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Waste Characterization Strategy Form

Project Title	**Chromium Wells (R-42 and SCI-2/R-43) and corehole Installation**
Solid Waste Management Unit or Area of Concern #	**Mortandad Canyon (R-42) and Sandia Canyon (SCI-2/R-43)**
Activity Type	**Regional Groundwater Well Installation and Corehole Drilling**
Field Team Leader	**Mark Everett**
Field Waste Management Coordinator	**Victor Garde**
Completed by	**TerranearPMC**
Date	**May 2008**

Description of Activity: Well R-42 and corehole SCI-2/Well R-43 are being installed by the LANL Water Stewardship Program (LWSP) in Mortandad and Sandia Canyons, respectively (Figure 1). All work will be performed under the statement of work (SOW) and in accordance with the Compliance Order on Consent (2005) between the New Mexico Environment Department (NMED) and the United States Department of Energy (DOE)/LANL, and the Work Plan for Geochemical Characterization and Drilling for Fate and Transport of Contaminants Originating in Sandia Canyon (LA-UR-07-7579). These new wells are intended to further define the nature and extent of contamination and address key uncertainties in the conceptual model for contaminant fate and transport from Sandia Canyon and are being installed to address concerns expressed by the New Mexico Environment Department (NMED) in their October 17, 2007, letter "Notice of Disapproval, Fate and Transport Modeling Report for Chromium Contamination from Sandia Canyon" (NMED 2007, 097586).

Known groundwater contaminants within Mortandad Canyon, to the west of the proposed location of R-42, include Am-241; Cs-137; Pu-238; Pu-249, 240; Sr-90; H-3; U-235; U-238; nitrate; chloride; sulfate; and other inorganic solutes.

Sampling of both the intermediate and regional groundwater in Sandia Canyon has resulted in detects of trace intermittent organics, occasional perchlorate, HE, metals (iron, lead, manganese, nickel, and selenium); radionuclides above background levels including uranium-234/235/238, gross beta and tritium. Hexavalent chromium contamination is present in the upper part of the regional groundwater system at R-11 and R-28.

The waste-generating activities addressed in this Waste Characterization Strategy Form (WCSF) consist of the installation (i.e. drilling, collecting chip and core samples, development, groundwater sampling and aquifer testing) of the regional groundwater monitoring well R-42 located in Mortandad Canyon, and the continuous coring and possible well installation of either intermediate groundwater monitoring well (SCI-2) or regional groundwater monitoring well R-43 located in Sandia Canyon.

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The following waste streams are anticipated for both R-42 and SCI-2/R-43:

- Waste Stream #1-Contact IDW
- Waste Stream #2-Borehole Cuttings
- Waste Stream #3-Drilling Fluids
- Waste Stream #4-Development and Purge Water

- Waste Stream #5-Decontamination Fluids
- Waste Stream #6-Municipal Solid Waste (MSW)
- Waste Stream #7-New Mexico Special Waste (NMSW)
- Waste Stream #8-Drilled out Concrete Chips or Concrete Slurry

If analyses indicate the presence of listed constituents that are not identified from historical processes, a due diligence may be performed to support the position that the constituents are not from a known process, spill or disposal event and therefore the waste will not carry the waste code. If a listed constituent is identified and is from a known process but the levels are below screening levels and LDRs, a No-Longer-Contained-In request may be made to NMED in order to drop the listed code from the waste stream. A copy of either the ENV-RCRA approved due diligence or the NMED no-longer-contained-in approval must accompany all waste profiles prepared for the subject waste(s).

All wastes will be managed in accordance with EP-ERSS-SOP-5022, Characterization and Management of Environmental Restoration Project Waste, and every effort shall be made to recycle/reuse any appropriate waste stream. Returned samples and associated PPE may be included with a waste stream at the time of disposal if appropriate. An amendment to this strategy form shall be prepared and submitted for review and approval if any of the waste streams change in description or characterization approach. Also, unanticipated waste streams generated as a result of this activity shall be subject to inclusion in an amendment to this strategy upon discovery or generation of the waste. The generation of no path forward wastes must be approved by DOE prior to generation of the waste.

