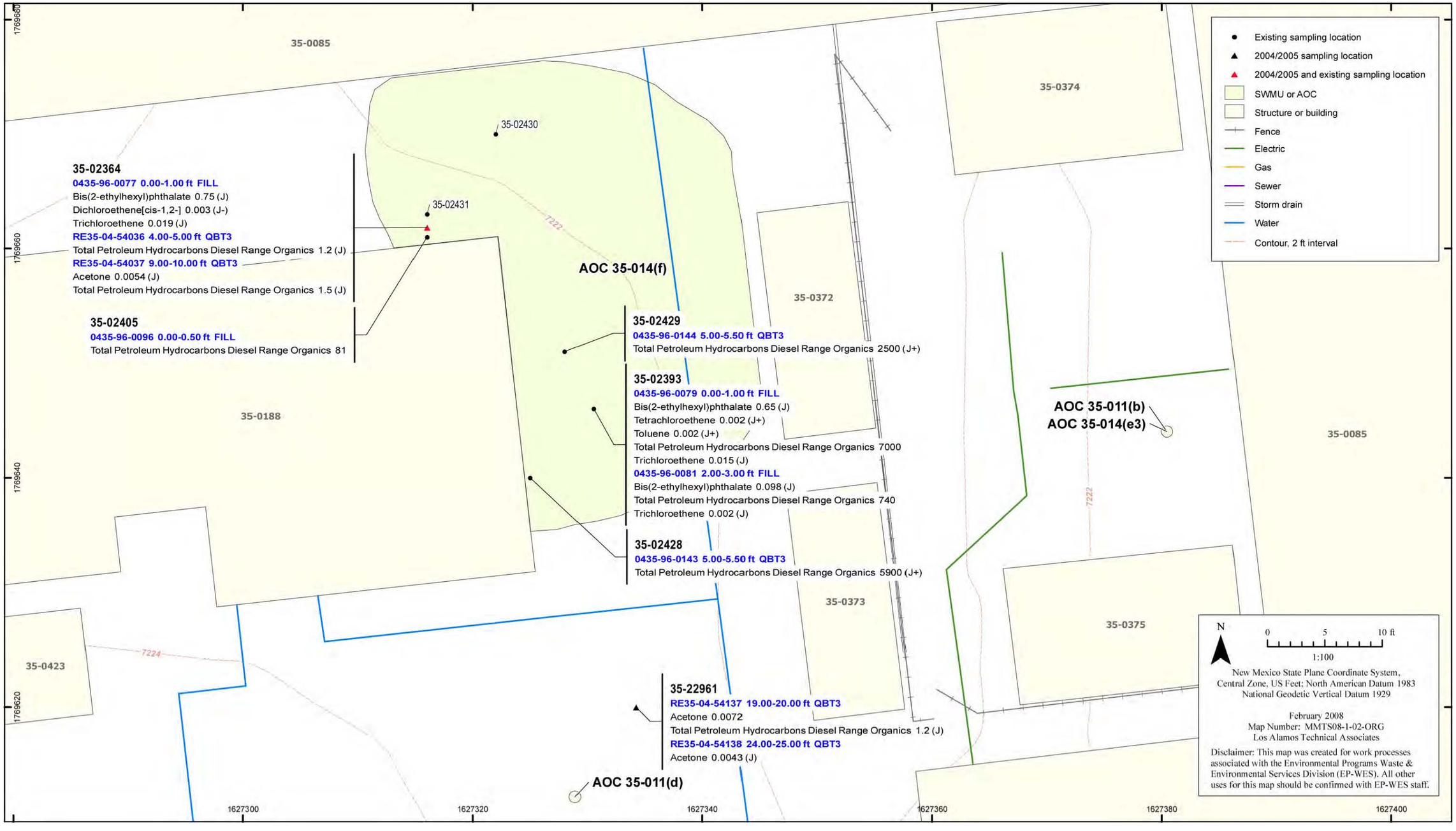


Figure F-3.2-16 Mesa Top Area A organic COPCs detected in all media

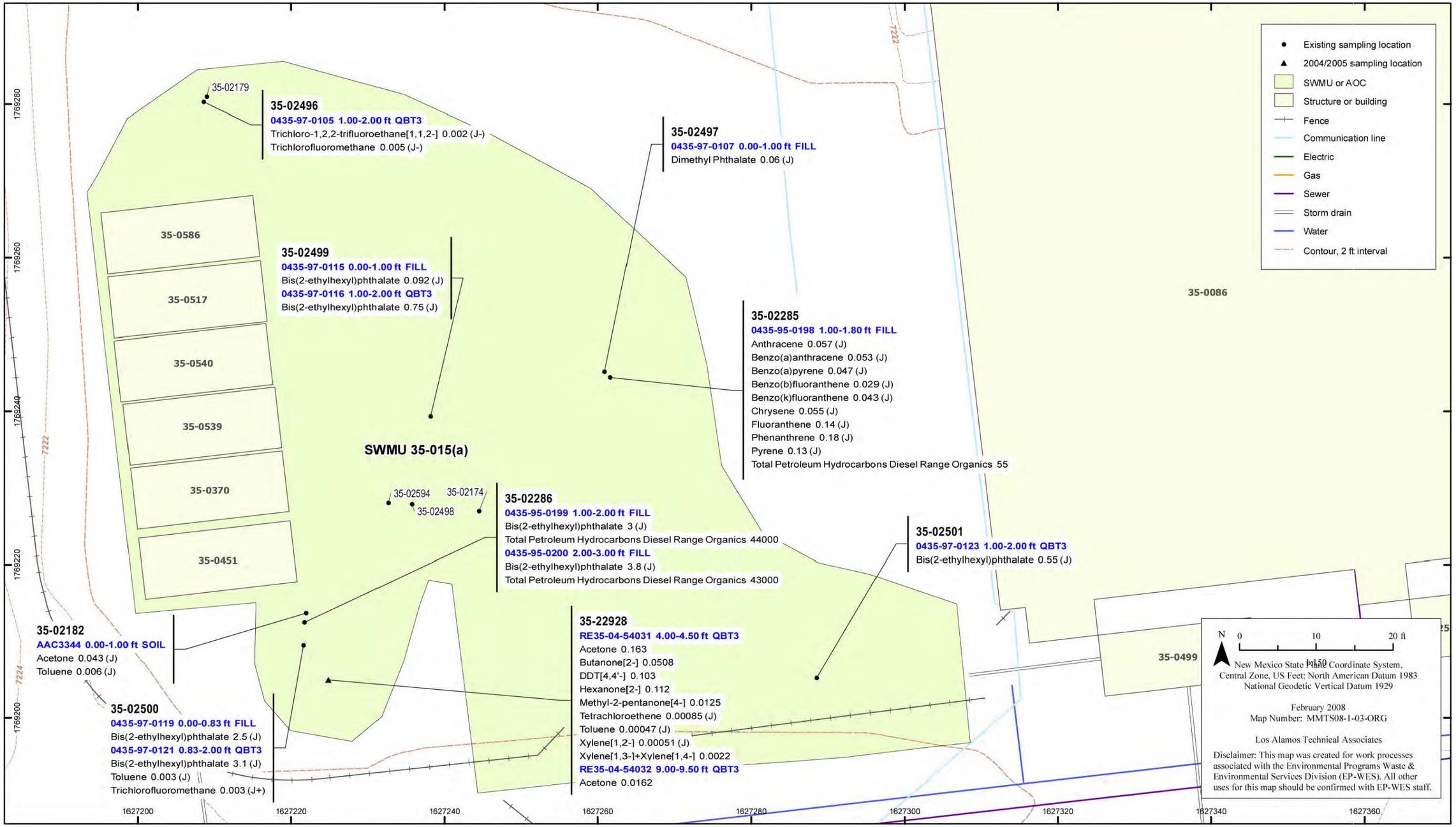


Figure F-3.2-17 Mesa Top Area B organic COPCs detected in all media

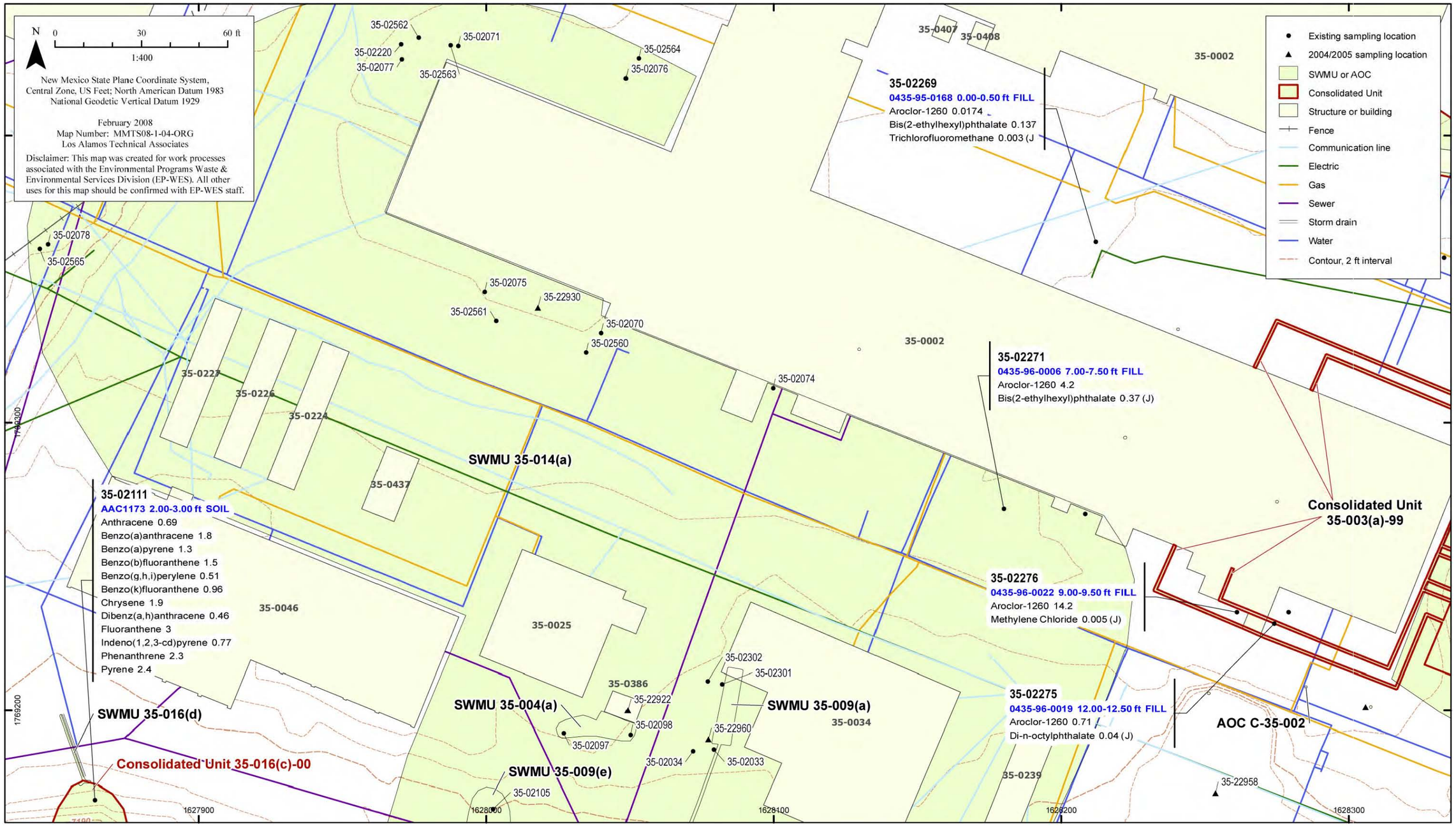


Figure F-3.2-18 Mesa Top Area C organic COPCs detected in all media

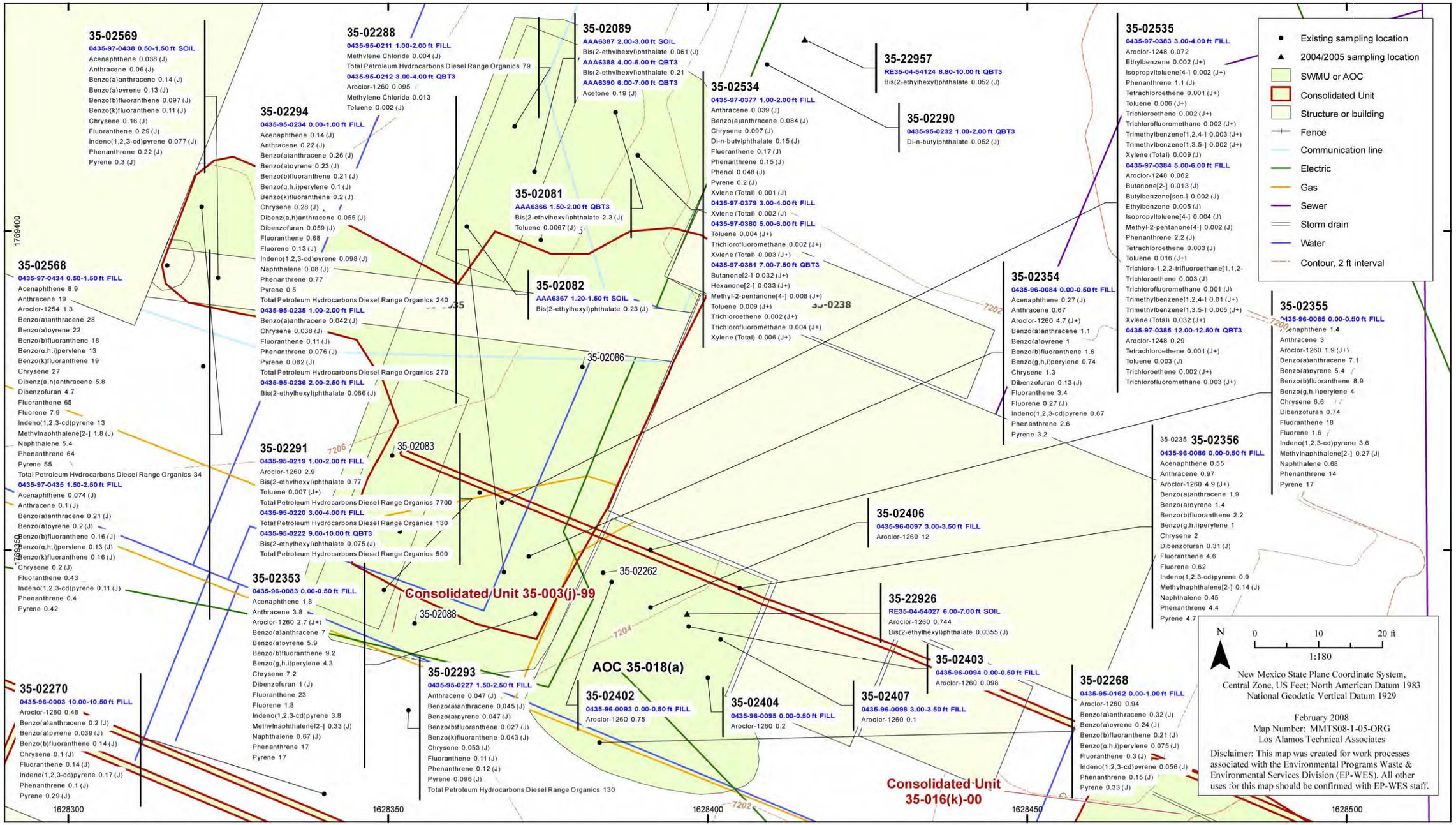


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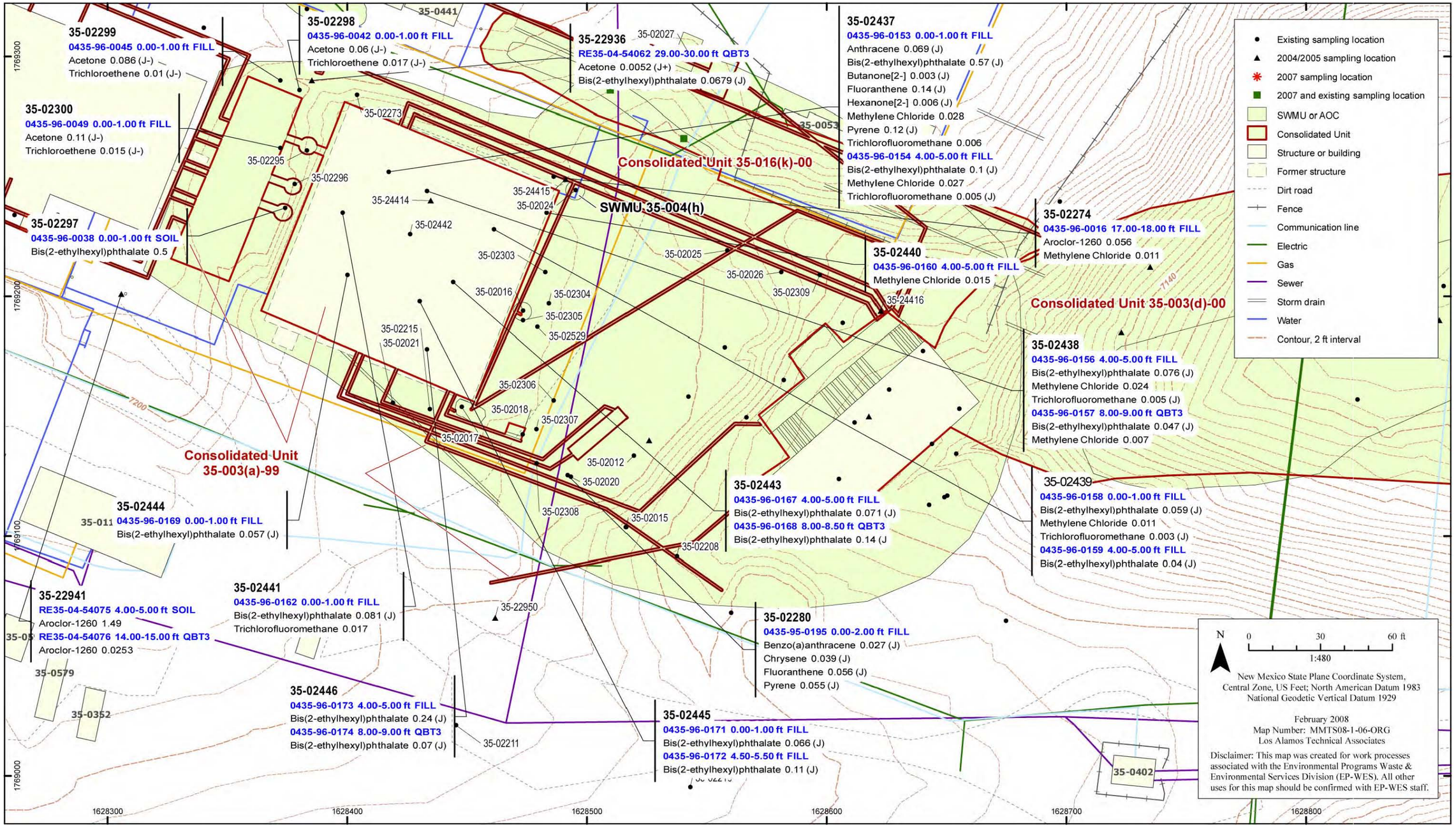


Figure F-3.2-20 Mesa Top Area E organic COPCs detected in all media

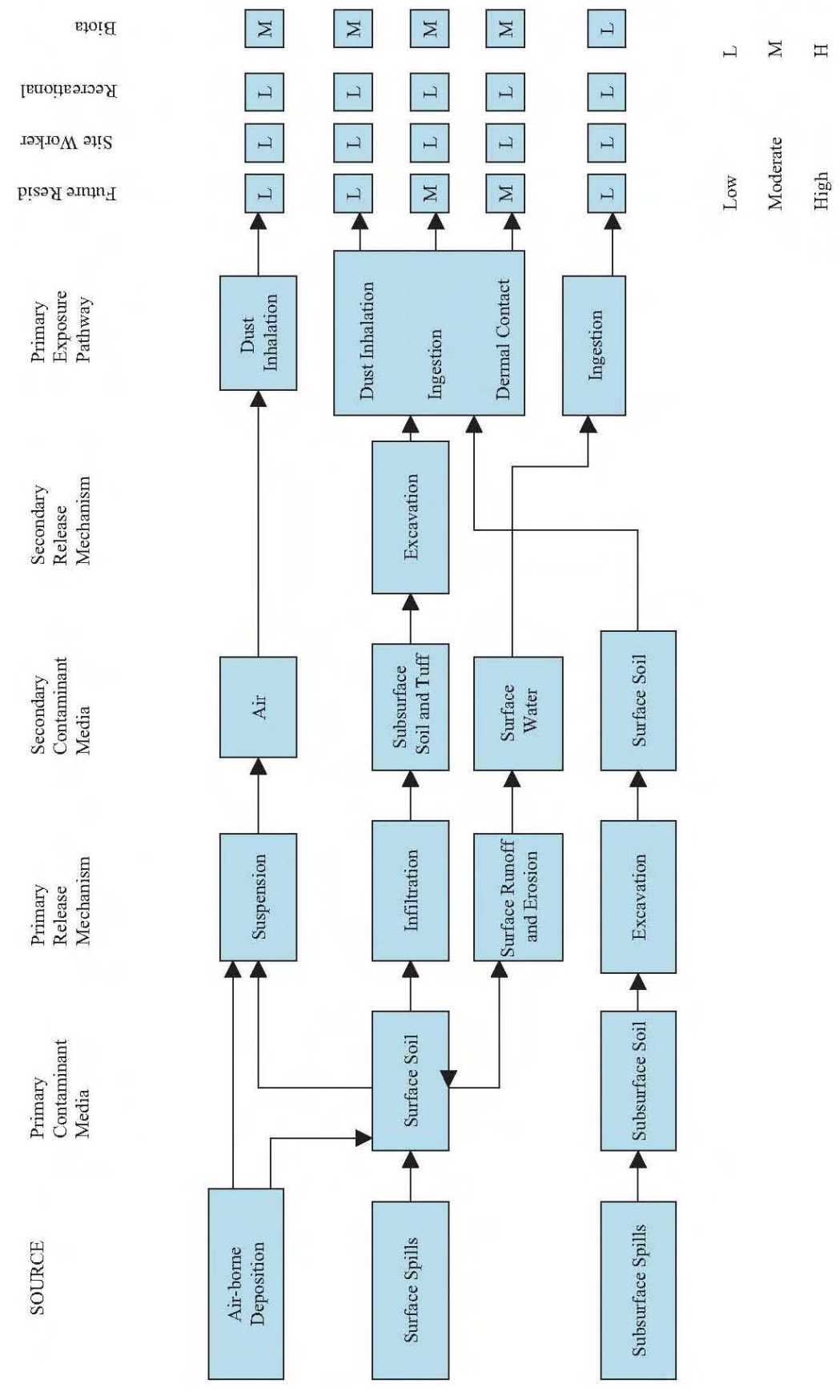


Figure F-3.3-1 Conceptual site model for Middle Mortandad/Ten Site Aggregate

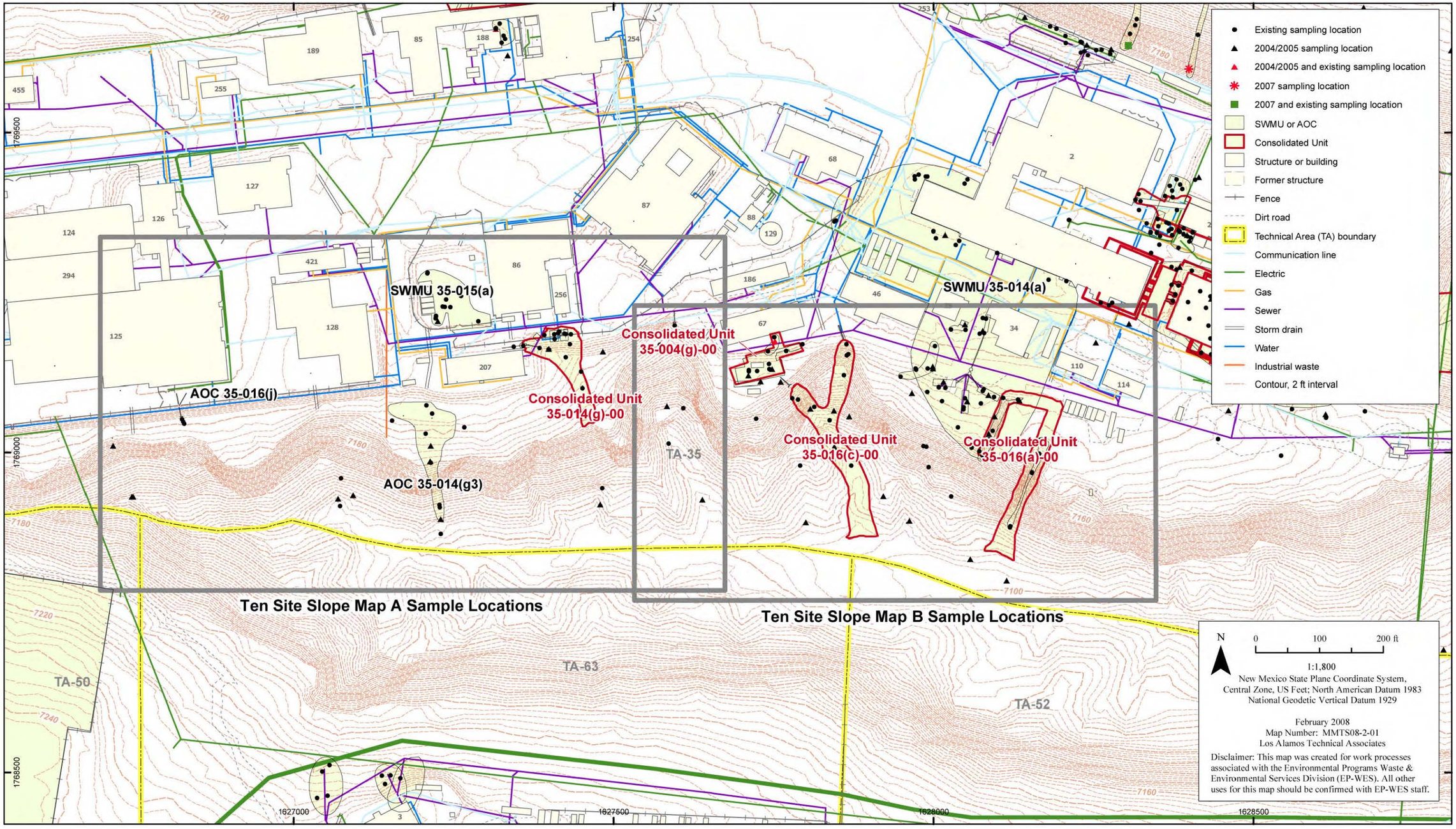


Figure F-4.2-1 Index map of the Ten Site Slope Subarea

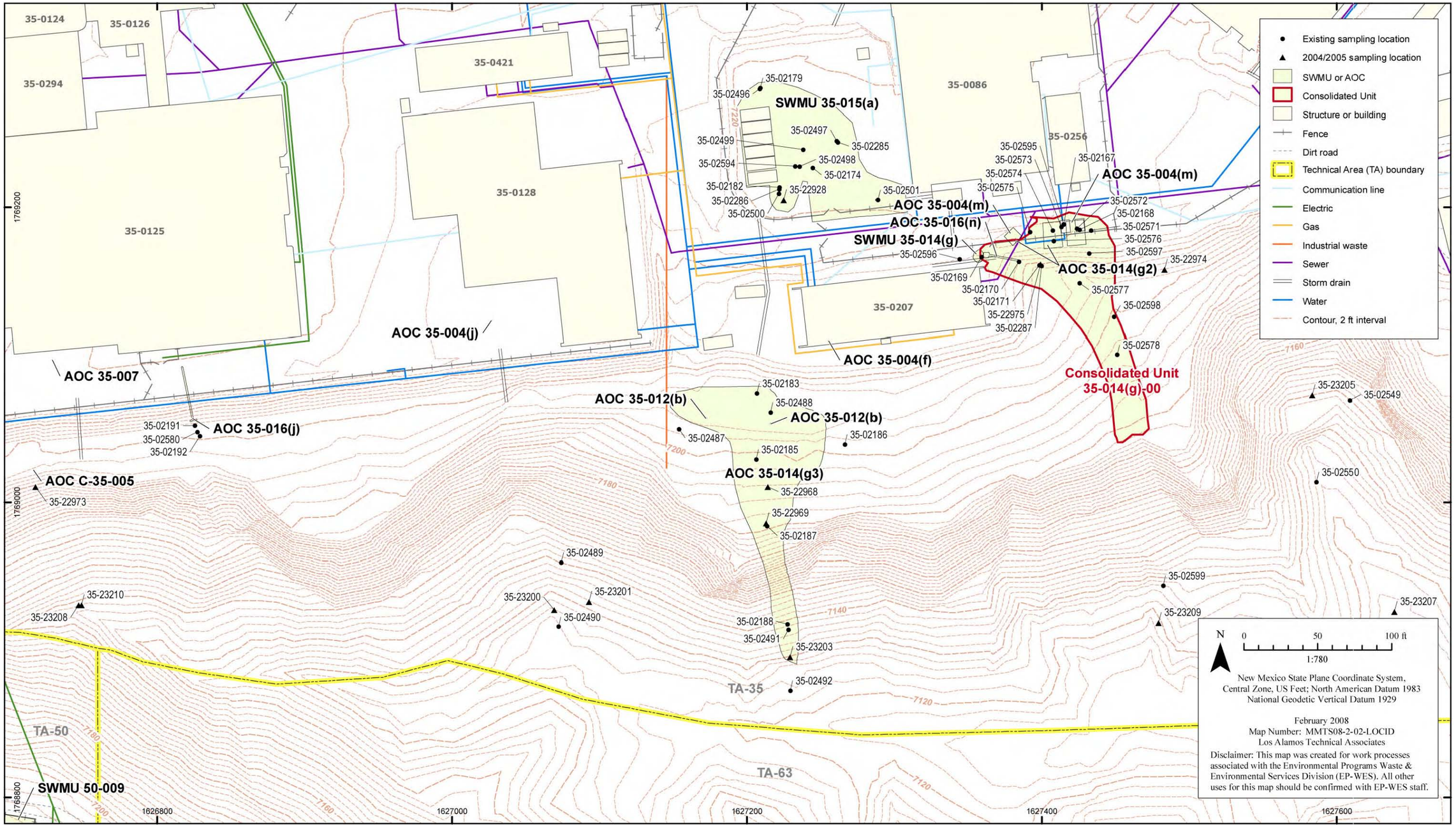


Figure F-4.2-2 Ten Site Slope Area A sampling locations

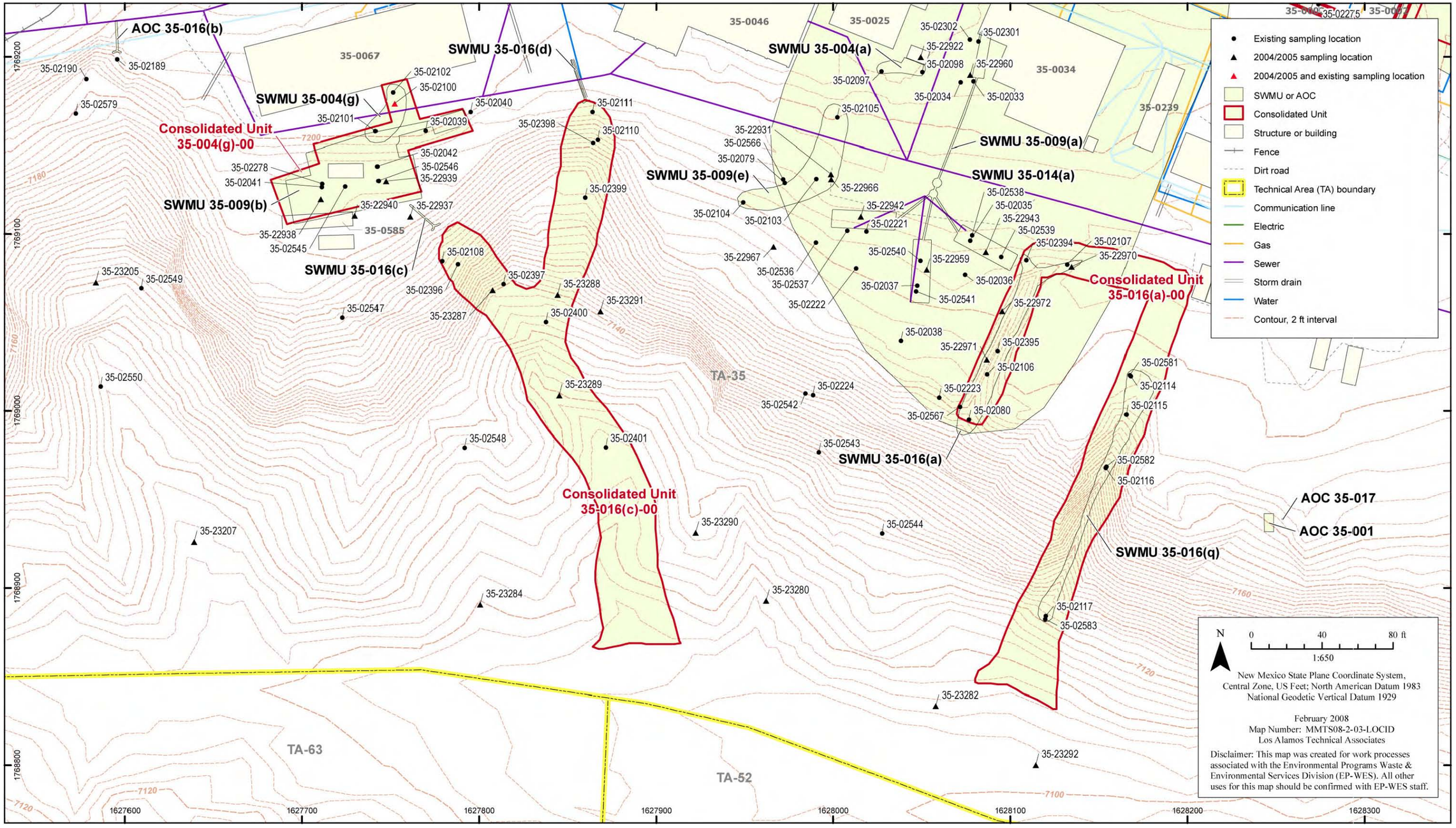


Figure F-4.2-3 Ten Site Slope Area B sampling locations

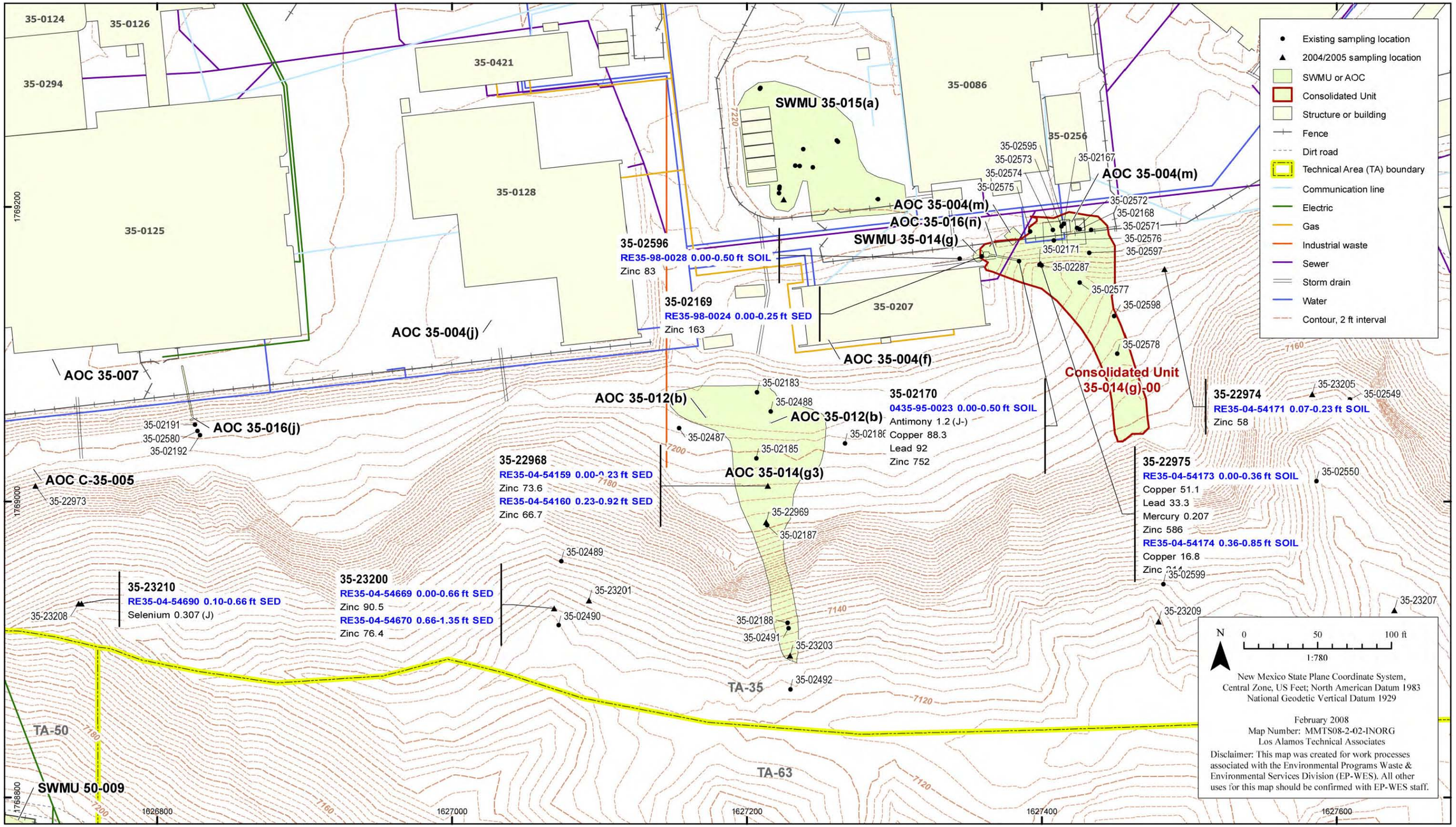


Figure F-4.2-4 Ten Site Slope Area A inorganic COPCs detected above background values in all media

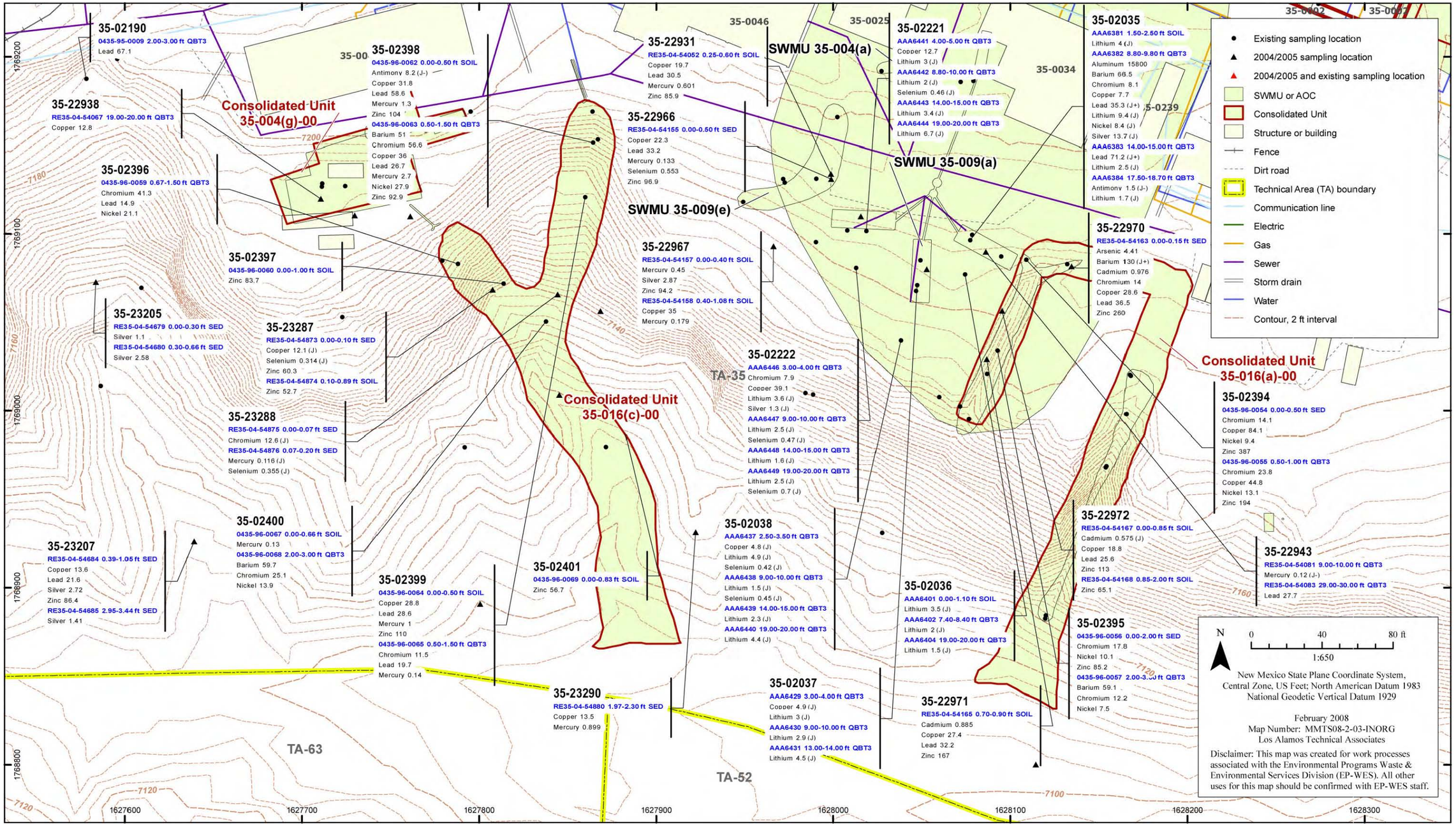


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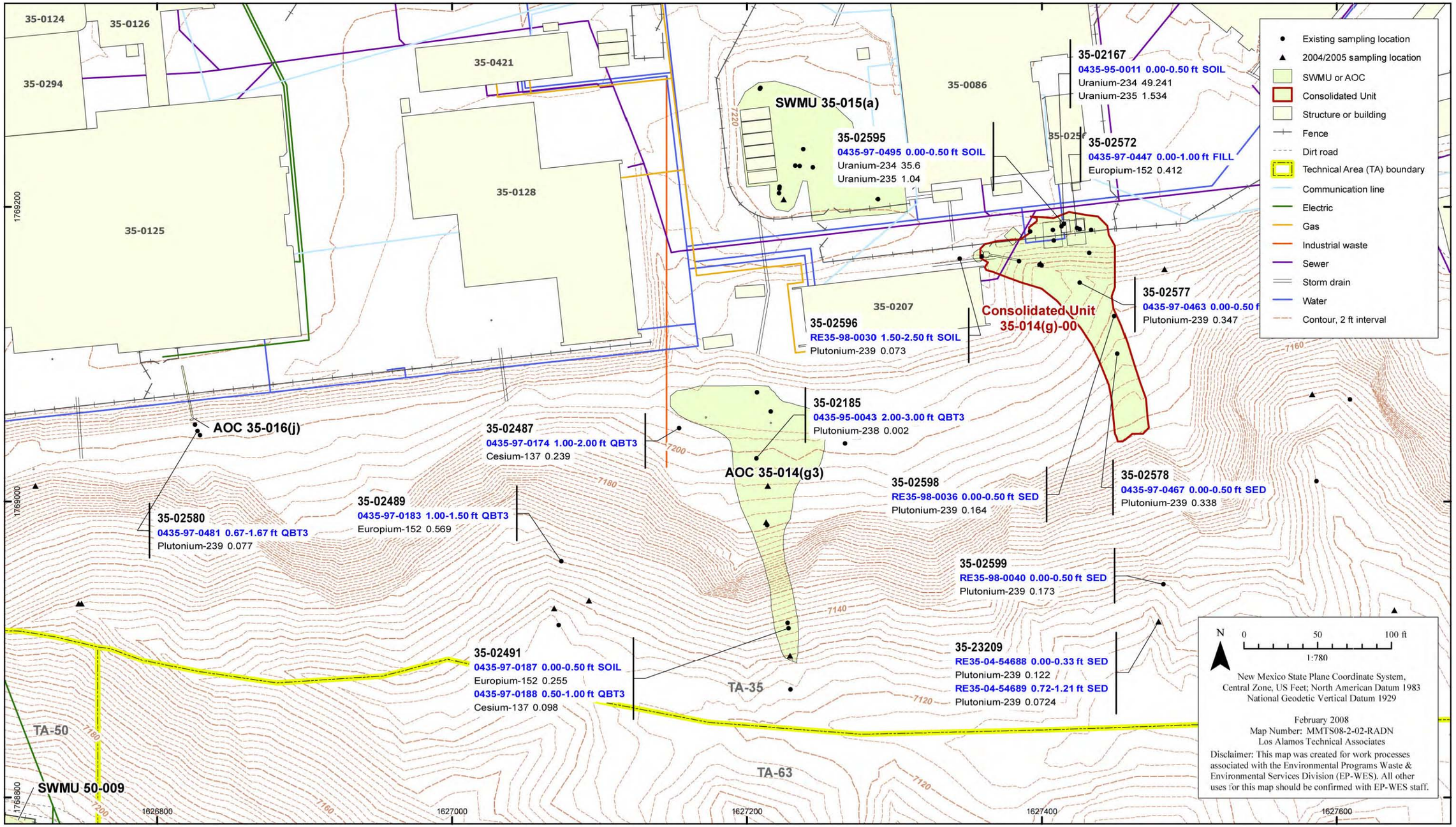


Figure F-4.2-6 Ten Site Slope Area A radionuclide COPCs detected above background values in all media

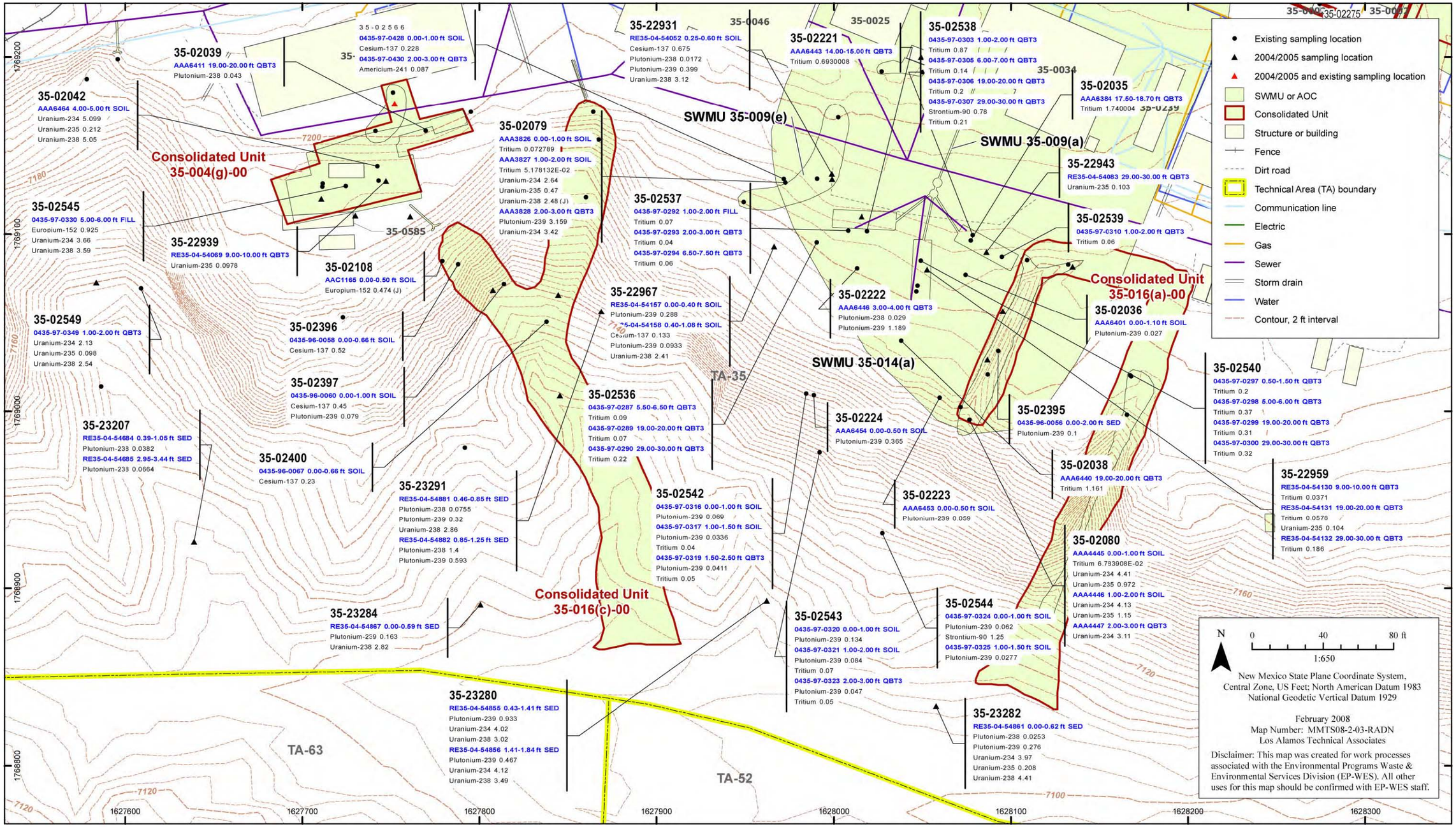


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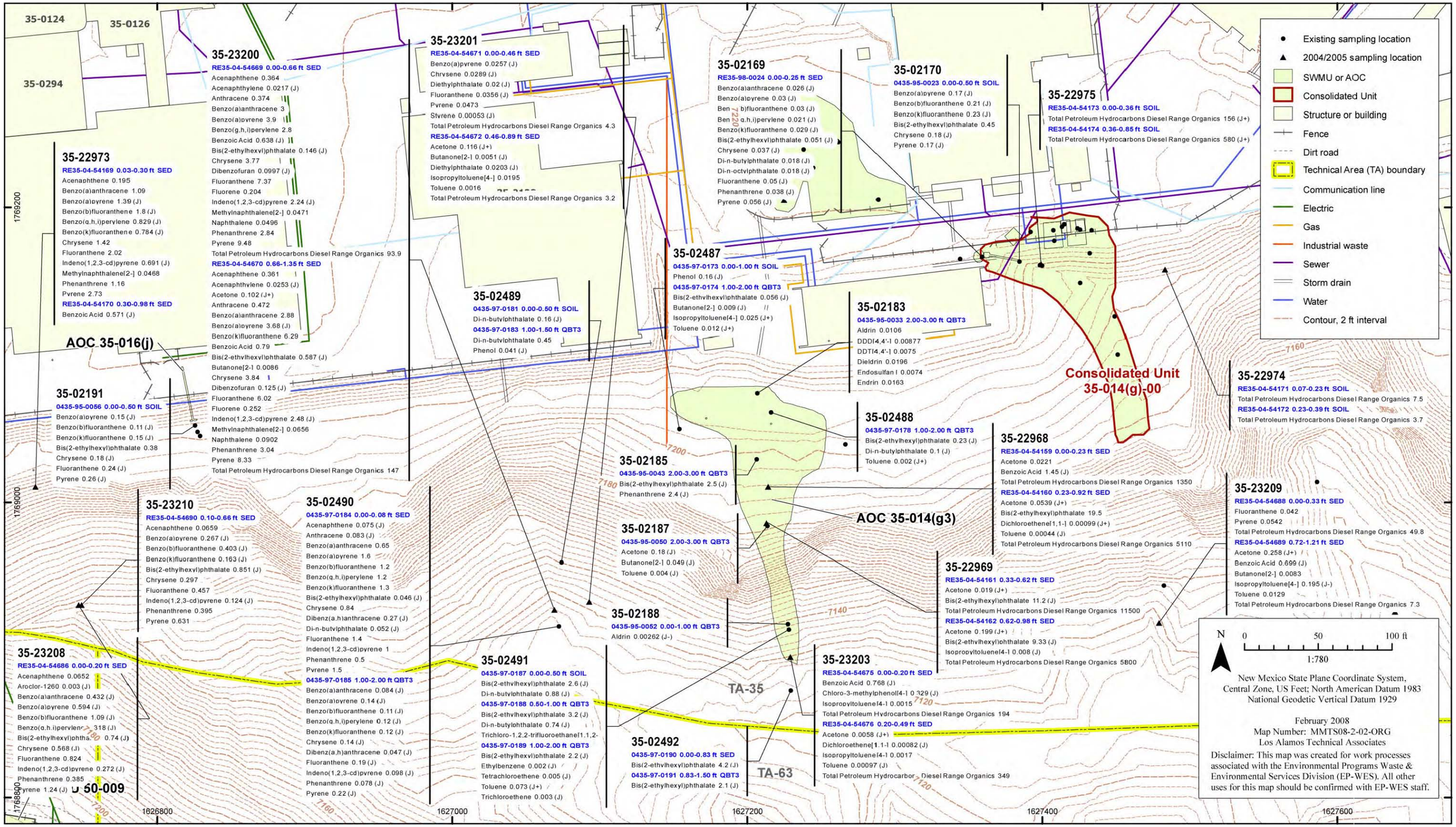


