108458

Waste Characterization Strategy Form

Project Title:	**MDA-B Area 9 & 10 Trenching**
Solid Waste Management Unit or Area of Concern #:	**TA-21, Material Disposal Area B (MDA-B), Unit 21-015**
Activity Type:	**Investigation Excavation/Trenching in MDA-B Areas 9 & 10**
Project Manager/Waste Generator:	**Mitch Goldberg**
LANL Waste Management Coordinator:	**Jeff Lee**
Completed by:	**Jennifer Griffin**
Date:	**18 February 2010**

Description of Activity: LANL has received verbal guidance from NMED for the excavation/trenching of Areas 9 and 10 that supersedes the description of soil/debris management in LA-UR-06-6968, *Investigation/Remediation Work Plan for Material Disposal Area B, Solid Waste Management Unit 21-015 at Technical Area 21, Revision 1.* This guidance requires that LANL excavate/trench Areas 9 and 10 to confirm that waste materials are not buried in the areas. Instead of returning only the excavated soils that meet residential soil screening levels to the trenches, all excavated soil may be returned to the trenches, regardless of the level of contamination unless waste materials are discovered.

This Waste Characterization Strategy Form (WCSF) specifies how wastes generated by the excavation/trenching activities at Areas 9 and 10 at MDA-B will be characterized and managed. The objective of the excavation/trenching activities is to determine presence or absence of buried waste material by digging 9 exploratory test trenches to the top of the native tuff. In historical documents the suspected waste disposal pits in Areas 9 & 10 are described as two pits "in the west end running north and south making the 'L' shape to the fence." To increase the probability of locating north-south running pits, a series of east-west oriented test trenches will be excavated as follows:

- Five (5) exploratory test trenches (E-I), oriented east-west, in Area 9
- Four (4) exploratory test trenches (A-D), oriented east-west, in Area 10

Excavation/test trenching will NOT be performed near DPT sampling locations AI155 and AI157 at Area 9 (see attached sketch). The Plutonium concentration in the soil and depth to native tuff suggest that this area is within a waste-filled trench (Area 8).

All excavated material will be removed from the trench, spread out, visually inspected, screened for radiological activity and organic vapors (for Health and Safety) and photographed. If waste material (e.g., paper, rags, rubber gloves, glassware, cardboard boxes building demolition debris, ductwork, equipment, wooden boxes) is observed, or if radiological or organic vapor screening above background levels are measured the area will be put into a safe configuration and the work will be stopped. All soil will be returned to the trench after inspection and/or sampling.

At the discretion of the subject matter experts (SME) and Operations personnel, samples of soil at Areas 9 and 10 may be collected (i.e., provide data for future removal of waste [if found]). All soil samples, if collected, will be collected one of the following ways:

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1. Sampled from each pile using an auger or thin-wall tube sampler in accordance with SOP-06.10, *Hand Auger and Thin-Wall Tube Sampler* or subcontractor equivalent procedure. The sample will be collected by augering from the surface to the bottom of the waste in a sufficient number of locations to obtain a representative sample.

2. Sampled from the excavation bucket in accordance with SOP-06.11, *Spade and Scoop Method for Collection of Soil Samples*.

Samples will be analyzed for volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs); PCBs; radionuclides, total metals, pesticides/herbicides, nitrate, perchlorate, total cyanide, and toxicity characteristic metals. Total petroleum hydrocarbons (TPH) will be analyzed if staining is observed.

The activities described above are expected to generate the following waste streams:

- Investigation Derived Waste (IDW)
- Decontamination Fluids
- Petroleum Contaminated Soil (PCS)
- Municipal Solid Waste (MSW)

NOTE: This WCSF does not apply to the excavation of material associated with legacy waste disposal activities at MDA-B. If these types of materials are discovered during investigation excavation/trenching at Areas 9 & 10, the excavation/trench will be returned to a safe configuration (as determined by the SME and Operations Personnel), work will be stopped, and the applicable area will be remediated in accordance with LA-UR-06-6968, *Investigation/Remediation Work Plan for Material Disposal Area B, Solid Waste Management Unit 21-015 at Technical Area 21, Revision 1*.

All of these waste streams will be managed in accordance with SOP-5238, Characterization and Management of Environmental Program Waste.