Relevant Site History and Description: The wells and corehole discussed here are located in Mortandad (R-42) and Sandia (SCI-2/R-43) Canyons. A review of solid waste management units (SWMUs) and areas of concern (AOCs) in Los Alamos, Sandia, and Mortandad Canyons was conducted to identify the potential source(s) of chromium in groundwater. Knowledge of previous operations at the Laboratory and groundwater flow paths supports a focus on these three watersheds as likely sources. The likely sources are related to usage of chromate-containing compounds as a corrosion inhibitor in cooling-tower systems that discharged to each of the three watersheds. Available information indicates that the usage of chromates for this purpose ceased in the early 1970s. Records also indicate that Sandia Canyon received the largest mass of chromium (LANL 2006, 91987, p.2).

Well R-42in Mortandad Canyon will be located downstream from active and inactive outfalls at TA-5, TA-35, TA-48, TA-50, TA-52, TA-55, and TA-60. The sources of groundwater contamination of most concern are the former wastewater treatment plant at TA-35 and the present day Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-50. Mortandad Canyon received effluent discharged from the Los Alamos National Laboratory's former wastewater treatment plant at TA-35 from 1951 to 1963 and from the radioactive liquid waste treatment facility at TA-50 from 1963 to present. Contaminants of potential concern associated with this operation include La-140, Ba-140, Sr-89, Sr-90, Y-90, Cs-137, Pu-238, Pu-239/240, caustic, acid, sodium carbonate, strontium nitrate, iron sulfate, and dielectric oil (LANL, 1997 056835). By the early 1960s, the wastewater treatment plant at TA-35 reached its capacity to handle the increasing volume of liquid radioactive wastes associated with expanding Laboratory operations. In 1963, TA-35 wastewater operations were transferred to a new RLWTF at TA-50. The RLWTF has discharged treated wastewater to Effluent Canyon (a tributary to Mortandad Canyon) since 1963. From 1963 through 1995, a total of 342 million gallons of treated wastewater were discharged (LANL 1997, 56835).

The types of SWMUs and AOCs that affect the Sandia Canyon watershed (SCI-2/R-43) vary from industrial outfalls to open-detonation firing sites. The potential sources of contamination in the upper portion of this watershed are attributed to TA-03 and former TA-20. The primary sources of contamination in the middle portion of the Sandia watershed are attributed to TAs-53, -60, -61, and -72, Los Alamos and Mortandad Canyons. The following contaminants have been detected in upper Sandia Canyon sediments: nitrate, perchlorate, chromium, copper, polychlorinated biphenyls (PCBs) and high explosives (HE). The following contaminants were detected in surface soils: tritium, nitrate, perchlorate, lead, and isotopes of uranium and plutonium. Molybebdenum concentrations were observed above background levels in groundwater screening sample collected from Wells R-35 and R-35b.

CHARACTERIZATION STRATEGY

Waste #1: Contact IDW - This waste stream is comprised of PPE and other solid waste generated during the course of investigation activities that comes into contact with contaminated media. This includes but is not limited too; plastic sheeting (e.g., tarps and liners), gloves, coveralls, booties, paper towels, plastic and glass sample bottles, disposable sampling supplies (filters, tubing, plastic bags), and equipment used for dry decontamination, such as wire brushes , paper towels, rags, etc.. It is estimated that approximately 10 cubic yards of contact IDW will be generated during this investigation.

Anticipated Regulatory Status: The possible classifications of this solid waste stream and the anticipated regulatory status include: non-hazardous, non-radioactive waste, low-level radioactive waste, hazardous waste, and mixed low-level waste (MLLW).

Characterization Approach: Contact IDW will be characterized using Acceptable Knowledge (AK) based on the characterization of Waste #(s) 2 and 3.

Storage and Disposal Method: Contact waste which has only come in contact with Waste Streams #2, #3 will be managed as non-hazardous/non-radioactive pending data review. The storage method for this waste stream will be 30 or 55-gallon drums. If AK from analytical results for waste streams #2 and #3 determine the environmental media to be acceptable for onsite reuse or NOI discharge, then this waste stream will be disposed as non-hazardous, non-radioactive solid waste. If any of the environmental media is determined to be low-level radioactive, hazardous, or mixed low-level waste, then the contact waste will be managed accordingly and disposed of at an authorized facility.

Contact Waste which has come in contact with Waste Stream # 5 (decontamination water) will be managed as Hazardous waste pending analysis. This waste will be stored in either a Satellite Accumulation Area (SAA) or a <90 Day Hazardous Waste Accumulation Area depending on waste volume. Once a waste determination has been made, the waste will be managed accordingly and disposed of at an authorized facility.

