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3-31-09 PM1:34 IN

Date: March 31, 2009
Refer To: EP2009-0168

Mr. Lawrence E. Starfield, Acting Regional Administrator
Environmental Protection Agency, Region 6
1445 Ross Avenue, Suite 1200
Dallas, TX 75202-2733

Subject: Application for Risk-Based Disposal Approval for the Septic Tank Area at Solid Waste Management Unit 21-024(c)

Dear Mr. Starfield:

Enclosed for your review is the Los Alamos National Laboratory's (the Laboratory's) application for implementing a risk-based methodology for sampling, cleanup, and disposal of polychlorinated biphenyl (PCB) remediation waste as described by 40 Code of Federal Regulations (CFR) §761.61(c) for the septic tank area at Solid Waste Management Unit (SWMU) 21-024(c). As discussed with Mr. Richard Mayer of your staff during his February 11, 2009, site visit, contamination under the septic tank will be remediated to 1 part per million (ppm) to a depth of 10 ft below ground surface (bgs). However, current data show total PCBs at one location below the septic tank are approximately 4 ppm at 15 ft bgs, and the concentrations at this location are not decreasing with depth. In a subsequent telephone conversation on February 18, 2009, Mr. Mayer requested that the Laboratory submit a risk-based application to provide the U.S. Environmental Protection Agency (EPA) with the information necessary to review and approve the remediation activities under the former septic tank. The attached document fulfills this request.

PCB remediation will also occur in the nonseptic tank portions of SWMU 21-024(c) and collocated Consolidated Unit 21-003-99. These locations will be remediated to 1 ppm of PCB. As requested by EPA, the Laboratory will submit a separate notice of self-implementation under the provisions of 40 CFR §761.61(a)(3)(i) for these portions of Consolidated Unit 21-003-99 and SWMU 21-024(c).

If you have any questions, please contact Mark Thacker at (505) 699-1963 (mthacker@lanl.gov) or Woody Woodworth at (505) 665-5820 (lwoodworth@doeal.gov).

Sincerely,

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Sincerely,

David R. Gregory, Project Director
Environmental Operations
Los Alamos Site Office

31471

MG/DG/AC/MT/RB:sm

Enclosures: Two hard copies with electronic files
(1) Application for Risk-Based Disposal Approval for the Septic Tank Area at Solid Waste Management Unit 21-024(c) (LA-UR-09-1668)

Cy: (w/enc.)
Rich Mayer, EPA, Dallas, TX
Lou Roberts, EPA, Dallas, TX
Kathryn Roberts, NMED-HWB, Santa Fe, NM
David Cobrain, NMED-HWB, Santa Fe, NM
Max Baker, Los Alamos County, Los Alamos, NM
Woody Woodworth, DOE-LASO, MS A316
Mark Thacker, EP-TA-21, MS C349
RPF, MS M707 (with two CDs)
Public Reading Room, MS M992

Cy: (Letter and CD only)
Laurie King, EPA Region 6, Dallas, TX
Steve Yanicak, NMED-OB, White Rock, NM
Emily Day, Weston Solutions, Los Alamos, NM
Roy Bohn, EP-TA-21, MS C349
Ann Sherrard, ENV-RCRA, MS K490
Albert Dye, ENV-RCRA, MS K490
Kristine Smeltz, EP-WES, MS M992
EP-TA-21 File, MS C349

Cy: (w/o enc.)
Tom Skibitski, NMED-OB, Santa Fe, NM
Keyana DeAguero, DOE-LASO (date-stamped letter emailed)
Richard S. Watkins, ADESHQ, MS K491
Michael J. Graham, ADEP, MS M991
Alison M. Dorries, EP-WES, MS M992
Allan Chaloupka, EP-TA-21, MS C349
IRM-RMMSO, MS A150 (date-stamped letter emailed)

Application for Risk-Based Disposal Approval
for the Septic Tank Area at Solid Waste Management Unit 21-024(c)

Background

Los Alamos National Laboratory (LANL or the Laboratory) Technical Area 21 (TA-21) Closure Project, under the Environmental Programs (EP) Directorate, is participating in a national effort by the U.S. Department of Energy (DOE) to clean up sites and facilities formerly involved in weapons research and development. The sites under investigation and proposed for remediation are designated as solid waste management units (SWMUs) or areas of concern (AOCs). Individual SWMUs and AOCs may be grouped into consolidated units as a result of spatial proximity or function.

At TA-21, SWMU 21-024(c) is an inactive septic system, installed in the late 1940s (LANL 2004, 087461; NMED 2005, 089314), that routed sewage from buildings 21-054 and 21-061 through a septic tank (structure 21-056) to an outfall and eventually over the mesa top into Los Alamos Canyon. Its use was discontinued after 1966 when a wastewater treatment plant was constructed at the east end of TA-21 (LANL 1991, 007529, p. 15-34). The suspected sources of polychlorinated biphenyl (PCB) contamination in the septic system are spills from the use of PCB-contaminated oil and from the PCB container storage at building 21-061.

In 1988, initial contaminant information for SWMU 21-024(c) was obtained from samples collected as part of Environmental Restoration Project reconnaissance sampling effort (LANL 1991, 007529). In 1992 and 1993, Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) activities included collecting outfall soil samples (LANL 1994, 031591, p. 8-18–8-24). The following year, RFI activities included drilling a 20-ft borehole in the vicinity of the reinforced concrete septic tank (structure 21-56) (LANL 1995, 052350, pp. 7-2–7-3). More recently, in 2006, the septic tank and associated piping and overlying soil were excavated and removed, and the site was further characterized by the collection of additional subsurface samples (LANL 2008, 102760). The excavation area was backfilled with clean soil. However, the extent of PCB contamination is not currently defined under the former septic tank.

