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Field Implementation Plan for Preconstruction Investigation and Removal at Solid Waste Management Unit (SWMUs) 33-002(a), an Inactive Septic System, and 33-002(c), an Inactive Sump, and 33-013, a Former Storage Area, at Technical Area 33

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Environmental Stewardship–Remediation Services

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LIST OF ACRONYMS AND ABBREVIATIONS

AOC	area of concern
BGS	below ground surface
BMP	best management practice
BV	background value
COPC	chemical of potential concern
CFR	Code of Federal Regulations
DO	division office
DOE	US Department of Energy
DOT	US Department of Transportation
ECR	Environmental Characterization and Remediation (Laboratory Group)
ENV	Environmental Stewardship (Laboratory Division)
ENV-RS	Environmental Stewardship–Remediation Services (Laboratory project)
ENV-SMO	Environmental Stewardship Sample Management Office
EPA	US Environmental Protection Agency
FIP	field implementation plan
FV	fallout value
HE	high explosives
ISR	International, Space & Response (Laboratory Division)
IWD	Integrated Work Document
LANL	Los Alamos National Laboratory
LIG	Laboratory Implementation Guidance
LIR	Laboratory Implementation Requirement
LLW	low-level waste
NMED	New Mexico Environment Department
PCB	polychlorinated biphenyl
QA	quality assurance
QC	quality control
QP	quality procedure
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
SOP	standard operating procedure
SSL	soil screening level
SVOC	semivolatile organic compound

SWMU	solid waste management unit
TA	technical area
TAL	target analyte list
VCP	vitrified clay pipe
VOC	volatile organic compound
WCSF	Waste Characterization Strategy Form

1.0 INTRODUCTION

This field implementation plan (FIP) prescribes the fieldwork to be accomplished in support of remediation and sampling of solid waste management units (SWMUs) within the Chaquehui Canyon Aggregate Area at Los Alamos National Laboratory (LANL or the Laboratory). In accordance with the terms of the March 1, 2005 Compliance Order on Consent (hereinafter referred to as "the Consent Order") among the New Mexico Environment Department (NMED), the Department of Energy (DOE), and the Regents of the University of California, the investigation work plan for this aggregate area is due to the NMED in November 2009. The Laboratory plans to investigate and remediate SWMUs 33-002(a), 33-002(c) and 33-013 within the aggregate in advance of the work plan deliverable date because these sites lie in the path of the planned Technical Area (TA) 33 High Bay Complex and will be inaccessible during and after the complex's construction, scheduled to begin in June 2005.

The purpose of the activities described in this FIP is to implement corrective actions at SWMUs 33-002(a), 33-002(c) and 33-013 while the sites are still accessible. To meet corrective action objectives, personnel from the Laboratory's Environmental Stewardship (ENV) – Remediation Services (RS) project (formerly the Environmental Restoration Project) and from the Laboratory's International Space & Response (ISR) Division Office (DO) will conduct the following fieldwork: (1) collect characterization and/or confirmation samples to define the nature and extent of contamination at the sites; and (2) remove structures and potentially contaminated soil and asphalt. High Bay Complex Project Manager Bill Bryant and/or Facility Manager Ray Jermance will serve as the University technical representatives for these activities. After fieldwork is complete, the Laboratory will turn the sites over to ISR-DO to maintain and implement best management practices (BMPs) during construction activities at the sites. ISR-DO will also assume responsibility for any long-term controls required by NMED (see section 1.1).

Operational history and the results of previous investigations indicate that the following hazardous constituents and radionuclides may be present at SWMUs 33-002(a), 33-002(c) and 33-013:

- SWMUs 33-002(a) and (c), inactive septic system and drainlines: inorganic chemicals, total uranium, volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), tritium, gamma emitters, isotopic uranium, isotopic plutonium, polychlorinated biphenyls (PCBs), high explosives (HE), strontium-90 (Sr-90), perchlorates, and cyanide. Nitrates may also be associated with the former SWMU 33-002(a) septic system.

- SWMU 33-013, former waste storage area: metals, VOCs, SVOCs, tritium, gamma emitters, isotopic uranium, isotopic plutonium, PCBs, HE, Sr-90, perchlorates, and cyanide.

The locations of SWMUs 33-002(a), 33-002(c) and 33-013 are shown in Figure 1. Section 2.0 provides site descriptions and summarizes the findings of previous site investigations. Section 3.0 addresses health and safety requirements. Section 4.0 presents methods to be followed for waste management and disposal, and section 5.0 states requirements for photo documentation. References cited in this FIP are listed in section 6.0.

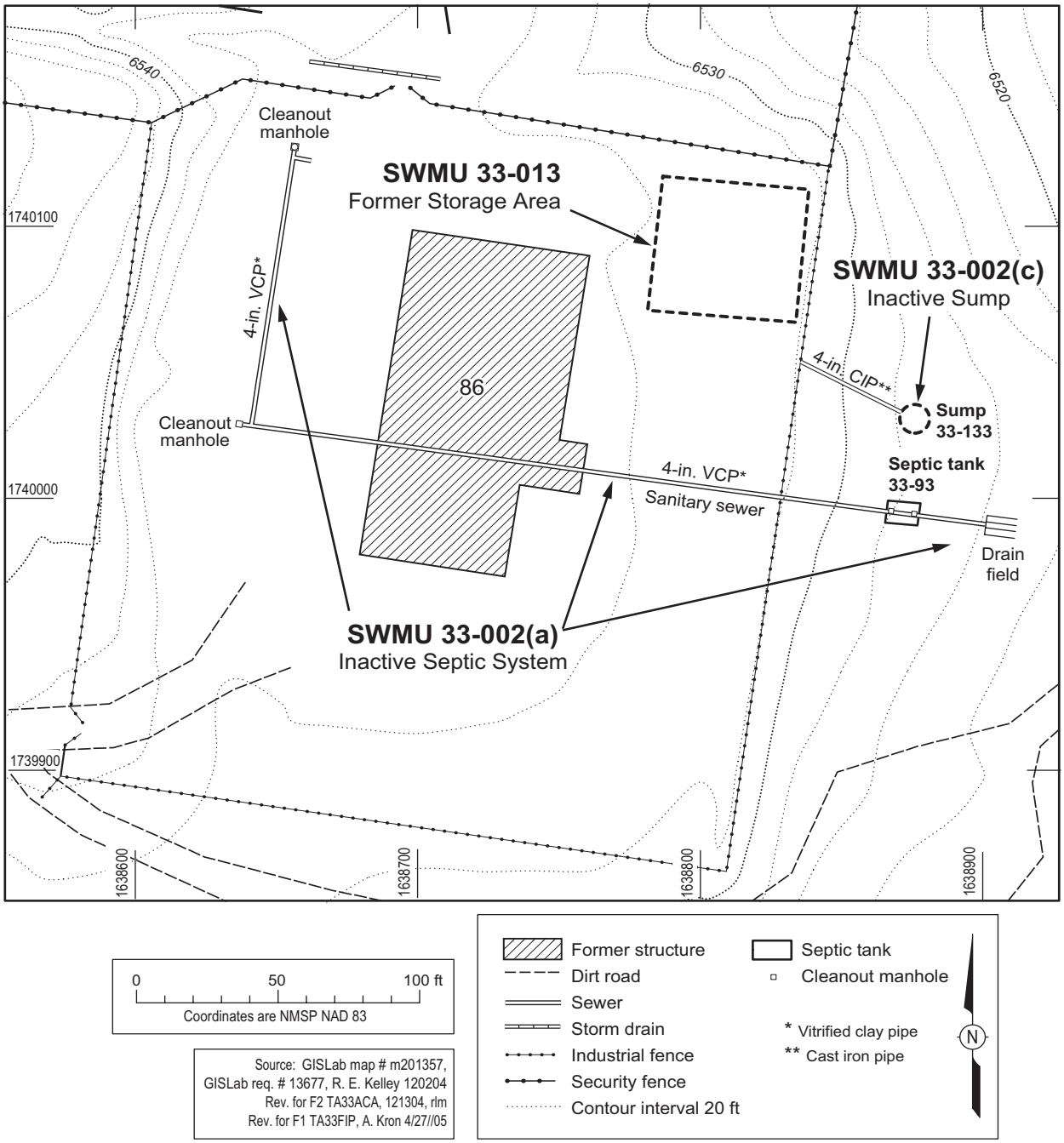

Figure 1. Locations of SWMUs 33-002(a), 33-002(c) and 33-013 at TA-33

1.1 Regulatory Background

SWMUs 33-002(a), 33-002(c), and 33-013 are listed in Module VIII of the Laboratory's Hazardous Waste Facility Permit (US Environmental Protection Agency [EPA] 1990, 01585; EPA 1994, 44146). NMED is the administrative authority for the SWMUs. NMED has not approved the SWMUs for no further action. The Consent Order modifies and replaces the corrective action requirements of Module VIII. Under the terms of the Consent Order the deliverable date for the Chaquehui Canyon Aggregate Area investigation work plan is November 30, 2009. The Laboratory has accelerated the schedule for the investigation and remediation of SWMUs 33-002(a), 33-002(c), and 33-013 within the aggregate to accommodate the ISR-DO construction schedule for the TA-33 High Bay Complex.

Under the terms of the Consent Order, NMED may issue Certificates of Completion for corrective actions as either "complete without controls" or "complete with controls." The Laboratory plans to complete corrective actions at all or portions of SWMUs 33-002(a), 33-002(c), and 33-013 located within the security fence of the planned High Bay Complex to the levels required to ensure no further corrective action will be required within the fenced facility. ENV-RS will request NMED to issue a Certificate of Completion for each site for corrective action complete without controls. In the event that corrective action at a site receives NMED approval as complete with controls, the Laboratory will assume responsibility for the controls specified for the site by NMED. The Laboratory expects that such controls will be limited to institutional/administrative controls to ensure that land use remains consistent with residual contamination at the site. In the event that NMED will not issue a Certificate of Completion for corrective action at a site, the Facility Owner will assume long-term responsibility for the site.

