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Waste Characterization Strategy Form

Project Title	**Phase II Middle LA Canyon Aggregate Area**
Solid Waste Management Unit #, Area of Concern #, or Consolidated Unit #	**SWMUs:** 02-005, 02-006(a), 02-006(b), 02-007, 02-008(a), 02-009(a), 02-009(b), 02-009(c), 02-009(e) [duplicate of 02-009(c)], 26-001, 26-002(a), 26-002(b), 26-003 **AOCs:** 02-003(a), 02-003(b), 02-003(c), 02-003(d), 02-003(e), 02-004(a), 02-004(b), 02-004(c), 02-004(d), 02-004(e), 02-004(f), 02-004(g), 02-006(c), 02-006(d), 02-006(e), 02-008(c), 02-009(d), 02-010, 02-011(a), 02-011(b), 02-011(c), 02-011(d), 02-011(e) [duplicate of 02-008(a)], 02-012, 21-028(c) **Consolidated Units:** 02-007-00, 21-006(e)-99
Activity Type	**Investigation and Remediation**
Field Team Leader	**Larry Lopez**
Waste Management Coordinator	**Michael Le Scouarnec**
Completed by	**Kevin Krause**
Date	**July 6, 2007**

Description of Activity:

The objective of the project is to conduct investigation and remediation activities for 40 solid waste management units (SWMUs), areas of concern (AOCs), and consolidated units in the Middle Los Alamos Canyon Aggregate Area. The work will be performed in accordance with the New Mexico Environment Department (NMED)-approved Phase II Investigation Work Plan for Middle Los Alamos Canyon Aggregate Area and EXHIBIT "D" SCOPE OF WORK AND TECHNICAL Implementation of the Middle Los Alamos Canyon Aggregate Area Phase II, Subcontract No. 53655-001-07. Trained and qualified Subcontractor Field Waste Management Technician(s) (FWMT), Waste Sampling Personnel (SP), and Hazardous Materials Packaging and Transportation (HMPT) personnel will be assigned to perform the duties outlined in EP-SOP-5238, *Characterization and Management of Environmental Program Waste*.

The following activities are planned:

Surface and subsurface sampling – This activity includes collection of samples using hand auger, spade and scoop and/or core-barrel (hollow-stem auger drill rig) methods. The method(s) used will depend on site conditions and depth of required samples; all samples will be collected using hand methods if possible, and a drill rig will be used only at sites where samples cannot be collected by hand.

Soil Removal – This activity includes limited soil removal at four sites at TA-02 where preliminary risk screening indicated either excess cancer risk or radiation dose above target levels. Excavation depths will range from approximately 2 ft to 7 ft below ground surface (bgs). Confirmation samples will be collected at each excavated area, and the excavations will be backfilled with clean soil or other clean fill material.

Waste Management –This task involves then management of investigation-derived waste (IDW in accordance with this waste characteristic strategy form (WCSF) and all applicable procedures, including but not limited to SOP-5238, Characterization and Management of Environmental Program Waste; P930-1, LANL Waste Acceptance Criteria; P930-2, Waste Certification Program; and P-409, Waste Management. The IDW may include, but is not limited to drill cuttings, contact waste, excavated environmental media and debris, decontamination fluids, petroleum-contaminated soils, and all other waste that has potentially come into contact with contaminants.

Site restoration –This activity involves the restoration of sites to pre-investigation conditions to the degree practicable. This may involve patching concrete or asphalt pavement, filling excavations with clean backfill material, land application of cuttings, or seeding or planting vegetation.

Relevant Site History and Description:

TA-02 was used to house a series of research reactors from 1943 through 2003. Building TA-02-001, the main reactor building, was constructed in 1943. It housed five separate nuclear reactors; three iterations of water boiler type reactors located on the east side of the building, and one plutonium-fueled reactor followed by an enriched uranium reactor, the OWR. A number of facilities were constructed over the years to support the TA-02 research activities. The facility was active from 1943 through 1993. All TA-02 facilities remaining on-site were removed in September 2003. The site was cleared, material was disposed of in an appropriate off-site disposal facility, and the land was returned to its original contour and re-seeded. Two concrete surface water flumes, their associated catch basins, the main paved road, bridges and the creek's northern retaining wall adjacent to the former facility are all that remain at the site. The former reactor site is fenced and access is controlled by the Laboratory.

Operations at TA-21 started in 1945 for establishing the chemical and metallurgical properties of the nuclear material necessary to achieve and sustain the required nuclear fission reaction. Delta Prime (DP) West operations began in September 1945, primarily to produce metal and alloys of plutonium from the nitrate solution feedstock provided by other production facilities. This procedure involved several acid dissolution and chemical precipitation steps to separate the plutonium and other valuable actinides from the feedstock. A major research objective at DP West was the development of new purification techniques that would increase the efficiency of the separation processes. Other operations performed at DP west included nuclear fuel reprocessing. In 1977, a transfer of work to the new plutonium facility at TA-55 began, and much of the DP West complex was vacated. DP East operations also began in September 1945. These facilities were used to process polonium and actinium and to produce initiators.

Former TA-26 is located in TA-73 south of NM State Highway 502 and to the east and south of the Los Alamos airport and to the west of East Gate Industrial Park. The area being considered for environmental investigation is restricted to D-Site. In 1946, D-Site was established for LANL's Chemistry and Metallurgical Research (CMR) Division for the purpose of storing radioactive materials. The area consisted of several structures, including the East Gate vault, Guard Towers A and B, a guard building, east room septic system, and a sump system. D-Site was demolished in 1965-1966.

CHARACTERIZATION STRATEGY

This WCSF identifies the types of wastes expected, based on the data from previous investigations; however, other types of wastes may be encountered. An amendment to this WCSF will 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 IDW will be managed in accordance with Los Alamos National Laboratory (LANL) Standard Operating Procedure (SOP) 5238, *Characterization and Management of Environmental Program Waste.*

In accordance with the Phase II work plan, the initial management of waste (i.e., excavated material and hand auger waste) will rely on the data from the 2007 investigation of Middle Los Alamos Aggregate Area (LANL 2008, 102093). Due diligence reviews prepared for all potential release sites (PRSs) covered by these investigations identified that none of the waste would be listed. The 2007 investigation data identified several locations where the total concentrations of metals divided by 20 were higher than the toxicity characteristic (TCLP) limit. However, the drill cuttings from these investigations were analyzed for TCLP metals and were below regulatory limits. Therefore, all of the waste will initially be managed as non-hazardous. Waste determinations will be made using existing and/or new analytical data and waste accumulation area postings, regulated storage duration, and inspection requirements will be based on the type waste and its regulatory classification. 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 such as waste classification, contents, radioactivity, and date generated, if applicable. A non-hazardous waste label, date of generation, the generator's name, and container contents should be placed on non-hazardous waste containers as a best management practice. Waste streams with the same regulatory classification that are destined for the same receiving facility may be combined into a single container for disposal (e.g. contact waste with drill cuttings).