Waste # 2: Borehole Cuttings (IDW) - Soil and rock cuttings or core from boreholes. Cuttings and core may or may not contain residue of drilling additives (drilling foam) used to promote borehole integrity. It is estimated that approximately 180 cubic yards of borehole cuttings and/or core will be generated during this investigation.

Anticipated Regulatory Status: The possible classifications of this solid waste stream and the anticipated regulatory status include: non-hazardous, non-radioactive waste and meets criteria for land application, non-hazardous, non-radioactive waste, but does not meet criteria for land application, low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested), and mixed low-level waste (MLLW).

Characterization Approach: Waste characterization will be based upon the analytical results obtained from the direct sampling of containerized waste from the R-42 and SCI-2/R-43 pits and AK from MSDS's for any drilling additives. The specific procedures for characterization of the cuttings are provided in ENV-RCRA-SOP 011.0 Land Application of Drill Cuttings. Samples analyses are provided in the characterization table (Table 1) presented below.

Storage and Disposal Method: Borehole Cuttings (Waste Stream #2) and drilling fluids (Waste Stream #3) will initially be contained in a lined cutting pit staging area within the project controlled area pending review of analytical results to determine final waste characterization. Specifications for the cutting pits will be in accordance with the approved Storm-water Pollution Prevention Plan. Drill cuttings and drilling fluids will be segregated by borehole. IDW solids will be managed in accordance with ENV-RCRA-SOP011.0 and evaluated for compliance with the NMED-approved NOI Decision Tree, *Land Application of IDW Solids from Construction of Wells and Borehole* and the *Radiological Decision Tree* before any land application occurs. It is anticipated that these cuttings will be left in place in the drill pit or used as fill in site restoration or road maintenance. If the drilling cuttings and drilling fluids meet criteria for land application, the pit liner will be removed and managed as contact waste. If the cuttings do not meet the criteria for land application, they will be removed from the pit, containerized, and managed in an appropriate storage area and disposed of at an authorized facility based on the disposal facility's WAC (Table 2).

Waste # 3: Drilling Fluids – Potable water introduced into the borehole during drilling operations. The drilling fluids are not expected to be contaminated by chemicals other than those present in the drilling additives. It is estimated that a total of approximately 100,000 gallons of drilling fluids (potable water from a municipal water well) will be used during this investigation.

Anticipated Regulatory Status: The possible classifications of this solid waste stream and the anticipated regulatory status include: non-hazardous, non-radioactive water that is suitable for land application, non-hazardous, non-radioactive water that is not suitable for land application, low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested), and mixed low-level waste (MLLW).

Characterization Approach: All drilling fluids from the R-42 and SCI-2/R-43 wells will be managed in accordance with ENV-RCRA-SOP010.0 Land Application of Groundwater and evaluated for compliance with NMED-approved NOI Decision Tree before any discharge occurs. Data from direct waste sampling will be evaluated in accordance with the NOI Decision Tree; radionuclide data will be reviewed and compared to groundwater background levels (LANL 2005, 90580) to complete a radioactive waste determination. Groundwater produced during well drilling will be containerized on-site in a lined pit. Samples will be collected from each pit in order to accurately characterize the water quality to determine compliance with the NOI Decision Tree. A list of samples analyses for this waste stream is provided in the characterization table (Table 1) presented below.

Storage and Disposal Method: Borehole Cuttings (Waste Stream #2) and drilling fluids (Waste Stream #3) will initially be contained in lined cutting pits staging areas within each project controlled area pending review of analytical results to determine final waste characterization. This waste will remain in the lined pits until the disposal path or land application determination of drilling fluids is achieved in accordance with ENV-RCRA-SOP-010.0 Land Application of Groundwater and the NOI Decision Tree. If drilling fluids fail to meet Decision Point 6 and cannot be land applied, they will be managed in an appropriate storage area, containerized, and disposed of at an authorized on-site or off-site facility, based on the drilling fluids meeting the facility's WAC (Table 2).

Waste #4 – Development and Purge Water (IDW) - This waste stream consists of groundwater generated during development of the well and prior to any sampling. The anticipated

volume of development purge water that will be generated will be between 20,000 and 30,000 gallons for each well for a total of 40,000 to 60,000 gallons.