1.2 Project Objectives

The objectives for this project are to collect confirmation soil samples for fixed-laboratory analysis, remove the asphalt pad and top 6 inches of soil beneath the pad at SWMU 33-013, remove the drainline and empty septic tank associated with SWMU 33-002(a), remove any remaining drainline associated with SWMU 33-002(c), and, if necessary, remove any newly identified contaminated soils or materials from each SWMU. The sampling strategy prescribed in this FIP is designed to fully define the nature and extent of contamination at these sites within the security fence and to demonstrate that residual contaminant concentrations are acceptable for an industrial exposure scenario (NMED 2004, 85615).

2.0 SITE DESCRIPTIONS AND HISTORY

2.1 SWMU 33-002(a)

SWMU 33-002(a) is an inactive septic system installed in 1954 to serve the former Tritium Facility (Building 86) and a nearby guard station (Building 90) within TA-33. The septic system consists of a vitrified clay pipe (VCP) drainline; an 860-gal. septic tank (Structure 33-93); a siphon tank; and a tiled drain field approximately 50 ft wide and 100 ft long. The top of the septic tank is approximately 6 feet below ground surface (bgs). Discharge of effluent from the Tritium Facility ceased when the building was decommissioned in 1990; however, the septic system received effluent from the guard station until the mid-1990s. The principal waste stream received by the septic system was sanitary wastewater from Building 86 and Building 90. Additional waste streams were tritium- and uranium-contaminated liquids associated with operations and accidental releases from Building 86 and plutonium-contaminated liquid discharged during two emergency releases from the building in 1961.

NOTE: A Resource Conservation and Recovery Act (RCRA) field investigation (RFI) conducted in 1995 investigated the septic system drain field and a tritium vapor plume located within SWMU 33-002(a) east of the planned High Bay Complex. This area of the SWMU 33-002(a) will be accessible during the

Chaquehui Canyon Aggregate investigation and is not addressed by this FIP. The results of the 1995 investigation are documented in “RFI Report for TA-33, MDA K, PRSs 33-002(a, b, c, d, e), Field Unit 3” (LANL 1995, 1263).

ER Project personnel conducted a Phase I RFI at the site in 1993 and collected the following samples:

- one liquid sample and one sludge sample from the septic tank
- four samples from a 4-ft-deep borehole adjacent to the septic tank
- three samples from each of two 10-ft-deep boreholes drilled within the septic tank drain field
- samples from 5-ft intervals within three deep boreholes (230 to 315 ft) near the eastern (downgradient) edge of the drain field
- surface samples from 0 to 0.5 ft at four locations in the drain field and two locations adjacent to the septic tank

Analytical results for samples collected from the septic tank contents indicated elevated concentrations of inorganic chemicals (arsenic, cadmium, lead, and uranium), organic chemicals (numerous SVOCs and VOCs), and tritium. Analysis of samples from the three deep boreholes detected inorganic chemicals and radionuclides (antimony, cadmium, chromium, lead, nickel, tritium, uranium, plutonium-238, and plutonium-239) above background values (BVs) and/or fallout values (FVs) and indicated the presence of a subsurface tritium plume directly east of septic tank 33-93. The extent of the plume was not defined (LANL 1995, 1263; LANL 1995, 50113.1).

In 1996, Phase II RFI samples were collected from boreholes advanced in the septic tank drain field and adjacent to the septic tank. Figure 2 shows the locations of boreholes and samples collected during the 1993 and 1996 RFIs at SWMU 33-002(a). The Phase II RFI report defined the nature and extent of the subsurface tritium plume detected during the 1993 RFI (LANL 1997, 57021.7). The investigation characterized the plume depth at approximately 100 ft below ground surface and located the plume east of the septic system’s drain field.

ER Project personnel deactivated and cleaned out septic tank 33-93 during a 1997 institutional interim measure (LANL 1997, 57085). The tank’s interior was steam-cleaned several times, the inlet and outlet lines were removed, the drainline connections to the tank were plugged, and the tank was left in place. Deactivating septic tank 33-93 should have stabilized the tritium plume by eliminating the hydraulic driving force that resulted from septic tank operation, and subsurface tritium concentrations should decrease over time as a result of decay (the half-life is 12.6 yr) and natural dispersion.

Tritium was also detected above background levels in samples collected during the 1993 and 1996 RFIs from the surface of several sampling locations in the immediate vicinity of septic tank 33-93 (Figure 3). Chemicals of potential concern (COPCs) identified for SWMU-33-002(a) include inorganic chemicals, total uranium, organic chemicals (VOCs and SVOCs), tritium, gamma-emitting radionuclides, isotopic uranium, and isotopic plutonium. RFI sampling data and analysis are presented in the RFI reports and have been provided to ISR-DO and to KSL (KBR, Shaw, LATA) and Eberline Services staff (LANL 1995, 1263; LANL 1997, 57021.7).

2.2 SWMU 33-002(c)

SWMU 33-002(c) is an inactive sump (structure 33-133) that was connected to sinks and floor drains in the former Tritium Facility (Building 33-86) by a 4-inch cast iron pipe. The sump is an unlined, rubble-filled seepage pit approximately 6 ft in diameter and 8 ft deep, and is located approximately 30 ft north of septic tank 33-93 (SWMU 33-002(a). Originally, the sump had a 3-in. thick concrete cover overlain with soil;

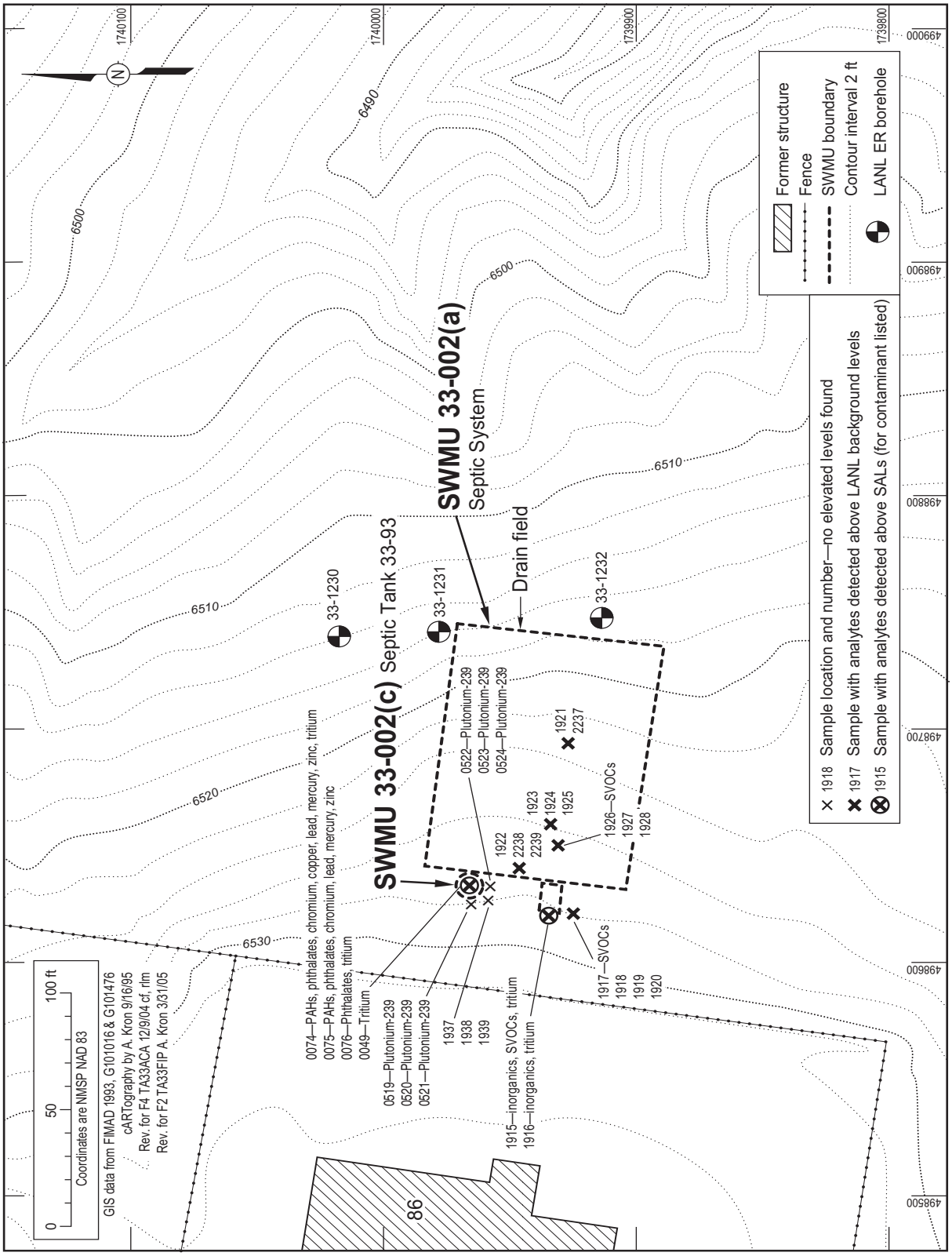

Figure 2. 1993 and 1996 RFI sample locations at SWMUs 33-002(a) and 33-002(c) at TA-33