Relevant Site History and Description: The MDA-B consists of approximately 6 acres of non-industrialized land at TA-21 located on DP Mesa. MDA-B is a Nuclear Environmental Site (NES), Nuclear Facility Hazard Category 3, which is posted as a Radiation Control Area. MDA-B was the first common disposal site for contaminated materials from the Laboratory, operating from 1944 to 1948. MDA-B may contain both hazardous and radiological chemicals. No formal records of the wastes or construction design exist for MDA-B. The MDA-B Process Waste Review (EP2007-0236) provides the context for knowledge of waste generation and management during the operational period. From 1966 to 1990 the surface for MDA-B and adjacent property was open to the public for recreational vehicle and automobile parking.

Areas 9 and 10 are located at the far west end of MDA-B. It is suspected that Areas 9 and 10 were never used for below-ground disposal of waste. Sampling of the soil in these two areas was performed in the late summer and fall of 2009 using direct-push technology (DPT). Seven samples from seven locations were collected from Area 9, and fourteen samples from ten locations were collected from Area 10. Top of native tuff was observed from depths of 3 to 5 feet below ground surface (ft-bgs) in Area 9, and from depths of 4.5 to 7.5 ft-bgs in Area 10. Soil from each DPT collection sleeve was screened with a portable gamma spec, and if a sufficient quantity of soil was available, the soil was combined and analyzed for the following:

- Radiochemistry – gamma spec, strontium-90, tritium, americium-241, isotopic plutonium, isotopic thorium and isotopic uranium;
- Total Inorganics – TCL metals, mercury, reactive cyanide and reactive sulfide; and

- Total Organics – pesticides, PCBs, herbicides, VOC and SVOC.

All seven samples collected from Area 9 were analyzed for methods listed above. Most samples collected from Area 10 were analyzed for all methods, with the exception of two samples that were not analyzed for inorganics and VOCs, six samples that were not analyzed for isotopic thorium, and one sample that was not analyzed for americium-241, isotopic thorium and reactive cyanide. Analytical results of all soil samples collected in Areas 9 & 10 were found to be below all radiological Soil Action Levels (SALs), and all NMED Soil Screening Levels (SSLs) (NMED, August 2009). While all analytical results were found to be below SALs and SSLs, sample collection with DPT does not provide a large sample of material for visual observation. It was concluded that there was not enough evidence to show that waste material was not buried in these areas.

CHARACTERIZATION STRATEGY

This WCSF identifies the types of wastes expected. However, other types of waste may be encountered. An amendment to this WCSF shall be prepared and submitted for review and approval if any of the waste streams change in description or characterization approach or a new waste stream is generated. All wastes will be managed in accordance with SOP-5238, *Characterization and Management of Environmental Program Waste*.

All IDW will initially be managed within the boundary of the Area of Contamination as non-hazardous waste. Waste determinations will be made before the waste is removed from the Area of Contamination. Characterization of IDW will be completed through acceptable knowledge (AK), including associated environmental sampling data, process knowledge, and existing documents; and/or the waste may be directly sampled. Samples must be collected by trained sampling personnel in accordance with this WCSF and Environmental Protection Agency (EPA) guidance. Sampling personnel must record waste sampling information in accordance with EP-ERSS-SOP-5058, *Sample Control and Field Documentation* and EP-ERSS-SOP-5181, *Documentation for Waste and Environmental Services Technical Field Activities*. The field notebook must be used to document sample collection activities (e.g., equipment and sampling methods used, number and location of samples, etc.). Sampling personnel must also record field conditions, problems encountered, local sources of contamination (e.g., operating generators or vehicles), the personnel involved, equipment and supplies used, wastes generated, and field observations.

The selection of waste containers will be based on U.S. Department of Transportation requirements, waste types, and estimated volumes of IDW to be generated. Immediately following containerization, each waste container will be individually labeled with a unique identification number and with information regarding waste classification, contents, and date generated. A waste determination must be made within 45 days of the generation of the waste. A WAC exception form (WEF) can be used if the generator does not meet the 45 day deadline.