The Laboratory plans to remove an estimated 20 yd^3 of PCB-contaminated soils from under the former septic tank to 10 ft below ground surface (bgs). The total depth of PCB contamination under the septic tank is not known; therefore, this area is not planned to be remediated to less than 1 part per million (ppm) total PCBs. The contamination remaining under the former septic tank deeper than 10 ft bgs will be addressed in a risk assessment that will be performed after site remediation is complete. The remainder of SMWU 21-024(c) and collocated Consolidated Unit 21-003-99 are addressed in a separate self-implementation notice filed on the same date as this application (LANL 2009, 105182). Figures 1 and 2 show the locations of the SWMU addressed in this application.

Purpose

The purpose of this risk-based disposal approval application is to provide the U.S. Environmental Protection Agency (EPA) with the information necessary to review and approve the proposed remediation activities at SWMU 21-024(c) under the Toxic Substances and Control Act (40 Code of Federal Regulations [CFR] 761.61[c]). This application also provides the information required by 40 CFR §761.61(a)(3)(i) to allow the Laboratory to manage the waste generated from the cleanup as PCB remediation waste. This application is organized according to the requirements in 40 CFR §761.61(a)(3)(i).

Corrective actions at the Laboratory are subject to the March 1, 2005, Compliance Order on Consent (the Consent Order), issued pursuant to the New Mexico Hazardous Waste Act, New Mexico Statutes Annotated (NMSA) 1978, § 74-4-10, and the New Mexico Solid Waste Act, NMSA 1978, § 74-9-36(D). Therefore, cleanup activities at SWMU 21-024(c) will be conducted as part of RCRA corrective action activities. Section VIII.B.1.a of the Consent Order establishes a default concentration of 1 ppm or a risk-based PCB cleanup level established through performing a risk assessment in accordance with the New Mexico Environment Department's (NMED's) "Risk-Based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites" (NMED 2000, 068980). The soil at the removed septic tank location at SWMU 21-024(c) will be excavated to a maximum of 10 ft bgs, as described in the part D of this application. A risk assessment will then be performed and submitted to NMED. The risk assessment will demonstrate that cleanup levels will not pose an unreasonable risk of injury to health or the environment. In addition, land-use restrictions will be formulated, as needed.

(A) The nature of contamination, including kinds of materials contaminated.

Based on historical information, the septic tank at SWMU 21-024(c) was contaminated from PCB fluid storage and use at the buildings connected to the septic system. Specifically, piping, the septic tank, and soil removed from the site were contaminated with PCBs. PCB-contaminated soil is still present under the location of the removed septic tank. The topography of the site slopes from north to south and is covered with vegetation. The site drains toward the outfall along the south side of the site (Figure 2). The outfall is being addressed in a separate self-implementation notification filed on the same date as this application (LANL 2009, 105182).

(B) A summary of the procedures used to sample contaminated and adjacent areas and a table or cleanup site map showing PCB concentrations measured in all pre-cleanup characterization samples. The summary must include sample collection and analysis dates.

This section summarizes the field methods used to collect characterization samples at SWMU 21-024(c) during the 2006 field season. All activities were conducted in accordance with the most current versions of applicable standard operating procedures (SOPs) listed below (available at http://www.lanl.gov/environment/cleanup/qa.shtml).

- EP-ERSS-SOP-5022, Characterization and Management of Environmental Restoration (ER) Project Waste
- EP-ERSS-SOP-5028, Coordinating and Evaluating Geodetic Surveys
- EP-ERSS-SOP-5056, Sample Containers and Preservation
- EP-ERSS-SOP-5057, Handling, Packaging, and Transporting Field Samples
- EP-ERSS-SOP-5058, Sample Control and Field Documentation
- EP-ERSS-SOP-5059, Field Quality Control Samples
- EP-ERSS-SOP-5061, Field Decontamination of Equipment
- SOP-06.09, Spade and Scoop Method for Collection of Soil Samples
- SOP-06.10, Hand Auger and Thin-Wall Tube Sampler
- SOP-06.24, Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers
- SOP-10.14, Performing and Documenting Gross Gamma Radiation Scoping Surveys
- SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials

Table 1 summarizes the field methods used. Existing PCB precleanup characterization data at the former septic tank location are presented in Tables 2 and 3 and are shown in Figure 3.

Exploratory Drilling

Cuttings and core were field screened for radioactivity and organic vapors, and the core was visually inspected and lithologically logged following SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials. A detailed lithologic log was completed for each boring by a qualified geologist and classified in accordance with Unified Soil Classification System, American Society for Testing and Materials D2487 and D2488, or American Geological Institute "Methods for Soil and Rock Classification."

All drilling equipment was dry-decontaminated after use at each borehole. Rinsate blanks on drilling equipment were collected at a frequency of 1 per every 10 analytical samples collected.

All drill cuttings generated during sampling activities were placed in appropriate waste containers (rolloff bins or 55-gal. drums) and staged in a less-than-90-d waste storage area. Waste remained on-site pending receipt of the results of waste characterization, which was based on analytical results from core samples, augmented by direct sampling, if necessary.

Surface and Subsurface Sampling

Samples were collected from 0.0 to 0.5 ft using the spade-and-scoop method in accordance with SOP-06.09, Spade and Scoop Method for Collection of Soil Samples. The samples were collected using stainless-steel shovels or spoons and homogenized in stainless-steel bowls. Samples were collected at depths of less than 15 ft bgs using the hand-auger method in accordance with SOP-06.10, Hand Auger and Thin-Wall Tube Sampler. The material was placed in stainless-steel bowls and handled in the same manner as surface soil samples. Samples at the bottom or at the entire length of a borehole were collected using the split-spoon core-barrel method in accordance with SOP-06.24, Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers. The samples were collected using a cylindrical barrel split lengthwise, which enabled separation of the two halves to expose the core sample.

