

WASTE CHARACTERIZATION STRATEGY FORM

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HSWA LANL 4/10/99 Mortandad C-00-008

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
All Waste Types or Wastestreams: Drill cuttings, excavated soil/sediment, monitoring well waters and decontamination liquids, and PPE and sampling equipment		

Completed By: J. W. Heyser	Date: May 15, 2001
FPL: Allyn Pratt	WMC: Roy Bohn
Type of Activity (site investigation, EC, etc.): Technology Demonstration	

Description of the Activity (e.g., drilling, surface sampling, excavation and recontouring, soil washing, etc.)
 A subsurface Permeable Reactive Barrier (PRB) will be designed and installed in Mortandad Canyon to treat strontium, plutonium, americium, nitrate, and perchlorate compounds, which are migrating down gradient through the canyon. This PRB will consist of four sequential cells of materials contained within a reactive gate bounded by slurry walls and together they will span the canyon to remove contaminants listed above. The four layers of the PRB will consist of porous gravel, Apatite, pecan shells, and limestone gravel. The slurry walls will act as a funnel to ensure that potentially contaminated ground water will be diverted through the multibarrier reactive gate located in the center of the canyon floor. The depth of the PRB will be based upon how deep the alluvium is; this is estimated to be approximately 30 feet. Prior to the design and installation of the PRB, an investigation of an area in Mortandad Canyon will be performed to determine waste characterization criteria and hydrogeological parameters. The investigation will be carried out by drilling and installing a number of monitoring wells. The soil and groundwater will be sampled during installation of the wells and upon completion of the wells. Two separate mobilization events will occur: the first event is the initial site investigation and the second one is PRB construction and installation (SSHASP No: 01-005, PRB Investigation and Installation in Mortandad Canyon, p. 1).

Soil samples taken during the first phase include a total of 6 waste characterization samples collected from the boreholes installed during the geotechnical investigation. These soil samples will be analyzed in an offsite laboratory for Americium-241, isotopic Plutonium, Cesium-137, Strontium-90, TCLP metals, VOCs, SVOCs and tritium. The final waste characterization will occur after the PRB is constructed, when a composite sample will be taken from each of the roll-offs filled with soil/sediment during construction. These samples will be analyzed for only the constituents detected in the borehole samples and used to verify the preliminary waste characterization data. The results of these samples will ensure that the wastes meet the Waste Acceptance Criteria (WAC) for the intended TSD facility used for disposal (Mortandad Canyon Workplan for PRB, May 2001). Monitoring well waters disposed as wastewater will be characterized as follows. A total of 2 groundwater samples will be collected and analyzed for nitrate-nitrogen, perchlorates Americium -241, isotopic Plutonium, Cesium-137, Strontium-90, TCLP metals, VOCs, SVOCs, and tritium (Mortandad Canyon Workplan for PRB, May 2001).

Acceptable Knowledge Site Description, Site History, and Historical Waste Generating Processes or Activities: (Include dates for site history): The primary Laboratory use of Mortandad Canyon has been for liquid waste disposal. Mortandad Canyon and its tributaries have received liquid waste from various Laboratory operations possibly since the Laboratory began operation in 1943. These early discharges were probably limited to outfalls from the buildings associated with firing sites at TA-4 and TA-5. However, the first recorded discharges into Mortandad Canyon and its tributaries occurred coincident with the construction of Ten Site, which is now TA-35 and Ten Site Mesa. Sanitary septic systems and the TA-35 wastewater treatment plant began discharging circa 1951. With the continued expansion of Laboratory operations to new sites in the 1950s and 1960s, specifically at TA-48, -50, and -60, additional discharges began (Mortandad Canyon Work Plan, August 1999, p. 2-1). Starting in 1963, radioactive liquid wastes from Laboratory operations were collected and treated at the Radioactive Liquid Waste Treatment Facility (RLWTF) at TA-