Figure F-4.2-8 Ten Site Slope Area A organic COPCs detected in all media

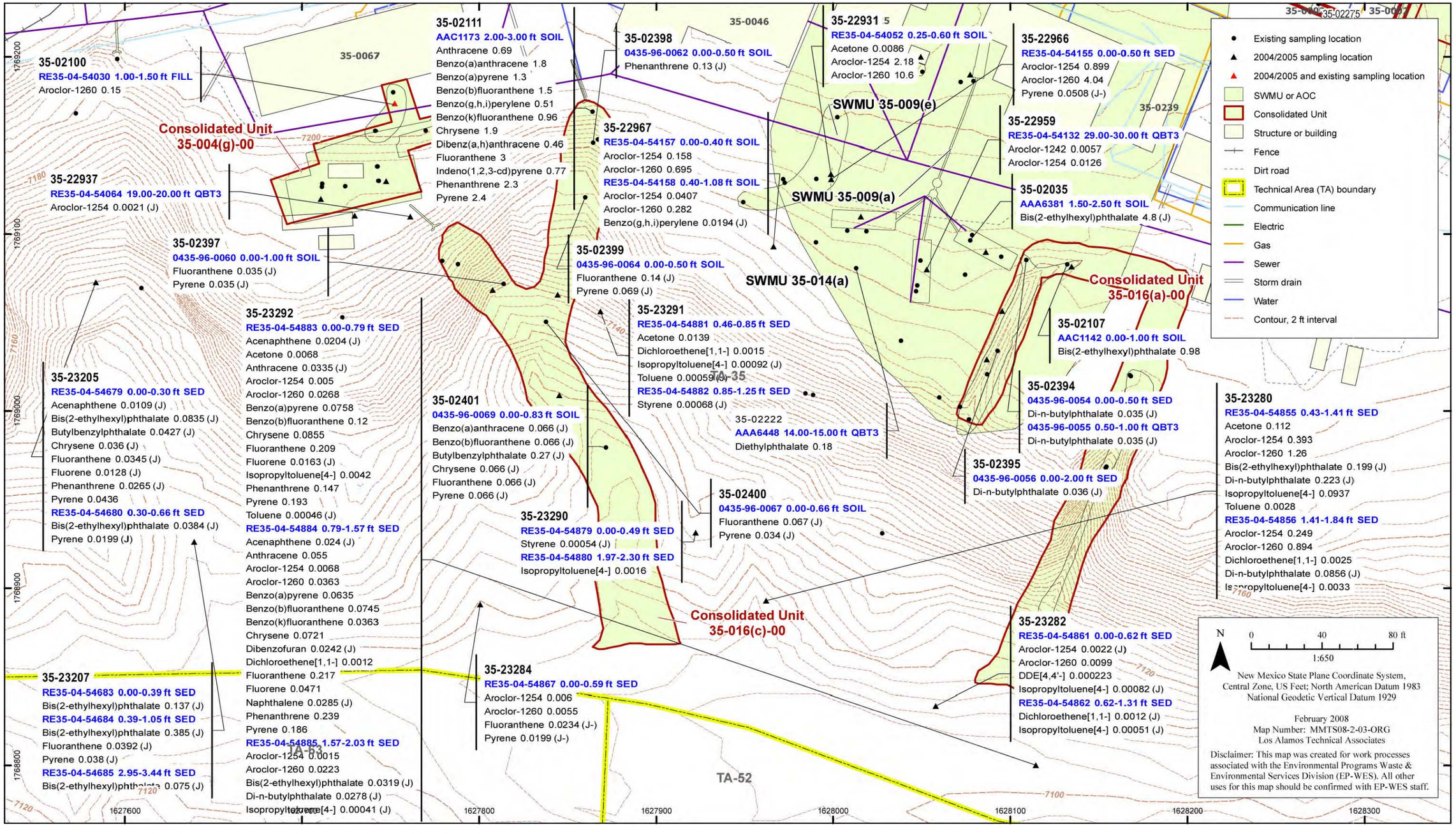


Figure F-4.2-9 Ten Site Slope Area B organic COPCs detected in all media

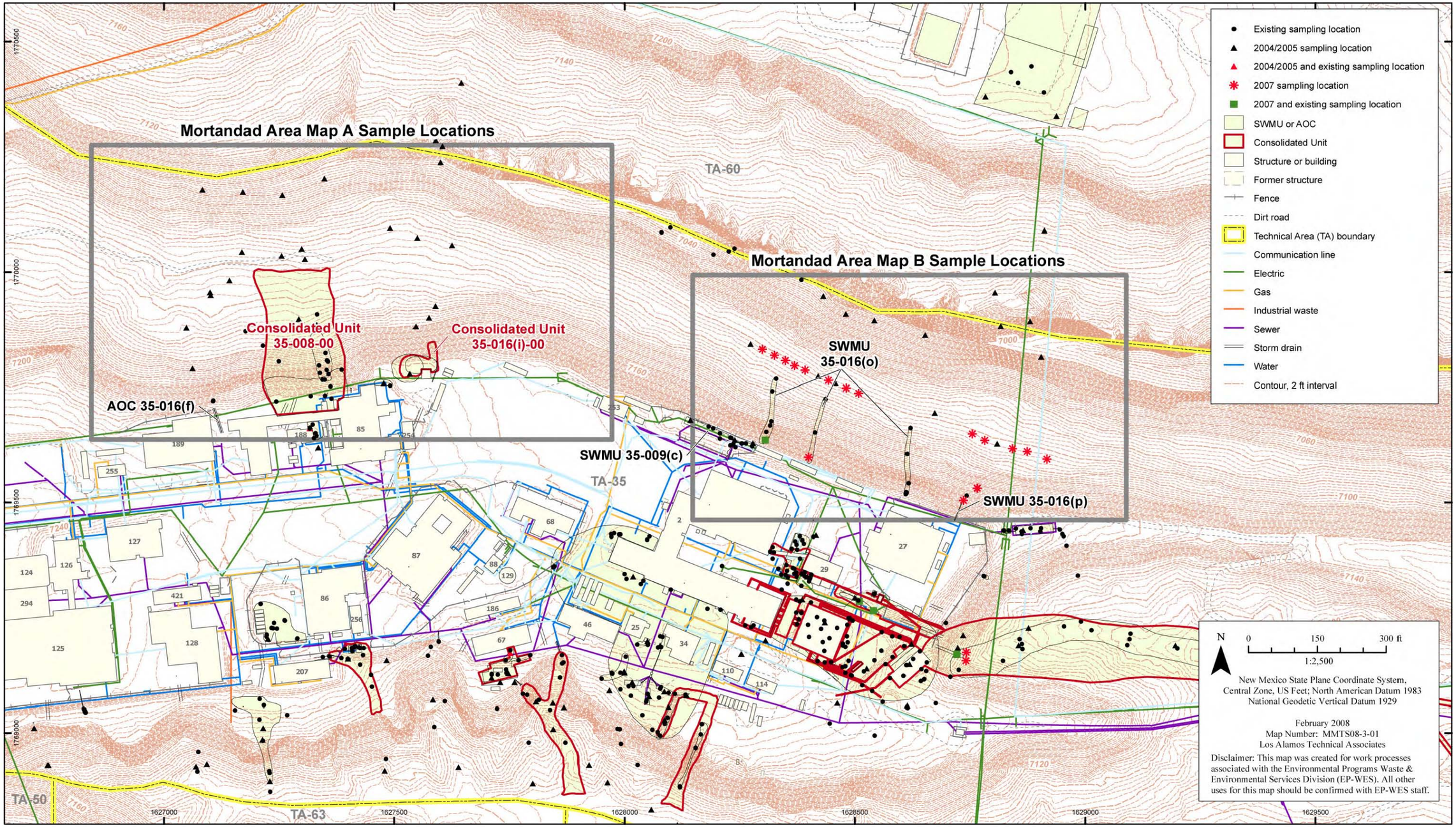


Figure F-5.2-1 Index map of the Mortandad Slope Subarea

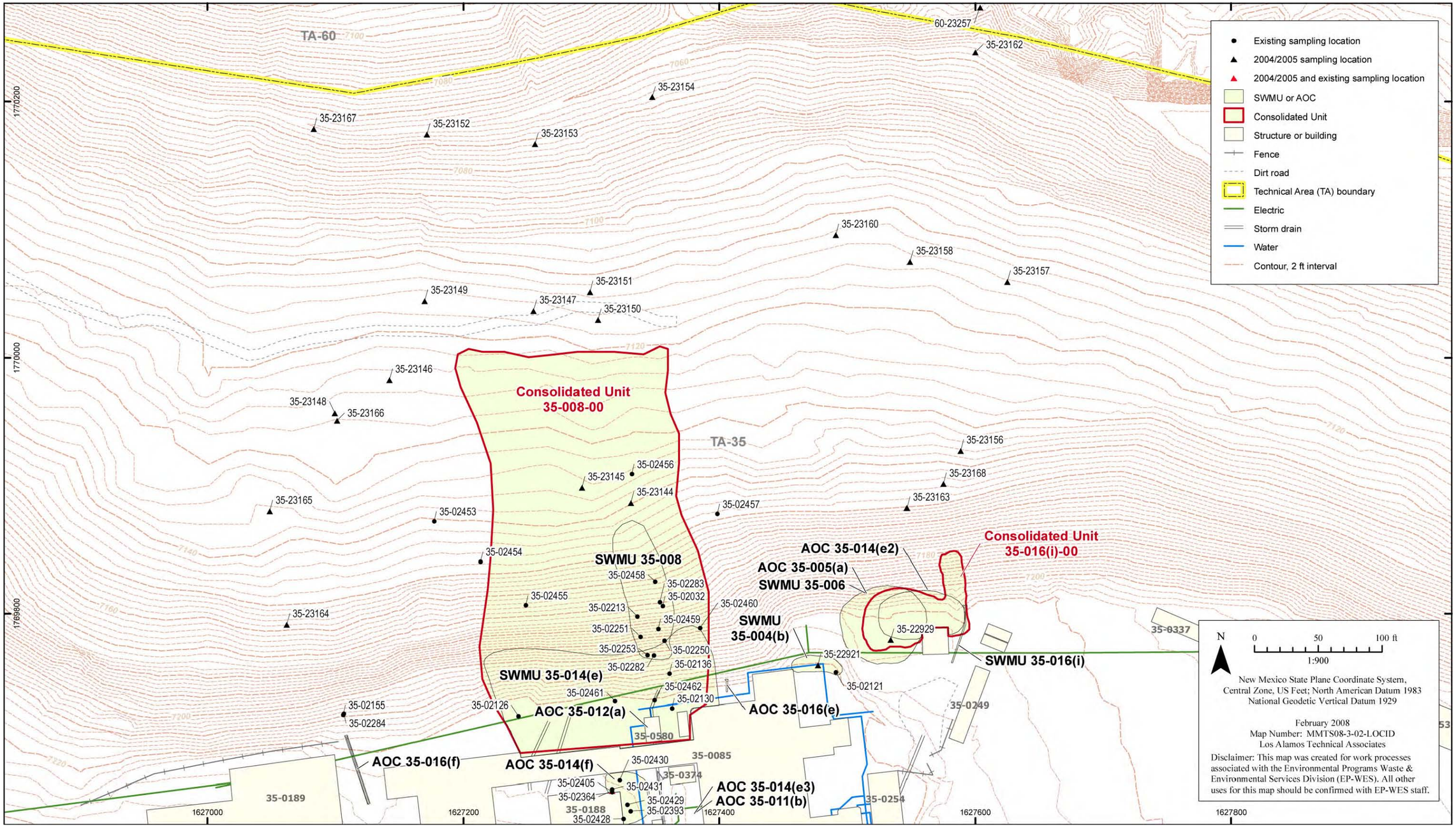


Figure F-5.2-2 Mortandad Slope Area A sampling locations

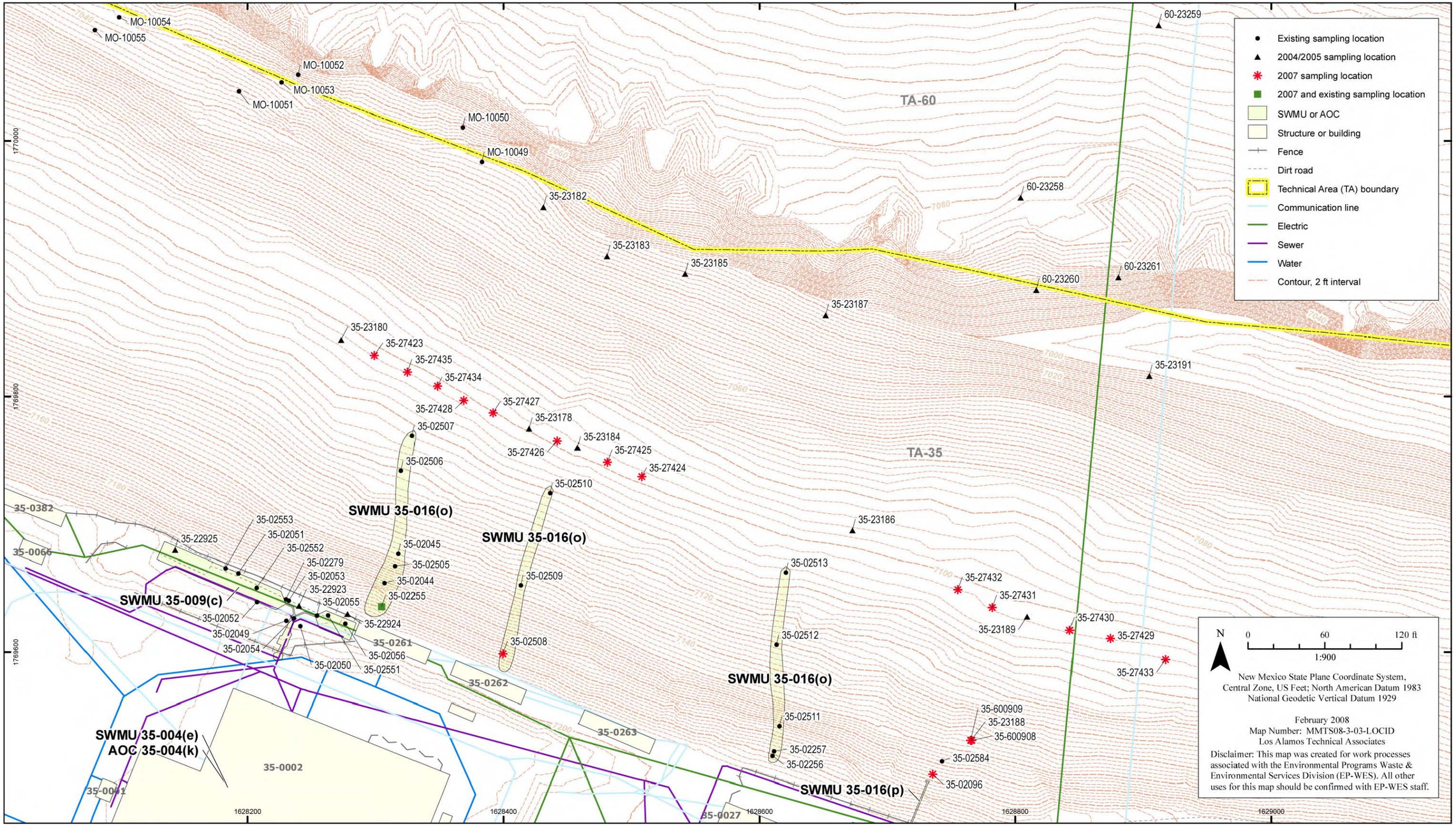


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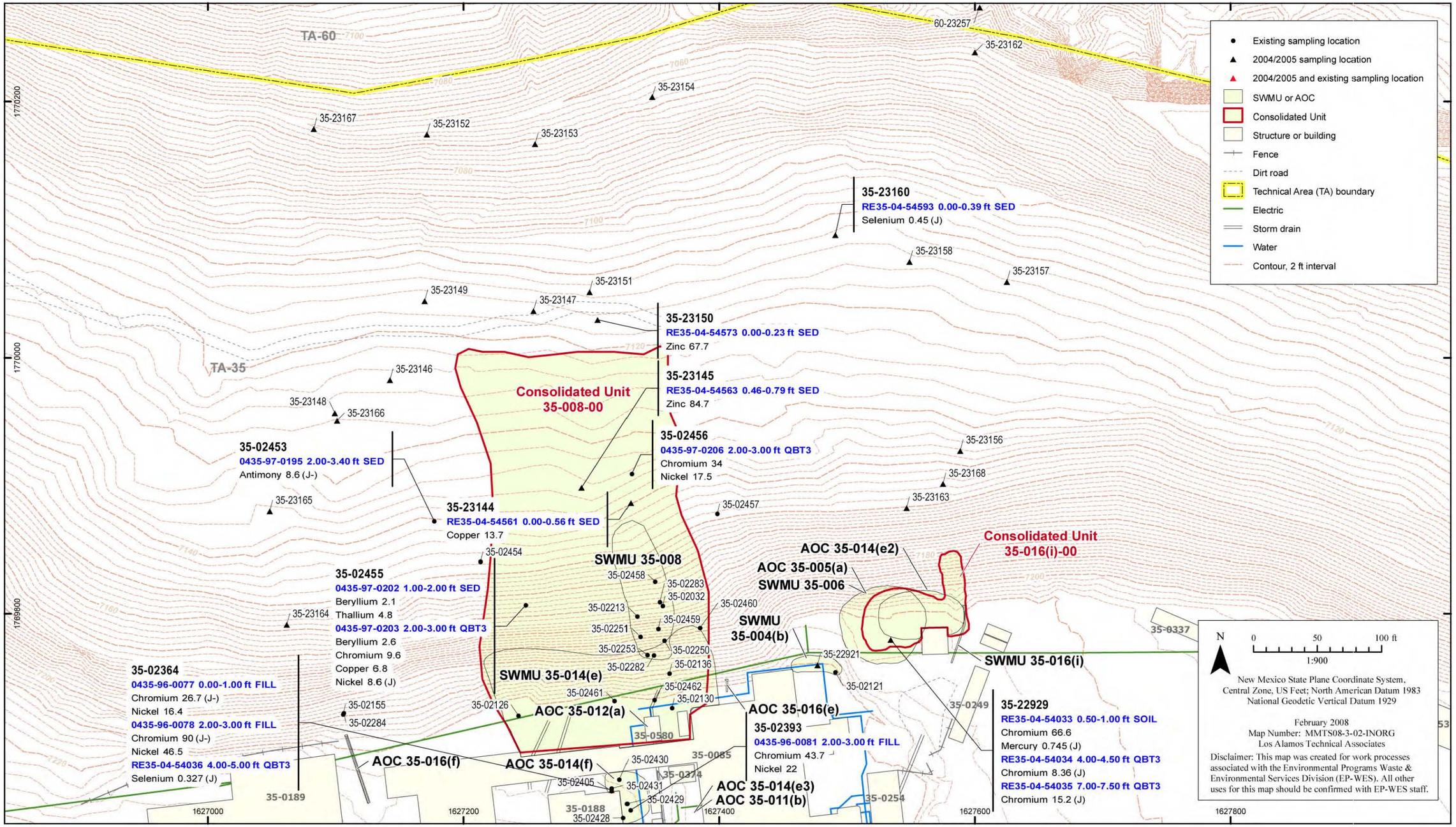


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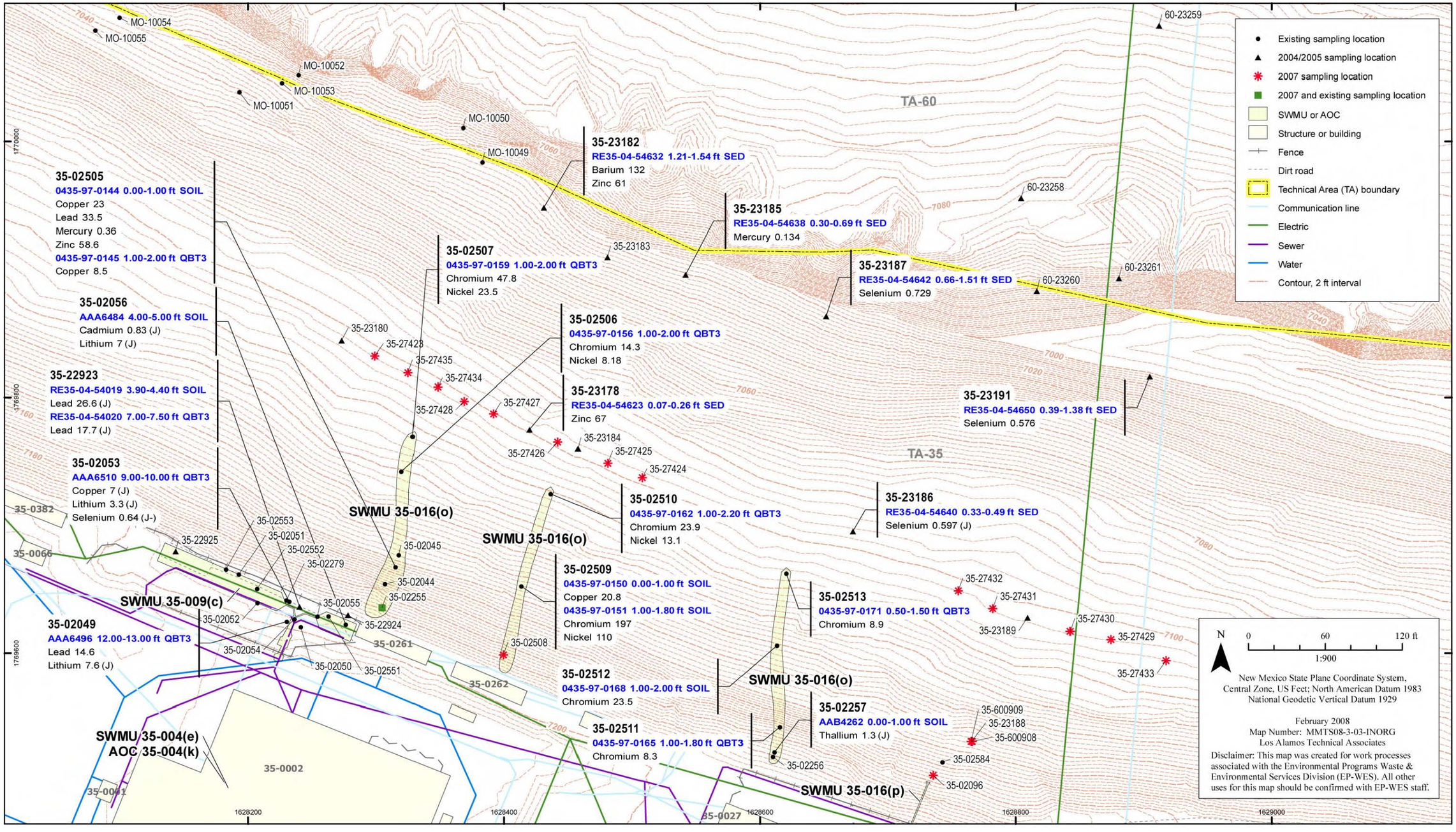


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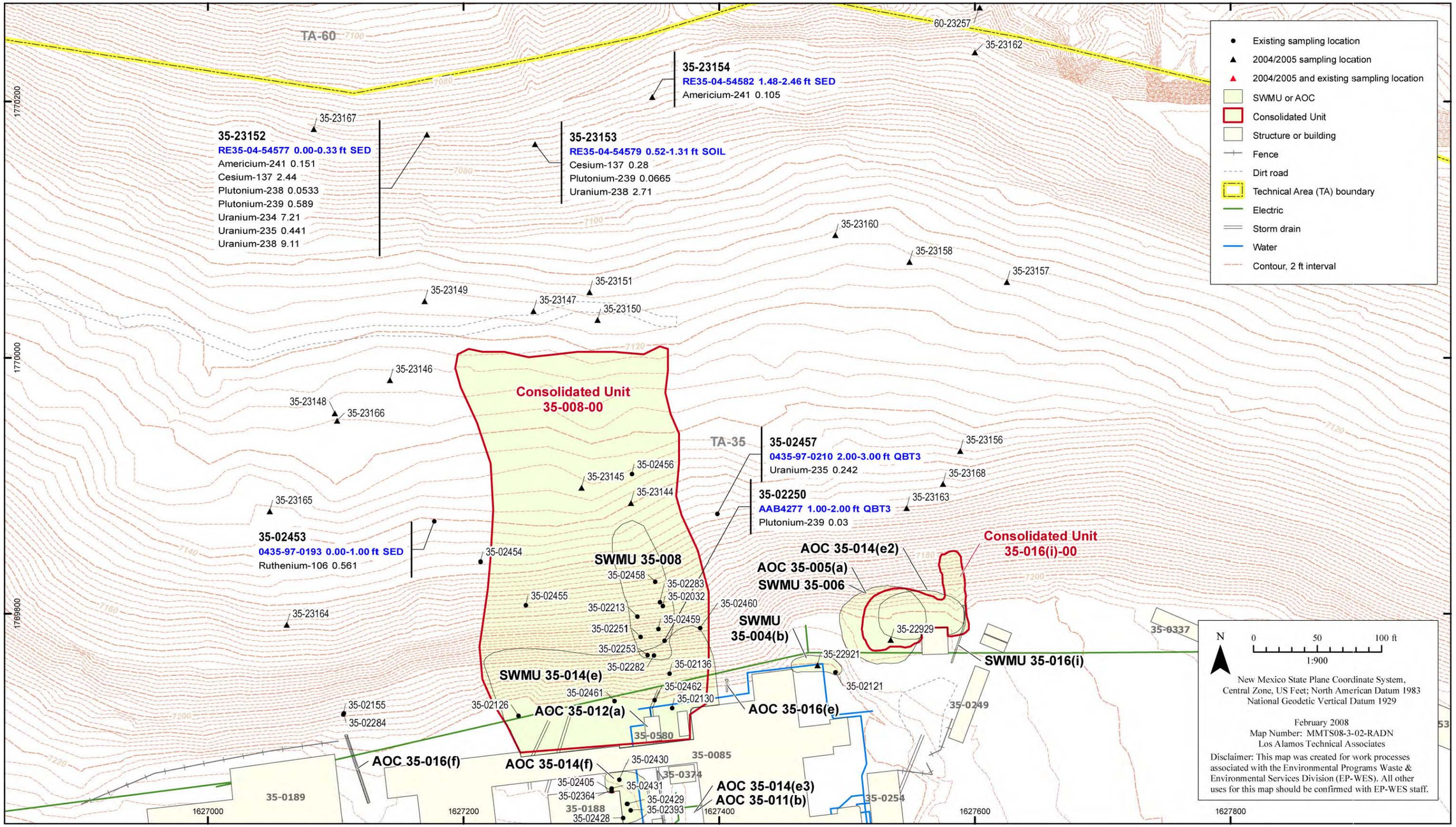


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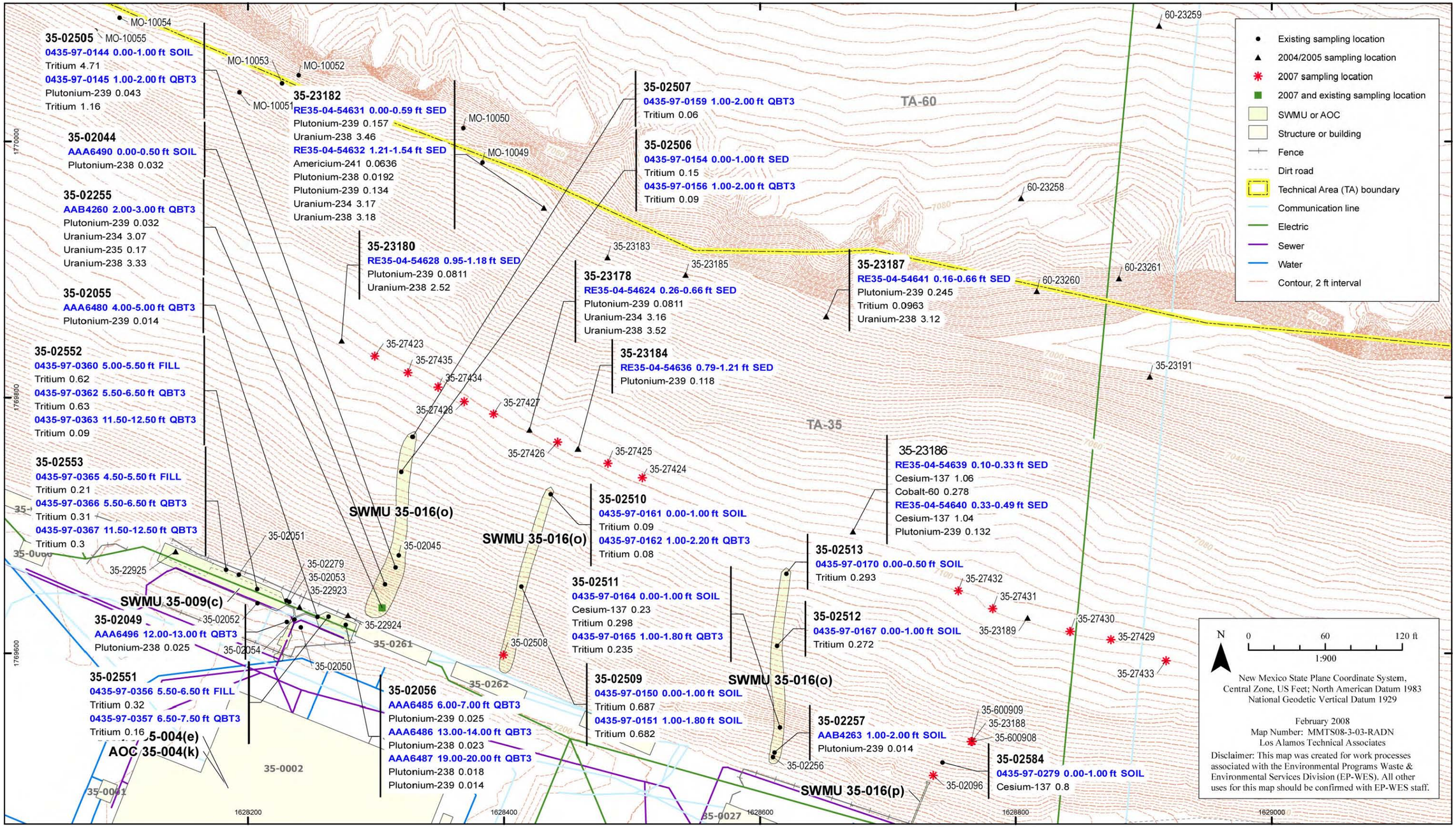


Figure F-5.2-7 Mortandad Slope Area B radionuclide COPCs detected above background values in all media

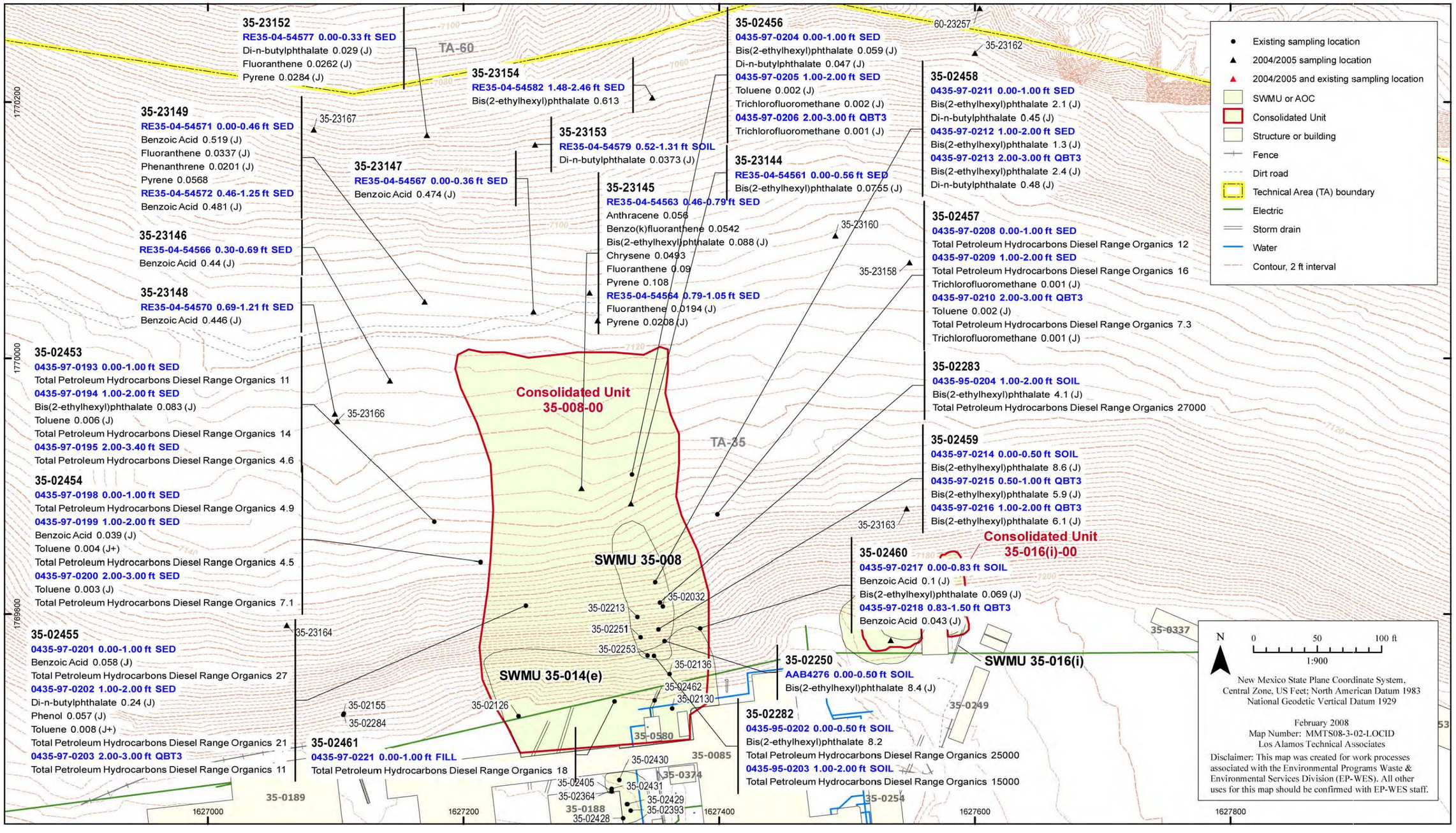


Figure F-5.2-8 Mortandad Slope Area A organic COPCs detected in all media (1 of 2)

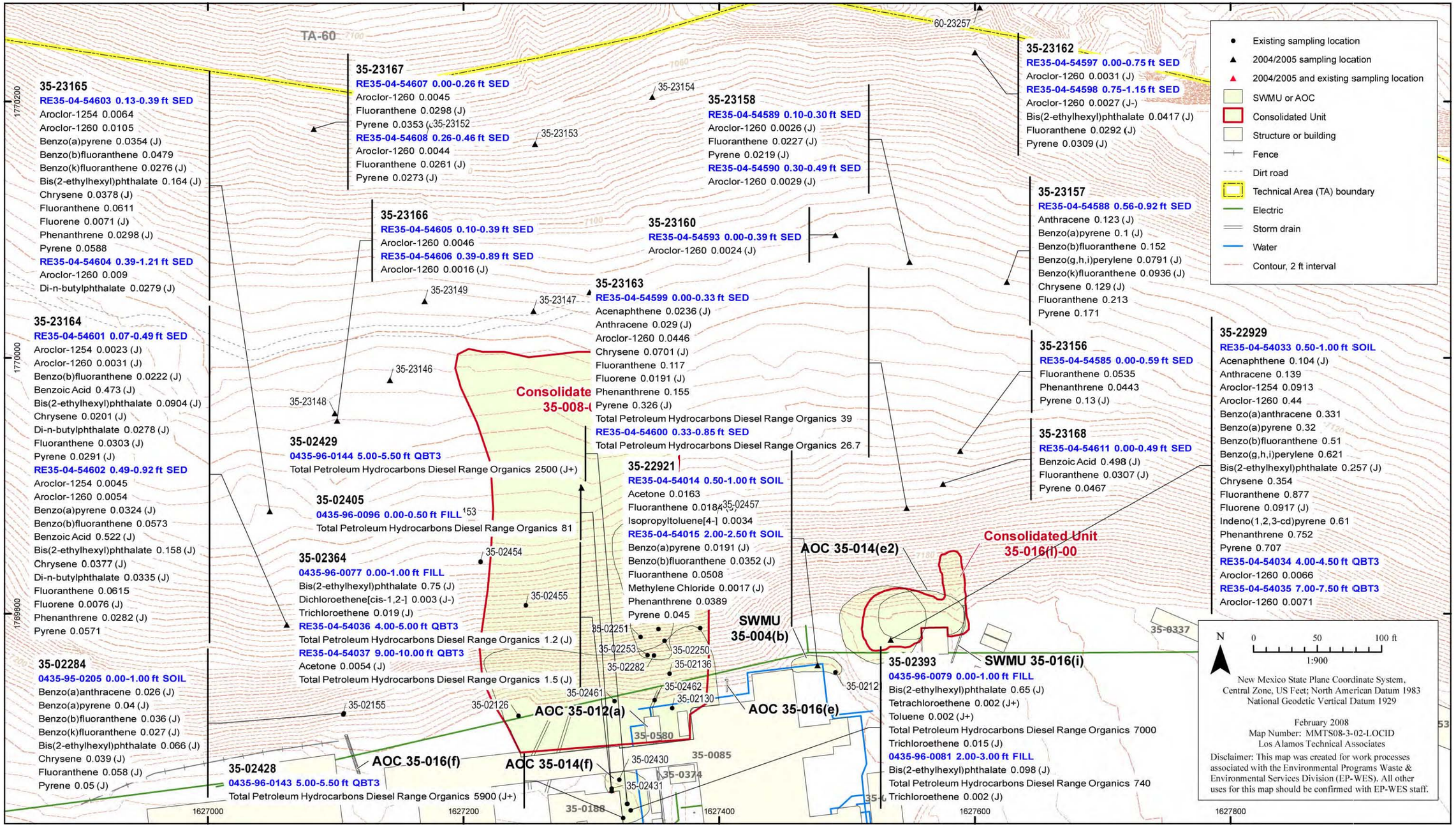


Figure F-5.2-8 Mortandad Slope Area A organic COPCs detected in all media (2 of 2)

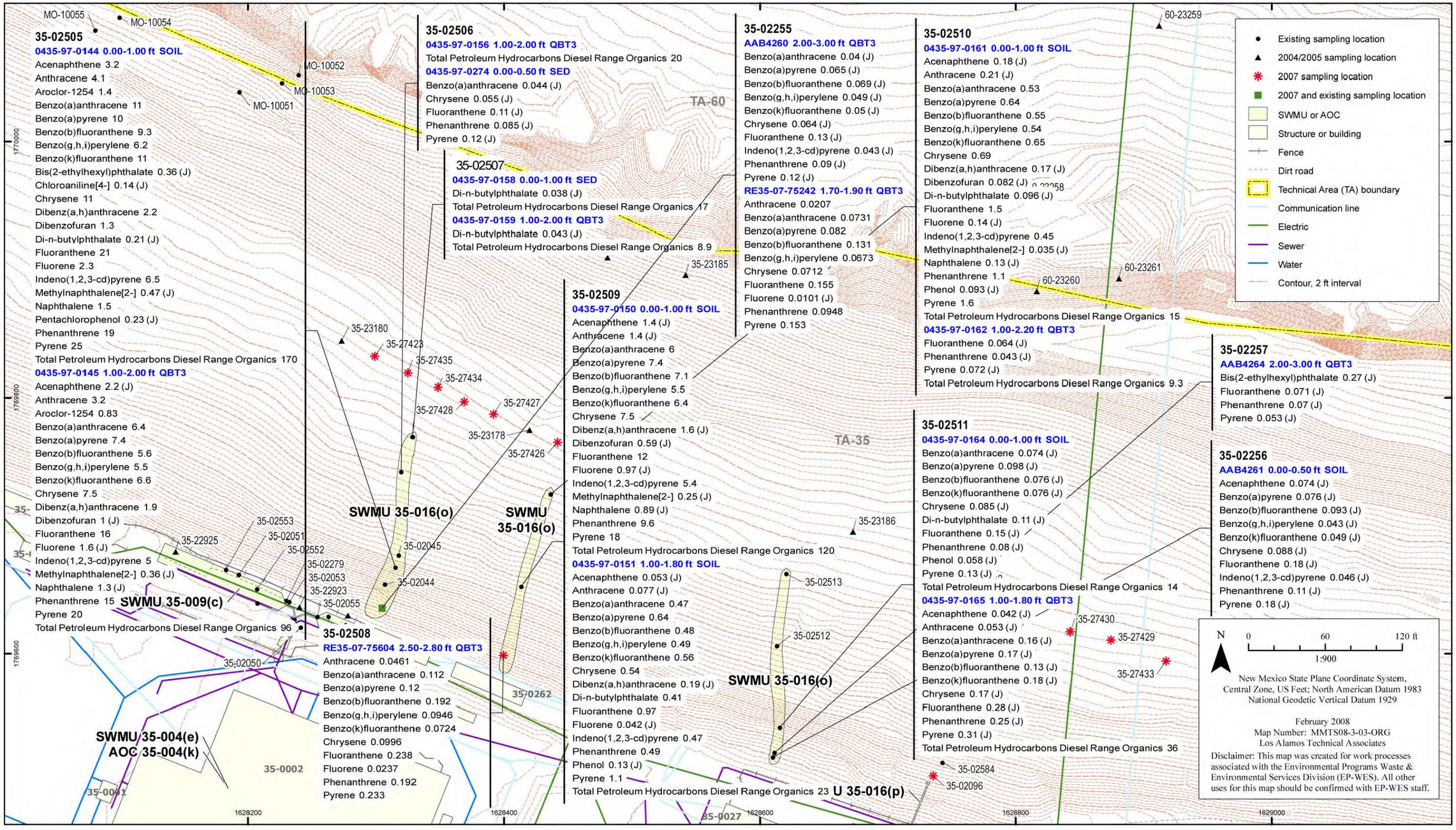


Figure F-5.2-9 Mortandad Slope Area B organic COPCs detected in all media (1 of 3)

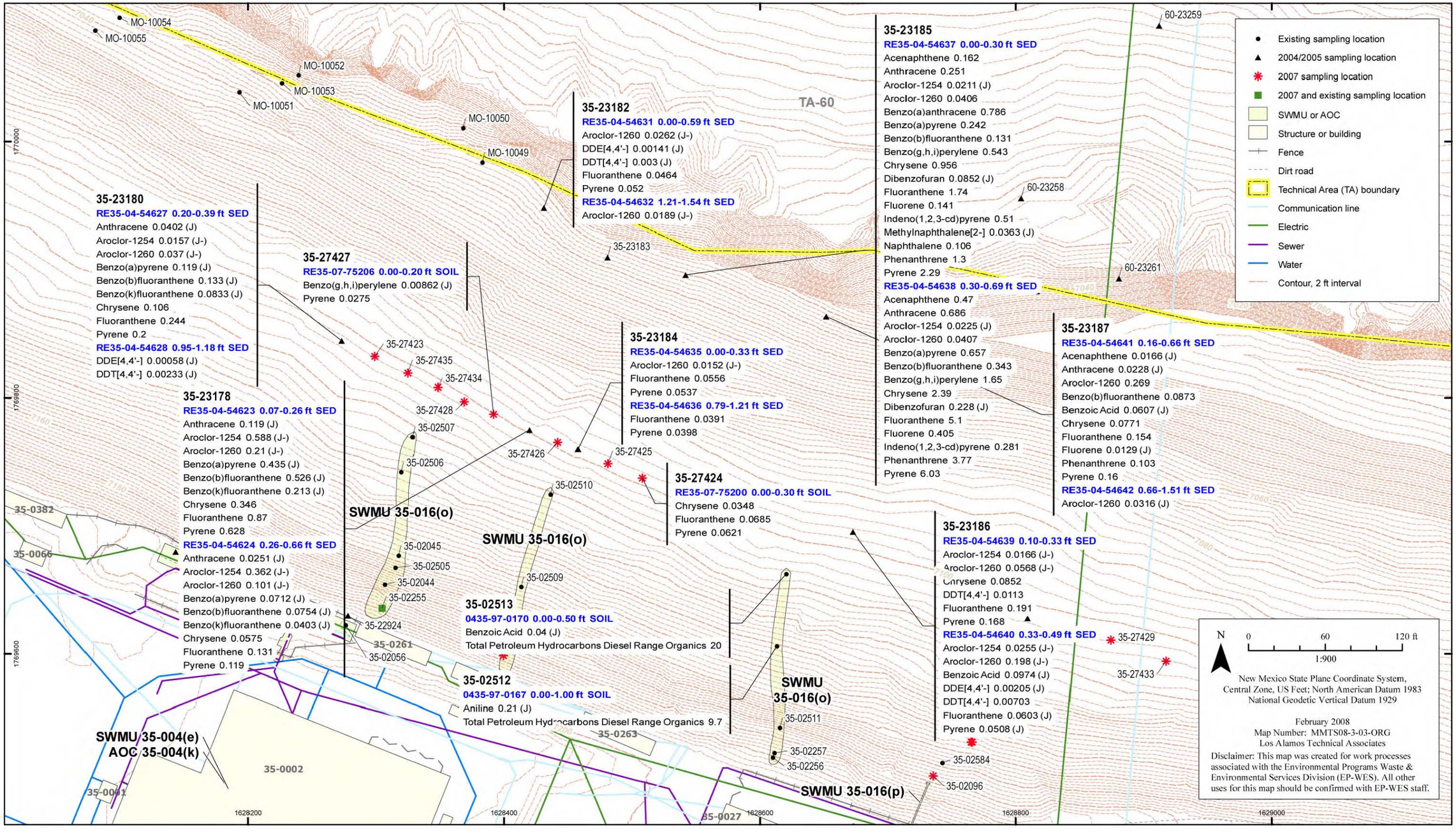


Figure F-5.2-9 Mortandad Slope Area B organic COPCs detected in all media (2 of 3)

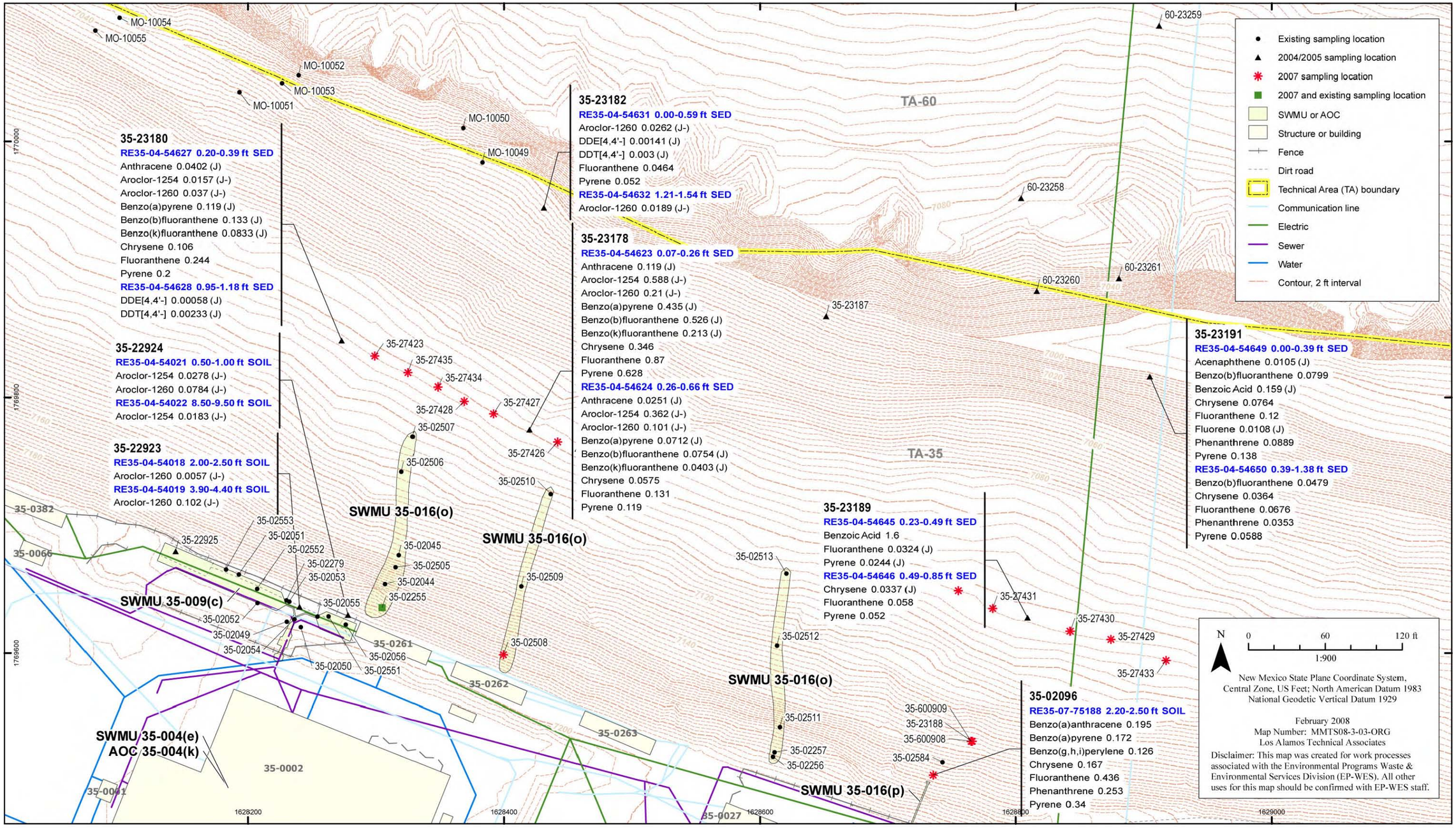


Figure F-5.2-9 Mortandad Slope Area B organic COPCs detected in all media (3 of 3)

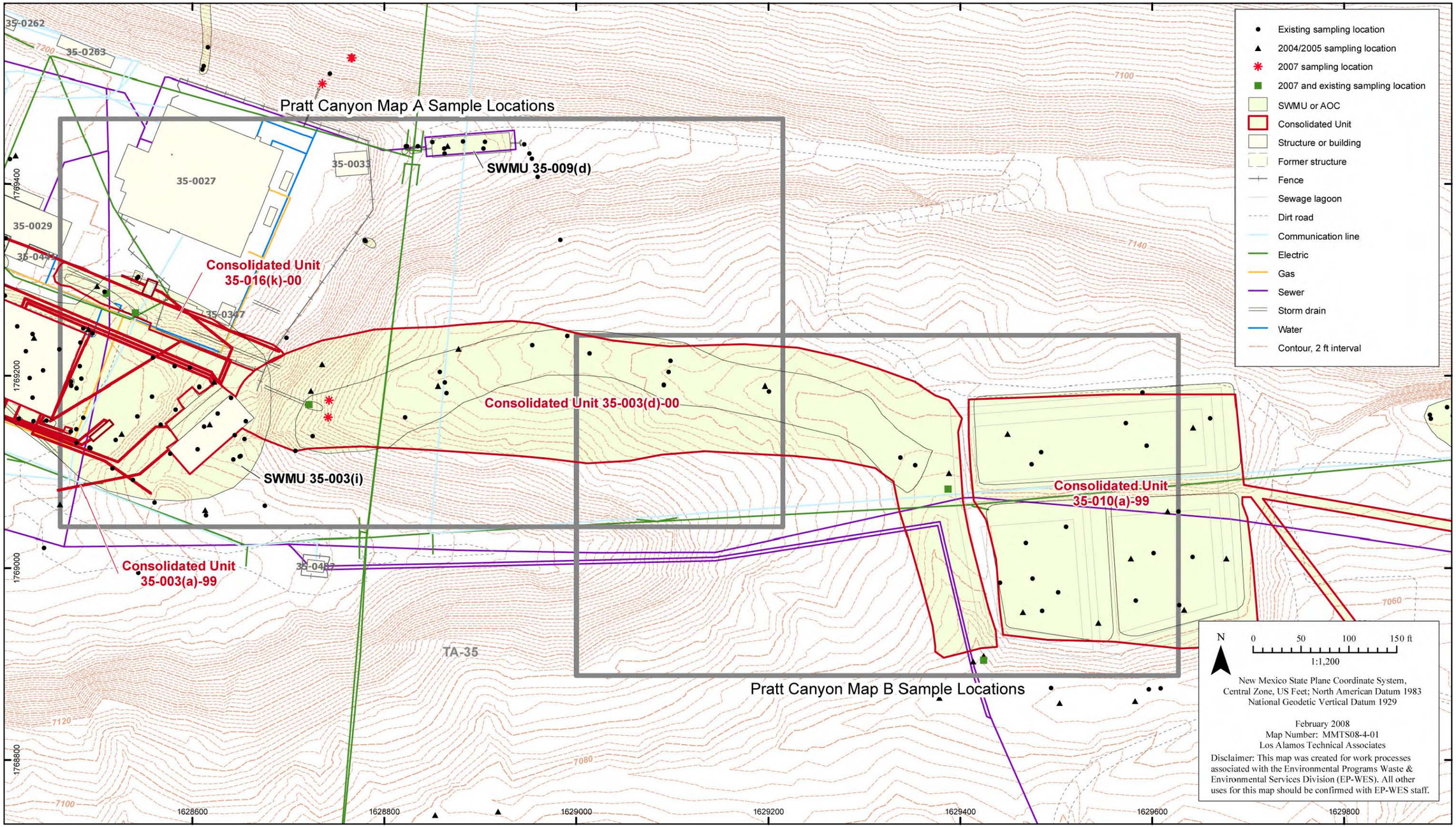


Figure F-6.2-1 Index map of the Pratt Canyon Subarea

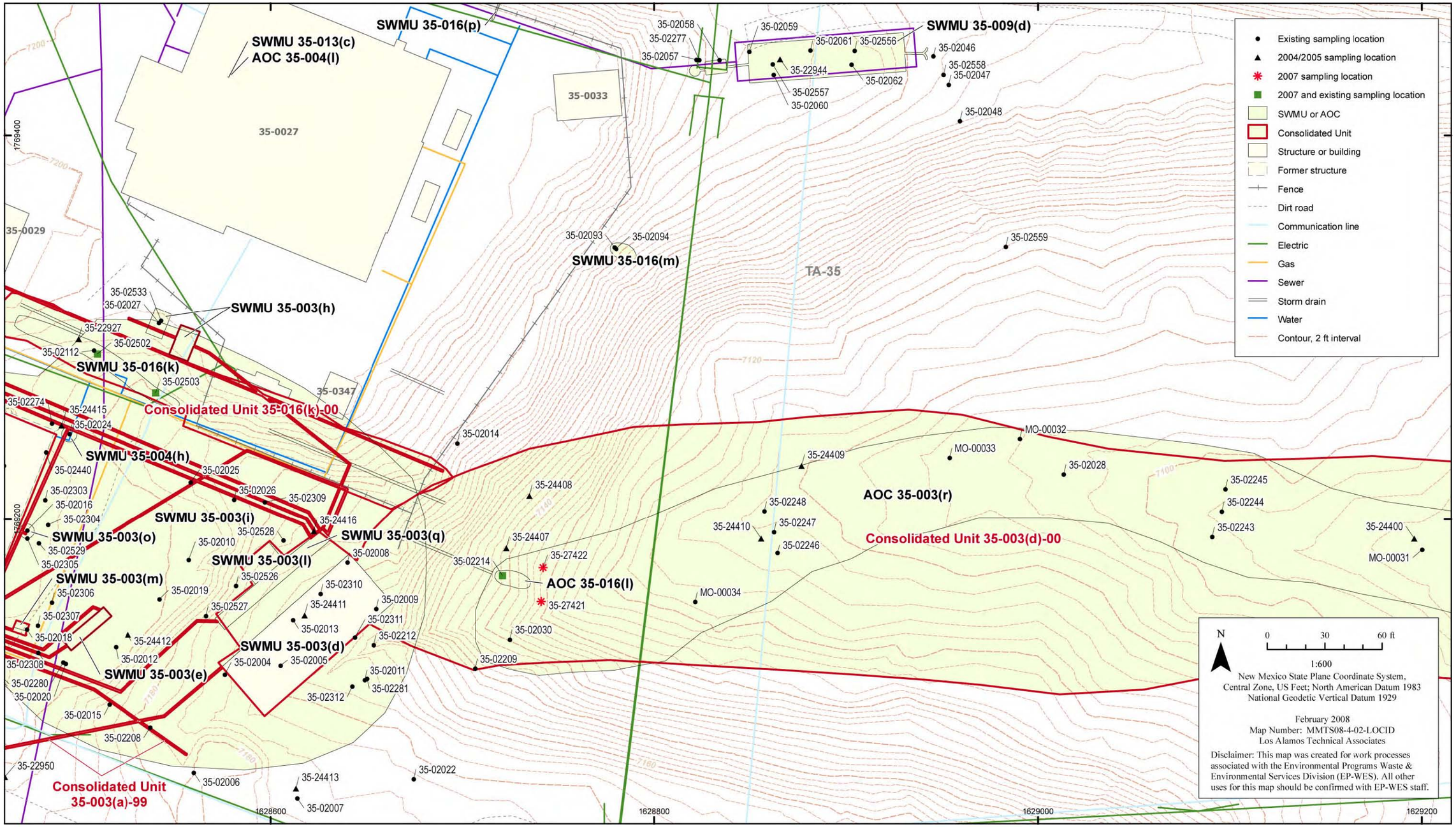


Figure F-6.2-2 Pratt Canyon Area A sampling locations

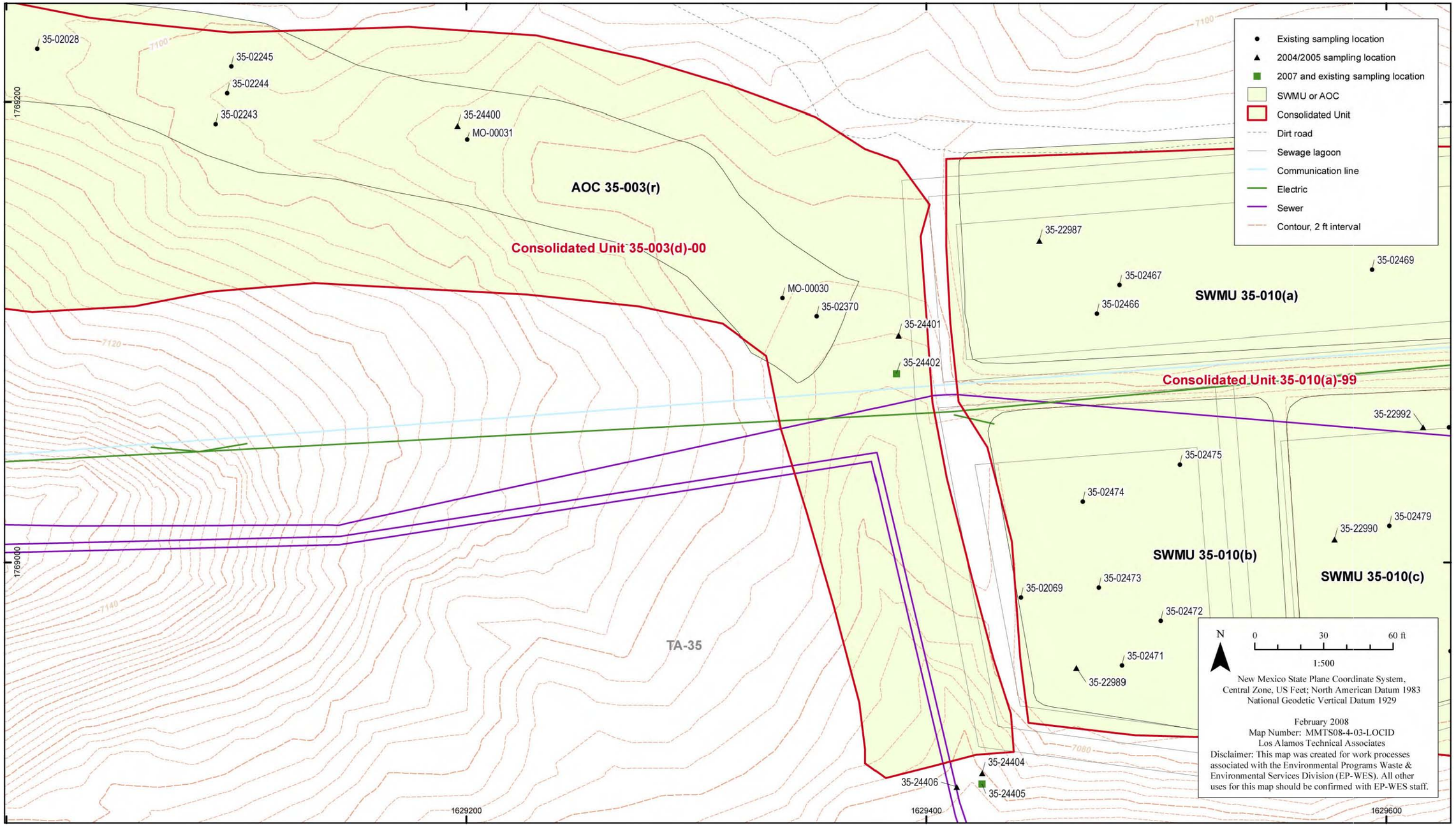


Figure F-6.2-3 Pratt Canyon Area B sampling locations

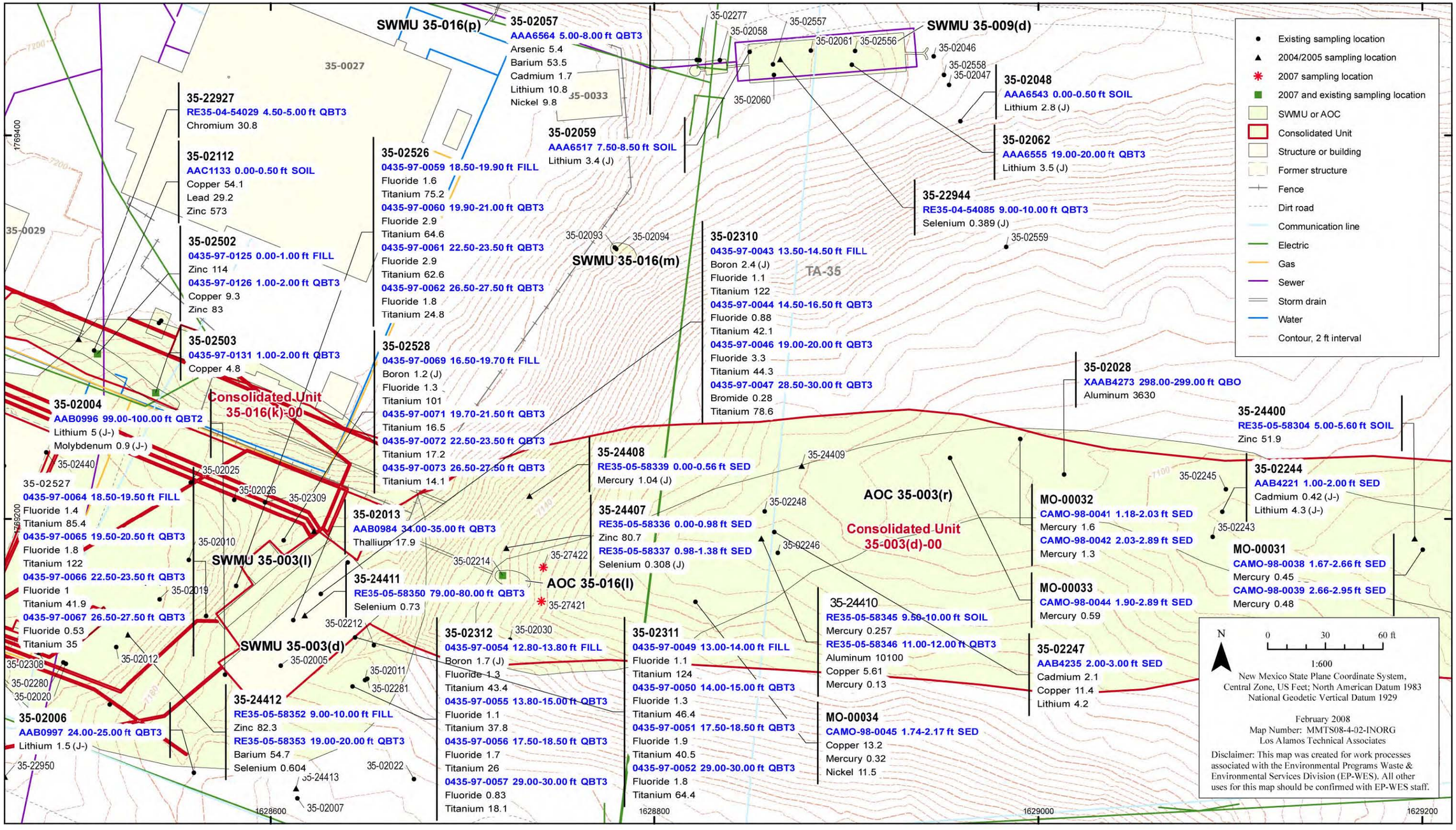


Figure F-6.2-4 Pratt Canyon Area A inorganic COPCs detected above background values in all media