Because this project does not include the removal/excavation of wastes from the trenches, none of the IDW is expected to be listed. However, if potentially listed waste is unexpectedly encountered, a due diligence document review may be performed to identify whether the contaminants are from a listed process. If no or inconclusive documentation of a listed source exists, the waste will not carry the listed hazardous waste numbers(s). If documentation exist that the contaminant(s) originated from a listed source but the levels are below residential screening levels and the land disposal restriction treatment standards, a "contained-in" request may be submitted to the New Mexico Environment Department (NMED), who may approve dropping the listings from the waste stream. A copy of either the ENV-RCRA approved due diligence or the NMED contained-in approval letter must accompany all waste profiles prepared for the subject waste(s).

Waste #1: Contact IDW - This waste stream is comprised of PPE, equipment, sampling equipment and other materials that contacted or potentially contacted contaminated materials that cannot be decontaminated. This includes but is not limited to plastic sheeting (e.g., tarps and liners), gloves, coveralls, booties, paper towels, plastic and glass sample bottles, and disposable sampling supplies. It is estimated that approximately 3 yd^3 of contact IDW will be generated during the activities described in this WCSF.

Anticipated Regulatory Status: Industrial, LLW

Characterization Approach: Contact IDW will be characterized using AK based on the characterization of the associated material with which it came into contact. If waste materials are not found in the trench(s), the appropriate AK will be the results from the DPT sampling that occurred in 2009. If waste is found in the in the trench(s) AK will be the analytical results from samples collected from the surrounding soil (Waste #2).

Storage and Disposal Method: The IDW may be separately containerized in drums or it may be placed into the same containers as the media with which it is contaminated. For disposal, separately containerized contact waste may be also be combined with the material that it contacted (the WPF will document the decision to combine the waste streams). Wastes will be treated and/or disposed of at an authorized off-site facility.

Waste #2: Decontamination Fluids - This waste stream consists of liquid wastes generated from the decontamination of excavation, sampling, and drilling equipment. This waste stream will be generated only if dry decontamination methods are not effective. It is estimated that approximately 55 gallons of decontamination fluids will be generated from this activity.

Anticipated Regulatory Status: Industrial, LLW

Characterization Approach: Waste characterization of decontamination fluids will be based upon the analytical results obtained from the direct sampling of containerized waste.

The decontamination fluid will be characterized by direct sampling of the containerized fluids. Samples will be collected from the storage container in accordance with LANL SOP-06.15, *COLIWASA Sampler for Liquids and Slurries* or subcontractor equivalent procedure. If the container does not permit COLIWASA or bailer sampling, the type of sampling equipment used will be appropriate for the waste container and properly operated in accordance with Chapter 7 and Appendix E of the RCRA Waste Sampling Draft Technical Guidance (EPA 530-D-02-002, August 2002, http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/rwsdtg.pdf). Samples will be analyzed for VOCs; SVOCs; PCBs; radionuclides, total metals, pesticides/herbicides, nitrate, perchlorate, total cyanide, and toxicity characteristic metals, and other analyses required to meet the WAC of the receiving facility.

> **NOTE:** Decontamination fluids destined for LANL's sanitary plant (SWS) must be sampled by ENV-RCRA for microtox analysis, total suspended solids (TSS), total dissolved solids (TDS), oil and grease, and pH. Submit a request for analysis at https://esp-esh-as01-f5.lanl.gov/~esh19/databases/rfa_form.shtml.

Storage and Disposal Method: Decontamination fluids will be managed in approved containers within the boundaries of the Area of Contamination in secure, designated non-hazardous accumulation areas appropriate to the type of waste (e.g., LLW). It is anticipated that this waste will be a candidate for treatment at the TA-50 Radioactive Liquid Waste Treatment facility (RLWTF). If it cannot be treated at the RLWTF, due to operational limitations or inability to meet the WAC, it will be adsorbed/solidified and disposed of at TA-54 or an appropriate off-site disposal facility.

Waste #3: Petroleum Contaminated Soils (PCS) - PCS may be generated from releases of products such as hydraulic fluid, motor oil, unleaded gasoline, or diesel fuel (e.g. from the rupture of hydraulic or fuel hoses, or spills during maintenance or filling equipment) onto soil. PCS spills must be reported in accordance with the project's health and safety plan. Absorbent padding, paper towels, spill pillows or other absorbent material used to contain the released material may be added to the PCS waste for storage and disposal. It is estimated that less than 1 yd^3 of PCS will be generated.