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50. This facility has operated continually with periodic upgrades being made to the treatment process. Major upgrades to meet new NPDES requirements and DOE derived concentration guides for radionuclides in water were implemented in 1997 and 1998. The discharge has been regulated as NPDES outfall 051 since 1990 and contains typically low levels of radionuclides and other chemical constituents (See below). The discharge flows a short distance downstream in Mortandad Canyon and infiltrates into the alluvium and then into a shallow body of perched groundwater in middle Mortandad Canyon (Mortandad Canyon Work Plan, p. 2-2). The Laboratory has installed numerous wells in the canyon alluvium and underlying hydrogeological unit and routinely monitors the ground water and sediment in the canyon. Monitoring data are reported annually in environmental surveillance reports (for example, Environmental Protection Group 1996). Evaluation of the monitoring data has shown that most of the radionuclides (fission products and actinides) discharged are adsorbed to the sediments largely contained within the Laboratory boundaries (Mortandad Canyon Work Plan, p. 2-2). Because most of the radionuclides are associated with the sediments, three sediment traps were constructed about 2 mi. (3.2 km) downstream in middle Mortandad Canyon from the TA-50 RLWTF outfall. The sediment traps dissipate the energy of major runoff events and capture transported sediments, thus eliminating or reducing radionuclide transport downstream. Two sediment traps were constructed in 1976, and a third was constructed in 1980. The sediment traps are monitored in accordance with the requirements of the HSWA Module VIII (EPA 1990, 1585) of the Laboratory's Hazardous Waste Facility Permit (Mortandad Canyon Work Plan, p. 2-2).

Based on a review of hydrogeologic information, the PRB will most likely be located between existing monitoring wells MCO-4 and MCO-5 (upgradient from the sediment traps), 8 wells will be installed along the potential PRB alignment. These wells will all be temporary installations used to conduct slug testing. Permanent monitoring wells will be installed following PRB construction.

Previous Investigation Analytical Results: (Report the analytical methods and results above background levels) The data from routine monitoring and special studies conducted over three decades in Mortandad Canyon system are voluminous (Mortandad Canyon Work Plan, p. 2-2). Relevant data gathered from the upgradient discharges at the TA-50 RLWTF and the downgradient samples are summarized. At the RLWTF; bicarbonate, chloride, magnesium, nitrate and sodium are the major inorganic chemicals discharged. Total uranium measured at Gauging Station GS-1 (upgradient of PRB) ranged from 1 to 4 µg/l. The maximum concentration of total uranium was 33 µg/l at monitoring well MCO-6 in 1978. Since 1987, total uranium has usually been less than 5 µg/l in alluvial groundwater. Americium-241 concentrations in the RLWTF discharge ranged from less than 20 pCi/L to approximately 1,000 pCi/L. Cesium-137 discharges ranged from 20 pCi/L to approximately 8,000 pCi/L. In the alluvial groundwater, typical activities of Am-241 and Cs-137 were 0.05 to 5 pCi/L and 0.01 to 100 pCi/L, respectively. Plutonium-238 discharges from the RLWTF ranged from 10 pCi/L to approximately 500 pCi/L. Contaminants in the groundwaters from monitoring wells MCO-4B and MCO-5 collected from 1996 through 1999 included the following. Maximum radionuclides were americium-241 (1.03 pCi/L), cesium-137 (7.65 pCi/L), plutonium-238 (0.16 pCi/L), plutonium-239/240 (0.65 pCi/L), strontium-90 (140 pCi/L), tritium (29,300 pCi/L), uranium-234 (0.32 pCi/L), and uranium-238 (0.1 pCi/L). Maximum inorganics included barium (160 µg/L), cadmium (7.0 µg/L), chromium (10.0 µg/L), lead (3.0 µg/L), mercury (0.2 µg/L), NO₃-N (36.6 µg/L) and silver (14.0 µg/L). Maximum acetone was 86.0 µg/L, while other organics were less than 5.0 µg/L. The sediment and soil samples contained the following contaminants. Maximum radionuclides included cesium-137 (21.9 pCi/g), plutonium-238 (31.3 pCi/g), plutonium-239/240 (78.3 pCi/g), tritium (3,500 pCi/g), and total uranium (4.4 µg/g). Maximum inorganics were barium (15.6 mg/kg), chromium (3.7 pCi/g), lead (7.2 mg/kg) and mercury (0.009 mg/kg). Maximum organics included toluene (0.027 mg/kg), acetone (0.038 mg/kg), and methyl ethyl ketone (0.014 mg/kg). Other organics were less than 0.008 mg/kg (SSHASP No. 01-005).