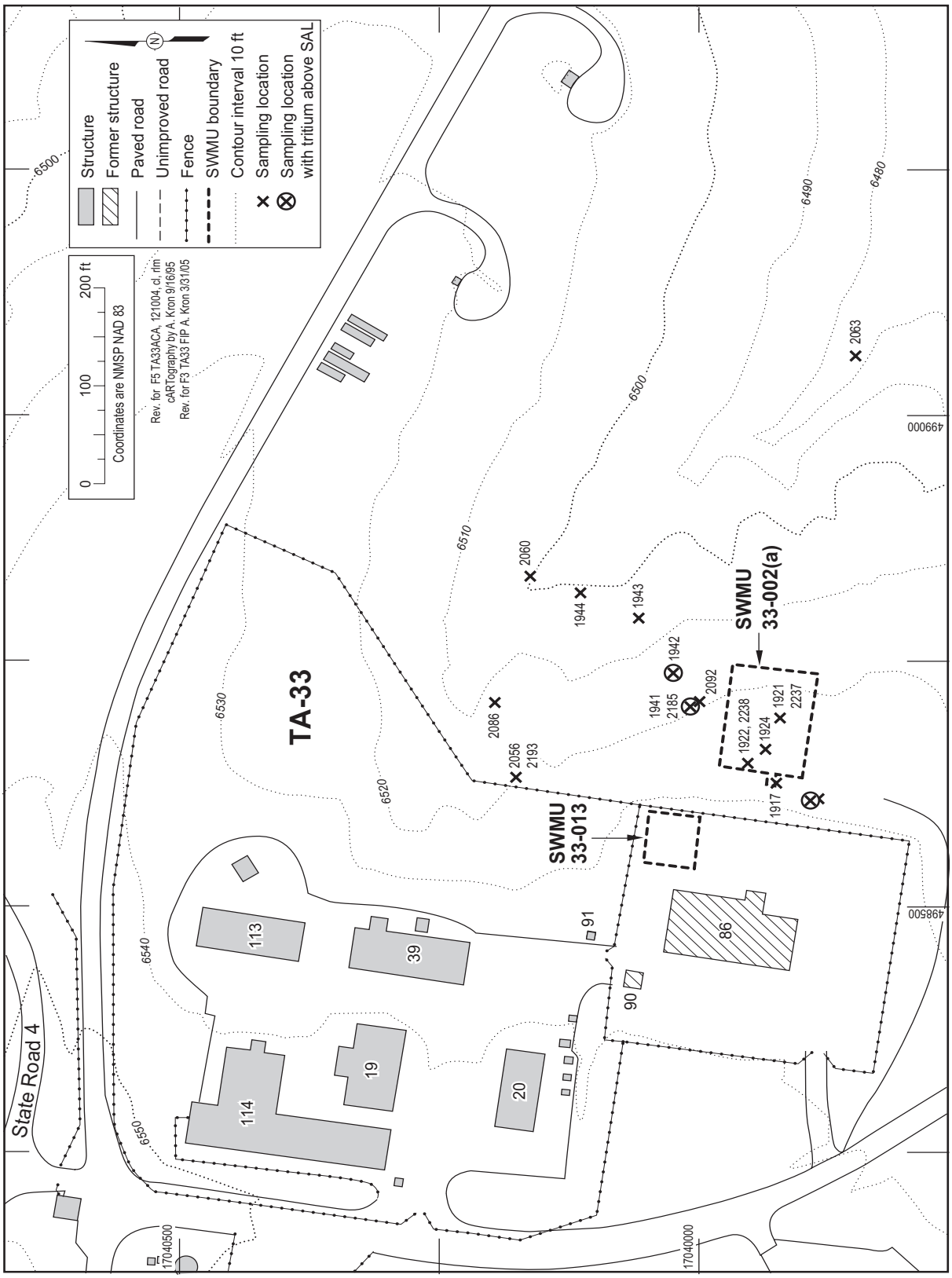

Figure 3. 1993 and 1996 RFI sampling locations with surface tritium levels above TA-33 background UTLs

however, the cover was destroyed during a 1989 sampling campaign. The sump operated from 1955 until 1959 when the drainline discharging into the sump was extend through the sump and routed approximately 75 feet down-slope to daylight. Wastes discharged to SWMU 33-002(c) contained tritium and may have included small quantities of organic chemical solvents, such as trichloroethene, methanol, ethanol, acetone, and propanol. Phase I sampling at SWMU 33-002(c) consisted of hand augering a 30-in.-deep borehole to the soil-tuff interface adjacent to the sump and collecting three soil samples from this borehole. All samples were analyzed for uranium, tritium, plutonium, gamma emitters, inorganic chemicals, and organic chemicals. The RFI work plan also called for collecting liquid and sludge samples from the sump, but these samples could not be collected because no liquid or sludge was present. Plutonium-238, plutonium-239, and tritium were detected above BVs. Inorganic chemicals detected above BVs included antimony, cadmium, chromium, silver, and uranium. Only one organic chemical, 2-hexanone (0.059 mg/kg), was detected in these samples at trace concentrations.

During Phase II sampling conducted at SWMU 33-002(c) in 1996, a borehole was advanced through the sump to a total depth of 62 ft; samples were collected at 5-ft intervals and analyzed for tritium. In addition, three samples were collected within the first 12 ft and analyzed for uranium, plutonium, inorganic chemicals, and organic chemicals. Six additional samples also were collected from two shallow borings at locations near the Phase I sample location adjacent to the sump and analyzed for plutonium. Figure 2 shows the locations of boreholes and sample collected during the 1993 and 1996 RFIs at SWMU 33-002(c). Plutonium-238, -239/240 and tritium were detected above BVs. These samples were collected over the depth interval of 5 ft to 8.5 ft. Inorganic chemicals detected above BVs were chromium, copper, mercury, lead, and zinc; none was present above SALs. Thirteen organic chemicals (acenaphthene, anthracene, benzo[a]anthracene, benzo[a]pyrene, benzo[b]fluoranthene, benzo[g,h,i]perylene, bis(2-ethylhexyl) phthalate, chrysene, di-n-butyl phthalate, fluoranthene, indeno[1,2,3-cd]pyrene, phenanthrene, and pyrene) were detected. Tritium was also detected above background levels in samples collected during the 1993 and 1996 RFIs from the surface of several sampling locations in the immediate vicinity of sump 33-133 (Figure 3). Chemicals of potential concern (COPCs) identified for SWMU-33-002(c) include inorganic chemicals, total uranium, organic chemicals (VOCs and SVOCs), tritium, gamma-emitting radionuclides, isotopic uranium, and isotopic plutonium. RFI sampling data and analysis are presented in the RFI reports and have been provided to ISR-DO and to KSL (KBR, Shaw, LATA) and Eberline Services staff (LANL 1995, 1263; LANL 1997, 57021.7).

To meet security requirements identified during the project planning process, the High Bay Complex project team plans to move the existing fence to the east approximately 10 feet. Subsequent review of ENV-RS Project TA-33 PRS maps indicates that a portion of the drainline that discharged wastewater to SWMU 33-002(c) may still be in place directly east of the existing fence within the planned fence expansion corridor. There are no records documenting the removal of this drainline.

2.2 SWMU 33-013

SWMU 33-013 was an uncovered storage area for items awaiting disposal, including vacuum pumps from throughout LANL; drums containing oil contaminated with tritium and, possibly, with metals and solvents; and dumpsters of miscellaneous materials. Some of these containers reportedly leaked and some materials were stored in this area for years. The storage area was approximately 50 ft long x 50 ft wide and located on the asphalt surface inside the northeast corner of the fence around former Tritium Facility (Building 86). Stains were noted on the asphalt during a 1987 ER Project site visit (LANL 1992, 7671). The exact date that storage operations began is not known, but could coincide with the initial operation of Building 86 in June 1955. Storage activities were moved to another location in 1989.

In 1993, the ER Project collected three surface soil samples at random locations from 0 to 6-in. beneath the asphalt pad (Figure 4). The samples were field-screened for radioactivity and analyzed at an off-site

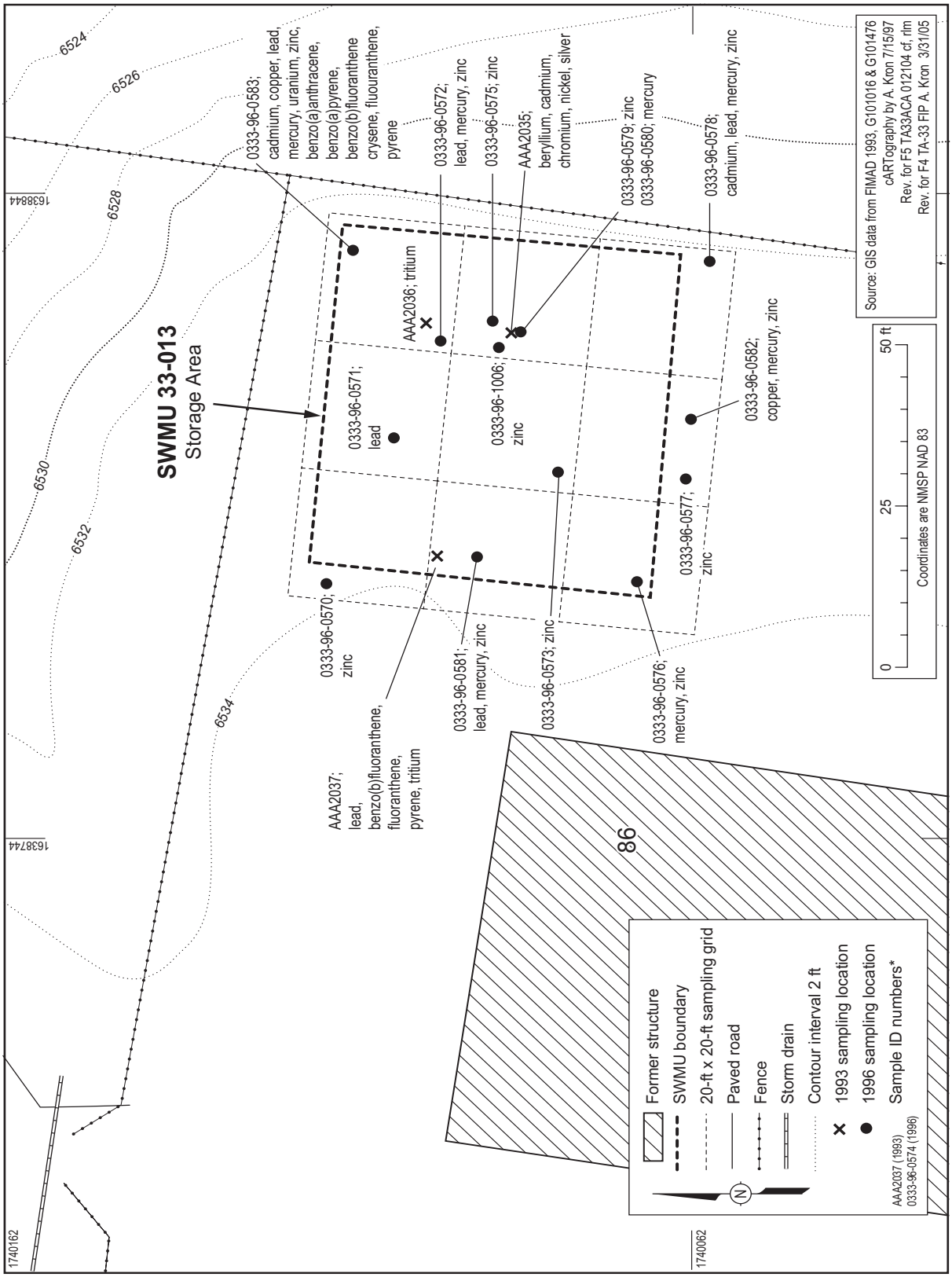

Figure 4. 1993 and 1996 RFI sampling locations with detects at SWMU 33-013 at TA-33