Anticipated Regulatory Status: New Mexico Special Waste (NMSW), Industrial, LLW, PCB

Characterization Approach: The PCS may be sampled in place if sampling and containerization can occur the same day as the spill. If sampling cannot occur the same day as the spill, the PCS should immediately be containerized and sampled in the container within 10 days. Samples should be collected in accordance with SOP-06.10, *Hand Auger and Thin-Wall Tube Sampler* (containerized or deeper spills) or, if the spill is shallow and being sampled in place or the waste container is small, in accordance with SOP-06.11, *Spade and Scoop Method for Collection of Soil Samples*. Samples will be analyzed for VOCs, SVOC, PCBs, radionuclides, pesticides/herbicides, total metals, TPH, TCLP metals (if needed), and TCLP organics. Other constituents must be analyzed as needed to meet the receiving disposal facility's WAC.

Storage and Disposal Method: PCS will be stored in clearly marked and appropriately constructed waste accumulation areas. Waste accumulation area postings, regulated storage duration, and inspection requirements will be based on the most restrictive waste classification appropriate to the area where the spill occurred. If the PCS is suspect or known hazardous or MLLW, it will initially be managed in a registered hazardous waste accumulation area pending analysis. All PCS will be treated and/or disposed at an authorized off-site facility appropriate for the waste classification.

Waste #4: Municipal Solid Waste (MSW) - This waste stream primarily consists of non-contact trash including but not limited to paper, cardboard, wood, plastic, food and beverage containers, empty solution containers, and other non-contact trash. It is estimated that less than 1 yd^3 of MSW will be generated.

Anticipated Regulatory Status: MSW

Characterization Approach: MSW will be characterized based on acceptable knowledge (AK) of the waste materials (including Material Safety Data Sheets) and methods of generation.

Management and Disposal Method: MSW will be segregated from all other waste streams. It is anticipated that the waste will be stored in plastic trash bags or other appropriate containers and disposed of at the County of Los Alamos solid waste transfer station or other authorized off-site solid waste facility.

CHARACTERIZATION TABLE (PAGE 1 OF 1)