IDW characterization will be completed using existing or new investigation sampling data or by direct sampling of the IDW. If the waste is directly sampled, it will be sampled within 10 days of generation, and a 21 day turnaround time for analyses will be requested. Samples must be collected using the methods described in this WCSF by trained and qualified sampling personnel. Sampling personnel must record waste sampling information in accordance with LANL's procedure, EP-ERSS-SOP-5058, *Sample Control and Field Documentation* and EP-ERSS-SOP-5181, *Notebook and Logbook Documentation for Environmental Directorate Technical and Field Activities.*

A waste determination will be made within 45 days of the generation date of waste. A Waste Acceptance Criteria Exception Form (WEF) can be used if the generator does not meet the 45 day deadline. The generation of no path forward wastes must be approved by Department of Energy (DOE) prior to generation of the waste; however, no such wastes are anticipated for this project.

A copy of the due diligence reviews already prepared for this investigation should accompany all waste profiles prepared for the waste(s) with potentially listed contaminants.

Investigation activities will be conducted in a manner that minimizes the generation of waste. Waste minimization will be accomplished by implementing the most recent version of the "Los Alamos National Laboratory Hazardous Waste Minimization Report." Waste streams will be recycled/reused, as appropriate.

The following waste streams are anticipated for this well:

- Waste Stream #1-Drill Cuttings
- Waste Stream #2-Contact Waste
- Waste Stream #3-Decontamination Fluid (potential)
- Waste Stream #4-Excavated Media and Debris
- Waste Stream #5-Municipal Solid Waste (MSW)
- Waste Stream #6-Petroleum Contaminated Soils (PCS) (potential)
- Waste Stream #7-Returned or Excess Samples

Waste # 1: Drill Cuttings (IDW) - This waste stream consists of soil and rock cuttings generated from the drilling of boreholes. Drill cuttings may include excess core samples not submitted for analysis and any returned drill cutting samples. Drill cuttings may be land applied if they meet the criteria in Quality Procedure (QP)-011, *Land Application of Drill Cuttings.* Approximately 50 yd^3 of drill cuttings are expected to be generated.

Anticipated Regulatory Status: Industrial, Low-level radioactive waste (LLW), New Mexico Special Waste (NMSW), Land Applied

Characterization Approach: The drill cuttings will be characterized by direct sampling of the containerized cuttings. Drill cuttings from a single PRS may be combined into a single container before sampling, but cuttings from different PRSs may not be combined before sampling and may not be combined if they will be land applied (they must be land applied at the same PRS from which they originated). If container sizes are small, the representative sample may be collected from more than one container of drill cuttings from a single location (e.g., a minimum of one sample should be collected for every 20 cy^3 generated from a single PRS). Cuttings will be sampled within 10 days of generation and submitted for analysis with a 21 day turnaround time. A hand auger or thin-wall tube sampler will be used in accordance with EP-ERSS-SOP-06.10, *Hand Auger and Thin-Wall Tube Sampler*, to collect waste material from each container, augering from the surface to the bottom of the waste in a sufficient number of locations to obtain a representative sample. Cuttings will be characterized and analyzed in accordance with Table 1. All samples will be analyzed for VOCs, semi-volatile organic compounds (SVOCs), total metals, isotopic radionuclides, and gamma spectroscopy radionuclides. Cyanide, nitrates, and polychlorinated biphenyls (PCBs) need only be sampled if the cuttings originated from a location specified as requiring these analytes in the 2008 Phase II Work Plan (summarized in Table 1 of this WCSF). The 2008 Investigation Report shows that perchlorate does not exceed residential screening levels. Therefore, additional perchlorate data are not needed; based on existing data, the drill cuttings will meet perchlorate residential soil screening levels (SSLs). If process knowledge, odors, or staining indicate the cuttings may be contaminated with petroleum products, the materials will also be analyzed for total petroleum hydrocarbons (TPH [DRO/GRO]) and polychlorinated biphenyls (PCBs). Other constituents may be analyzed as necessary to meet the WAC for a receiving facility. A waste determination will be made using the automated waste determination tool (AWD) in accordance with SOP 5238, Characterization and Management of Environmental Program Waste. Each borehole location will use a different sampling event number to simplify AWD evaluations.

Storage and Disposal Method: Drill cuttings will be containerized at the point of generation in LANL approved 55-gallon steel drums, 20 yd^3 roll-off bins, or other containers appropriate for the quantity of waste generated. The cuttings will initially be managed as non-hazardous. Because they will be directly sampled, they will be managed as radioactive only if they cannot be land applied and the analytical data identify them as radioactive. If analytical data changes the waste classification (e.g., PCB waste), the waste will be stored in an area appropriate for the type of waste. Cuttings may be land applied if they meet the criteria of the NMED-approved NOI decision tree for land application. Land application will be conducted in accordance with ENV-RCRA-QP-011, *Land Application of Drill Cuttings*. Drill cuttings that cannot be land applied will be used as attic cover at TA-54 or treated and/or disposed of at authorized off-site facilities appropriate for the waste classification.

Waste # 2: Contact Waste (IDW) - This waste stream includes personnel protective equipment (PPE), contaminated sampling supplies, and dry decontamination waste that may have come in contact with contaminated environmental media and cannot be decontaminated. This includes, but is not limited to plastic sheeting (e.g., tarps and liners), gloves, coveralls (e.g. Tyvek), booties, paper towels, plastic and glass sample bottles, and disposable sampling supplies. Approximately 2 yd^3 of contact waste are expected to be generated.

Anticipated Regulatory Status: Industrial, LLW, Green is Clean

Characterization Approach: Contact waste will be characterized using AK based on the data from the media with which they came into contact, as follows:

- If generated during drilling, data from the associated drill cuttings will be used.
- If generated during hand augering, associated 2007 investigation or 2010 investigation data will be used.
- If generated during excavations, data from the associated excavated environmental media (using the 2007 investigation data and 2010 TCLP metals data) will be used.

The amount of media contaminating the contact waste can be estimated and the results from the analytical data may be weighted by the extent of contamination for determining whether wastes are characteristic. This calculation must be submitted with the WPF as acceptable knowledge.

Storage and Disposal Method: The contact waste may initially be separately containerized in drums or it may be placed into the same containers as the media with which it is contaminated if the media will not be land applied. Based on existing investigation and waste data, waste will initially be managed as non-hazardous. If the waste fails Green is Clean, it will be managed as radioactive if/when the waste with which it came into contact is being managed as radioactive. If analytical data changes the waste classification, the waste will be stored in an area appropriate for the type of waste (e.g., PCB waste). For disposal, separately containerized contact waste may also be combined with the material that it contacted (the WPF will document the decision to combine the waste streams). Wastes will be disposed of in authorized on-site or off-site facilities appropriate for the waste classification.

Waste #3: Decontamination Fluids (potential)- This waste stream consists of liquid wastes generated from decontamination of excavation, sampling and drilling equipment. Consistent with waste minimization practices, the Laboratory employs dry decontamination methods to the extent possible. If dry decontamination cannot be performed, liquid decontamination wastes will

be collected in appropriate containers at the point of generation. It is estimated that less than 55 gal. of decontamination fluids are expected to be generated from this activity.