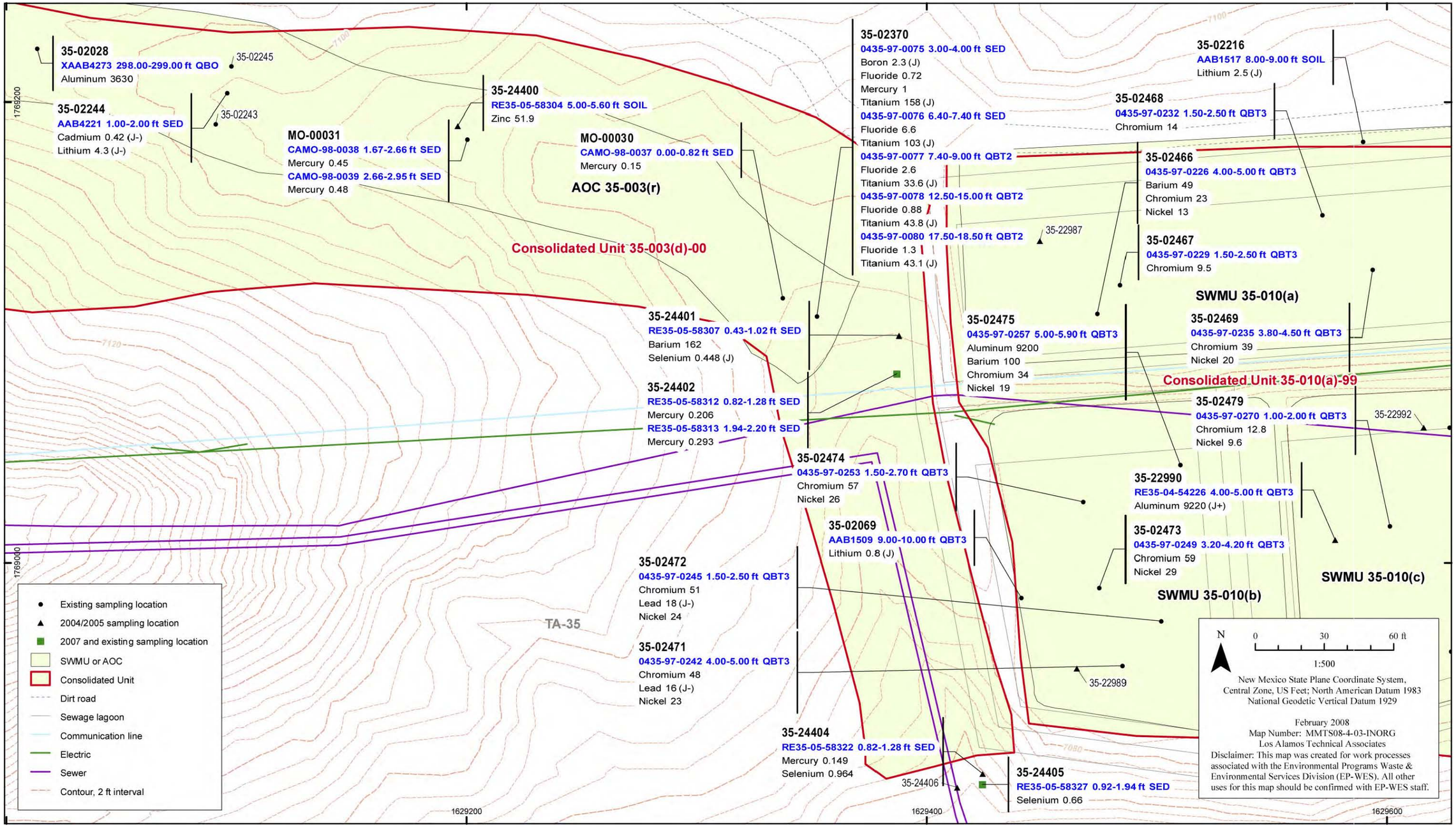
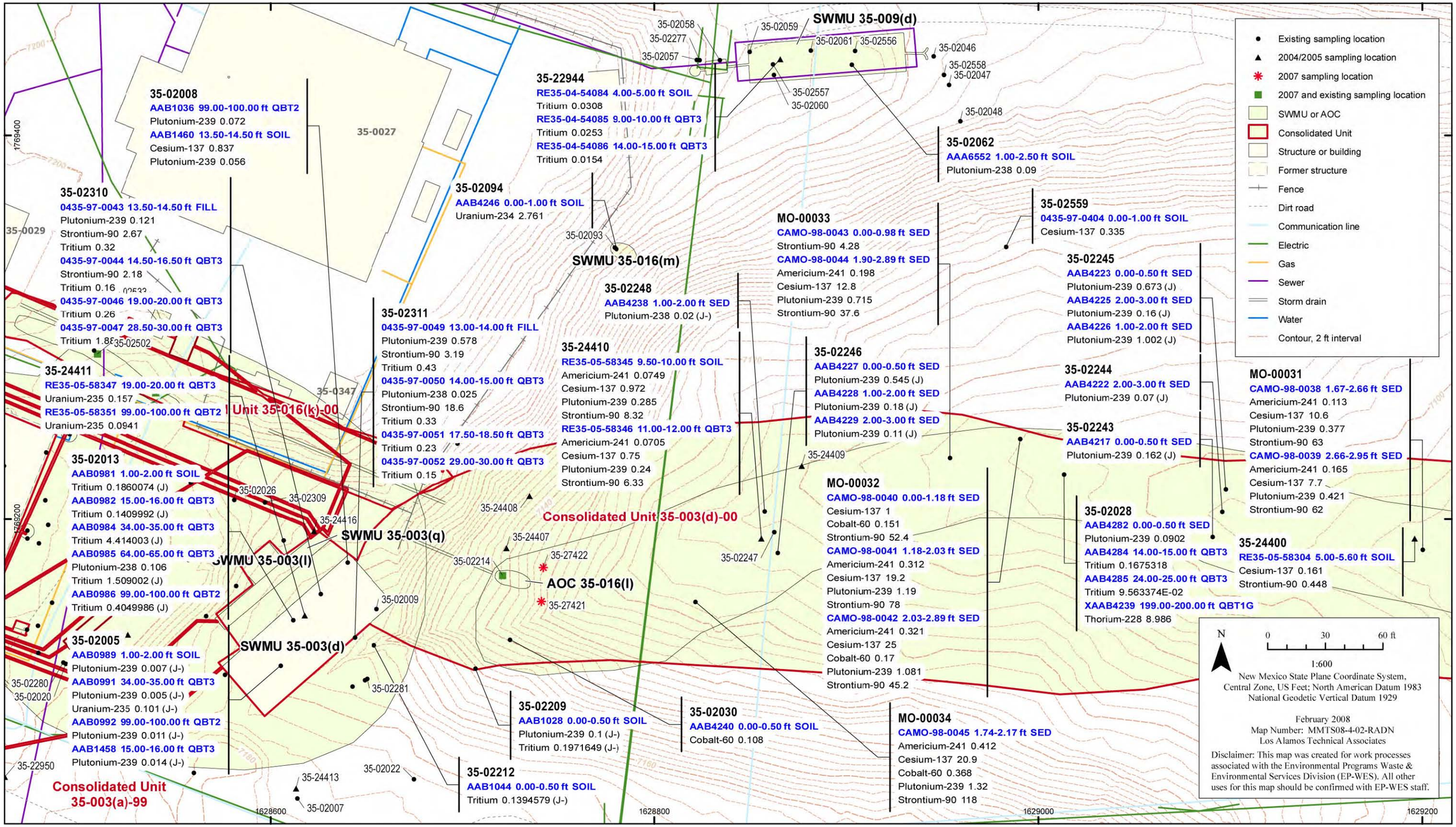


Figure F-6.2-5 Pratt Canyon Area B inorganic COPCs detected above background values in all media



Figue F-6.2-6 Pratt Canyon Area A radionuclide COPCs detected above background/fallout values in all media

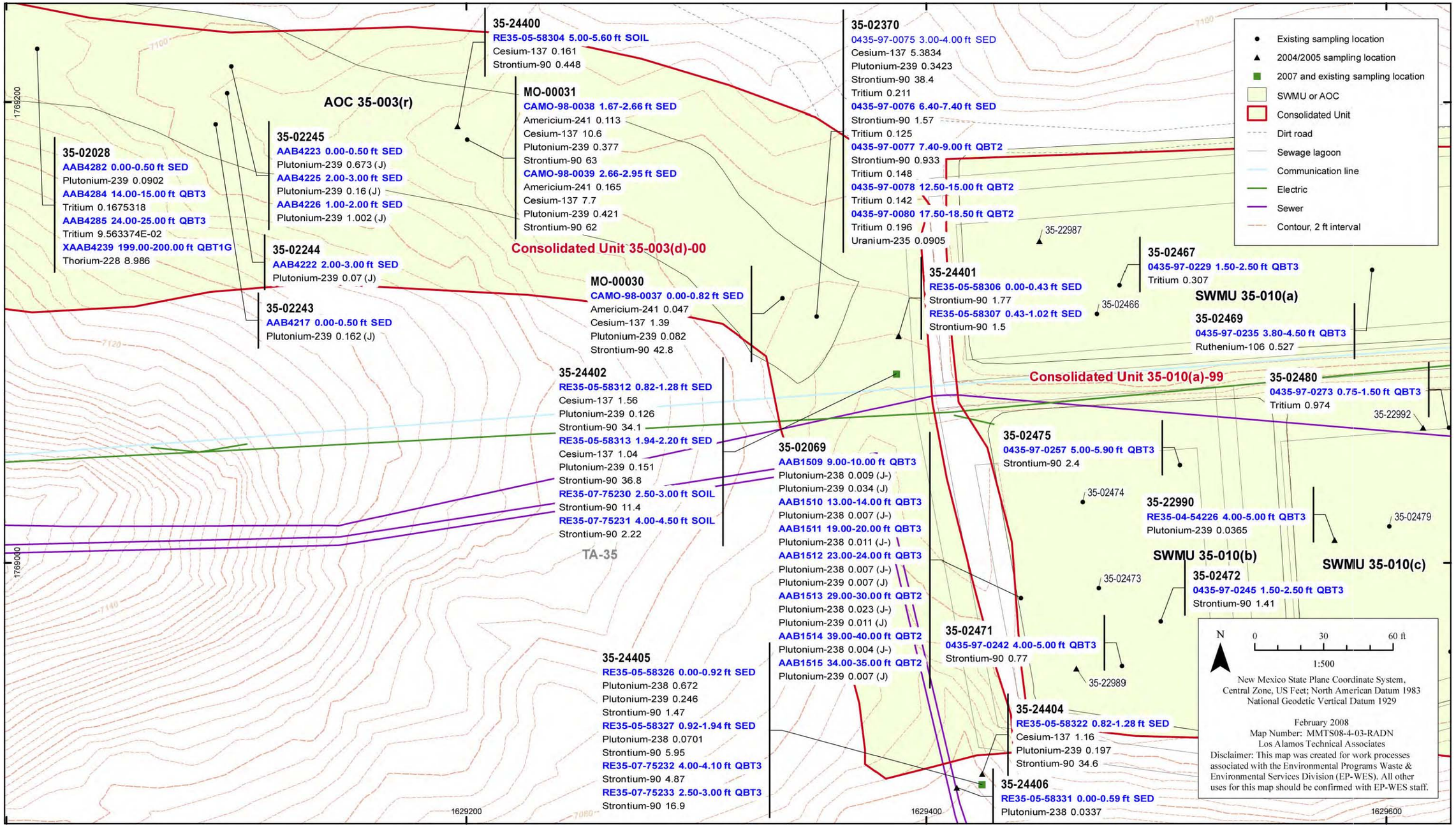


Figure F-6.2-7 Pratt Canyon Area B radionuclide COPCs detected above background values in all media

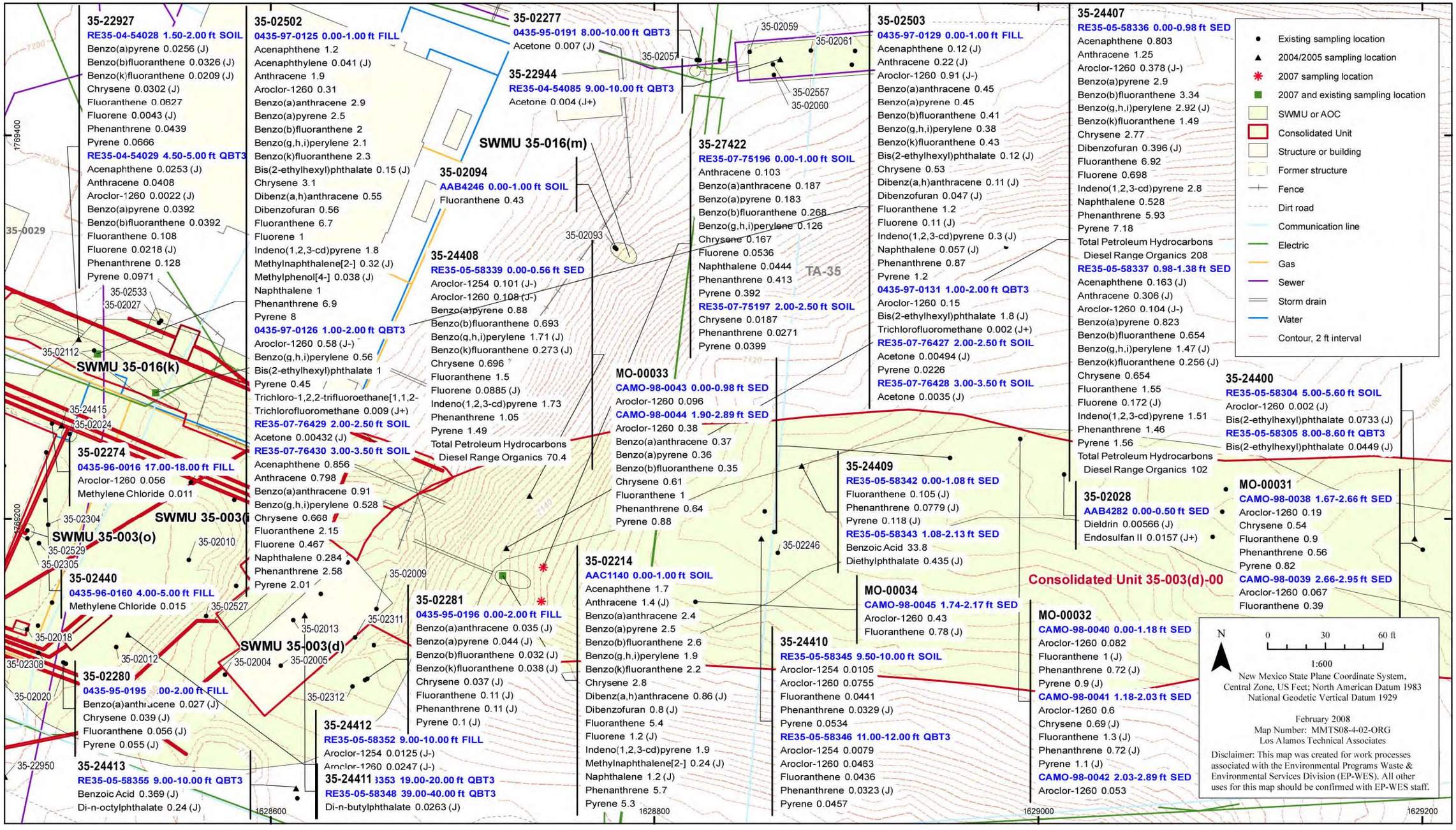


Figure F-6.2-8 Pratt Canyon Area A organic COPCs detected above background values in all media

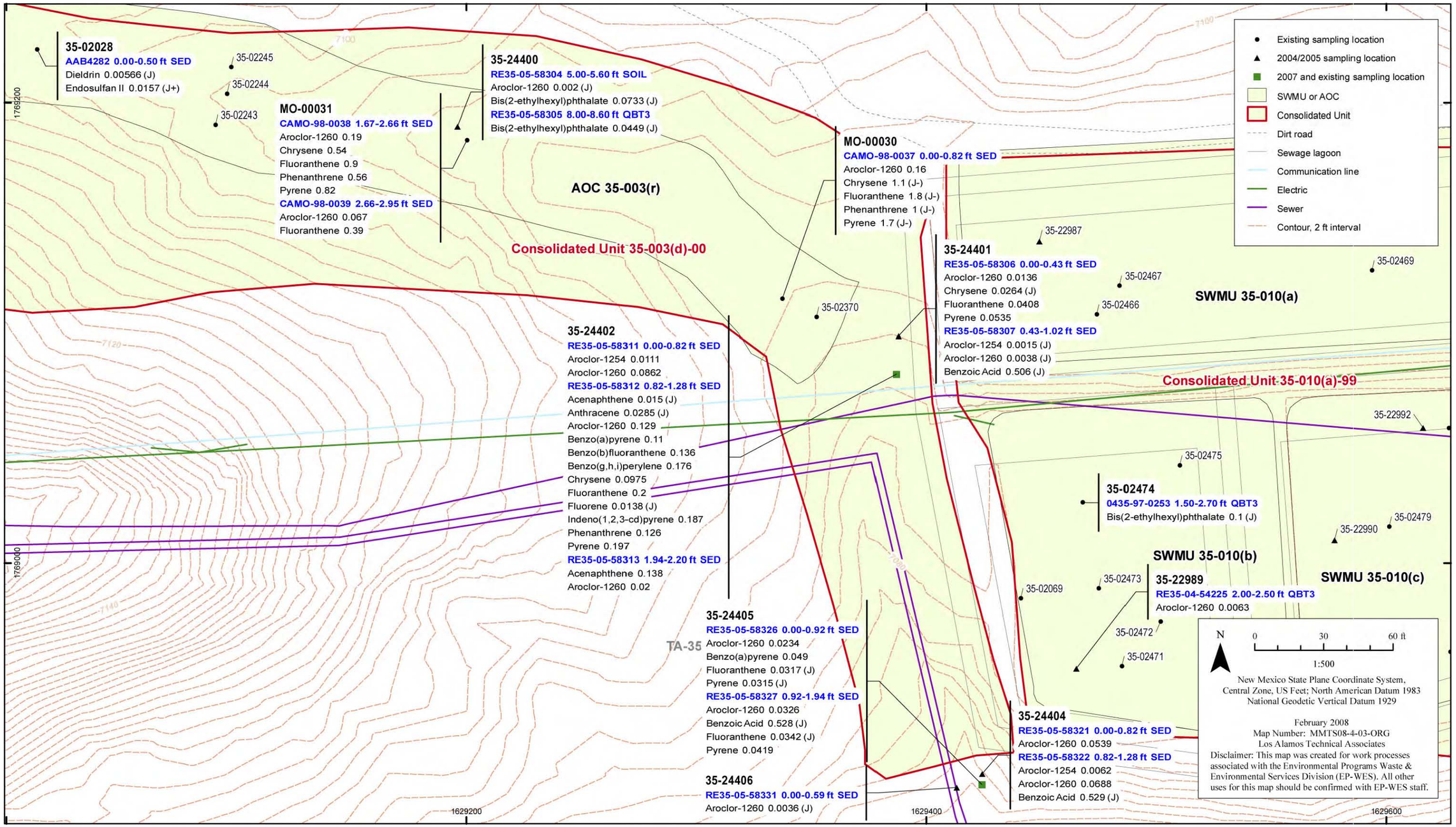


Figure F-6.2-9 Pratt Canyon Area B organic COPCs detected in all media

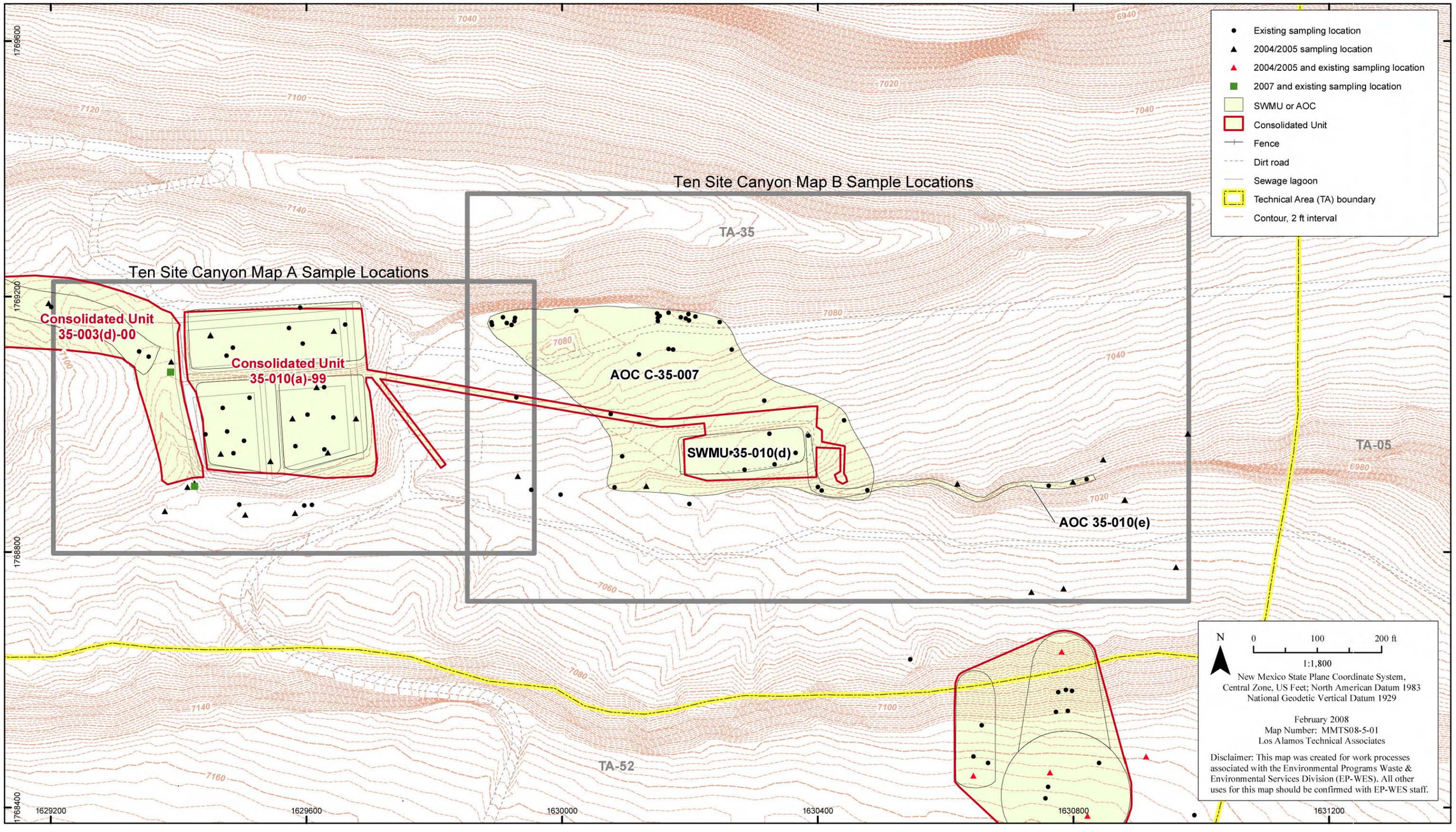


Figure F-7.2-1 Index map of the Ten Site Canyon Subarea

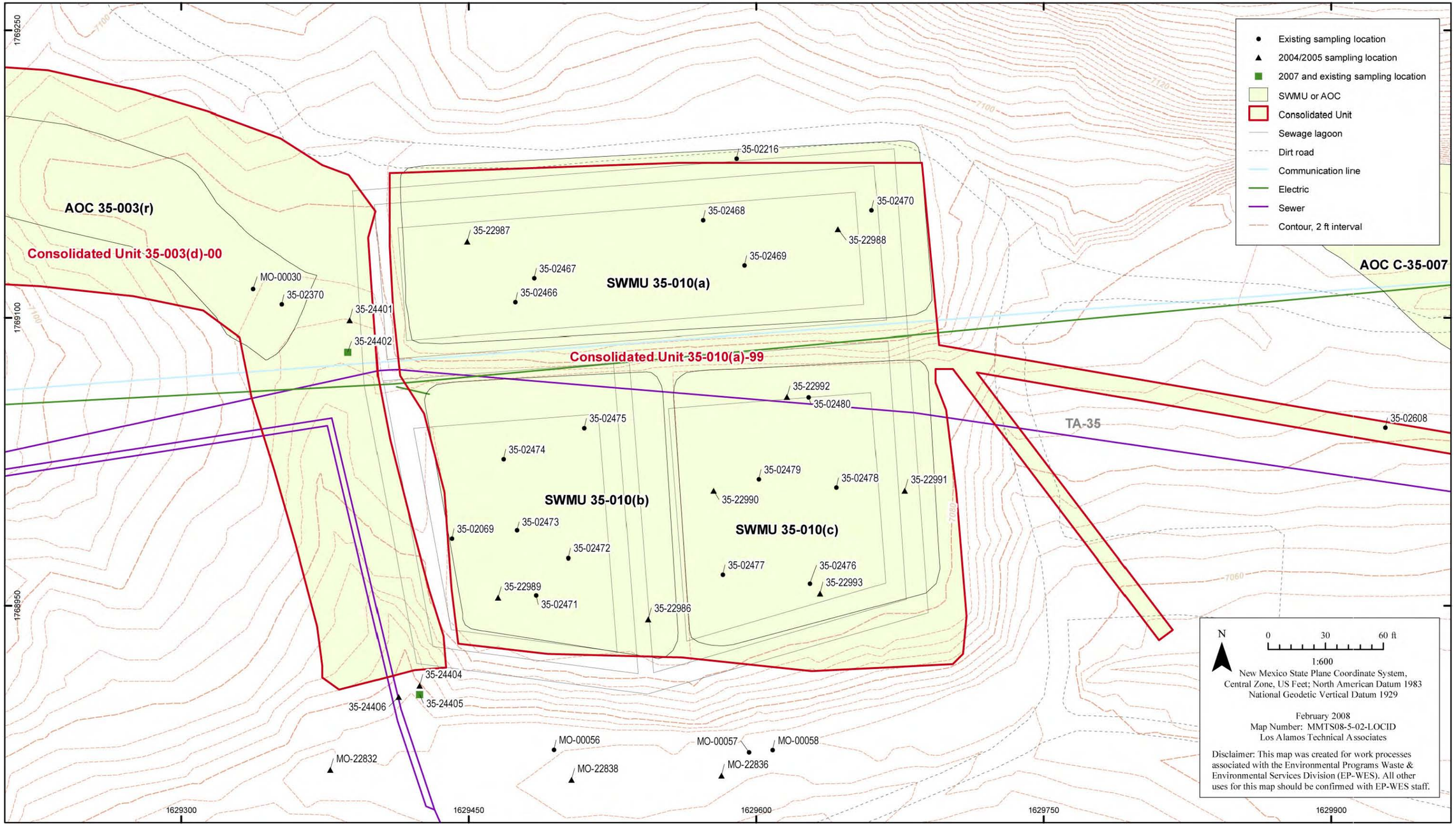


Figure F-7.2-2 Ten Site Canyon Area A sample locations

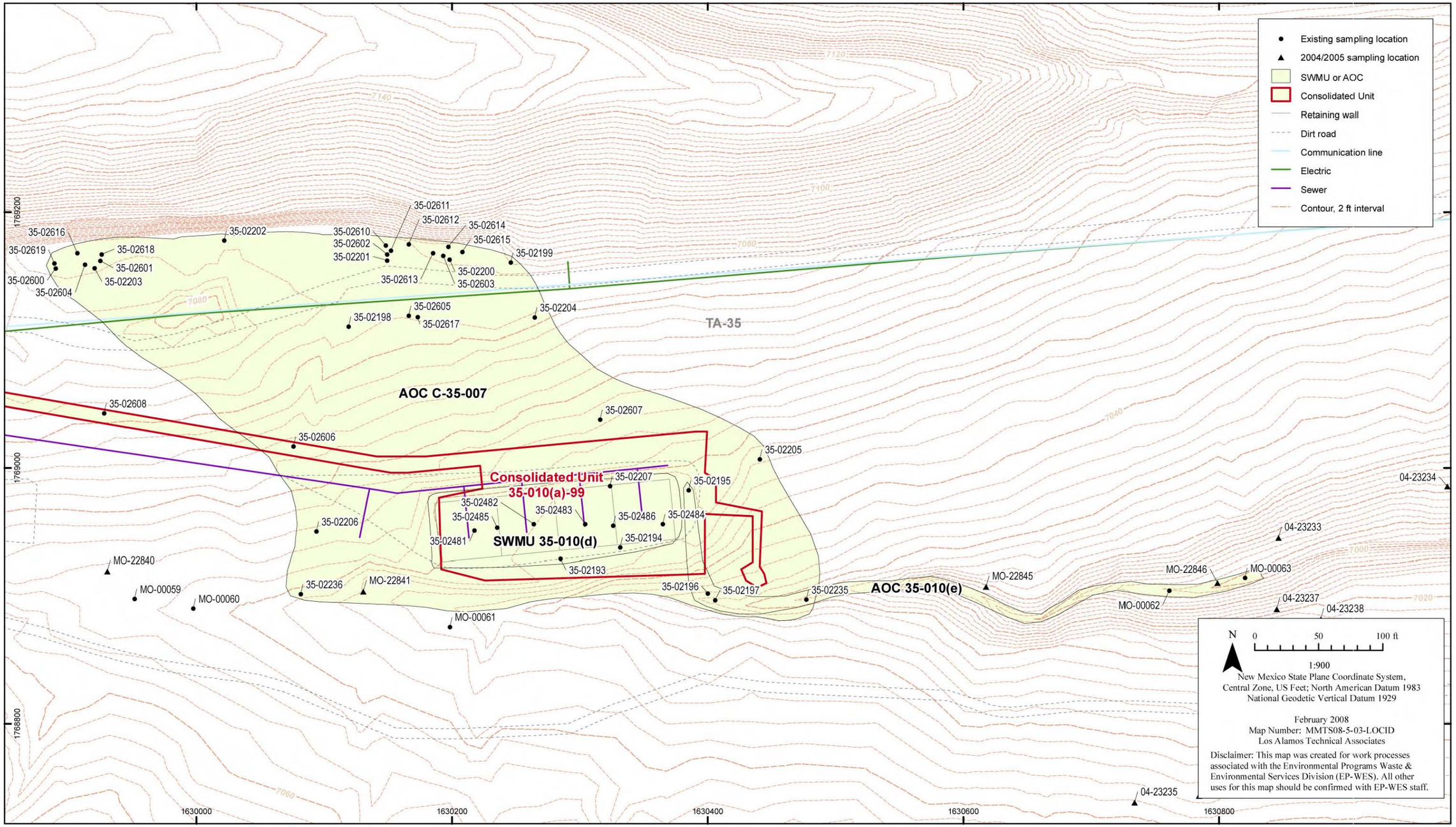


Figure F-7.2-3 Ten Site Canyon Area B sampling locations

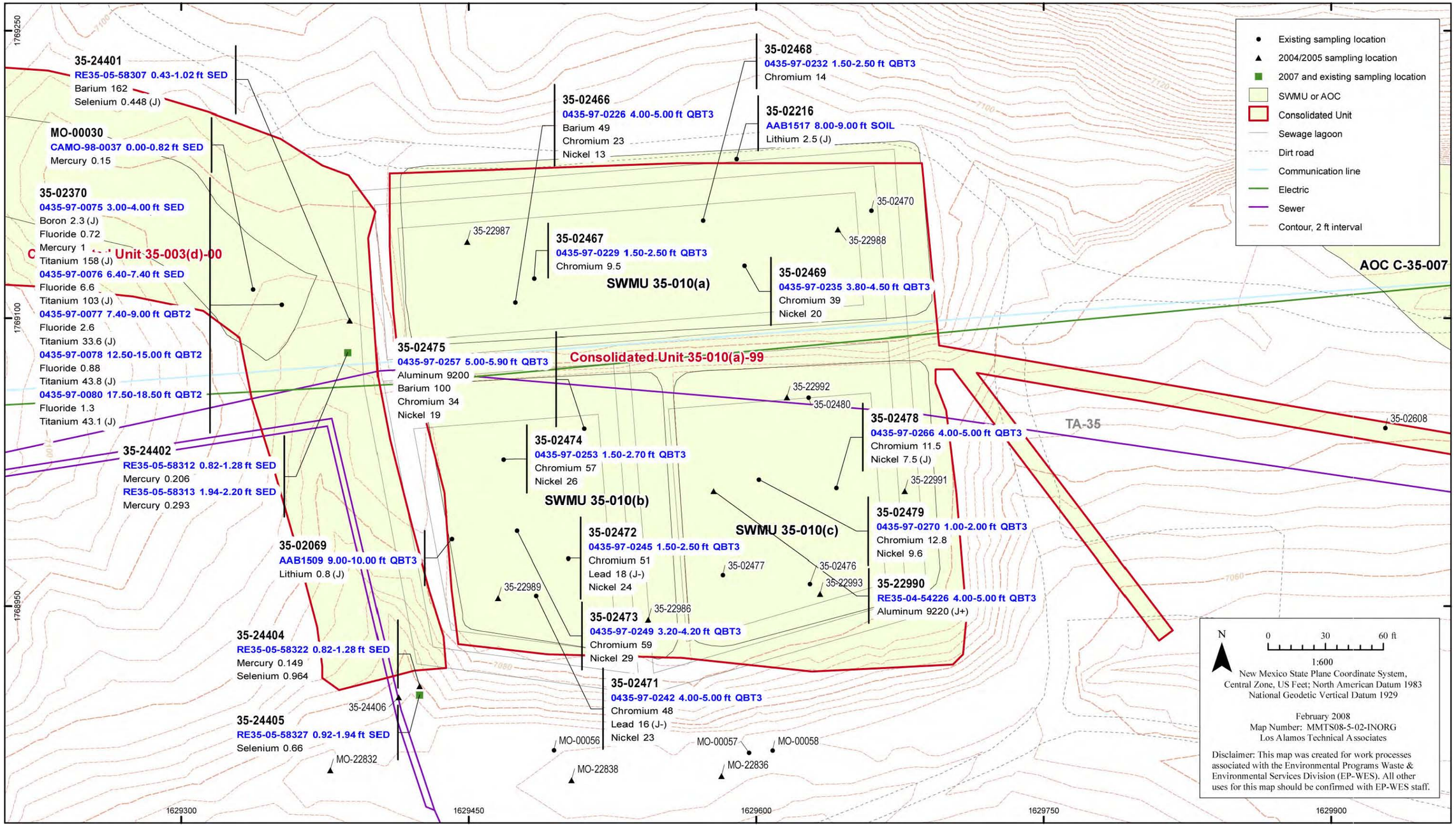


Figure F-7.2-4 Ten Site Canyon Area A inorganic COPCs detected above background in all media

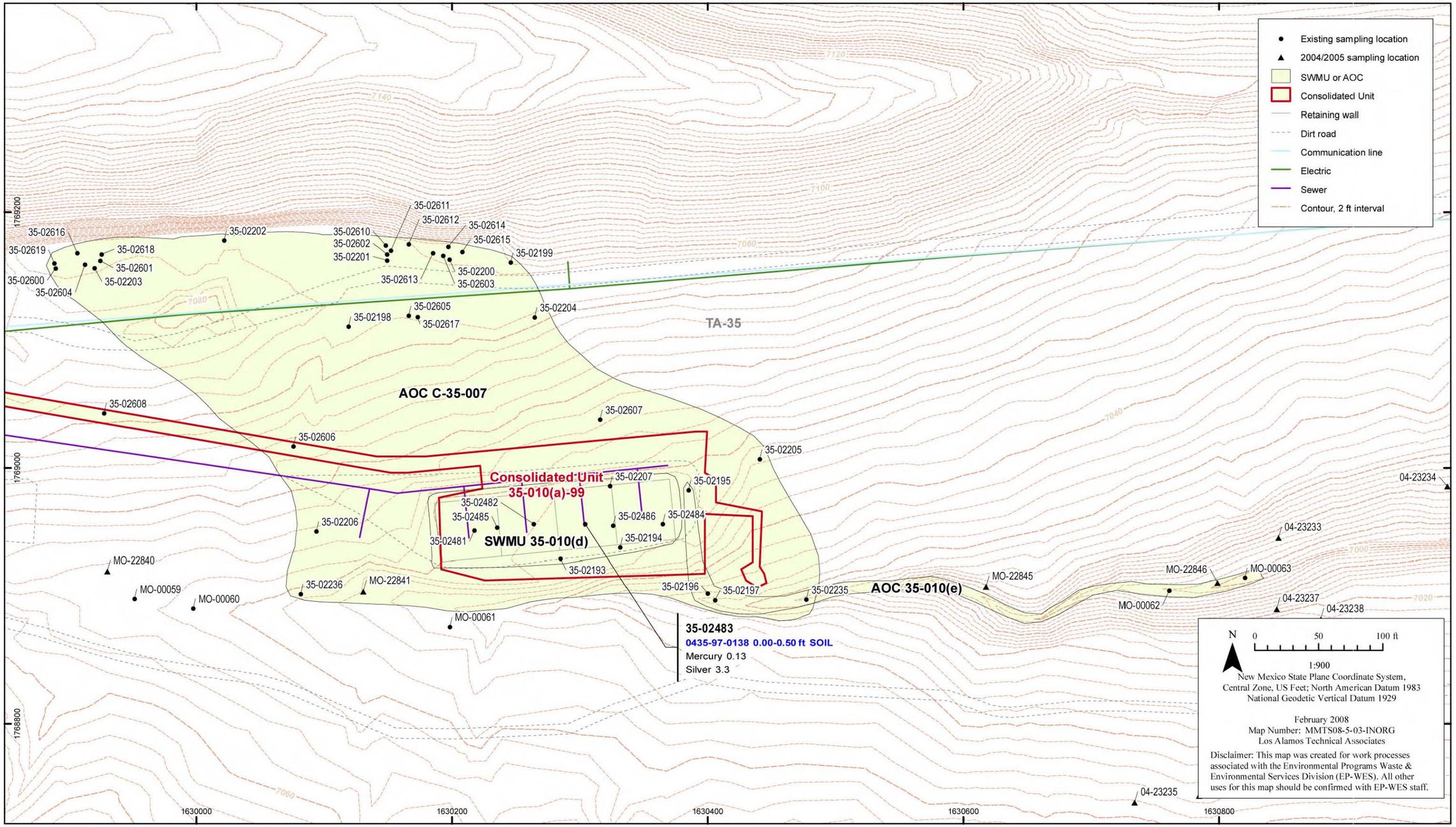


Figure F-7.2-5 Ten Site Canyon Area B inorganic COPCs detected above background values in all media

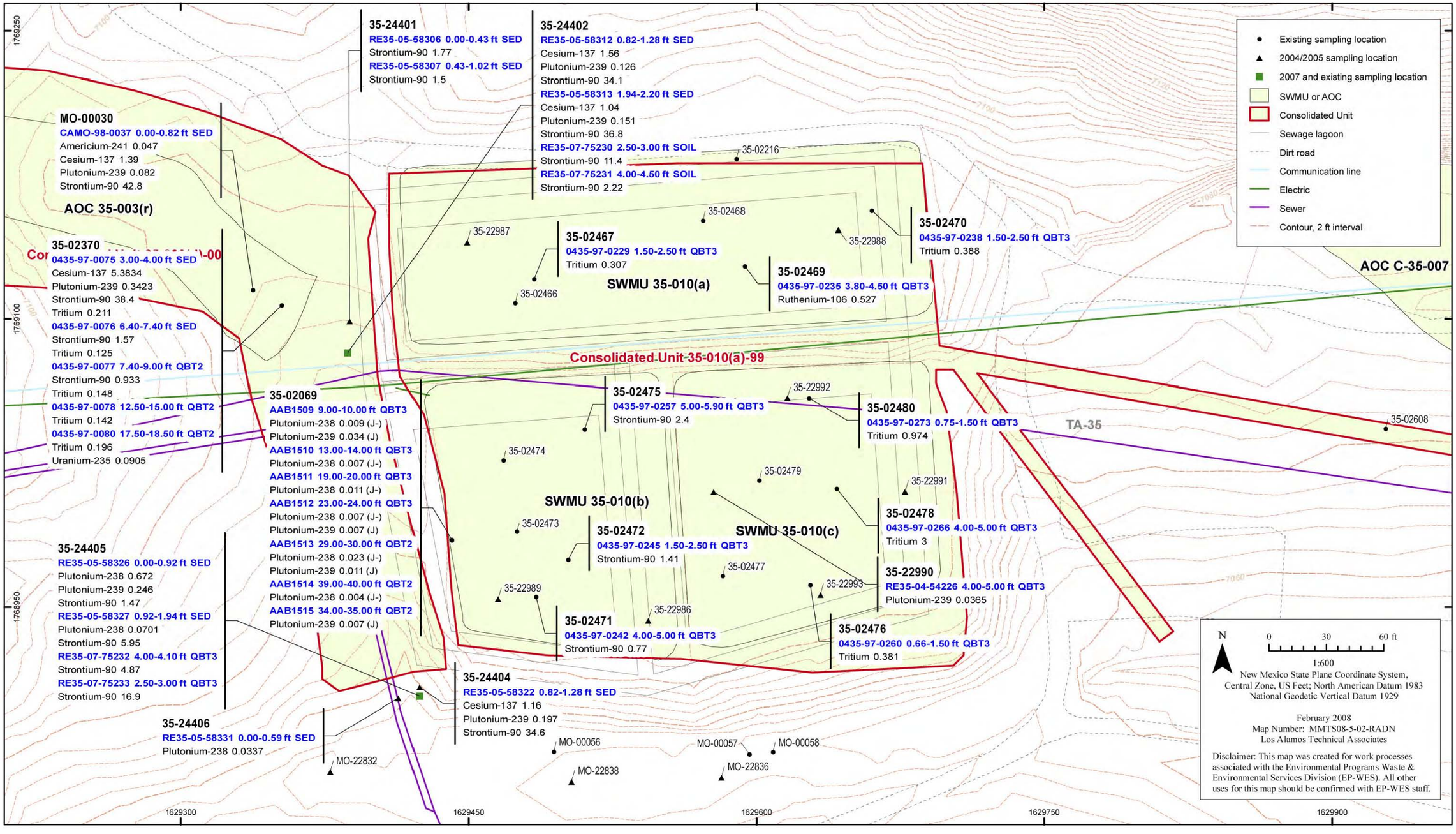


Figure F-7.2-6 Ten Site Canyon Area A radionuclide COPCs detected above background/fallout in all media

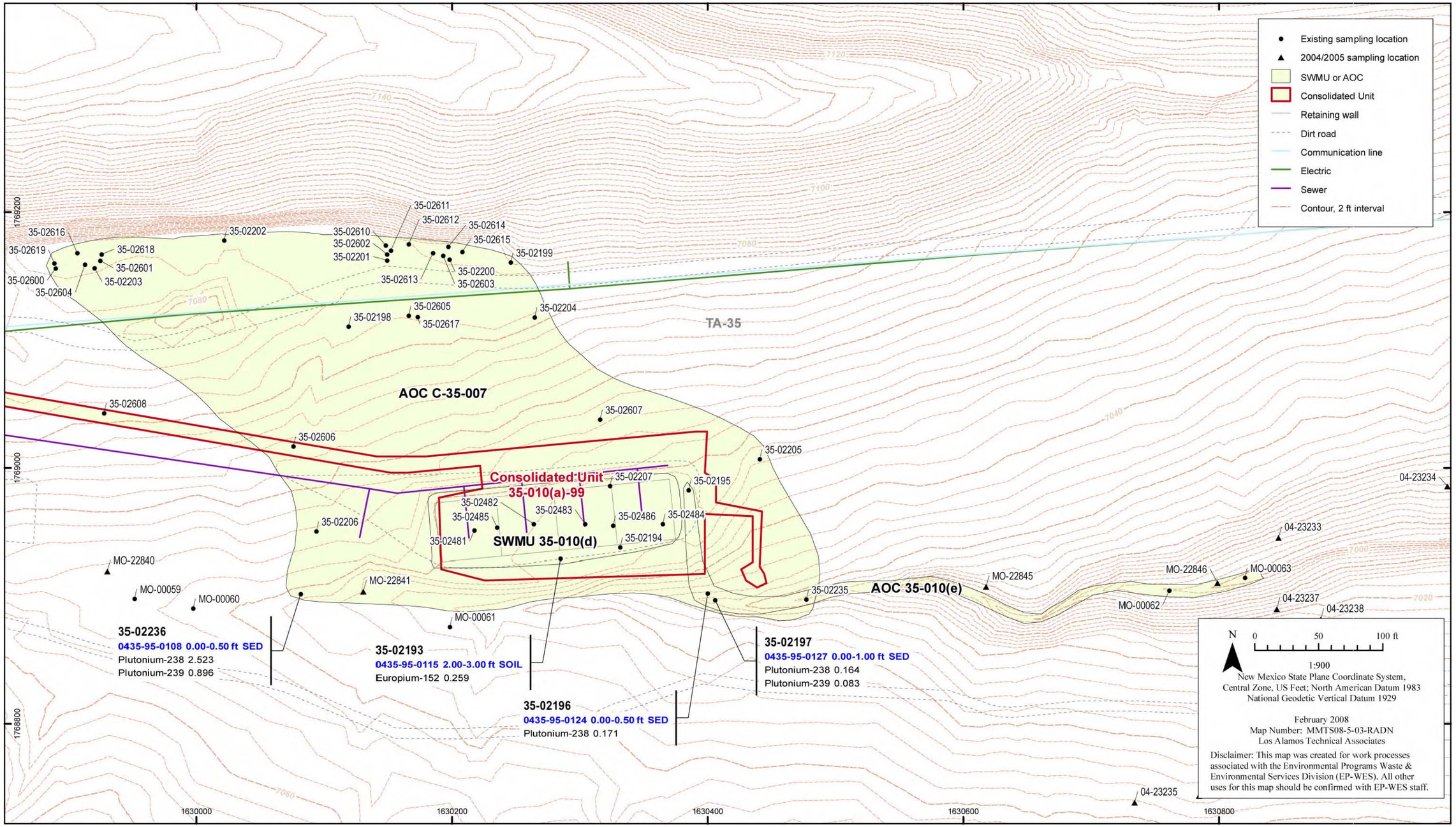


Figure F-7.2-7 Ten Site Canyon Area B radionuclide COPCs detected above background values in all media