laboratory for inorganic chemicals, gamma-emitting radionuclides, tritium, SVOCs, and herbicides. Field-screening detected no radioactivity above instrument background. Inorganic chemicals detected above BVs were beryllium, cadmium, chromium, nickel, and silver. Tritium was detected above BVs/FVs. No herbicides were detected, and several SVOCs associated with asphalt were detected at low concentrations (LANL 1995, 50113). In 1996, the ER Project collected fourteen surface soil samples from directly beneath the asphalt pad and one subsurface (6 to 12-in.) soil sample from within the storage area. Nine of the samples were collected at random locations within each cell of a nine-cell grid over the storage area. The remaining samples were collected at locations biased toward stains observed on the asphalt pad. The samples were analyzed for inorganic chemicals and total uranium. Inorganic chemicals detected above BV were copper, lead, mercury, and zinc. Uranium was not detected above background (Figure 4) (LANL 1997, 57021.7). COPCs identified for SWMU 33-013 include inorganic chemicals, organic chemicals (VOCs and SVOCs), tritium, isotopic uranium, gamma-emitting radionuclides, isotopic plutonium, and isotopic uranium.

2.3 Radiological Sites

On November 26, 2003, DOE/National Nuclear Security Administration approved the initial nuclear facility hazard categorization, in accordance with Title 10, Part 830 of the Code of Federal Regulations, (10 CFR 830), Nuclear Safety Management, of SWMUs and AOCs that had not previously been considered for hazard categorization. The categorization resulted in the identification of 254 below Hazard Category 3 (HC-3), Radiological sites. **SWMUs 33-002(a), 33-002(c) and 33-013 are classified as below HC-3, Radiological sites.**

In addition to fulfilling previously existing work and safety requirements, all work at the Radiological SWMUs and AOCs must be performed according to applicable requirements defined in 10 CFR 835, Occupational Radiation Protection. Any organization performing activities in a Radiological site must have a quality assurance program that meets the requirements of 10 CFR 830, Subpart A, Quality Assurance.

The Office of Price-Anderson Enforcement applies sanctions to contractors for actions, procurements, or conditions that violate nuclear safety requirements for protecting workers and the public. ENV-RS and ISR-DO will ensure that all personnel, including subcontractors, are notified of enforcement consequences, associated with the Price Anderson Amendments Act (PAAA), of noncompliance with 10 CFR 830, Subpart A. This means that those performing the work within the boundary of a SWMU/AOC classified as a less than Category 3 radiological Site must have an implemented program in place that meets the ten criteria of Subpart A:

Criterion 1—Management/Program

Criterion 2—Management/Personnel Training and Qualification

Criterion 3—Management/Quality Improvement

Criterion 4—Management/Documents and Records

Criterion 5—Performance/Work Processes

Criterion 6—Performance/Design

Criterion 7—Performance/Procurement

Criterion 8—Performance/Inspection and Acceptance Testing

Criterion 9—Assessment/Management Assessment

Criterion 10—Assessment/Independent

2.4 Specific Work Elements

The information presented in the following sections details the field procedures and sampling requirements to be followed for each SWMU during field activities in support of the High Bay Complex Project at TA-33. SWMU 33-013 and the drainline portion of SWMU 33-002(a) are located within the fenced area formerly occupied by the Tritium Facility (Building 86), which is the planned location of the High Bay Complex. A portion of the drainline to the septic tank is located within the planned fence expansion corridor and the septic tank is located approximately 20 feet east of the fenced area. In addition, a portion of the drainline to SWMU 33-002(c) may remain within the planned fence expansion corridor. This work will include the removal and disposal of the VCP drainline and septic tank (structure 33-93) from SWMU 33-002(a), removal and disposal of any drainline remaining from SWMU 33-002(c), and the removal of potentially contaminated soil and asphalt from SWMU 33-013. Confirmation samples will be collected following the removal actions and analyzed for COPCs and hazardous components.

2.4.1 Conduct Readiness Review Activities

Readiness review activities include the completion of all tasks required to conduct the fieldwork: project planning, preparation of required documents for fieldwork, obtaining required permits, documentation of personnel qualification, and conducting the readiness review. The following are the specific readiness review activities to be completed:

- in accordance with Laboratory Implementation Requirement (LIR) IMP 300-00-00, Integrated Work Management for Work Activities, prepare the Integrated Work Document (IWD), in accordance with the ENV-RS Project Program Health and Safety Requirements Manual, prepare a site specific health and safety plan, with task hazard analyses for all tasks to be conducted in the field
- coordinate with facility management
- conduct all activities required to support the readiness review (Quality Procedure [QP] 5.3) and Laboratory Implementation Guidance (LIG) 300-00-08.0, LANL Readiness Review Process, including, but not limited to,
    - completing all applicable items on the readiness review checklist (QP-5.3) including the IWD process,
    - participating in the readiness review meeting and in resolution of any issues brought up during the review,
    - preparing a Waste Characterization Strategy Form (WCSF) and waste profile forms, and
    - preparing a schedule for field work.

Assumptions: The subcontractor will obtain the excavation permit for this project. All utilities onsite will be located by U-Map prior to project initiation (including remaining portions of the cast iron drainline from SWMU 33-002(c), the septic tank and drainline locations will be verified by potholing. The location of the asphalt pad will be verified.

Activities described in this FIP will be performed in accordance with the applicable quality assurance requirements addressed in the ENV-RS Project Quality Management Plan and implementing quality and standard operating procedures (SOPs) and Quality Procedures (QPs), Laboratory requirement documents (e.g. LIRs and LIGs), or equivalent Laboratory-approved subcontractor documents (e.g.,

statements of work, etc.). These SOPs are available at http://erproject.lanl.gov/documents/procedures.html. The requirements of the following documents apply to the activities described in this FIP. Additional procedures may be used as necessary to guide these activities.

SOPs and QPs

SOP-01.01, General Instruction for Field Investigations

SOP-01.02, Sample Container and Preservation

SOP-01.03, Handling, Packaging and Shipping of Samples

SOP-01.04, Sample Control and Field Documentation

SOP-01.05, Field Quality Control Samples

SOP-01.06, Management of ER Project Wastes

SOP-01.07, Operational Guidelines for Taking Soil and Water Samples in Explosive Areas

SOP-01.08, Field Decontamination of Drilling and Sampling Equipment

SOP-01.10, Waste Characterization

SOP-01.12, Field Site Closeout Checklist

SOP-03.11, Geodetic Surveys

SOP-06.09, Spade and Scoop method for Collection of Soil Samples

SOP-06.10, Hand Auger and Thin-Wall Tube Sampler

SOP 6.33, Headspace Vapor Screening with a Photoionization Detector

SOP-10.14, Performing and Documenting Gross Gamma Radiation Scoping Surveys

QP-2.1, Documenting Personnel Qualification and Selection Process

QP-2.2, Personnel Training and Management

QP-3.4, Corrective Action Process

QP-3.5, Peer Review Process

QP-4.4, Transmittal of Records to the RPF

QP-4.9, Document Development and Approval Process Peer Review Required

QP4.12, Documenting Oral Communications

QP-5.2, Control of Measuring and Test Equipment

QP-5.3, Readiness Planning and Reviews

QP-5.7, Notebook Documentation for Environmental Restoration Technical Activities

QP-7.1, Procurement

QP-7.2, Supplier Evaluation

QP-10.3, Stop and Restart

LIRs and LIGs

LIG 300-00-08.0, LANL Readiness Review Process

LIR 300-00-01.4, Safe Work Practices

LIR 300-00-05.3, Facility Hazard Categorization

LIR 308-00-07.0, LANL PAAA Enforcement Program Requirements

LIR 402-10-01.8, Hazard Analysis and Control for Facility Work

LIR 402-10-03.2, ES&H Management of Contractor Performed Facility Construction/Maintenance, Environmental Restoration/Decontamination and Decommissioning, and Related Drilling Operations

LIR 402-880-01.5, Excavation/Soil Disturbance Permit Process

LIR-404-00-03.1, Hazardous and Mixed Waste Requirements

LIR 404-00-02.3, General Waste Management Requirements

LIR 404-00-04.2, Managing Solid Waste

LIR 404-00-05.3, Managing Radioactive Waste

LIR 405-10-01.2, Packaging and Transportation

LIR IMP 300-00-00.0, Integrated Work Management for Work Activities

Other Documents

RRES-RS Project Program Health and Safety Requirements Manual

RRES-RS Project Program Quality Management Plan

2.4.2 Mobilization and Field Screening for SWMU 33-002(a)

This specific work element includes mobilization and site preparation, potholing (by hand) to locate the septic tank and drainline for SWMU 33-002(a) and field radiation screening of the drainline uncovered at specific pothole locations and within the two drainline cleanout manholes and the septic tank cover.

- Mobilize equipment and prepare the site (including any necessary BMPs).
- Use fences or other appropriate measures to control site and support area access, and to prevent unauthorized entry by workers or the public. **Note:** Access to TA-33 is restricted and the majority of the project area is surrounded by another fence which can be secured.
- Conduct land surveys and a radiation survey before initiation of excavation activities (including utility location) in accordance to SOP-03.11, Geodetic Surveys.
- Before activities begin, take photographs to record the conditions at the site; after activities start, take photographs to document each activity.
- Once the drainlines have been located by U-Map, pothole (by-hand) a minimum of four locations along the septic tank drainline and a minimum of two locations along the sump drainline (if located). Potholing will be used to locate the top of the tank. Since the septic tank is empty and clean, a backhoe will be used to uncover the top of the septic tank.