Anticipated Regulatory Status: Industrial, LLW

Characterization Approach: All drilling equipment and tooling will be steam-cleaned by the drilling subcontractor prior to arriving onsite. If tooling appears unclean or odors are detected, the equipment must be steam-clean onsite in accordance with EP-ERSS-SOP-5061, *Field Decontamination of Equipment* or an approved equivalent procedure. The rinsate must be separately collected and sampled (do not mix with any other decontamination fluids).

Decontamination fluids will be characterized by direct sampling. Representative samples will be collected within 10 days of generation and submitted for analysis with a 21 day turnaround time. Samples will be collected from the storage container in accordance with EP-ERSS-SOP-06.15, *COLIWASA Sampler for Liquids and Slurries.* 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, available at http://www.epa.gov/osw/hazard/testmethods/sw846/pdfs/rwsdtg.pdf). Samples will be analyzed in accordance with Table 2. Other constituents may be analyzed as necessary to meet the WAC for a receiving facility. If wastes will be treated on-site at the Sanitary Waste Water System (SWWS) or the Radioactive Liquid Waste Treatment Facility (RLWTF), submit a sampling request to http://esp-esh-as01-f5.lanl.gov/~esh19/database/rfa_form.shtml for additional constituents identified in Table 2, footnote 1. If the fluids cannot be treated on-site, they may be solidified for disposal off-site. The Material Safety Data Sheet (MSDS) for any absorbent used for solidification will be used as AK for waste characterization.

Storage and Disposal Method: Decontamination fluids will be collected in appropriate containers at the point of generation and managed in secure, designated waste areas. Waste will initially be managed as non-hazardous. If analytical data changes the waste classification (e.g., PCB or radioactive wastes), the waste will be stored in an area appropriate for the type of waste. It is expected that most of the decontamination fluids will be treated on-site at the Sanitary Waste Water System (SWWS) or TA-50 Radioactive Liquid Waste Treatment Facility (RLWTF). Decontamination fluids not meeting the WAC for on-site facilities will be treated and/or disposed of in authorized off-site treatment/disposal facilities. If solidification of decontamination fluids is required for transportation or disposal, it may be solidified using an approved absorbent. Solidification activities must be reviewed by the ENV-RCRA before being conducted.

Waste #4: Excavated Media and Debris – Contaminated soil and tuff will be excavated from Area of Contamination (AOC 02-004(a), AOC 02-004(f), 02-010, and 02-011(a)) to remove soil that exceeds cleanup objectives. Manmade debris is not expected but small amounts may be encountered during soil removal. The total amount of media removed is expected to be approximately 25 yd^3.

Anticipated Regulatory Status: Industrial, LLW, NMSW, PCB

Characterization Approach: Excavated soils will be characterized with data collected during the 2007 investigation except that an additional sample will be collected from location 600532 and 600582 and analyzed only for TCLP metals. One representative sample will be collected from each rolloff, augering from the bottom to the top of the waste in 5 locations (4 corners and the middle of the bin). The samples will be submitted for analysis with a 21 day turnaround time. If process knowledge, odors, or staining indicate that the excavated media may be

contaminated with petroleum products, the materials will also be analyzed for TPH and PCBs. Other constituents may be analyzed as necessary to meet the WAC for a receiving facility. Manmade debris is not expected to be excavated but if it is encountered, it will be evaluated by the sampling personnel to determine the best characterization method. If soil is the only contaminant on or within the debris, the data used to characterize the soil may be used. For debris that is difficult to characterize, acceptable knowledge (AK) will be used whenever possible, supplemented by sampling as needed. Sampling methods and analytes may be identified on a case-by-case basis by qualified sampling personnel. Sampling and analysis decisions will be documented in the field activity notebook.

Storage and Disposal Method: The materials will be containerized in rolloff bins appropriate for LLW storage at the point of generation. Based on the waste profile forms (which included TCLP data) and previous investigation data for the AOCs to be excavated, the media will be managed as non-hazardous. However, based on these data, the media must be managed as radioactive waste upon generation. The excavated material will be used at TA-54 as attic fill or treated/ disposed of at an off-site authorized for the type of waste.

Waste #5: 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 non-hazardous solution containers, and other non-contact trash. This waste stream may also include vegetation from sites with no radioactive contamination. It is estimated that approximately 2 yd^3 of MSW will be generated, but may change if vegetation removal is required.

Anticipated Regulatory Status: MSW

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

Management and Disposal Method: MSW will be segregated from all other waste streams and managed in approved containers. 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 Transfer Station or other authorized solid waste landfill.

Waste #6: Petroleum Contaminated Soils (PCS), (potential) - 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 created by legacy contamination may also be encountered during investigations. Absorbent padding, paper towels, spill pillows or other absorbent material used to contain the released material will 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: NMSW, Industrial, LLW, PCB

Characterization Approach: The contaminated soil may either be sampled in-place (by gridding the spill location and collecting and combining incremental samples into one sample) or after containerization in accordance with EP-ERSS-SOP-06.10, *Hand Auger and Thin-Wall Tube Sampler.* If the spill is shallow (in-place sampling) or containers are small, Spade and Scoop Method for Collection of Soil Samples (EP-ERSS-SOP-06.11) may also be appropriate. If the spill is new, it must be reported to ENV-RCRA and the contaminated material must be containerized the same day it is spilled unless permission is received from ENV-RCRA to leave it longer (generally only granted for large spills). Representative samples of containerized waste will be collected within 10 days of generation and submitted for analysis with a 21 day turnaround time. Samples will be analyzed in accordance with Table 1. Other constituents will

be considered significant only if analysis of these constituents is required by the work plan for the PRS (see Table 1). If legacy petroleum contamination is discovered, the soils will also be analyzed for PCBs and TPH DRO/GRO). Other constituents may be analyzed as necessary to meet the WAC for a receiving facility.

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. All PCS will be treated and/or disposed of, at an authorized on-site or off-site facility appropriate for the waste classification.

Waste #7: Returned or Excess Samples - This waste stream consists of soil and tuff samples returned from a laboratory or samples collected but not submitted to the analytical laboratory. It is estimated that less than approximately 0.5 yd^3 of material will be generated from this activity.

Anticipated Regulatory Status: Industrial, LLW, NMSW

Characterization Approach: Waste characterization will be based upon analytical results obtained from the direct sampling of containerized waste or from investigation or characterization data from media associated with the returned/excess samples. Direct sampling will be conducted in accordance with EP-ERSS-SOP-06.10, *Hand Auger and Thin-Wall Tube Sampler* or EP-ERSS-SOP-06.09, *Spade and Scoop Method for Collection of Soil Samples.* Representative samples will be sampled within 10 days of generation and submitted for analysis with a 21 day turnaround time. Samples will be analyzed for the constituents identified in Table 1. If process knowledge, odors, or staining indicate the returned samples may be contaminated with petroleum products, the materials will also be analyzed for TPH and PCBs. Other constituents may be analyzed as necessary to meet the WAC for a receiving facility.