The samples were transferred to sterile sample collection jars or bags for transport to the Laboratory's Sample Management Office (SMO).

Quality Assurance/Quality Control Samples

Quality assurance/quality control (QA/QC) samples for soil and tuff (Qbt 3) were collected in accordance with EP-ERSS-SOP-5059, Field Quality Control Samples. Field duplicate samples were collected at a frequency of at least 1 duplicate sample for every 10 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 samples were collected for analysis of volatile organic compounds (VOCs).

Sample Documentation and Handling

Field personnel completed a sample collection log (SCL) and associated chain-of-custody (COC) form for each sample. Sample containers were sealed with signed COC seals and placed in coolers at approximately 4°C. The samples were packaged, handled, and shipped in accordance with EP-ERSS-SOP-5057, Handling, Packaging, and Transporting Field Samples, and EP-ERSS-SOP-5056, Sample Containers and Preservation.

Samples were transported to the SMO in sealed coolers. The SMO personnel reviewed and approved the SCLs and COC forms before taking custody of the samples. Samples were subsequently shipped to an analytical laboratory.

Decontamination of Sampling Equipment

All sampling equipment that came (or could have come) in contact with sampling material was decontaminated immediately before each sample was collected to avoid cross-contamination of samples. Dry decontamination (brushing off debris with a brush) was first used to minimize liquid waste. Wet decontamination (spraying the equipment with Alconox and deionized water and wiping clean with paper towels) was subsequently used. Decontamination activities, including collection of rinsate blank samples, were performed in accordance with EP-ERSS-SOP-5061, Field Decontamination of Equipment, and EP-ERSS-SOP-5059, Field Quality Control Samples.

Geodetic Surveying

Geodetic surveys of all sampled locations were performed using a Trimble R8 (integrated receiver, radio, and antenna) and a permanent base station. This real-time kinematic (RTK) global positioning system (GPS) is referenced from published and monumented external Laboratory survey control points in the vicinity. All borehole and sampling locations were surveyed according to EP-ERSS-SOP-5028, Coordinating and Evaluating Geodetic Surveys. Horizontal accuracy of the monumented control points is within ±0.5 ft. The RTK GPS instrument referenced from Laboratory control points is accurate within ±0.5 ft.

(C) The location and extent of the identified contaminated areas, including topographic maps with sample collection site cross referenced to a sample identification numbers in the data summary from paragraph (a)(3)(i)(b).

Existing PCB characterization data at the septic tank area are presented in Tables 2 and 3 and are shown in Figure 3.

Figure 3 presents a cross-section of the former septic tank area from north to south, with total PCB concentrations represented in various colors. Vertical extent has not been defined under the former septic tank location; PCB concentrations increase with depth at location 21-25748. Specifically, total PCB concentrations increase from 2.98 mg/kg at a depth of 4.0 to 5.0 ft bgs to a concentration of 4.14 mg/kg at a depth of 14 to 15 ft bgs. Before site cleanup activities are conducted, a sample will be collected 5 ft deeper than the deepest sample previously collected beneath the location of the former septic tank to establish the extent of PCB contamination; additional samples will be collected in 5-ft increments until a decreasing trend is found (Figure 3). The additional sampling is described in part D of this application.

(D) A cleanup plan for the site, including schedule, disposal technology, and approach. This plan should contain options and contingencies to be used if unanticipated higher concentrations or wider distributions of PCB remediation waste are found or other obstacles force changes in the cleanup approach.

Schedule

The preexcavation PCB sampling and site remediation activities are scheduled to begin once EPA approves this application. The preexcavation sampling and receipt of analytical results are anticipated to

take approximately 2 mo. The evaluation of the data and soil removal will be conducted concurrently with sampling efforts and are expected to take approximately 3 mo. Site restoration and a summary report are expected to take approximately 2 additional months to complete. Based on these estimates, the project is expected to be completed approximately 5 mo after EPA approves this application.

Disposal Technology

Wastes will consist of PCB-contaminated material that may also contain low-level radionuclide contamination. Wastes will be segregated based on characterization data. Materials containing greater than or equal to 50 ppm total PCBs (not expected for this cleanup activity) will be separated from those containing less than 50 ppm. The requirements of 40 CFR §761.61(a)(5)(ii) and (a)(5)(v)(A) are summarized below.

- Bulk PCB-remediation wastes with a PCB concentration of less than 50 ppm will be disposed of at an authorized nonmunicipal, nonhazardous waste facility, an authorized hazardous waste landfill, or an authorized PCB landfill. The Laboratory does not plan to dispose of this waste in a facility licensed or registered to manage municipal solid waste, although it is allowed by 40 CFR §761.61(a)(5)(v)(A).
- Bulk PCB remediation wastes with a PCB concentration of greater than or equal to 50 ppm and less than 500 ppm will be disposed of in an authorized hazardous waste facility or in an authorized EPA-approved PCB disposal facility.

Interim storage of the wastes will be at an area of contamination near the areas to be remediated and managed using best management practices, in accordance with 40 CFR §761.65(c)(9). Approval of the area of contamination designation from NMED will be obtained before any wastes are stored at the area of contamination.