***Anticipated Regulatory Status*:** The possible classifications of this waste stream and the anticipated regulatory status include: non-hazardous, non-radioactive water that is suitable for land application, non-hazardous, non-radioactive waste that is not suitable for land application, low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested), and mixed low-level waste (MLLW).

Characterization Approach: Waste characterization will be based upon the analytical results obtained from the direct sampling of containerized waste or project water samples and information from MSDS's for any drilling additives and will be evaluated for compliance with the approved NOI criteria following ENV-RCRA-SOP-010.0 Land Application of Groundwater. To collect a representative waste sample either a composite sample will be collected after well development or sample aliquots will be collected periodically during development and stored in a clean 55-gallon drum. A list of samples analyses for this waste stream is provided in the characterization table (Table 1) presented below.

Storage and Disposal Method: The anticipated staging of the groundwater is in 21,000-gallon frac tanks or poly tanks and metal drums as needed. The disposal path or land application determination of development water will be based on the NOI Decision Tree. If drilling fluids fail to meet Decision Point 6 and cannot be land applied, they will be managed in an appropriate storage area and disposed of at an authorized on-site or off-site facility, based on the drilling fluids meeting the facility's WAC (Table 2).

Waste #5: 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 a total of approximately 500 gallons of decontamination fluids will be generated from this activity.

Anticipated Regulatory Status: The possible classifications of this liquid waste stream and the anticipated regulatory status include: non-hazardous, non-radioactive waste, low-level radioactive waste, hazardous waste, mixed low-level waste (MLLW).

Characterization Approach: All water that is used during decontamination of drilling equipment and materials used down hole will be containerized, sampled, and evaluated for compliance with the appropriate standards. The decontamination water will be characterized by direct sampling of the containerized fluids. Representative waste characterization samples will be collected with as short of a turn-around time as is possible to minimize storage time.

Storage and Disposal Method: Decontamination fluids will be managed as hazardous waste and stored in an authorized accumulation area until a hazardous waste determination can be made. If this waste is characterized other than hazardous, it will be relabeled, managed in an appropriate storage area and disposed of at an authorized on-site or off-site facility, based on the drilling fluids meeting the facility's WAC (Table 2). If this waste stream is characterized as hazardous or mixed low-level radioactive, it will be managed as such and disposed of at an authorized off site facility.

Waste #6: 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, but may also include commercial solid waste, and industrial solid waste or petroleum contaminated soils that are not a special waste, which are derived from project activities . It is estimated that a total of approximately 2 cubic yards of MSW will be generated from this activity.

***Anticipated Regulatory Status*:** Non-hazardous, non-radioactive, municipal solid waste

Characterization Approach: MSW will be characterized based on acceptable knowledge or if necessary direct sampling of containerized waste.

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 Landfill or other authorized facility.

Waste #7: New Mexico Special Waste (NMSW): Petroleum Contaminated Soils (PCS), Spilled Chemical Substance or Commercial Product, or Regulated Asbestos Waste (potential) - NMSW may be generated from the accidental release of commercial 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 etc.), spills of chemicals or products used during project operations (e.g. drilling fluid additives), onto the ground, or regulated asbestos wastes generated during project activities. This may also include absorbent padding, paper towels, spill pillows or other absorbent material used to contain the released material. If produced, it is estimated that >1 cubic yard of this waste stream will be produced.

Anticipated Regulatory Status: New Mexico Special Waste

Characterization Approach: NMSW will be characterized based on acceptable knowledge using the MSDS and/or direct sampling. PCS will be sampled and analyzed for TPH (DRO/GRO), and total lead.

Management and Disposal Method: NMSW will be managed in approved containers, staged in a designated NMSW storage area, and disposed of at an authorized NMSW facility.

Waste #8: Drilled out Concrete Chips or Concrete Slurry-This waste stream may consist of concrete chips from drilling out plug used to seal off perched groundwater or stabilize the borehole to facilitate drilling. Approximately 60 cubic yards of drilled out concrete ships or concrete slurry may be generated from this activity.

Anticipated Regulatory Status: The possible classifications of this waste stream and the anticipated regulatory status include: non-hazardous, non-radioactive waste, non-hazardous, low-level radioactive waste, low-level radioactive waste, hazardous waste (for which a "contained in" determination from NMED may be requested), mixed low-level waste (MLLW).

Characterization Approach: This waste stream will be characterized based on AK from the direct waste sampling of waste #2 (IDW solids) and generic MSDS for Portland type 1 and 2 cement.