Storage and Disposal Method: These wastes will be containerized in 5 gallon buckets, 55 gallon drums, or placed into the same containers as the environmental media from which they were taken. They will initially be stored in the same manner as the media from which they originated. If analytical data changes the waste classification, the waste will be stored in an area appropriate for the type of waste. The wastes will be sent to an authorized on-site or off-site disposal facility, appropriate for the waste regulatory classification.

REFERENCES

LANL (Los Alamos National Laboratory). "Los Alamos National Laboratory Hazardous Waste Minimization Report," (LANL,2009).

EP2010-0266 Integrated Work Document (IWD) – Implementation of the Phase II Investigation Work Plan for Middle Los Alamos Canyon Aggregate Area

EP2010-0267-Site-Specific Health and Safety Plan (SSHASP) – Implementation of the Phase II Investigation Work Plan for Middle Los Alamos Canyon Aggregate Area

LANL (Los Alamos National Laboratory), February 2009. "Investigation Work Plan for Phase II Middle Los Alamos Canyon Aggregate, Revision 1," Los Alamos, New Mexico. (LANL 2009, EP2009-0080)

LANL (Los Alamos National Laboratory), November 2008. "Investigation Report for Middle Los Alamos Canyon Aggregate Area," Los Alamos, New Mexico. (LANL 2008, EP2008-0208)

Table 1. Analyses Required for Drill Cuttings

Location	Analyze Drill Cuttings For[1]
Vertical Extent near Former TA-2 Structure	
Locations 6 and 7	VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy (for Cesium-134 and -137 and Cobalt-60)
Locations 8 - 13	PCBs, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
Location 14	VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
Locations 15 - 22	PCBs, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
Locations 23-26	VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
Locations 27 - 38	PCBs, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy, gamma spectroscopy
Locations 39-59	Cyanide (total), PCBs, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
SWMU 02-005	
Location 60-67	NA – hand auger samples, only contact waste will be generated and will be characterized using existing data
SWMU 02-006(e)	
Locations1, 3-13	VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
Location 2	Cyanide (total), VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
SWMU 21-006(e)-99	
All locations	PCBs, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
SWMU 21-028(c)	
All locations	PCBs, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy
TA-26	
Locations 1-4	VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy gamma spectroscopy
Locations 5-11	Nitrate, VOCs, SVOCs, total metals, and isotopic radionuclides, gamma spectroscopy

[1]Also analyze for toxicity characteristic metals if total metals divided by 20 exceed toxicity characteristic limits

Table 2. Waste Characterization

Waste Description	Waste # 1 Drill Cuttings	Waste #2 Contact Waste	Waste #3 Decontamination Fluids	Waste #4 Excavated Media
Estimated Volume	54 CY	2 CY	< 55 gallons	25 CY
Packaging	20 yd^3 Roll-off Bins	55 gallon drums	30 or 55 gallon drums	Roll-offs or on ground
Regulatory classification:				
Radioactive Waste	X	X	X	X
Municipal Solid Waste (MSW)				
Waste destined for LANL's SWWS or RLWTF[1]			X	
Hazardous Waste				
Mixed (hazardous and radioactive) Waste				
Polychlorinated Biphenyls-Contaminated Waste (PCBs)				X
New Mexico Special Waste	X			X
Industrial Waste	X	X	X	X
Characterization Method				
Acceptable knowledge (AK): Existing Data/Documentation		X		X
AK: Site Characterization		X		X
Direct Sampling of Waste	X		X	X
Analytical Testing				
Volatile Organic Compounds (VOCs) (EPA 8260-B)	X		X	
Semivolatile Organic Compounds (SVOCs) (EPA 8270-C)	X		X	
Organic Pesticides (EPA 8081-A)				
Organic Herbicides (EPA 8151-A)				
PCBs (EPA 8082)	X[5]		X	X[4]
Total Metals (EPA 6010-B/7471-A or EPA 6020)	X		X	
Total Cyanide (EPA 9012-A)			X	
High Explosives Constituents (EPA 8330/8321-A)				
Asbestos (EPA 600M4)				
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)	X[4]			X[4]
TPH-DRO (EPA 8015-M)	X[4]			X[4]
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)	X[6]			X[4]
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[4]		X[4]	
Gross Beta (beta counting) (EPA 900)	X[4]		X[4]	
Tritium (liquid scintillation) (EPA 906.0)	X		X	
Gamma spectroscopy (EPA 901.1)	X		X	
Isotopic plutonium (HASL-300)	X		X	
Isotopic uranium (HASL-300)	X		X	
Total uranium (EPA 6020)	X		X	
Strontium-90 (EPA 905)	X		X	
Americium-241 (HASL-300)	X		X	
Perchlorates (EPA 6850)				
Nitrates/Nitrites (EPA 300.09-soil or 343.2-water)	X[5]		X[1]	
Oil / Grease (EPA 1665)			X[1]	
Fluorine, Chorine, Sulfate (EPA 300)			X[1]	
TTO (EPA 8260-B and EPA 8270-C)[2]	Request VOC and SVOCs above[1]			
Total Suspended & Dissolved Solids (TSS) and Total Dissolved Solids (TDS) (EPA 160.1 and 160.2)			X[1]	

Table 2. Waste Characterization				
Waste Description	**Waste # 1 Drill Cuttings**	**Waste #2 Contact Waste**	**Waste #3 Decontamination Fluids**	**Waste #4 Excavated Media**
Chemical Oxygen Demand (COD) (EPA 410.4)			X[1]	
pH (EPA 904c)			X[1]	
Microtox or Biological Oxygen Demand (BOD)[3]			X[1]	

Table 2. Waste Characterization			
Waste Description	**Waste #5 Municipal Solid Waste**	**Waste #6 Petroleum Contaminated Soils**	**Waste #7 Returned or Excess Samples**
Estimated Volume	< 1 CY	< 1 CY	0.5 CY
Packaging	Plastic trash bags	30 or 55 gallon drums	Same containers as the environmental media from which they were taken or other drums.
Regulatory classification:			
Radioactive Waste		X	X
Municipal Solid Waste (MSW)	X		
Waste destined for LANL's SWWS or RLWTF[1]			
Hazardous Waste			
Mixed (hazardous and radioactive) Waste			
Polychlorinated Biphenyls-Contaminated Waste (PCBs)		X	
New Mexico Special Waste		X	X
Industrial Waste		X	X
Characterization Method			
Acceptable knowledge (AK): Existing Data/Documentation	X		X
AK: Site Characterization			X
Direct Sampling of Waste		X	X
Analytical Testing			
Volatile Organic Compounds (VOCs) (EPA 8260-B)		X	X
Semivolatile Organic Compounds (SVOCs) (EPA 8270-C)		X	X
Organic Pesticides (EPA 8081-A)			
Organic Herbicides (EPA 8151-A)			
PCBs (EPA 8082)		X[4]	X[4]
Total Metals (EPA 6010-B/7471-A or EPA 6020)		X	X
Total Cyanide (EPA 9012-A)		X[5]	X[5]
High Explosives Constituents (EPA 8330/8321-A)			
Asbestos (EPA 600M4)			
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)		X	X[4]
TPH-DRO (EPA 8015-M)		X	X[4]
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)		X[6]	X[6]
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[4]	X[4]
Gross Beta (beta counting) (EPA 900)		X[4]	X[4]
Tritium (liquid scintillation) (EPA 906.0)		X	X
Gamma spectroscopy (EPA 901.1)		X	X
Isotopic plutonium (HASL-300)		X	X
Isotopic uranium (HASL-300)		X	X
Total uranium (EPA 6020)		X	X
Strontium-90 (EPA 905)		X	X
Americium-241 (HASL-300)		X	X
Perchlorates (EPA 6850)			
Nitrates/Nitrites (EPA 300.09-soil or 343.2-water)		X[5]	X[5]
Oil / Grease (EPA 1665)			
Fluorine, Chorine, Sulfate (EPA 300)			
TTO (EPA 8260-B and EPA 8270-C)[2]			