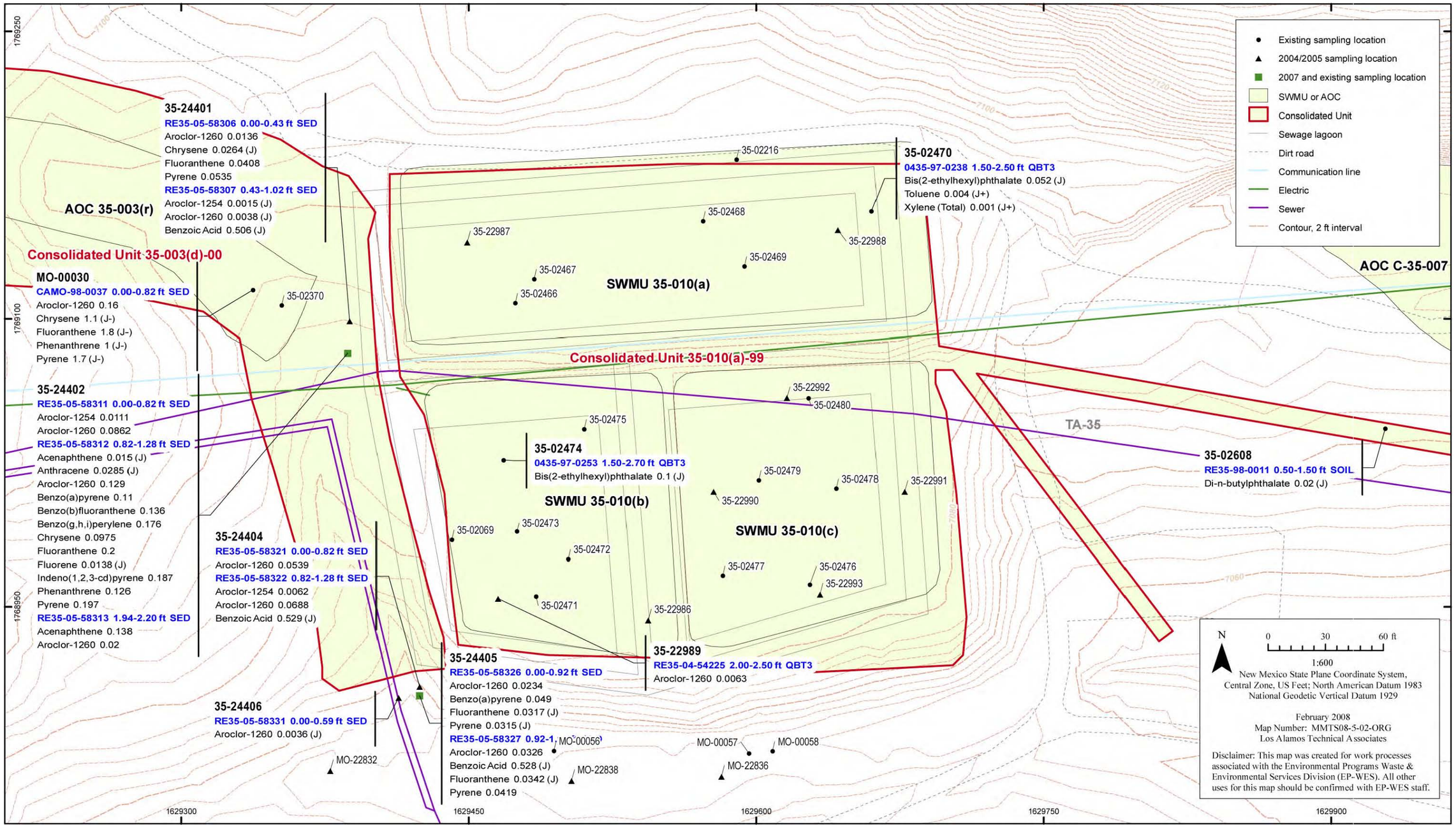


Figure F-7.2-8 Ten Site Canyon Area A organic COPCs detected in all media

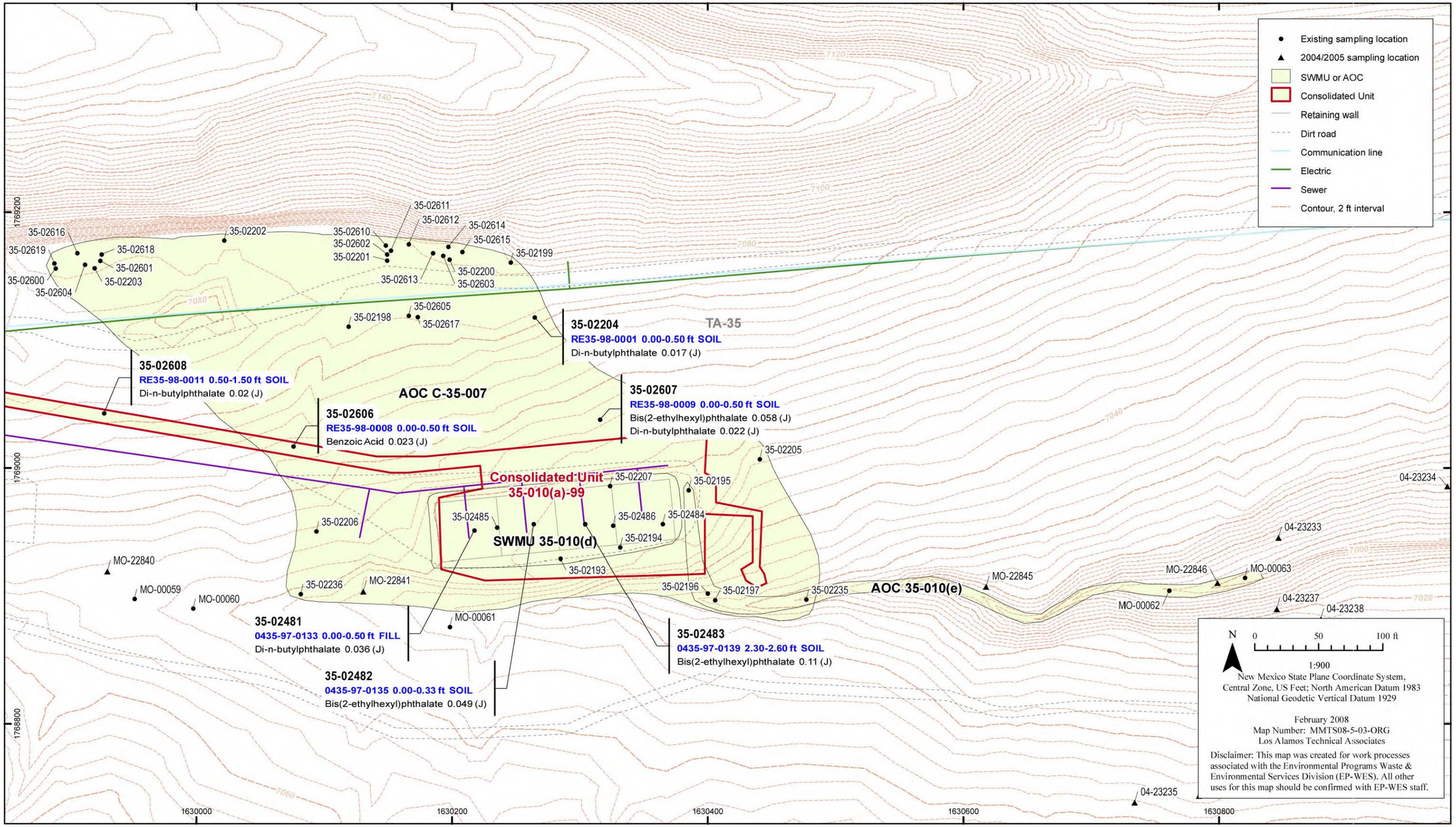


Figure F-7.2-9 Ten Site Canyon Area B organic COPCs detected in all media

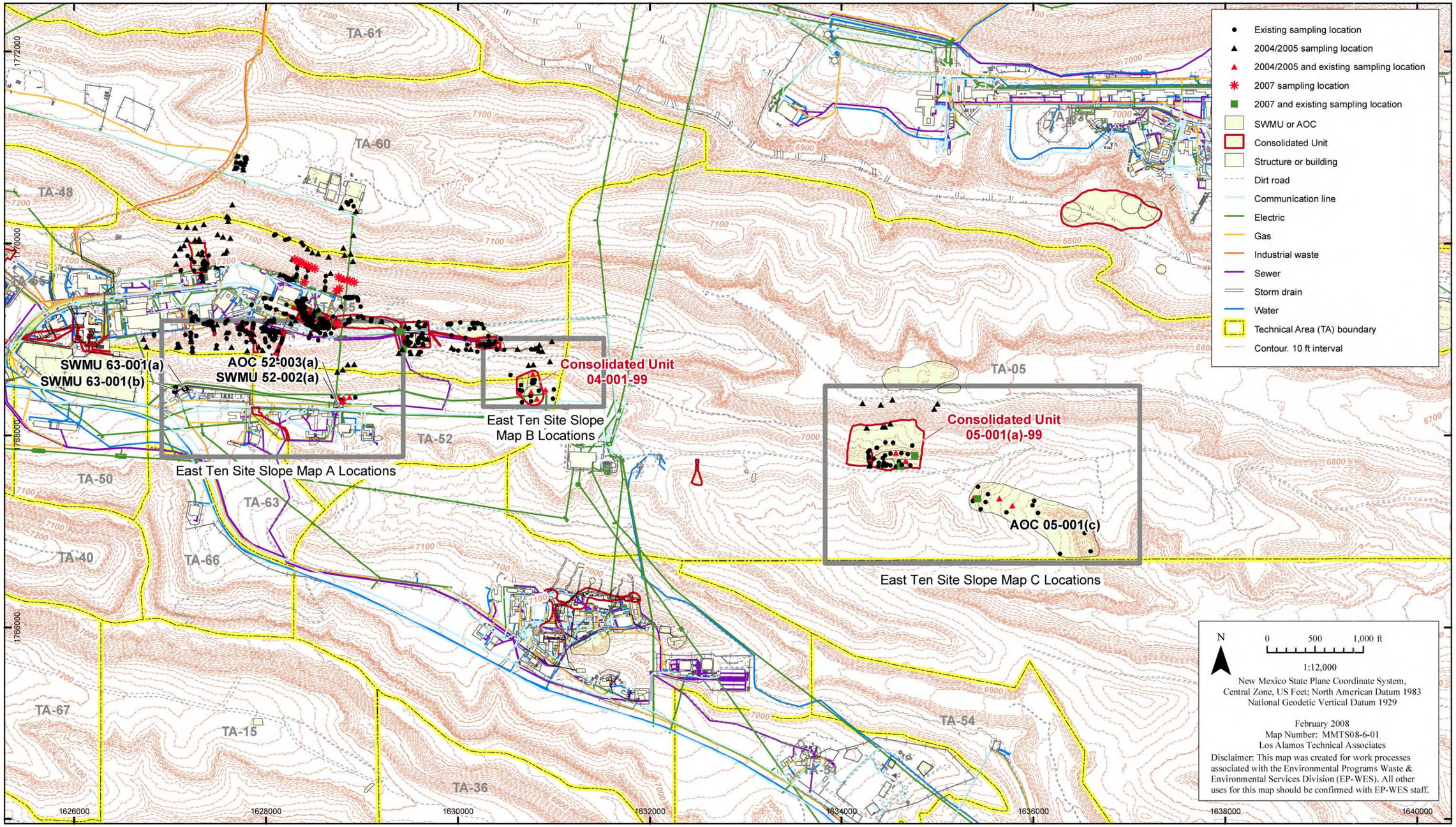


Figure F-8.2-1 Index map of the East Ten Site Slope Subarea

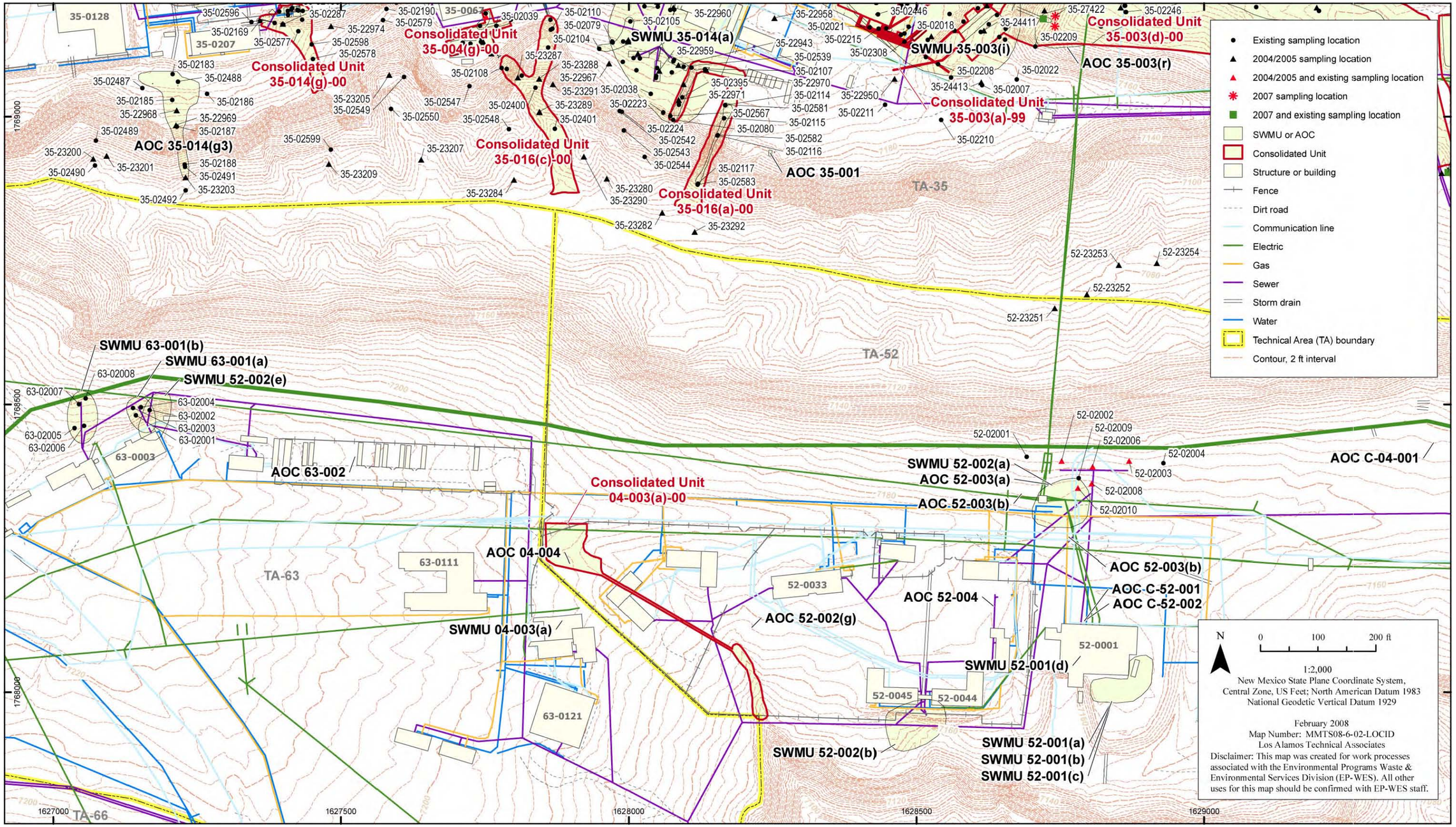


Figure F-8.2-2 East Ten Site Slope Area A sampling locations

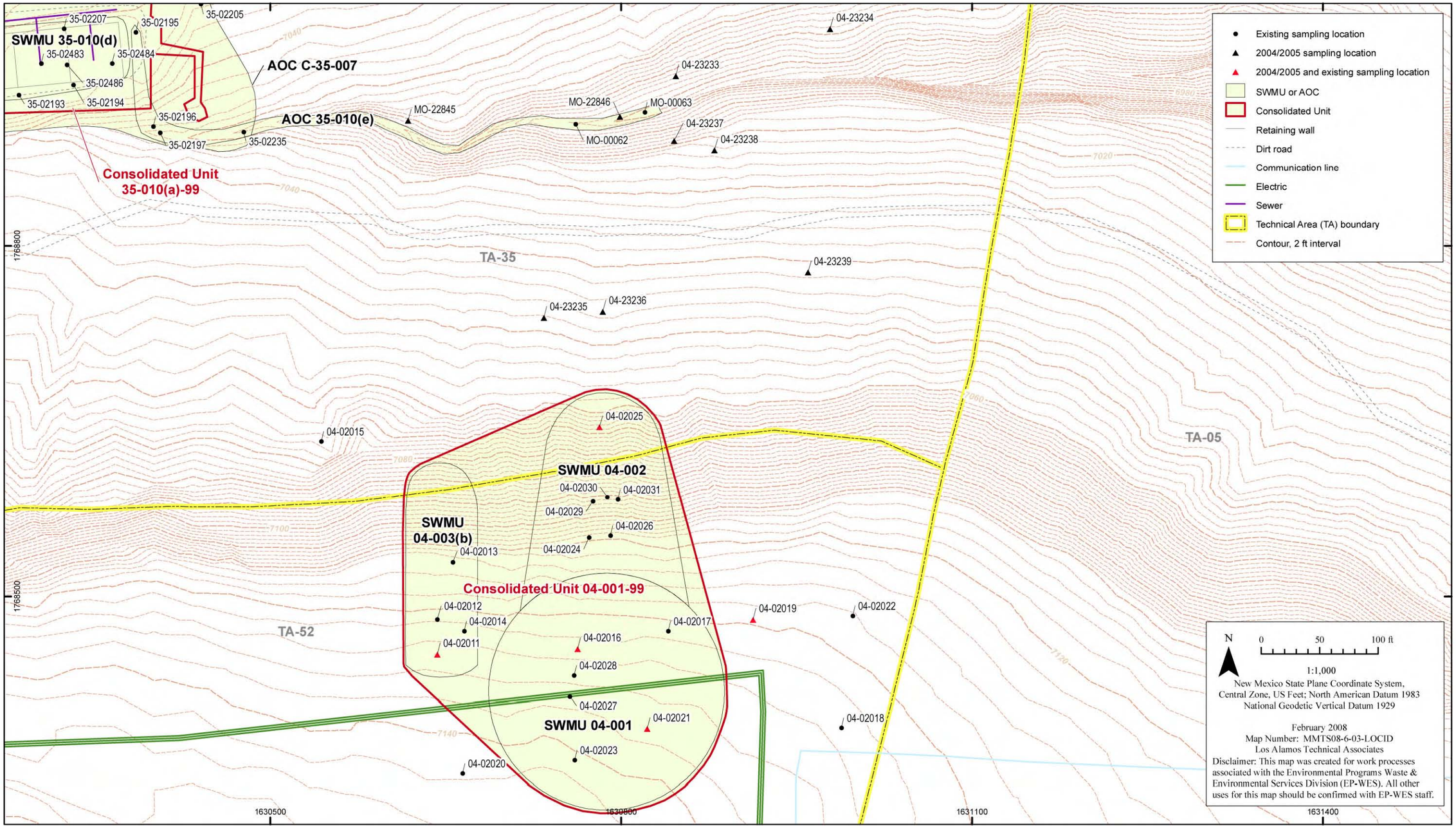


Figure F-8.2-3 East Ten Site Slope Area B sampling locations

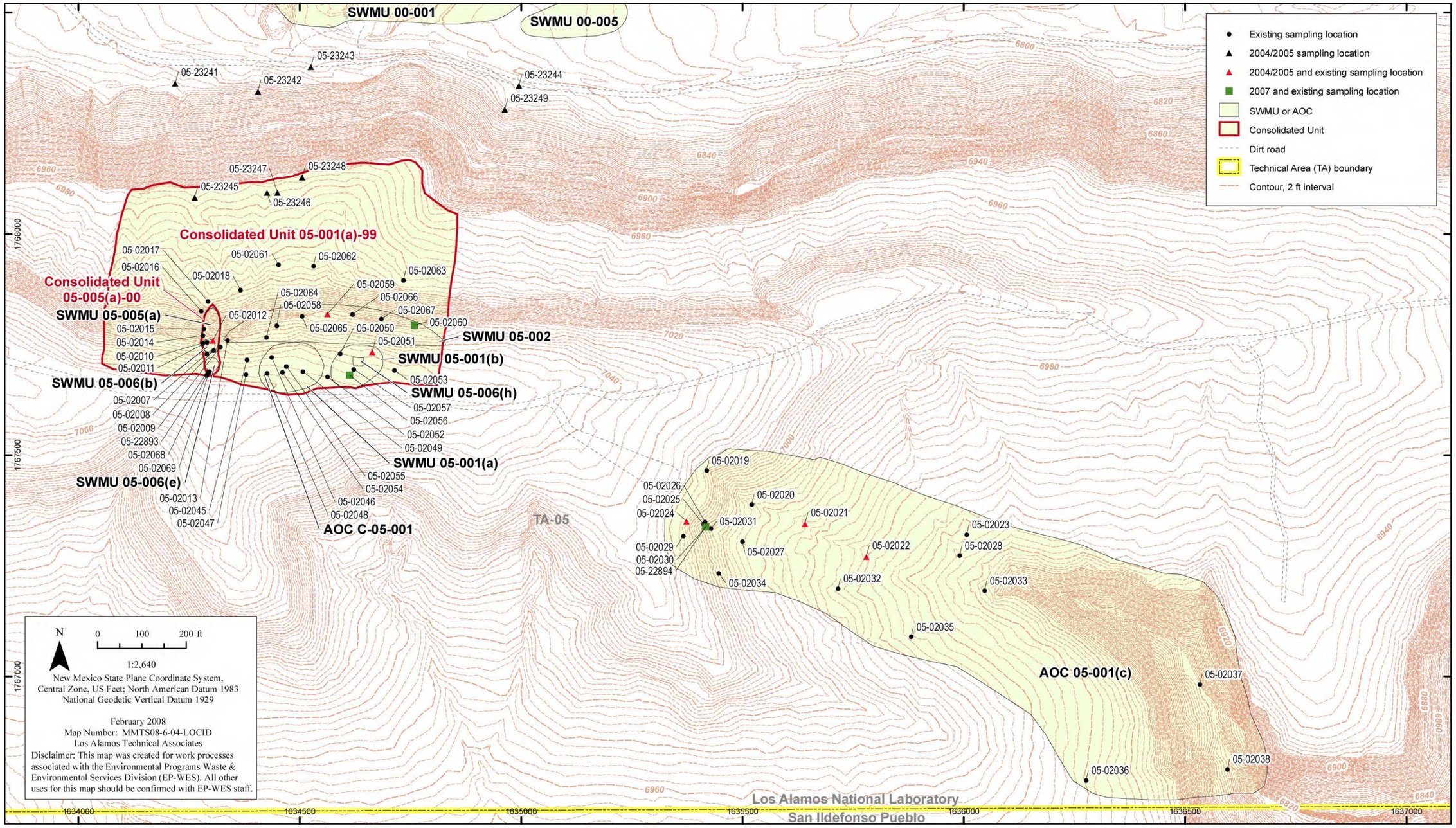


Figure F-8.2-4 East Ten Site Slope Area C sampling locations

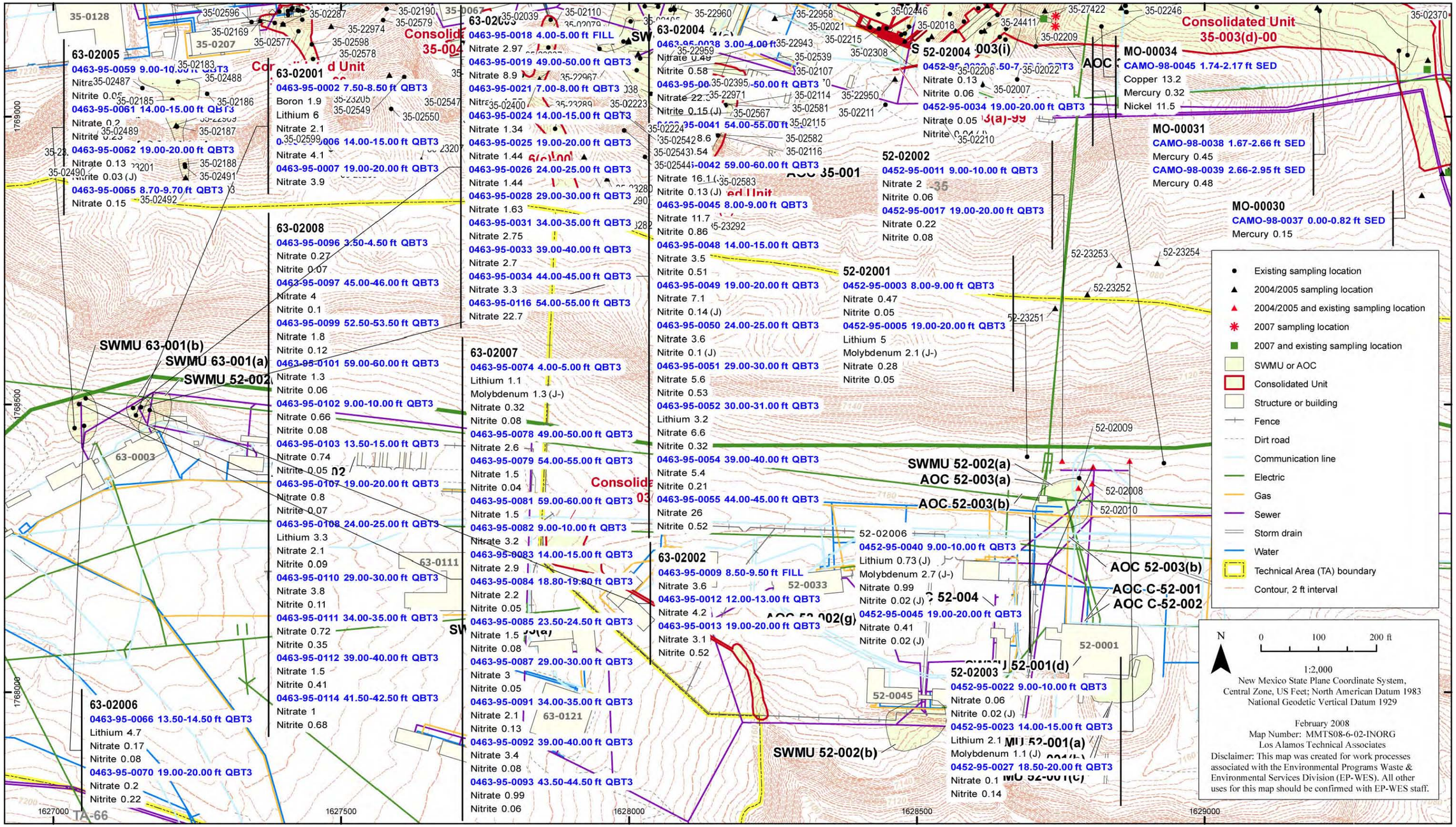


Figure F-8.2-5 East Ten Site Slope Area A inorganic COPCs detected above background values in all media

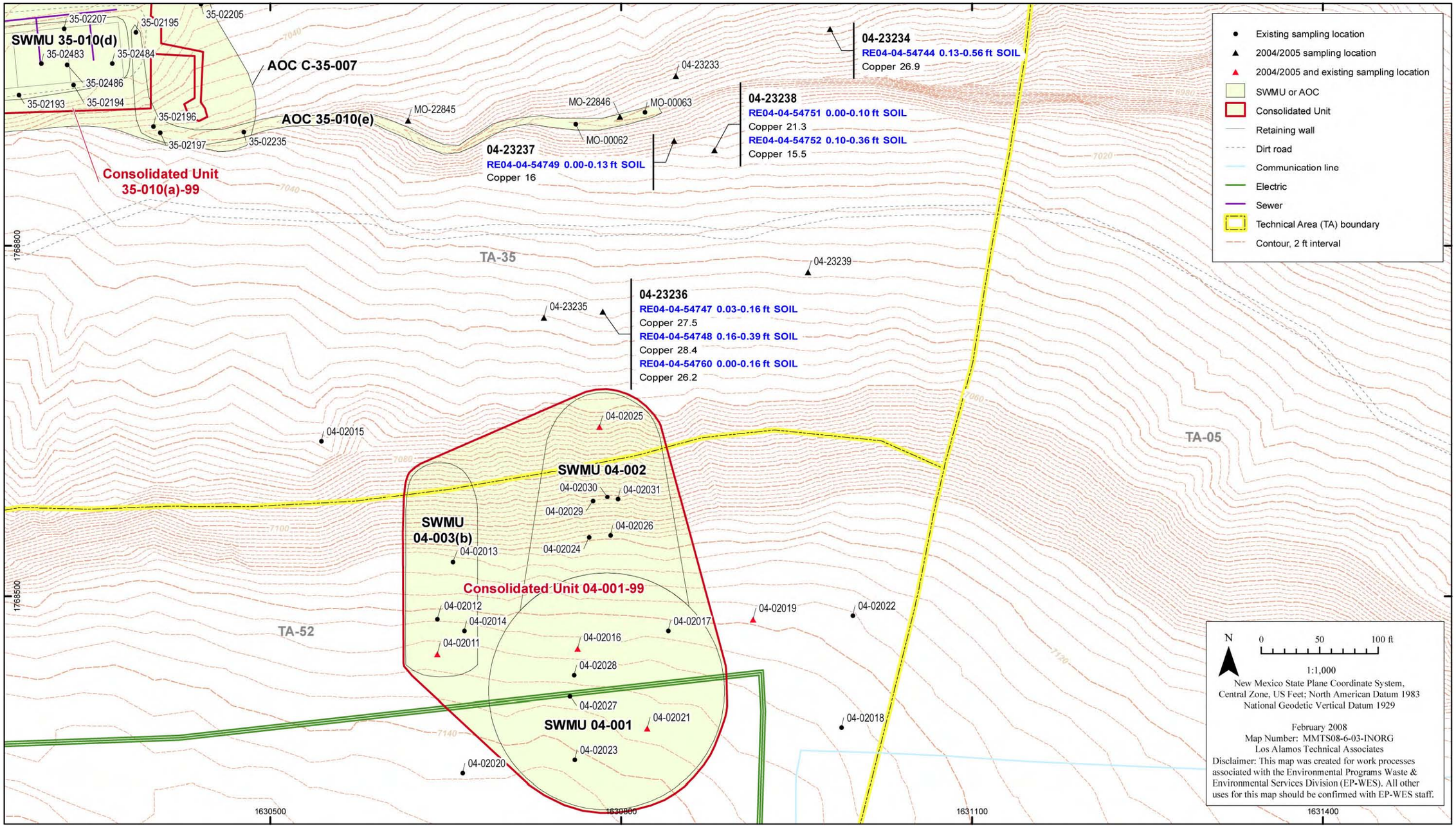


Figure F-8.2-6 East Ten Site Slope Area B inorganic COPCs detected above background values in all media

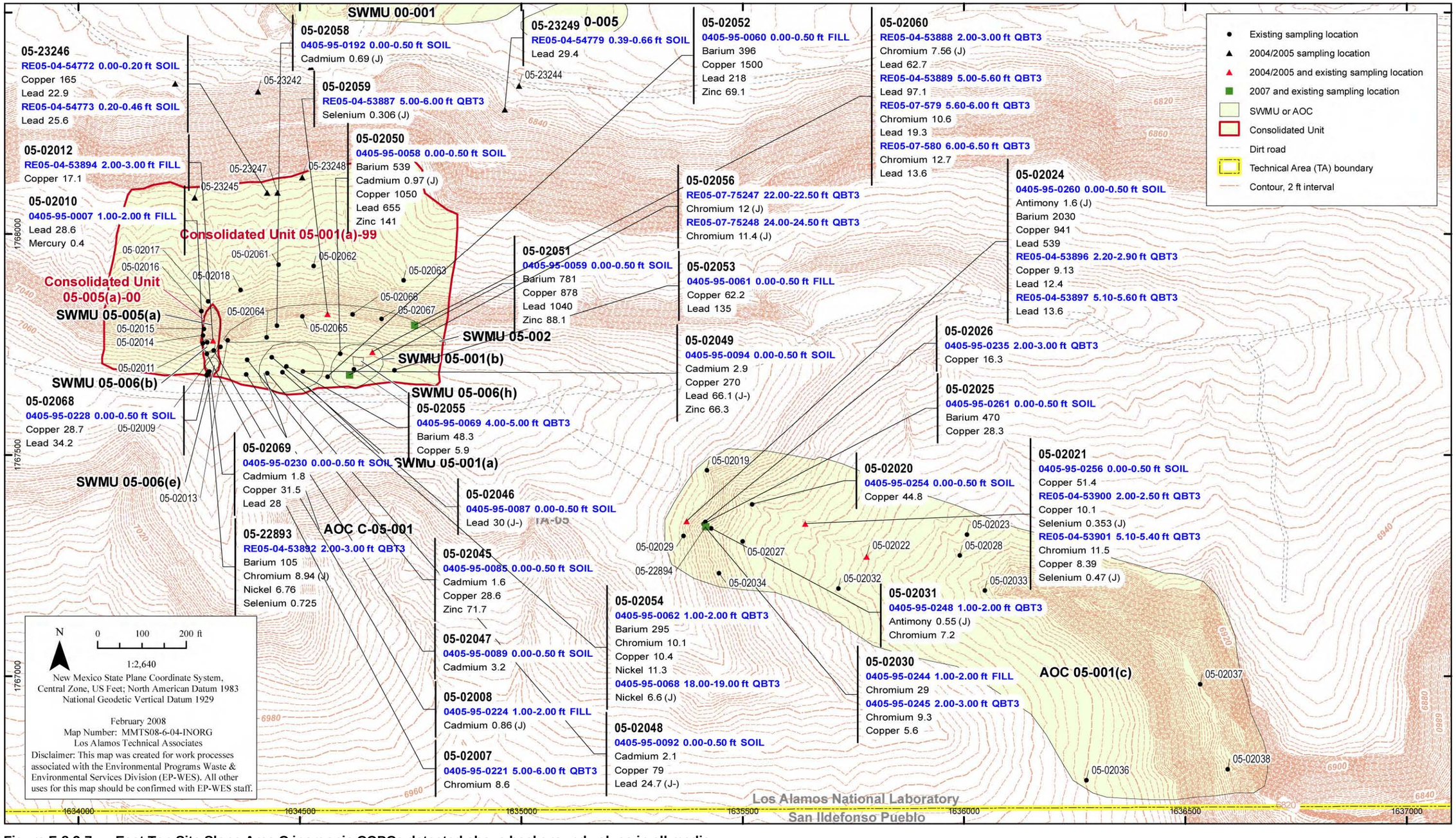


Figure F-8.2-7 East Ten Site Slope Area C inorganic COPCs detected above background values in all media

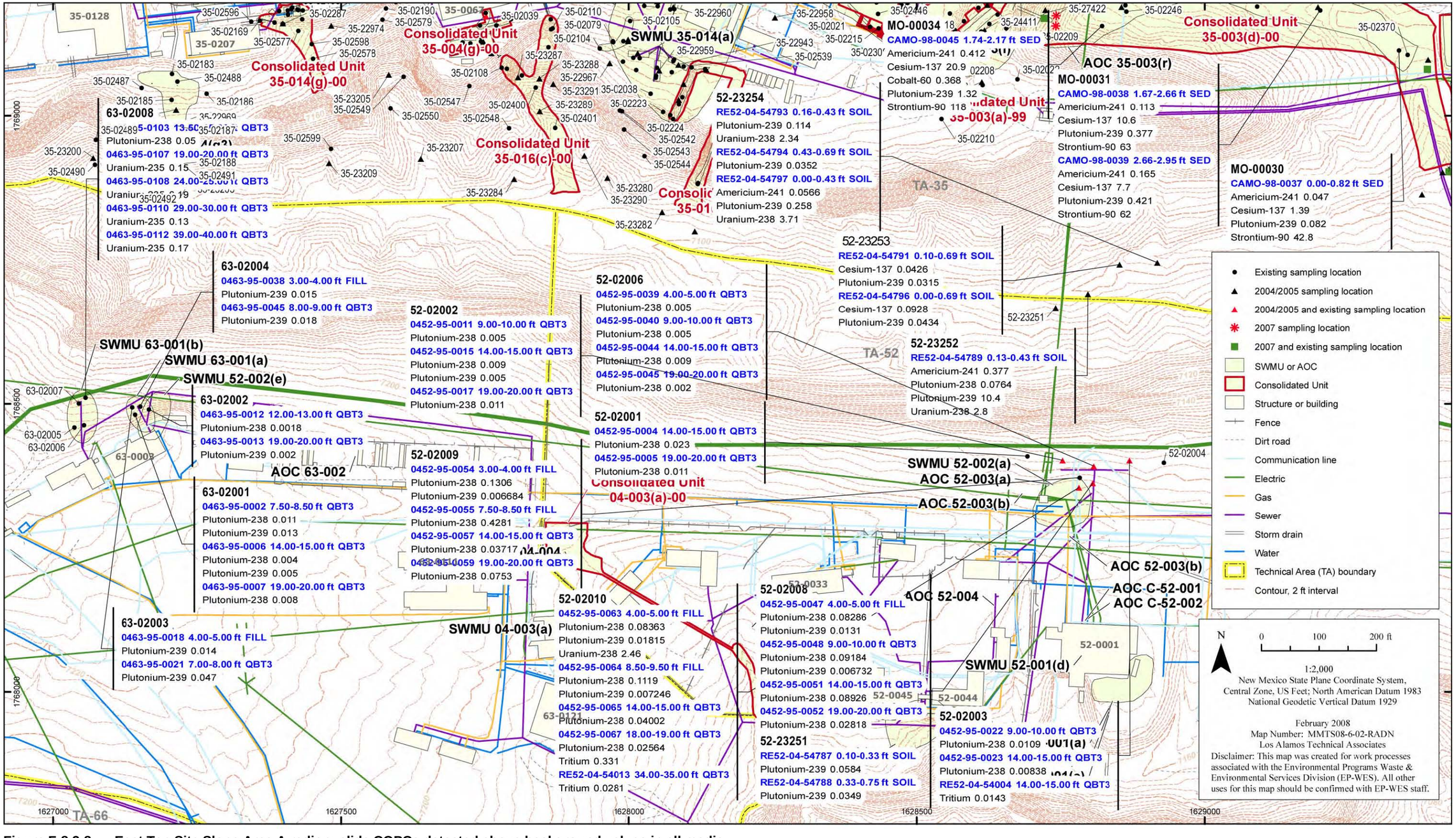


Figure F-8.2-8 East Ten Site Slope Area A radionuclide COPCs detected above background values in all media

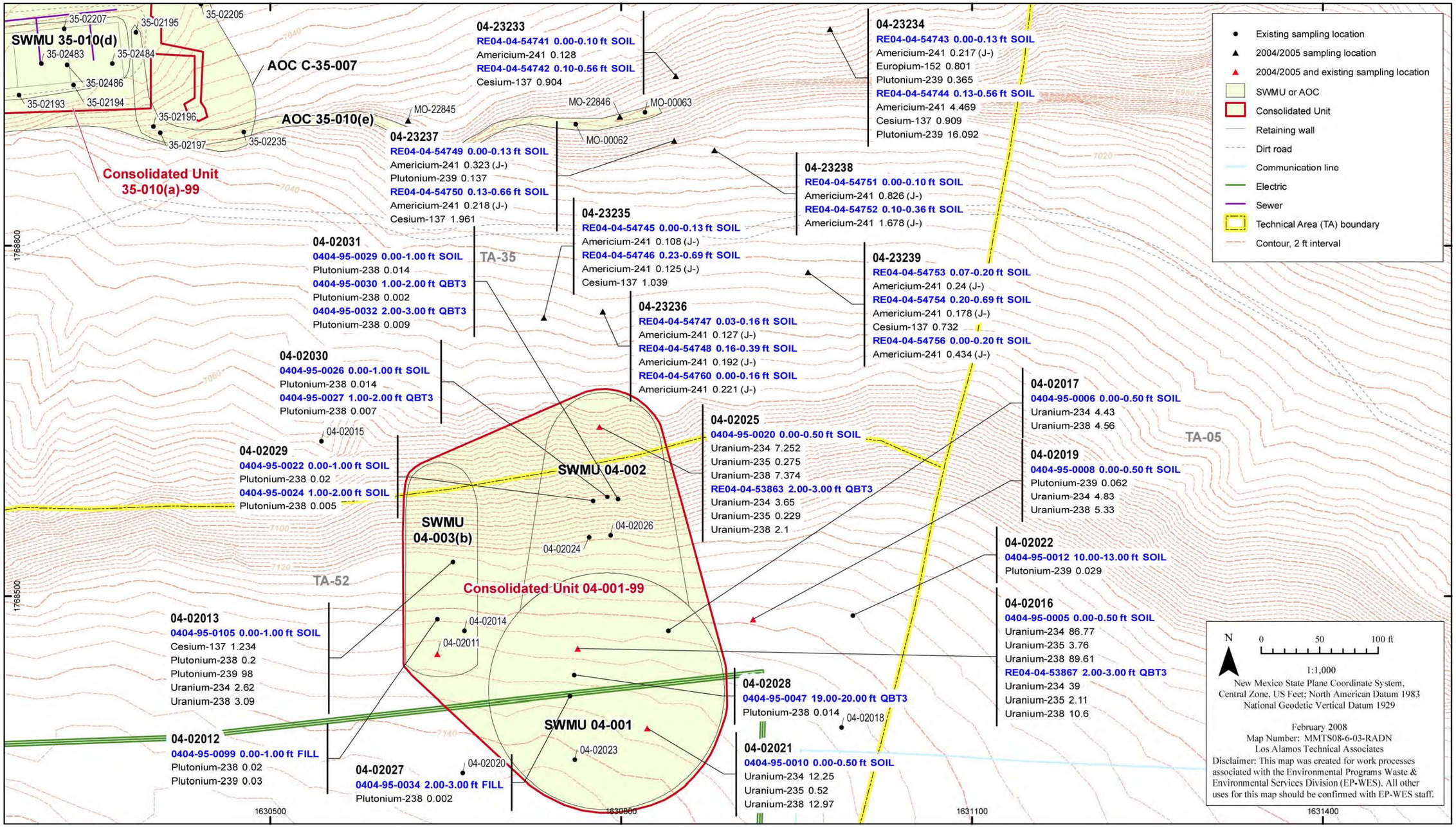


Figure F-8.2-9 East Ten Site Slope Area B radionuclide COPCs detected above background values in all media

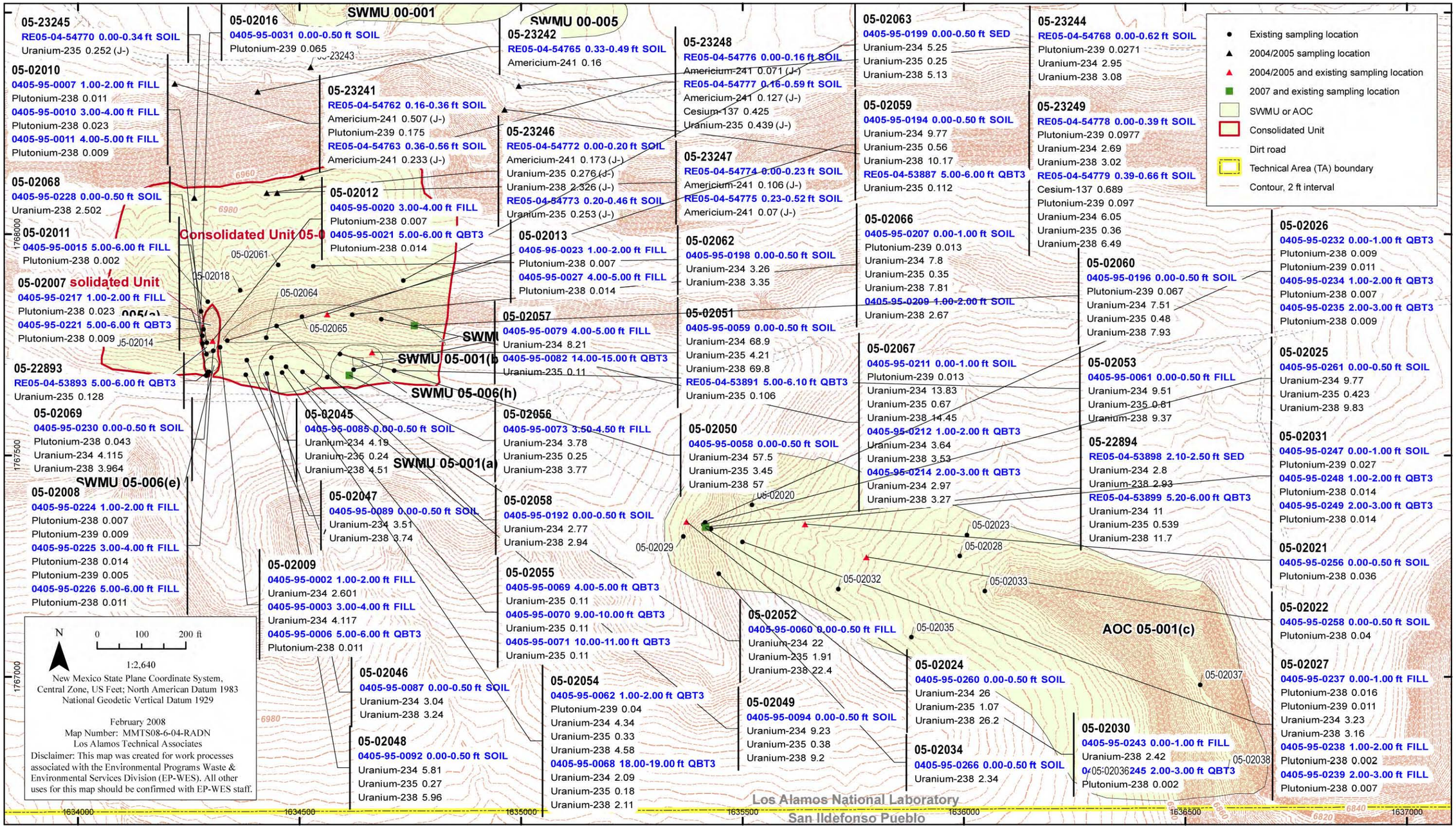


Figure F-8.2-10 East Ten Site Slope Area C radionuclide COPCs detected above background values in all media

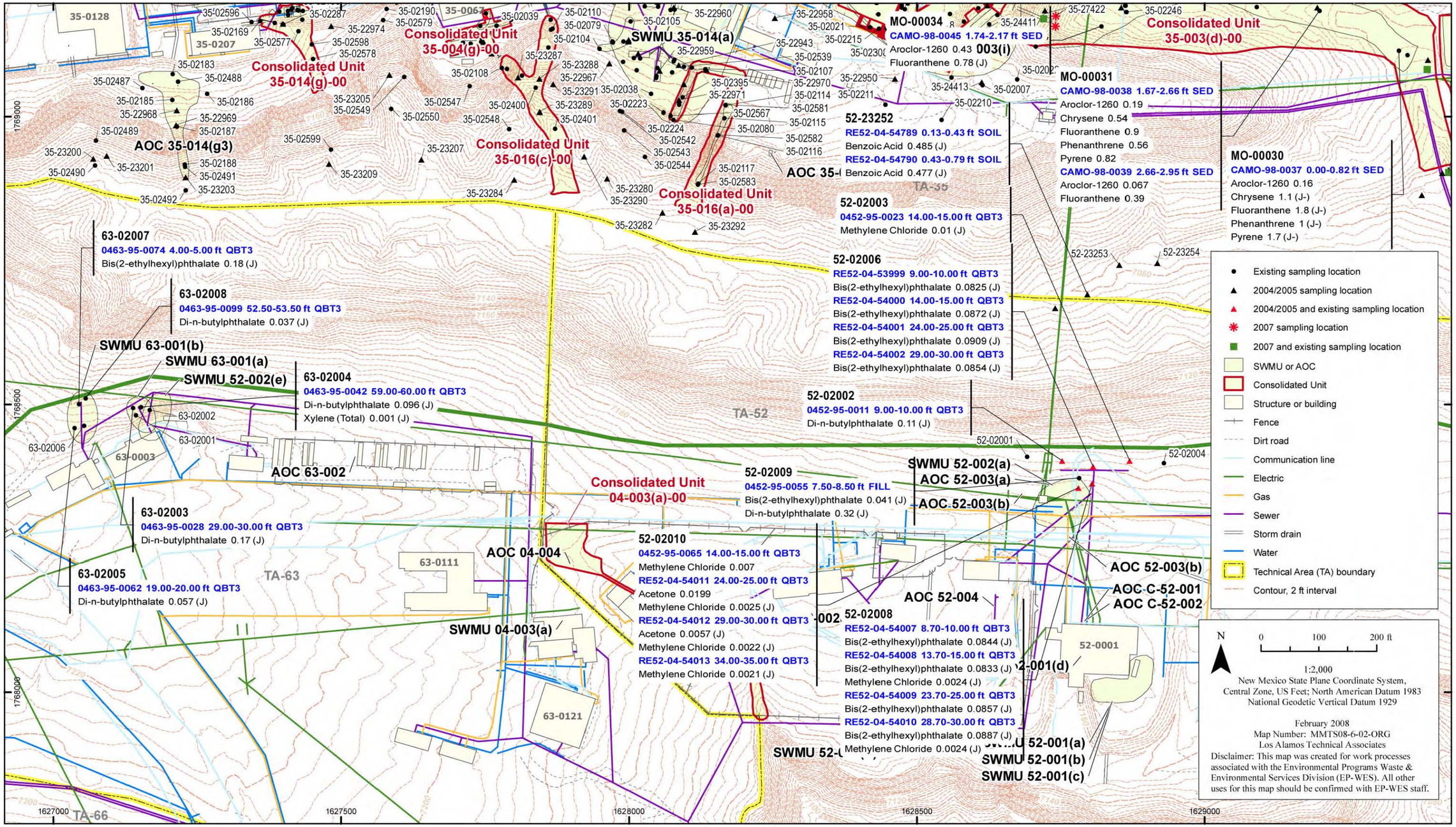


Figure F-8.2-11 East Ten Site Slope Area A organic COPCs detected in all media

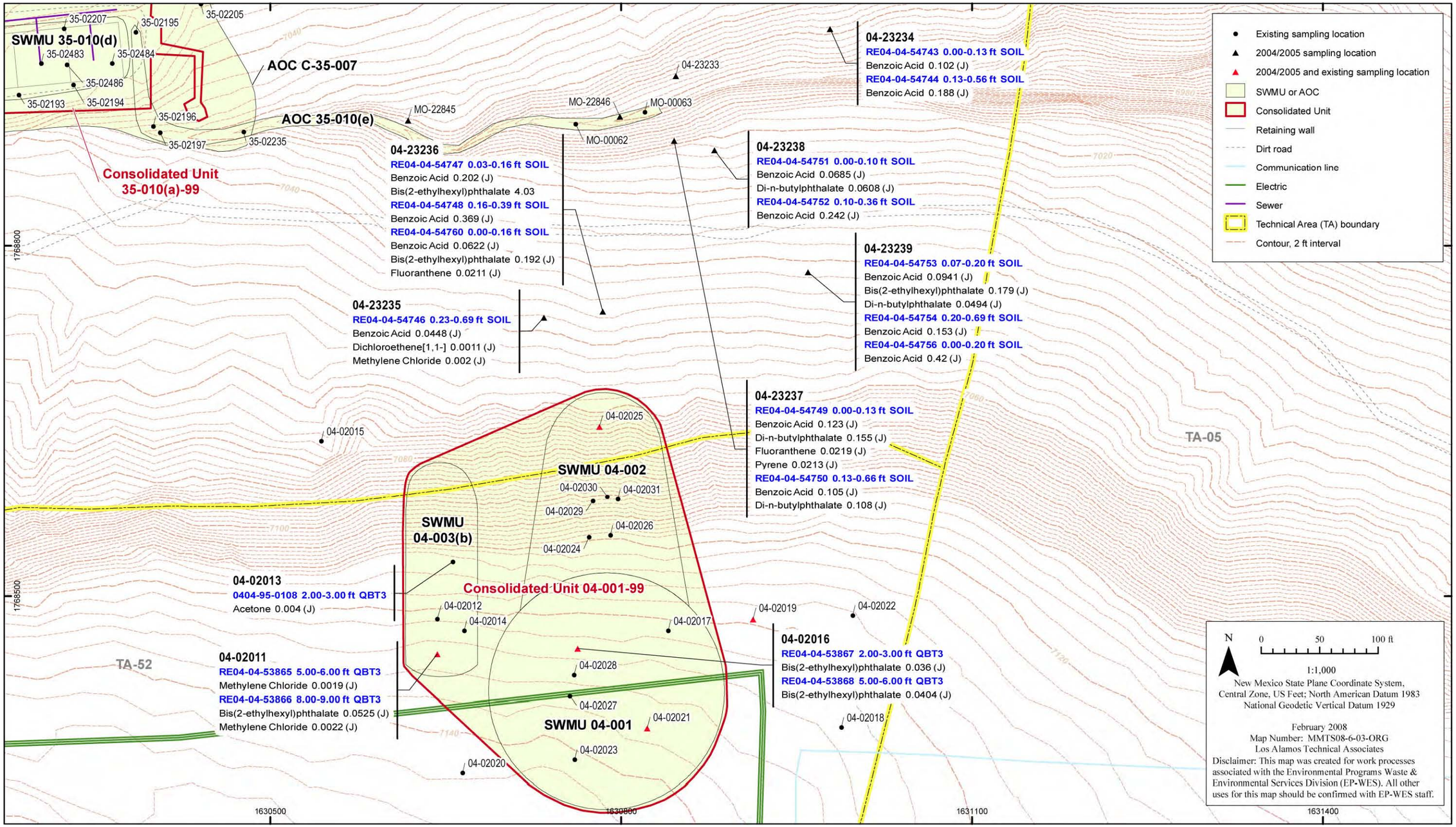


Figure F-8.2-12 East Ten Site Slope Area B organic COPCs detected in all media

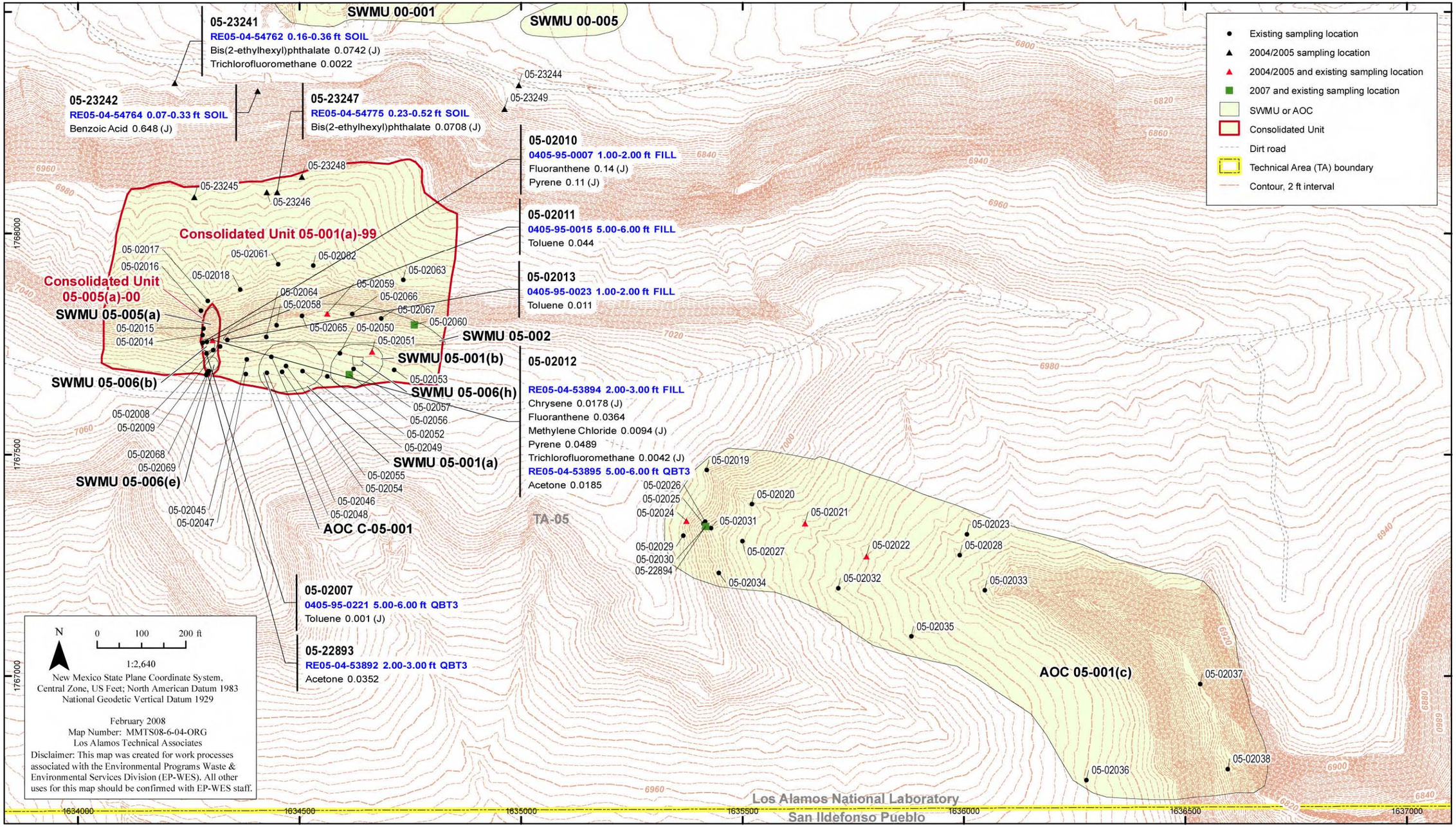


Figure F-8.2-13 East Ten Site Slope Area C organic COPCs detected in all media

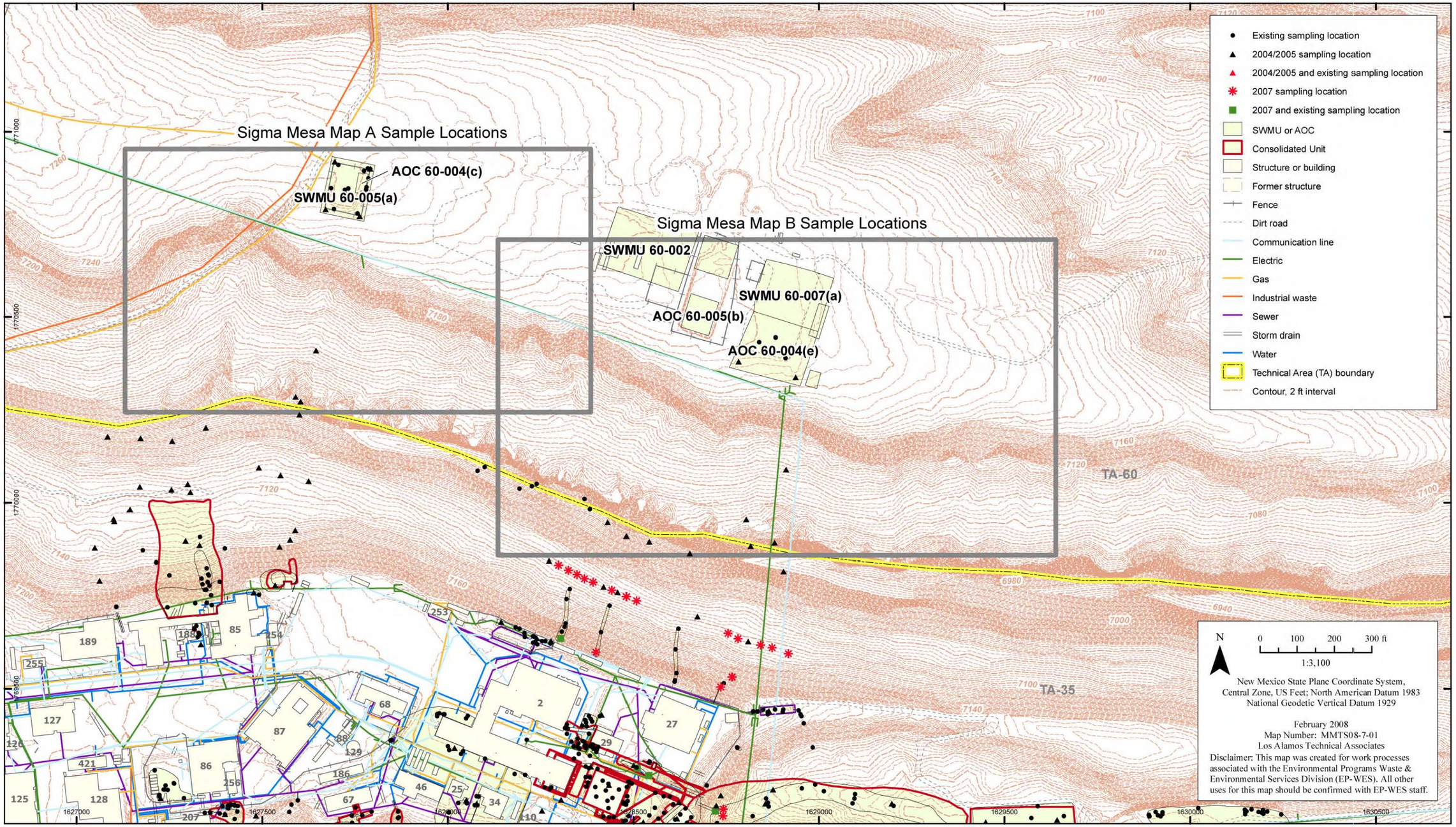


Figure F-9.2-1 Index map of the Sigma Mesa Subarea

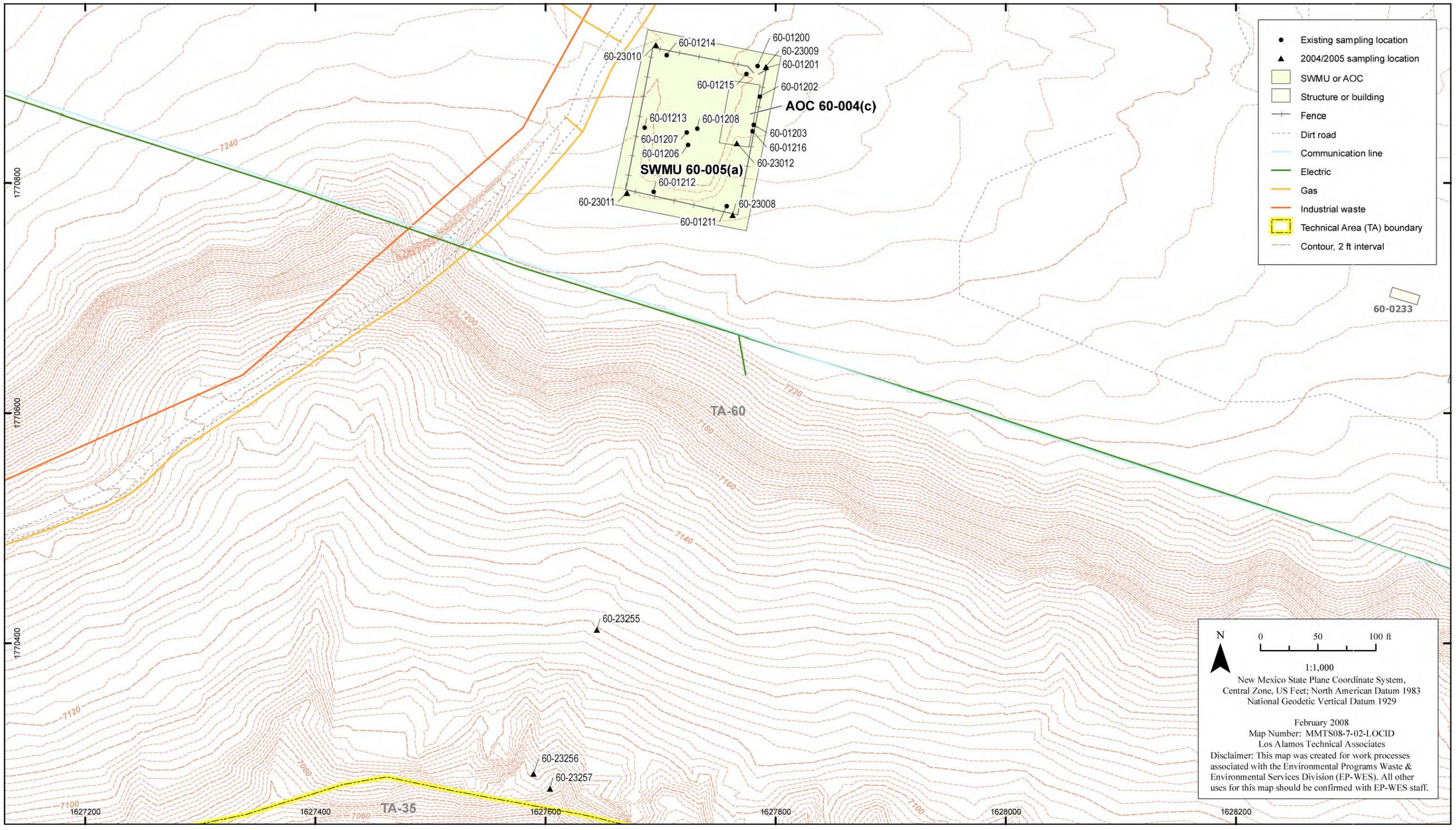


Figure F-9.2-2 Sigma Mesa Area A sampling locations

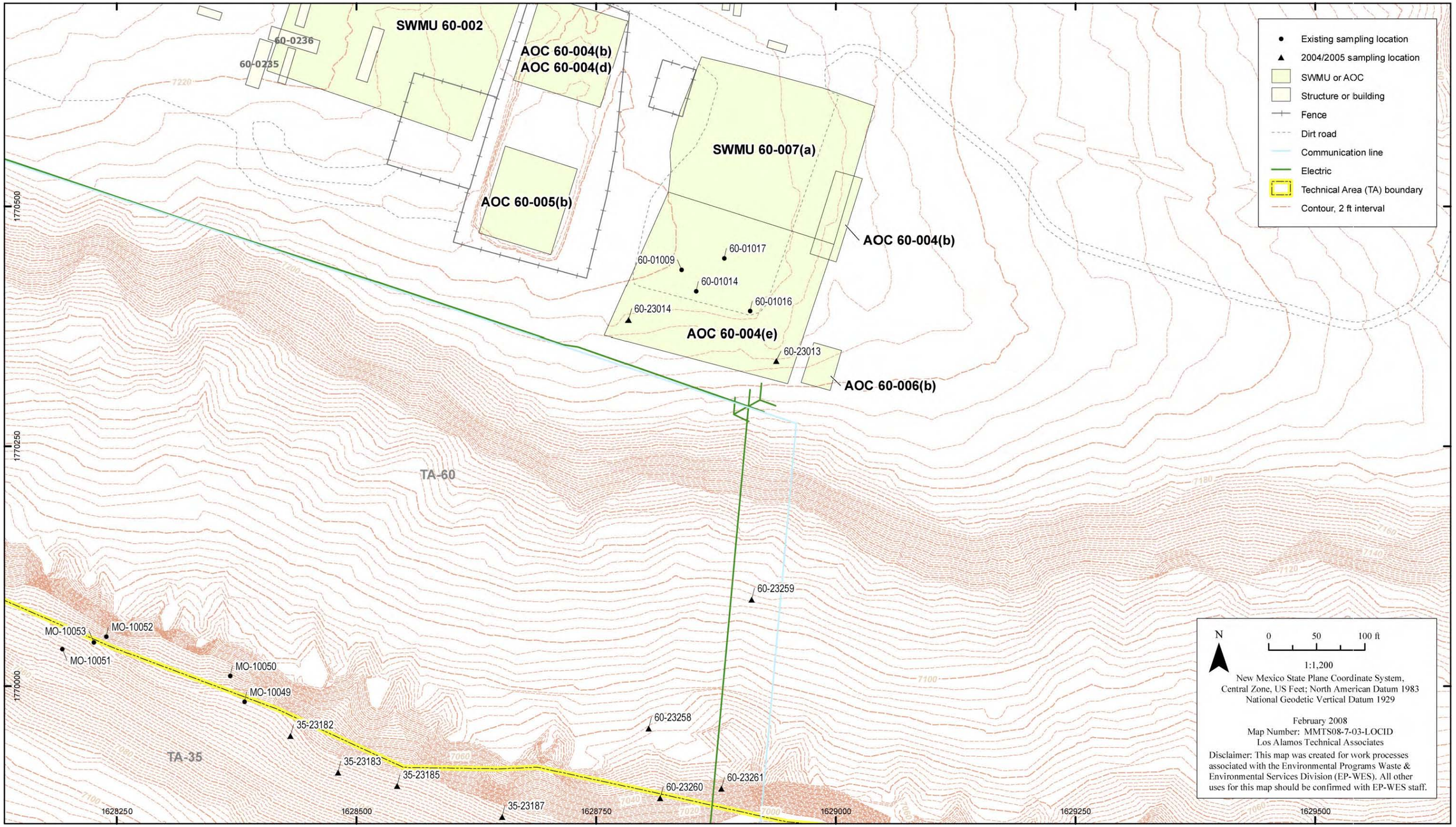


Figure F-9.2-3 Sigma Mesa Area B sampling locations

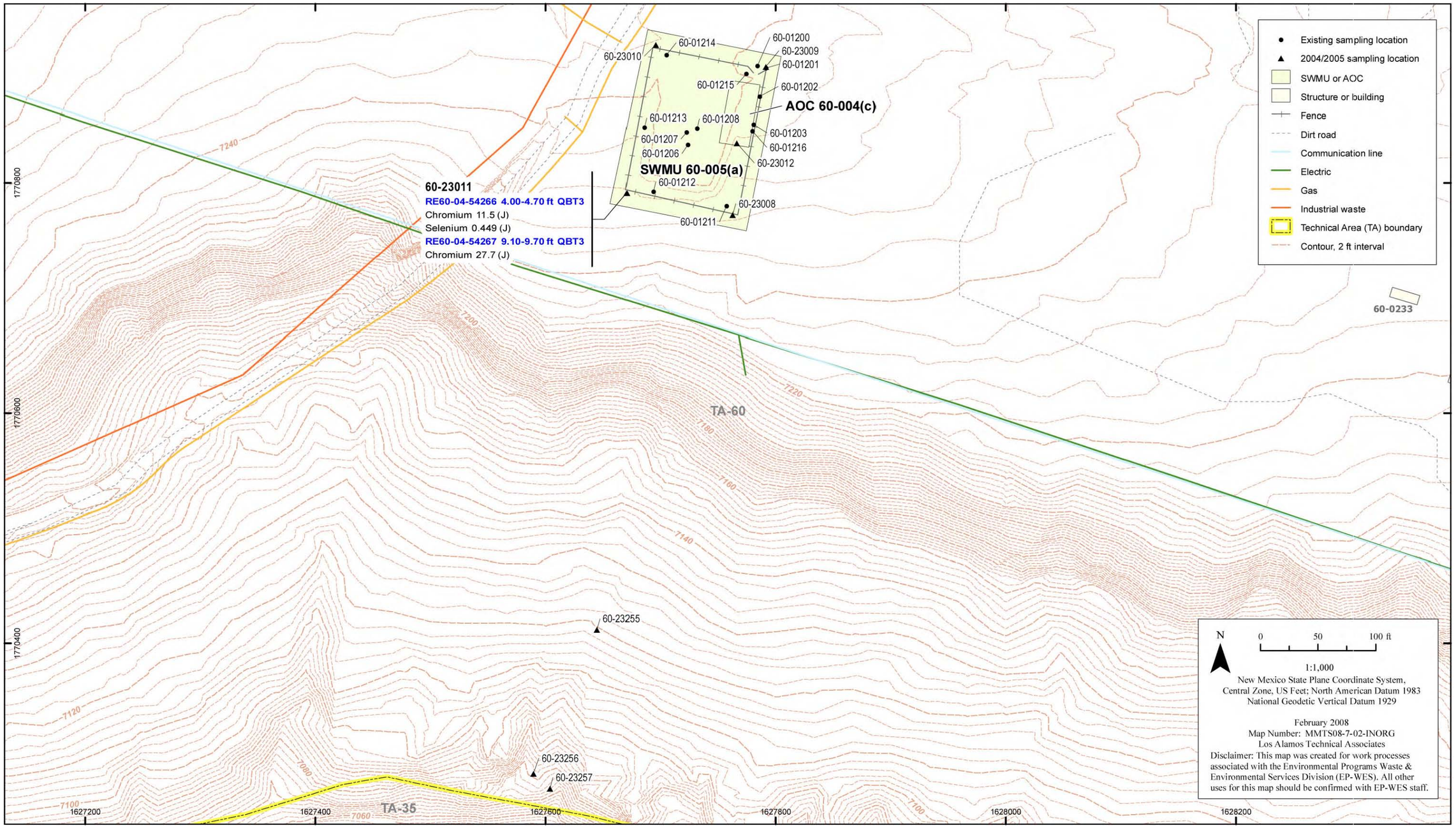


Figure F-9.2-4 Sigma Mesa Area A inorganic COPCs detected above background values in all media