- Verify that radiation levels do not exceed two times background by screening for beta/gamma and alpha radiation using an ESP-1 rate meter with an HP-260 probe and a Ludlum Model-139 rate meter equipped with an air proportional probe, respectively, at each pothole location and within the locations of the drainline and septic tank cleanout manholes. The value of two times background levels was selected to account for the variability that occurs in local background across a site. A screening level of two times background provides greater confidence that the measure value is actually above background.

- Survey pothole locations to document the location and depth profile of the drainlines and septic tank in accordance with SOP-03.11, Geodetic Surveys.

2.4.2.1 Removal and Confirmation Sampling Activities for SWMU 33-002(a)

This specific work element includes excavation and removal of the drainline and septic tank; collection of subsurface confirmation samples beneath the former locations of the drainline and septic tank; field screening of the samples for radioactivity; and submittal of samples to an off-site laboratory for analysis.

- Conduct initial removal activities by excavating soil covering the drainline beginning from the cleanout manholes to the septic tank. Continuously observe excavation activities to differentiate between pre-existing line damage and any damage caused by the excavation activities. The depth of the excavated line is expected to increase steadily from the cleanout manholes to where it connects to the west end of the septic tank. Perform screening for beta/gamma and alpha radiation using an ESP-1 rate meter with an HP-260 probe and a Ludlum Model-139 rate meter equipped with an air proportional probe, respectively, over the entire length of the exposed drainline. Note any measured radioactivity detected above 2 times local background levels and mark the locations of the detections along the edge of the trench. Photograph the entire length of the exposed drainline to document its condition before it is removed from the trench. Determine the type of mortar used to seal the joints and the condition of the joints. Document any observed breaks in the line or staining.

- Remove the drainline and place it in a designated roll-off bin located within a registered low-level waste (LLW) storage area. If no breaks in the line, staining, or elevated radiation levels are observed when the drainline is exposed and removed, collect confirmation samples from two depths at locations approximately 35 to 40 ft apart along the length of the trench (eight sample locations). Stake confirmation sample locations along the drainline trench. **Note:** ENV-RS Project Facility Integration staff will determine confirmation sample locations. The sample locations may be relocated slightly, or additional samples collected, to ensure samples are collected from locations with elevated field screening levels, where breaks in the lines occur, or where staining is observed within the trench excavations.

- Remove the septic tank lid, screen for radioactivity, and place it in the LLW roll-off bin. Visually inspect the interior of the septic tank, which is assumed to be empty and clean, to ensure it is empty and clean. Photograph the tank interior to document its condition. If the tank is confirmed to be empty and clean, remove it, inspect the exterior of the tank for cracks, photograph the tank, place and crush it in the roll-off bin; determine and survey former inlet and outlet connection elevations.

- Perform screening for beta/gamma and alpha radiation within the septic tank excavation by using an ESP-1 rate meter with an HP-260 probe and a Ludlum Model-139 rate meter equipped with an air proportional probe, respectively. Note any measured radioactivity above 2 times background

levels and mark the locations of the detections along the edge of the excavation. Inspect the excavation for staining. Photograph the excavation.

- Remove soil/tuff with radioactivity detected above two times background levels from the drainline trench or septic tank excavation until field screening instruments no longer exceed local background levels. Collect confirmation samples from these locations.

- The minimum number of characterization/confirmation samples to collect from SWMU 33-002(a) is listed in Table 1 and shown in Figure 5. Collect confirmation samples per SOP 6.10, Hand Auger and Thin-Walled Tube Sampling, from 0 to 6 inches and 24 to 30 inches below the bottom of the drainline and beneath the bottom of the septic tank excavation. Screen samples in the field for radiation as described above and submit them to the ENV Division Sample Management Office (SMO) for fixed laboratory analysis. Include the following quality assurance (QA)/quality control (QC) samples: trip blanks for VOC analysis, field duplicates to evaluate the reproducibility of the sampling technique, and rinsate blanks (for target analyte list [TAL] metals analysis) to evaluate decontamination procedures.

- In accordance with the Consent Order and SOP 06.33, headspace vapor screening for VOCs will be conducted using a photoionization detector (PID) capable of measuring concentrations as low as 1 ppm. Screening samples will be sealed in mason jars and allowed to equilibrate in a warm area for not less than ten minutes. The headspace gas will then be screened using a PID equipped with an 11.7 eV bulb. To ensure compliance with US Department of Transportation (DOT) regulations, all samples will be field screened for alpha- and beta-gamma radiation before they are transported to the Sample Management Office (SMO).

- In accordance with Section IX.B.2.e of the Consent Order and SOP-01.05, Field Quality Control Samples, QA/QC samples will include VOC trip blanks at a frequency of 1 per 20 or 1 per day, whichever is greater, field duplicates at a rate of 1 per 10 or 1 per day per matrix, whichever is greater to evaluate the reproducibility of the sampling technique, and rinsate blanks for TAL metals analysis at a frequency of 1 per day to evaluate decontamination procedures.

- Include the following in the analytical suite for all confirmation samples for SWMU 33-002(a): explosive compounds; PCBs, organic chemicals, tritium; gamma spectroscopy; americium-241 (Am-241), isotopic uranium, and isotopic plutonium; target analyte list (TAL) metals; perchlorates; strontium-90 (Sr-90); nitrates, and cyanide.

- Coordinate sample collection and analysis with the ENV-SMO. Once samples have been collected, store and transport samples to the ENV-SMO in accordance with SOP-01.03, Handling, Packaging and Shipping of Samples. The ENV-SMO will ship samples to an analytical laboratory that is qualified according to QP-7.2, Supplier Evaluation, and listed on the ENV-RS Approved Suppliers List.

- The analytical cost is borne by the Laboratory, not the subcontractor. The subcontractor shall supply the cost to collect, package, and transport the samples to the ENV-SMO according to ENV-RS Project SOPs. **Note:** The turnaround time for the samples submitted for offsite contract laboratory analysis will be normal (30 days).

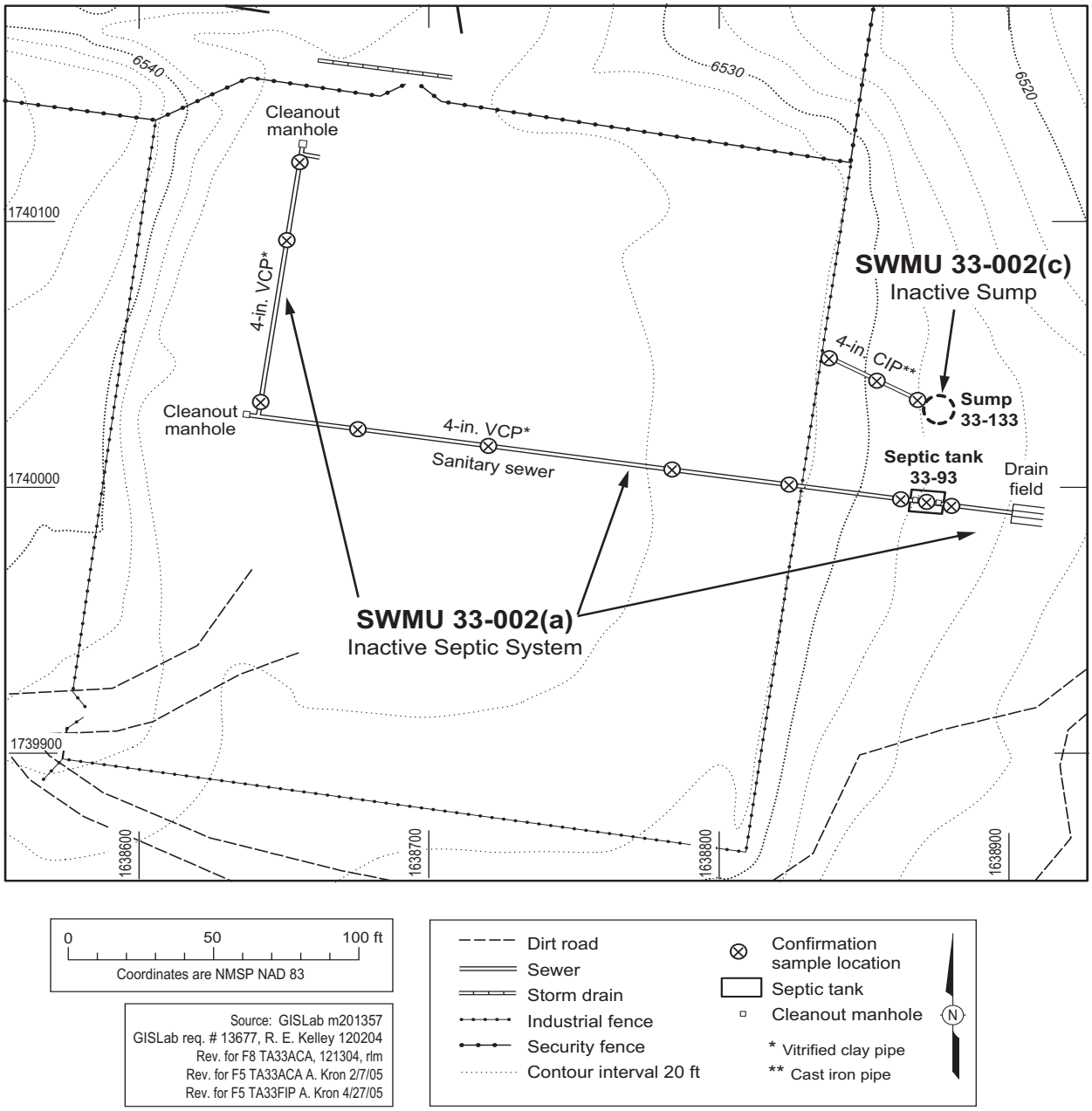

Figure 5. Confirmation sample locations following removal of drainline and septic tank for SWMU 33-002(a) and removal of drainline (if found) for SWMU 33-002(c) at TA-33