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OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Drill cuttings		

Waste Description

Description of Waste Type, Potential Contaminants, Volume Estimate, and Waste Packaging:

Waste Type Description: Drill cuttings from boreholes generated during initial site investigation

Potential Regulatory Status: Low-level radioactive or mixed waste

Volume Estimate: 4 cubic yards

Waste Packaging: Drill cuttings will be stored onsite in closed 55-gallon drums or in single waste container such as a B-25 box or a lined roll-off pending final waste characterization.

Characterization Strategy

Description of Strategy: Drill cuttings will be characterized based on the results of *in situ* samples collected from the boreholes during the initial investigation and will be analyzed at an offsite laboratory for gamma spectroscopy, Americium-241, isotopic Plutonium, Cesium-137, Strontium-90, TCLP metals, VOCs, SVOCs, and tritium. The results from years of sampling the effluents of the TA-50 RLWTF, the alluvial soils and the monitoring well waters in Mortandad Canyon have identified the potential major contaminates as low-levels of radionuclides. The analyses for TCLP metals, VOCs SVOCs, and tritium are being performed to ensure that the drill cuttings are in fact non-hazardous and have a low tritium level.

Waste Sampling*: (If sampling will be used, indicate how many grab or composite samples will be collected per container or volume of waste and whether the waste is considered homogeneous or heterogeneous.)

In situ soil samples taken from the boreholes (6 total) will be analyzed for Americium-241, isotopic Plutonium, Cesium-137, Strontium-90, TCLP metals, VOCs, SVOCs and tritium. The disposal facility accepting these wastes may require the performance of other analysis as part of their waste acceptance criteria.

* Grab sampling is appropriate for wastes that are fairly homogeneous, such as liquid wastes.

* Composite sampling is appropriate for wastes that are heterogeneous, such as soil, sediment, and debris.

Analytical Strategy

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Volatile Organics Constituents	SW 846 8260	Unknown			X
Semivolatile Constituents	SW 846 8270	Unknown			X
Organic Pesticides		No		X	
Organic Herbicides		No		X	

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OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Drill cuttings		

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Pesticides and PCBs		No		X	
PCBs		No		X	
Total Metals		Yes		X	
Total Cyanide		No		X	
Other Inorganic Constit. (specify)		No		X	
High Explosive Constituents		No		X	
Asbestos		No		X	
TPH		No		X	
TCLP Metals	SW 846 6010, 1311	Yes			X
TCLP Organics		No		X	
TCLP Pesticides and Herbicides		No		X	
Gross Alpha		Yes		X	
Gross Beta		Yes		X	
Gross Gamma		Yes		X	
Tritium ¹	HASL 300	Yes			X
Gamma Spectro.		Yes		X	
Isotopic Plutonium	HASL 300	Yes			X
Total Plutonium		Yes		X	
Isotopic Uranium		Yes		X	
Total Uranium		Yes		X	
Strontium-90	HASL 300	Yes			X
Americium-241	HASL 300	Yes			X
Cesium-137	HASL 300	Yes			X

¹ If tritium is not expected, attach a statement signed by the FPL stating that, based on a review of the available information and professional judgment, it is not necessary to sample for tritium at this site.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Drill cuttings		

Preliminary RCRA Determination

Based on available information, indicate the waste and whether it could potentially be any of the wastes as defined in 40 CFR 261. List the F-, D-, K-, P-, or U- category and number.

Based on the extensive sampling of TA-50 RLWTF effluents, monitoring well waters and alluvium soils over the years, these wastes are expected to be non-hazardous. The direct sampling of containerized wastes for TCLP metals, VOCs, and SVOCs is expected to confirm the non-hazardous classification of this waste stream. However, wastes will be managed as RCRA waste within a less-than-90-day storage area pending analysis.