Waste Description	Waste #1 Contact IDW	Waste #2 Decon Fluid	Waste #3 (PCS)	Waste #4 MSW
Volume	3 CY	55 gallons	1 CY	1 CY
Packaging	Approved container	55-gallon Drums	Approved Container	Approved Container
Regulatory classification:				
Radioactive	X	X	X	
Reusable material				
MSW				X
Hazardous			X	
Mixed (hazardous and radioactive)			X	
Toxic Substances Control Act (TSCA)			X	
New Mexico Special Waste			X	
Industrial	X	X	X	
Characterization Method				
Acceptable knowledge (AK): Existing Data/Documentation	X		X	X
AK: Site Characterization				
Direct Sampling of Containerized Waste		X	X	
Analytical Testing				
Volatile Organic Compounds (EPA 8260-B)		X	X	
Semivolatile Organic Compounds (EPA 8270-C)		X	X	
Organic Pesticides (EPA 8081-A)		X	X	
Organic Herbicides (EPA 8151-A)		X	X	
PCBs (EPA 8082)		X	X	
Total Metals (EPA 6010-B/7471-A)		X	X	
Total Cyanide (EPA 9012-A)		X		
High Explosives Constituents (EPA 8330/8321-A)				
Asbestos			X	
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)			X	
TPH-DRO (EPA 8015-M)			X (AS NEEDED)	
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)		X		
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)		X	X	
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)		X	X	
Gross Alpha (alpha counting) (EPA 900)				
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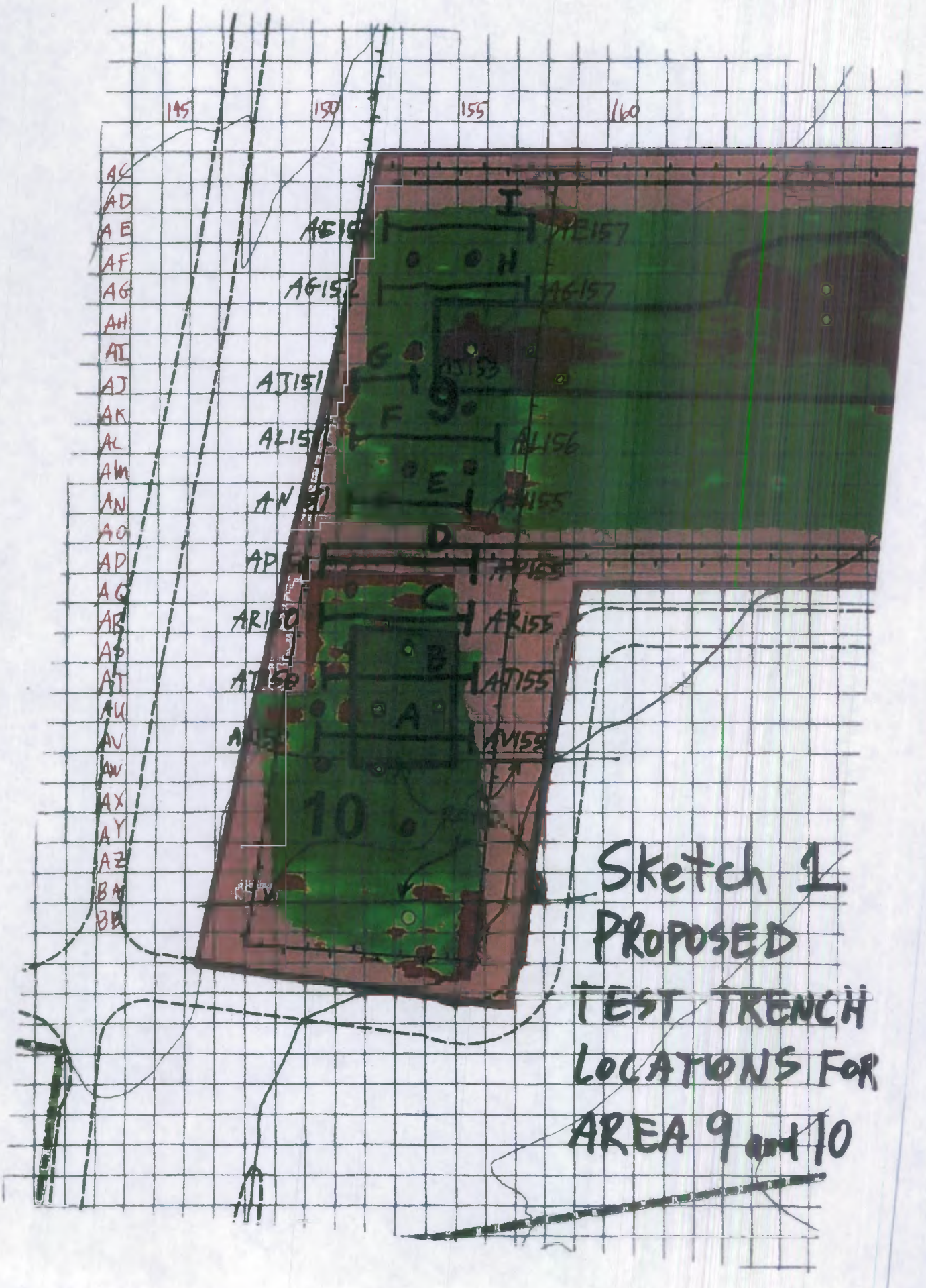
Tritium (liquid scintillation) (EPA 906.0)		X	X	
Gamma spectroscopy (EPA 901.1)		X	X	
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)		X	X	
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)		X	X	
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])		X	X	
Strontium-90 (EPA 905)		X	X	
Americium-241 (chem. separation/alpha spec.) (HASL-300)		X	X	
Perchlorate/Nitrate		X		
Waste Profile Form #	TBD	TBD	TBD	NA

Waste Characterization Strategy Form (continued)

Signatures	Date
ADEP Project Leader: Mitch Goldberg	2-18-10
Preparer: Jennifer Griffin	2/18/10
Waste Management Coordinator: Jeff Lee	2/18/10
ENV-RCRA Representative: Ann Sherrard	2/18/10
WES-Waste Acceptance Representative: Andy Elicio	02/18/10
Waste Certification Program Representative: Michelle Coriz	2/18/10
	Los Alamos National Laboratory **ENV-ERSS**



Sketch 1
PROPOSED
TEST TRENCH
LOCATONS FOR
AREA 9 and 10