Storage and Disposal Method: Concrete waste will be stored separately from IDW solids in 55-gallon steel drums. The waste will be managed as non-hazardous waste pending analytical review. Disposal of the concrete will take place at a LANL approved disposal facility.

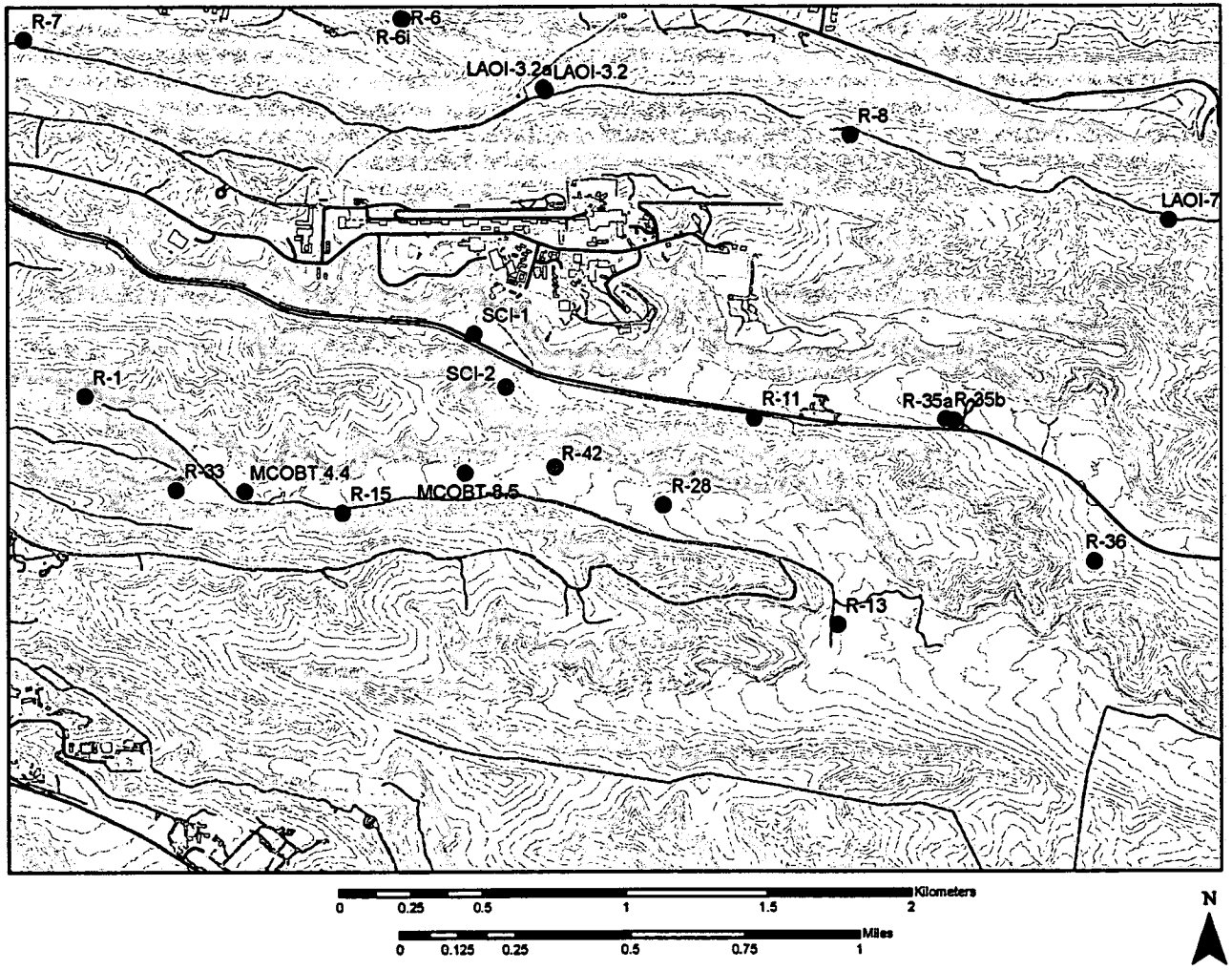

Figure 1 Proposed location of SCI-2 and R-42 located in Sandia and Mortandad Canyons, respectively.