Approach

A drill rig will be used to collect one sample beneath the area of the removed septic tank for PCB analysis to fully define the extent of PCB site contamination before excavation begins (Table 4). The proposed preexcavation sampling location is shown in Figure 4. The sample will be collected from the 19- to 20-ft depth bgs using the same methods as described in part B of this application and analyzed for PCBs. If the results indicate that PCB concentrations are not decreasing with depth (i.e., are not less than 4 ppm), additional samples will be collected from this location at 5-ft intervals until extent is defined.

The proposed excavation area is shown in Figure 4. Total PCBs were previously detected at approximately 4 ppm at 15 ft bgs. This area will be excavated to a total of 10 ft bgs, based on NMED human health risk scenarios (NMED 2006, 092513). After site remediation, a risk assessment will be performed to demonstrate that cleanup levels will not pose an unreasonable risk of injury to health or the environment. Land-use restrictions will be formulated, as needed, to limit exposures.

One postremediation confirmatory sample will be collected from the center of the base of the excavation area to determine the level of total PCBs remaining at depth (Table 4).

After confirmatory sampling and cleanup are completed, the site will be backfilled with clean soil, regraded, and seeded.

(E) A written certification signed by the owner of the property where the cleanup site is located and the party conducting the cleanup. This certification must state that the sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the PCB contamination are on file at the location designated in the certificate.

The written certification and required signatures are on page 7 of this application.

CERTIFICATION STATEMENT OF AUTHORIZATION

LOS ALAMOS NATIONAL LABORATORY

Application for Risk-Based Disposal Approval for the Septic Tank Area at Solid Waste Management Unit 21-024(c)

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

Additionally, the sampling plans, sample collection procedures, sample preparation procedures, extraction procedures, and instrumental/chemical analysis procedures used to assess or characterize the polychlorinated biphenyl contamination at the cleanup site are on file for U.S. Environmental Protection Agency inspection. These documents and procedures are/will be available at the Los Alamos National Laboratory's Environmental Programs Records Processing Facility.

for C Mangeng — 3/30/09

Michael J. Graham, Associate Director
Environmental Programs
Los Alamos National Laboratory

Date

David R Gregory — 3/30/09

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

Date

REFERENCES

LANL (Los Alamos National Laboratory), May 1991. "TA-21 Operable Unit RFI Work Plan for Environmental Restoration," Vol. II (Chapters 14 to 16), Los Alamos National Laboratory document LA-UR-91-962, Los Alamos, New Mexico. (LANL 1991, 007529)

LANL (Los Alamos National Laboratory), February 28, 1994. "Phase Report 1C, TA-21 Operable Unit RCRA Facility Investigation, Outfalls Investigation," Los Alamos National Laboratory document LA-UR-94-228, Los Alamos, New Mexico. (LANL 1994, 031591)

LANL (Los Alamos National Laboratory), January 1995. "Phase Report Addendum 1B and 1C Operable Unit 1106 RCRA Facility Investigation," Los Alamos National Laboratory document LA-UR-94-4360, Los Alamos, New Mexico. (LANL 1995, 052350)

LANL (Los Alamos National Laboratory), August 2004. "Investigation Work Plan for Delta Prime Site Aggregate Area at Technical Area 21," Los Alamos National Laboratory document LA-UR-04-5009, Los Alamos, New Mexico. (LANL 2004, 087461)

LANL (Los Alamos National Laboratory), March 2008. "Delta Prime Site Aggregate Area Investigation Report, Revision 1," Los Alamos National Laboratory document LA-UR-08-1834, Los Alamos, New Mexico. (LANL 2008, 102760)

LANL (Los Alamos National Laboratory), March 2009. "Notice of Self-Implementation of On-Site Cleanup and Disposal of Polychlorinated Biphenyl Remediation Waste for Consolidated Unit 21-003-99 and Solid Waste Management Unit 21-024(c)," Los Alamos National Laboratory document LA-UR-09-1667, Los Alamos, New Mexico. (LANL 2009, 105182)

NMED (New Mexico Environment Department), March 2, 2000. "Risk-Based Remediation of Polychlorinated Biphenyls at RCRA Corrective Action Sites," position paper, Hazardous and Radioactive Materials Bureau, Santa Fe, New Mexico. (NMED 2000, 068980)

NMED (New Mexico Environment Department), April 13, 2005. "Approval with Modifications for the Investigation Work Plan for Delta Prime Site Aggregate Area at Technical Area 21," New Mexico Environment Department letter to D. Gregory (DOE LASO) and G.P. Nanos (LANL Director) from J.P. Bearzi (NMED-HWB), Santa Fe, New Mexico. (NMED 2005, 089314)

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)