Table 2. Waste Characterization			
Waste Description	**Waste #5 Municipal Solid Waste**	**Waste #6 Petroleum Contaminated Soils**	**Waste #7 Returned or Excess Samples**
Total Suspended & Dissolved Solids (TSS) and Total Dissolved Solids (TDS) (EPA 160.1 and 160.2)			
Chemical Oxygen Demand (COD) (EPA 410.4)			
pH (EPA 904c)			
Microtox or Biological Oxygen Demand (BOD)[3]			

Characterization Table (Cont'd)

[1]in addition to other analytes needed to characterize the waste (e.g., VOC, SVOC, total metals), analyze for TSS, TDS, Oil and Grease, gross alpha, gross beta, tritium, and pH for liquids destined for the LANL sanitary waste water system (SWWS). For wastes destined for the RLWTF additional constituents include TTO,TSS, COD, pH, total nitrates/nitrites, and gross alpha, gross beta (not including tritium), and gross gamma **or** the sum of individual alpha-, beta-, and gamma-emitting nuclides.

[2]TTO is the total of volatile organic and semi-volatile organic compound contaminants. Request methods EPA 8260-B (VOCs) and EPA 8270-C (SVOCs).

[3] If Microtox analysis is not available, request BOD.

[4] If required by a receiving facility's acceptance criteria or if required due to discovered contamination (e.g., TPH and PCBs)

[5] If required for investigation samples by the Phase II IWP for a specific PRS (see Table 1).

[6] TCLP metals must be analyzed for excavation areas (AOCs 02-004(a), 02-004(f), 02-010, 02-011(a) and for drill cuttings if total metals divided by 20 exceed toxicity characteristic limits.

Signatures	Date
Project Manager (Becky Coel-Robeck) for BCR	7/7/10
Preparer (Kevin Krause) Kevin Krause	7/7/10
Waste Management Coordinator (Michael Le Scouarnec) For Michael Le Scouarnec, Ron DeJotec	7-7-10
ENV-RCRA Representative (Ann Sherrard)	7/7/10
Waste Acceptance Representative (Jose Ortega)	7/7/10
Waste Certification Program Representative (Michelle Coriz)	7/7/10

Environmental Programs (EP)
Document Signature Form

Document Catalog Number: EP2011-0049

(Please prefix the name of all electronic versions of this document with this number.)

Document Title/Subject: Amendment #1
Management of Environmental Project Waste

Associated Document Catalog Number(s):

Author: Coel-Roback, Becky J 665 5011 becky_cr@lanl.gov

Organuzation: EP-CAP

Document Team:

Document Type: Waste Characterzation Strategy Form (WCSF)

Date Due: **Date Final Complete:**

Date To ADEP: **Date To DOE:**

Date To NMED: **Date To RPF:**

Comm Tracker #: **LAUR #** **ERID #:**

Status/Comments:

Reviewer Signatures: By signing below, the reviewer indicates that he/she **reviewed** and **approves** the document.

Document Catalog Number: EP2011-0049

Amendment #1 Management of Environmental Project Waste	Records Use Only

Reason for Change:

Amendment #1 to WCSF Phase II Middle LA Canyon Aggregate Area, EP2010-0249 is to address minor administrative changes to the Characterization Approach for Drill Cuttings (Waste Stream #1). The statement requiring drill cuttings to be returned to the SWMU/AOC, in which they were generated, was revised. The cuttings may be applied to project access roads, as well as at the point of generation, and this verbiage was added to the WCSF. Additionally, the statement about each borehole having a different sampling event number was incorrect. The same sampling event number may be used for multiple boreholes in each location, with the sample number being the unique identifier for the AWD. Hence, this statement was removed. Anticipated Regulatory Status and Storage and Disposal Method will remain unchanged.

Waste Description:

Waste # 1: Drill Cuttings (IDW) - This waste stream consists of soil and rock cuttings generated from the drilling of boreholes. Drill cuttings may include excess core samples not submitted for analysis and any returned drill cutting samples. It is estimated that 70 cubic yards of cuttings will be generated.

Characterization, Management, and Disposal:

Anticipated Regulatory Status:

Characterization and Sampling Approach: The drill cuttings will be characterized by direct sampling of the containerized cuttings. Drill cuttings from a single PRS / location may be combined into a single container before sampling, but cuttings from different PRSs / locations, may not be combined before sampling and may not be combined if they will be land applied. Note: Certain characterization borehole locations will penetrate multiple, overlapping SWMUs. Segregation and packaging of drill cuttings in accordance with borehole location, as opposed to PRS, may be required for this project. If container sizes are small, the representative sample may be collected from more than one container of drill cuttings from a single location (e.g., a minimum of one sample should be collected for every 20 cy^3 generated from a single PRS). Cuttings will be sampled within 10 days of generation and submitted for analysis with a 21 day turnaround time. A hand auger or thin-wall tube sampler will be used in accordance with EP-ERSS-SOP-06.10, *Hand Auger and Thin-Wall Tube Sampler*, to collect waste material from each container, augering from the surface to the bottom of the waste in a sufficient number of locations to obtain a representative sample. Cuttings will be characterized and analyzed in accordance with Table 1. Other constituents may be analyzed as necessary to meet the WAC for a receiving facility. A waste determination will be made using the automated waste determination tool (AWD) in accordance with SOP 5238, Characterization and Management of Environmental Program Waste.