Table 1
Confirmation Samples from beneath the Septic Tank and Drainline at SWMU 33-002(a)

Depth (in.)	Description	Chemical and Radiochemical Analyses		Total Number of Samples
0 to 6 and 24 to 30	Collected from beneath the center of septic tank after excavation and removal of the septic tank, media may be fill or tuff	VOCs (8260B), explosive compounds (8321A), PCBs (8082), SVOCs (8270C), perchlorates (8321A), TAL metals (6010B, 6020, 7471A), and cyanide (9012A) and nitrates (300.1)	Gamma spectroscopy (EPA:901.1), Am-241 (HASL-300:AM-241), isotopic plutonium (HASL-300:IsoPu), isotopic uranium (HASL-300:IsoU), tritium (EPA:906.0), Sr-90 (EPA:905.0)	2 planned 1 duplicate
0 to 6 and 24 to 30	Collected from beneath the connection to the inlet line and outlet line, media may be fill or tuff	VOCs (8260B), explosive compounds (8321A), PCBs (8082), SVOCs (8270C), perchlorates (8321A), TAL metals (6010B, 6020, 7471A), and cyanide (9012A) and nitrates (300.1)	Gamma spectroscopy (EPA:901.1), Am-241 (HASL-300:AM-241), isotopic plutonium (HASL-300:IsoPu), isotopic uranium (HASL-300:IsoU), tritium (EPA:906.0), Sr-90 (EPA:905.0)	4 planned
0 to 6 and 24 to 30	Collected from beneath the inlet lines originating from former Building 86 between the northern-most drainline cleanout and the septic tank; media may be fill or tuff	VOCs (8260B), explosive compounds (8321A), PCBs (8082), SVOCs (8270C), perchlorates (8321A), TAL metals (6010B, 6020, 7471A), and cyanide (9012A) and nitrates (300.1)	Gamma spectroscopy (EPA:901.1), Am-241 (HASL-300:AM-241), isotopic plutonium (HASL-300:IsoPu), isotopic uranium (HASL-300:IsoU), tritium (EPA:906.0), Sr-90 (EPA:905.0)	16 planned 2 duplicates

2.4.2.2 Site Restoration and Associated Demobilization Activities for SWMU 33-002(a)

Perform site restoration by returning all excavated material to the excavation of origin and adding clean fill where necessary to bring the site back to original grade.

Return auger cuttings from all soil borings to original augerhole locations.

Decontaminate sampling equipment by using dry decontamination techniques.

Remove all excavation and sampling equipment and materials from the site.

2.4.2.3 Survey Confirmation Sample Locations

Geodetically survey the locations of the cleanouts, septic tank, areas with elevated radioactivity, and confirmation samples in accordance with SOP-03.11, Coordinating and Evaluating Geodetic Surveys, and deliver the data to the ENV-RS RPF for migration to the ENV-RS Geographical Information System.

Thoroughly document and photograph all site preparation, site fieldwork (excavation, sampling, etc.) and site restoration activities. Provide descriptive annotations for all photographs.

2.4.3 Mobilization and Field Screening for SWMU 33-002(c)

This specific work element includes mobilization and site preparation, potholing (by hand) to determine if a portion of the cast iron drainline for SWMU 33-002(c) is still in place east of the current fence, and conducting field radiation screening of any portion of the drainline uncovered at specific pothole locations.

- Mobilize equipment and prepare the site (including any necessary BMPs).
- Use fences or other appropriate measures to control site and support area access, and to prevent unauthorized entry by workers or the public. **Note:** Access to TA-33 is restricted and the majority of the project area is surrounded by another fence which can be secured.
- Conduct land surveys and a radiation survey before initiation of excavation activities (including utility location) in accordance to SOP-03.11, Geodetic Surveys.
- Before activities begin, take photographs to record the conditions at the site; after activities start, take photographs to document each activity.
- If the drainline is located by U-Map, pothole (by-hand) a minimum of two locations along the septic tank drainline and a minimum of two locations along the sump drainline (if located). If the drainline is not located by U-Map, pothole in the area on the ENV-RS project TA-33 PRS maps where approximately 40 feet of the cast iron drain line may remain east of the current fence around the planned High Bay Complex site.

2.4.3.1 Removal and Confirmation Sampling Activities for SWMU 33-002(c)

This specific work element includes excavation and removal of any length of remaining cast iron drainline east of the fence (if found); collection of subsurface confirmation samples beneath the bottom of the drainline trench or collection of confirmation samples from the former location of the drainline east of the fence; field screening of the samples for radioactivity; and submittal of samples to an off-site laboratory for analysis.

- Conduct initial removal activities by excavating soil over the drainline. Continuously observe excavation activities to differentiate between pre-existing line damage and any damage caused by the excavation activities. The depth of the excavated line is expected to be approximately 6 ft below ground surface. Perform screening for beta/gamma and alpha radiation using an ESP-1 rate meter with an HP-260 probe and a Ludlum Model-139 rate meter equipped with an air proportional probe, respectively, over the entire length of the exposed drainline. Note any measured radioactivity detected above two times local background levels and mark the locations of the detections along the edge of the trench. Photograph the entire length of the exposed

drainline to document its condition before it is removed from the trench. Determine the type of mortar used to seal the joints and the condition of the joints. Document any observed breaks in the line or staining.

- Remove the drainline and place it in a designated roll-off bin located within a registered LLW storage area. If no breaks in the line, staining, or elevated radiation levels are observed when the drainline is exposed and removed, collect confirmation samples from two depths at locations approximately 20 to 25 ft apart along the length of the trench (three sample locations). Stake confirmation sample locations along the drainline trench. **Note:** ENV-RS Project Facility Integration staff will determine confirmation sample locations. The sample locations may be relocated slightly, or additional samples collected, to ensure samples are collected from locations with elevated field screening levels, where breaks in the lines occur, or where staining is observed within the trench excavation.

- Remove soil/tuff with radioactivity detected above two times local background levels from the drainline trench or septic tank excavation until field screening instruments no longer exceed local site background levels. Collect confirmation samples from these locations.

- If the drainline is found and removed, the minimum number of characterization/confirmation samples to be collected from SWMU 33-002(c) is listed in Table 2 and shown in Figure 5. Collect confirmation samples per SOP 6.10, Hand Auger and Thin-Walled Tube Sampling, from 0 to 6 inches and 24 to 30 inches below the bottom of the drainline. Screen samples in the field for radiation as described above and submit them to the ENV Division SMO for fixed laboratory analysis.

- In accordance with the Consent Order and SOP 06.33, headspace vapor screening for VOCs will be conducted using a PID capable of measuring concentrations as low as 1 ppm. Screening samples will be sealed in mason jars and allowed to equilibrate in a warm area for not less than ten minutes. The headspace gas will then be screened using a PID equipped with an 11.7 eV bulb. To ensure compliance with US DOT regulations, all samples will be field screened for alpha- and beta-gamma radiation before they are transported to the SMO.

- In accordance with Section IX.B.2.e of the Consent Order and SOP-01.05, QA/QC samples will include VOC trip blanks at a frequency of 1 per 20 or 1 per day, whichever is greater, field duplicates at a rate of 1 per 10 or 1 per day per matrix, whichever is greater to evaluate the reproducibility of the sampling technique, and rinsate blanks for TAL metals analysis at a frequency of 1 per day to evaluate decontamination procedures.

- Include the following in the analytical suite for all confirmation samples from SWMU 33-002(c): isotopic uranium, tritium, isotopic plutonium, gamma spectroscopy, Am-241, TAL metals, perchlorates, PCBs, organic chemicals, HE, Sr-90, and cyanide.

- Coordinate sample collection and analysis with the ENV-SMO. Once samples have been collected, store and transport samples to the ENV-SMO in accordance with SOP-01.03, Handling, Packaging and Shipping of Samples. The ENV-SMO will ship samples to an analytical laboratory that is qualified according to QP-7.2, Supplier Evaluation, and listed on the ENV-RS Approved Suppliers List.

- The analytical cost is borne by the Laboratory, not the subcontractor. The subcontractor shall supply the cost to collect, package, and transport the samples to the ENV-SMO according to

ENV-RS Project SOPs. **Note:** The turnaround time for the samples submitted for offsite contract laboratory analysis will be normal (30 days).

Table 2
Confirmation Samples from Remaining Drainline at SWMU 33-002(c), (if found)

Depth (in.)	Description	Chemical and Radiochemical Analyses		Total Number of Samples
0 to 6 and 24 to 30	Collected from beneath the inlet lines originating from former Building 86 between the northern-most drainline cleanout and the septic tank; media may be fill or tuff	VOCs (8260B), explosive compounds (8321A), PCBs (8082), SVOCs (8270C), perchlorates (8321A), TAL metals (6010B, 6020, 7471A), and cyanide (9012A)	Gamma spectroscopy (EPA:901.1), Am-241 (HASL-300:AM-241), isotopic plutonium (HASL-300:IsoPu), isotopic uranium (HASL-300:IsoU), tritium (EPA:906.0), Sr-90 (EPA:905.0)	6 planned 1 duplicate

2.4.3.2 Site Restoration and Associated Demobilization Activities for SWMU 33-002(c)

Perform site restoration by returning all excavated material to the excavation of origin and adding clean fill where necessary to bring the site back to original grade.

Return auger cuttings from all soil borings to original augerhole locations.

Decontaminate sampling equipment by using dry decontamination techniques.

Remove all excavation and sampling equipment and materials from the site.

2.4.3.3 Survey Confirmation Sample Locations

Geodetically survey the locations of drainline, areas with elevated radioactivity, and confirmation samples in accordance with SOP-03.11, Coordinating and Evaluating Geodetic Surveys, and deliver the data to the ENV-RS RPF for migration to the ENV-RS Geographical Information System.

Thoroughly document and photograph all site preparation, site fieldwork (excavation, sampling, etc.) and site restoration activities. Provide descriptive annotations for all photographs.

2.4.4 Mobilization and Field Screening for SWMU 33-013

This specific work element includes mobilization and site preparation, locating the asphalt pad, and field radiation screening of the pad. **Note:** Review and incorporate into the planning process the 2004 and 2005 waste characterization data.