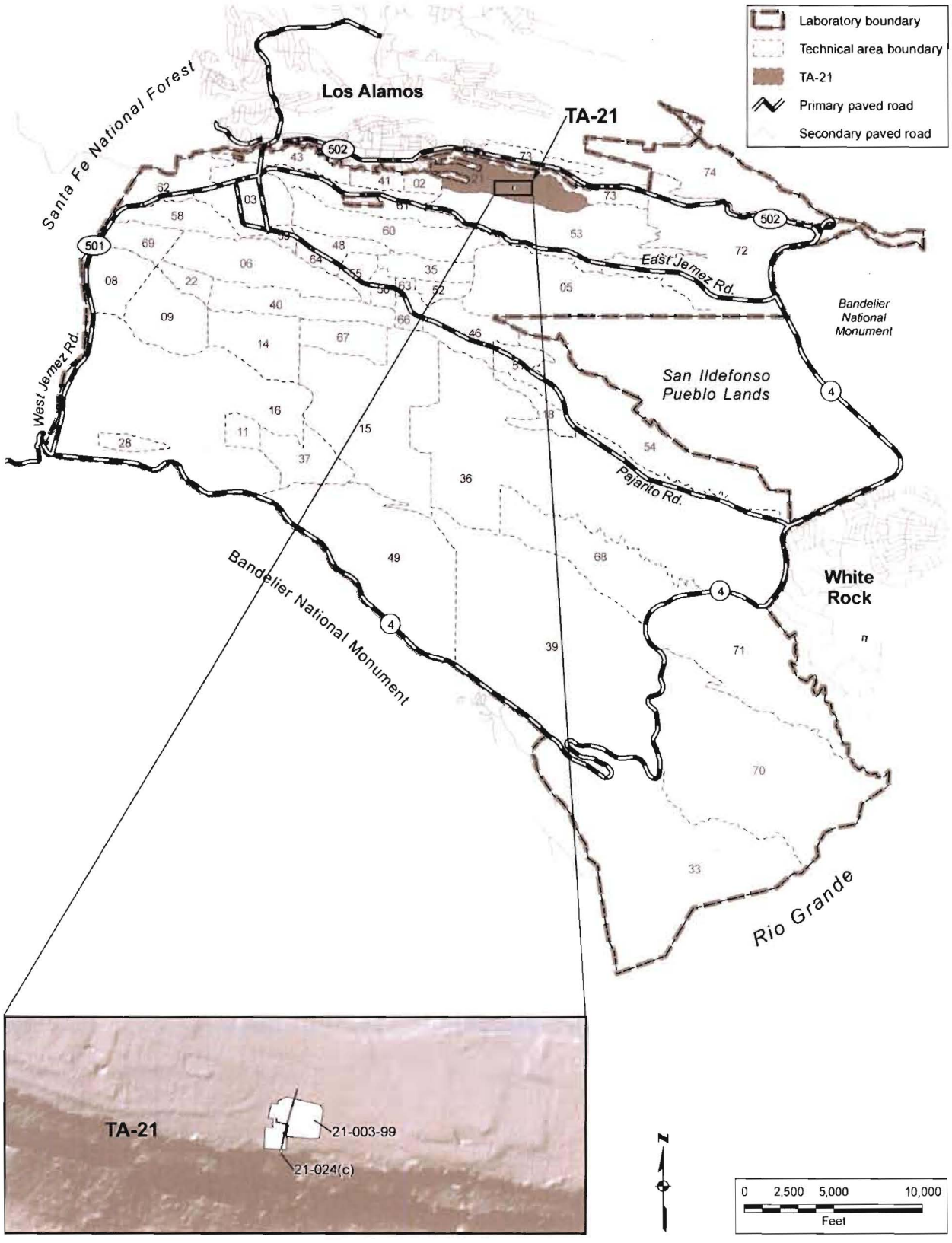

Figure 1 Consolidated Unit 21-003-99 and SWMU 21-024(c) within TA-21

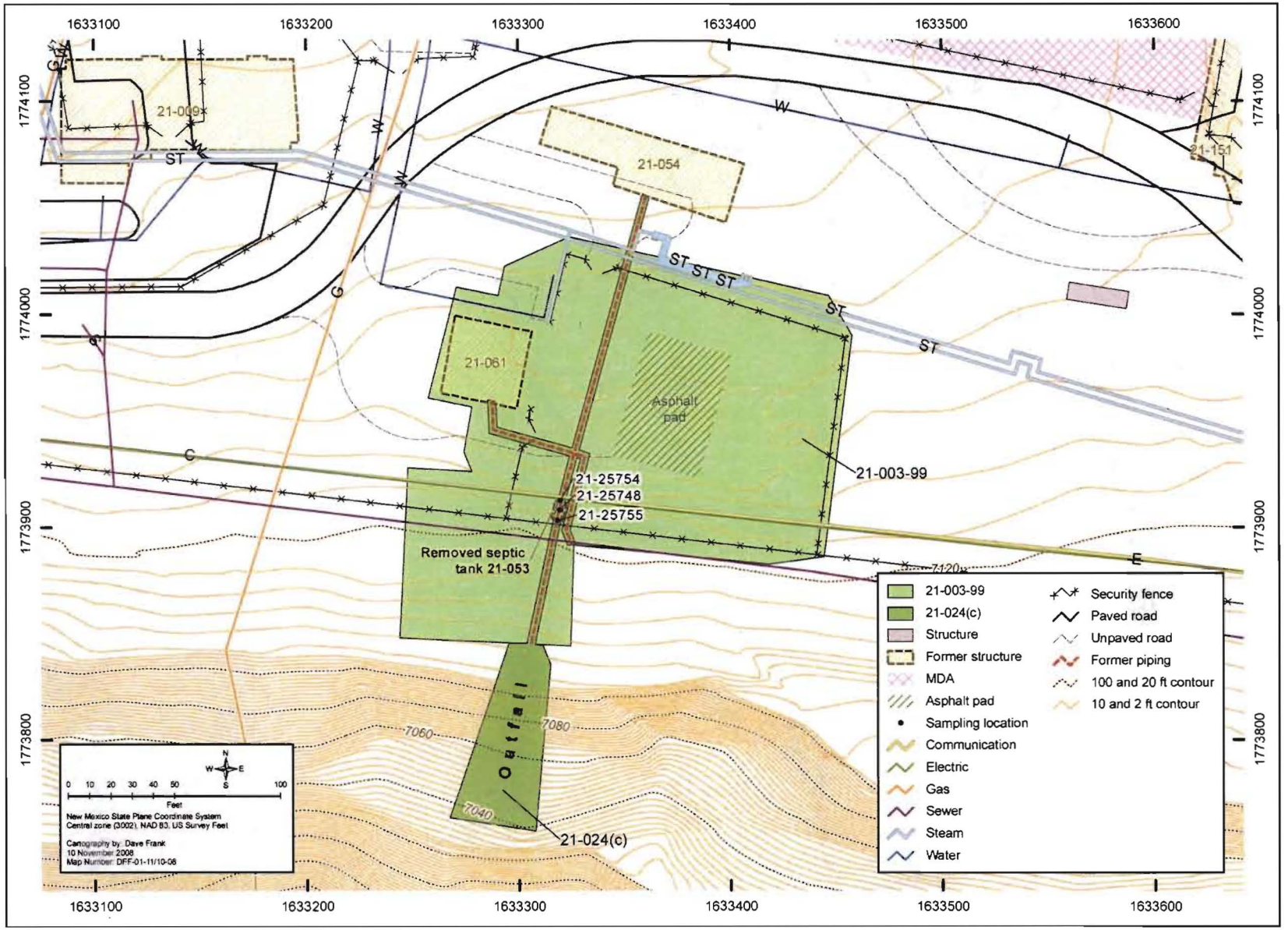