Preliminary RCRA Status

Non-RCRA: (No 90-Day Storage Requirement)
Describe how waste will be stored/handled:

RCRA: (90-Day Storage Requirement)
Waste will be stored/handled in accordance with 20 NMAC Generator Requirements. Wastes will be stored in a less-than-90-day storage area onsite in sealed 55-gallon drums or in a single closed container such as a B-25 box or a lined roll-off until the results for all analytical samples have been evaluated and a final waste classification is made.

Preliminary Determination for Radioactivity

Based on available information, indicate the amount and type of radiation contamination expected in the waste.

Based on the low levels of radionuclides found in the effluents released from the TA-50 RLWTF, the drill cutting are expected to have low-levels of Americium-241, Plutonium, Strontium-90, Cesium-137 and possibly tritium.

Preliminary Radioactivity Status

Material is not radioactive
Describe how waste will be stored/handled

Material is radioactive
Describe the controlled area, labeling, and protection against inadvertent contamination.

The drill cuttings will be stored onsite in a container or containers labeled as low-level radioactive waste until all analytical results are evaluated and a final determination is made on their radioactive classification.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Excavated soil/sediment		

Waste Description

Description of Waste Type, Potential Contaminants, Volume Estimate, and Waste Packaging:

Waste Type Description: Excavated soil/sediment during the PRB installation.
 Potential Regulatory Status: Low-level radioactive or mixed waste.
 Volume Estimate: 500 cubic yards.
 Waste Packaging: The soil/sediment will be stored onsite in closed rolls until a final waste determination is made.

Characterization Strategy

Description of Strategy:

Each roll off will be sampled for Americium-241, isotopic Plutonium, Cesium-137, and Strontium-90. The tritium results obtained from the drill cuttings will be used to determine the tritium status of this waste stream. The results from years of sampling the effluents of the TA-50 RLWTF, the alluvial soils and the monitoring well waters in Mortandad Canyon have identified the potential major contaminates as low-levels of radionuclides. The analyses (TCLP metals, VOCs, and SVOCs) from the monitoring well drill cuttings will be used to characterize the excavated soil and sediments.

Waste Sampling*: (If sampling will be used, indicate how many grab or composite samples will be collected per container or volume of waste and whether the waste is considered homogeneous or heterogeneous.)

One composite sample from each roll-off will be sampled for Americium-241, isotopic Plutonium, Cesium-137, and Strontium-90. The disposal facility accepting these wastes may require other analyses as part of their waste acceptance criteria.

* Grab sampling is appropriate for wastes that are fairly homogeneous, such as liquid wastes.
 * Composite sampling is appropriate for wastes that are heterogeneous, such as soil, sediment, and debris.

Analytical Strategy

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Volatile Organic Constituents	SW 846 8260	Unknown		X	X
Semivolatile Constituents	SW 846 8270	Unknown		X	X
Organic Pesticides		No		X	
Organic Herbicides		No		X	

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Excavated soil/sediment		

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Pesticides and PCBs		No		X	
PCBs		No		X	
Total Metals		Yes		X	
Total Cyanide		No		X	
Other Inorganic Constit. (specify)		No		X	
High Explosive Constituents		No		X	
Asbestos		No		X	
TPH		No		X	
TCLP Metals	SW 846 6010, 1311	Yes			X
TCLP Organics		No		X	
TCLP Pesticides and Herbicides		No		X	
Gross Alpha		Yes		X	
Gross Beta		Yes		X	
Gross Gamma		Yes		X	
Tritium ²		Yes		X	
Gamma Spectro.		Yes		X	
Isotopic Plutonium	HASL 300	Yes	X		
Total Plutonium		Yes		X	
Isotopic Uranium		Yes		X	
Total Uranium		Yes		X	
Strontium-90	HASL 300	Yes	X		
Americium-241	HASL 300	Yes	X		
Cesium-137	HASL 300	Yes	X		

² If tritium is not expected, attach a statement signed by the FPL stating that, based on a review of the available information and professional judgment, it is not necessary to sample for tritium at this site.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Excavated soil/sediment		

Preliminary RCRA Determination

Based on available information, indicate the waste and whether it could potentially be any of the wastes as defined in 40 CFR 261. List the F-, D-, K-, P-, or U- category and number.