- Mobilize equipment and prepare the site (including any necessary BMPs).
- Use fences or other appropriate measures to control site and support area access, and to prevent unauthorized entry by workers or the public. **Note:** Access to TA-33 is restricted and the majority of the project area is surrounded by another fence which can be secured.

- The entire surface of the former storage area will be inspected for staining. Visual inspections for staining will be made on top of the soil/pumice veneer prior to excavation, on top of the asphalt after the soil/pumice veneer has been removed, and in the soil/tuff after the asphalt has been removed and during excavation. These inspections will be used to bias confirmation sample locations to areas where spilled material may have migrated into the soil beneath the asphalt pad.

- Conduct land surveys before initiation of excavation activities (including utility location) in accordance with ENV-RS/ECR-SOP-03.11, Geodetic Surveys.

- Perform screening for beta/gamma and alpha radiation over the surface of the asphalt pad before initiation of excavation activities by using an ESP-1 rate meter with an HP-260 probe and a Ludlum Model-139 rate meter equipped with an air proportional probe, respectively. Note any measured radioactivity detected above two times local background levels and mark the location of the detection directly on the pad.

- Before activities begin, take photographs to record the conditions at the site; after activities start, take photographs to document each activity. Include photographs of the asphalt pad to document its condition.

- Survey the asphalt pad to document its location.

2.4.4.1 Removal and Confirmation Sampling Activities for SWMU 33-013

This specific work element includes the excavation and removal of the asphalt pad; the first 6 inches of soil; collection of confirmation samples; field screening of samples for radioactivity; and submittal of samples.

- Excavate the asphalt pad and first 6 in. of soil beneath the pad and place in a roll-off bin. The beta/gamma and alpha radiation screening will be repeated within the excavated area before the collection of confirmation samples. Any measured radioactivity detected above two times local background levels will be marked directly on the ground surface and removed until field screening instruments no longer exceed two times local background levels. Confirmation samples will be collected from these locations.

- **At the request of NMED**, the visual inspection of samples from SWMU 33-013 will include inspection for moisture. The presence of elevated moisture in soils beneath the asphalt pad or at confirmation sample intervals will be evaluated to determine if the sampling intervals should be revised. If free liquid is observed in sufficient quantities to allow for sample collection, one or more samples will be collected in accordance with SOP-06.13.

- Repeat screening for beta/gamma and alpha radiation within the excavated area before collection of confirmation samples. Note any measured radioactivity detected above 2 times local background levels and mark the location of the detection directly on the ground surface.

- Remove soil/tuff with radioactivity detected above two times local background levels from the excavated area until field screening instruments no longer exceed local background levels. Collect confirmation samples from these locations.

- Collect thirteen confirmation samples from two depth intervals (0 to 6 in. and 24 to 30 in.) at six locations within the asphalt pad excavation and eight confirmation samples at four locations off the asphalt pad (Table 3), primarily from locations on the slope directly northeast of the former storage area (Figure 6). **At the request of NMED**, two of the confirmation samples will be

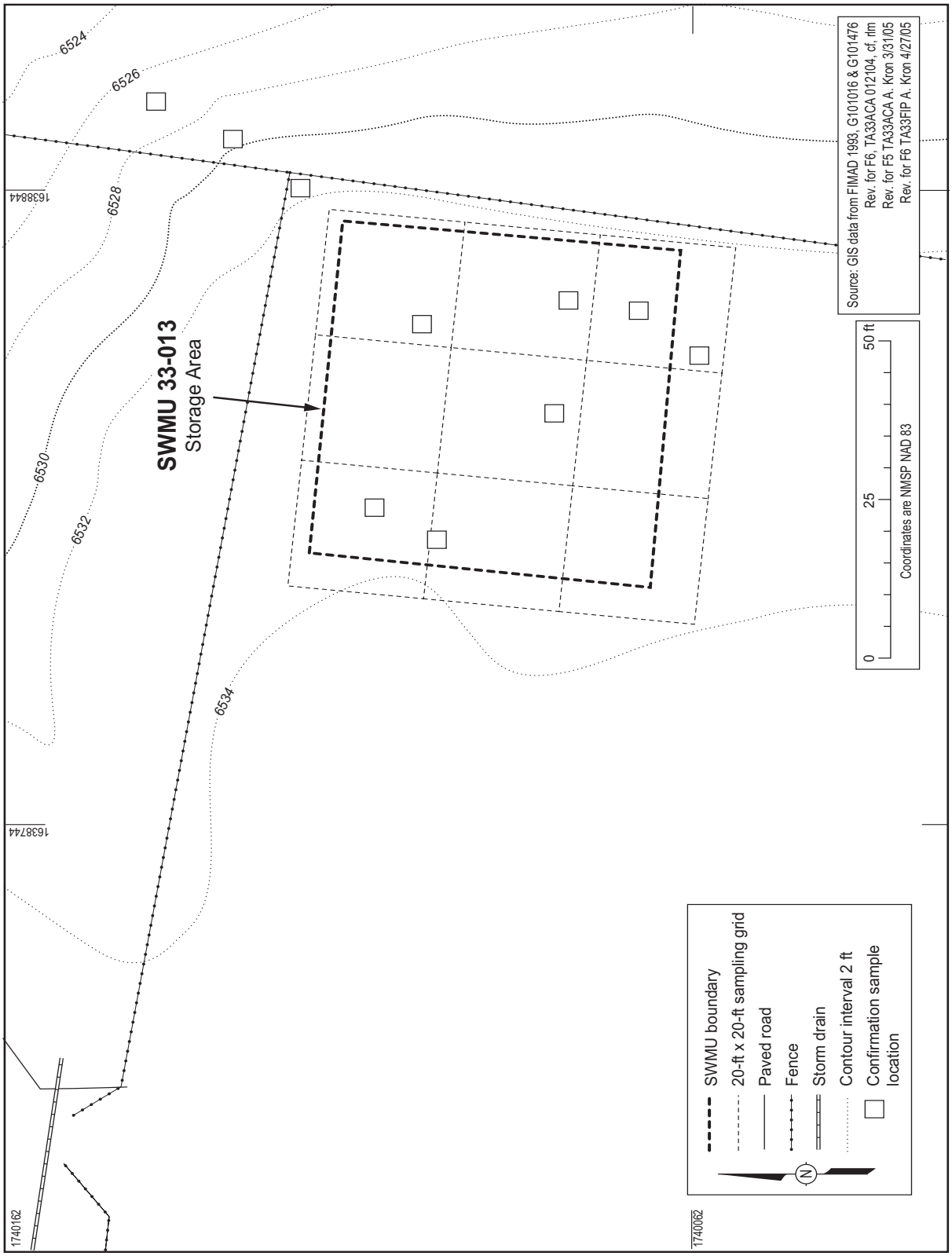

Figure 6. Confirmation sampling locations at SWMU 33-013 at TA-33

collected at the locations of RFI samples AAA2036 and AAA2037 and other sample locations will be biased based on results of field screening, including the observation of staining or moisture. If there are no field screening results indicating potential contamination, samples will be collected at the random locations. Collect confirmation samples from 0 to 6 in. and 24 to 30 in. beneath the asphalt pad and soil removal area by using the method prescribed in SOP-6.10, Hand Auger and Thin-Walled Tube Sampling. Screen samples in the field for radiation as described above and submit them to the ENV-SMO for fixed laboratory analysis.

- In accordance with the Consent Order and SOP 06.33, headspace vapor screening for VOCs will be conducted using a PID capable of measuring concentrations as low as 1 ppm. Screening samples will be sealed in mason jars and allowed to equilibrate in a warm area for not less than ten minutes. The headspace gas will then be screened using a PID equipped with an 11.7 eV bulb. To ensure compliance with US DOT regulations, all samples will be field screened for alpha- and beta-gamma radiation before they are transported to the SMO.

- In accordance with Section IX.B.2.e of the Consent Order and SOP-01.05, QA/QC samples will include VOC trip blanks at a frequency of 1 per 20 or 1 per day, whichever is greater, field duplicates at a rate of 1 per 10 or 1 per day per matrix, whichever is greater to evaluate the reproducibility of the sampling technique, and rinsate blanks for TAL metals analysis at a frequency of 1 per day to evaluate decontamination procedures.

- Include the following in the analytical suite for all confirmation samples from SWMU 33-013: isotopic uranium, tritium, isotopic plutonium, gamma spectroscopy, Am-241, TAL metals, perchlorates, PCBs, organic chemicals, HE, Sr-90, and cyanide.

- Coordinate sample collection and analysis with the ENV-SMO. Once samples have been collected, samples store and transport samples to the ENV-SMO in accordance with SOP-01.03, Handling, Packaging and Shipping of Samples. The ENV-SMO will ship samples to an analytical laboratory that is qualified according to QP-7.2, Supplier Evaluation, and listed on the ENV-RS Approved Suppliers List.

- The analytical cost is borne by the Laboratory, not the subcontractor. The subcontractor shall supply the cost to collect, package, and transport the samples to the ENV-SMO according to SOPs. **Note:** The turnaround time for the samples submitted for offsite contract laboratory analysis will be normal (30 days).

2.4.4.2 Site Restoration and Associated Demobilization Activities for SWMU 33-013

Perform site restoration by returning of all excavated material to the excavation of origin and adding clean fill where necessary to bring the site back to original grade.

Return auger cuttings from all soil borings to original auger-hole locations.

Decontaminate sampling equipment by using dry decontamination techniques.

Remove all excavation and sampling equipment and materials from the site.