Figure 2 Location of SWMU 21-024(c)

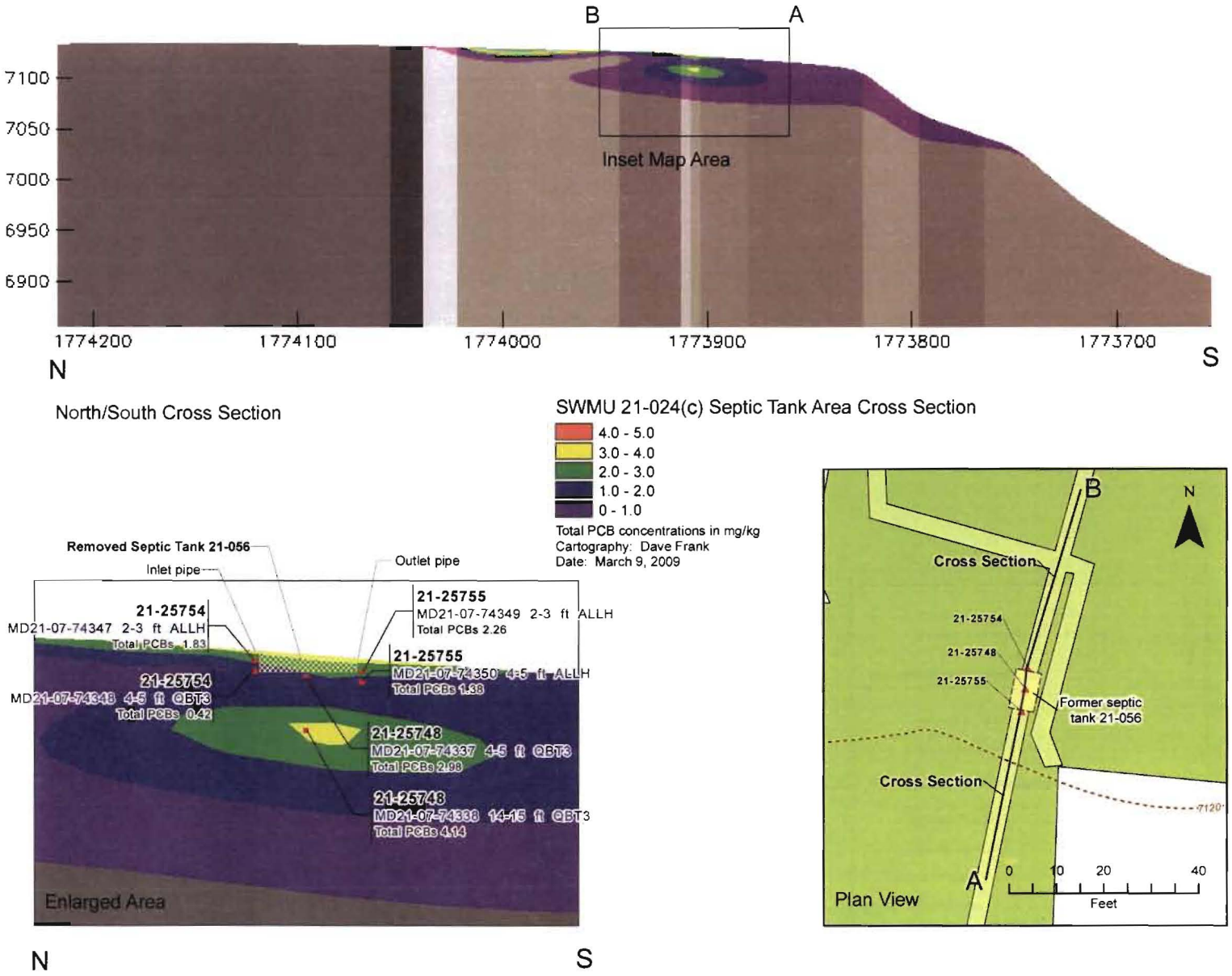

Figure 3 Concentrations of total PCBs and cross-section of the former septic tank area, SWMU 21-024(c)