Based on the extensive sampling of TA-50 RLWTF effluents, monitoring well waters and alluvium soils over the years, these wastes are expected to be non-hazardous. The direct sampling of containerized wastes for TCLP metals, VOCs, and SVOCs is expected to confirm the non-hazardous classification of this waste stream. Waste will be managed as RCRA within a less-than-90-day storage area pending analysis.

Preliminary RCRA Status

Non-RCRA: (No 90-Day Storage Requirement)
Describe how waste will be stored/handled:

RCRA: (90-Day Storage Requirement)
Waste will be stored/handled in accordance with 20 NMAC Generator Requirements. The wastes will be stored onsite in lined and closed roll-offs until a final waste classification is made after all the analytical results are evaluated.

Preliminary Determination for Radioactivity

Based on available information, indicate the amount and type of radiation contamination expected in the waste.

Based on the low levels of radionuclides found in the effluents released from the TA-50 RLWTF, the soils/sediments are expected to have low-levels of Americium-241, Plutonium, Strontium-90, Cesium-137 and possibly tritium. See the monitoring results on page 2 for a range of the expected levels of radionuclides.

Preliminary Radioactivity Status

Material is not radioactive
Describe how waste will be stored/handled

Material is radioactive
Describe the controlled area, labeling, and protection against inadvertent contamination
The soils/sediments will be stored onsite in closed rolls-off labeled as low-level radioactive waste until the analytical results are evaluated and a final determination is made as to their radioactive status.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Monitoring well waters and decontamination liquids		

Waste Description

Description of Waste Type, Potential Contaminants, Volume Estimate, and Waste Packaging:
 Waste Type Description: Monitoring well waters and decontamination liquids
 Potential Regulatory Status: Low-level radioactive or mixed waste.
 Volume Estimate: 2,500 gallons total (2,200 gallons from the monitoring wells and 300 gallons of decontamination liquids).
 Waste Packaging: The wastes will be stored in 3,000-gallon polyethylene tanks until all analyses are completed. A Notice of Intent (NOI) to discharge benign groundwater on-site will be prepared and submitted to ESH-18 for NMED approval.

Characterization Strategy

Description of Strategy:
 The monitoring wells (two samples total) will be each analyzed for nitrate-nitrogen, perchlorates, Americium-241, isotopic Plutonium, Cesium-137, and Strontium-90 as part of the initial site characterization. A sample taken from the containerized waste will be analyzed for TCLP metals, VOCs, SVOCs and tritium.
 The decontamination waters (whose potential contamination originated in the soil and sediments or the monitoring well waters) will be combined with the monitoring well water and will be characterized based on the analytical results for the monitoring well water and containerized water. The liquids are expected to contain only low levels of contaminants, since they will mostly consist of the uncontaminated water used to rinse PPE, construction equipment, and sampling equipment.
Waste Sampling*: (If sampling will be used, indicate how many grab or composite samples will be collected per container or volume of waste and whether the waste is considered homogeneous or heterogeneous.)
 Two monitoring well water samples will be analyzed for nitrate-nitrogen, perchlorates, Americium-241, isotopic Plutonium, Cesium-137, and Strontium-90 during the initial phase of the PRB project. The containerized wastes will be further analyzed (one sample) for TCLP metals, VOCs, SVOCs and tritium to further characterize these wastes.
 * Grab sampling is appropriate for wastes that are fairly homogeneous, such as liquid wastes.
 * Composite sampling is appropriate for wastes that are heterogeneous, such as soil, sediment, and debris.