TABLE 1- CHARACTERIZATION TABLE

Waste Description	Waste # 1 Contact IDW	Waste #2 Borehole cuttings	Waste #3 Drilling Fluids	Waste #4 Development and Purge water
Volume	10 cy	180 cy	100,000 gal	60,000 gal
Packaging	Drums or Roll-off bins	Lined pit, Roll-off bins, or Drums	Lined pit, Poly Tanks, or drums	Frac and/or Poly Tanks
Regulatory classification:				
Radioactive	X	X	X	X
Solid	X	X	X	X
Hazardous	X	X	X	X
Mixed (hazardous and radioactive)	X	X	X	X
Toxic Substances Control Act (TSCA)	—	—	—	—
New Mexico Special Waste	—	—	—	—
Industrial	—	X	X	X
Characterization Method				
Acceptable knowledge (AK): Existing Data/Documentation	X	X	—	—
AK: Site Characterization	—	—	—	—
Direct Sampling of Containerized Waste	—	X	X	X
Analytical Testing				
Volatile Organic Compounds (EPA 8260-B)	—	X	X	X
Semivolatile Organic Compounds (EPA 8270-C)	—	X	X	X
Organic Pesticides (EPA 8081-A)	—	X	X	X
Organic Herbicides (EPA 8151-A)	—	X	X	X
PCBs (EPA 8082)	—	X	X	X
Total Metals (EPA 6010-B/7471-A)	—	X	X[1]	X[1]
Total Cyanide (EPA 9012-A)	—	X	X	X
High Explosives Constituents (EPA 8330/8321-A)	—	X	X	X
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)	—	—	—	—
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)	—	—	—	—
Gross Alpha (alpha counting) (EPA 900)	—	X	X	X
Gross Beta (beta counting) (EPA 900)	—	X	X	X
Tritium (liquid scintillation) (EPA 906.0)	—	X	X	X
Gamma spectroscopy (EPA 901.1)	—	X	X	X
Isotopic plutonium (chem. separation/alpha spec.) (HASL-300)	—	X	X	X
Isotopic uranium (chem. separation/alpha spec.) (HASL-300)	—	X	X	X
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])	—	—	—	—
Strontium-90 (EPA 905)	—	X	X	X
Americium-241 (chem. separation/alpha spec.) (HASL-300)	—	X	X	X
Waste Profile Form #	—	TBD	TBD	TBD

TABLE 1-CHARACTERIZATION TABLE CONT.

Waste Description	Waste #5 Decon-Fluids	Waste #6 Municipal Solid Waste	Waste #7 NMSW/PCS	Waste #8 Drilled out concrete chips or concrete slurry
Volume	500 gal	2 cy	<1 cy	60 gallons
Packaging	Drums or Tanks	Plastic-Lined Can	Drums	Drums
Regulatory classification:				
Radioactive	X	—	—	X
Solid	X	X	X	X
Hazardous	X	—	—	X
Mixed (hazardous and radioactive)	X	—	—	X
Toxic Substances Control Act (TSCA)	—	—	—	—
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	—	—	—
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	—	X	—
Total Cyanide (EPA 9012-A)	X	—	—	—
High Explosives Constituents (EPA 8330/8321-A)	X	—	—	—
Asbestos	—	—	—	—
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)	X	—	X	—
TPH-DRO (EPA 8015-M)	X	—	X	—
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)	—	—	—	—
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)	—	—	—	—
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)	—	—	—	—
Gross Alpha (alpha counting) (EPA 900)	X	—	—	—
Gross Beta (beta counting) (EPA 900)	X	—	—	—
Tritium (liquid scintillation) (EPA 906.0)	X	—	—	—
Gamma spectroscopy (EPA 901.1)	X	—	—	—
Isotopic plutonium (ilhem.. Separation/alpha spec.) (HASL-300)	X	—	—	—
Isotopic uranium (ilhem.. Separation/alpha spec.) (HASL-300)	X	—	—	—
Total uranium (6020 inductively coupled plasma mass spectroscopy [ICPMS])	—	—	—	—
Strontium-90 (EPA 905)	X	—	—	—
Americium-241 (ilhem.. Separation/alpha spec.) (HASL-300)	X	—	—	—
Waste Profile Form #	TBD	TBD	TBD	TBD

Footnotes:
X[1] Filtered metals will also be run for land application determination

Note: Section 1.2 of the TCLP method 1311 states "If a total analysis of the waste demonstrates that individual analytes are not present in the waste, or that they are present but at such low concentrations that the appropriate regulatory levels could not possibly be exceeded, the TCLP need not be run." The methodology for using total waste analyses determination for the 40 TC constituents is as follows;

Liquids – Wastes containing less than 0.5% filterable solids do not require extraction and therefore by filtering the waste and measuring the total constituent levels of the filtrate and comparing those levels to regulatory levels is appropriate.