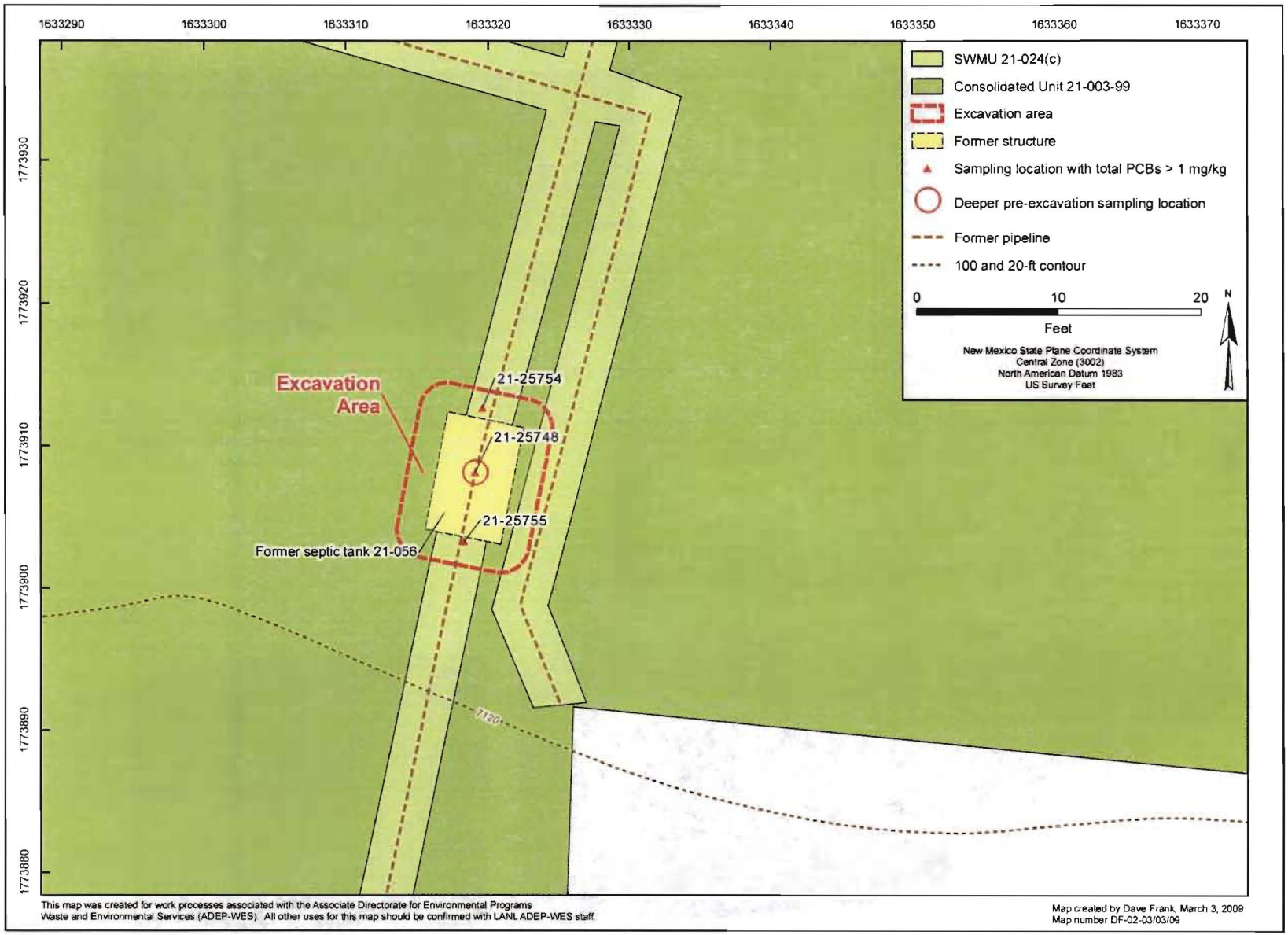

Figure 4 Proposed PCB sampling and excavation area at SWMU 21-024(c)

Table 1
Summary of Field Methods

Method	Summary
SOP-06.09, Spade and Scoop Method for Collection of Soil Samples	This method was used for collection of shallow (approximately 0- to 0.5-ft) soil samples. The spade-and-scoop method involved digging a hole to the desired depth, as prescribed in the sampling and analysis plan, and collecting a discrete grab sample. Typically, the sample was placed in a clean stainless-steel bowl for transfer to various sample containers.
SOP-06.10, Hand Auger and Thin-Wall Tube Sampler	This method was used for sampling soil or Qbt 3 at depths of less than 15 ft bgs. This method involved hand-turning a stainless-steel bucket auger (typically 3- to 4-in.-inside diameter [I.D.]) with an attached thin-wall tube sampler, creating a vertical hole that could be advanced to the desired sample depth. When the desired depth was reached, the auger was decontaminated before advancing the hole through the sample depth. The sample material was transferred from the bucket auger to a stainless-steel sampling bowl before the various required sampled containers were filled.
SOP-06.24, Sample Collection from Split-Spoon Samplers and Shelby Tube Samplers	The split-spoon core barrel is a cylindrical barrel split lengthwise so that the two halves can be separated to expose the core sample. The stainless-steel core barrel (3-in.-I.D., 5 ft long) is pushed directly into the subsurface media using a hollow-stem auger drilling rig. A continuous length of core was screened for radioactivity and organic vapors and described in a geologic log. If located within a targeted sample interval, a portion of the core was collected for fixed laboratory analysis.
SOP-12.01, Field Logging, Handling, and Documentation of Borehole Materials	Upon reaching the surface, core barrels were immediately opened for field screening, logging, and sampling. Once the core material was logged, selected samples were taken from discrete intervals of the core. All borehole material not sampled was disposed of as investigation-derived waste (IDW).
EP-ERSS-SOP-5057, Handling, Packaging, and Transporting Field Samples	Field team members sealed and labeled samples before packing to ensure the sample containers and the containers used for transport were free of external contamination. All environmental samples were collected, preserved, packaged, and transported to the SMO under COC. The SMO arranged for the shipping of the samples to analytical laboratories. Any levels of radioactivity (i.e., action-level or limited quantity ranges) were documented on sample collection logs submitted to the SMO.
EP-ERSS-SOP-5058, Sample Control and Field Documentation	The SMO generated standard forms that documented the collection, screening, and transport of samples. These forms included sample collection logs, COC forms, SCLs, and custody seals. Collection logs were completed at the time of sample collection and were signed by the sampler and a reviewer who verified the logs for completeness and accuracy. Corresponding labels were generated and applied to each sample container, and custody seals were placed around container lids or openings. COC forms were completed and signed to verify that the samples were not left unattended.