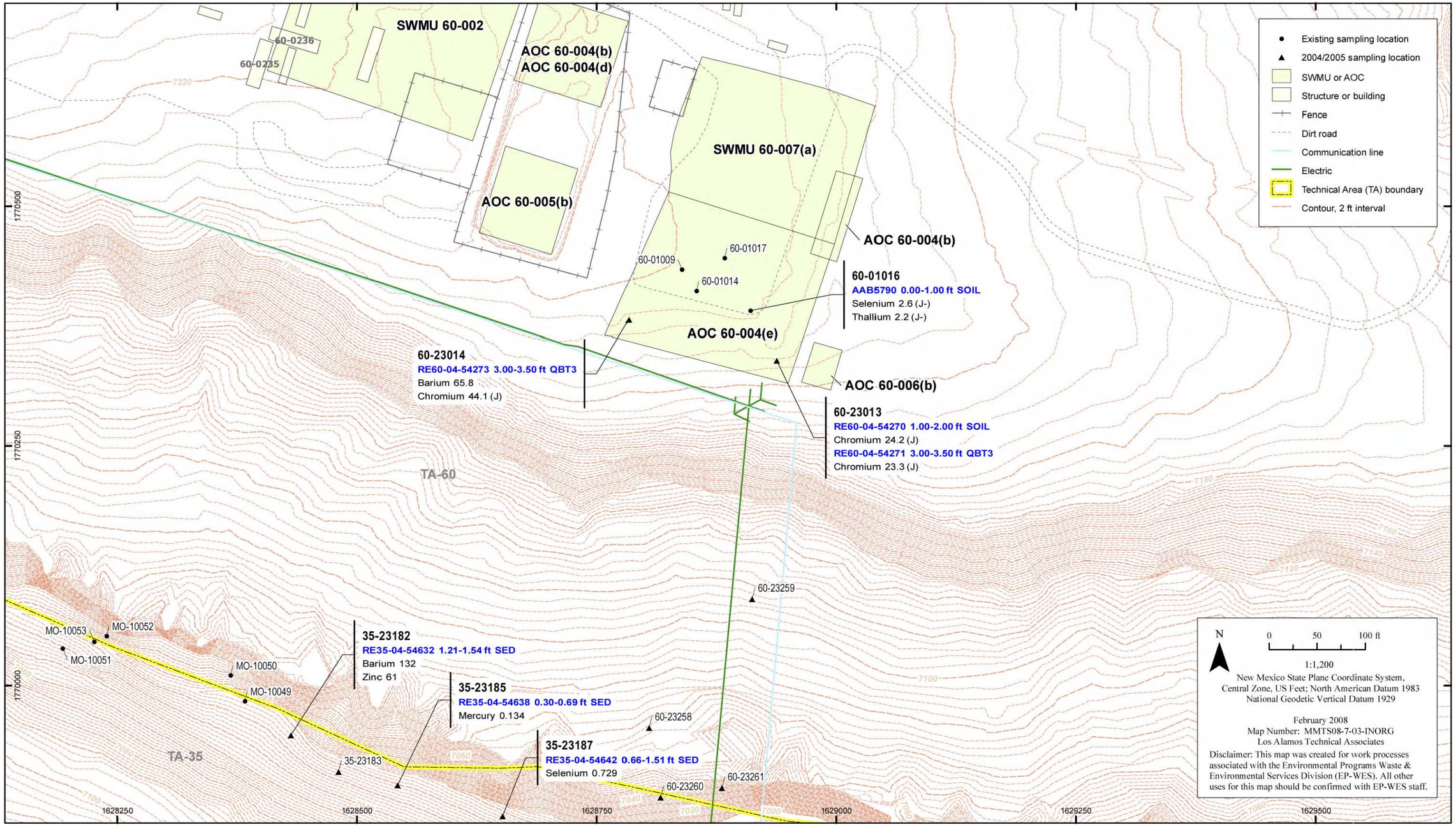


Figure F-9.2-5 Sigma Mesa Area B inorganic COPCs detected above background values in all media

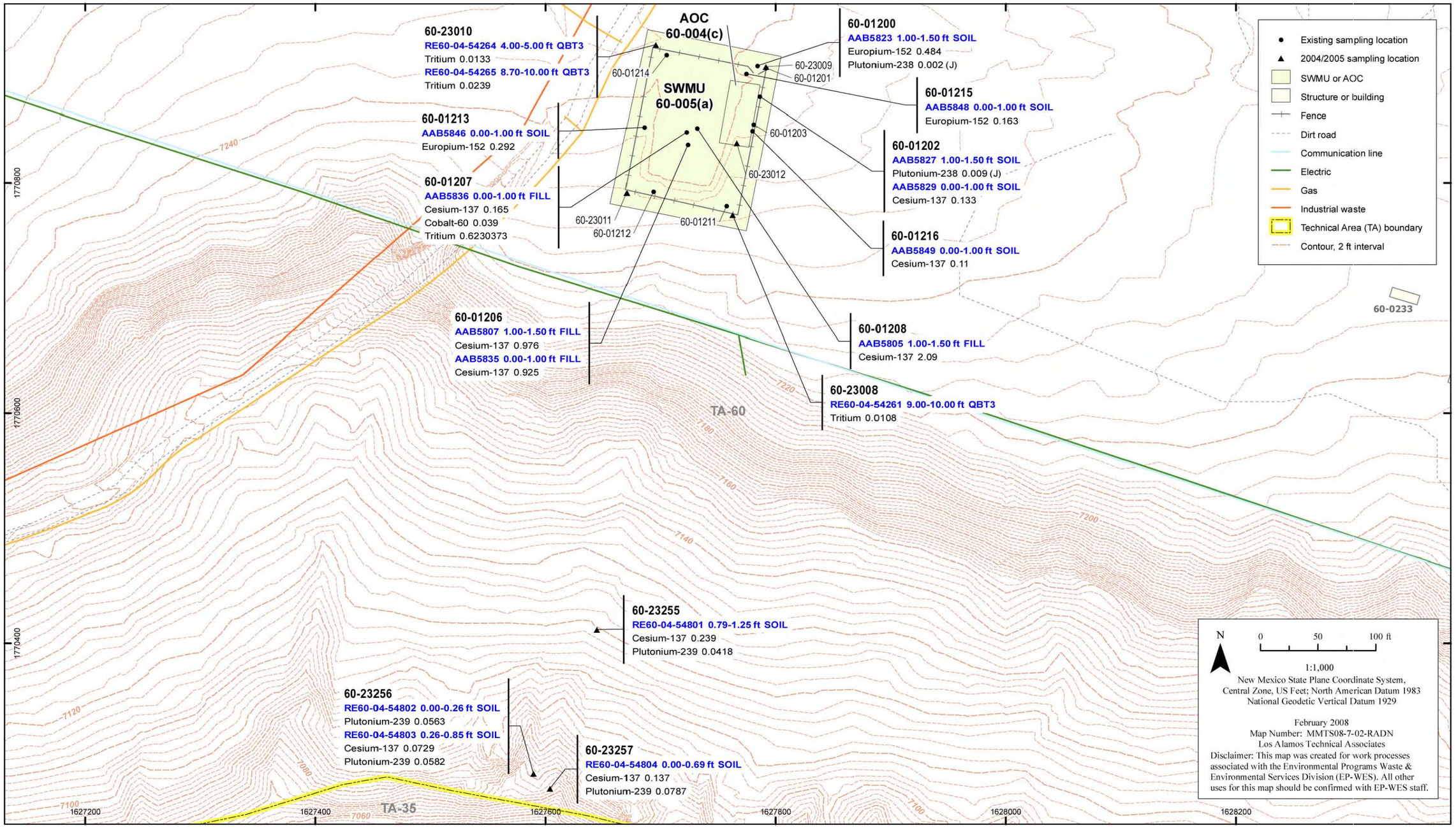


Figure F-9.2-6 Sigma Mesa Area A radionuclide COPCs detected above background values in all media

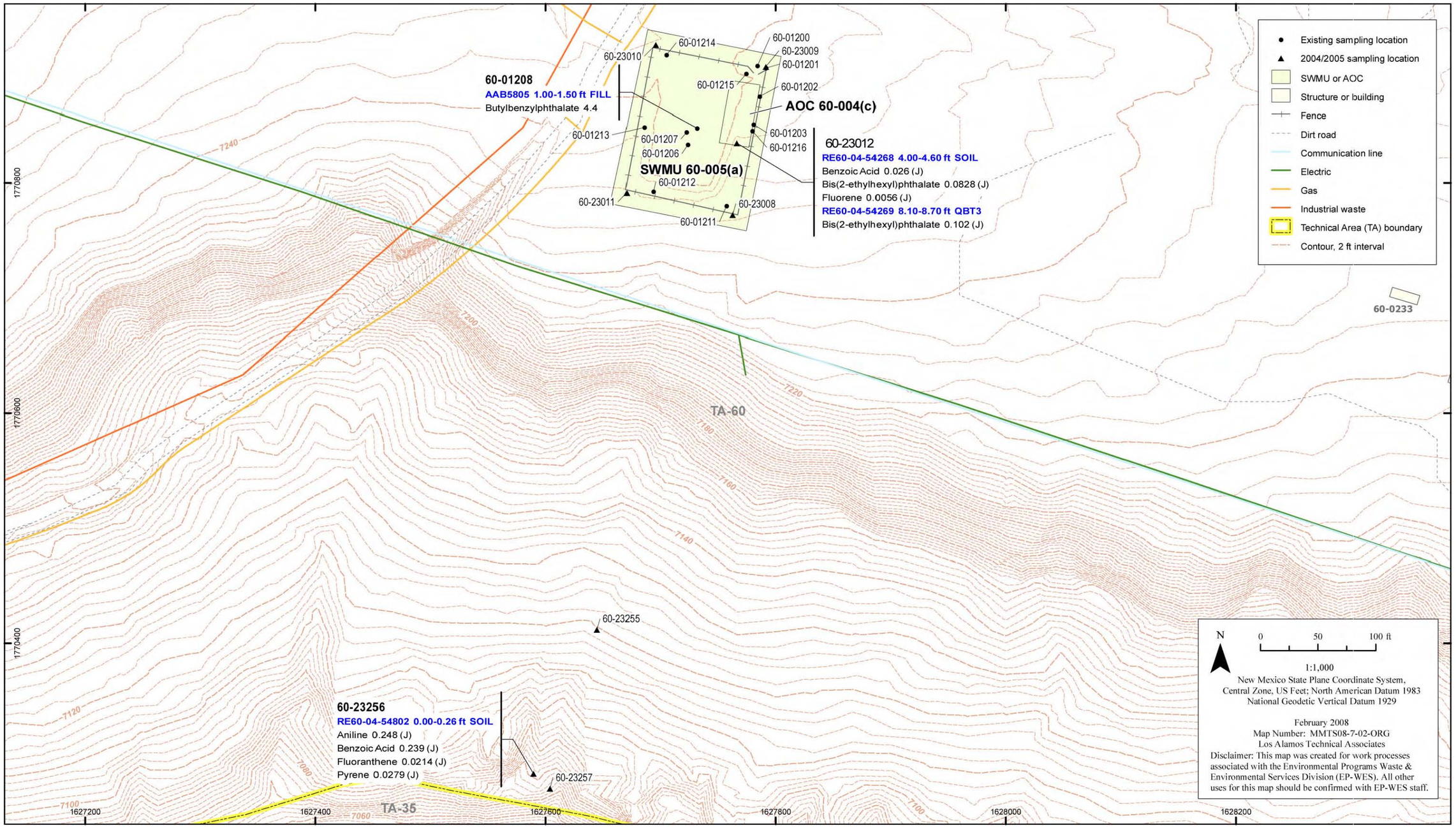


Figure F-9.2-7 Sigma Mesa Area A organic COPCs detected in all media

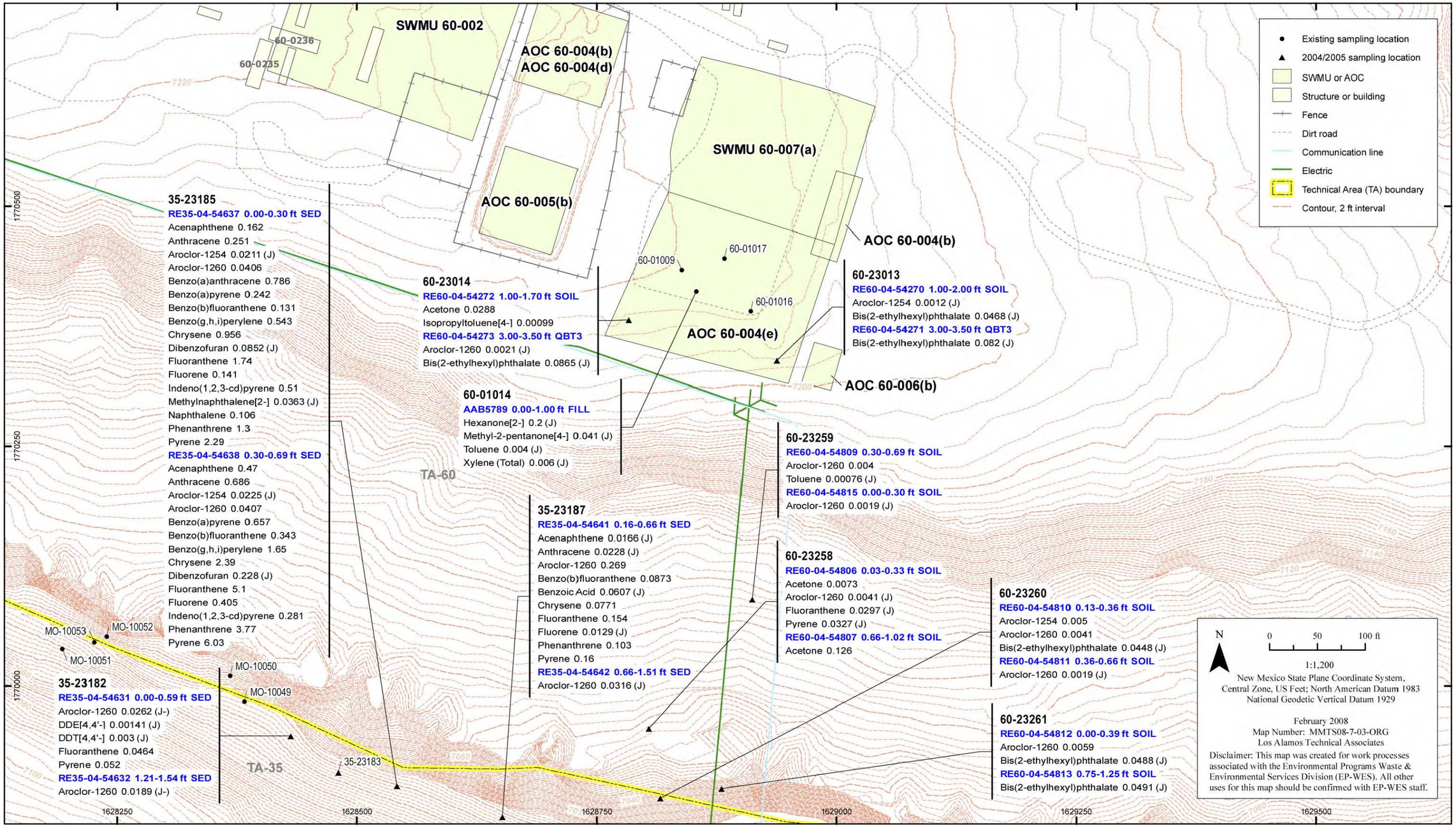


Figure F-9.2-8 Sigma Mesa Area B organic COPCs detected in all media

Table F-2.1-1
Physiochemical Properties for Organic Chemicals

Name	Water Solubility (mg/L)[a]	Vapor Pressure (mmHg)[a] at 25°C	K_{ow}[a,b]	K_{oc}[a,c]
Acenaphthene[d]	3.9E+00	2.15E-03	8.32E+03	No Data
Acenaphthylene	3.8E+00	4.93E-06	9.22E+03	4.90E+03
Acetone	6.04E+05	2.99E-01	6.00E-01	9.51E-01
Aldrin	7.84E-02	7.84E-02	1.51E+06	4.87E+04
Aniline	3.60E+04	8.8E-04	9.55E+00	8.23E+00
Anthracene	5.37E-02	3.35E-08	2.95E+04	2.35E+04
Aroclor-1242[e]	2.4E-01	4.06E-04	5.6E+00	No Data
Aroclor-1248[d]	1.0E-01	4.94E-04	1.58E+06	No Data
Aroclor-1254[e]	1.2E-02	7.71E-05	3.2E+06	No data
Aroclor-1260	2.7E-03	4.05E-05	6.3E+06	No data
Benzene[d]	1.79E+03	9.48E+01	1.35E+02	No data
Benzoic Acid[d]	2.40E+03	7.0E-04	7.41E+01	No data
Benzo(a)anthracene	1.28E-02	2.03E-10	4.77E+05	2.60E+03
Benzo(a)pyrene	1.94E-03	6.43E-12	1.35E+06	9.69E+05
Benzo(b)fluoranthene	4.33E-03	1.06E-10	1.59E+06	8.36E+05
Benzo(g,h,i)perylene[d]	2.60E-04	1.00E-10	4.27E+06	No data
Benzo(k)fluoranthene	8.0E-04	1.32E-12	1.56E+06	8.32E-05
BHC[alpha-][d]	2.0E+00	No data	3.8E+00	No data
BHC[beta-][d]	2.0E-01	No data	3.78E+00	No data
BHC[gamma-][d]	7.3E+00	4.20E-05	5.25E+03	No data
Bis(2-ethylhexyl)phthalate	3.96E-01	8.49E-09	1.6E+05	1.11E+05
Butanone[2-][e]	1.36E+05	9.06E+01	1.95E+00	3.55E+00
Butylbenzene[sec-][d]	1.76E+01	1.75E+00	3.72E+04	No Data
Chloro-3-methylphenol[4-]	3.85E+03	1.08E-05	1.26E+03	3.71E+03
Chloroaniline[4-][d]	3.90E+03	2.7E-02	6.76E+01	No Data
Chrysene	1.94E-03	1.03E-11	5.48E+05	2.97E+05
DDD[4,4'-]	7.33E-02	1.14E-09	1.32E+06	4.58E+04
DDE[4,4'-]	1.92E-02	7.45E-09	1.80E+06	8.64E+02
DDT[4,4'-]	3.41E-03	5.17E-10	1.17E+06	6.78E+05
Dibenz(a,h)anthracene	6.70E-04	2.70E-14	3.53E+06	1.79E+06
Dibenzofuran[d]	3.1E+00	2.48E-03	1.32E+04	No Data
Dichloroethene[1,1-]	3.0E+03	7.88E-01	1.32E+02	6.50E+01
Dichloroethene[cis-1,2]	4.94E+03	2.30E-01	9.60E+01	4.98E+02
Dieldrin	1.87E-01	1.31E-09	1.86E+05	2.55E+04
Diethylphthalate	8.80E+02	2.17E-06	2.73E+04	8.20E+01
Dimethyl phthalate	4.19E+03	2.17E-06	4.30E+01	3.09E+01
Di-n-butylphthalate	1.08E+01	5.55E-08	5.25E+04	1.57E+03

Table F-2.1-1 (continued)

Name	Water Solubility (mg/L)[a]	Vapor Pressure (mmHg)[a] at 25°C	K_{ow}[a,b]	K_{oc}[a,c]
Di-n-octylphthalate[d]	2.0E-02	1.00E-07	1.26E+08	No Data
Endosulfan I	2.3E-01	1.72E-11	3.02E+03	2.04E+03
Endosulfan II[d]	4.5E-01	6.00E-07	6.76E+03	No Data
Endrin	2.46E-01	7.68E-10	7.79E+04	1.08E+04
Ethylbenzene	1.73E+02	1.26E-02	1.33E+03	2.04E+02
Fluoranthene	2.32E-01	1.07E-08	1.21E+05	4.91E+04
Fluorene	1.90E+00	8.17E-07	1.47E+04	7.71E+03
Hexanone[2-][d]	1.75E+04	1.16E+01	2.40E+01	No Data
Indeno(1,2,3-cd)pyrene	1.07E-02	1.88E-13	8.22E+06	4.11E+06
Isopropyltoluene[4-]	5.6E+00	6.00E-03	4.10E+03	9.31E+03
Methoxychlor[4,4'-]	8.84E-02	1.62E-09	3.36E+04	8.00E+04
Methyl-2-pentanone	2.00E+04	2.50E-02	1.55E+01	1.20E+01
Methylene Chloride[e]	1.6E+04	4.25E+02	2.0E+01	2.51E+01
Methylnaphthalene[2-][d]	2.46E+01	5.5E-02	7.24E+03	No Data
Methylphenol[4-][d]	2.15E+04	1.1E-01	1.82E+10	No Data
Naphthalene	3.11E+01	1.17E-04	2.36E+03	1.19E+03
Pentachlorophenol	1.34E+01	7.11E-07	1.20E+05	504.9@ pH of 7
Phenanthrene	1.28E+00	1.35E-03	3.55E+04	2.09E+02
Phenol	9.08E+04	5.74E-04	3.00E+01	2.20E+01
Pyrene	1.30E-01	5.59E-09	1.00E+05	6.80E+04
Styrene	2.57E+02	8.21E-03	8.49E+02	9.12E+02
Tetrachloroethene[d]	2.06E+02	1.85E+01	2.51E+03	No Data
Toluene	5.58E+02	3.71E-02	4.65E+02	1.40E+02
TPH-DRO	No Data	No Data	No Data	No Data
Trichloro-1,2,2-trifluoroethane[1,1,2-][d]	1.70E+02	3.63E+02	1.45E+03	No Data
Trichloroethene	1.18E+03	9.48E-02	2.71E+02	9.4E+01
Trichlorofluoromethane	1.1E+03	1.1E+00	3.40E+02	1.34E+02
Trimethylbenzene[1,2,4-][d]	5.7E+01	2.1E+00	4.27E+03	No Data
Trimethylbenzene[1,3,5-][d]	4.82E+01	2.48E+00	2.63E+03	No Data
Xylene[1,2-][d]	1.78E+02	6.61E+00	1.32E+03	No Data
Xylene[1,3]+Xylene[1,4]	1.86E+02	1.06E-02	1.48E+03	3.11E+02
Xylene (total)	1.86E+02	1.06E-02	1.48E+03	3.11E+02

[a] Denotes reference information from http://www.epa.gov/earth1r6/6pd/rcra_c/pd-o/appd1a.pdf.
[b] K_{ow} = Octanol water partition coefficient.
[c] K_{oc} = Adsorption coefficient.
[d] Denotes reference information from http://www.toxnet.nlm.nih.gov.
[e] Denotes reference information from http://www.atsdr.cdc.gov/toxprofiles/tp17-c4.pdf.

Table F-3.4-1
Parameters Used to Calculate Chemical SSLs

Parameters	Residential Values	Industrial Worker Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	n/a
Body weight–child	15 kg (0–6 yr of age)	n/a
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	225 day/yr
Exposure duration–child	6 yr (0–6 yr of age)	n/a[a]
Age-adjusted ingestion factor	114 mg-yr/kg-day	n/a
Age-adjusted inhalation factor	11 m^3-yr/kg-day	n/a
Inhalation rate–child	10 m^3/day	n/a
Soil ingestion rate–child	200 mg/day	n/a
Particulate emission factor	6.61 x 10^9 m^3/kg	6.61 x 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	n/a
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	n/a
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	25
Adherence factor–adult	0.07 mg/cm^2	0.2 mg/cm^2
Soil ingestion rate–adult	100 mg/day	100 mg/day
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)	3300 cm^2/day (head, hands, forearms)
Inhalation rate–adult	20 m^3/day	20 m^3/day

[a] n/a = Not applicable.
[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

Table F-3.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5 [a]	7305 [b]
Mass Loading (g/m^3)	1.5 x 10^{-7} [c]	1.5 x 10^{-7} [c]
Outdoor Time fraction	0.2236 [d]	0.0599 [e]
Indoor Time fraction	0.7347 [f]	0.8984 [g]
Soil ingestion (g/yr)	73 [h]	36.5 [i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).
[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).
[c] Calculated as [1/ 6.6 x 10+9 m^3/kg) x 1000 g/kg, where 6.6 x 10+9 m^3/kg is the particulate emission factor (NMED 2004, 085615).
[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3-11 yr old child (EPA 1997, 066598, Section 15.4-1).
[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).
[f] Calculated as [(24-5.6 hr/day x 350 day/yr] / 8766 hr/yr.
[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.
[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).
[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-3.4-3
Parameters Used in the SAL Calculations for Radionuclides, Industrial

Parameters	Industrial, Adult
Inhalation Rate (m^3/yr)	19,481 [a]
Mass Loading (g/m^3)	1.5 x 10^{-7} [b]
Outdoor Time fraction	0.2053 [c]
Indoor Time fraction	0
Soil ingestion (g/yr)	97.4 [d]

[a] Calculated as [20 m^3/day x 225 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult and 225 days/yr is the exposure frequency (NMED 2004, 085615).
[b] Calculated as [1/ 6.6 x 10+9 m^3/kg) x 1000 g/kg, where 6.6 x 10+9 m^3/kg is the particulate emission factor (NMED 2004, 085615).
[c] Calculated as [8 hr/day x 225 day/yr] / 8766 hr/yr, where 8 hr/day is an estimate of the average length of the work day.
[d] Calculated as [0.1 g/day x 225 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-3.4-4
Screening Evaluation for SWMU 35-002, Noncarcinogenic and Carcinogenic COPCs

Analyte	EPC (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] mg/kg)	HQ
Aroclor-1260	ND[c]	n/a[d]	Not a COPC	1.49	1.12	1.3
		HI	**Not a COPC**		**HI**	**1**
Analyte	EPC (0–1 ft)	Industrial SSL (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL (mg/kg)	Cancer Risk
Aroclor-1260	ND	8.26	Not a COPC	1.49	2.22	6.71E-06
	Total Excess Cancer Risk		**n/a**	**Total Excess Cancer Risk**		**7E-06**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] n/a = Not applicable.

Table F-3.4-5
Screening Evaluation for SWMU 35-002, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Tritium	ND[b]	4.40E+05	Not a COPC	0.0898	750	0.002
		Total Dose	**n/a[c]**		**Total Dose**	**0.002**

[a] Values from LANL 2007, 088493.
[b] ND = Not detected.
[c] n/a = Not applicable.

Table F-3.4-6
Screening Evaluation for Consolidated Unit 35-003(a)-99, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	11(U)	454	2.42E-02	4.02	31.3	1.28E-01
Barium	114	1.00E+05[c]	1.14E-03	128	1.56E+04	8.21E-03
Boron	NA[d]	1.00E+05[c]	Not a COPC	2.69	1.56E+04	1.72E-04
Copper	8.1	4.54E+04	1.78E-04	18.4	3130	5.88E-03
Fluoride	NA	4.10E+04[e]	Not a COPC	2.05	3700[e]	5.54E-04
Lead	20.3	800	2.54E-02	11.3	400	2.83E-02
Mercury	0.97	340[e]	2.85E-03	0.34	23[e]	1.48E-02
Nickel	124	2.27E+04	5.46E-03	38.99	1560	2.50E-02
Selenium	ND	5680	Not a COPC	0.28	391	7.24E-04
Silver	2.3(U)	5680	4.05E-04	0.8	391	2.05E-03
Thallium	ND	74.9	Not a COPC	0.28	5.16	5.52E-02
Titanium	NC	1.00E+05[c]	Not a COPC	160	1.00E+05[c]	1.60E-03
Zinc	45.2	1.00E+05[c]	4.52E-04	30.9	2.35E+04	1.31E-03
Acetone	0.0773	1.00E+05[c]	7.73E-07	0.035	2.81E+04	1.25E-06
Anthracene	0.069	1.00E+05[c]	6.90E-07	0.25	2.20E+04	1.12E-05
Aroclor-1260	0.0174	n/a	n/a	14.2	1.12	12.7
Butanone(2-)	0.003	4.87E+04	6.16E-08	0.011	3.18E+04	3.46E-07
Fluoranthene	0.14	2.44E+04	5.74E-06	0.25	2290	1.10E-04
Hexanone(2-)[f]	0.006[g]	4.87E+04	1.23E-07	0.011	3.18E+04	3.46E-07
Pyrene	0.12	3.09E+04	3.88E-06	0.24	2290	1.07E-04
Trichlorofluoromethane	0.008	983[c]	8.17E-06	0.006	588	1.02E-05
		HI	**0.06**		**HI**	**13**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] NA = Not analyzed for this analyte I this depth range.
[e] Values from EPA Region 6 (EPA 2004, 087478).
[f] 2-butanone used as a surrogate for 2-hexanone.

Table F-3.4-7
Screening Evaluation for Consolidated Unit 35-003(a)-99, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL (mg/kg)[a]	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL (mg/kg)[b]	Cancer Risk
Chromium	110	5000[c]	2.20E-07	36	2100[c]	1.71E-07
Aroclor-1260	0.017	8.26	2.11E-08	14.2	2.2[c]	6.40E-05
Benzo(a)anthracene	0.027	23.4	1.15E-08	0.25	6.21	4.09E-07
Bis(2-ethylhexyl)phthalate	0.273	1370	1.99E-09	0.22	347	6.40E-09
Chrysene	0.039	2310	1.69E-10	0.25	621	4.09E-09
Methylene Chloride	0.0176	490	3.59E-10	0.013	182	7.14E-10
Trichloroethene	0.0127	1.56	8.14E-08	0.007	0.638	1.10E-07
Total Excess Cancer Risk			**3E-07**	**Total Excess Cancer Risk**		**6E-05**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-3.4-8
Screening Evaluation for Consolidated Unit 35-003(a)-99, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	1.056	23	0.69	0.56	5.6	1.487
Cobalt-60	0.40	5.1	1.176	0.12	1.3	1.419
Europium-152	ND[b]	11	Not a COPC	0.092	2.9	0.476
Plutonium-238	ND	240	Not a COPC	0.006	37	0.002
Plutonium-239	0.021	210	0.002	0.028	33	0.013
Strontium-90	290.3	1900	2.29	174	5.7	458
Tritium	2.937	4.40E+05	1.00E-04	1.2	750	0.024
Uranium-234	0.609	1500	0.006	1	170	0.088
Uranium-235	0.035	87	0.006	0.097	17	0.086
Uranium-238	0.622	430	0.022	4	86	0.698
Total Dose			**4**	**Total Dose**		**462**

[a] Values from LANL 2005, 088493.
[b] ND = Not detected.

Table F-3.4-9
Screening Evaluation for Consolidated Unit 35-003(j)-99, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	ND[c]	454	Not a COPC	10.9(U)	31.3	3.48E-01
Barium	92.9	1.00E+05[d]	9.29E-04	145.3	1.56E+04	9.31E-03
Lead	13.4	800	1.68E-02	21.63	400	5.41E-02
Mercury	0.03	340[e]	8.82E-05	0.211	23[e]	9.17E-03
Nickel	6.3	2.27E+04	2.78E-04	6.374	1560	4.09E-03
Selenium	0.48(U)	5680	8.63E-05	0.48(U)	391	1.25E-03
Silver	ND	5680	Not a COPC	2.2(U)	391	5.63E-03
Acenaphthene	3.575	3.35E+04	1.07E-04	0.528	3730	1.42E-04
Acetone	0.12	1.00E+05[d]	1.20E-06	0.069	2.81E+04	2.46E-06
Anthracene	7.62	1.00E+05[d]	7.62E-05	0.996	2.20E+04	4.53E-05
Aroclor-1254	1.3	12	1.08E-01	1.3	1.12	1.16
Aroclor-1260	3.9	n/a[f]	0	0.601	1.12	0.54
Benzo(g,h,i)perylene[g]	5.086	2290	2.22E-03	0.811	3.09E+04	2.62E-05
Butanone[2-]	ND	4.87E+04	Not a COPC	0.0155	3.18E+04	4.87E-07
Butylbenzene[sec-]	NA[h]	60.6[d]	Not a COPC	0.002	60.6[d]	3.30E-05
Dibenzofuran	1.93	1620	1.19E-03	0.342	142	2.41E-03
Di-n-butylphthalate	ND	6.84E+04	Not a COPC	0.081	6110	1.33E-05
Ethylbenzene	ND	128[d]	Not a COPC	0.005	128[d]	3.91E-05
Fluoranthene	24.67	2.44E+04	1.01E-03	6.679	2290	2.92E-03
Fluorene	3.27	2.65E+04	1.23E-04	0.561	2660	2.11E-04
Hexanone[2-][i]	ND	4.87E+04	Not a COPC	0.033	3.18E+04	1.04E-06
Isopropyltoluene[4-][j]	NA	389	Not a COPC	0.004	271	1.48E-05
Methyl-2-pentanone[4-]	ND	7010	Not a COPC	0.008	5510	1.45E-06
Methylnaphthalene[2-][k]	1.573	300	5.24E-03	1.8	79.5	2.26E-02
Naphthalene	2.22	300	7.41E-03	0.37	79.5	4.70E-03
Phenanthrene	25.27	2.05E+04	1.23E-03	6.33	1830	3.46E-03
Phenol	ND	1.00E+05[d]	Not a COPC	0.048	1.83E+04	2.62E-06
Pyrene	21.22	3.09E+04	6.87E-04	5.56	2290	2.43E-03
Toluene	ND	252[d]	Not a COPC	0.0056	252[d]	2.23E-05
Trichloro-1,2,2-trifluoroethane[1,1,2-]	NC	3280d	Not a COPC	0.003	3280d	9.15E-07
Trichlorofluoromethane	ND	983d	Not a COPC	0.005	588	8.50E-06

Table F-3.4-9 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Trimethylbenzene[1,2,4-]	NA	213	Not a COPC	0.005	58	8.62E-05
Trimethylbenzene[1,3,5-]	NA	69.2[d]	Not a COPC	0.003	25	1.21E-04
Xylene (Total)	ND	82[d]	Not a COPC	0.009	82[d]	1.10E-04
		HI	**0.1**		**HI**	**2**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] Maximum values or saturation values.
[e] Values from EPA Region 6 (EPA 2006, 094321).
[f] n/a = Not applicable, this analyte doe not have a noncarciogenic industrial SSL.
[g] Pyrene used as a surrogate for Benzo(g,h,i)perylene.
[h] NA = Not analyzed in this depth range.
[i] 2-Butanone used as a surrogate for 2-Hexanone.
[j] Isopropylbenzene used as a surrogate for 4-Isopropyltoluene.
[k] Naphthalene used as a surrogate for 2-Methylnaphthalene.

Table F-3.4-10
Screening Evaluation for Consolidated Unit 35-003(j)-99, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1248	ND[c]	8.26	Not a COPC	0.0629	2.2[d]	2.86E-07
Aroclor-1254	1.3	8.26	1.57E-06	1.3	2.2[d]	5.91E-06
Aroclor-1260	3.9	8.26	4.72E-06	0.601	2.2[d]	2.73E-06
Benzo(a)anthracene	10.35	23.4	4.42E-06	2.802	6.21	4.51E-06
Benzo(a)pyrene	8.896	2.34	3.80E-05	1.22	0.621	1.97E-05
Benzo(b)fluoranthene	7.637	23.4	3.26E-06	1.126	6.21	1.81E-06
Benzo(k)fluoranthene	12.78	234	5.46E-07	1.856	62.1	2.99E-07
Bis(2-ethylhexyl)phthalate	0.85	1370	6.20E-09	0.23	347	6.63E-09
Chrysene	ND	2310	Not a COPC	3.26	615	5.30E-08
Dibenz(a,h)anthracene	4.914	2.34	2.10E-05	0.772	0.621	1.24E-05
Indeno(1,2,3-cd)pyrene	4.822	23.4	2.06E-06	0.772	6.21	1.24E-06
Methylene Chloride	ND	490	Not a COPC	0.005	182	2.89E-10
Tetrachloroethene	ND	31.6	Not a COPC	0.003	12.5	2.40E-09
Trichloroethene	ND	1.56	Not a COPC	0.003	0.638	4.70E-08
		Total Excess Cancer Risk	**8E-05**		**Total Excess Cancer Risk**	**5E-05**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] Values from EPA Region 6 (EPA 2006, 094321).

Table F-3.4-11
Screening Evaluation for Consolidated Unit 35-003(j)-99, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-239	ND[b]	210	Not a COPC	6.61	33	3.0
Uranium-234	3.98	1500	0.040	1.82	170	0.160
Uranium-235	0.62	87	0.106	0.35	17	0.31
Uranium-238	2.64	430	0.092	1.35	86	0.235
		Total Dose	**0.2**		**Total Dose**	**4**

[a] Values from LANL 2005, 088493.
[b] ND = Not detected.

Table F-3.4-12
Screening Evaluation for SWMU 35-004(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Tritium	NC[b]	4.40E+05	Not a COPC	0.044	750	0.001
		Total Dose	**n/a[c]**		**Total Dose**	**0.001**

[a] Values from LANL 2005, 088493.
[b] NC = Not collected.
[c] n/a = Not applicable.

Table F-3.4-13
Screening Evaluation for SWMU 35-004(h), Noncarcinogenic COPCs

Analyte	EPC (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	Maximum Detected Conc (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Selenium	NC[c]	5680	Not a COPC	0.88	391	2.24E-03
		HI	**n/a[d]**		**HI**	**0.002**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] NC = Not collected.
[d] n/a = Not applicable.

Table F-3.4-14
Screening Evaluation for SWMU 35-004(h), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	Maximum Detected Conc (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Tritium	NC[b]	4.40E+05	Not a COPC	0.24	750	0.005
		Total Dose	**n/a[c]**		**Total Dose**	**0.005**

[a] Values from LANL 2005, 088493.
[b] NC = Not collected.
[c] n/a = Not applicable.

Table F-3.4-15
Screening Evaluation for SWMU 35-009(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.102	454	2.25E-04	0.53	31.3	1.70E-02
Aluminum	9814	1.00E+05[c]	9.81E-02	6012	7.78E+04	7.73E-02
Barium	84.79	1.00E+05 [c]	8.48E-04	44.7	1.56E+04	2.87E-03
Cadmium	0.319	564	5.66E-04	0.56	39	1.44E-02
Cobalt	3.38	2.05E+04	1.65E-04	2.16	1.52E+03	1.42E-03
Copper	101	4.54E+04	1.65E-04	34.8	3130	1.11E-02
Lead	12.86	800	1.61E-02	10	400	2.50E-02
Lithium	3.5	2.3E+04 [d,e]	1.52E-04	4.66	1600 [d]	2.91E-03
Mercury	0.905	340	2.66E-03	1.05	23 [d]	4.57E-02
Nickel	4.88	2.27E+04	2.15E-04	3.73	1560	2.39E-03
Selenium	0.55 (U)	5680	9.68E-05	0.32	391	8.29E-04
Silver	2.27	5680	4.00E-04	3.86	391	9.87E-03
Zinc	96.3	1.00E+05 [c]	9.63E-04	70.3	2.35E+04	2.99E-03
Acetone	0.11	1.00E+05 [c]	1.12E-06	0.11	2.81E+04	3.99E-06
Aroclor-1254	0.39	12	3.25E-02	0.39	1.12	3.51E-01
Aroclor-1260	1.26	12	1.05E-01	1.26	1.12	1.13
Dichloroethene(1,1-)	0.0012	777	1.54E-06	0.0025	206	1.21E-05
Di-n-butyl phthalate	0.223	6.84E+04	3.26E-06	0.19	6110	3.18E-05
Isopropyltoluene(4-)[f]	0.094	389 [c]	2.42E-04	0.094	271	3.46E-04
Pyrene	ND[g]	3.09E+04	Not a COPC	0.092	2290	4.02E-05
Toluene	0.0028	252 [c]	1.11E-05	0.0028	252 [c]	1.11E-05
		HI	**0.3**		**HI**	**2**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321)
[e] Value is a residential value.
[f] Isopropylbenzene used as a surrogate for 4-isopropyltoluene.
[g] ND = Not detected.

Table F-3.4-16
Screening Evaluation for SWMU 35-009(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	10.08	5000	2.02E-08	5.48	2100[c]	2.61E-08
Aroclor-1254	0.39	8.26	4.76E-07	0.39	2.2 [c]	1.79E-06
Aroclor-1260	1.26	8.26	1.53E-06	1.26	2.2 [c]	5.73E-06
Bis(2-ethylhexyl)phthalate	0.199	1370	1.45E-09	1.24	347	3.57E-08
DDE(4,4'-)	0.00022	78.1	2.86E-11	0.00022	17.2	1.30E-10
Excess Cancer Risk			**2E-06**	**Excess Cancer Risk**		**8E-06**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-3.4-17
Screening Evaluation for SWMU 35-009(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	0.025	240	1.58E-03	0.01	37	4.05E-03
Plutonium-239	0.646	210	4.61E-02	0.23	33	1.05E-01
Strontium-90	1.25	1900	9.87E-03	0.34	5.7	8.84E-01
Tritium	0.2	4.4E+05	6.82E-06	0.26	750	5.14E-03
Uranium-234	2.836	1500	2.84E-02	2.12	170	1.87E-01
Uranium-235	0.0854	87	1.47E-02	0.07	17	6.53E-02
Uranium-238	2.47	430	8.63E-02	1.45	86	2.53E-01
Total Dose			**0.2**	**Total Dose**		**2**

[a] Values from LANL (LANL 2005, 088493).

Table F-3.4-18
Screening Evaluation for SWMU 35-014(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.20	23	0.13	0.10	5.6	0.28
Cobalt-60	ND[b]	5.1	Not a COPC	0.055	1.3	0.63
Europium-152	0.36	11	0.49	0.12	2.9	0.63
Plutonium-239	0.065	210	4.64E-03	0.64	33	0.29
Tritium	40.2	4.40E+05	1.37E-03	15.3	750	0.31
Uranium-234	2.51	1500	0.03	1.8	170	0.16

Table F-3.4-18 (continued)

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Uranium-235	0.61	87	0.10	0.31	17	0.27
Uranium-238	2.23	430	0.08	1.41	86	0.25
		Total Dose	**0.8**		**Total Dose**	**3**

[a] Values from LANL 2005, 088493.
[b] ND = Not detected.

Table F-3.4-19
Screening Evaluation for AOC 35-014(f), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	6.1	454	1.34E-02	6.1(U)	31.3	1.95E-01
Nickel	16.4	2.27E+04	7.22E-04	46.5	1560	2.98E-02
Selenium	ND[c]	5680	Not a COPC	0.33	391	8.36E-04
Silver	1.5(U)	5680	2.64E-04	0.027	391	6.83E-05
Acetone	ND	1.00E+05[d]	Not a COPC	0.0054	2.81E+04	1.92E-07
Dichloroethene[cis-1,2-]	0.003	300	1.00E-05	0.003	76.5	3.92E-05
Toluene	0.002	252[d]	7.94E-06	0.002	252[d]	7.94E-06
		HI	**1E-02**		**HI**	**0.2**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] Maximum values or saturation values.

Table F-3.4-20
Screening Evaluation for AOC 35-014(f), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	26.7	4500[c]	5.93E-08	90	2100[c]	4.29E-07
Bis(2-ethylhexyl)phthalate	0.75	1370	5.47E-09	0.75	347	2.16E-08
Tetrachloroethene	0.002	31.6	6.33E-10	0.002	12.5	1.60E-09
Trichloroethene	0.019	1.56	1.22E-07	0.019	0.638	2.98E-07
		Total Excess Cancer Risk	**2E-07**		**Total Excess Cancer Risk**	**7E-07**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-3.4-21
Screening Evaluation for SWMU 35-015(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	7(U)	454	1.54E-02	3.85	31.3	1.23E-01
Nickel	10.42	2.27E+04	4.59E-04	32.9	1560	2.11E-02
Selenium	0.22	5680	3.87E-05	0.31	391	7.83E-04
Silver	0.5	5680	8.80E-05	1.04	391	2.66E-03
Acetone	0.043	1.00E+05[c]	4.30E-07	0.16	7.04E+04	2.32E-06
Anthracene	ND[d]	1.00E+05	Not a COPC	5.47	2.20E+04	2.49E-04
Butanone[2-]	ND	4.87E+04	Not a COPC	0.051	3.18E+04	1.60E-06
Dimethyl phthalate	0.06	1.00E+05[c]	6.00E-07	5.53	1.00E+05[c]	5.53E-05
Fluoranthene	ND	2.44E+04	Not a COPC	5.47	2.29E+03	2.39E-03
Hexanone[2-][e]	ND	4.87E+04	Not a COPC	0.11	3.18E+04	3.52E-06
Methyl-2-pentanone[4-]	ND	7010[c]	Not a COPC	0.012	5.51E+03	2.27E-06
Phenanthrene	ND	2.05E+04[c]	Not a COPC	5.47	1.83E+03	2.99E-03
Pyrene	ND	3.09E+04	Not a COPC	5.47	2.29E+03	2.39E-03
Toluene	0.006	252[c]	2.38E-05	0.006	252[c]	2.38E-05
Trichloro-1,2,2-trifluoroethane[1,1,2-]	ND	3280[c]	Not a COPC	0.002	3280[c]	6.10E-07
Trichlorofluoromethane	0.003	983[c]	3.05E-06	0.005	588[c]	8.50E-06
Xylene[1,3-] +Xylene[1,4-]	NC[f]	82[c]	Not a COPC	0.0022	82	2.68E-05
Xylene[1,2-]	NC	99.5[c]	Not a COPC	0.00051	99.5[c]	5.13E-06
		HI	**2E-02**		**HI**	**0.2**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] ND = Not detected
[e] 2-Butanone used as a surrogate for 2-Hexanone.
[f] NC = Not collected.

Table F-3.4-22
Screening Evaluation for SWMU 35-015(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	23.3	5000[c]	4.66E-08	39.8	2100[c]	1.90E-07
Benzo(a)anthracene	ND[d]	23.4	Not a COPC	5.47	6.21	8.81E-06
Benzo(a)pyrene	ND	2.34	Not a COPC	5.47	0.621	8.81E-05
Benzo(b)fluoranthene	ND	23.4	Not a COPC	5.47	6.21	8.81E-06
Benzo(k)fluoranthene	ND	234	Not a COPC	5.47	62.1	8.81E-07
Bis(2-ethylhexyl)phthalate	1.72	1370	1.26E-08	5.16	347	1.49E-07
Chrysene	ND	2310	Not a COPC	5.47	615	8.89E-08

Table F-3.4-22 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
DDT[4,4'-]	NC	78.1	Not a COPC	0.10	17.2	5.99E-08
Tetrachloroethene	ND	31.6	Not a COPC	0.00085	12.5	6.80E-10
Total Excess Cancer Risk			**6E-08**	**Total Excess Cancer Risk**		**1E-04**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321)
[d] ND = Not detected.

Table F-3.4-23
Screening Evaluation for SWMU 35-015(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Europium-152	ND[b]	11	Not a COPC	0.16	2.9	0.81
Plutonium-239	0.028	210	0.002	0.011	33	0.005
Total Dose			**0.002**	**Total Dose**		**0.8**

[a] Values from LANL 2005, 088493.
[b] ND = Not detected.

Table F-3.4-24
Screening Evaluation for AOC 35-018(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Mercury	0.04	340	1.18E-04	0.41	23	1.78E-02
Acenaphthene	1.55	3.35E+04	4.62E-05	1.34	3.73E+04	3.60E-05
Anthracene	3.27	1.00E+05[c]	3.27E-05	2.84	2.20E+04	1.29E-04
Aroclor-1260	3.31	na	na	6.12	1.12	5.46
Benzo(g,h,i)perylene[d]	3.90	3.09E+04	1.26E-04	3.32	2290	1.45E-03
Dibenzofuran	0.85	1620	5.27E-04	0.75	142	5.30E-03
Fluoranthene	19.39	2.44E+04	7.95E-04	16.46	2290	7.19E-03
Fluorene	1.64	2.65E+04	6.18E-05	1.42	2660	5.34E-04
2-Methylnaphthalene[e]	0.33	300	1.10E-03	0.32	79.5	4.05E-03
Naphthalene	0.67	300	2.23E-03	0.63	79.5	7.95E-03
Phenanthrene	14.7	2.05E+04	7.17E-04	12.52	1830	6.84E-03
Pyrene	16.04	3.09E+04	5.19E-04	13.69	2290	5.98E-03
HI			**6E-03**	**HI**		**6**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Pyrene used as a surrogate for Benzo(g,h,i)perylene.
[e] Naphthalene used as a surrogate for 2-Methylnaphthalene.

Table F-3.4-25
Screening Evaluation for AOC 35-018(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1260	3.308	8.26	4.00E-06	6.12	2.2	2.78E-05
Benzo(a)anthracene	6.63	23.4	2.83E-06	5.66	6.21	9.12E-06
Benzo(a)pyrene	5.32	2.34	2.27E-05	4.54	0.621	7.31E-05
Benzo(b)fluoranthene	8.51	23.4	3.64E-06	7.25	6.21	1.17E-05
Benzo(k)fluoranthene	ND[c]	234	Not a COPC	0.2	62.1	3.22E-08
Bis(2-ethylhexyl)phthalate	ND	1370	Not a COPC	0.036	347	1.02E-09
Chrysene	6.59	2310	2.85E-08	5.73	615	9.32E-08
Indeno(1,2,3-cd)pyrene	3.48	23.4	1.49E-06	2.96	6.21	4.77E-06
Total Excess Cancer Risk			**3E-05**	**Total Excess Cancer Risk**		**1E-04**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.

Table F-3.4-26
Screening Evaluation for AOC 35-018(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL*(pCi/g)	Total Dose (mrem/yr)
Tritium	0.034	4.40E+05	1.17E-06	0.034	750	0.001
		Total Dose	**1E-06**		**Total Dose**	**0.001**

*Values from LANL 2005, 088493.

Table F-3.5-1
Final ESL Comparison for Mesa Top Subarea

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acenaphthene	1.31	0.25	Plant	**5.22**	**Yes**
Acetone	0.04	1.2	Deer mouse	0.03	No
Anthracene	1.13	210	Shrew	5E-03	No
Aroclor-1248	0.056	7.20E-03	Shrew	**7.78**	**Yes**
Aroclor-1254	0.063	4.10E-02	Robin	**1.54**	**Yes**
Aroclor-1260	1.13	0.14	Red fox	**8.10**	**Yes**
Benzo(a)anthracene	1.14	3.0	Shrew	**0.38**	**Yes**
Benzo(a)pyrene	1.15	9.6	Shrew	0.12	No
Benzo(b)fluoranthene	1.14	18	Plant	0.06	No
Benzo(g,h,i)perylene	1.15	24	Shrew	0.05	No
Benzo(k)fluoranthene	1.12	62	Shrew	0.02	No
Bis(2-ethylhexyl)phthalate	0.71	0.02	Robin	**35.4**	**Yes**

Table F-3.5-1 (continued)

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
2-Butanone	0.011	360	Deer mouse	3E-05	No
Chrysene	1.14	2.4	Shrew	**0.48**	**Yes**
4,4'-DDT	0.10	0.3	Robin	**0.34**	**Yes**
Dibenz(a,h)anthracene	0.54	12	Shrew	0.05	No
cis-1,2-Dichloroethene	0.003	23	Deer mouse	1E--04	No
Dimethylphthalate	0.59	10	Earthworm	0.06	No
Di-n-butylphthalate	0.58	0.011	Robin	**52.4**	**Yes**
Fluoranthene	1.77	22	Shrew	0.08	No
Fluorene	0.61	4.1	Earthworm	0.15	No
2-Hexanone	0.011	360	Deer mouse	3E-05	No
Indeno(1,2,3-cd)pyrene	1.15	62	Shrew	0.02	No
Methylene Chloride	0.008	2.6	Deer mouse	3E-03	No
2-Methylnaphthalene	1.11	2.5	Shrew	0.45	**Yes**
Naphthalene	1.12	0.34	Shrew	3.3	**Yes**
Phenanthrene	1.77	10	Shrew	0.18	No
Phenol	0.86	0.79	Plant	1.08	**Yes**
Pyrene	1.77	18	Shrew	0.10	No
Tetrachloroethene	0.002	0.18	Shrew	0.01	No
Toluene	0.006	23	Shrew	3E-04	No
Trichloroethene	0.006	42	Deer mouse	1E-04	No
Xylene (total)	0.004	1.4	Shrew	3E-03	No
1,2-Xylene	0.001	1.4	Shrew	7E-04	No
1,3-Xylene+1,4-Xylene	0.002	1.4	Shrew	1E-03	No
Inorganic Chemicals (mg/kg)					
Barium	83.37	110	Plant	**0.76**	**Yes**
Boron	2.99	2	Robin	**1.50**	**Yes**
Chromium	35.02	2.3	Earthworm	**15.23**	**Yes**
Copper	15.31	10	Plant	**1.53**	**Yes**
Fluoride	1.32	31	Robin	0.04	No
Lead	10.7	14	Robin	**0.76**	**Yes**
Mercury	0.094	0.03	Robin	**7.23**	**Yes**
Nickel	28.78	20	Plant	**1.44**	**Yes**
Selenium	0.32	0.1	Plant	**3.20**	**Yes**
Silver	0.88	0.05	Plant	**17.70**	**Yes**
Thallium	0.26	0.032	Shrew	**8.13**	**Yes**
Titanium	135.22	72	Shrew	**1.88**	**Yes**
Zinc	33.64	10	Plant	**3.36**	**Yes**
Radionuclides (pCi/g)					
Americium-241	0.038	44	Earthworm	9E-04	No
Cesium-137	0.286	680	Red fox	4E-04	No
Cobalt-60	0.072	550	Earthworm	1E-04	No
Europium-152	0.12	380	Earthworm	3E-04	No
Plutonium-238	0.005	44	Earthworm	1E-04	No

Table F-3.5-1 (continued)

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Plutonium-239	0.35	47	Earthworm	7E-03	No
Strontium-90	131.17	560	Red fox	0.23	No
Tritium	6.19	3.60E+04	Plant	2E-04	No
Uranium-234	1.51	51	Earthworm	0.03	No
Uranium-235	0.15	55	Earthworm	3E-03	No
Uranium-238	3.32	55	Earthworm	0.06	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-3.5-2
HI Analysis for Mesa Top Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Barium	83.37	<0.01	<0.01	0.08	0.10	0.09	0.08	0.03	0.06	0.05	0.25	**0.76**
Boron	2.99	<0.01	<0.01	0.05	**1.50**	**0.93**	**0.40**	0.04	0.02	0.05	na*	0.08
Chromium (total)	35.02	<0.01	<0.01	<0.01	0.02	0.03	0.04	<0.01	0.05	0.02	**15.23**	**14.59**
Copper	15.31	<0.01	0.01	0.17	**0.55**	**0.96**	**1.39**	0.06	**0.45**	0.26	**1.18**	**1.53**
Lead	10.70	<0.01	0.01	0.09	**0.51**	**0.67**	**0.76**	0.03	0.15	0.09	0.01	0.09
Mercury	0.094	<0.01	**0.34**	**1.15**	**1.34**	**4.27**	**7.23**	<0.01	0.06	0.03	**1.88**	<0.01
Nickel	28.78	<0.01	<0.01	0.05	0.05	0.24	**0.41**	<0.01	0.12	0.05	0.29	**1.44**
Selenium	0.32	<0.01	<0.01	0.04	0.21	0.25	0.29	0.11	**0.35**	0.29	0.04	**3.20**
Silver	0.89	<0.01	<0.01	0.02	0.03	0.08	0.12	<0.01	0.02	0.01	na	**17.70**
Thallium	0.26	0.09	<0.01	0.04	0.03	0.16	0.29	0.09	**8.13**	**3.82**	na	**2.60**
Titanium	135.22	0.02	na	na	na	na	na	0.02	**1.88**	**0.90**	na	na
Zinc	33.64	<0.01	0.02	0.19	0.17	**0.70**	**1.25**	0.01	0.21	0.12	0.18	**3.36**
Acenaphthene	1.31	<0.01	na	na	na	na	na	<0.01	0.01	0.01	na	**5.22**
Aroclor-1248	0.06	**0.75**	0.16	0.28	0.06	**0.71**	**1.37**	0.09	**7.78**	**4.00**	na	na
Aroclor-1254	0.06	**0.42**	0.29	0.37	0.05	**0.79**	**1.54**	<0.01	0.14	0.07	na	<0.01
Aroclor-1260	1.13	**8.10**	0.25	0.31	0.02	**0.67**	**1.29**	<0.01	0.11	0.06	na	na
Benzo(a)anthracene	1.14	0.03	na	na	na	na	na	0.18	**0.38**	0.03	na	0.06
Bis(2-ethylhexyl)phthalate	0.71	**0.59**	**21.45**	**15.73**	0.04	**17.70**	**35.40**	<0.01	**1.20**	**0.64**	na	na
Chrysene	1.14	0.02	na	na	na	na	na	0.18	**0.48**	**0.37**	na	na
DDT[4,4'-]	0.10	0.07	0.10	0.10	<0.01	0.17	**0.34**	<0.01	**0.30**	0.15	na	0.03
Di-n-butyl phthalate	0.58	<0.01	**2.40**	**8.47**	**1.48**	**27.43**	**52.36**	<0.01	<0.01	<0.01	na	<0.01
Methylnaphthalene[2-]	1.11	0.01	na	na	na	na	na	0.07	0.45	0.29	**na**	na
Naphthalene	1.12	0.03	<0.01	<0.01	0.03	0.02	0.01	**2.48**	**1.16**	**3.29**	na	**1.12**
Phenol	0.86	<0.01	na	na	na	na	na	0.02	<0.01	0.02	**0.48**	**1.08**
HI		**10**	**25**	**27**	**6**	**56**	**105**	**3**	**24**	**15**	**20**	**53**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-3.5-3
Comparison of EPC to Background Concentrations, Mesa Top Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Range (mg/kg)	Tuff Background Range (mg/kg)
Barium	83.37	21–410	1.4–51.6
Boron	2.99	No background	No background
Chromium	35.02	1.9–36.5	0.25–13
Copper	15.31	0.25–16	0.25–6.2
Lead	10.7	2–28	1.6–15.5
Mercury	0.094	0.05–0.1	0.1*
Nickel	28.78	1–29	0.5–7
Selenium	0.32	0.1–1.7	0.1–0.105
Silver	0.885	1.0*	0.2–1.9
Thallium	0.26	0.063–1	0.05–1.7
Titanium	135.22	No background	No background
Zinc	33.635	14–75.5	5.5–65.6

*No background data set; value is the BV.

Table F-3.5-4
Population Area Use Factors for Mesa Top Subarea

Receptor	Home Range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 1.66-ha Mesa Top Subarea
Mexican spotted owl	366	n/a[a]	0.0045[b]
American kestrel	106	4240	3.92E-04
American robin	0.42	16.8	0.10
Deer mouse	0.077	3.08	0.54
Vagrant shrew	0.39	15.6	0.11
Desert cottontail	3.1	124	0.01
Red fox	1038	41520	4.00E-05

[a] n/a = Not applicable.
[b] Value for Mexican spotted owl is the AUF based on individual home range.

Table F-3.5-5
HI Analysis for Mesa Top Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Boron	2.99	<0.1	<0.01	0.05	**1.50**	**0.93**	**0.40**	0.04	0.02	0.05	na	0.08
Titanium	135.22	0.02	na[a]	na	na	na	na	0.02	**1.88**	**0.90**	na	na
Acenaphthene	1.31	<0.01	na	na	na	na	na	<0.01	0.01	0.01	na	**5.22**
Aroclor-1248	0.06	**0.75**	0.16	0.28	0.06	**0.71**	**1.37**	0.09	**7.78**	**4.00**	na	na
Aroclor-1254	0.06	**0.42**	0.29	**0.37**	0.05	**0.79**	**1.54**	<0.01	0.14	0.07	na	<0.01
Aroclor-1260	1.13	**8.10**	0.25	**0.31**	0.02	**0.67**	**1.29**	<0.01	0.11	0.06	na	na
Benzo(a)anthracene	1.14	0.03	na	na	na	na	na	0.18	**0.38**	0.03	na	0.06
Bis(2-ethylhexyl)phthalate	0.71	**0.59**	**21.45**	**15.73**	0.04	**17.70**	**35.40**	<0.01	**1.20**	**0.64**	na	na
Chrysene	1.14	0.02	na	na	na	na	na	0.18	**0.48**	**0.37**	na	na
DDT[4,4'-]	0.10	0.07	0.10	0.10	<0.01	0.17	**0.34**	<0.01	0.30	0.15	na	0.03
Di-n-butyl phthalate	0.58	<0.01	**2.40**	**8.47**	**1.48**	**27.43**	**52.36**	<0.01	<0.01	<0.01	na	<0.01
Methylnaphthalene[2-]	1.11	0.01	na	na	na	na	na	0.07	**0.45**	0.29	na	na
Naphthalene	1.12	0.03	<0.01	<0.01	0.03	0.02	0.01	**2.48**	**1.16**	**3.29**	na	**1.12**
Phenol	0.86	<0.01	na	na	na	na	na	0.02	<0.01	0.02	**0.48**	**1.08**
HI		**10**	**25**	**25**	**3**	**48**	**93**	**3**	**14**	**10**	**0.5**	**8**
HI Adjusted for PAUF		**<0.01**	**0.01**	**0.01**	**0.3**	**5**	**9**	**0.04**	**2**	**5**	**n/a[b]**	**n/a**

Note: Bolded values indicate HQ greater than 0.3.
[a] na = Not available.
[b] n/a = Not applicable.