Analytical Strategy

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Volatile Organic Constituents	SW 846 8260	Unknown	X		
Semivolatile Constituents	SW 846 8270	Unknown	X		
Organic Pesticides		No		X	
Organic Herbicides		No		X	

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Monitoring well waters and decontamination liquids		

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Pesticides and PCBs		No		X	
PCBs		No		X	
Total Metals		Yes		X	
Total Cyanide		No		X	
Other Inorganic Constit. (specify)		No		X	
High Explosive Constituents		No		X	
Asbestos		No		X	
TPH		No		X	
TCLP Metals	SW 846 6010, 1311	Yes	X		
TCLP Organics		No		X	
TCLP Pesticides and Herbicides		No		X	
Gross Alpha		Yes		X	
Gross Beta		Yes		X	
Gross Gamma		Yes		X	
Tritium ³	HASL 300	Yes	X		
Gamma Spectro.		Yes		X	
Isotopic Plutonium	HASL 300	Yes			X
Total Plutonium		Yes		X	
Isotopic Uranium		Yes		X	
Total Uranium		Yes		X	
Strontium-90	HASL 300	Yes			X
Americium-241	HASL 300	Yes			X
Cesium-137	HASL 300	Yes			X

³ If tritium is not expected, attach a statement signed by the FPL stating that, based on a review of the available information and professional judgment, it is not necessary to sample for tritium at this site.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: Monitoring well waters and decontamination liquids		

Preliminary RCRA Determination

Based on available information, indicate the waste and whether it could potentially be any of the wastes as defined in 40 CFR 261. List the F-, D-, K-, P-, or U- category and number.

Based on the extensive sampling of TA-50 RLWTF effluents, monitoring well waters and alluvium soils over the years, these wastes are expected to be non-hazardous. The direct sampling of containerized wastes for TCLP metals, VOCs, and SVOCs is expected to confirm the non-hazardous classification of this waste stream. Waste will be managed as RCRA waste within a less-than-90-day storage area pending analysis.

Preliminary RCRA Status

Non-RCRA: (No 90-Day Storage Requirement)
Describe how waste will be stored/handled:

RCRA: (90-Day Storage Requirement)
Waste will be stored/handled in accordance with 20 NMAC Generator Requirements. The wastes will be stored on site in 3,000-gallon polyethylene tanks until all the analytical results are evaluated and a final waste classification is made.

If the monitoring well waters and decontamination liquids are non-hazardous, and the NOI is approved, they will be discharged on-site upgradient from the installed PRB.

Preliminary Determination for Radioactivity

Based on available information, indicate the amount and type of radiation contamination expected in the waste.

Based on the low levels of radionuclides found in the effluents released from the TA-50 RLWTF, the waste liquids are expected to have low-levels of Americium-241, Plutonium, Strontium-90, Cesium-137 and possibly tritium. See the monitoring results on page 2 for the potential range of radionuclides in this waste stream.

Preliminary Radioactivity Status

Material is not radioactive
Describe how waste will be stored/handled

Material is radioactive
Describe the controlled area, labeling, and protection against inadvertent contamination

The wastewaters will be stored onsite in 3,000-gallon polyethylene tanks labeled as low-level radioactive waste until all the analytical results have been evaluated and a final waste determination is made.

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OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: PPE and sampling equipment		

Waste Description
Description of Waste Type, Potential Contaminants, Volume Estimate, and Waste Packaging:
 Waste Type Description: PPE, plastic and sampling equipment.
 Potential Regulatory Status: Low-level radioactive or non-hazardous waste.
 Volume Estimate: Less than 1 cubic yard.
 Waste Packaging: The wastes will be stored onsite in closed 55-gallon drums until removed to a disposal facility.

Characterization Strategy

Description of Strategy:
 This waste stream will not be directly sampled, but will be characterized after taking dilution into account based on the analytical results for the drill cuttings, soils/sediments and monitoring well waters. Personnel will be screened for radioactivity using field instruments for health and safety reasons. If no detectable above background radiation is found, the PPE, plastic and sampling equipment will be disposed as non-hazardous waste. The equipment used for drilling operations and in constructing the PRB will be decontaminated and plastic will be used to catch decontamination fluids.