Storage and Disposal Method:

No Changes

Signatures	Date
ADEP Project Manager (Print name and then sign below.) Becky Coel-Roback	1/26/11
Preparer (Print name and then sign below.) Kim Oman	1/25/11
Waste Management Coordinator (Print name and then sign below.) Mike Le Scouarnec	1.26.11
ENV-RCRA Representative (Print name and then sign below.) Jocelyn Buckley	1-26-11
WES-Waste Acceptance Representative (Print name and then sign below.) Andy Elicio	1/26/2011
Waste Certification Program Representative (Print name and then sign below.) Michelle Coriz	1/26/11

WASTE PROFILE FORM
COVER SHEET

7588
APPROVED

Waste Characterization Information

Waste Stream ID:	7588
WPF ID (Legacy):	42154
Waste Stream Name:	AOC-21-006(E)-99. INVESTIGATIVE DRILLING AT TA-21 FOR UPPER LA CANYON ACA PROJECT. AOC21-006(E)-99.
Expiration Date:	01/05/2012
Waste Type:	Low Level Waste
Radiological Type:	Low Level Waste
RCRA Category:	RCRA Solid Non-hazardous
Ancillary Types:	
Primary Composition:	Soil
Composition (other):	
EPA Codes:	
Waste Acceptance:	
EPA Form Code:	NA Not Applicable: Not Applicable
EPA Source Code:	NA Not Applicable: Not Applicable

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WASTE PROFILE FORM

Reference Number

WCATS ID	Legacy WPF ID
7588	42154

Generator's Z Number	Waste Generator's Name *(print)*	WMC's Z Number	WMC's Name *(print)*		Generator's Phone
146032	COEL-ROBACK, REBECCA J	135015	LE SCOUARNEC, JEAN-MICHEL		5056655011
Generator's Mail Stop	**Waste Generating Group**	**Waste Stream Technical Area**	**Building**	**Room**	**WMC Phone**
M992	CAP	21	000000	0	

Waste Accumulation *(check only one)*

- ☐ Satellite Accumulation Area — Site No: _____
- ☐ Less-than-90 Days Storage Area — Site No: _____
- ☐ TSDF — Site No: _____
- ☐ Universal Waste Storage Area — Site No: _____
- ☐ Used Oil for Recycle — Site No: _____

ER Use Only

- ☑ ER Site — SWMU/AOC No. 21-006(E)-99

- ☐ PCBs Storage Area — Site No: _____
- ☐ NM Special Waste — Site No: _____
- ☐ Rad Staging Area — Site No: _____
- ☐ Rad Storage Area — Site No: _____
- ☑ None of the Above — Site No: _____

Method of Characterization *(check as many as apply)*

☑ Chemical/Physical Analysis	☑ Attached	Sample No: SEE DOCUMENTATION TAB
☑ Radiological Analysis	☑ Attached	Sample No: SEE DOCUMENTATION TAB
☑ PCB Analysis	☑ Attached	Sample No: SEE DOCUMENTATION TAB
☑ Acceptable Knowledge Documentation	☑ Attached	Documentation No: SEE DOCUMENTATION TAB
☐ Material Safety Data Sheet (MSDS)	☐ Attached	

Section 1 - Waste Prevention/Minimization *(answer all questions)*

Can hazard segregation, elimination, or material substitution be used?	☐ Yes *(provide comments)*	☑ No
Can any of the materials in the waste stream be recycled or reused?	☐ Yes *(provide comments)*	☑ No
Has waste minimization been incorporated into procedures or other process controls?	☑ Yes	☐ No *(provide comments)*
Can this waste be generated outside a RCA?	☐ Yes *(provide comments)*	☐ No ☑ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type *(check only one)*

- ☐ Unused/Unspent Chemical
- ☑ Process Waste/Spent Chemical/Other

Radiological Information

Was Waste generated in a RCA?

- ☑ Yes ☐ No
- ☐ Non-radioactive
- ☑ Radioactive - Low Level
- ☐ Radioactive - Transuranic

Waste Destination *(check one)*

- ☐ SWWS
- ☐ RLWTF
- ☐ RLWTP
- ☐ TA-16/HE
- ☐ NTS

Classified Information

- ☑ Unclassified
- ☐ Classified/Sensitive

Waste Category *(check all that apply)*

- ☑ Inorganic
- ☑ Organic
- ☐ Solvent (see instructions)
- ☐ Degreaser (see instructions)
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous Waste or Residue
- ☐ No-Longer Contained-In
- ☐ Explosive Process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (see instructions)
- ☐ Battery (see instructions)

Asbestos

- ☐ Friable
- ☐ Non-Friable

PCB Source Concentration

- ☑ PCB < 50 ppm
- ☐ PCB >= 50 - < 500 ppm
- ☐ PCB >= 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other [Describe]

Other:

Waste Source *(check only one)*

Waste Source A

- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (describe)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☑ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (non-routine)
- ☐ Spill Cleanup (non-routine)
- ☐ Non-Petroleum Tanks
- ☐ Petroleum Tanks
- ☐ Other (describe)

Other:

Waste Matrix *(check only one)*

Gas

- ☐ ≤1.5 Atmospheres Pressure
- ☐ >1.5 Atmospheres Pressure
- ☐ Liquified Compressed Gas

Liquid

- ☐ Aqueous
- ☐ Non-Aqueous
- ☐ Suspended Solids/Aqueous
- ☐ Suspended Solids/Non-Aqueous

Solid

- ☐ Powder/Ash/Dust
- ☑ Solid
- ☐ Sludge
- ☐ Absorbed/Solidified Liquid
- ☐ Debris

Matrix Type *(check only one)*

- ☑ Homogeneous
- ☐ Heterogeneous

Estimate Annual Volume (m^3):

15.3000

Section 3 - Process and Waste Description

Process Description:
AOC-21-006(E)-99. INVESTIGATIVE DRILLING AT TA-21 FOR UPPER LA CANYON ACA PROJECT. AOC21-006(E)-99.

Waste Description:
LL DRILL CUTTINGS in plastic liner, small amount of PPE

Section 4 - Characteristics

Ignitability *(check only one)*
- ☐ < 73 F (< 22.8 C)
- ☐ 73 - 99 F (22.8 - 37.2 C)
- ☐ 100 - 139 F (37.8 - 59.4 C)
- ☐ 140 - 200 F (60.0 - 99.3 C)
- ☐ > 200 (> 99.3 C)
- ☐ EPA Ignitable - Non-liquid
- ☐ DOT Flammable Gas
- ☐ DOT Oxidizer
- ☑ Not Ignitable

Corrosivity *(check only one)* (pH)
- ☐ <= 2.0
- ☐ 2.1 - 4.0
- ☐ 4.1 - 6.0
- ☐ 6.1 - 9.0
- ☐ 9.1 - 12.4
- ☐ >= 12.5
- ☐ Liquid Corrosive to Steel
- ☑ Non-aqueous

Reactivity *(check as many as apply)*
- ☐ RCRA Unstable
- ☐ Water Reactive
- ☐ Cyanide Bearing
- ☐ Sulfide Bearing
- ☐ Pyrophoric
- ☐ Shock Sensitive
- ☐ Explosive [Specify DOT Div.]
- ☑ Non-Reactive

Boiling Point *(check only one)*
- ☐ <= 95 F (<= 35 C)
- ☐ >95 F (> 35 C)
- ☑ Not Applicable