Table F-3.5-6
Remaining COPECs and Receptors Adjusted for PAUF for Mesa Top Subarea

Analyte	EPC (mg/kg)	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Titanium	135.22	na*	na	0.02	**1.88**	**0.90**	na	na
Aroclor-1260	1.13	**0.67**	**1.29**	<0.01	0.11	0.06	na	na
Benzo(a)anthracene	1.14	na	na	0.18	**0.38**	0.03	na	0.06
Chrysene	1.14	na	na	0.18	**0.48**	**0.37**	na	na
Methylnaphthalene[2-]	1.11	na	na	0.07	**0.45**	0.29	na	na
HI		**0.7**	**1**	.4	**3**	**2**	na	0.06
PAUF-Adjusted HI		**0.07**	**0.1**	0.01	**0.4**	**0.9**	na	0.06

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-4.4-1
Parameters Used to Calulate Chemical SSLs

Parameter	Residential Values	Recreational User Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	0.2 mg/cm^2
Body weight–child	15 kg (0–6 yr of age)	31 kg (6–11 yr of age)
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	200 events/yr
Exposure duration–child	6 yr (0–6 yr of age)	6 yr (6–11 yr of age)
Age-adjusted ingestion factor	114 mg-yr/kg-day	22.6 mg-yr/kg-day
Age-adjusted inhalation factor	11 m^3-yr/kg-day	0.8 m^3-yr/kg-day
Inhalation rate–child	10 m^3/day	1.2 m^3/hr
Soil ingestion rate–child	200 mg/day	71.4 mg/day (400 mg/day x 1 hr/56.hrs)[a]
Particulate emission factor	6.61×10^9 m^3/kg	6.61×10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	3525 cm^2/day (head, hands, forearms, lower legs, feet)
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	273.3 mg-yr/kg-day
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	30 yr[b]
Adherence factor–adult	0.07 mg/cm^2	0.07 mg/cm^2
Soil ingestion rate–adult	100 mg/day	25.6 mg/day (100 mg/day ÷ 1 hr/3.9 hr)[c]
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)	5700 cm^2/day (head, hands, forearms, lower legs)
Inhalation rate–adult	20 m^3/day	1.6 m^3/hr

[a] Assumes 1 hr of use per day, with potential exposure to contaminants occurring over all of that time out of an average of 5.6 h spent outdoors per day (EPA 1997, 066598, Table 15-176, p. 15-187).

[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

[c] Assumes 1 hr of trail use per day, with potential exposure to contaminants occurring over all of that time out of an average of 3.9 hr spent outdoors per day (EPA 1997, 066598, Table 15-10, pp. 15-28 and 15-29).

Table F-4.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5[a]	7305 [b]
Mass Loading (g/m^3)	1.5 x 10^{-7} [c]	1.5 x 10^{-7} [c]
Outdoor Time fraction	0.2236 [d]	0.0599 [e]
Indoor Time fraction	0.7347 [f]	0.8984 [g]
Soil ingestion (g/yr)	73 [h]	36.5 [i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).

[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).

[c] Calculated as [1/ 6.6 x 10+9 m^3/kg) x 1000 g/kg, where 6.6 x 10+9 m^3/kg is the particulate emission factor (NMED 2004, 085615).

[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3–11 yr old child (EPA 1997, 066598, Section 15.4-1).

[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).

[f] Calculated as [(24–5.6 hr/day x 350 day/yr] / 8766 hr/yr.

[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.

[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).

[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-4.4-3
Parameters Used in the SAL Calculations for Radionuclides, Recreational

Parameters	Recreational, Child	Recreational, Adult
Inhalation Rate (m^3/yr)	10,526[a]	14,035 [b]
Mass Loading (g/m^3)	1.5 x 10^{-7} [c]	1.5 x 10^{-7} [c]
Outdoor Time fraction	0.0228 [d]	0.0228 [d]
Indoor Time fraction	0	0
Soil ingestion (g/yr)	626 [e]	225 [f]

[a] Calculated as [1.2 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.2 m^3/hr is the child inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[b] Calculated [1.6 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.6 m^3/hr is the adult inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[c] Calculated as [1/ 6.6 x 10+9 m^3/kg) x 1000 g/kg, where 6.6 x 10+9 m^3/kg is the particulate emission factor used for residential and industrial scenarios.

[d] Calculated as [1 hr/day x 200 day/yr] / 8766 hr/yr, where 1 hr/day is the exposure time for a recreational adult or child (LANL 2004, 087800).

[e] Calculated as [(0.4 g/day / 5.6 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 5.6 hr/day is an estimate of time spent outdoors for a child (EPA 1997, 066598, Section 15.4.1), and where 0.4 g/day is the upper bound child soil ingestion rate (EPA 1997, 066596, Table 4-23).

[f] Calculated as [(0.1 g/day / 3.9 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 3.9 hr/day is the time-weighted average for “doers” across ages 12-44 (EPA 1997, 066598, Table 15-10), and where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-4.4-4
Screening Evaluation for Consolidated Unit 35-004(g)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Copper	5.35	3.17E+04	1.69E-04	7.48	3130	2.39E-03
Selenium	1.1 (U)	3960	2.78E-04	1.1 (U)	391	2.81E-03
Aroclor-1254	0.006	6.65	9.02E-04	0.006	1.12	5.36E-03
Aroclor-1260	0.006	15.8	3.48E-04	0.15	1.12	1.34E-01
Fluoranthene	0.023	1.39E+04	1.68E-06	0.023	2290	1.02E-05
Pyrene	0.020	2.38E+04	8.36E-07	0.020	2290	8.69E-06
		HI	**2E-03**		**HI**	**0.1**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).

Table F-4.4-5
Screening Evaluation for Consolidated Unit 35-004(g)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1254	0.006	10.5	5.71E-09	0.006	2.2[c]	2.73E-08
Aroclor-1260	0.006	10.5	5.24E-09	0.15	2.2 [c]	6.82E-07
		Total Excess Cancer Risk	**1E-08**		**Total Excess Cancer Risk**	**7E-07**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321)

Table F-4.4-6
Screening Evaluation for Consolidated Unit 35-004(g)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Europium-152	ND[b]	100	Not a COPC	0.33	2.9	1.68
Plutonium-238	ND	330	Not a COPC	0.01	37	5.68E-03
Plutonium-239	0.163	300	8.15E-03	0.004	33	1.82E-03
Uranium-234	1.67	3200	7.83E-03	2.23	170	0.20
Uranium-235	0.083	520	2.38E-03	0.08	17	7.06E-02
Uranium-238	2.47	2100	1.76E-02	2.26	86	0.39
		Total Dose	**0.04**		**Total Dose**	**2**

[a] Values from LANL (LANL 2005, 088493).
[b] ND = Not detected.

Table F-4.4-7
Screening Evaluation for SWMU 35-009(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.102	317	3.22E-04	0.53	31.3	1.70E-02
Aluminum	9814	1.00E+05[c]	9.81E-02	6012	7.78E+04	7.73E-02
Barium	84.7	1.00E+05[c]	8.47E-04	44.7	1.56E+04	2.87E-03
Cadmium	0.319	392	8.14E-04	0.56	39	1.44E-02
Cobalt	3.38	1.57E+04	2.15E-04	2.16	1.52E+03	1.42E-03
Copper	101	3.17E+04	3.19E-03	34.8	3130	1.11E-02
Lead	12.86	560	2.30E-02	10	400	2.50E-02
Lithium	3.5	1600[d,e]	2.19E-03	4.66	1600[d]	2.91E-03
Mercury	0.905	238	3.80E-03	1.05[f]	23[d]	4.57E-02
Nickel	4.88	1.58E+04	3.09E-04	3.73	1560	2.39E-03
Selenium	0.55 (U)	3960	1.39E-04	0.32	391	8.29E-04
Silver	2.274	3960	5.74E-04	3.86	391	9.87E-03
Zinc	96.3	1.00E+05[c]	9.63E-04	70.3	2.35E+04	2.99E-03
Acetone	0.11	1.00E+05[c]	1.12E-06	0.11[f]	2.81E+04	3.99E-06
Aroclor-1254	0.39	6.65	5.91E-02	0.39[f]	1.12	3.51E-01
Aroclor-1260	1.26	15.8	7.97E-02	1.26[f]	1.12	1.13E+00
Dichloroethene(1,1-)	0.0012	5050	2.38E-07	0.0025[f]	206	1.21E-05
Di-n-butyl phthalate	0.223	3.99E+04	5.59E-06	0.19	6110	3.18E-05
Isopropyltoluene(4-)[g]	0.094	389[c]	2.42E-04	0.094[f]	271	3.46E-04
Pyrene	ND[h]	2.38E+04	Not a COPC	0.092	2290	4.02E-05
Toluene	0.0028	252[c]	1.11E-05	0.0028[f]	252[c]	1.11E-05
		HI	**0.3**		**HI**	**2**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321)
[e] Value is a residential value.
[f] Value is maximum detected concentration.
[g] Isopropylbenzene used as a surrogate for 4-Isopropyltoluene.
[h] ND = Not detected.

Table F-4.4-8
Screening Evaluation for SWMU 35-009(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	10.08	2.57E+05	3.92E-10	5.48	210[c]	2.61E-07
Aroclor-1254	0.39	10.5	3.74E-07	0.39[d]	2.2[c]	1.79E-06
Aroclor-1260	1.26	10.5	1.2E-06	1.26[d]	2.2[c]	5.73E-06

Table F-4.4-8 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.199	1830	1.09E-09	1.24	347	3.57E-08
DDE(4,4'-)	0.00022	122	1.83E-11	0.00022 [d]	17.2	1.30E-10
Excess Cancer Risk			**2E-06**	**Excess Cancer Risk**		**8E-06**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] Value is maximum detected concentration.
[e] ND = Not detected.

Table F-4.4-9
Screening Evaluation for SWMU 35-009(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	0.025	330	1.15E-03	0.01	37	4.05E-03
Plutonium-239	0.646	300	3.23E-02	0.23	33	1.05E-01
Strontium-90	1.25	5600	3.35E-03	0.34	5.7	8.84E-01
Tritium	0.2	5.10E+06	5.88E-07	0.26	750	5.14E-03
Uranium-234	2.83	3200	1.33E-02	2.12	170	1.87E-01
Uranium-235	0.085	520	2.46E-03	0.07	17	6.53E-02
Uranium-238	2.47	2100	1.77E-02	1.45	86	2.53E-01
Total Dose			**0.1**	**Total Dose**		**2**

[a] Values from LANL (LANL 2005, 088493).

Table F-4.4-10
Screening Evaluation for SWMU 35-009(e), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Copper	35	3.17E+04	1.10E-03	35	3130	1.12E-02
Lead	33.2	560	5.93E-02	33.2	400	8.30E-02
Mercury	0.60	238	2.53E-03	0.60	23[c]	2.61E-02
Selenium	0.97	3960	2.44E-04	0.97	391	2.47E-03
Silver	2.87	3960	7.25E-04	2.87	391	7.34E-03
Zinc	96.9	1.00E+05[d]	9.69E-04	96.9	2.35E+04	4.12E-03
Acetone	0.0086	1.00E+05 [d]	8.60E-08	0.0086	2.81E+04	3.06E-07

Table F-4.4-10 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aroclor-1254	1.98[e]	6.65	2.98E-01	1.54[e]	1.12	1.38E+00
Aroclor-1260	9.52[e]	15.8	6.02E-01	7.40[e]	1.12	6.61E+00
Benzo(g,h,i)perylene[f]	0.019	2.38E+04	8.15E-07	0.019	2290	8.47E-06
Pyrene	0.051	2.38E+04	2.13E-06	0.051	2290	2.22E-05
		HI	**1**		**HI**	**8**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Values from EPA Region 6 (EPA 2006, 094321)

[d] Maximum values or saturation values.

[e] Value is EPC.

[f] Pyrene used as a surrogate for benzo(g,h,i)perylene.

Table F-4.4-11
Screening Evaluation for SWMU 35-009(e), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1254	1.98	10.5	1.88E-06	1.54	2.2[c]	7.00E-06
Aroclor-1260	9.52	10.5	9.06E-06	7.40	2.2[c]	3.36E-05
Total Excess Cancer Risk			**1E-05**	**Total Excess Cancer Risk**		**4E-05**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Values from EPA Region 6 (EPA 2006, 094321)

Table F-4.4-12
Screening Evaluation for SWMU 35-009(e), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	ND[b]	280	Not a COPC	0.087	30	4.35E-02
Cesium-137	0.68	210	4.82E-02	0.68	5.6	1.81E+00
Plutonium-238	0.017	330	7.82E-04	0.017	37	6.97E-03
Plutonium-239	0.40	300	2.00E-02	3.16	33	1.44E+00
Tritium	0.073	5.10E+06	2.15E-07	0.073	750	9.73E-05
Uranium-234	2.4	3.20E+03	1.13E-02	3.42	170	3.02E-01
Uranium-235	0.17	520	4.82E-03	0.47	17	4.15E-01
Uranium-238	3.12	2100	2.23E-02	3.12	86	5.44E-01
		Total Dose	**0.1**		**Total Dose**	**5**

[a] Values from LANL (LANL 2005, 088493).

[b] ND = Not detected.

Table F-4.4-13
Screening Evaluation for Consolidated Unit 35-014(g)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.43	317	1.35E-03	1.86	31.3	5.94E-02
Copper	46.43	3.17E+04	1.46E-03	36.80	3130	1.18E-02
Lead	30.76	560	5.49E-02	23.6	400	5.90E-02
Mercury	0.062	238	2.63E-04	0.078	23[c]	3.39E-03
Selenium	0.58	3960	1.47E-04	0.73	391	1.86E-03
Silver	0.088	3960	2.23E-05	0.44	391	1.11E-03
Thallium	0.23	52.3	4.46E-03	0.46	5.16	8.99E-02
Zinc	446.2	1.00E+05[d]	4.46E-03	355	2.35E+04	1.51E-02
Acetone	0.26	1.00E+05 [d]	2.58E-06	0.26	2.81E+04	9.18E-06
Benzo(g,h,i)perylene[e]	0.021	2.38E+04	8.82E-07	0.23	2290	1.01E-04
Benzoic Acid	0.699	1.00E+05 [d]	6.99E-06	2.72	1.00E+05[d]	2.72E-05
Butanone(2-)	0.0083	4.87E+04 [d]	1.70E-07	0.0083	3.18E+04	2.61E-07
Di-n-butyl phthalate	0.018	3.99E+04	4.51E-07	1.44	6110	2.36E-04
Di-n-octyl phthalate	0.018	1.59E+04	1.13E-06	1.44	2400[c]	6.00E-04
Fluoranthene	0.05	1.39E+04	3.60E-06	0.23	2290	9.96E-05
Isopropyltoluene(4-)[f]	0.195	389 [d]	5.01E-04	0.19	271	7.20E-04
Phenanthrene	0.038	1.20E+04	3.17E-06	0.23	1830	1.26E-04
Pyrene	0.12	2.38E+04	5.17E-06	0.22	2290	9.78E-05
Toluene	0.013	252 [d]	5.12E-05	0.013	252 [d]	5.12E-05
		HI	**0.1**		**HI**	**0.2**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] Maximum values or saturation values.
[e] Pyrene used as a surrogate for benzo(g,h,i)perylene.
[f] Isopropylbenzene used as a surrogate for 4-isopropyltoluene.

Table F-4.4-14
Screening Evaluation for Consolidated Unit 35-014(g)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Benzo(a)anthracene	0.026	30.1	8.64E-09	0.23	6.21	3.74E-07
Benzo(a)pyrene	0.17	3.01	5.65E-07	0.23	0.621	3.66E-06
Benzo(b)fluoranthene	0.21	30.1	6.98E-08	0.23	6.21	3.72E-07
Benzo(k)fluoranthene	0.23	301	7.64E-09	0.23	62.1	3.77E-08
Bis(2-ethylhexyl)phthalate	0.35	1830	1.93E-09	0.66	347	1.90E-08
Chrysene	0.18	3010	5.98E-10	0.23	615	3.71E-09
		Total Excess Cancer Risk	**7E-07**		**Total Excess Cancer Risk**	**4E-06**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).

Table F-4.4-15
Screening Evaluation for Consolidated Unit 35-014(g)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Europium-152	0.41	100	6.18E-02	0.10	2.9	5.38E-01
Plutonium-239	0.15	300	7.55E-03	0.35	33	1.58E-01
Uranium-234	16.92	3200	7.93E-02	10.45	170	9.22E-01
Uranium-235	0.51	520	1.48E-02	0.32	17	2.82E-01
		Total Dose	**0.2**		**Total Dose**	**2**

*Values from LANL (LANL 2005, 088493).

Table F-4.4-16
Screening Evaluation for AOC 35-014(g3), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.071	317	2.24E-04	0.31	31.3	9.78E-03
Mercury	0.022	238	9.24E-05	0.036	23[c]	1.57E-03
Selenium	0.21	3960	5.30E-05	0.42	391	1.06E-03
Zinc	66.66	1.00E+05[d]	6.67E-04	64.3	2.35E+04	2.74E-03
Acenaphthene	0.21	4.75E+04	4.42E-06	1.92	3730	5.15E-04
Acenaphthylene[e]	0.025	2.38E+04	1.06E-06	1.91	2300	8.30E-04
Acetone	0.079	1.00E+05[d]	7.90E-07	0.11	2.81E+04	3.88E-06
Anthracene	0.23	1.00E+05[d]	2.30E-06	1.92	2.20E+04	8.73E-05
Benzo(g,h,i)perylene[e]	1.58	2.38E+04	6.66E-05	2.12	2290	9.26E-04
Benzoic Acid	1.00	1.00E+05[d]	1.00E-05	10.79	1.00E+05[d]	1.08E-04
Butanone(2-)	0.007	4.87E+04[d]	1.35E-07	0.013	3.18E+04	4.09E-07
4-Chloro-3-methylphenol[f]	0.33	2620	1.26E-04	5.12	166	3.08E-02
Dibenzofuran	0.12	1580	7.91E-05	3.98	142	2.80E-02
Dichloroethene(1,1-)	0.00099	5050	1.96E-07	0.003	206	1.46E-05
Diethylphthalate	0.020	1.00E+05[d]	2.03E-07	3.97	4.89E+04	8.12E-05
Di-n-butyl phthalate	0.37	3.99E+04	9.27E-06	3.81	6110	6.24E-04
Endosulfan I[g]	ND[h]	2390	Not a COPC	0.0074	367	2.02E-05
Endrin	ND	120	Not a COPC	0.016	18.3	8.91E-04
Ethylbenzene	ND	128[d]	Not a COPC	0.003	128[d]	2.34E-05
Fluoranthene	1.99	1.39E+04	1.43E-04	2.42	2290	1.06E-03
Fluorene	0.23	3.17E+04	7.26E-06	1.92	2660	7.22E-04

Table F-4.4-16 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Isopropyltoluene(4-)[i]	0.0066	389	1.70E-05	0.009	271	3.32E-05
Methylnaphthalene(2-)[j]	0.057	3170	1.80E-05	1.91	79.5	2.40E-02
Naphthalene	0.072	1.58E+04	4.53E-06	1.91	79.5	2.40E-02
Phenanthrene	1.28	1.20E+04	1.07E-04	2.25	1830	1.23E-03
Phenol	0.16	1.00E+05 [d]	1.60E-06	3.98	1.83E+04	2.17E-04
Pyrene	2.36	2.38E+04	9.94E-05	2.76	2290	1.21E-03
Styrene	0.00053	100[d]	5.30E-06	0.003	100 [d]	3.00E-05
Toluene	0.0011	252[d]	4.44E-06	0.024	252 [d]	9.52E-05
Trichloro-1,2,2-trifluoroethane(1,1,2-)	0.002	3280[d]	6.10E-07	0.004	3280 [d]	1.22E-06
		HI	**0.002**		**HI**	**0.1**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] Maximum values or saturation values.
[e] Pyrene used as a surrogate for acenaphthylene and benzo(g,h,i)perylene.
[f] 2-Chlorophenol used as a surrogate for 4-chloro-3-methylphenol.
[g] Endosulfan used as a surrogate for Endosulfan I.
[h] ND = Not detected.
[i] Isopropylbenzene used as a surrogate for 4-isopropyltoluene.
[j] Naphthalene used as a surrogate for 2-Methylnaphthalene.

Table F-4.4-17
Screening Evaluation for AOC 35-014(g3), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aldrin	0.0026	1.49	1.76E-08	0.011	0.284	3.73E-07
Benzo(a)anthracene	1.38	30.1	4.59E-07	2.22	6.21	3.57E-06
Benzo(a)pyrene	1.27	3.01	4.23E-06	2.42	0.621	3.90E-05
Benzo(b)fluoranthene	1.2	30.1	3.99E-07	1.94	6.21	3.12E-06
Benzo(k)fluoranthene	6.29	301	2.09E-07	2.51	62.1	4.04E-07
Bis(2-ethylhexyl)phthalate	5.065	1830	2.77E-08	6.21	347	1.79E-07
Chrysene	1.27	3010	4.21E-09	2.39	615	3.89E-08
4,4'-DDD	ND[c]	173	Not a COPC	0.0088	24.4	3.59E-09
4,4'-DDT	ND	122	Not a COPC	0.0075	17.2	4.36E-09
Dibenz(a,h)anthracene	0.27	3.01	8.97E-07	1.92	0.621	3.09E-05
Dieldrin	ND	1.6	Not a COPC	0.020	0.304	6.45E-07

Table F-4.4-17 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Indeno(1,2,3-cd)pyrene	1.44	30.1	4.77E-07	2.14	6.21	3.45E-06
Tetrachloroethene	ND	238	Not a COPC	0.003	12.5	2.40E-09
Trichloroethene	ND	13.1	Not a COPC	0.003	0.638	4.70E-08
Total Excess Cancer Risk			**7E-06**	**Total Excess Cancer Risk**		**8E-05**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] ND = Not detected.

Table F-4.4-18
Screening Evaluation for AOC 35-014(g3), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.098	210	7.00E-03	0.12	5.6	3.08E-01
Europium-152	0.25	100	3.83E-02	0.31	2.9	1.60E+00
Plutonium-238	NC[b]	330	Not a COPC	0.002[c]	37	8.11E-04
Total Dose			**0.05**	**Total Dose**		**2**

[a] Values from LANL (LANL 2005, 088493).

[b] NC = Not collected.

[c] Maximum detected concentration.

Table F-4.4-19
Screening Evaluation for Consolidated Unit 35-016(a)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Barium	92.84	1.00E+05[c]	9.28E-04	81.5	1.56E+04	5.22E-03
Cadmium	0.58	392	1.48E-03	0.52	39	1.33E-02
Copper	44.89	3.17E+04	1.42E-03	34.5	3130	1.10E-02
Lead	24.12	560	4.31E-02	20.5	400	5.13E-02
Nickel	8.93	1.58E+04	5.65E-04	7.98	1560	5.12E-03
Selenium	0.36	3960	8.99E-05	0.33	391	8.34E-04
Zinc	205.6	1.00E+05[c]	2.06E-03	187	2.35E+04	7.96E-03
Acenaphthene	0.020	4.75E+04	4.29E-07	0.024	3730	6.43E-06
Acetone	0.0068	1.00E+05[c]	6.80E-08	0.0068	2.81E+04	2.42E-07
Anthracene	0.034	1.00E+05[c]	3.35E-07	0.055	2.20E+04	2.50E-06
Aroclor-1254	0.005	6.65	7.52E-04	0.0068	1.12	6.07E-03
Aroclor-1260	0.027	15.8	1.70E-03	0.036	1.12	3.24E-02
Dibenzofuran	0.024	1580	1.53E-05	0.024	142	1.70E-04

Table F-4.4-19 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Dichloroethene(1,1-)	0.0012	5050	2.38E-07	0.0012	206	5.83E-06
Di-n-butyl phthalate	0.036	3.99E+04	9.02E-07	0.036	6110	5.89E-06
Fluoranthene	0.22	1.39E+04	1.56E-05	0.22	2290	9.48E-05
Fluorene	0.047	3.17E+04	1.49E-06	0.047	2660	1.77E-05
Isopropyltoluene(4-)	0.0042	389[c]	1.08E-05	0.0042	271	1.55E-05
Naphthalene	0.028	1.58E+04	1.80E-06	0.028	79.5	3.58E-04
Phenanthrene	0.24	1.20E+04	1.99E-05	0.24	1830	1.31E-04
Pyrene	0.19	2.38E+04	8.11E-06	0.19	2290	8.43E-05
Toluene	0.00046	252[c]	1.83E-06	0.00046	252[c]	1.83E-06
		HI	**0.05**		**HI**	**0.1**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.

Table F-4.4-20
Screening Evaluation for Consolidated Unit 35-016(a)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Arsenic	3.40	27.7	1.23E-06	2.9	3.9	7.44E-06
Chromium	15.03	2.57E+05	5.85E-10	13.3	2100[c]	6.33E-08
Aroclor-1254	0.005	10.5	4.76E-09	0.0068	2.2[c]	3.09E-08
Aroclor-1260	0.027	10.5	2.55E-08	0.036	2.2[c]	1.65E-07
Benzo(a)pyrene	0.076	3.01	2.52E-07	0.076	0.621	1.22E-06
Benzo(b)fluoranthene	0.12	30.1	3.99E-08	0.12	6.21	1.93E-07
Benzo(k)fluoranthene	0.036	301	1.21E-09	0.036	62.1	5.85E-09
Bis(2-ethylhexyl)phthalate	0.98	1830	5.36E-09	0.98	347	2.82E-08
Chrysene	0.086	3010	2.84E-10	0.086	615	1.39E-09
		Total Excess Cancer Risk	**2E-06**		**Total Excess Cancer Risk**	**9E-06**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-4.4-21
Screening Evaluation for Consolidated Unit 35-016(a)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-239	0.056	300	2.78E-03	0.04	33	1.68E-02
Tritium	0.068	5.10E+06	2.00E-07	0.068	750	1.36E-03
Uranium-234	2.18	3.20E+03	1.02E-02	2.21	170	0.19
Uranium-235	0.37	520	1.06E-02	0.37	17	0.33
		Total Dose	**0.02**		**Total Dose**	**0.5**

[a] Values from LANL (LANL 2005, 088493).

Table F-4.4-22
Screening Evaluation for AOC 35-016(b), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Cadmium	0.14	392	3.70E-04	0.14	39	3.72E-03
Copper	13.6	3.17E+04	4.29E-04	13.6	3130	4.35E-03
Lead	21.6	560	3.86E-02	67.1	400	1.68E-01
Selenium	0.657(U)	3960	1.66E-04	1.4(U)	391	3.58E-03
Silver	2.72	3960	6.87E-04	2.72	391	6.96E-03
Zinc	86.4	1.00E+05[c]	8.64E-04	86.4	2.35E+04	3.68E-03
Acenaphthene	0.011	4.75E+04	2.29E-07	0.011	3730	2.92E-06
Butyl benzyl phthalate	0.043	7.97E+04	5.36E-07	0.043	1.20E+04[d]	3.56E-06
Fluoranthene	0.039	1.39E+04	2.82E-06	0.039	2290	1.71E-05
Fluorene	0.013	3.17E+04	4.04E-07	0.013	2660	4.81E-06
Phenanthrene	0.026	1.20E+04	2.21E-06	0.026	1830	1.45E-05
Pyrene	0.044	2.38E+04	1.83E-06	0.044	2290	1.90E-05
		HI	**0.04**		**HI**	**0.2**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321).

Table F-4.4-23
Screening Evaluation for AOC 35-016(b), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.38	1830	2.10E-09	0.38	347	1.11E-08
Chrysene	0.036	3010	1.20E-10	0.036	615	5.85E-10
		Total Excess Cancer Risk	**2E-09**		**Total Excess Cancer Risk**	**1E-08**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).

Table F-4.4-24
Screening Evaluation for AOC 35-016(b), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	0.038	330	1.74E-03	0.066	37	2.69E-02
Uranium-234	0.84	3200	3.92E-03	1.21	170	1.07E-01
Uranium-235	ND [b]	520	Not a COPC	0.056	17	4.94E-02
Uranium-238	0.87	2100	6.19E-03	1.34	86	2.34E-01
		Total Dose	**0.01**		**Total Dose**	**0.4**

[a] Values from LANL (LANL 2005, 088493).
[b] ND = Not detected.

Table F-4.4-25
Screening Evaluation for Consolidated Unit 35-016(c)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	4.65	317	1.47E-02	3.75	31.3	1.20E-01
Barium	56.79	1.00E+05[c]	5.68E-04	55	1.56E+04	3.53E-03
Cadmium	0.067	392	1.71E-04	0.16	39	4.08E-03
Cobalt	2.096	1.57E+04	1.34E-04	1.87	1520	1.23E-03
Copper	15.75	3.17E+04	4.97E-04	13.5	3130	4.31E-03
Lead	22.65	560	4.04E-02	19.8	400	4.95E-02
Mercury	1.04	238	4.37E-03	0.88	23[d]	3.83E-02
Nickel	13.64	1.58E+04	8.63E-04	8.69	1560	5.57E-03
Selenium	0.36	3960	8.96E-05	0.31	391	7.95E-04
Zinc	66.37	1.00E+05 [c]	6.64E-04	60.4	2.35E+04	2.57E-03
Acetone	0.014	1.00E+05 [c]	1.39E-07	0.014	2.81E+04	4.95E-07
Anthracene	ND [e]	1.00E+05 [c]	Not a COPC	0.37	2.20E+04	1.68E-05
Benzo(g,h,i)perylene[f]	ND	2.38E+04	Not a COPC	0.32	2290	1.40E-04
Butylbenzylphthalate	0.27	7.97E+04	3.39E-06	0.24	1.20E+04[d]	1.98E-05
Dichloroethene(1,1-)	0.0015	5050	2.97E-07	0.0015	206	7.28E-06
Fluoranthene	0.087	1.39E+04	6.27E-06	1.04	2290	4.54E-04
Isopropyltoluene(4-)[g]	0.00092	389[c]	2.37E-06	0.0016	271	5.90E-06
Phenanthrene	0.13	1.20E+04	1.08E-05	0.84	1830	4.59E-04

Table F-4.4-25 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Pyrene	0.056	2.38E+04	2.34E-06	0.54	2290	2.38E-04
Styrene	0.00068	100 [c]	6.80E-06	0.00068	100 [c]	6.80E-06
Toluene	0.00059	252 [c]	2.34E-06	0.00059	252 [c]	2.34E-06
		HI	**0.06**		**HI**	**0.2**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321).
[e] ND = Not detected.
[f] Pyrene used as a surrogate for benzo(g,h,i)perylene.
[g] Isopropylbenzene used as a surrogate for 4-isopropyltoluene.

Table F-4.4-26
Screening Evaluation for Consolidated Unit 35-016(c)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	19.38	2.57E+05	7.54E-10	17	2100[c]	8.10E-08
Benzo(a)anthracene	0.066	30.1	2.19E-08	0.69	6.21	1.11E-06
Benzo(a)pyrene	ND [d]	3.01	Not a COPC	0.54	0.621	8.70E-06
Benzo(b)fluoranthene	0.066	30.1	2.19E-08	0.60	6.21	9.66E-07
Benzo(k)fluoranthene	ND	301	Not a COPC	0.44	62.1	7.09E-08
Chrysene	0.066	3010	2.19E-10	0.72	615	1.17E-08
Dibenz(a,h)anthracene	ND	3.01	Not a COPC	0.31	0.621	4.99E-06
Indeno(1,2,3-c,d)pyrene	ND	30.1	Not a COPC	0.39	6.21	6.28E-07
		Total Excess Cancer Risk	**4E-08**		**Total Excess Cancer Risk**	**2E-05**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] ND = Not detected.

Table F-4.4-27
Screening Evaluation for Consolidated Unit 35-016(c)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.32	210	2.27E-02	0.31	5.6	8.41E-01
Europium-152	0.47	100	7.11E-02	0.22	2.9	1.13E+00
Plutonium-238	0.73	330	3.33E-03	0.45	37	1.81E-01
Plutonium-239	0.17	300	8.70E-03	0.22	33	1.00E-01
Uranium-238	2.24	2100	1.60E-02	2.04	86	3.56E-01
		Total Dose	**0.1**		**Total Dose**	**3**

[a] Values from LANL (LANL 2005, 088493).

Table F-4.4-28
Screening Evaluation for AOC 35-016(j), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Cadmium	0.59 (U)	392	1.51E-03	0.59 (U)	39	1.51E-02
Selenium	0.31	3960	7.75E-05	0.31	391	7.85E-04
Acenaphthene	0.19	4.75E+04	4.11E-06	0.19	3730	5.23E-05
Aroclor-1260	0.003	15.8	1.90E-04	0.003	1.12	2.68E-03
Benzo(g,h,i) perylene[c]	0.83	2.38E+04	3.48E-05	0.83	2290	3.62E-04
Benzoic Acid	0.57	1.00E+05[d]	5.71E-06	0.57	1.00E+05 [d]	5.71E-06
Fluoranthene	2.02	1.39E+04	1.45E-04	2.02	2290	8.82E-04
Methylnaphthalene (2-)[e]	0.047	3170	1.48E-05	0.047	79.5	5.89E-04
Phenanthrene	1.16	1.20E+04	9.67E-05	1.16	1830	6.34E-04
Pyrene	2.73	2.38E+04	1.15E-04	2.73	2290	1.19E-03
			HI	**2E-03**	**HI**	**0.02**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Pyrene used as a surrogate for benzo(g,h,i)perylene.

[d] Maximum values or saturation values.

[e] Naphthalene used as a surrogate for 2-Methylnaphthalene.

Table F-4.4-29
Screening Evaluation for AOC 35-016(j), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1260	0.003	10.5	2.86E-09	0.003	2.2[c]	1.36E-08
Benzo(a)anthracene	1.09	30.1	3.62E-07	1.09	6.21	1.76E-06
Benzo(a)pyrene	1.39	3.01	4.62E-06	1.39	0.621	2.24E-05
Benzo(b)fluoranthene	1.8	30.1	5.98E-07	1.8	6.21	2.90E-06

Table F-4.4-29 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Benzo(k)fluoranthene	0.78	301	2.60E-08	0.78	62.1	1.26E-07
Bis(2-ethylhexyl)phthalate	0.85	1830	4.65E-09	0.85	347	2.45E-08
Chrysene	1.42	3010	4.72E-09	1.42	615	2.31E-08
Indeno(1,2,3-cd)pyrene	0.69	30.1	2.30E-07	0.69	6.21	1.11E-06
Total Excess Cancer Risk			**6E-06**	**Total Excess Cancer Risk**		**3E-05**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-4.4-30
Screening Evaluation for AOC 35-016(j), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-239	0.067	300	.3.36E-03	0.08	33	3.50E-02
Total Dose			**0.003**	**Total Dose**		**0.04**

*Values from LANL (LANL 2005, 088493).

Table F-4.5-1
Final ESLs for Ten Site Slope Subarea

Analyte	EPC or Maximum Conc.	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acenaphthene	0.37	0.25	Plant	**1.47**	**Yes**
Acenaphthylene	0.36	120	Shrew	3E-03	No
Acetone	0.08	1.2	Deer mouse	0.07	No
Anthracene	0.38	210	Shrew	2E-03	No
Aroclor-1254	0.41	0.041	Robin	**10.07**	**Yes**
Aroclor-1260	1.93	0.14	Red fox	**13.76**	**Yes**
Benzo(a)anthracene	0.53	3.0	Shrew	0.18	No
Benzo(a)pyrene	0.60	9.6	Shrew	0.06	No
Benzo(b)fluoranthene	0.44	18	Plant	0.02	No
Benzo(g,h,i)perylene	0.47	24	Shrew	0.02	No
Benzo(k)fluoranthene	0.59	62	Shrew	0.01	No
Benzoic Acid	1.14	1	Deer mouse	**1.14**	**Yes**
Bis(2-ethylhexyl)phthalate	1.80	0.02	Robin	**89.95**	**Yes**
Butanone(2-)	0.01	360	Deer mouse	3E-05	No
Butylbenzylphthalate	0.76	90	Shrew	0.01	No
4-Chloro-3-methylphenol	0.70	0.39	Robin	**1.81**	**Yes**
Chrysene	0.60	2.4	Shrew	0.25	No

Table F-4.5-1 (continued)

Analyte	EPC or Maximum Conc.	Final ESL	Receptor	Hazard Quotient	COPEC
DDE(4,4'-)	0.01	0.019	Robin	**0.58**	**Yes**
DDT(4,4'-)	0.01	0.3	Robin	0.03	No
Dibenzofuran	0.75	6.1	Plant	0.12	No
Dichloroethene(1,1-)	0.002	11	Deer mouse	2E-04	No
Dibenz(a,h)anthracene	0.37	12	Shrew	0.03	No
Dieldrin	0.01	0.0045	Shrew	**2.67**	**Yes**
Di-n-butyl phthalate	0.68	0.011	Robin	**61.6**	**Yes**
Di-n-octyl phthalate	0.75	1.1	Shrew	**0.68**	**Yes**
Endosulfan I	0.01	0.64	Deer Mouse	0.01	No
Endrin	0.01	1.40E-03	Plant	**8.57**	**Yes**
Fluoranthene	0.98	22	Shrew	0.04	No
Fluorene	0.36	4.1	Earthworm	0.09	No
Indeno(1,2,3-cd)pyrene	0.48	62	Shrew	0.01	No
Methylnaphthalene(2-)	0.36	2.5	Shrew	0.14	No
Naphthalene	0.36	0.34	Shrew	**1.05**	**Yes**
Phenanthrene	0.57	10	Shrew	0.06	No
Phenol	0.76	0.79	Plant	**0.96**	**Yes**
Pyrene	1.14	18	Shrew	0.06	No
Tetrachloroethene	0.002	0.18	Shrew	0.01	No
Toluene	0.01	23	Shrew	5E-04	No
Trichloroethene	0.002	42	Shrew	5E-05	No
Inorganic Chemicals (mg/kg)					
Antimony	0.71	0.05	Plant	**14.26**	**Yes**
Cadmium	0.34	0.27	Shrew	**1.26**	**Yes**
Chromium	11.21	2.3	Earthworm	**4.87**	**Yes**
Copper	19.32	10	Plant	**1.93**	**Yes**
Lead	19.27	14	Robin	**1.38**	**Yes**
Mercury	0.30	0.013	Robin	**22.69**	**Yes**
Nickel	5.26	20	Plant	0.26	No
Selenium	0.44	0.1	Plant	**4400**	**Yes**
Silver	0.67	0.05	Plant	**13.40**	**Yes**
Zinc	119.53	10	Plant	**11.95**	**Yes**
Radionuclides (pCi/g)					
Americium-241	0.07	44	Earthworm	1E-03	No
Cesium-137	0.15	20.8	Red fox	7E-03	No
Europium-152	0.09	380	Earthworm	2E-04	No
Plutonium-238	0.08	44	Earthworm	2E-03	No
Plutonium-239	0.26	47	Earthworm	6E-03	No
Tritium	0.36	3.60E+04	Plant	1E-05	No
Uranium-234	4.05	51	Earthworm	0.08	No
Uranium-235	0.18	55	Earthworm	3E-03	No
Uranium-238	1.45	55	Earthworm	0.03	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-4.5-2
HI Analysis for Ten Site Slope Subarea

Analyte	EPC or Maximum Conc. (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	0.71	0.02	na*	na	na	na	na	0.25	**2.74**	**1.49**	0.01	**14.26**
Cadmium	0.34	<0.01	<0.01	0.17	0.08	**0.63**	**1.17**	0.03	**1.26**	**0.67**	<0.01	0.01
Chromium (total)	11.21	<0.01	<0.01	<0.01	0.01	0.01	0.01	<0.01	0.01	0.01	**4.87**	**4.67**
Copper	19.32	0.01	0.02	0.22	**0.69**	**1.21**	**1.76**	0.08	**0.57**	**0.33**	**1.49**	**1.93**
Lead	19.27	0.01	0.02	0.16	**0.92**	**1.20**	**1.38**	0.05	0.27	0.16	0.01	0.16
Mercury (inorganic)	0.3	0.01	**1.07**	**3.66**	**4.29**	**13.64**	**23.08**	0.01	0.18	0.10	**6.00**	0.01
Selenium	0.44	<0.01	<0.01	0.05	0.29	**0.34**	**0.40**	0.15	**0.48**	**0.40**	0.06	**4.40**
Silver	0.67	<0.01	<0.01	0.01	0.02	0.06	0.09	<0.01	0.02	0.01	na	**13.40**
Zinc	119.53	0.01	0.09	**0.66**	**0.60**	**2.49**	**4.43**	0.04	**0.75**	**0.41**	**0.63**	**11.95**
Acenaphthene	0.37	<0.01	na	na	na	na	na	<0.01	<0.01	<0.01	na	**1.47**
Aroclor-1254	0.41	**2.75**	**1.88**	**2.43**	**0.32**	**5.16**	**10.07**	0.01	**0.94**	**0.47**	na	<0.01
Aroclor-1260	1.93	**13.76**	**0.42**	**0.52**	0.04	**1.13**	**2.19**	<0.01	0.19	0.10	na	na
Benzoic Acid	1.14	<0.01	**na**	**na**	na	**na**	**na**	0.27	**1.14**	**0.88**	na	na
Bis(2-ethylhexyl)phthalate	1.80	**1.50**	**54.52**	**39.98**	0.09	**44.98**	**89.95**	<0.01	**3.05**	**1.64**	na	na
4-Chloro-3-methylphenol	0.70	0.01	<0.01	0.04	**1.81**	**1.02**	0.25	**1.04**	**0.32**	**1.30**	na	na
DDE[4,4'-]	0.011	<0.01	0.20	0.18	0.01	0.28	**0.58**	<0.01	<0.01	<0.01	na	na
Di-n-butyl phthalate	0.68	<0.01	**2.83**	**9.97**	**1.74**	**32.29**	**61.64**	<0.01	<0.01	<0.01	na	<0.01
Di-n-octyl phthalate	0.75	0.05	na	na	na	na	na	<0.01	**0.68**	**0.34**	na	na
Dieldrin	0.012	0.21	0.10	0.19	0.03	**0.52**	**1.00**	0.04	**2.67**	**1.36**	na	<0.01
Endrin	0.012	0.03	**0.60**	1.46	0.24	**4.29**	**8.57**	0.01	0.52	0.26	na	**3.53**
Naphthalene	0.36	0.01	<0.01	<0.01	0.01	0.01	<0.01	**0.80**	**0.37**	**1.05**	na	**0.36**
Phenol	0.76	<0.01	na	na	na	na	na	0.02	<0.01	0.02	**0.42**	**0.96**
HI		**18**	**62**	**60**	**11**	**109**	**207**	**3**	**16**	**11**	**13**	**57**

Note: Bolded values indicate HQ greater than 0.3.

*na = Not available.

Table F-4.5-3
Comparison of EPC to Background Concentrations for Ten Site Slope Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Concentrations (mg/kg)	Sediment Background Concentrations (mg/kg)	Tuff Background Concentrations (mg/kg)
Antimony	0.71	0.1–1	0.83*	0.05-0.4
Cadmium	0.34	0.2–2.6	0.05–0.18	0.1–1.5
Chromium	11.21	1.9–36.5	0.8–9.2	0.25–13
Copper	19.32	0.25–16	0.77–12	0.25–6.2
Lead	19.27	2–28	2–25.6	1.6–15.5
Mercury	0.3	0.05–0.1	0.01–0.03	0.1*
Selenium	0.44	0.1–1.7	0.1–0.1	0.1–0.105
Silver	0.67	1.0*	0.05–0.28	0.2–1.9
Zinc	119.53	14–75.5	9–56.2	5.5–65.6

*No background data set; compared to BV.

Table F-4.5-4
Population Area Use Factors for Ten Site Slope Subarea

Receptor	Home Range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 4.10-ha Ten Site Slope Subarea
Mexican spotted owl	366	n/a[a]	0.011[b]
American kestrel	106	4240	9.66E-04
American robin	0.42	16.8	0.24
Deer mouse	0.077	3.08	1
Vagrant shrew	0.39	15.6	0.26
Desert cottontail	3.1	124	3.30E-02
Red fox	1038	41520	9.86E-05

[a] n/a = Not applicable.
[b] Value for Mexican spotted owl is the AUF based on individual home range.

Table F-4.5-5
HI Analysis for Ten Site Slope Subarea Using PAUF

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Acenaphthene	0.37	<0.01	na[a]	na	na	na	na	<0.01	<0.01	<0.01	na	**1.47**
Aroclor-1254	0.41	**2.75**	**1.88**	**2.43**	**0.32**	**5.16**	**10.07**	0.01	**0.94**	**0.47**	na	<0.01
Aroclor-1260	1.93	**13.76**	**0.42**	**0.52**	0.04	**1.13**	**2.19**	<0.01	0.19	0.10	na	na
Benzoic Acid	1.14	<0.01	na	na	na	na	na	0.27	**1.14**	**0.88**	na	na
Bis(2-ethylhexyl)phthalate	1.8	**1.5**	**54.52**	**39.98**	0.09	**44.98**	**89.95**	<0.01	**3.05**	**1.64**	na	na
4-Chloro-3-methylphenol	0.70	0.01	<0.01	0.04	**1.81**	**1.02**	0.25	**1.04**	**0.32**	**1.30**	na	na
DDE[4,4'-]	0.011	<0.01	0.20	0.18	0.01	0.28	**0.58**	<0.01	<0.01	<0.01	na	na
Di-n-butyl phthalate	0.68	<0.01	**2.83**	**9.97**	**1.74**	**32.29**	**61.64**	<0.01	<0.01	<0.01	na	<0.01
Di-n-octyl phthalate	0.75	0.05	na	na	na	na	na	<0.01	**0.68**	**0.34**	na	na
Dieldrin	0.012	0.21	0.10	0.19	0.03	0.52	1.00	0.04	**2.67**	**1.36**	na	<0.01
Endrin	0.012	0.03	**0.60**	**1.46**	0.24	**4.29**	**8.57**	0.01	0.52	0.26	na	**3.53**
Naphthalene	0.36	0.01	<0.01	<0.01	0.01	0.01	<0.01	**0.80**	**0.37**	**1.05**	**na**	**0.36**
Phenol	0.77	<0.01	na	na	na	na	na	0.02	<0.01	0.02	**0.42**	**0.96**
HI		**18**	**61**	**55**	**4**	**90**	**174**	**2**	**10**	**7**	**0.4**	**6**
HI adjusted by PAUF		**<0.01**	**0.06**	**0.05**	**1**	**22**	**43**	**0.07**	**3**	n/a[b]	n/a	n/a

Note: Bolded values indicate HQ greater than 0.3.
[a] na = Not available.
[b] n/a = Not applicable.

Table F-4.5-6
Remaining COPECs and Receptors Adjusted for PAUF for Ten Site Slope Subarea

Analyte	EPC (mg/kg)	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Shrew	Deer Mouse	Earthworm	Plant
Bis(2-ethylhexyl)phthalate	1.80	0.09	**44.98**	**89.95**	**3.05**	**1.64**	na*	na
HI		**0.09**	**45**	**90**	**3**	**2**	**na**	**na**
PAUF - Adjusted HI		**<0.01**	**0.8**	**2**	**0.1**	**2**	**na**	**na**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-5.4-1
Parameters Used to Calculate Chemical SSLs

Parameter	Residential Values	Recreational User Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	0.2 mg/cm^2
Body weight–child	15 kg (0–6 yr of age)	31 kg (6–11 yr of age)
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	200 events/yr
Exposure duration–child	6 yr (0–6 yr of age)	6 yr (6–11 yr of age)
Age-adjusted ingestion factor	114 mg-yr/kg-day	22.6 mg-yr/kg-day
Age-adjusted inhalation factor	11 m^3-yr/kg-day	0.8 m^3-yr/kg-day
Inhalation rate–child	10 m^3/day	1.2 m^3/hr
Soil ingestion rate–child	200 mg/day	71.4 mg/day (400 mg/day x 1 hr/56.hrs)[a]
Particulate emission factor	6.61 x 10^9 m^3/kg	6.61 x 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	3525 cm^2/day (head, hands, forearms, lower legs, feet)
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	273.3 mg-yr/kg-day
Volatilization factor for soil (chemical-specific)	(m3/kg)	(m3/kg)

Table F-5.4-1 (continued)

Parameter	Residential Values	Recreational User Values
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	30 yr[b]
Adherence factor–adult	0.07 mg/cm2	0.07 mg/cm2
Soil ingestion rate–adult	100 mg/day	25.6 mg/day (100 mg/day ÷ 1 hr/3.9 hr)c
Exposed surface area–adult	5700 cm2/day (head, hands, forearms, lower legs)	5700 cm2/day (head, hands, forearms, lower legs)
Inhalation rate–adult	20 m3/day	1.6 m3/hr

[a] Assumes 1 hr of use per day, with potential exposure to contaminants occurring over all of that time out of an average of 5.6 hr spent outdoors per day (EPA 1997, 066598, Table 15-176, p. 15-187).

[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

[c] Assumes 1 hr of trail use per day, with potential exposure to contaminants occurring over all of that time out of an average of 3.9 hr spent outdoors per day (EPA 1997, 066598, Table 15-10, pp. 15-28 and 15-29).

Table F-5.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5[a]	7305 [b]
Mass Loading (g/m^3)	1.5×10^{-7} [c]	1.5×10^{-7} [c]
Outdoor Time fraction	0.2236 [d]	0.0599 [e]
Indoor Time fraction	0.7347 [f]	0.8984 [g]
Soil ingestion (g/yr)	73 [h]	36.5 [i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).

[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).

[c] Calculated as [1/ 6.6 x 10+9 m^3/kg) x 1000 g/kg, where 6.6 x 10+9 m^3/kg is the particulate emission factor (NMED 2004, 085615).

[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3-11 yr old child (EPA 1997, 066598, Section 15.4-1).

[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).

[f] Calculated as [(24-5.6 hr/day x 350 day/yr] / 8766 hr/yr.

[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.

[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).

[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-5.4-3
Parameters Used in the SAL Calculations for Radionuclides, Recreational

Parameters	Recreational, Child	Recreational, Adult
Inhalation Rate (m^3/yr)	10,526[a]	14,035[b]
Mass Loading (g/m^3)	1.5 x 10^{-7} [c]	1.5 x 10^{-7} [c]
Outdoor Time fraction	0.0228[d]	0.0228[d]
Indoor Time fraction	0	0
Soil ingestion (g/yr)	626[e]	225[f]

[a] Calculated as [1.2 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.2 m^3/hr is the child inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[b] Calculated [1.6 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.6 m^3/hr is the adult inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[c] Calculated as [1/ 6.6 x 10+9 m^3kg) x 1000 g/kg, where 6.6 x 10+9 m^3/kg is the particulate emission factor used for residential and industrial scenarios.

[d] Calculated as [1 hr/day x 200 day/yr] / 8766 hr/yr, where 1 hr/day is the exposure time for a recreational adult or child (LANL 2004, 087800).

[e] Calculated as [(0.4 g/day / 5.6 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 5.6 hr/day is an estimate of time spent outdoors for a child (EPA 1997, 066598, Section 15.4.1), and where 0.4 g/day is the upper bound child soil ingestion rate (EPA 1997, 066596, Table 4-23).

[f] Calculated as [(0.1 g/day / 3.9 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 3.9 hr/day is the time-weighted average for "doers" across ages 12-44 (EPA 1997, 066598, Table 15-10), and where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-5.4-4
Screening Evaluation for SWMU 35-004(b), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Acetone	0.02	1.00E+05[c]	1.63E-07	0.02	2.81E+04	5.80E-07
Fluoranthene	0.02	1.39E+04	1.32E-06	0.05	2290	2.22E-05
Isopropyltoluene(4-)[d]	0.0034	389[c]	8.74E-06	0.003	271	1.25E-05
Phenanthrene	ND[e]	1.20E+04	Not a COPC	0.04	1830	2.13E-05
Pyrene	ND	2.38E+04	Not a COPC	0.05	2290	1.97E-05
		HI	**1E-05**		**HI**	**8E-05**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Maximum values or saturation values.

[d] Isopropylbenzene used as a surrogate for 4-Isopropyltoluene.

[e] ND = Not detected.

Table F-5.4-5
Screening Evaluation for SWMU 35-004(b), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Benzo(a)pyrene	ND[c]	3.01	Not a COPC	0.02	0.621	3.08E-07
Benzo(b)fluoranthene	ND	30.1	Not a COPC	0.04	6.21	5.67E-08
Methylene Chloride	ND	3010	Not a COPC	0.002	182	9.34E-11
Total Excess Cancer Risk			**n/a**	**Total Excess Cancer Risk**		**4E-07**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] ND = Not detected.

Table F-5.4-6
Screening Evaluation for Consolidated Unit 35-008-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aluminum	6072	1.00E+05[c]	6.07E-02	5641	7.78E+04	7.25E-02
Antimony	0.091	317	2.88E-04	3.08	31.3	9.84E-02
Beryllium	0.62	1580	3.91E-04	0.78	156	5.01E-03
Cadmium	0.17	392	4.29E-04	0.30	39	7.77E-03
Copper	5.85	3.17E+04	1.84E-04	5.45	3130	1.74E-03
Nickel	3.56	1.58E+04	2.55E-04	4.62	1560	2.96E-03
Selenium	8.5(U)	3960	2.15E-03	8.5(U)	391	2.17E-02
Thallium	0.076	52.3	1.45E-03	2.51	5.16	4.86E-01
Zinc	42.16	1.00E+05[c]	4.22E-04	38.2	2.35E+04	1.63E-03
Anthracene	0.056	1.00E+05[c]	5.60E-05	4.07	2.20E+04	1.85E-04
Benzoic Acid	0.43	1.00E+05[c]	4.27E-06	16.1	1.00E+05[c]	1.61E-04
Di-n-butylphthalate	0.13	3.99E+04	3.38E-06	3.93	6110	6.43E-04
Fluoranthene	0.038	1.39E+04	2.73E-06	4.07	2290	1.78E-03
Phenanthrene	0.02	1.20E+04	1.68E-06	4.07	1830	2.22E-03
Phenol	ND[d]	1.00E+05[c]	Not a COPC	4.18	1.83E+04	2.28E-04
Pyrene	0.042	2.38E+04	1.74E-06	4.07	2290	1.78E-03
Toluene	ND	252[c]	Not a COPC	0.005	252[c]	1.98E-05
Trichlorofluoromethane	NA	983[c]	Not a COPC	0.002	588	3.40E-06
		HI	**0.07**		**HI**	**0.7**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Maximum values or saturation values.

[d] ND = Not detected.

Table F-5.4-7
Screening Evaluation for Consolidated Unit 35-008-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	4.54	2.75E+05	1.65E-10	9.51	2100[c]	4.53E-08
Benzo(k)fluoranthene	0.05	301	1.80E-09	4.07	62.1	6.55E-07
Bis(2-ethylhexyl)phthalate	1.92	1830	1.05E-08	3.89	347	1.12E-07
Chrysene	0.05	3010	1.64E-10	4.07	615	6.62E-08
Total Excess Cancer Risk			**1E-08**	**Total Excess Cancer Risk**		**9E-07**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-5.4-8
Screening Evaluation for Consolidated Unit 35-008-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.15	280	8.09E-03	0.07	30	0.03
Cesium-137	1.09	210	7.81E-02	0.59	5.6	1.59
Plutonium-238	0.05	330	2.42E-03	0.02	37	0.01
Plutonium-239	0.29	300	1.43E-02	0.16	33	0.07
Ruthenium-106	0.56	740	1.14E-02	0.13	20	0.09
Uranium-234	4.23	3200	1.98E-02	2.92	170	0.26
Uranium-235	0.17	520	4.82E-03	0.15	17	0.13
Uranium-238	5.20	2100	3.71E-02	3.49	86	0.61
Total Dose			**0.2**	**Total Dose**		**3**

*Values from LANL (LANL 2005, 088493).

Table F-5.4-9
Screening Evaluation for SWMU 35-009(c), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.14	317	4.42E-04	0.31	31.3	9.84E-03
Barium	78.96	1.00E+05[c]	7.90E-04	79.4	1.56E+04	5.09E-03
Cadmium	0.27	392	6.81E-04	0.34	39	8.82E-03
Copper	9.29	3.17E+04	2.93E-04	7.13	3130	2.28E-03
Lead	17.16	560	3.06E-02	16.2	400	4.05E-02
Lithium	NA[d]	1600	Not a COPC	7	1600[e]	4.38E-03
Selenium	0.78	3960	1.96E-04	0.44	391	1.11E-03
Zinc	52.99	1.00E+05[c]	5.30E-04	45	2.35E+04	1.91E-03
Anthracene	0.076	1.00E+05[c]	7.61E-07	0.062	2.20E+04	2.81E-06
Aroclor-1254	0.29	6.65	4.36E-02	0.15	1.12	1.33E-01
Aroclor-1260	0.12	15.8	7.34E-03	0.11	1.12	9.73E-02
Fluoranthene	0.82	1.39E+04	5.90E-05	0.396	2290	1.73E-04

Table F-5.4-9 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Fluorene	0.012	3.17E+04	3.94E-07	0.012	2660	4.70E-06
Phenanthrene	0.11	1.20E+04	9.42E-06	0.11	1830	6.17E-05
Pyrene	0.39	2.38E+04	1.64E-05	0.29	2290	1.25E-04
		HI	**0.08**		**HI**	**0.3**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Maximum values or saturation values.

[d] NA = Not analyzed.

[e] Values from EPA Region 6 (EPA 2006, 094321).

Table F-5.4-10
Screening Evaluation for SWMU 35-009(c), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1242	0.009	10.5	8.10E-09	0.009	2.2 [c]	3.86E-08
Aroclor-1254	0.29	10.5	2.76E-07	0.15	2.2 [c]	6.77E-07
Aroclor-1260	0.12	10.5	1.10E-07	0.11	2.2 [c]	4.95E-07
Benzo(a)pyrene	0.27	3.01	9.10E-07	0.20	0.621	3.29E-06
Benzo (b)fluoranthene	0.33	30.1	1.08E-07	0.24	6.21	3.85E-07
Benzo (k)fluoranthene	0.14	301	4.65E-09	0.11	62.1	1.82E-08
Bis(2-ethylhexyl)phthalate	0.056	1830	3.06E-10	0.06	347	1.61E-09
Chrysene	0.22	3010	7.21E-10	0.17	615	2.83E-09
DDE(4,4'-)	0.001	122	1.16E-10	0.001	17.2	5.37E-10
DDT(4,4'-)	0.003	122	2.46E-10	0.003	17.2	1.47E-09
	Total Excess Cancer Risk		**1E-06**	**Total Excess Cancer Risk**		**5E-06**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-5.4-11
Screening Evaluation for SWMU 35-009(c), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	2.32	280	0.12	1.08	30	0.54
Cesium-137	6.16	210	0.44	0.05	5.6	0.13
Plutonium-238	1.86	330	0.08	0.46	37	0.19

Table F-5.4-11 (continued)

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-239	3.88	300	0.19	1.16	33	0.53
Tritium	0.12	5.10E+06	3.47E-07	0.44	750	0.01
Uranium-234	2.66	3200	0.01	1.58	170	0.14
Uranium-238	3.28	2100	0.02	1.81	86	0.32
		Total Dose	**1**		**Total Dose**	**2**

[a] Values from LANL (LANL 2005, 088493).

Table F-5.4-12
Screening Evaluation for AOC 35-016(f), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Cadmium	0.11	392	2.76E-04	0.12	39	2.77E-03
Selenium	1.1(U)	3960	2.78E-04	1.1(U)	391	2.81E-03
Aroclor-1254	0.0043	6.65	6.42E-04	0.006	1.12	5.71E-03
Aroclor-1260	0.0074	15.8	4.66E-04	0.0074	1.12	6.58E-03
Benzoic Acid	0.52	1.00E+05[c]	5.22E-06	0.52	1.00E+05[c]	5.22E-06
Di-n-butylphthalate	0.033	3.99E+04	8.32E-07	0.033	6110	5.43E-06
Fluoranthene	0.053	1.39E+04	3.81E-06	0.053	2290	2.31E-05
Fluorene	0.008	3.17E+04	2.40E-07	0.008	2660	2.86E-06
Phenanthrene	0.030	1.20E+04	2.48E-06	0.030	1830	1.63E-05
Pyrene	0.051	2.38E+04	2.15E-06	0.051	2290	2.23E-05
		HI	**2E-03**		**HI**	**2E-02**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.

Table F-5.4-13
Screening Evaluation for AOC 35-016(f), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1254	0.0043	10.5	4.07E-09	0.0073	2.2[c]	1.94E-08
Aroclor-1260	0.0074	10.5	7.02E-09	0.0074	2.2[c]	3.35E-08
Benzo(a)anthracene	0.026	30.1	8.64E-09	0.026	6.21	4.19E-08
Benzo(a)pyrene	0.0038	3.01	1.26E-07	0.038	0.621	6.09E-07
Benzo(b)fluoranthene	0.047	30.1	1.57E-08	0.047	6.21	7.63E-08
Benzo(k)fluoranthene	0.028	301	9.17E-10	0.028	62.1	4.44E-09
Bis(2-ethylhexyl)phthalate	0.16	1830	8.96E-10	0.16	347	4.73E-09
Chrysene	0.037	3010	1.23E-10	0.037	615	6.03E-10
Total Excess Cancer Risk			**2E-07**	**Total Excess Cancer Risk**		**8E-07**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-5.4-14
Screening Evaluation for Consolidated Unit 35-016(i)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Cadmium	0.12	392	3.06E-04	0.30	39	7.74E-03
Mercury	0.63	238	2.65E-03	0.28	23[c]	1.22E-02
Selenium	0.40	3.96E+03	1.00E-04	0.30	391	7.57E-04
Acenaphthene	0.10	4.75E+04	2.19E-06	0.08	3730	2.06E-05
Anthracene	0.083	1.00E+05[d]	8.26E-07	0.10	2.20E+04	4.32E-06
Aroclor-1254	0.091	6.65	1.37E-02	0.04	1.12	3.57E-02
Aroclor-1260	0.19	15.8	1.21E-02	0.17	1.12	1.52E-01
Benzo(g,h,i)perylene[e]	0.62	2.38E+04	2.61E-05	0.25	2290	1.09E-04
Benzoic Acid	0.50	1.00E+05[d]	4.98E-06	1.41	1.00E+05[d]	1.41E-05
Fluoranthene	0.25	1.39E+04	1.78E-05	0.36	2290	1.57E-04
Fluorene	0.09	3.17E+04	2.89E-06	0.08	2660	2.82E-05
Phenanthrene	0.22	1.20E+04	1.84E-05	0.30	1830	1.64E-04
Pyrene	0.22	2.38E+04	9.45E-06	0.26	2290	1.14E-04
HI			**0.03**	**HI**		**0.2**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] Maximum values or saturation values.
[e] Pyrene used as a surrogate for benzo(g,h,i)perylene.

Table F-5.4-15
Screening Evaluation for Consolidated Unit 35-016(i)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	29.32	2.75E+05	1.07E-09	27.00	2100[c]	1.29E-07
Aroclor-1254	0.091	10.5	8.70E-08	0.04	2.2[c]	1.82E-07
Aroclor-1260	0.19	10.5	1.82E-07	0.17	2.2[c]	7.73E-07
Benzo(a)anthracene	0.33	30.1	1.10E-07	0.15	6.21	2.37E-07
Benzo(a)pyrene	0.16	3.01	5.25E-07	0.15	0.621	2.35E-06
Benzo(b)fluoranthene	0.25	30.1	8.17E-08	0.22	6.21	3.54E-07
Benzo(k)fluoranthene	0.09	301	3.11E-09	0.07	62.1	1.19E-08
Bis(2-ethylhexyl)phthalate	0.26	1830	1.40E-09	0.67	347	1.92E-08
Chrysene	0.14	3010	4.82E-10	0.16	615	2.67E-09
Indeno(1,2,3-cd)pyrene	0.61	30.1	2.03E-07	0.24	6.21	3.86E-07
Total Excess Cancer Risk			**1E-06**	**Total Excess Cancer Risk**		**4E-06**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-5.4-16
Screening Evaluation for SWMU 35-016(o), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.11	317	3.47E-04	0.10	31.3	3.35E-03
Barium	55.86	1.00E+05[c]	5.59E-04	58.45	1.56E+04	3.75E-03
Cadmium	0.20	392	5.03E-04	0.19	39	4.92E-03
Copper	11.15	3.17E+04	3.52E-04	9.71	3130	3.10E-03
Lead	15.22	560	2.72E-02	13.56	400	3.39E-02
Mercury	0.088	238	3.70E-04	0.074	23[d]	3.21E-03
Nickel	4.95	1.58E+04	3.13E-04	23.09	1560	1.48E-02
Selenium	0.64	3960	1.62E-04	0.64	391	1.65E-03
Thallium	0.26	52.3	4.88E-03	0.20	5.16	3.93E-02
Zinc	40.38	1.00E+05[c]	4.04E-04	37.54	2.35E+04	1.60E-03
Acenaphthene	0.31	4.75E+04	6.61E-06	0.30	3730	7.94E-05
Anthracene	0.38	1.00E+05[c]	3.78E-06	0.64	2.20E+04	2.92E-05
Aroclor-1254	0.42	6.65	6.24E-02	0.35	1.12	3.16E-01
Arolcor-1260	0.088	15.8	5.60E-03	0.072	1.12	6.40E-02
Benzo(g,h,i)perylene[e]	0.72	2.38E+04	3.04E-05	0.69	2290	3.03E-04
Benzoic Acid	0.84	1.00E+05[c]	8.41E-07	0.084	1.00E+05[c]	8.38E-07
Chloroaniline[4-]	0.14	240[d]	5.83E-04	0.81	240[d]	3.37E-03
Dibenzofuran	0.32	1580	2.03E-04	0.30	142	2.13E-03
Di-n-butylphthalate	0.15	3.99E+04	3.86E-06	0.15	6110	2.44E-05
Fluoranthene	3.70	1.39E+04	2.66E-04	3.44	2290	1.50E-03

Table F-5.4-16 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Fluorene	0.23	3.17E+04	7.19E-06	0.22	2660	8.12E-05
Methylnaphthalene(2-)[f]	0.11	3170	3.38E-05	0.10	79.5	1.30E-03
Naphthalene	0.24	1.58E+04	1.49E-05	0.24	79.5	2.96E-03
Phenanthrene	1.83	1.20E+04	1.52E-04	3.05	1830	1.67E-03
Phenol	0.09	1.00E+05[c]	9.30E-07	0.13	1.83E+04	7.05E-06
Pyrene	4.67	2.38E+04	1.96E-04	4.32	2290	1.89E-03
		HI	**0.1**		**HI**	**0.5**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321).
[e] Pyrene used as a surrogate for benzo(g,h,i)perylene.
[f] Naphthalene used as a surrogate for residential.

Table F-5.4-17
Screening Evaluation for SWMU 35-016(o), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	6.46	2.75E+05	2.35E-10	40.01	2100	1.91E-07
Aniline	0.21	850[c]	2.47E-09	0.21	850[c]	2.47E-09
Aroclor-1254	0.42	10.5	3.95E-07	0.35	2.2[c]	1.61E-06
Aroclor-1260	0.088	10.5	8.43E-08	0.072	2.2[c]	3.26E-07
Benzo(a)anthracene	1.04	30.1	3.44E-07	0.93	6.21	1.50E-06
Benzo(a)pyrene	1.88	3.01	6.25E-06	1.70	0.621	2.74E-05
Benzo(b)fluoranthene	1.76	30.1	5.86E-07	1.53	6.21	2.46E-06
Benzo(k)fluoranthene	1.03	301	3.43E-08	1.65	62.1	2.66E-07
Bis(2-ethylhexyl)phthalate	0.36	1830	1.97E-09	0.18	347	5.33E-09
Chrysene	2.03	3010	6.76E-09	1.82	615	2.95E-08
DDE(4,4'-)	0.002	122	1.48E-10	0.002	17.2	1.01E-09
DDT(4,4'-)	0.006	122	4.63E-10	0.005	17.2	2.94E-09
Dibenz(a,h)anthracene	0.38	3.01	1.25E-06	0.36	0.621	5.88E-06
Indeno(1,2,3-cd)pyrene	0.73	30.1	2.43E-07	0.68	6.21	1.10E-06
Pentachlorophenol	0.23	117	1.97E-08	1.69	29.8	5.67E-07
		Total Excess Cancer Risk	**9E-06**		**Total Excess Cancer Risk**	**4E-05**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-5.4-18
Screening Evaluation for SWMU 35-016(o), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.87	280	0.05	0.646	30	0.32
Cesium-137	2.47	210	0.18	1.27	5.6	3.40
Cobalt-60	0.28	46	0.09	0.051	1.3	0.59
Plutonium-238	0.44	330	0.02	0.262	37	0.11
Plutonium-239	0.52	300	0.03	0.615	33	0.28
Tritium	1.23	5.10E+06	3.61E-06	0.95	750	0.02
Uranium-234	1.54	3200	0.01	1.48	170	0.13
Uranium-235	0.068	520	1.98E-03	0.092	17	0.08
Uranium-238	1.80	2100	0.01	2.06	86	0.36
		Total Dose	**0.4**		**Total Dose**	**5**

*Values from LANL (LANL 2005, 088493).

Table F-5.4-19
Screening Evaluation for SWMU 35-016(p), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Selenium	0.83	3960	2.08E-04	0.82	391	2.09E-03
Acenaphthene	0.03	4.75E+04	6.29E-07	0.026	3730	7.02E-06
Anthracene	0.023	1.00E+05[c]	2.28E-07	0.023	2.20E+04	1.04E-06
Benzo(g,h,i)perylene[d]	0.026	2.38E+04	1.08E-06	0.13	2290	5.50E-05
Benzoic Acid	1.6	1.00E+05	1.60E-05	1.6	1.00E+05 [d]	1.60E-05
Fluoranthene	0.061	1.39E+04	4.40E-06	0.12	2290	5.11E-05
Fluorene	0.034	3.17E+04	1.09E-06	0.034	2660	1.30E-05
Naphthalene	0.010	1.58E+04	6.52E-07	0.010	79.5	1.30E-03
Phenanthrene	0.12	1.20E+04	9.58E-06	0.12	1830	6.45E-05
Pyrene	0.066	2.38E+04	2.78E-06	0.096	2290	4.21E-05
		HI	**0.0002**		**HI**	**0.002**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Pyrene used as a surrogate for benzo(g,h,i)perylene.

Table F-5.4-20
Screening Evaluation for SWMU 35-016(p), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Benzo(a)anthracene	0.060	30.1	2.01E-08	0.082	6.21	1.32E-07
Benzo(a)pyrene	0.042	3.01	1.41E-07	0.068	0.621	1.10E-06
Benzo(b)fluoranthene	0.058	30.1	1.92E-08	0.058	6.21	9.32E-08
Chrysene	0.043	3010	1.44E-10	0.059	615	9.58E-10
Indeno(1,2,3-cd)pyrene	0.029	30.1	9.50E-09	0.029	6.21	4.61E-08
Total Excess Cancer Risk			**2E-07**	**Total Excess Cancer Risk**		**1E-06**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).

Table F-5.4-21
Screening Evaluation for SWMU 35-016(p), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.80	210	0.06	0.80	5.6	2.14
Total Dose			**0.06**		**Total Dose**	**2**

*Values from LANL (LANL 2005, 088493).

Table F-5.5-1
Final ESL Comparison for Mortandad Slope Subarea

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acenaphthene	1.47	0.25	Plant	**5.88**	**Yes**
Acetone	0.013	1.2	Deer mouse	0.01	No
Anthracene	1.5	210	Shrew	0.01	No
Aroclor-1242	0.034	0.041	Robin	**0.83**	**Yes**
Aroclor-1254	0.18	0.041	Robin	**4.46**	**Yes**
Aroclor-1260	0.086	0.14	Red fox	**0.61**	**Yes**
Benzo(a)anthracene	1.66	3.0	Shrew	**0.55**	**Yes**
Benzo(a)pyrene	1.67	9.6	Shrew	0.17	No
Benzo(b)fluoranthene	1.65	18	Plant	0.09	No
Benzo(g,h,i)perylene	1.58	24	Shrew	0.06	No
Benzo(k)fluoranthene	1.69	62	Shrew	0.03	No
Benzoic Acid	7.25	1	Deer mouse	**7.25**	**Yes**
Bis(2-ethylhexyl)phthalate	1.80	0.02	Robin	**89.85**	**Yes**
Butanone[2-]	0.014	360	Deer mouse	4E-05	No
Chrysene	1.71	2.4	Shrew	**0.71**	**Yes**
DDE[4,4'-]	0.021	0.019	Robin	**1.11**	**Yes**
DDT[4,4'-]	0.016	0.3	Robin	0.05	No

Table F-5.5-1 (continued)

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Dibenz(a,h)anthracene	1.45	12	Shrew	0.12	No
Dibenzofuran	1.91	6.1	Plant	**0.31**	**Yes**
Di-n-butyl phthalate	1.80	0.011	Robin	**163.64**	**Yes**
Fluoranthene	2.17	22	Shrew	**0.10**	No
Fluorene	1.46	4.1	Earthworm	**0.36**	**Yes**
Indeno(1,2,3-cd)pyrene	1.57	62	Shrew	0.03	No
Methylene Chloride	0.006	2.6	Deer mouse	2E-03	No
Methylnaphthalene[2-]	1.75	2.5	Shrew	**0.70**	**Yes**
Naphthalene	1.45	0.34	Shrew	**4.26**	**Yes**
Pentachlorophenol	5.84	0.36	Robin	**16.22**	**Yes**
Phenanthrene	7.06	10	Shrew	19.61	No
Phenol	1.91	0.79	Plant	**2.42**	**Yes**
Pyrene	2.44	18	Earthworm	0.14	No
Toluene	0.004	23	Shrew	2E-04	No
Inorganic Chemicals (mg/kg)					
Antimony	1.49	0.05	Plant	**29.80**	**Yes**
Chromium	15.96	0.2	Earthworm	**6.94**	**Yes**
Copper	6.15	10	Plant	**0.62**	**Yes**
Fluoride	2.06	31	Robin	0.07	No
Mercury	0.07	0.013	Earthworm	**5.31**	**Yes**
Nickel	9.23	20	Plant	**0.46**	**Yes**
Selenium	0.55	0.1	Plant	**5.50**	**Yes**
Thallium	0.87	0.032	Shrew	**27.19**	**Yes**
Zinc	35.25	10	Plant	**3.53**	**Yes**
Radionuclides (pCi/g)					
Americium-241	6.20	44	Earthworm	0.14	No
Cesium-137	122	680	Red fox	0.18	No
Cobalt-60	0.12	550	Earthworm	2E-04	No
Plutonium-238	21.4	44	Earthworm	**0.49**	**Yes**
Plutonium-239	6.15	47	Earthworm	0.13	No
Strontium-90	5.76	560	Red fox	0.01	No
Tritium	0.89	3.60E+04	Plant	2E-05	No
Uranium-234	1.38	51	Earthworm	0.03	No
Uranium-235	0.10	55	Earthworm	2E-03	No
Uranium-238	1.53	55	Earthworm	0.03	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-5.5-2
HI Analysis for Mortandad Slope Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	1.49	0.03	na*	na	na	na	na	**0.51**	**5.73**	**3.10**	0.02	**29.80**
Chromium (total)	15.96	<0.01	<0.01	<0.01	0.01	0.01	0.02	<0.01	0.02	0.01	**6.94**	**6.65**
Copper	6.15	<0.01	0.01	0.07	0.22	**0.38**	**0.56**	0.02	0.18	0.10	**0.47**	**0.62**
Mercury (inorganic)	0.07	<0.01	0.25	**0.85**	**1.00**	**3.18**	**5.38**	<0.01	0.04	0.02	**1.40**	<0.01
Nickel	9.23	<0.01	<0.01	0.02	0.02	0.08	0.13	<0.01	0.04	0.02	0.09	**0.46**
Selenium	0.55	0.01	<0.01	0.06	**0.37**	**0.42**	**0.50**	0.18	**0.60**	**0.50**	0.07	**5.50**
Thallium	0.87	**0.31**	0.01	0.13	0.09	**0.54**	**0.97**	0.31	**27.19**	**12.79**	na	**8.70**
Zinc	35.25	<0.01	0.03	0.20	0.18	**0.73**	**1.31**	0.01	0.22	0.12	0.19	**3.53**
Acenaphthene	1.47	<0.01	na	na	na	na	na	<0.01	0.01	0.01	na	**5.88**
Aroclor-1242	0.034	<0.01	0.02	0.13	0.03	**0.43**	**0.83**	<0.01	0.09	0.04	na	na
Aroclor-1254	0.18	**1.22**	**0.83**	**1.08**	0.14	**2.29**	**4.46**	<0.01	**0.42**	0.21	na	<0.01
Aroclor-1260	0.086	**0.61**	0.02	0.02	<0.01	0.05	0.10	<0.01	0.01	<0.01	na	na
Benzo(a)anthracene	1.66	0.04	na	na	na	na	na	0.27	**0.55**	**0.49**	na	0.09
Benzoic Acid	7.25	0.02	na	na	na	na	na	**1.73**	**7.25**	**5.58**	na	na
Bis(2-ethylhexyl)phthalate	1.80	1.50	**54.45**	**39.93**	0.09	**44.93**	**89.85**	<0.01	**3.05**	**1.63**	na	na
Chrysene	1.71	0.04	na	na	na	na	na	0.26	**0.71**	**0.55**	na	na
DDE[4,4'-]	0.021	<0.01	0.38	0.34	0.02	**0.54**	**1.11**	<0.01	0.01	<0.01	na	na
Dibenzofuran	1.91	na	na	na	na	na	na	na	na	na	na	**0.31**
Di-n-butyl phthalate	1.80	<0.01	**7.50**	**26.47**	**4.62**	**85.71**	**163.64**	<0.01	0.01	<0.01	na	0.01
Fluorene	1.46	<0.01	na	na	na	na	na	<0.01	**0.01**	<0.01	0.36	na
Methylnaphthalene[2-]	1.75	0.01	na	na	na	na	na	0.11	**0.70**	**0.46**	na	na
Naphthalene	1.45	0.03	<0.01	<0.01	0.04	0.02	0.01	**3.22**	**1.51**	**4.26**	na	1.45
Pentachlorophenol	7.06	0.54	1.41	3.53	0.23	**9.81**	**19.61**	0.04	**8.72**	**4.41**	0.23	**1.41**

Table F-5.5-2 (continued)

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Phenol	1.91	<0.01	na	na	na	na	na	0.04	<0.01	0.05	**1.06**	**2.42**
Plutonium-238	21.4	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	**0.49**	<0.01
	HI	**4**	**65**	**73**	**7**	**149**	**288**	**7**	**57**	**34**	**11**	**67**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-5.5-3
Comparison of EPC to Background Concentrations for Mortandad Slope Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Concentrations (mg/kg)	Sediment Background Concentrations (mg/kg)	Tuff Background Concentrations (mg/kg)
Antimony	1.49	0.1–1	0.83*	0.05–0.4
Chromium	15.96	1.9–36.5	0.8–9.2	0.25–13
Copper	6.15	0.25–16	0.77–12	0.25–6.2
Mercury	0.07	0.05–0.1	0.01–0.03	0.1*
NIckel	9.23	1-29	1-8.9	0.5-7
Selenium	0.55	0.1–1.7	0.1–0.1	0.1–0.105
Thallium	0.87	0.063–1	0.73*	0.05–1.7
Zinc	35.25	14–75.5	9–56.2	5.5–65.6

*No background data set; value is the BV.

Table F-5.5-4
Population Area Use Factors for Mortandad Slope Subarea

Receptor	Home range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 5.53-ha Mortandad Slope Subarea
Mexican spotted owl	366	n/a[a]	0.015[b]
American kestrel	106	4240	1.30E-03
American robin	0.42	16.8	0.33
Deer mouse	0.077	3.08	1
Vagrant shrew	0.39	15.6	0.35
Desert cottontail	3.1	124	0.045
Red fox	1038	41520	1.33E-04

[a] n/a = Not applicable.
[b] Value for Mexican spotted owl is the AUF based on individual home range.

Table F-5.5-5
HI Analysis for Mortandad Slope Subarea, PAUF

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Acenaphthene	1.47	<0.01	na	na	na	na	na	<0.01	0.01	0.01	na	**5.88**
Aroclor-1242	0.034	<0.01	0.02	0.13	0.03	**0.43**	**0.83**	<0.01	0.09	0.04	na	na
Aroclor-1254	0.18	**1.22**	**0.83**	**1.08**	0.14	**2.29**	**4.46**	<0.01	**0.42**	0.21	na	<0.01
Aroclor-1260	0.086	**0.61**	0.02	0.02	<0.01	0.05	0.10	<0.01	0.01	<0.01	na	na
Benzo(a)anthracene	1.66	0.04	na	na	na	na	na	0.27	**0.55**	**0.49**	na	0.09
Benzoic Acid	7.25	0.02	na	na	na	na	na	**1.73**	**7.25**	**5.58**	na	na
Bis(2-ethylhexyl)phthalate	1.80	1.50	**54.45**	**39.93**	0.09	**44.93**	**89.85**	<0.01	**3.05**	**1.63**	na	na
Chrysene	1.71	0.04	na	na	na	na	na	0.26	**0.71**	**0.55**	na	na
DDE[4,4'-]	0.021	<0.01	0.38	0.34	0.02	**0.54**	**1.11**	<0.01	0.01	<0.01	na	na
Dibenzofuran	1.91	na	na	na	na	na	na	na	na	na	na	**0.31**
Di-n-butyl phthalate	1.80	<0.01	**7.50**	**26.47**	**4.62**	**85.71**	**163.64**	<0.01	0.01	<0.01	na	0.01
Fluorene	1.46	<0.01	na	na	na	na	na	<0.01	**0.01**	<0.01	0.36	na
Methylnaphthalene[2-]	1.75	0.01	na	na	na	na	na	0.11	**0.70**	**0.46**	na	na
Naphthalene	1.45	0.03	<0.01	<0.01	0.04	0.02	0.01	**3.22**	**1.51**	**4.26**	na	1.45
Pentachlorophenol	7.06	0.54	1.41	3.53	0.23	**9.81**	**19.61**	0.04	**8.72**	**4.41**	0.23	**1.41**
Phenol	1.91	<0.01	na	na	na	na	na	0.04	<0.01	0.05	**1.06**	**2.42**
Plutonium-238	21.4	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	<0.01	**0.49**	<0.01
HI		**4**	**65**	**72**	**5**	**144**	**280**	**6**	**23**	**18**	**2**	**12**
PAUF-Adjusted HI		**<0.01**	**0.08**	**0.09**	**2**	**47**	**92**	**0.3**	**8**	**n/a[b]**	**n/a**	**n/a**

Note: Bolded values indicate HQ greater than 0.3.
[a] na = Not available.
[b] n/a = Not applicable.

Table F-5.5-6
Remaining COPECs and Receptors Adjusted for PAUF for Mortandad Slope Subarea

Analyte	EPC	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Shrew	Deer Mouse	Earthworm	Plant
Dibenzofuran	1.91	na[a]	na	na	na	na	na	**0.31**
Fluorene	1.47	na	na	na	0.01	<0.01	**0.36**	na
Plutonium-238	21.4	<0.01	0.01	0.01	<0.01	<0.01	**0.49**	<0.01
HI		**<0.01**	**0.01**	**0.01**	**0.01**	**<0.01**	**0.8**	**0.3**
PAUF-Adjusted HI		**<0.01**	**<0.01**	**<0.01**	**<0.01**	**<0.01**	**n/a[b]**	**n/a**

Note: Bolded values indicate HQ greater than 0.3.
[a] na = Not available.
[b] n/a = Not applicable.

Table F-6.4-1
Parameters Used to Calculate Chemical SSLs

Parameter	Residential Values	Recreational User Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	0.2 mg/cm^2
Body weight–child	15 kg (0–6 yr of age)	31 kg (6–11 yr of age)
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	200 events/yr
Exposure duration–child	6 yr (0–6 yr of age)	6 yr (6–11 yr of age)
Age-adjusted ingestion factor	114 mg-yr/kg-day	22.6 mg-yr/kg-day
Age-adjusted inhalation factor	11 m^3-yr/kg-day	0.8 m^3-yr/kg-day
Inhalation rate–child	10 m^3/day	1.2 m^3/hr
Soil ingestion rate–child	200 mg/day	71.4 mg/day (400 mg/day x 1 hr/56.hrs)[a]
Particulate emission factor	6.61 x 10^9 m^3/kg	6.61 x 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	3525 cm^2/day (head, hands, forearms, lower legs, feet)
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	273.3 mg-yr/kg-day

Table F-6.4-1 (continued)

Parameter	Residential Values	Recreational User Values
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	30 yr[b]
Adherence factor–adult	0.07 mg/cm^2	0.07 mg/cm^2
Soil ingestion rate–adult	100 mg/day	25.6 mg/day (100 mg/day ÷ 1 hr/3.9 hr)[c]
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)	5700 cm^2/day (head, hands, forearms, lower legs)
Inhalation rate–adult	20 m^3/day	1.6 m^3/hr

[a] Assumes 1 hr of use per day, with potential exposure to contaminants occurring over all of that time out of an average of 5.6 hours spent outdoors per day (EPA 1997, 066598, Table 15-176, p. 15-187).

[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

[c] Assumes 1 hr of trail use per day, with potential exposure to contaminants occurring over all of that time out of an average of 3.9 hr spent outdoors per day (EPA 1997, 066598, Table 15-10, pp. 15-28 and 15-29).

Table F-6.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5 [a]	7305 [b]
Mass Loading (g/m^3)	1.5×10^{-7} [c]	1.5×10^{-7} [c]
Outdoor Time fraction	0.2236 [d]	0.0599 [e]
Indoor Time fraction	0.7347 [f]	0.8984 [g]
Soil ingestion (g/yr)	73 [h]	36.5 [i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).

[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).

[c] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor (NMED 2004, 085615).

[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3-11 yr old child (EPA 1997, 066598, Section 15.4-1).

[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).

[f] Calculated as [(24-5.6 hr/day x 350 day/yr] / 8766 hr/yr.

[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.

[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).

[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-6.4-3
Parameters Used in the SAL Calculations for Radionuclides, Recreational

Parameters	Recreational, Child	Recreational, Adult
Inhalation Rate (m^3/yr)	10,526 [a]	14,035 [b]
Mass Loading (g/m^3)	1.5 x 10^{-7} [c]	1.5 x 10^{-7} [c]
Outdoor Time fraction	0.0228 [d]	0.0228 [d]
Indoor Time fraction	0	0
Soil ingestion (g/yr)	626 [e]	225 [f]

[a] Calculated as [1.2 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.2 m^3/hr is the child inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[b] Calculated [1.6 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.6 m^3/hr is the adult inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[c] Calculated as [1/ 6.6 x 10^{+9} m^3/kg) x 1000 g/kg, where 6.6 x 10^{+9} m^3/kg is the particulate emission factor used for residential and industrial scenarios.

[d] Calculated as [1 hr/day x 200 day/yr] / 8766 hr/yr, where 1 hr/day is the exposure time for a recreational adult or child (LANL 2004, 087800).

[e] Calculated as [(0.4 g/day / 5.6 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 5.6 hr/day is an estimate of time spent outdoors for a child (EPA 1997, 066598, Section 15.4.1), and where 0.4 g/day is the upper bound child soil ingestion rate (EPA 1997, 066596, Table 4-23).

[f] Calculated as [(0.1 g/day / 3.9 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 3.9 hr/day is the time-weighted average for "doers" across ages 12-44 (EPA 1997, 66598, Table 15-10), and where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-6.4-4
Screening Evaluation for Consolidated Unit 35-003(d)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aluminum	9246	1.00E+05[c]	9.25E-02	7018	7.78E+04	9.02E-02
Antimony	0.070	317	2.22E-04	1.06	31.3	3.39E-02
Barium	95.01	1.00E+05 [c]	9.50E-04	69.5	1.56E+04	4.46E-03
Boron	ND[d]	1.00E+05 [c]	Not a COPC	1.27	1.56E+04	8.14E-05
Cadmium	0.14	392	3.60E-04	0.54	39	1.38E-02
Copper	6.17	3.17E+04	1.95E-04	6.57	3130	2.10E-03
Fluoride	NA[e]	3700[f]	Not a COPC	6.6	3700[f]	1.78E-03
Lithium	NA	1600[f]	Not a COPC	4.3	1600[f]	2.69E-03
Mercury	0.14	238	5.71E-04	0.49	23 [f]	2.15E-02
Nickel	5.63	1.58E+04	3.56E-04	5.14	1560	3.29E-03
Selenium	0.64	3960	1.61E-04	1.29	391	3.30E-03
Thallium	0.14	52.3	2.68E-03	3.40	5.16	0.66
Titanium	NA	1.00E+05[c, f]	Not a COPC	158	1.00E+05[c, f]	1.58E-03
Zinc	39.98	1.00E+05 [c]	4.00E-04	40.6	2.35E+04	1.73E-03
Acenaphthene	0.015	4.75E+04	3.16E-07	0.47	3730	1.26E-04
Anthracene	0.028	1.00E+05 [c]	2.85E-07	0.47	2.20E+04	2.14E-05
Aroclor-1254	0.005	6.65	8.14E-04	0.023	1.12	2.05E-02
Aroclor-1260	0.086	15.8	5.47E-03	0.16	1.12	0.14
Benzo(g,h,i)perylene [g]	0.18	2.38E+04	7.39E-06	0.47	2290	2.05E-04
Benzoic Acid	0.53	1.00E+05 [c]	5.29E-06	4.68	1.00E+05 [c]	4.68E-05

Table F-6.4-4 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Di-n-octylphthalate	ND	1.59E+04[f]	Not a COPC	0.51	2400[f]	2.14E-04
Endosulfan II[h]	0.016	2390	6.57E-06	0.008	367	2.18E-05
Fluoranthene	0.64	1.39E+04	4.61E-05	0.81	2290	3.54E-04
Fluorene	ND	3.17E+04	Not a COPC	0.47	2260	2.08E-04
Phenanthrene	0.46	1.20E+04	3.87E-05	0.54	1830	2.95E-04
Pyrene	0.62	2.38E+04	2.62E-05	0.74	2290	3.23E-04
		HI	**0.1**		**HI**	**1**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] ND = Not detected.
[e] NA = Not analyzed at this depth.
[f] Values from EPA Region 6 (EPA 2006, 094321).
[g] Pyrene used as a surrogate for benzo(g,h,i)perylene.
[h] Endosulfan used as a surrogate for Endoslfan II.

Table F-6.4-5
Screening Evaluation for Consolidated Unit 35-003(d)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Aroclor-1254	0.005	10.5	5.15E-09	0.023	2.2[c]	1.05E-07
Aroclor-1260	0.086	10.5	8.24E-08	0.16	2.2[c]	7.32E-07
Benzo(a)anthracene	0.035	30.1	1.16E-08	0.47	6.21	7.57E-07
Benzo(a)pyrene	0.07	3.01	2.33E-07	0.48	0.621	7.73E-06
Benzo(b)fluoranthene	0.14	3.01	4.52E-07	0.48	6.21	7.73E-07
Benzo(k)fluoranthene	0.038	301	1.26E-09	0.46	62.1	7.41E-08
Bis(2-ethylhexyl)phthalate	ND[d]	1830	Not a COPC	0.51	347	1.46E-08
Chrysene	0.39	3010	1.30E-09	0.53	615	8.62E-09
Dieldrin	0.0057	1.6	3.54E-08	0.005	0.304	1.64E-07
Indeno(1,2,3-cd)pyrene	ND	30.1	Not a COPC	0.47	6.21	7.57E-07
		Total Excess Cancer Risk	**8E-07**		**Total Excess Cancer Risk**	**1E-05**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] ND = Not detected.

Table F-6.4-6
Screening Evaluation for Consolidated Unit 35-003(d)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.047	280	2.52E-03	0.17	30	0.09
Cesium-137	0.98	210	6.96E-02	10.9	5.6	29.20
Cobalt-60	0.14	46	4.47E-02	0.12	1.3	1.40
Plutonium-238	0.21	330	5.64E-03	0.068	37	0.03
Plutonium-239	0.21	300	1.05E-02	0.40	33	0.18
Strontium-90	43.19	5600	1.24E-01	48.5	5.7	127.63
Tritium	0.15	5.10E+06	4.35E-07	0.16	750	3.12E-03
Uranium-235	0.052	3200	2.46E-04	0.055	17	4.85E-02
		Total Dose	**0.3**		**Total Dose**	**159**

*Values from LANL (LANL 2005, 088493).

Table F-6.4-7
Screening Evaluation for SWMU 35-009(d), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aluminum	2270	1.00E+05[c]	2.27E-02	13600	7.78E+04	1.75E-01
Antimony	1.1(UJ)	317	3.47E-03	4.7(UJ)	13.3	1.50E-01
Barium	19.7	1.00E+05[c]	1.97E-04	53.5	1.56E+04	3.43E-03
Cadmium	ND[d]	392	Not a COPC	1.7	39	4.36E-02
Lithium	2.8	1.60E+03[e]	1.75E-03	10.8	1.60E+03[e]	6.75E-03
Nickel	ND	1.58E+04	Not a COPC	9.8	1.56E+03	6.28E-03
Selenium	ND	3.96E+03	Not a COPC	0.39	391	9.95E-04
Acetone	NA[f]	1.00E+05[c]	Not a COPC	0.007	2.81E+04	2.49E-07
		HI	**0.03**		**HI**	**0.4**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] ND = Not detected.
[e] Values from EPA Region 6 (EPA 2006, 094321).
[f] NA = Not analyzed at this depth.

Table F-6.4-8
Screening Evaluation for SWMU 35-009(d), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Arsenic	1.1	27.7	3.97E-07	5.4	3.9	1.38E-05
Total Excess Cancer Risk			**4E-07**	**Total Excess Cancer Risk**		**1E-05**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).

Table F-6.4-9
Screening Evaluation for SWMU 35-009(d), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.34	210	2.39E-02	0.11	5.6	0.30
Plutonium-238	ND[b]	330	Not a COPC	0.018	37	0.01
Tritium	NA[c]	5.10E+06	Not a COPC	0.031[d]	750	6.16E-04
Total Dose			**0.02**	**Total Dose**		**0.3**

[a] Values from LANL (LANL 2005, 088493).
[b] ND = Not detected.
[c] NA = Not analyzed at this depth.
[d] Value is maximum detected concentration.

Table F-6.4-10
Screening Evaluation for Consolidated Unit 35-016(k)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.11	317	3.60E-04	2.95	31.3	9.42E-02
Copper	40.92	3.17E+04	1.29E-03	25.1	3130	8.02E-03
Lead	21.68	560	3.87E-02	15.6	400	3.90E-02
Mercury	0.58	238	2.42E-03	1.04	23[c]	4.52E-02
Selenium	0.30	3960	7.68E-05	0.36	391	9.23E-04
Zinc	445.8	1.00E+05[d]	4.46E-03	337	2.35E+04	1.43E-02
Acenaphthene	0.98	4.75E+04	2.06E-05	1.8	3730	4.83E-04
Acenaphthylene	0.041	2.38E+04	1.72E-06	0.62	2300	2.70E-04
Acetone	ND[e]	1.00E+05[d]	Not a COPC	0.0049	2.81E+04	1.74E-07
Anthracene	1.18	1.00E+05[d]	1.18E-05	1.03	2.20E+04	4.68E-05
Aroclor-1254	0.10	6.65	1.52E-02	0.101	1.12	9.02E-02
Aroclor-1260	0.68	15.8	4.28E-02	0.91	1.12	8.13E-01
Benzo(g,h,i)perylene[f]	2.04	2.38E+04	8.56E-05	0.997	2290	4.35E-04
Dibenzofuran	0.77	1580	4.87E-04	1.36	142	9.58E-03
Fluoranthene	5.02	1.39E+04	3.61E-04	3.75	2290	1.64E-03
Fluorene	0.74	3.17E+04	2.34E-05	0.88	2660	3.32E-04

Table F-6.4-10 (continued)

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Methylnaphthalene(2-)[g]	0.32	3170	1.01E-04	1.02	79.5	1.28E-02
Methylphenol(4-)	0.038	2620[h]	1.38E-05	2.22	166[c]	1.33E-02
Naphthalene	0.71	1.58E+04	4.49E-05	0.86	79.5	1.09E-02
Phenanthrene	4.74	1.20E+04	3.95E-04	3.43	1830	1.87E-03
Pyrene	5.31	2.38E+04	2.23E-04	3.88	2290	1.69E-03
Trichloro-1,2,2-trifluoroethane(1,1,2-)	ND	3280[d]	Not a COPC	0.001	3280[d]	3.05E-07
Trichlorofluoromethane	ND	983[d]	Not a COPC	0.009	588	1.53E-05
		HI	**0.1**		**HI**	**1**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).
[d] Maximum values or saturation values.
[e] ND = Not detected.
[f] Pyrene used as a surrogate for benzo(g,h,i)perylene.
[g] Naphthalene used as a surrogate for 2-methylnaphthalene.
[h] 2-Chlorophenol used as a surrogate for 4-methylphenol.

Table F-6.4-11
Screening Evaluation for Consolidated Unit 35-016(k)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	6.59	2.75E+05	2.40E-10	12.8	2100[c]	6.10E-08
Aroclor-1254	0.10	10.5	9.62E-08	0.10	2.2[c]	4.59E-07
Aroclor-1260	0.68	10.5	6.44E-07	0.91	2.2[c]	4.14E-06
Benzo(a)anthracene	1.76	30.1	5.84E-07	1.54	6.21	2.48E-06
Benzo(a)pyrene	2.07	3.01	6.88E-06	1.78	0.621	2.87E-05
Benzo(b)fluoranthene	2.09	30.1	6.94E-07	1.75	6.21	2.82E-06
Benzo(k)fluoranthene	1.56	301	5.18E-08	1.28	62.1	2.06E-07
Bis(2-ethylhexyl)phthalate	0.15	1830	8.20E-10	0.99	347	2.85E-08
Chrysene	3.1	3010	1.03E-08	1.9	615	3.09E-08
Dibenz(a,h)anthracene	0.48	3.01	1.59E-06	0.75	0.621	1.21E-05
Indeno(1,2,3-cd)pyrene	1.97	30.1	6.54E-07	1.74	6.21	2.80E-06
		Total Excess Cancer Risk	**1E-05**		**Total Excess Cancer Risk**	**5E-05**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321).

Table F-6.4-12
Screening Evaluation for Consolidated Unit 35-016(k)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Plutonium-239	0.03	300	1.50E-03	0.03	33	0.01
Strontium-90	2.05	5600	5.49E-03	2.05	5.7	5.39
		Total Dose	**0.01**		**Total Dose**	**5**

*Values from LANL (LANL 2005, 088493).

Table F-6.4-13
Screening Evaluation for SWMU 35-016(m), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Benzoic Acid	ND[c]	1.00E+05[d]	Not a COPC	33.8	1.00E+05[d]	3.38E-04
Diethylphthalate	ND	1.00E+05[d]	Not a COPC	0.44	4.89E+04	8.90E-06
Fluoranthene	0.43	1.39E+04	3.09E-05	0.43	2290	1.88E-04
Phenanthrene	0.08	1.20E+04	6.66E-06	0.08	1830	4.37E-05
Pyrene	0.12	2.38E+04	4.96E-06	0.12	2290	5.15E-05
		HI	**4E-05**		**HI**	**6E-04**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] Maximum values or saturation values.

Table F-6.4-14
Screening Evaluation for SWMU 35-016(m), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Uranium-234	2.761	3200	1.29E-02	2.761	170	0.24
Uranium-238	3.61	2100	2.58E-02	3.61	86	0.63
		Total Dose	**0.04**		**Total Dose**	**0.9**

*Values from LANL (LANL 2005, 088493).

Table F-6.5-1
Final ESL Comparison for Pratt Canyon Subarea

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acenaphthene	0.62	0.25	Plant	**2.46**	**Yes**
Acenaphthylene	0.47	120	Shrew	4E-03	No
Acetone	0.005	1.2	Deer mouse	4E-03	No
Anthracene	0.66	210	Shrew	3E-03	No
Aroclor-1254	0.04	0.041	Robin	**1.07**	**Yes**
Aroclor-1260	0.25	0.14	Red fox	**1.81**	**Yes**
Benzo(a)anthracene	0.62	3	Shrew	0.21	No
Benzo(a)pyrene	0.69	9.6	Shrew	0.07	No
Benzo(b)fluoranthene	0.69	18	Plant	0.04	No
Benzo(g,h,i)perylene	0.65	24	Shrew	0.03	No
Benzo(k)fluoranthene	0.74	62	Shrew	0.01	No
Benzoic Acid	7.88	1	Deer mouse	**7.88**	**Yes**
Bis(2-ethylhexyl)phthalate	0.73	0.02	Robin	**36.50**	**Yes**
Chrysene	0.74	2.4	Shrew	**0.31**	**Yes**
4,4'-DDT[	0.008	0.3	Robin	0.03	No
Dibenz(a,h)anthracene	0.50	12	Shrew	0.04	No
Dibenzofuran	0.96	6.1	Plant	0.16	No
Dieldrin	0.003	0.004	Shrew	**0.67**	**Yes**
Endosulfan II	0.009	0.64	Deer mouse	0.01	No
Fluoranthene	1.39	22	Shrew	0.06	No
Fluorene	0.56	4.1	Earthworm	0.14	No
Indeno(1,2,3-cd)pyrene	0.68	62	Shrew	0.01	No
2-Methylnaphthalene	0.59	2.5	Shrew	0.24	No
Naphthalene	0.55	0.34	Deer mouse	**1.61**	**Yes**
Phenanthrene	1.79	10	Shrew	0.18	No
Pyrene	1.36	18	Shrew	0.08	No
Toluene	0.001	23	Shrew	4E-05	No
Inorganic Chemicals (mg/kg)					
Antimony	1.28	0.05	Plant	**25.56**	**Yes**
Boron	1.70	2	Robin	**0.85**	**Yes**
Cadmium	0.49	0.27	Shrew	**1.80**	**Yes**
Chromium	9.35	2.3	Earthworm	**4.06**	**Yes**
Copper	13.64	10	Plant	**1.36**	**Yes**
Fluoride	0.87	31	Robin	0.03	No
Mercury	0.48	0.013	Robin	**36.62**	**Yes**
Selenium	1.00	0.1	Plant	**10.01**	**Yes**
Thallium	2.53	0.032	Shrew	**79.16**	**Yes**
Titanium	158.00	72	Shrew	**2.19**	**Yes**
Zinc	127.55	10	Plant	**12.76**	**Yes**
Radionuclides (pCi/g)					
Americium-241	7.45	44	Earthworm	0.17	No
Cesium-137	31.1	680	Red fox	0.04	No
Cobalt-60	0.09	550	Earthworm	2E-04	No
Plutonium-238	1.73	44	Earthworm	0.04	No
Plutonium-239	4.42	47	Earthworm	0.09	No
Strontium-90	45.8	560	Red fox	0.08	No
Tritium	0.15	3.60E+04	Plant	4E-06	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-6.5-2
HI Analysis for Pratt Canyon Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	1.28	0.03	na*	na	na	na	na	**0.44**	**4.92**	**2.66**	0.02	**25.56**
Boron	1.7	<0.01	<0.01	0.03	**0.85**	**0.53**	0.23	0.02	0.01	0.03	na	0.05
Cadmium	0.48	<0.01	<0.01	0.24	0.11	**0.90**	**1.67**	0.05	**1.80**	**0.95**	<0.01	0.02
Chromium (total)	9.35	<0.01	<0.01	<0.01	<0.01	0.01	0.01	<0.01	0.01	<0.01	**4.06**	**3.90**
Copper	13.64	<0.01	0.01	0.15	**0.49**	**0.85**	**1.24**	0.05	**0.40**	0.23	**1.05**	**1.36**
Mercury (inorganic)	0.48	0.01	**1.70**	**5.80**	**6.80**	**21.64**	**36.62**	0.02	0.28	0.16	**9.52**	0.01
Selenium	1.00	0.01	0.01	0.12	**0.67**	**0.77**	**0.91**	**0.33**	**1.09**	**0.91**	0.13	**10.01**
Thallium	2.53	**0.90**	0.03	**0.38**	0.28	**1.58**	**2.81**	**0.90**	**79.16**	**37.25**	na	**25.33**
Titanium	158	0.02	na	na	na	na	na	0.03	**2.19**	**1.05**	na	na
Zinc	127.55	0.01	0.09	**0.71**	**0.64**	**2.66**	**4.72**	0.04	**0.80**	**0.44**	**0.67**	**12.76**
Acenaphthene	0.62	<0.01	na	na	na	na	na	<0.01	0.01	0.01	na	**2.46**
Aroclor-1254	0.04	0.29	0.20	0.26	0.03	**0.55**	**1.07**	<0.01	0.10	0.05	na	<0.01
Aroclor-1260	0.25	**1.81**	0.06	0.07	0.01	0.15	**0.29**	<0.01	0.03	0.01	na	na
Benzoic Acid	7.88	0.02	na	na	na	na	na	**1.88**	**7.88**	**6.06**	na	na
Bis(2-ethylhexyl)phthalate	0.73	**0.61**	**22.12**	**16.22**	0.04	**18.25**	**36.50**	<0.01	**1.24**	**0.66**	na	na
Chrysene	0.74	0.02	na	na	na	na	na	0.11	**0.31**	0.24	na	na
Dieldrin	0.003	0.05	0.03	0.05	0.01	0.13	0.25	0.01	**0.67**	**0.34**	na	<0.01
Naphthalene	0.55	0.01	<0.01	<0.01	0.013	0.01	<0.01	**1.22**	**0.57**	**1.61**	na	0.55
	HI	**4**	**24**	**24**	**50**	**48**	**86**	**5**	**97**	**50**	**15**	**56**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-6.5-3
Comparison of EPCs to Sediment Backround Concentrations for Pratt Canyon Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Concentrations (mg/kg)	Sediment Background Concentrations (mg/kg)	Tuff Background Concentrations (mg/kg)
Antimony	1.28	0.1–1	0.83*	0.05–0.4
Cadmium	0.48	0.2–2.6	0.05-0.18	0.1–1.5
Chromium	9.35	1.9–36.5	0.8-9.2	0.25–13
Copper	13.64	0.25–16	0.77-12	0.25–6.2
Mercury	0.48	0.05–0.1	0.01-0.03	0.1*
Selenium	1.00	0.1–1.7	0.1-0.1	0.1–0.105
Thallium	2.53	0.063–1	0.73*	0.05–1.7
Zinc	127.55	14–75.5	9-56.2	5.5–65.6

*No background data set; value is the BV.

Table F-6.5-4
Population Area Use Factors for Pratt Canyon Subarea

Receptor	Home Range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 1.96-ha Pratt Canyon Subarea
Mexican Spotted Owl	366	n/a	0.0053
American kestrel	106	4240	4.62E-04
American robin	0.42	16.8	0.12
Deer mouse	0.077	3.08	0.64
Vagrant shrew	0.39	15.6	0.13
Desert cottontail	3.1	124	0.016
Red fox	1038	41520	4.72E-05

[a] n/a = Not applicable.
[b] Value for Mexican spotted owl is the AUF based on individual home range.

Table F-6.5-5
HI Analysis for Pratt Canyon Subarea, PAUF

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Boron	1.70	<0.01	<0.01	0.03	**0.85**	**0.53**	0.23	0.02	0.01	0.03	na	0.05
Mercury (inorganic)	0.48	0.01	**1.70**	**5.80**	**6.80**	**21.64**	**36.62**	0.02	0.28	0.16	**9.52**	0.01
Selenium	1.00	0.01	0.01	0.12	**0.67**	**0.77**	**0.91**	**0.33**	**1.09**	**0.91**	**0.13**	**10.01**
Thallium	2.53	**0.90**	0.03	**0.38**	0.28	**1.58**	**2.81**	**0.90**	**79.16**	**37.25**	na	**25.33**
Titanium	158.00	0.02	na	na	na	na	na	0.03	**2.19**	**1.05**	na	na
Zinc	127.55	0.01	0.09	**0.71**	**0.64**	**2.66**	**4.72**	0.04	**0.80**	**0.44**	**0.67**	**12.76**
Acenaphthene	0.62	<0.01	na	na	na	na	na	<0.01	0.01	<0.01	na	**2.46**
Aroclor-1254	0.044	0.29	0.20	0.26	0.03	**0.55**	**1.07**	<0.01	0.10	0.05	na	<0.01
Aroclor-1260	0.25	**1.81**	0.06	0.07	0.01	0.15	0.29	<0.01	0.03	0.01	na	na
Benzoic Acid	7.88	0.02	na	na	na	na	na	**1.88**	**7.88**	**6.06**	na	na
Bis(2-ethylhexyl)phthalate	0.73	**0.61**	**22.12**	**16.22**	0.04	**18.25**	**36.50**	<0.01	**1.24**	**0.66**	na	na
Chrysene	0.74	0.02	na	na	na	na	na	0.11	**0.31**	0.24	na	na
Dieldrin	0.003	0.05	0.03	0.05	0.01	0.13	0.25	0.01	**0.67**	**0.34**	na	<0.01
Naphthalene	0.55	0.01	<0.01	<0.01	0.01	0.01	0.01	**1.22**	**0.57**	**1.61**	na	0.55
HI		**4**	**24**	**24**	**9**	**46**	**83**	**5**	**94**	**49**	**10**	**51**
HI adjusted by PAUF		**<0.01**	**0.01**	**0.01**	**1**	**5**	**10**	**0.07**	**12**	**31**	**n/a[b]**	**n/a**

Note: Bolded values indicate HQ greater than 0.3.
[a] na = Not available.
[b] n/a = Not applicable.

Table F-7.4-1
Parameters Used to Calculate Chemical SSLs

Parameter	Residential Values	Recreational User Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	0.2 mg/cm^2
Body weight–child	15 kg (0–6 yr of age)	31 kg (6–11 yr of age)
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	200 events/yr
Exposure duration–child	6 yr (0–6 yr of age)	6 yr (6–11 yr of age)
Age-adjusted ingestion factor	114 mg-yr/kg-day	22.6 mg-yr/kg-day
Age-adjusted inhalation factor	11 m^3-yr/kg-day	0.8 m^3-yr/kg-day
Inhalation rate–child	10 m^3/day	1.2 m^3/hr
Soil ingestion rate–child	200 mg/day	71.4 mg/day (400 mg/day x 1 hr/56.hrs)[a]
Particulate emission factor	6.61 x 10^9 m^3/kg	6.61 x 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	3525 cm^2/day (head, hands, forearms, lower legs, feet)
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	273.3 mg-yr/kg-day
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	30 yr[b]
Adherence factor–adult	0.07 mg/cm^2	0.07 mg/cm^2
Soil ingestion rate–adult	100 mg/day	25.6 mg/day (100 mg/day ÷ 1 hr/3.9 hr)[c]
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)	5700 cm^2/day (head, hands, forearms, lower legs)
Inhalation rate–adult	20 m^3/day	1.6 m^3/hr

[a] Assumes 1 hr of use per day, with potential exposure to contaminants occurring over all of that time out of an average of 5.6 hours spent outdoors per day (EPA 1997, 066598, Table 15-176, p. 15-187).

[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

[c] Assumes 1 hr of trail use per day, with potential exposure to contaminants occurring over all of that time out of an average of 3.9 hr spent outdoors per day (EPA 1997, 066598, Table 15-10, pp. 15-28 and 15-29).

Table F-7.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5[a]	7305[b]
Mass Loading (g/m^3)	1.5×10^{-7} [c]	1.5×10^{-7} [c]
Outdoor Time fraction	0.2236[d]	0.0599[e]
Indoor Time fraction	0.7347[f]	0.8984[g]
Soil ingestion (g/yr)	73[h]	36.5[i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).

[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).

[c] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor (NMED 2004, 085615).

[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3-11 yr old child (EPA 1997, 066598, Section 15.4-1).

[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).

[f] Calculated as [(24-5.6 hr/day x 350 day/yr] / 8766 hr/yr.

[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.

[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).

[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-7.4-3
Parameters Used in the SAL Calculations for Radionuclides, Recreational

Parameters	Recreational, Child	Recreational, Adult
Inhalation Rate (m^3/yr)	10,526[a]	14,035[b]
Mass Loading (g/m^3)	1.5×10^{-7} [c]	1.5×10^{-7} [c]
Outdoor Time fraction	0.0228[d]	0.0228[d]
Indoor Time fraction	0	0
Soil ingestion (g/yr)	626[e]	225[f]

[a] Calculated as [1.2 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.2 m^3/hr is the child inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[b] Calculated [1.6 m^3/hr x 200 hr/yr] / [indoor + outdoor time fractions], where 1.6 m^3/hr is the adult inhalation rate for moderate activity (EPA 1997, 066596, Table 5-23).

[c] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor used for residential and industrial scenarios.

[d] Calculated as [1 hr/day x 200 day/yr] / 8766 hr/yr, where 1 hr/day is the exposure time for a recreational adult or child (LANL 2004, 087800).

[e] Calculated as [(0.4 g/day / 5.6 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 5.6 hr/day is an estimate of time spent outdoors for a child (EPA 1997, 066598, Section 15.4.1), and where 0.4 g/day is the upper bound child soil ingestion rate (EPA 1997, 066596, Table 4-23).

[f] Calculated as [(0.1 g/day / 3.9 hr/day) x 200 hr/yr] / [indoor + outdoor time fractions], where 3.9 hr/day is the time-weighted average for "doers" across ages 12-44 (EPA 1997, 066598, Table 15-10), and where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-7.4-4
Screening Evaluation for AOC C-35-007, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Benzoic Acid	0.02	1.00E+05[e]	2.30E-07	1.89	1.00E+05[c]	1.89E-05
Di-n-butylphthalate	0.02	3.99E+04	5.51E-07	0.20	6110	3.29E-05
		HI	**8E-07**		**HI**	**5E-05**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.

Table F-7.4-5
Screening Evaluation for AOC C-35-007, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.06	1.83E+03	3.17E-10	0.172	347	4.96E-09
		Total Excess Cancer Risk	**3E-10**		**Total Excess Cancer Risk**	**5E-09**

[a] Values from LANL (LANL 2007, 094496).
[b] Values from NMED – residential (NMED 2006, 092513).

Table F-7.4-6
Screening Evaluation for AOC C-35-007, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	0.84	330	3.84E-02	0.84	37	0.34
Plutonium-239	0.28	300	1.42E-02	0.28	33	0.13
		Total Dose	**0.05**		**Total Dose**	**0.5**

*Values from LANL (LANL 2005, 088493).

Table F-7.4-7
Screening Evaluation for Consolidated Unit 35-010(a)-99, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aluminum	957	1.00E+05[c]	9.57E-03	2819	7.78E+04	3.62E-02
Barium	32.32	1.00E+05 [c]	3.23E-04	38.5	1.56E+04	2.47E-03
Lead	6.28	560	1.12E-02	6.91	400	1.73E-02
Lithium	NA [d]	1600 [e]	Not a COPC	2.5	1600 [e]	1.56E-03
Mercury	0.13	238	5.46E-04	0.06	23 [e]	2.39E-03
Nickel	3.82	1.58E+04	2.42E-04	12.6	1560	8.08E-03
Silver	3.3	3960	8.33E-04	1.26	391	3.22E-03
Thallium	0.15	52.3	2.87E-03	2.94	5.16	5.70E-01
Aroclor-1260	ND[f]	15.8	Not a COPC	0.02	1.12	1.79E-02
Di-n-butylphthalate	0.036	3.99E+04	9.02E-07	0.18	6110	2.98E-05
Toluene	NA	252 [c]	Not a COPC	0.003	252 [c]	1.19E-05
Xylene[total]	NA	82 [c]	Not a COPC	0.003	82 [c]	3.66E-05
		HI	**0.03**		**HI**	**0.7**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Maximum values or saturation values.

[d] NA = Not analyzed in this depth range.

[e] Values from EPA Region 6 (EPA 2006, 094321)

[f] ND = Not detected.

Table F-7.4-8
Screening Evaluation for Consolidated Unit C-35-010(a)-99, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Recreational SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	4.76	2.75E+05	1.73E-10	59	2100[c]	2.81E-07
Aroclor-1260	ND [d]	10.5	Not a COPC	0.02	2.2	9.09E-08
Bis(2-ethylhexyl)phthalate	0.049	1830	2.68E-10	0.175	347	5.04E-09
		Total Excess Cancer Risk	**4E-10**		**Total Excess Cancer Risk**	**4E-07**

[a] Values from LANL (LANL 2007, 094496).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] Values from EPA Region 6 (EPA 2006, 094321)

[d] ND = Not detected.

Table F-7.4-9
Screening Evaluation for Consolidated Unit C-35-010(a)-99, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Recreational SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Europium-152	ND[b]	100	Not a COPC	0.08	2.9	0.40
Plutonium-238	0.17	330	7.68E-03	0.05	37	0.02
Plutonium-239	0.08	300	4.15E-03	0.03	33	0.01
Ruthenium-106	ND	740	Not a COPC	0.13	20	0.10
Strontium-90	ND	5600	Not a COPC	0.64	5.7	1.68
Tritium	0.97	5.10E+06	2.86E-06	0.85	750	0.02
		Total Dose	**0.01**		**Total Dose**	**2**

[a] Values from LANL (LANL 2005, 088493).
[b] ND = Not detected.