Table 1 (continued)

Method	Summary
EP-ERSS-SOP-5059, Field Quality Control Samples	*Field Duplicates*: Collected at the same time as a regular sample at a frequency of 10% and submitted for the same analyses *Equipment Rinsate Blanks*: Collected by rinsing sampling equipment with deionized water at a frequency of 10%. The water was collected in a sample container and submitted for laboratory analyses. *Trip Blanks*: Required for all field events that include the collection of samples for VOC analyses. Trip blank containers certified clean were kept with the other sample containers during the sampling process and submitted for laboratory analyses.
Manufacturer's Instructions for PID Screening for Total VOCs	Soil and Qbt 3 samples were field screened for headspace total VOCs by placing a portion of the sample in a resealable plastic sample bag. The container was sealed and gently shaken and then allowed to equilibrate for 5 min. The sample was screened by inserting a photoionization detector (PID) probe into the container and recording any detected VOCs.
SOP-10.14, Performing and Documenting Gross Gamma Radiation Scoping Surveys	Scoping surveys provide limited site-specific information based on direct measurements. When scoping surveys identify contamination, a characterization survey is typically performed by a qualified radiological control technician (RCT) who has been properly trained in the implementation of survey techniques. A Laboratory RCT conducted radionuclide screening of all samples for alpha, beta, and gamma emitters. Radionuclide screening consisted of a direct frisk survey using an Eberline E-600 rate meter with an SHP 380 probe to measure alpha/beta activity. Furthermore, a smear survey of the sample was conducted and submitted to the Health Physics Analytical Laboratory for detection of contamination using a 2929 Ludlum Dual Scaler smear counter with a 43-10 probe to verify nondetectable activity.
EP-ERSS-SOP-5022, Characterization and Management of Environmental Restoration (ER) Project Waste	IDW was 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 complied with on-site or off-site waste acceptance criteria, as appropriate. All stored IDW was marked with appropriate signs and labels. Drums containing IDW were stored on pallets. The means to store, control, and transport each potential waste type and the classification of the waste were determined before field operations began. A waste storage area was established before waste was generated. Each waste container was individually labeled with waste classification, item identification, and radioactivity (if applicable) immediately after containerization. All waste was segregated by classification and compatibility to prevent cross-contamination.
EP-ERSS-SOP-5056, Sample Containers and Preservation	Specific requirements/processes for sample containers, preservation techniques, and holding times were based on EPA guidance for environmental sampling, preservation, and QA. Specific requirements for each sample were printed in the sample collection logs the SMO provided (size and type of container, preservatives, etc.). All samples were preserved by placing them in insulated containers with ice to maintain a temperature of 4°C.
EP-ERSS-SOP-5028, Coordinating and Evaluating Geodetic Surveys	Geodetic surveys focused on obtaining survey data of acceptable quality to use during project investigations. The surveys were conducted with a Trimble R8 (integrated receiver, radio, and antenna) and Laboratory permanent base station.

Table 2
Samples Analyzed for PCBs at SWMU 21-024(c)

Sample ID	Method	Date Analyzed	Date Collected	Location ID	Depth (ft)	Media	PCBs
MD21-07-74337	SW-846:8082	04/23/2007	04/12/2007	21-25748	4.0–5.0	Qbt 3	6904S*
MD21-07-74338	SW-846:8082	04/23/2007	04/12/2007	21-25748	14.0–15.0	Qbt 3	6904S
MD21-07-74347	SW-846:8082	03/01/2007	02/22/2007	21-25754	2.0–3.0	Soil	6739S
MD21-07-74348	SW-846:8082	03/01/2007	02/22/2007	21-25754	4.0–5.0	Qbt 3	6739S
MD21-07-74349	SW-846:8082	03/01/2007	02/22/2007	21-25755	2.0–3.0	Soil	6739S
MD21-07-74350	SW-846:8082	03/01/2007	02/22/2007	21-25755	4.0–5.0	Soil	6739S

*Alphanumeric = Analysis request number.

Table 3
Aroclors and Total PCBs Detected at SWMU 21-024(c)

Sample ID	Location ID	Depth (ft)	Media	Aroclor-1254 (mg/kg)	Aroclor-1260 (mg/kg)	Total PCBs (mg/kg)
MD21-07-74337	21-25748	4.0–5.0	Qbt 3	1.62	1.36	2.98
MD21-07-74338	21-25748	14.0–15.0	Qbt 3	2.98	1.16	4.14
MD21-07-74347	21-25754	2.0–3.0	Soil	0.889	0.941	1.83
MD21-07-74348	21-25754	4.0–5.0	Qbt 3	0.173	0.247	0.42
MD21-07-74349	21-25755	2.0–3.0	Soil	1.05	1.21	2.26
MD21-07-74350	21-25755	4.0–5.0	Soil	0.598	0.784	1.382

Table 4
Proposed PCB Sampling at SWMU 21-024(c)

Objective Addressed	Location Number	Sample Depth (ft)
Establish vertical extent of PCB contamination at location 21-25748	21-25748	19–20
Conduct confirmation sampling for PCBs	21-25748	Center of excavation area, one depth