Identify for all contaminants listed	Characterization Method: AK	TCLP	Total	None or Non-detect	Concentration of Contaminants: Contaminant present at Minimum	Maxiumum	Regulatory Limit
Toxicity Characteristic Metals					(10,000 ppm = 1%)		
Arsenic	☐	☑	☐	☐	0.08 to	0.1 ppm	5.0 ppm
Barium	☐	☑	☐	☐	3.3 to	3.5 ppm	100.0 ppm
Cadmium	☐	☑	☐	☐	0.0065 to	0.0067 ppm	1.0 ppm
Chromium	☐	☑	☐	☐	0.2 to	0.3 ppm	5.0 ppm
Lead	☐	☑	☐	☐	0.4 to	0.5 ppm	5.0 ppm
Mercury	☐	☑	☐	☐	0.01 to	0.02 ppm	0.2 ppm
Selenium	☐	☑	☐	☑	to	ppm	1.0 ppm
Silver	☐	☑	☐	☑	to	ppm	5.0 ppm
Toxicity Characteristic Organics							
Benzene	☐	☑	☐	☑	to	ppm	0.5 ppm
Carbon tetrachloride	☐	☑	☐	☑	to	ppm	0.5 ppm
Chlorobenzene	☐	☑	☐	☑	to	ppm	100.0 ppm
Chloroform	☐	☑	☐	☑	to	ppm	6.0 ppm
Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
p-Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
m-Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
o-Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
1,4-Dichlorobenzene	☐	☑	☐	☑	to	ppm	7.5 ppm
1,2-Dichloroethane	☐	☑	☐	☑	to	ppm	0.5 ppm
1,1-Dichloroethylene	☐	☑	☐	☑	to	ppm	0.7 ppm
2,4-Dinitrotoluene	☐	☑	☐	☑	to	ppm	0.13 ppm
Hexachlorobenzene	☐	☑	☐	☑	to	ppm	0.13 ppm
Hexachlorobutadiene	☐	☑	☐	☑	to	ppm	0.5 ppm
Hexachloroethane	☐	☑	☐	☑	to	ppm	3.0 ppm
Methyl ethyl ketone	☐	☑	☐	☑	to	ppm	200.0 ppm
Nitrobenzene	☐	☑	☐	☑	to	ppm	2.0 ppm
Pentachlorophenol	☐	☑	☐	☑	to	ppm	100.0 ppm
Pyridine	☐	☑	☐	☑	to	ppm	5.0 ppm
Tetrachloroethylene	☐	☑	☐	☑	to	ppm	0.7 ppm
Trichloroethylene	☐	☑	☐	☑	to	ppm	0.5 ppm
2,4,6-Trichlorophenol	☐	☑	☐	☑	to	ppm	2.0 ppm
2,4,5-Trichlorophenol	☐	☑	☐	☑	to	ppm	400.0 ppm
Vinyl chloride	☐	☑	☐	☑	to	ppm	0.2 ppm
Herbicides and Pesticides							
Chlordane	☑	☐	☐	☑	to	ppm	0.03 ppm
2,4-D	☑	☐	☐	☑	to	ppm	10.0 ppm
Endrin	☑	☐	☐	☑	to	ppm	0.02 ppm
Heptachlor (& its epoxide)	☑	☐	☐	☑	to	ppm	0.008 ppm
Lindane (gamma-BHC)	☑	☐	☐	☑	to	ppm	0.4 ppm
Methoxychlor	☑	☐	☐	☑	to	ppm	10.0 ppm
2,4,5-TP (Silvex)	☑	☐	☐	☑	to	ppm	1.0 ppm
Toxaphene	☑	☐	☐	☑	to	ppm	0.5 ppm

7588: WASTE STREAM PROFILE

AOC-21-006(E)-99. INVESTIGATIVE DRILLING AT TA-21 FOR UPPER LA CANYON ACA PROJECT. AOC21-006(E)-99.

F: Nuclear Materials

NM Type	Nuclear Material Name	Concentration From	To	Unit

G: Composition

CAS Number	Material Name	Concentration From	To	Unit
	ZINC	0.00	0	wt%
	VANADIUM	0.00	0	wt%
	SODIUM	0.00	0	wt%
	POTASSIUM	0.00	0	wt%
	NICKEL	0.00	0	wt%
	MANGANESE	0.00	0	wt%
	MAGNESIUM	0.00	0	wt%
	IRON	0.00	1	wt%
	COPPER	0.00	0	wt%
	COBALT	0.00	0	wt%
	CALCIUM	0.00	1	wt%
	BERYLLIUM	0.00	0	wt%
	ALUMINUM	0.00	0	wt%
	plastic liner & PPE	1.00	2	wt%
	DRILL CUTTINGS	98.00	99	wt%
11096-82-5	AROCLOR-1260	0.00	0	wt%
11097-69-1	ALOCLOR-1254	0.00	0	wt%
117-81-7	BIS(2-ETHYLHEXYL)PHTHALATE	0.00	0	wt%
129-00-0	PYRENE	0.00	0	wt%
191-24-2	BENZO(G,H)PERYLENE	0.00	0	wt%
193-39-5	INDENO(1 2 3-CD)PYRENE	0.00	0	wt%
205-99-2	BENZO(B)FLUORANTHENE	0.00	0	wt%
206-44-0	FLUORANTHENE	0.00	0	wt%
207-08-9	BENZO(K)FLUORANTHENE	0.00	0	wt%
218-01-9	CHRYSENE	0.00	0	wt%
50-32-8	BENZO(A)PYRENE	0.00	0	wt%
56-55-3	BENZO(A)ANTHRACENE	0.00	0	wt%
85-01-8	PHENANTHRENE	0.00	0	wt%

Attachment 1 - Additional Radionuclides

Please list the supplimentary radionuclides and their concentration values.

Nuclear Abbr.	Concentration			Unit
	Low	Typical	High	
Am-241	1.47	1.47	1.47	pCi/g
Bi-214	1.69	1.69	1.69	pCi/g
H-3	0.09	0.09	0.09	pCi/g
K-40	34.00	34.00	34.00	pCi/g
Pb-212	1.87	1.87	1.87	pCi/g
Pb-214	1.61	1.61	1.61	pCi/g
Pu-239	18.20	18.20	18.20	pCi/g
Ra-226	1.69	1.69	1.69	pCi/g
Ra-228	2.41	2.41	2.41	pCi/g
Th-234	1.57	1.57	1.57	pCi/g
Tl-208	0.57	0.57	0.57	pCi/g
U-234	10.20	10.20	10.20	pCi/g
U-235	0.91	0.91	0.91	pCi/g
U-236	0.74	0.74	0.74	pCi/g
U-238	1.12	1.12	1.12	pCi/g

Section 8 - Waste Certification Statements

☑ Waste appears to meet WAC attachment for: LLW
☐ Waste stream needs exception/exemption for treatment, storage, or disposal.
☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the office of the Principle Associate Director for Weapons Programs [PADWP] for assistance.)
Waste Generator Certification: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations. Signature: *REBECCA J COEL-ROBACK (146032)* Date: *01/05/11 09:19 AM*
Waste Management Coordinator: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC. Signature: *JEAN-MICHEL LE SCOUARNEC (13501* Date: *01/05/11 09:19 AM*