Table F-7.5-1
Final ESL Comparison for Ten Site Canyon Subarea

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acetone	0.08	1.2	Deer mouse	0.07	No
Anthracene	0.22	210	Shrew	1E-03	No
Aroclor-1254	0.02	0.041	Robin	**0.54**	**Yes**
Aroclor-1260	0.06	0.14	Red fox	**0.41**	**Yes**
Benzene	0.003	24	Deer mouse	1E-04	No
Benzo(a)anthracene	0.25	3.0	Shrew	0.08	No
Benzo(a)pyrene	0.26	9.6	Shrew	0.03	No
Benzo(b)fluoranthene	0.26	18	Plant	0.01	No
Benzo(g,h,i)perylene	0.24	24	Shrew	0.01	No
Benzo(k)fluoranthene	0.24	62	Shrew	4E-03	No
Benzoic Acid	1.33	1.0	Deer mouse	**1.33**	**Yes**
Bis(2-ethylhexyl)phthalate	0.23	0.02	Robin	**11.30**	**Yes**
Butanone(2-)	0.02	360	Deer mouse	4E-05	No
Chrysene	0.29	2.4	Shrew	0.12	No
Dibenz(a,h)anthracene	0.22	12	Shrew	0.02	No
Di-n-butyl phthalate	0.23	0.011	Robin	**20.73**	**Yes**
Fluoranthene	0.34	22	Shrew	0.02	No
Indeno(1,2,3-cd)pyrene	0.25	62	Shrew	4E-03	No
Phenanthrene	0.24	10	Shrew	0.02	No
Pyrene	0.33	18	Shrew	0.02	No
Toluene	0.004	23	Shrew	2E-04	No
Trichloroethene	0.004	42	Deer mouse	1E-04	No
Xylene (total)	0.004	1.4	Shrew	3E-03	No
Inorganic Chemicals (mg/kg)					
Antimony	2.16	0.05	Plant	**43.20**	**Yes**
Chromium	16.75	2.3	Earthworm	**7.28**	**Yes**
Copper	9.64	10	Plant	**0.96**	**Yes**
Fluoride	2.84	31	Robin	0.09	No
Lead	10.25	14	Robin	**0.73**	**Yes**

Table F-7.5-1 (continued)

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Mercury	0.11	0.013	Robin	**8.15**	**Yes**
Nickel	8.91	20	Plant	**0.45**	**Yes**
Selenium	0.37	0.1	Plant	**3.65**	**Yes**
Silver	3.74	0.05	Plant	**74.78**	**Yes**
Radionuclides (pCi/g)					
Americium-241	0.08	44	Earthworm	2E-03	No
Cesium-134	0.04	320	Red fox	1E-04	No
Cesium-137	0.26	680	Red fox	4E-04	No
Europium-152	0.07	380	Earthworm	2E-04	No
Plutonium-238	0.62	44	Earthworm	0.01	No
Plutonium-239	0.64	47	Earthworm	0.01	No
Strontium-90	1.76	560	Red fox	3E-03	No
Tritium	0.41	3.60E+04	Plant	1E-05	No
Uranium-235	0.12	55	Earthworm	2E-03	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-7.5-2
HI Analysis for Ten Site Slope Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	2.16	0.05	na*	na	na	na	na	**0.74**	**8.31**	**4.50**	0.03	**43.20**
Chromium (total)	16.75	<0.01	<0.01	<0.01	0.01	0.02	0.02	<0.01	0.02	0.01	**7.28**	**6.98**
Copper	9.64	<0.01	0.01	0.11	**0.34**	**0.60**	**0.88**	0.04	0.28	0.16	**0.74**	**0.96**
Lead	10.25	<0.01	0.01	0.09	**0.49**	**0.64**	**0.73**	0.03	0.14	0.09	0.01	0.09
Mercury (inorganic)	0.11	<0.01	**0.38**	**1.29**	**1.51**	**4.82**	**8.15**	<0.01	0.06	0.04	**2.12**	<0.01
Nickel	8.91	<0.01	<0.01	0.02	0.02	0.07	0.13	<0.01	0.04	0.02	0.09	**0.45**
Selenium	0.37	<0.01	<0.01	0.04	0.24	0.28	**0.33**	0.12	**0.40**	**0.33**	0.05	**3.65**
Silver	3.74	<0.01	<0.01	0.07	0.12	**0.34**	**0.52**	0.01	0.08	0.05	na	**74.78**
Aroclor-1254	0.02	0.15	0.10	0.13	0.02	0.28	**0.54**	<0.01	0.05	0.03	na	<0.01
Aroclor-1260	0.06	**0.41**	0.01	0.02	<0.01	0.03	0.07	<0.01	0.01	<0.01	na	na
Benzoic Acid	1.33	<0.01	na	na	na	na	na	**0.32**	**1.33**	**1.02**	na	na
Bis(2-ethylhexyl)phthalate	0.23	0.19	**6.97**	**5.11**	0.01	**5.73**	**11.50**	<0.01	**0.39**	0.21	na	na
Di-n-butyl phthalate	0.23	<0.01	**0.95**	**3.35**	**0.58**	**10.86**	**20.73**	<0.01	<0.01	<0.01	na	<0.01
HI		**0.8**	**8**	**10**	**3**	**24**	**44**	**1**	**11**	**6**	**10**	**130**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-7.5-3
Comparison of EPCs to Background Concentrations for Ten Site Canyon Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Range (mg/kg)	Sediment Background Range (mg/kg)	Tuff Background Range (mg/kg)
Antimony	2.16	0.1–1	0.83*	0.05–0.4
Chromium	16.75	1.9–36.5	0.8–9.2	0.25–13
Copper	9.64	0.25–16	0.77–12	0.25–6.2
Lead	10.24	2–28	2–25.6	1.6–15.5
Mercury	0.11	0.05–0.1	0.01–0.03	0.1*
Nickel	8.91	1–29	1–8.9	0.5–7
Selenium	0.36	0.1–1.7	0.1–0.1	0.1–0.105
Silver	3.74	1.0*	0.05–0.28	0.2–1.9

*No background data set; value is the BV.

Table F-7.5-4
Population Area Use Factors for Ten Site Canyon Subarea

Receptor	Home Range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 2.33-ha Ten Site Canyon Subarea
Mexican Spotted Owl	366	n/a[a]	0.0061[b]
American kestrel	106	4240	0.001
American robin	0.42	16.8	0.13
Deer mouse	0.077	3.08	0.72
Vagrant shrew	0.39	15.6	0.14
Desert cottontail	3.1	124	0.02

[a] n/a = Not applicable.

[b] Value for Mexican spotted owl is the AUF based on individual home range.

Table F-7.5-5
HI Analysis for Ten Site Canyon Subarea, PAUF

Analyte	EPC (mg/kg)	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	2.16	na	na	na[a]	na	na	**0.74**	**8.31**	**4.50**	0.03	**43.20**
Silver	3.74	<0.01	0.07	0.12	**0.34**	**0.52**	0.01	0.08	0.05	na	**74.80**
Aroclor-1254	0.02	0.10	0.13	0.02	0.28	**0.54**	<0.01	0.05	0.03	na	<0.01
Aroclor-1260	0.06	0.01	0.02	<0.01	0.03	0.07	<0.01	0.01	<0.01	na	na
Benzoic Acid	1.33	na	na	na	**na**	**na**	**0.32**	**1.33**	**1.02**	na	na
Bis(2-ethylhexyl)phthalate	0.23	**6.97**	**5.11**	0.01	**5.75**	**11.50**	<0.01	**0.39**	0.21	na	na
Di-n-butyl phthalate	0.23	**0.95**	**3.35**	**0.58**	**10.86**	**20.73**	<0.01	<0.01	<0.01	na	<0.01
HI		**8.0**	**9**	**0.7**	**17**	**33**	**1**	**10**	**6**	**0.03**	**118.00**
HI Adjusted for PAUF		**<0.01**	**<0.01**	**0.1**	**2**	**4**	**0.02**	**1**	**4**	**n/a[b]**	**n/a**

Note: Bolded values indicate HQ greater than 0.3.

[a] na = Not available.

[b] n/a = Not applicable.

Table F-8.4-1
Parameters Used to Calculate Chemical SSLs

Parameters	Residential Values	Industrial Worker Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	n/a
Body weight–child	15 kg (0–6 yr of age)	n/a
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	225 day/yr
Exposure duration–child	6 yr (0–6 yr of age)	n/a[a]
Age-adjusted ingestion factor	114 mg-yr/kg-day	n/a
Age-adjusted inhalation factor	11 m^3-yr/kg-day	n/a
Inhalation rate–child	10 m^3/day	n/a
Soil ingestion rate–child	200 mg/day	n/a
Particulate emission factor	6.61 x 10^9 m^3/kg	6.61 x 10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	n/a
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	n/a
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	25 yr[b]
Adherence factor–adult	0.07 mg/cm^2	0.2 mg/cm^2
Soil ingestion rate–adult	100 mg/day	100 mg/day
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)	3300 cm^2/day (head, hands, forearms)
Inhalation rate–adult	20 m^3/day	20 m^3/day

[a] n/a = Not applicable.

[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

Table F-8.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5[a]	7305[b]
Mass Loading (g/m^3)	1.5×10^{-7} [c]	1.5×10^{-7} [c]
Outdoor Time fraction	0.2236[d]	0.0599[e]
Indoor Time fraction	0.7347[f]	0.8984[g]
Soil ingestion (g/yr)	73[h]	36.5[i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).

[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).

[c] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor (NMED 2004, 085615).

[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3-11 yr old child (EPA 1997, 066598, Section 15.4-1).

[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).

[f] Calculated as [(24-5.6 hr/day x 350 day/yr] / 8766 hr/yr.

[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.

[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).

[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-8.4-3
Parameters Used in the SAL Calculations for Radionuclides, Industrial

Parameters	Industrial, Adult
Inhalation Rate (m^3/yr)	19,481[a]
Mass Loading (g/m^3)	1.5×10^{-7} [b]
Outdoor Time fraction	0.2053[c]
Indoor Time fraction	0
Soil ingestion (g/yr)	97.4[d]

[a] Calculated as [20 m^3/day x 225 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult and 225 days/yr is the exposure frequency (NMED 2004, 085615).

[b] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor (NMED 2004, 085615).

[c] Calculated as [8 hr/day x 225 day/yr] / 8766 hr/yr, where 8 hr/day is an estimate of the average length of the work day.

[d] Calculated as [0.1 g/day x 225 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-8.4-4
Screening Evaluation for Consolidated Unit 04-001-99, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.88	454	1.95E-03	0.83	31.3	2.65E-02
Copper	18.2	4.54E+04	4.01E-04	13.3	3130	4.25E-03
Selenium	ND[c]	5680	Not a COPC	0.31	391	7.98E-04
Acetone	ND	1.00E+05[d]	Not a COPC	0.004[e]	7.04E+04	5.68E-08
Benzoic Acid	0.30	1.00E+05[d]	3.02E-06	1.03	1.00E+05[d]	1.03E-05
Dichloroethene[1,1-]	0.0011[e]	777	1.42E-06	0.0011[e]	206	5.34E-06
Di-n-butylphthalate	0.20	6.84E+04	2.89E-06	0.20	6110	3.34E-05
Fluoranthene	0.021	2.44E+04	8.61E-07	0.098	2290	4.28E-05
Pyrene	0.021	30900	6.8E-07	0.098	2290	4.28E-05
		HI	**0.002**		**HI**	**0.03**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] Maximum values or saturation values.
[e] Value is maximum detected concentration.

Table F-8.4-5
Screening Evaluation for Consolidated Unit 04-001-99, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	1.48	1370	1.08E-08	18.9	347	5.45E-07
Methylene Chloride	0.002[c]	490	1.33E-11	0.002[c]	182	1.21E-10
		Total Excess Cancer Risk	**1E-08**		**Total Excess Cancer Risk**	**5E-07**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Value is maximum detected concentration.

Table F-8.4-6
Screening Evaluation for Consolidated Unit 04-001-99, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	1.62	180	0.14	1.29	30	0.65
Cesium-137	1.09	23	0.71	0.91	5.6	2.44
Europium-152	0.80[b]	11	1.09	0.42	2.9	2.17
Plutonium-238	0.039	240	2.44E-03	0.027	37	0.01
Plutonium-239	16.1	210	1.15	11.4	33	5.18
Uranium-234	14.90	1500	0.15	10.16	170	0.90
Uranium-235	0.25	87	0.04	0.46	17	0.41
Uranium-238	15.48	430	0.54	9.49	86	1.66
		Total Dose	**4**		**Total Dose**	**13**

[a] Values from LANL 2005, 088493.
[b] Maximum detected concentration.

Table F-8.4-7
Screening Evaluation for Consolidated Unit 05-001(a)-99, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aluminum	8625	1.00E+05[c]	8.63E-02	8775	7.78E+04	1.13E-01
Barium	261.1	1.00E+05[c]	2.61E-03	168	1.56E+04	1.08E-02
Cadmium	0.88	564	2.25E-03	0.80	3.90E+01	2.05E-02
Copper	422.8	4.54E+04	1.33E-02	232	3130	7.41E-02
Lead	258.3	800	3.23E-01	147	400	3.68E-01
Mercury	0.013	340[d]	5.50E-05	0.062	23[d]	2.70E-03
Nickel	4.50	2.27E+04	2.85E-04	4.34	1560	2.78E-03
Selenium	0.62	5680	1.57E-04	0.44	391	1.12E-03
Silver	0.04	5680	1.01E-05	0.38	391	9.64E-04
Thallium	0.13	74.9	2.56E-03	0.43	5.16	8.41E-02
Zinc	48.69	1.00E+05[c]	4.87E-04	36.9	2.35E+04	1.57E-03
Acetone	ND[e]	1.00E+05[c]	Not a COPC	0.035	2.81E+04	1.25E-06
Benzoic Acid	0.65	1.00E+05[c]	6.48E-06	0.55	1.00E+05[c]	5.52E-06
Fluoranthene	ND	2.44E+04	Not a COPC	0.073	2290	3.19E-05
Pyrene	ND	3.09E+04	Not a COPC	0.07	2290	3.06E-05
Toluene	ND	252[c]	Not a COPC	0.044	252[c]	1.75E-04
Trichlorofluoromethane	0.0022	983[c]	2.24E-06	0.0042	588	7.14E-06
		HI	**0.4**		**HI**	**0.7**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321).
[e] ND = Not detected.

Table F-8.4-8
Screening Evaluation for Consolidated Unit 05-001(a)-99, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.074	1830	4.05E-10	0.18	347	5.07E-09
Chrysene	ND[c]	2310	Not a COPC	0.018	615	2.89E-10
Methylene chloride	ND	490	Not a COPC	0.0094	182	5.16E-10
		Total Excess Cancer Risk	**4E-10**		**Total Excess Cancer Risk**	**6E-09**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.

Table F-8.4-9
Screening Evaluation for Consolidated Unit 05-001(a)-99, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.16	180	0.01	0.23	30	0.11
Cesium-137	0.56	23	0.36	0.60	5.6	1.59
Plutonium-238	0.007	240	4.24E-04	0.01	37	4.05E-03
Plutonium-239	0.038	210	2.71E-03	0.028	33	0.01
Uranium-234	15.37	1500	0.15	8.65	170	0.76
Uranium-235	0.96	87	0.17	0.52	17	0.46
Uranium-238	15.64	430	0.55	8.64	86	1.51
		Total Dose	**1**		**Total Dose**	**4**

*Values from LANL 2005, 088493.

Table F-8.4-10
Screening Evaluation for AOC 05-001(c), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	0.7	454	1.54E-03	0.54	31.3	1.73E-02
Barium	601	1.00E+05 [c]	6.01E-03	372	1.56E+04	2.38E-02
Copper	88.3	4.54E+04	1.94E-03	50.1	3130	1.60E-02
Lead	149	800	1.86E-01	90.8	400	2.27E-01
Selenium	ND [d]	5680	Not a COPC	0.27	391	6.91E-04
		HI	**0.2**		**HI**	**0.3**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] ND = Not detected.

Table F-8.4-11
Screening Evaluation for AOC 05-001(c), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	0.02	240	1.25E-03	0.014	37	0.01
Plutonium-239	0.016	210	1.14E-03	0.01	33	0.00
Uranium-234	8.41	1500	8.41E-02	5.65	170	0.50
Uranium-235	0.26	87	4.43E-02	0.18	17	0.16
Uranium-238	8.52	430	2.97E-01	5.76	86	1.00
		Total Dose	**0.4**		**Total Dose**	**2**

*Values from LANL 2005, 088493.

Table F-8.4-12
Screening Evaluation for Consolidated Unit 05-005(a)-00, Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Aluminum	8365	1.00E+05[c]	8.37E-02	7988	7.78E+04	1.03E-01
Barium	70.2	1.00E+05[c]	7.02E-04	71.2	1.56E+04	4.56E-03
Copper	31.5	4.54E+04	6.94E-04	12.03	3130	3.84E-03
Lead	26.7	800	3.34E-02	17.8	400	4.45E-02
Mercury	0.019	340[d]	5.44E-05	0.14	23[d]	6.00E-03
Selenium	0.62	5680	1.09E-04	0.76	391	1.95E-03
Acetone	ND[e]	1.00E+05[c]	Not a COPC	0.023	2.81E+04	8.19E-07
Fluoranthene	ND	2.44E+04	Not a COPC	0.076	2290	3.31E-05
Pyrene	ND	3.09E+04	Not a COPC	0.072	2290	3.15E-05
Toluene	ND	252[c]	Not a COPC	0.016	252[c]	6.15E-05
Trichlorofluoromethane	0.0022	983[c]	2.24E-06	0.0042	588[c]	5.10E-06
		HI	**0.1**		**HI**	**0.2**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] Values from EPA Region 6 (EPA 2006, 094321).
[e] ND = Not detected.

Table F-8.4-13
Screening Evaluation for Consolidated Unit 05-005(a)-00, Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	0.074	1370	5.42E-10	0.074	347	2.14E-09
Chrysene	ND[c]	2310	Not a COPC	0.018	615	2.89E-10
Methylene Chloride	ND	490	Not a COPC	0.009	182	5.16E-10
		Total Excess Cancer Risk	**5E-10**		**Total Excess Cancer Risk**	**3E-09**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.

Table F-8.4-14
Screening Evaluation for Consolidated Unit 05-005(a)-00, Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.51	180	4.23E-02	0.51	30	0.25
Plutonium-238	0.019	240	1.22E-03	0.011	37	4.46E-03
Plutonium-239	0.08	210	5.86E-03	0.024	33	0.01
Uranium-234	2.05	1500	2.05E-02	1.66	170	0.15
Uranium-235	0.15	87	2.64E-02	0.12	17	0.11
Uranium-238	2.27	430	7.93E-02	1.45	86	0.25
		Total Dose	**0.2**		**Total Dose**	**0.8**

[a] Values from LANL 2005, 088493.

Table F-8.4-15
Screening Evaluation for SWMU 52-002(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Lithium	NA[c]	2.30E+04[d]	Not a COPC	0.73	1600[d]	4.56E-04
Molybdenum	NA	5680	Not a COPC	2.7	391	6.91E-03
Nitrate	NA	1.00E+05[e]	Not a COPC	2	1.00E+05[e]	2.00E-05
Nitrite	NA	1.00E+05[e]	Not a COPC	0.06	7820	7.67E-06
Selenium	0.88	5680	1.55E-04	0.88	391	2.25E-03
Benzoic Acid	0.48	1.00E+05[e]	4.85E-06	0.80	1.00E+05[e]	7.98E-06
Di-n-butylphthalate	ND[f]	6.84E+04	Not a COPC	0.19	6110	3.18E-05
		HI	**2E-04**		**HI**	**0.01**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] NA = Not analyzed in this depth range.
[d] Values from EPA Region 6 (EPA 2006, 094321).
[e] Maximum values or saturation values.
[f] ND = Not detected.

Table F-8.4-16
Screening Evaluation for SWMU 52-002(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	ND[c]	1370	Not a COPC	0.24	347	6.89E-09
		Total Excess Cancer Risk	**n/a[d]**		**Total Excess Cancer Risk**	**7E-09**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] n/a = Not applicable.

Table F-8.4-17
Screening Evaluation for SWMU 52-002(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL* (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL* (pCi/g)	Total Dose (mrem/yr)
Americium-241	0.28	180	0.02	0.19	30	0.09
Cesium-137	0.29	23	0.19	0.37	5.6	0.99
Plutonium-238	0.076	240	4.78E-03	0.036	37	0.01
Plutonium-239	5.67	210	0.41	2.16	33	0.98
Uranium-238	2.39	430	0.08	1.49	86	0.26
		Total Dose	**0.7**		**Total Dose**	**2**

*Values from LANL 2005, 088493.

Table F-8.4-18
Screening Evaluation for SWMU 52-003(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Di-n-butylphthalate	NC[c]	6.84E+04	Not a COPC	0.32	6110	5.24E-05
		HI	**n/a[d]**		**HI**	**5E-05**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] NC = Not collected.
[d] n/a = Not applicable.

Table F-8.4-19
Screening Evaluation for SWMU 52-003(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	NC[c]	1370	Not a COPC	0.041	347	1.18E-09
		Total Excess Cancer Risk	**n/a[d]**		**Total Excess Cancer Risk**	**1E-09**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] NC = Not collected.
[d] n/a = Not applicable.

Table F-8.4-20
Screening Evaluation for SWMU 52-003(a), Radionuclide COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	NC[b]	240	Not a COPC	0.428	37	0.17
Plutonium-239	NC	210	Not a COPC	0.0182	33	0.01
Uranium-238	NC	430	Not a COPC	2.46	86	0.43
		Total Dose	**n/a[c]**		**Total Dose**	**0.6**

[a] Values from LANL 2005, 088493.
[b] NC = Not collected.
[c] n/a = Not applicable.

Table F-8.4-21
Screening Evaluation for SWMU 63-001(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Boron	NC[c]	1.00E+05[d]	Not a COPC	1.9	1.56E+04	1.22E-04
Lithium	NC	2.30E+04[e]	Not a COPC	6	1600[e]	3.75E-03
Nitrate	NC	1.00E+05[d]	Not a COPC	11.7	1.00E+05[d]	1.17E-04
Nitrite	NC	1.00E+05[d]	Not a COPC	0.86	7820	1.10E-04
		HI	**n/a[f]**		**HI**	**4E-03**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] NC = Not collected.
[d] Maximum values or saturation values.
[e] Values from EPA Region 6 (EPA 2006, 094321).
[f] n/a = Not applicable.

Table F-8.4-22
Screening Evaluation for SWMU 63-001(a), Radionuclide COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Plutonium-238	NC[b]	240	Not a COPC	0.011	37	4.46E-03
Plutonium-239	NC	210	Not a COPC	0.047	33	0.02
		Total Dose	**n/a[c]**		**Total Dose**	**0.03**

[a] Values from LANL 2005, 088493.
[b] NC = Not collected.
[c] n/a = Not applicable.

Table F-8.4-23
Screening Evaluation for SWMU 63-001(b), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Lithium	NC[c]	2.30E+04[d]	Not a COPC	1.1	1600[d]	6.88E-04
Molybdenum	NC	5680	Not a COPC	1.3	391	3.32E-03
Nitrate	NC	1.00E+05[e]	Not a COPC	3.2	1.00E+05[e]	3.20E-05
Nitrite	NC	1.00E+05[e]	Not a COPC	0.08	7820	1.02E-05
		HI	**n/a[f]**		**HI**	**0.004**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] NC = Not collected.
[d] Values from EPA Region 6 (EPA 2006, 094321).
[e] Maximum values or saturation values.
[f] n/a = Not applicable.

Table F-8.4-24
Screening Evaluation for SWMU 63-001(b), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Bis(2-ethylhexyl)phthalate	NC[c]	1370	Not a COPC	0.18	347	5.19E-09
Total Excess Cancer Risk			**n/a[d]**	**Total Excess Cancer Risk**		**5E-09**

[a] Values from NMED – industrial (NMED 2006, 092513).

[b] Values from NMED – residential (NMED 2006, 092513).

[c] NC = Not collected.

[d] n/a = Not applicable.

Table F-8.4-25
Screening Evaluation for SWMU 63-001(b), Radionuclide COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Uranium-235	NC[b]	87	Not a COPC	0.05	17	0.04
Total Dose			**n/a[c]**	**Total Dose**		**0.04**

[a] Values from LANL 2005, 088493.

[b] NC = Not collected.

[c] n/a = Not applicable.

Table F-8.5-1
Final ESL Comparison for East Ten Site Slope Subarea

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acetone	0.02	1.2	Deer mouse	0.01	No
Benzoic Acid	0.49	1	Deer mouse	**0.49**	**Yes**
Bis(2-ethylhexyl)phthalate	0.54	0.02	Robin	**27.15**	**Yes**
Chrysene	0.063	2.4	Shrew	0.03	No
Dichloroethene[1,1-]	0.002	11	Shrew	2E-04	No
Di-n-butyl phthalate	0.21	0.011	Robin	**18.64**	**Yes**
Fluoranthene	0.06	22	Shrew	3E-03	No
Methylene Chloride	0.006	2.6	Deer mouse	2E-03	No
Pyrene	0.06	18	Earthworm	3E-03	No
Toluene	0.005	23	Shrew	2E-04	No
Xylene (total)	0.003	1.4	Shrew	2E-03	No
Inorganic Chemicals (mg/kg)					
Barium	189	110	Plant	**1.72**	**Yes**
Cadmium	0.48	0.27	Shrew	**1.79**	**Yes**
Copper	144	10	Plant	**14.40**	**Yes**
Lead	91.0	14	Robin	**6.50**	**Yes**
Mercury	0.04	0.013	Robin	**3.31**	**Yes**
Selenium	0.36	0.1	Plant	**3.63**	**Yes**
Zinc	32.20	10	Plant	**3.22**	**Yes**
Radionuclides (pCi/g)					
Americium-241	0.59	44	Earthworm	0.01	No

Table F-8.5-1 (continued)

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Cesium-137	0.73	680	Red fox	1E-03	No
Europium-152	0.15	380	Earthworm	4E-04	No
Plutonium-238	0.02	44	Earthworm	4E-04	No
Plutonium-239	3.33	47	Earthworm	0.07	No
Uranium-234	6.69	51	Earthworm	0.13	No
Uranium-235	0.36	55	Earthworm	6E-03	No
Uranium-238	6.52	55	Earthworm	0.12	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-8.5-2
HI Analysis for East Ten Site Slope Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Barium	189	<0.01	0.01	0.02	0.23	0.20	0.19	0.06	0.15	**0.11**	**0.57**	**1.72**
Cadmium	0.48	<0.01	<0.01	0.24	0.11	**0.89**	**1.66**	0.05	**1.79**	**0.95**	<0.01	0.02
Copper	144	0.04	0.12	**1.64**	**5.14**	**9.00**	**13.09**	**0.58**	**4.24**	**2.44**	**11.08**	**14.40**
Lead	91	0.02	0.11	**0.76**	**4.33**	**5.69**	**6.50**	0.25	**1.26**	**0.76**	0.05	**0.76**
Mercury (inorganic)	0.04	<0.01	0.15	**0.52**	**0.61**	**1.95**	**3.31**	<0.01	0.03	0.01	**0.86**	<0.01
Selenium	0.36	<0.01	<0.01	0.04	0.24	0.28	**0.33**	0.12	**0.39**	**0.33**	0.05	**3.63**
Zinc	32.2	<0.01	0.02	0.18	0.16	**0.67**	**1.19**	0.01	0.20	0.11	0.17	**3.22**
Benzoic acid	0.49	<0.01	na*	na	na	**na**	**na**	0.12	**0.49**	**0.38**	na	na
Bis(2-ethylhexyl)phthalate	0.54	**0.45**	**16.45**	**12.07**	0.03	**13.58**	**27.15**	<0.01	**0.92**	**0.49**	na	na
Di-n-butyl phthalate	0.21	<0.01	**0.85**	**3.01**	**0.53**	**9.76**	**18.64**	<0.01	<0.01	<0.01	na	<0.01
	HI	**0.5**	**18**	**18**	**11**	**42**	**72**	**1**	**9**	**6**	**13**	**24**

Note: Bolded values indicate HQ greater than 0.3.
*na = Not available.

Table F-8.5-3
Comparison of EPCs to Background Concentrations for East Ten Site Slope Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Range (mg/kg)	Sediment Background Range (mg/kg)	Tuff Background Range (mg/kg)
Barium	189	21-410	8-127	1.4-51.6
Cadmium	0.48	0.2-2.6	0.05-0.18	0.1-1.5
Copper	144	0.25-16	0.77-12	0.25-6.2
Lead	91	2-28	2-25.6	1.6-15.5
Mercury	0.043	0.05-0.1	0.01-0.03	0.1*
Selenium	0.36	0.1-1.7	0.1-0.1	0.1-0.105
Zinc	32.2	14-75.5	9-56.2	5.5-65.6

*No background data set; value is the BV.

Table F-8.5-4
Population Area Use Factors for East Ten Site Slope Subarea

Receptor	Home Range (ha)	Assessment Population Area (40*HR)	PAUF for 13.2-ha Site
American kestrel	106	4240	3.12E-03
American robin	0.42	16.8	0.79
Deer mouse	0.077	3.08	1.00
Vagrant shrew	0.39	15.6	0.85
Desert cottontail	3.1	124	0.107

Table F-8.5-5
HI Analysis Using PAUF for East Ten Site Slope Subarea

Analyte	EPC (mg/kg)	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Shrew	Deer Mouse	Earthworm	Plant
Copper	144	0.12	**1.64**	**5.14**	**9.0**	**13.09**	**4.24**	**2.44**	**11.08**	**14.40**
Lead	91	0.11	**0.76**	**4.33**	**5.69**	**6.50**	**1.26**	**0.76**	0.05	**0.76**
Benzoic Acid	0.49	n/a	n/a	n/a	n/a	n/a	**0.49**	**0.38**	n/a	n/a
Bis(2-ethylhexyl)phthalate	0.54	**16.45**	**12.07**	0.03	**13.58**	**27.15**	**0.92**	**0.49**	n/a	n/a
Di-n-butyl phthalate	0.21	**0.85**	**3.01**	**0.53**	**9.76**	**18.64**	<0.01	<0.01	na[a]	<0.01
HI		**18**	**17**	**10**	**38**	**65**	**7**	**4**	**11**	**15**
HI Adjusted by PAUF		**0.05**	**0.05**	**8**	**30**	**51**	**6**	n/a[b]	n/a	n/a

Note: Bolded values indicate HQ greater than 0.3.

[a] na = Not available.

[b] n/a = Not applicable.

Table F-8.5-6
HI Analysis for Consolidated Unit 04-001-99

Analyte	EPC or EPCentration (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Copper	15.81	<0.01	0.01	0.18	**0.56**	**0.99**	**1.44**	0.06	0.47	0.27	**1.22**	**1.58**
Lead	13.12	<0.01	0.02	0.11	**0.62**	**0.82**	**0.94**	0.04	0.18	0.11	0.01	0.11
HI		**0.01**	**0.03**	**0.3**	**1**	**2**	**2**	**0.1**	**0.6**	**0.4**	**1**	**2**
HI adjusted by PAUF for 1.8-ha Site		**<0.01**	**<0.01**	**<0.01**	**0.13**	**0.2**	**0.2**	**<0.01**	**0.07**	**0.2**	n/a[c]	n/a

Note: Bolded values indicate HQ greater than 0.3.

[a] Value for benzoic acid is a maximum detected concentration

[b] na = Not available.

[c] n/a = Not applicable.

Table F-8.5-7
HI Analysis for Conslidated Unit 05-001(a)-99

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Copper	408.3	0.12	**0.34**	**4.64**	**14.58**	**25.52**	**37.12**	**1.63**	**12.01**	**6.92**	**31.41**	**40.83**
Lead	250.3	0.07	**0.31**	**2.09**	**8.86**	**12.66**	**16.62**	0.68	**2.66**	**1.21**	0.16	**1.27**
HI		**0.2**	**0.6**	**7**	**23**	**38**	**54**	**2**	**15**	**8**	**32**	**42**
HI adjusted by PAUF for 5.4-ha Site		**<0.01**	**<0.01**	**0.01**	**8**	**12**	**17**	**0.1**	**5**	n/a*	n/a	n/a
HI adjusted by PAUF for 0.2-ha Site		**<0.01**	**<0.01**	**<0.01**	**0.5**	**0.9**	**1**	**0.01**	**0.4**	**1**	n/a	n/a

Note: Bolded values indicate HQ greater than 0.3.
*n/a = Not applicable.

Table F-8.5-8
HI Analysis for AOC 05-001(c)

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Copper	59.9	0.02	0.05	**0.68**	**2.14**	**3.74**	**5.45**	0.24	**1.76**	**1.02**	**4.61**	**5.99**
Lead	98.62	0.03	0.12	**0.82**	**3.29**	**4.70**	**6.16**	0.27	**0.99**	**0.45**	0.06	**0.47**
HI		**0.04**	**0.2**	**2**	**5**	**8**	**12**	**0.5**	**3**	**1**	**5**	**6**
HI adjusted by PAUF for a 4.8-ha Site		**<0.01**	**<0.01**	**<0.01**	**2**	**2**	**3**	**0.02**	**0.8**	n/a*	n/a	n/a

Note: Bolded values indicate HQ greater than 0.3.
*n/a = Not applicable.

Table F-8.5-9
HI Analysis for Consolidated Unit 05-005(a)-00

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Copper	14.56	<0.01	0.01	0.17	**0.52**	**0.91**	**1.32**	0.06	0.43	0.25	**1.12**	**1.46**
Lead	20.14	<0.01	0.02	0.17	**0.67**	**0.96**	**1.26**	0.05	0.20	0.09	0.01	0.10
HI		**<0.01**	**0.04**	**0.3**	**1**	**2**	**3**	**0.1**	**0.6**	**0.3**	**1**	**2**

Note: Bolded values indicate HQ greater than 0.3.

Table F-9.4-1
Parameters Used To Calculate Chemical SSLs

Parameters	Residential Values	Industrial Worker Values
Target HQ	1	1
Target cancer risk	10–5	10–5
Averaging time (carcinogen)	70 yr x 365 days	70 yr x 365 days
Averaging time (noncarcinogen)	ED x 365 days	ED x 365 days
Skin absorption factor	Semivolatile organic compounds = 0.1	Semivolatile organic compounds = 0.1
	Chemical-specific	Chemical-specific
Adherence factor–child	0.2 mg/cm^2	n/a
Body weight–child	15 kg (0–6 yr of age)	n/a
Cancer slope factor–oral (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Cancer slope factor–inhalation (chemical-specific)	$(mg/kg\text{-}day)^{-1}$	$(mg/kg\text{-}day)^{-1}$
Exposure frequency	350 day/yr	225 day/yr
Exposure duration–child	6 yr (0–6 yr of age)	n/a[a]
Age-adjusted ingestion factor	114 mg-yr/kg-day	n/a
Age-adjusted inhalation factor	11 m^3-yr/kg-day	n/a
Inhalation rate–child	10 m^3/day	n/a
Soil ingestion rate–child	200 mg/day	n/a
Particulate emission factor	6.61×10^9 m^3/kg	6.61×10^9 m^3/kg
Reference dose–oral (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Reference dose–inhalation (chemical-specific)	(mg/kg-day)	(mg/kg-day)
Exposed surface area–child	2800 cm^2/day (head, hands, forearms, lower legs, feet)	n/a
Age-adjusted skin contact factor for carcinogens	361 mg-yr/kg-day	n/a
Volatilization factor for soil (chemical-specific)	(m^3/kg)	(m^3/kg)
Body weight–adult	70 kg	70 kg
Exposure duration	30 yr[b]	25 yr[b]
Adherence factor–adult	0.07 mg/cm^2	0.2 mg/cm^2
Soil ingestion rate–adult	100 mg/day	100 mg/day
Exposed surface area–adult	5700 cm^2/day (head, hands, forearms, lower legs)	3300 cm^2/day (head, hands, forearms)
Inhalation rate–adult	20 m^3/day	20 m^3/day

[a] n/a = Not applicable.

[b] Exposure duration for lifetime resident is 30 yr. For carcinogens, the exposures are combined for child (6 yr) and adult (24 yr).

Table F-9.4-2
Parameters Used in the SAL Calculations for Radionuclides, Residential

Parameters	Residential, Child	Residential, Adult
Inhalation Rate (m^3/yr)	3652.5[a]	7305[b]
Mass Loading (g/m^3)	1.5×10^{-7} [c]	1.5×10^{-7} [c]
Outdoor Time fraction	0.2236[d]	0.0599[e]
Indoor Time fraction	0.7347[f]	0.8984[g]
Soil ingestion (g/yr)	73[h]	36.5[i]

[a] Calculated as [10 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 10 m^3/day is the daily inhalation rate of a child (NMED 2004, 085615).

[b] Calculated as [20 m^3/day x 350 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult (NMED 2004, 085615).

[c] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor (NMED 2004, 085615).

[d] Calculated as [5.6 hr/day x 350 day/yr] / 8766 hr/yr, where 5.6 hr/day is an estimate of time spent outdoors for a 3-11 yr old child (EPA 1997, 066598, Section 15.4-1).

[e] Calculated as [1.5 hr/day x 350 day/yr] / 8766 hr/yr, where 1.5 hr/day is an estimate of time spent outdoors for an adult 12 yr and older (EPA 1997, 066598, Section 15.4-1).

[f] Calculated as [(24-5.6 hr/day x 350 day/yr] / 8766 hr/yr.

[g] Calculated as [(24-1.5 hr/day x 350 day/yr] / 8766 hr/yr.

[h] Calculated as [0.2 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.2 g/day is the child soil ingestion rate (NMED 2004, 085615).

[i] Calculated as [0.1 g/day x 350 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-9.4-3
Parameters Used in the SAL Calculations for Radionuclides, Industrial

Parameters	Industrial, Adult
Inhalation Rate (m^3/yr)	19,481[a]
Mass Loading (g/m^3)	1.5×10^{-7} [b]
Outdoor Time fraction	0.2053[c]
Indoor Time fraction	0
Soil ingestion (g/yr)	97.4[d]

[a] Calculated as [20 m^3/day x 225 day/yr] / [indoor + outdoor time fractions], where 20 m^3/day is the daily inhalation rate of an adult and 225 days/yr is the exposure frequency (NMED 2004, 085615).

[b] Calculated as [1/ $6.6 \times 10^{+9}$ m^3/kg) x 1000 g/kg, where $6.6 \times 10^{+9}$ m^3/kg is the particulate emission factor (NMED 2004, 085615).

[c] Calculated as [8 hr/day x 225 day/yr] / 8766 hr/yr, where 8 hr/day is an estimate of the average length of the work day.

[d] Calculated as [0.1 g/day x 225 day/yr] / [indoor + outdoor time fractions], where 0.1 g/day is the adult soil ingestion rate (NMED 2004, 085615).

Table F-9.4-4
Screening Evaluation for SWMU 60-004(c), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.13	23	8.67E-02	0.13	5.6	0.36
Europium-152	ND[b]	11	Not a COPC	0.48	2.9	2.50
Plutonium-238	NA[d]	240	Not a COPC	0.009	37	0.004
		Total Dose	**0.09**		**Total Dose**	**3**

[a] Values from LANL 2005, 088493.
[b] ND = Not detected.
[c] NA = Not analyzed.

Table F-9.4-5
Screening Evaluation for SWMU 60-004(e), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Barium	66.29	1.00E+05[c]	6.63E-04	131	1.56E+04	8.40E-03
Selenium	2.6	5680	4.58E-04	1.14	391	2.92E-03
Thallium	1.03	74.9	1.37E-02	0.46	5.16	8.90E-02
Acetone	0.13	1.00E+05[c]	1.26E-06	0.049	2.81E+04	1.74E-06
Aroclor-1254	0.005	12	4.17E-04	0.003	1.12	2.68E-03
Aroclor-1260	0.004	n/a[d]	n/a	0.008	1.12	7.14E-03
Butanone(2-)	ND[e]	4.87E+04	Not a COPC	0.083	3.18E+04	2.61E-06
Fluoranthene	0.03	2.44E+04	1.22E-06	9.57	2290	4.18E-03
Hexanone(2-)[f]	0.2	4.87E+04	4.11E-06	0.069	3.18E+04	2.17E-06
Isopropyltoluene(4-)[g]	ND	389	Not a COPC	0.0007	271	2.58E-06
Methyl-2-pentanone(4-)	0.04	7010	5.85E-06	0.031	5510	5.63E-06
Pyrene	0.03	3.09E+04	1.06E-06	9.57	2290	4.18E-03
Toluene	0.004	252[c]	1.59E-05	0.0063	252[c]	2.50E-05
Xylene (total)	0.006	82[c]	7.32E-05	0.035	82[c]	4.27E-04
		HQ	**0.01**		**HQ**	**0.1**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Maximum values or saturation values.
[d] n/a = not applicable.
[e] ND = Not detected.
[f] 2-Butanone used as a surrogate for 2-Hexanone.
[g] Isopropylbenzene used as a surrogate for 4-Isopropyltoluene.

Table F-9.4-6
Screening Evaluation for SWMU 60-004(e), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	3.48	5000[c]	6.97E-09	39.4	2100 [c]	1.88E-07
Aroclor-1254	0.005	8.26	6.05E-09	0.003	2.2 [c]	1.36E-08
Aroclor-1260	0.004	8.26	4.85E-09	0.008	2.2 [c]	3.64E-08
Bis(2-ethylhexyl)phthalate	0.048	1370	3.54E-10	9.62	347	2.77E-07
Total Excess Cancer Risk			**2E-08**	**Total Excess Cancer Risk**		**5E-07**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321)

Table F-9.4-7
Screening Evaluation for SWMU 60-005(a), Noncarcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	HQ	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	HQ
Antimony	5.6(U)	454	1.23E-02	5.6(U)	31.3	1.79E-01
Selenium	ND[c]	5680	Not a COPC	1.41	391	3.61E-03
Thallium	0.098	74.9	1.31E-03	1.01	5.16	1.96E-01
Benzoic Acid	0.24	1.00E+05[d]	2.39E-06	5.26	1.00E+05[d]	5.26E-05
Butyl benzy phthalate	ND	1.40E+05[e]	Not a COPC	1.65	1.20E+04[e]	1.38E-04
Fluoranthene	0.02	2.44E+04	8.77E-07	0.43	2290	1.90E-04
Fluorene	ND	2.65E+04	Not a COPC	0.44	2660	1.65E-04
Pyrene	0.028	3.09E+04	9.03E-07	0.43	2290	1.89E-04
HI			**0.01**	**HI**		**0.4**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] ND = Not detected.
[d] Maximum values or saturation values.
[e] Values from EPA Region 6 (EPA 2006, 094321)

Table F-9.4-8
Screening Evaluation for SWMU 60-005(a), Carcinogenic COPCs

Analyte	EPC (mg/kg) (0–1 ft)	Industrial SSL[a] (mg/kg)	Cancer Risk	EPC (mg/kg) (0–10 ft)	Residential SSL[b] (mg/kg)	Cancer Risk
Chromium	7.24	5000[c]	1.45E-08	8.39	2100 [c]	4.00E-08
Aniline	0.25	3400 [c]	7.29E-10	0.58	850 [c]	6.76E-09
Bis(2-ethylhexyl)phthalate	ND [d]	1.37E+03	Not a COPC	1.84	347	5.30E-08
Total Excess Cancer Risk			**2E-08**	**Total Excess Cancer Risk**		**1E-07**

[a] Values from NMED – industrial (NMED 2006, 092513).
[b] Values from NMED – residential (NMED 2006, 092513).
[c] Values from EPA Region 6 (EPA 2006, 094321)
[d] ND = Not detected.

Table F-9.4-9
Screening Evaluation for SWMU 60-005(a), Radionuclide COPCs

Analyte	EPC (pCi/g) (0–1 ft)	Industrial SAL[a] (pCi/g)	Total Dose (mrem/yr)	EPC (pCi/g) (0–10 ft)	Residential SAL[a] (pCi/g)	Total Dose (mrem/yr)
Cesium-137	0.29	23	1.91E-01	0.60	5.6	1.60
Cobalt-60	0.039	5.1	1.15E-01	0.017	1.3	0.20
Europium-152	0.29	11	3.98E-01	0.11	2.9	0.57
Plutonium-239	0.066	210	4.71E-03	0.049	33	0.02
Tritium	0.62	4.40E+05	2.12E-05	0.49	750	0.01
		Total Dose	**0.7**		**Total Dose**	**2**

[a] Values from LANL 2005, 088493.

Table F-9.5-1
Final ESL Comparison for Sigma Mesa Subarea

Analyte	EPC	Final ESL	Receptor	Hazard Quotient	COPEC
Organic Chemicals (mg/kg)					
Acetone	0.03	1.2	Deer mouse	0.03	No
Aroclor-1254	0.02	0.041	Robin	**0.41**	**Yes**
Aroclor-1260	0.17	0.14	Red fox	**1.21**	**Yes**
Benzoic Acid	2.60	1	Deer mouse	**2.60**	**Yes**
Bis(2-ethylhexyl)phthalate	0.37	0.02	Robin	**18.3**	**Yes**
Fluoranthene	0.35	22	Shrew	0.02	No
Fluorene	0.36	4.1	Earthworm	0.09	No
Pyrene	0.36	18	Earthworm	0.02	No
Toluene	0.009	23	Shrew	4E-04	No
Inorganic Chemicals (mg/kg)					
Antimony	1.82	0.05	Plant	**36.46**	**Yes**
Chromium	11.62	2.3	Earthworm	**5.05**	**Yes**
Selenium	1.05	0.1	Plant	**10.52**	**Yes**
Thallium	0.77	0.032	Shrew	**24.19**	**Yes**
Radionuclides (pCi/g)					
Cobalt-60	0.009	550	Earthworm	2E-05	No
Europium-152	0.14	380	Earthworm	4E-04	No
Tritium	1.08	36000	Plant	3E-05	No

Note: Bolded values indicate HQ greater than 0.3.

Table F-9.5-2
HI Analysis for Sigma Mesa Samples

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestrel	Omnivorous Kestrel	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Antimony	1.82	0.04	na*	na	na	na	na	**0.63**	**7.01**	**3.80**	0.02	**36.46**
Chromium (total)	11.62	<0.01	<0.01	<0.01	0.01	0.01	0.01	<0.01	0.02	0.01	**5.05**	**4.84**
Selenium	1.05	0.01	0.01	0.12	**0.70**	**0.81**	**0.96**	**0.35**	**1.14**	**0.96**	0.14	**10.52**
Thallium	0.77	0.28	0.01	0.12	0.08	**0.48**	**0.86**	0.28	**24.19**	**11.38**	na	**7.74**
Aroclor-1254	0.02	0.11	0.08	0.10	0.01	0.21	**0.41**	<0.01	0.04	0.02	na	<0.01
Aroclor-1260	0.17	**1.21**	0.04	0.05	<0.01	0.10	0.19	<0.01	0.02	0.01	na	na
Benzoic Acid	2.59	0.01	na	na	na	na	na	**0.62**	**2.60**	**2.0**	na	na
Bis(2-ethylhexyl)phthalate	0.37	**0.31**	**11.09**	**8.13**	0.02	**9.15**	**18.30**	<0.01	**0.62**	**0.33**	na	na
	HI	**2**	**11**	**9**	**0.8**	**11**	**21**	**2**	**36**	**19**	**5**	**60**

Note: Bolded values indicate HQ greater than 0.3.

*na = Not available.

Table F-9.5-3
Comparison of EPCs to Background Concentrations for Sigma Mesa Subarea

Inorganic Chemicals	EPC (mg/kg)	Soil Background Range (mg/kg)	Sediment Background Range (mg/kg)	Tuff Background Range (mg/kg)
Antimony	1.82	0.1–1	0.83*	0.05–0.4
Chromium	11.62	1.9–36.5	0.8–9.2	0.25–13
Selenium	1.05	0.1–1.7	0.1–0.1	0.1–0.105
Thallium	0.77	0.063–1	0.73*	0.05–1.7

*No background data set value is the BV.

Table F-9.5-4
Population Area Use Factors for Sigma Mesa Subarea

Receptor	Home Range (ha)	Assessment Population Area (40*HR) (ha)	PAUF for 1.13-ha Sigma Mesa Subarea
Mexican spotted owl	366	n/a[a]	0.0031[b]
American kestrel	106	4240	2.67E-04
American robin	0.42	16.8	0.07
Deer mouse	0.077	3.08	0.37
Vagrant shrew	0.39	15.6	0.07
Desert cottontail	3.1	124	9.11E-03
Red fox	1038	41520	2.72E-05

[a] n/a = Not applicable.
[b] Value for Mexican spotted owl is the AUF based on individual home range.

Table F-9.5-5
HI Analysis of Remaining COPECs for Sigma Mesa Subarea

Analyte	EPC (mg/kg)	Red fox	Carnivorous Kestral	Omnivorous Kestral	Herbivorous Robin	Omnivorous Robin	Insectivorous Robin	Cottontail	Shrew	Deer Mouse	Earthworm	Plant
Aroclor-1254	0.02	0.11	0.08	0.10	0.01	0.21	**0.41**	<0.01	0.04	0.02	na[a]	<0.01
Aroclor-1260	0.17	**1.21**	0.04	0.05	<0.01	0.10	0.19	<0.01	0.02	0.01	na	na
Benzoic Acid	2.60	0.01	na	na	na	na	na	**0.62**	**2.60**	**2.00**	na	na
Bis(2-ethylhexyl)phthalate	0.37	**0.31**	**11.09**	**8.13**	0.02	**9.15**	**18.30**	<0.01	**0.62**	**0.33**	na	na
HI		**2**	**11**	**8**	**0.03**	**10**	**19**	**0.6**	**3**	**2**	**na**	**<0.01**
HI Adjusted for PAUF		**<0.01**	**<0.01**	**<0.01**	**<0.01**	**0.6**	**1**	**<0.01**	**0.2**	**0.9**	**n/a**[b]	**n/a**

Note: Bolded values indicate HQ greater than 0.3.
[a] na = Not available
[b] n/a = Not applicable

Table F-10.0-1
Summary of Human Health Risk Screening Assessments for Site Decisions

Subarea/Site	Decision Scenario	HI	Cancer Risk	Dose (mrem/yr)	Total Equivalent Radionuclide Risk
Mesa Top Subarea					
SWMU 35-002	Residential	1	7×10^{-6}	0.002	4×10^{-8}
SWMU 35-004(a)	Residential	—*	—	0.001	2×10^{-8}
SWMU 35-004(h)	Residential	0.002	—	0.005	1×10^{-7}
SWMU 35-014(a)	Residential	—	—	3	2×10^{-5}
AOC 35-014(f)	Residential	0.01	2×10^{-7}	—	—
Consolidated Unit 35-003(a)-99	Industrial	0.06	3×10^{-7}	4	4×10^{-5}
Consolidated Unit 35-003(j)-99	Industrial	0.1	8×10^{-5}	0.2	3×10^{-6}
SWMU 35-009(a)	Industrial	0.3	2×10^{-6}	0.2	2×10^{-6}
SWMU 35-015(a)	Industrial	0.02	6×10^{-8}	0.002	2×10^{-9}
AOC 35-018(a)	Industrial	0.007	3×10^{-5}	1×10^{-6}	2×10^{-11}
Ten Site Slope Subarea					
Consolidated Unit 35-004(g)-00	Residential	0.1	7×10^{-7}	2	1×10^{-5}
Consolidated Unit 35-014(g)-00	Residential	0.2	4×10^{-6}	2	7×10^{-6}
Consolidated Unit 35-016(a)-00	Residential	0.1	9×10^{-6}	0.5	2×10^{-6}
AOC 35-016(b)	Residential	0.2	1×10^{-8}	0.4	2×10^{-6}
SWMU 35-009(a)	Recreational	0.3	2×10^{-6}	0.1	1×10^{-7}
SWMU 35-009(e)	Recreational	1	1×10^{-5}	0.1	3×10^{-7}
AOC 35-014(g3)	Recreational	0.002	7×10^{-6}	0.05	2×10^{-7}
Consolidated Unit 35-016(c)-00	Recreational	0.06	4×10^{-8}	0.1	4×10^{-7}
AOC 35-016(j)	Recreational	0.002	6×10^{-6}	0.003	1×10^{-9}
Mortandad Slope Subarea					
SWMU 35-004(b)	Residential	0.00008	4×10^{-7}	—	—
Consolidated Unit 35-008-00	Residential	0.7	9×10^{-7}	3	2×10^{-5}
SWMU 35-009(c)	Residential	0.3	5×10^{-6}	2	5×10^{-6}
AOC 35-016(f)	Residential	0.02	8×10^{-7}	—	—
Consolidated Unit 35-016(i)-00	Residential	0.2	4×10^{-6}	—	—
SWMU 35-016(p)	Residential	0.002	1×10^{-6}	2	1×10^{-5}
SWMU 35-016(o)	Recreational	0.1	9×10^{-6}	0.4	1×10^{-6}
Pratt Canyon Subarea					
SWMU 35-009(d)	Residential	0.4	1×10^{-5}	0.3	2×10^{-6}
SWMU 35-016(m)	Residential	0.0006	—	0.9	6×10^{-6}
Consolidated Unit 35-003(d)-00	Recreational	0.1	8×10^{-7}	0.3	9×10^{-7}
Consolidated Unit 35-016(k)-00	Recreational	0.1	1×10^{-5}	0.01	2×10^{-8}

Table F-10.0-1 (continued)

Subarea/Site	Decision Scenario	HI	Cancer Risk	Dose (mrem/yr)	Total Equivalent Radionuclide Risk
Ten Site Canyon Subarea					
AOC C-35-007	Residential	0.00005	5×10^{-9}	0.5	4×10^{-7}
Consolidated Unit 35-010(a)-99	Residential	0.7	4×10^{-7}	2	5×10^{-6}
East Ten Site Slope Subarea					
Consolidated Unit 04-001-99	Residential	0.03	5×10^{-7}	13	5×10^{-5}
Consolidated Unit 05-001(a)-99	Residential	0.7	6×10^{-9}	4	3×10^{-5}
AOC 05-001(c)	Residential	0.3	—*	2	1×10^{-5}
Consolidated Unit 05-005(a)-00	Residential	0.2	3×10^{-9}	0.8	3×10^{-6}
SWMU 52-002(a)	Residential	0.01	7×10^{-9}	2	9×10^{-6}
SWMU 52-003(a)	Residential	0.00005	1×10^{-9}	0.6	3×10^{-6}
SWMU 63-001(a)	Residential	0.004	—	0.03	2×10^{-8}
SWMU 63-001(b)	Residential	0.004	5×10^{-9}	0.04	2×10^{-7}
Sigma Mesa Subarea					
SWMU 60-004(c)	Residential	—	—	3	1×10^{-5}
SWMU 60-004(e)	Residential	0.1	5×10^{-7}	—	—
SWMU 60-005(a)	Residential	0.4	1×10^{-7}	2	1×10^{-5}

*— = No COPCs.

Table F-10.0-2
Summary of Investigations for SWMUs and AOCs in the Middle Mortandad/Ten Site Aggregate

Consolidated Unit Number	SWMU or AOC Number	Subarea	Nature and Extent Determined?	Additional Activities Recommended?	Residential Scenario[a]	Industrial/ Recreational Scenario[a]
04-001-99	04-001	East Ten Site Slope	Yes	No	Yes	Yes
	04-002	East Ten Site Slope				
	04-003(b)	East Ten Site Slope				
05-001(a)-99	05-001(a)	East Ten Site Slope	Yes	No	Yes	Yes
	05-001(b)	East Ten Site Slope				
	05-002	East Ten Site Slope				
	05-006(h)	East Ten Site Slope				
n/a[b]	05-001(c)	East Ten Site Slope	Yes	No	Yes	Yes
05-005(a)-00	05-005(a)	East Ten Site Slope	Yes	No	Yes	Yes
	05-006(b)	East Ten Site Slope				
	05-006(e)	East Ten Site Slope				
n/a	35-002	Mesa Top	Yes	No	Yes	Yes
35-003(a)-99	35-003(a)	Mesa Top	Yes	No	No	Yes
	35-003(b)	Mesa Top				
	35-003(c)	Mesa Top				
	35-003(e)	Pratt Canyon				
	35-003(f)	Mesa Top				
	35-003(g)	Mesa Top				
	35-003(h)	Mesa Top				
	35-003(m)	Mesa Top				
	35-003(misc)	Mesa Top				
	35-003(n)	Mesa Top				
	35-003(o)	Mesa Top				
	35-003(p)	Mesa Top				
35-003(d)-00	35-003(d)	Pratt Canyon	Yes	No	No	Yes
	35-003(l)	Pratt Canyon				
	35-003(q)	Mesa Top				
	35-003(r)	Pratt Canyon				
n/a	35-004(a)	Mesa Top	Yes	No	Yes	Yes
n/a	35-004(b)	Mortandad Slope	Yes	No	Yes	Yes
n/a	35-004(h)	Mesa Top	Yes	No	Yes	Yes
35-003(j)-99	35-003(j)	Mesa Top	Yes	No	No	No[c]
	35-003(k)	Mesa Top				
	35-014(b)	Mesa Top				
	35-014(d)	Mesa Top				
	35-015(b)	Mesa Top				
35-004(g)-00	35-004(g)	Ten Site Slope	Yes	No	Yes	Yes
	35-009(b)	Ten Site Slope				
35-008-00	35-008	Mortandad Slope	Yes	No	Yes	Yes
	35-014(e)	Mortandad Slope				
n/a	35-016(e)	Mortandad Slope	Yes	No	Yes	Yes

Table F-10.0-2 (continued)

Consolidated Unit Number	SWMU or AOC Number	Subarea	Nature and Extent Determined?	Additional Activities Recommended?	Residential Scenario[a]	Industrial/ Recreational Scenario[a]
n/a	35-009(a)	Ten Site Slope, Mesa Top	Yes	No	No	Yes
n/a	35-009(c)	Mortandad Slope	Yes	No	Yes	Yes
n/a	35-009(d)	Pratt Canyon	Yes	No	Yes	Yes
n/a	35-009(e)	Ten Site Slope	Yes	No	No	Yes
35-010(a)-99	35-010(a)	Ten Site Canyon	Yes	No	Yes	Yes
	35-010(b)	Ten Site Canyon				
	35-010(c)	Ten Site Canyon				
	35-010(d)	Ten Site Canyon				
	35-010(e)	Ten Site Canyon				
n/a	35-011(d)	Mesa Top	Yes	No	Yes	Yes
n/a	35-014(a)	Mesa Top	Yes	No	Yes	Yes
n/a	35-014(f)	Mesa Top	Yes	No	Yes	Yes
35-014(g)-00	35-014(g)	Ten Site Slope	Yes	No	Yes	Yes
	35-004(m)	Ten Site Slope				
	35-014(g2)	Ten Site Slope				
	35-016(n)	Ten Site Slope				
n/a	35-014(g3)	Ten Site Slope	Yes	No	No	Yes
n/a	35-015(a)	Mesa Top	Yes	No	No	Yes
35-016(a)-00	35-016(a)	Ten Site Slope	Yes	No	Yes	Yes
	35-016(q)	Ten Site Slope				
n/a	35-016(b)	Ten Site Slope	Yes	No	Yes	Yes
35-016(c)-00	35-016(c)	Ten Site Slope	Yes	No	No	Yes
	35-016(d)	Ten Site Slope				
n/a	35-016(f)	Mortandad Slope	Yes	No	Yes	Yes
35-016(i)-00	35-014(e2)	Mortandad Slope	Yes	No	Yes	Yes
	35-016(i)	Mortandad Slope				
n/a	35-016(j)	Ten Site Slope	Yes	No	No	Yes
35-016(k)-00	35-016(k)	Pratt Canyon	Yes	No	No	Yes
	35-016(l)	Pratt Canyon				
n/a	35-016(m)	Pratt Canyon	Yes	No	Yes	Yes
n/a	35-016(o)	Mortandad Slope	Yes	No	No	Yes
n/a	35-016(p)	Mortandad Slope	Yes	No	Yes	Yes
n/a	35-018(a)	Mesa Top	Yes	No	No	No[c]
n/a	C-35-007	Ten Site Canyon	Yes	No	Yes	Yes
n/a	52-002(a)	East Ten Site Slope	Yes	No	Yes	Yes
n/a	52-003(a)	East Ten Site Slope	Yes	No	Yes	Yes
n/a	60-004(c)	Sigma Mesa	Yes	No	Yes	Yes
n/a	60-004(e)	Sigma Mesa	Yes	No	Yes	Yes
n/a	60-005(a)	Sigma Mesa	Yes	No	Yes	Yes
n/a	63-001(a)	East Ten Site Slope	Yes	No	Yes	Yes
n/a	63-001(b)	East Ten Site Slope	Yes	No	Yes	Yes

[a] Yes indicates risk/dose is acceptable.

[b] n/a = Not applicable; the SWMU or AOC in that row has not been consolidated.

[c] Because of PAHs from the asphalt pavement, this site has limited exposure pathways and use by workers (see section F-3.4).

Appendix G

Surface Water Site Assessments
(on CD included with this document)

Appendix H

Ecological Scoping Checklists
(on CD included with this document)

Appendix I

Investigation-Derived Waste Documentation
(on CD included with this document)

Appendix J

Borehole Logs
(on CD included with this document)