Table 3
Confirmation Samples from SWMU 33-013

Depth (in.)	Description	Chemical and Radiochemical Analyses		Total Number of Samples
0 to 6 and 24 to 30	Collected after removal of the asphalt pad an first six inches of soil directly beneath the pad	VOCs (8260B), explosive compounds (8321A), PCBs (8082), SVOCs (8270C), perchlorates (8321A), TAL metals (6010B, 6020, 7471A), and cyanide (9012A)	Gamma spectroscopy (EPA:901.1), Am-241 (HASL-300:AM-241), isotopic plutonium (HASL-300:IsoPu), isotopic uranium (HASL-300:IsoU), tritium (EPA:906.0), Sr-90 (EPA:905.0)	12 planned 2 duplicates
0 to 6 and 24 to 30	Collected from four locations adjacent to the asphalt pad	VOCs (8260B), explosive compounds (8321A), PCBs (8082), SVOCs (8270C), perchlorates (8321A), TAL metals (6010B, 6020, 7471A), and cyanide (9012A)	Gamma spectroscopy (EPA:901.1), Am-241 (HASL-300:AM-241), isotopic plutonium (HASL-300:IsoPu), isotopic uranium (HASL-300:IsoU), tritium (EPA:906.0), Sr-90 (EPA:905.0)	8 planned 1 duplicate

2.4.4.3 Survey Confirmation Sample Locations

Geodetically survey the locations of the asphalt pad and confirmation samples in accordance with SOP-03.11, Coordinating and Evaluating Geodetic Surveys, and deliver the data to the ENV-RS RPF for migration to the ENV-RS Geographical Information System.

Thoroughly document and photograph all site preparation, site fieldwork (excavation, sampling, etc.) and site restoration activities. Provide descriptive annotations for all photographs.

3.0 HEALTH AND SAFETY

Conduct all activities described in this FIP under the applicable approved subcontractor site-specific health and safety plan. Prepare IWDs in accordance with LIR IMP300-00-00, Integrated Work Management for Work Activities, for each activity identified in the site-specific health and safety plan for the fieldwork.

4.0 WASTE MANAGEMENT AND DISPOSAL

Base the decision to excavate and dispose soil and asphalt and the characterization of associated waste streams on knowledge of historical operations, previous investigation results, recent waste characterization data, and additional waste samples, as necessary.

Before field investigation activities begin, ENV- RS Project Facility Integration staff will prepare and obtain approval for a WCSF in accordance with requirements of SOP-01.10, Waste Characterization. The WCSF provides detailed information on waste characterization, waste handling and segregation strategy, containerization, and potential volume generation. Waste characterization will be achieved by using

acceptable knowledge, direct waste-sampling, or sampling the media being investigated (i.e., surface and subsurface soil, etc.). The Eberline Services Waste Management Coordinator (WMC) will prepare and submit waste profile forms for waste streams generated from this investigation to Solid Waste Operations (SWO) at TA-54.

Waste streams that will be generated and managed during the sampling and remediation activities for SWMUs 33-002(a), 33-002(c) and 33-013 are:

- Excavated soil and asphalt (co-mingled) from SWMU 33-013
- Concrete septic tank, VCP, cast iron drainline, and excavated soil (co-mingled) from SWMUs 33-002(a) and 33-002(c)
- Personal protective equipment, sampling supplies, decontamination trash, and other investigation-derived waste

Remove all waste streams before High Bay Complex construction activities begin. Anticipated waste streams, regulatory classifications, estimated volumes, and disposal pathways are shown in Table 4. Use sample results and the extent of contamination to determine accurate volumes, final waste determination, and disposal pathways.

Table 4
Waste Streams from Sampling and Remediation at SWMUs 33-002(a), 33-002(c) and 33-013

Waste Stream	Waste Type (non-hazardous)	Estimated Maximum Volume	Ship To
Excavated soil and asphalt (co-mingled) from SWMU 33-013	Solid, suspect LLW	20 yd^3	Area G, LANL, Los Alamos, NM
Concrete, VCP, cast iron drainline, and soil from SWMU 33-002(a) septic system and SWMU 33-002(c) drainline	Solid, suspect LLW	10 yd^3	Area G, LANL, Los Alamos, NM
Personal protective equipment, sampling supplies, and other investigation-derived waste	Solid, suspect LLW	<1 yd^3	Area G, LANL, Los Alamos, NM

Manage all wastes generated as a result of sampling and remediation activities conducted at SWMUs 33-002(a), 33-002(c) and 33-013 in a way that is protective of human health and the environment, compliant with applicable federal, state, DOE, and Laboratory regulatory requirements, and consistent with Laboratory waste minimization goals. Manage all waste generated during field investigation activities in accordance with SOP-01.06, Management of ER Project Waste.

- Establish <90-day waste accumulation area for LLW (roll-off bins for removed drainline, septic tank, asphalt and potentially contaminated soil).
- Use previous waste characterization results from the septic contents and gross radiation screening results for waste characterization of the removed drainline, septic tank, and any potentially contaminated soil. It is anticipated that all waste from SWMUs 33-002(a) and 33-002(c) will be managed as LLW at Area G at TA-54.
- Use November 2004 waste characterization results from the asphalt pad and soil immediately beneath the pad for waste characterization of the removed asphalt pad and first 6 in. of soil

beneath the pad. It is anticipated that all waste from SWMU 33-013 will be managed as LLW at Area G.

- Ensure that all returned samples are managed, characterized, and disposed of in accordance with all applicable LANL waste management requirements.
- Ensure that all waste, including but not limited to, returned samples, used PPE, equipment, contaminated media, debris, and other IDW, are properly characterized and disposed. Sites must be verified as “waste free” by ENV-RS Project waste management personnel prior to completion of the project (SOP-01.12, Field Site Closeout Checklist).

Conduct investigation activities in a manner that minimizes the generation of waste. Waste minimization is accomplished by implementing the requirements of the ENV-RS portion of the 2003 Pollution Prevention Roadmap (LANL 2003, 85205).

Select waste containers based on appropriate US DOT requirements and the type and amount of waste planned for generation. Immediately after containerization, individually label each waste container to show waste classification, item identification number, and date of generation. Describe container and storage requirements in the WCSF, based on requirements outlined in the most recent versions of the Laboratory’s Waste Management Facilities Waste Acceptance Criteria; LIR 404-00-03, Hazardous and Mixed Waste Requirements; LIR-404-00-04, Managing Solid Waste; and LIR 405-10-01, Packaging and Transportation. Ensure transportation of waste complies with appropriate DOT requirements. After determining waste classification, dispose of solid waste at an approved off-site disposal facility. Detail transportation and disposal requirements in the WCSF.

5.0 PHOTO-DOCUMENTATION

Provide photo-documentation for each phase of site field work (excavation, sampling, removal, restoration, etc.). Provide descriptive annotations for all photographs.

6.0 DOCUMENTS AND RECORDS

All documents and records generated by QPs and SOPs governing activities of this FIP shall be transmitted to the ENV-ECR Records Processing Facility in accordance with QP-4.4 requirements.

7.0 REFERENCES

EPA (US Environmental Protection Agency), April 10, 1990. Module VIII of RCRA Permit No. NM0890010515, EPA Region VI, issued to Los Alamos National Laboratory, Los Alamos, New Mexico, effective May 23, 1990, EPA Region VI, Hazardous Waste Management Division, Dallas, Texas. (EPA 1990, 1585)

EPA (US Environmental Protection Agency), April 19, 1994. Module VIII of RCRA Permit No. NM0890010515, EPA Region VI, new requirements issued to Los Alamos National Laboratory, Los Alamos, New Mexico, effective May 19, 1994, EPA Region VI, Hazardous Waste Management Division, Dallas, Texas. (EPA 1994, 44146)

LANL (Los Alamos National Laboratory), May 1992. “RFI Work Plan for Operable Unit 1122,” Los Alamos National Laboratory document LA-UR-92-0925, Los Alamos, New Mexico. (LANL 1992, 7671)

LANL (Los Alamos National Laboratory), September 1995, “RFI Report for TA-33, MDA K, PRSs 33-002(a, b, c, d, e), Field Unit 3,” Los Alamos National Laboratory document LA-UR-95-3624, Los Alamos, New Mexico. (LANL 1995, 50113)

LANL (Los Alamos National Laboratory), September 1995, “RFI Report for TA-33, MDA K, PRSs 33-003(a), 33-004(a), 33-007(c), 33-009, 33-011(d), 33-013, 33-016, and 33-017,” Los Alamos National Laboratory document LA-UR-95-36254, Los Alamos, New Mexico. (LANL 1995, 71300)

LANL (Los Alamos National Laboratory), September 1995, “RFI Report for TA-33, PRSs: 33-004(d, g, h, i), 33-005(a, b, c), 33-07(c), 33-010(e, f), 33-011(a, e), 33-012(a), 33-015, Field Unit 3,” Los Alamos National Laboratory document LA-UR-95-0882, Los Alamos, New Mexico. (LANL 1995, 71262)

LANL (Los Alamos National Laboratory), September 1997, “RFI Report for Potential Release Sites, 33-002(b, c), 33-003(b), 33-004(k), 33-006(a), 33-008(a, b), 33-011(d), 33-013, 33-017,” Los Alamos National Laboratory document LA-UR-97-2944, Los Alamos, New Mexico. (LANL 1997, 57021.7)

LANL (Los Alamos National Laboratory), November 14, 1997, “Response to Request for Supplemental Information for the RFI Report for TA-33, PRSs 33-002(a-e), Material Disposal Area K (former OU 1122),” Los Alamos National Laboratory letter (EM/ER:97-478) to B. Garcia (NMED-HRMB) from J. Canepa (ER Project Manager) and T. Taylor (DOE ER Program Manager), Los Alamos, New Mexico. (LANL 1997, 57021.1)

LANL (Los Alamos National Laboratory), December 10, 1997, “Updated Request for Supplemental Information for Requests for TA-33 and TA-16,” Los Alamos National Laboratory letter (EM/ER:97-524) to D. Neleigh (EPA Region 6) from J. Canepa (ER Project Manager) and T. Taylor (DOE ER Program Manager), Los Alamos, New Mexico. (LANL 1997, 57085)

LANL (Los Alamos National Laboratory), December 1, 2003. ”2003 Pollution Prevention Roadmap, December 2003,” Los Alamos National Laboratory document LA-UR-03-9021, Los Alamos, New Mexico. (LANL 2003, 85205)

NMED (New Mexico Environment Department), February 1, 2004. HWB Ground Water Quality Bureau and Voluntary Remediation Program, Technical Background Document for Development of Soil Screening Levels, Revision 2.0, (Volume 1, Tier 1: Soil Screening Guidance Technical Background Document), Santa Fe, New Mexico. (NMED 2004, 85615)