[redacted]

TA-21CAP WASTE
1. WSCF: EP2010-0249
2. WASTE STREAM #1: DRILL CUTTINGS (IDW)
3. SAMPLE EVENT 2989, WST26-10-24548, see doc tab
4. AOC: 21-006(E)-99.
5. DUE DILIGENCE FOR SMWU/AOC 21-006(E)-99 see doc tab
6. FIELD IMPLEMENTATION PLAN FOR THE PHASE II INVESTIGATION WORK PLAN FOR MIDDLE LOS ALAMOS AGGREGATE AREA (JULY 2010) DID NOT PROPOSE SAMPLING AND ANALYSIS FOR PESTICIDES AND HERBICIDES FOR SWMU21-0066(E)-99 SINCE THEY WERE DETERMINED TO BE NOT PRESENT AND ARE THEREFORE NONE OR NON-DETECT.
7.A due diligence review performed for this waste stream, did not identify any listed sources. Therefore the F-, K-, P- and U-listed hazardous waste codes do not apply. The ENV-RCRA approved due diligence for this waste stream and the associated analytical data is provided as an attachment to the profile.
[see documentation tab]

WASTE PROFILE FORM COVER SHEET

22822
APPROVED

Waste Characterization Information

Waste Stream ID:	22822
WPF ID (Legacy):	50461
Waste Stream Name:	AOC-21-028(C). INVESTIGATIVE DRILLING AT TA-21 FOR UPPER LA CANYON ACA PROJECT. AOC 21-028(C).
Expiration Date:	02/14/2012
Waste Type:	Low Level Waste
Radiological Type:	Low Level Waste
RCRA Category:	RCRA Solid Non-hazardous
Ancillary Types:	
Primary Composition:	Soil
Composition (other):	Drill ops
EPA Codes:	
Waste Acceptance:	
EPA Form Code:	NA
	Not Applicable: Not Applicable
EPA Source Code:	NA
	Not Applicable: Not Applicable

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WASTE PROFILE FORM

Reference Number

WCATS ID	Legacy WPF ID
22822	50461

Generator's Z Number	Waste Generator's Name *(print)*	WMC's Z Number	WMC's Name *(print)*		Generator's Phone
146032	COEL-ROBACK, REBECCA J	135015	LE SCOUARNEC, JEAN-MICHEL		5056655011
Generator's Mail Stop	**Waste Generating Group**	**Waste Stream Technical Area**	**Building**	**Room**	**WMC Phone**
M992	CAP	21	000000	0	

Waste Accumulation *(check only one)*

- ☐ Satellite Accumulation Area — Site No: _____
- ☐ Less-than-90 Days Storage Area — Site No: _____
- ☐ TSDF — Site No: _____
- ☐ Universal Waste Storage Area — Site No: _____
- ☐ Used Oil for Recycle — Site No: _____

ER Use Only

- ☑ ER Site — SWMU/AOC No. 21-028(C)

- ☐ PCBs Storage Area — Site No: _____
- ☐ NM Special Waste — Site No: _____
- ☐ Rad Staging Area — Site No: _____
- ☐ Rad Storage Area — Site No: _____
- ☑ None of the Above — Site No: _____

Method of Characterization *(check as many as apply)*

☑ Chemical/Physical Analysis	☑ Attached	Sample No: SEE DOCUMENTATION TAB
☑ Radiological Analysis	☑ Attached	Sample No: SEE DOCUMENTATION TAB
☑ PCB Analysis	☑ Attached	Sample No: SEE DOCUMENTATION TAB
☑ Acceptable Knowledge Documentation	☑ Attached	Documentation No: SEE DOCUMENTATION TAB
☐ Material Safety Data Sheet (MSDS)	☐ Attached	

Section 1 - Waste Prevention/Minimization *(answer all questions)*

Can hazard segregation, elimination, or material substitution be used?	☐ Yes *(provide comments)*	☑ No	
Can any of the materials in the waste stream be recycled or reused?	☐ Yes *(provide comments)*	☑ No	
Has waste minimization been incorporated into procedures or other process controls?	☑ Yes	☐ No *(provide comments)*	
Can this waste be generated outside a RCA?	☐ Yes *(provide comments)*	☐ No	☑ N/A

Comments:

Section 2 - Chemical and Physical Information

Waste Type *(check only one)*

- ☐ Unused/Unspent Chemical
- ☑ Process Waste/Spent Chemical/Other

Radiological Information

Was Waste generated in a RCA?

- ☑ Yes ☐ No
- ☐ Non-radioactive
- ☑ Radioactive - Low Level
- ☐ Radioactive - Transuranic

Waste Destination *(check one)*

- ☐ SWWS
- ☐ RLWTF
- ☐ RLWTP
- ☐ TA-16/HE
- ☐ NTS

Classified Information

- ☑ Unclassified
- ☐ Classified/Sensitive

Waste Category *(check all that apply)*

- ☑ Inorganic
- ☑ Organic
- ☐ Solvent (see instructions)
- ☐ Degreaser (see instructions)
- ☐ Dioxin
- ☐ Electroplating
- ☐ Treated Hazardous Waste or Residue
- ☐ No-Longer Contained-In
- ☐ Explosive Process
- ☐ Infectious/Medical
- ☐ Biological
- ☐ Beryllium
- ☐ Empty Container (see instructions)
- ☐ Battery (see instructions)

Asbestos

- ☐ Friable
- ☐ Non-Friable

PCB Source Concentration

- ☑ PCB < 50 ppm
- ☐ PCB >= 50 - < 500 ppm
- ☐ PCB >= 500 ppm
- ☐ Hazardous Waste Contaminated Soil
- ☐ Untreated Hazardous Debris
- ☐ Commercial Solid Waste
- ☐ Other [Describe]

Other:

Waste Source *(check only one)*

Waste Source A

- ☐ Decon
- ☐ Materials Processing/Production
- ☐ Research/Development/Testing
- ☐ Scheduled Maintenance
- ☐ Housekeeping - Routine
- ☐ Spill Cleanup - Routine
- ☐ Sampling - Routine Monitoring
- ☐ Other (describe)

Waste Source B

- ☐ Abatement
- ☐ Construction/Upgrades
- ☐ Demolition
- ☐ Decon/Decom
- ☑ Investigative Derived
- ☐ Orphan/Legacy
- ☐ Remediation/Restoration
- ☐ Repacking (secondary)
- ☐ Unscheduled Maintenance
- ☐ Housekeeping (non-routine)
- ☐ Spill Cleanup (non-routine)
- ☐ Non-Petroleum Tanks
- ☐ Petroleum Tanks
- ☐ Other (describe)

Other:

Waste Matrix *(check only one)*

Gas

- ☐ ≤1.5 Atmospheres Pressure
- ☐ >1.5 Atmospheres Pressure
- ☐ Liquified Compressed Gas

Liquid

- ☐ Aqueous
- ☐ Non-Aqueous
- ