108558

Waste Characterization Strategy Form

Project Title:	**MDA-B Site Preparation**
Solid Waste Management Unit or Area of Concern #:	**TA-21, Material Disposal Area B (MDA-B), Unit 21-015**
Activity Type:	**Asphalt Removal, Grading, Site Preparation, Installation of Piers and Electrical Infrastructure**
Project Manager/Waste Generator:	**Mitch Goldberg**
LANL Waste Management Coordinator:	**Jeff Lee**
Completed by:	**Jennifer Griffin**
Date:	**26 January 10**

Description of Activity: This Waste Characterization Strategy Form (WCSF) specifies how wastes generated by site preparation activities at MDA-B will be characterized and managed. The waste generating activities include:

- Removal and mulching of Trees and Tree Stumps for land application to the AOC as long term erosion control.
- Removal of chain link fence and poles, including fabric on fence.
- Removal of concrete foundations, manholes, and other misc structures.
- Removal of the asphalt cover from the long western leg and central portion of MDA-B (Areas 4 – 9, ~1500-ft long by 120-ft wide).
- Site grading to provide a level surface for the installation of enclosures over the MDA-B trenches/disposal cells.
- Drilling/excavation to install piers designed to provide anchor locations for the enclosures.
- Pouring/installation of concrete anchors.
- Drilling/excavation to install light poles and other electrical support.
- Installation of light poles and other electrical support equipment.

The site preparation activities at MDA-B are expected to generate the following waste streams:

- Debris Asphalt
- Soil/cobble/rock
- Trees/Tree Stumps
- Debris (i.e., chain link fence, poles, fabric, concrete, manholes, and other misc structures)
- Investigation Derived Waste (IDW)
- Decontamination Fluids
- New Mexico Special Waste (NMSW)

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

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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.

CHARACTERIZATION STRATEGY

This WCSF identifies the types of wastes expected. However, other types of waste may be an 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 investigation-derived wastes (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 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: Asphalt - This waste stream consists of asphalt mixed with small amounts of vegetation that has been removed from the surface of MDA-B. It is estimated that approximately 3,000 yd^3 of asphalt will be generated from this activity. The debris asphalt will contain less than 1% associated soil and vegetation.

Anticipated Regulatory Status: Low-Level Waste (LLW)

Characterization Approach: Thirty six chip seal (asphalt cover) pucks were collected from the top of the soil cores collected during the 2009 Direct Push Sampling effort. The pucks were crumbled and combined and three sets of full-suite samples were taken. The samples were analyzed for volatile organic compounds (VOCs); semi-volatile organic compounds (SVOCs); polychlorinated biphenyls (PCBs); radionuclides, total metals, and toxicity characteristic metals. The asphalt waste characterization will be based on these analytical results, which indicate that the waste stream is LLW.

Storage and Disposal Method: The asphalt will be removed from Areas 5 – 9 and stockpiled either within the AOC or at another location within TA-21, surrounded by a silt fence, and managed as LLW until it can be containerized and shipped to an authorized off-site LLW disposal facility. If the asphalt is removed from the AOC and stockpiled at another location within TA21, the stockpile must be located such that will not create a potential release site and/or contaminate a clean area. The soil must be stockpiled within a defined area surrounded by a continuous line barrier/berm to prevent the runoff of precipitation from the material and the co-mingling of radiological contamination with storm water or entry into a watercourse. The stockpile cannot be located in a watercourse, TSDF, or storm water drainage area.

Waste # 2: Soil/Cobble/Rock - This waste stream consists of soil and rock (e.g., cobbles, gravel) removed by site grading and excavation/drilling operations during the installation of piers, light poles, and other electrical infrastructure associated with the enclosures at MDA-B. This will occur within the PRS boundary. It is estimated that approximately 16,500 yd^3 of media will be generated from this activity and stockpiled pending analytical results for reuse at the site. Approximately 4,000 yd^3 of the stockpiled soil is expected to be containerized and disposed of as waste.

Anticipated Regulatory Status: Industrial, LLW, Reusable Material

Characterization Approach: Waste characterization will be based upon the analytical results obtained from direct sampling of stockpiled soil, soil mixed with cobble and/or containerized soil destined for disposal as waste. Soil and soil/cobble mix must be sampled a minimum of every 50 yd^3 to determine if it is NOT hazardous and meets residential screening levels prior to reuse as fill at the site.

The cobble will be segregated and samples will be collected from the soil mixed with the cobbles, which should also be representative of the cobbles. Because the cobbles cannot be sampled with an auger after it is piled, the interstitial soil must be incrementally sampled as the cobbles are excavated. If staining is observed on the cobbles, the cobbles will be sampled in accordance with SOP-5194, *Chip Sampling of Porous Surfaces.*

Samples of soils not associated with the cobble can be collected one of the following ways:

1. Sampled from each pile or container 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, and toxicity characteristic metals, if needed. Total petroleum hydrocarbons (TPH) will be analyzed if staining is observed. Other constituents

may be analyzed as necessary to meet the WAC of the disposal facility. Existing data from previous investigations may be used to supplement these analyses (e.g., to identify that perchlorates and nitrates are not present).

Storage and Disposal Method: Excess soil and rock will be stockpiled within the MDA-B PRS boundary and sampled as described above. Soil piles must be constructed so that the entire depth of the pile can be sampled using hand augers and so that the location of soil associated with individual samples can be identified and segregated, if needed. Soils that are determined to be non-hazardous (either through process knowledge or an approved "contained-in") and meet residential screening levels based on analytical results of representative samples may be reused as fill in the deeper portions of the excavation. The soil and rock that cannot be land applied will be containerized and transferred to a storage area appropriate for the type of waste (based on the analytical results) pending disposal at an authorized off-site facility.

Overburden containerized at the point of generation (due to stains or other indications of contamination) will be managed within the boundaries of the Area of Contamination in secure, designated non-hazardous accumulation areas appropriate to the type of waste (e.g., LLW). If this waste stream is characterized as hazardous or mixed low-level radioactive, it will be managed as such when it is removed from the Area of contamination boundaries and disposed of at an authorized off-site facility.

Waste #3: Trees/Tree Stumps - This waste stream is comprised of trees and tree stumps removed from inside MDA-B. The estimated volume of material is 10 yd^3.

Anticipated Regulatory Status: Reusable Material

Characterization Approach: The characterization of this waste stream will be based on AK (historical analytical data) from direct sampling of vegetation at the site. Based on these data, the vegetation has slightly elevated radioactivity but meets residential screening levels.

Storage and Disposal Method: The trees/tree stumps will be stockpiled and/or mulched and stockpiled until the mulch can be applied to the site as an erosion control measure.

Waste #4: Debris - This waste stream is comprised of chain link fence, poles, fabric, concrete, manholes, and other miscellaneous structures removed from MDA-B to prepare the site for grading and eventually for remediation activities. The estimated volume of material is 50 yd^3.

Anticipated Regulatory Status: Industrial, LLW

Characterization Approach: None of the debris will have come into contact with the trench contents. Therefore, based on process knowledge, it will not be hazardous waste but may have radioactive contamination from historical stack emissions. Therefore, all material will be sampled (e.g., swipes) to determine radioactivity levels. Porous materials, volume contaminated materials, and/or items for which representative samples cannot be collected (e.g., inside fence poles) will be characterized and managed as LLW.

Storage and Disposal Method: Debris will containerized at the point of generation after sampling. Wastes will either be stored as LLW (if samples identify radioactivity levels above background) or as industrial waste if there is no detectable radioactivity.

Waste #5: 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 5 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 Waste Streams #1 - 4, 6, and 8, based upon activity and associated material it came into contact with (e.g., Waste Stream #1 if generated during asphalt removal activities).

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 #6: 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, radionuclides, total metals, pesticides/herbicides, toxicity characteristic metals (if needed), 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 disposed of 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 #7: Concrete Wash Out - This waste stream is comprised of the concrete remaiing after evaporating the rinse water from concrete trucks/equipment that will be used to provide concrete for the pier and light pole installation. It is estimated that approximately 500 gallons of concrete rinse water will be generated from this activity, with considerably fewer solids generated for disposal after the water is evaporated..

Anticipated Regulatory Status: Industrial, Non-Hazardous

Characterization Approach: This waste stream waste will be characterized using AK based on the concrete mix and point of generation.

Storage and Disposal Method: The washout of concrete waste will be performed with potable water within a defined area surrounded by a Triangular Silt DikeTM, compacted earth berm, or other appropriate control that acts as a continuous line barrier to prevent, contact with contaminated soil, the runoff of washout material, and the co-mingling of unset concrete with storm water or entry into a watercourse. The washout area cannot be placed within the MDA-B area of contamination, in or on a PRS, watercourse, TSDF, or storm water drainage area. The hardened excess concrete following evaporation or infiltration of all liquid from the concrete waste confined within the defined area will be disposed of as municipal solid waste (MSW) at the County of Los Alamos Transfer Station or other authorized off-site facility.

> **NOTE:** Due to the presence of contaminated soil throughout TA21, the washout area must be lined and the liner disposed of as LLW (Waste Stream #4).

Waste #8: 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 one cubic yard of PCS will be generated.

Anticipated Regulatory Status: New Mexico Special Waste (NMSW), Industrial, Hazardous, LLW, MLLW. 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 #9: 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 cubic yard 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 2)

Waste Description	Waste # 1 Debris Asphalt	Waste #2 Soil	Waste #3 Trees/Tree Stumps	Waste #4 Debris	Waste #5 Contact IDW
Volume	3,000 CY	4,000 CY	10 CY	50 CY	5 CY
Packaging	Stockpile, Approved Container	Stockpile, Approved Container	NA	Approved Container	Approved container
Regulatory classification:					
Radioactive	X	X		X	X
Reusable material		X	X		
MSW					
Hazardous					
Mixed (hazardous and radioactive)					
Toxic Substances Control Act (TSCA)					
New Mexico Special Waste					X
Industrial		X		X	
Characterization Method					
Acceptable knowledge (AK): Existing Data/Documentation	X	X	X	X	X
AK: Site Characterization					
Direct Sampling of Containerized Waste		X		X	
Analytical Testing					
Volatile Organic Compounds (EPA 8260-B)		X			
Semivolatile Organic Compounds (EPA 8270-C)		X			
Organic Pesticides (EPA 8081-A)		X			
Organic Herbicides (EPA 8151-A)		X			
PCBs (EPA 8082)					
Total Metals (EPA 6010-B/7471-A)		X			
Total Cyanide (EPA 9012-A)					
High Explosives Constituents (EPA 8330/8321-A)					
Asbestos					
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)					
TPH-DRO (EPA 8015-M)					
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)		X			
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)		X			
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)		X			
Gross Alpha (alpha counting) (EPA 900)				X	
Gross Beta (beta counting) (EPA 900)				X	
Tritium (liquid scintillation) (EPA 906.0)		X		X	
Gamma spectroscopy (EPA 901.1)		X		X	
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)		X			
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)		X			
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])		X			
Strontium-90 (EPA 905)		X			
Americium-241 (chem. separation/alpha spec.) (HASL-300)		X			
Waste Profile Form #	TBD	TBD	TBD	TBD	TBD

CHARACTERIZATION TABLE (PAGE 2 OF 2)

Waste Description	Waste #6 Decontamination Fluid	Waste #7 Concrete Wash Out	Waste #8 (PCS)	Waste #9 MSW
Volume	55 gallons	500 gallons	1 CY	1 CY
Packaging	55-gallon Drums	Land Application, Approved Container	Approved Container	Approved Container
Regulatory classification:				
Radioactive	X		X	
MSW		X		X
Hazardous				
Mixed (hazardous and radioactive)				
Toxic Substances Control Act (TSCA)				
New Mexico Special Waste			X	
Industrial	X		X	
Characterization Method				
Acceptable knowledge (AK): Existing Data/Documentation		X	X	X
AK: Site Characterization				
Direct Sampling of Containerized Waste	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	
Total Metals (EPA 6010-B/7471-A)	X		X	
Total Cyanide (EPA 9012-A)				
High Explosives Constituents (EPA 8330/8321-A)				
Asbestos				
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)			X	
TPH-DRO (EPA 8015-M)			X	
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)				
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)	X			
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)	X			
Gross Alpha (alpha counting) (EPA 900)				
Gross Beta (beta counting) (EPA 900)				
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	
Waste Profile Form #	TBD	TBD	TBD	NA

Waste Characterization Strategy Form (continued)

Signatures	Date
ADEP Project Leader: Mitch Goldberg	2/1/10
Preparer: Jennifer Griffin	2/1/10
Waste Management Coordinator: Jeff Lee	2/1/10
ENV-RCRA Representative: Ann Sherrard	2/1/10
WES-Waste Acceptance Representative: Andy Elicio	2/2/10
Waste Certification Program Representative: Michelle Coriz	2/1/10

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