Waste Sampling*: (If sampling will be used, indicate how many grab or composite samples will be collected per container or volume of waste and whether the waste is considered homogeneous or heterogeneous.)
 No direct sampling will be done on this waste stream. Instead it will be characterized based on the analytical results for the other waste streams.

* Grab sampling is appropriate for wastes that are fairly homogeneous, such as liquid wastes.
 * Composite sampling is appropriate for wastes that are heterogeneous, such as soil, sediment, and debris.

Analytical Strategy

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Volatile Organic Constituents	SW 846 8260	Unknown			X
Semivolatile Constituents	SW 846 8270	Unknown			X
Organic Pesticides		No		X	
Organic Herbicides		No		X	

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: PPE and sampling equipment		

Analyte Category	Analytical Method	May be Present (yes, no, unknown)	Direct Sampling of Containerized Waste	Acceptable Knowledge Existing Information	Acceptable Knowledge Data from Proposed Site Characterization
Pesticides and PCBs		No		X	
PCBs		No		X	
Total Metals		Yes		X	
Total Cyanide		No		X	
Other Inorganic Constit. (specify)		No		X	
High Explosive Constituents		No		X	
Asbestos		No		X	
TPH		No		X	
TCLP Metals	SW 846 6010, 1311	Unknown			X
TCLP Organics		No		X	
TCLP Pesticides and Herbicides		No		X	
Gross Alpha		Yes		X	
Gross Beta		Yes		X	
Gross Gamma		Yes		X	
Tritium ⁴	HASL 300	Yes			X
Gamma Spectro.	HASL 300	Yes			X
Isotopic Plutonium	HASL 300	Yes			X
Total Plutonium		Yes		X	
Isotopic Uranium		Yes		X	
Total Uranium		Yes		X	
Strontium-90	HASL 300	Yes			X
Americium-241	HASL 300	Yes			X
Cesium-137	HASL 300	Yes			X

⁴ If tritium is not expected, attach a statement signed by the FPL stating that, based on a review of the available information and professional judgment, it is not necessary to sample for tritium at this site.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Specific Waste Type: PPE and sampling equipment		

Preliminary RCRA Determination

Based on available information, indicate the waste and whether it could potentially be any of the wastes as defined in 40 CFR 261. List the F-, D-, K-, P-, or U- category and number.

The PPE, plastic and sampling equipment is expected to be non-hazardous based on the extensive data collected from the TA-50 RLWTF effluents, the monitoring well waters and alluvium soils in the canyon over the years. The analytical results for the other waste streams will be used as the basis for classifying this waste stream. Waste will be managed as RCRA waste within a less-than-90-day storage area pending analysis.

Preliminary RCRA Status

Non-RCRA: (No 90-Day Storage Requirement)
Describe how waste will be stored/handled:

RCRA: (90-Day Storage Requirement)
Waste will be stored/handled in accordance with 20 NMAC Generator Requirements. This waste stream will be stored onsite in closed 55-gallon drums until a final determination is made on its waste classification.

Preliminary Determination for Radioactivity

Based on available information, indicate the amount and type of radiation contamination expected in the waste.

PPE, plastic and sampling equipment that has no above background radiation based on field screening results will be considered non-radioactive waste. That waste with above background readings will be segregated and stored as low-level radioactive waste.

Preliminary Radioactivity Status

Material is not radioactive
Describe how waste will be stored/handled
The wastes will be stored onsite in 55-gallon drums until removed to a disposal facility.

Material is radioactive
Describe the controlled area, labeling, and protection against inadvertent contamination
The wastes will be stored in a closed container labeled as low-level radioactive waste until removed to a disposal facility.

WASTE CHARACTERIZATION STRATEGY FORM

OU Number/FU	PRS/SWMU Number	Title
Canyons Focus Area	None	Mortandad Canyon PRB
Waste Types or Wastestreams: Drill cuttings, excavated soil/sediment, monitoring well waters and decontamination liquids, and PPE and sampling equipment		

Signatures:

Field Team Leader _____

Field Team Waste Management Coordinator _____

Waste Management Representative _____