Solids – Constituent concentrations from the extraction fluid of wastes that are 100% physical solids are divided by 20 (reflecting the 20 to 1 ratio of TCLP extraction) and then compared to the regulatory levels. If the theoretical levels do not equal or exceed the regulatory levels, the TCLP need not be run. If the levels do equal or exceed the regulatory levels, the generator may either declare the waste hazardous or run TCLP analyses.

References

ER-ERSS-SOP-5022, *Management of Environmental Restoration Project Waste.*

TABLE 2-LIQUED WASTE WAC TESTS

Analytical Tests	TA-16 HEWTF	TA-46 SWWS	TA-50 RLWTF	TA-53 RLWTF	TA-54 SERF	DSSI MLLW
Total Metals	X	X	X	X		X
Boron	X	X	X			
Chloride	X					X
Cyanide		X	X			
Fluoride		X	X			X
Molybdenum		X				
Perchlorate	X		X			
Phosphorus		X				
PCB		X	X	X		X
Ammonia-Nitrogen		X	X			
Nitrate-Nitrogen		X	X			
VOCs	X[1]	X	X	X		X
Semi-VOCs	X	X	X	X		X
Total Toxic Organics (TTO)		X	X			
pH	X	X	X			X
COD	X	X	X			
TDS		X	X	X		
TSS		X	X	X		X
Microtox (KSL must		X				
HE	X					
Radioassay						
Gross Alpha	X	X	X	X		X[2]
Gross Beta	X	X	X	X		X[2]
Gamma Spec	X	X	X	X		X[2]
Isotopic as determined by			X	X		X[2]
Isotopic Pu (α spec)						X[2]
Isotopic U (α spec)						X[2]
American-241 (α spec)						X[2]
H-3 (liquid scintillation)				X		X[2]
Strontium -90						X[2]
Total Sulfur						
Ignitability						X
BTU value						X
Water content						X
Ash content						X

[1] Must ask for n-butanol and diethyl ether.

[2] Radionuclides are to be identified and quantified.

The following is a brief summary of waste acceptance criteria. Refer to the appropriate LANL WAC No: P903-1 for complete disclosure of WAC limitations (with the exception of HEWTF).

HEWTF – TA-16 High Explosives Wastewater Treatment Facility. Only naturally occurring radionuclides are acceptable – No added radioactivity. No hazardous waste.

SWWS – TA-46 Sanitary Waste Water System. Radionuclides must not exceed drinking water limits or background concentrations. No PCBs, DDT, dioxins, pesticides, radioactive or hazardous waste.

RLWTF – TA-50 Radioactive Liquid Waste Treatment Facility. No PCBs, DDT, dioxins, or pesticides. Need WAC Exception Form (WEF) for non-radioactive waste. Must identify and quantify three most predominant alpha, beta, & gamma emitting radionuclides. All radionuclides known must be listed on WPF.

SERF – TA-3 Sanitary Effluent Reclamation Facility WAC is pending. In the interim the SWWS WAC applies.

MLLW - Utah-certified analytical laboratory data is recommended for non-radioactive analyses to meet the MLLW WAC for Permafix (DSSI). No explosives, oxidizers, flammable liquids or TSCA waste. Radionuclides must be identified and quantified. Consult LANL WAC the MLLW Chapter and contact Environmental Programs Waste Services (ENV-WS) to ensure waste meets requirements of the off-site facility.

Waste Characterization Strategy Form (continued)

Signatures	Date
WES-RS Project Leader (Print name and then sign below.) Mark Everett; ~~Larry Maassen~~ Mark Everett	6-18-08
ERSS Waste Management Coordinator (Print name and then sign below.) Michael Le Scouarnec Mall Le Scouarnec	6.18.08
ENV-RCRA Representative (Print name and then sign below.) John Tymkowych John M. Tymkowych	6/18/08
WES-WA Representative (Print name and then sign below.) Andy U. Elicio	06/17/08

	Los Alamos National Laboratory **ENV-ERSS**

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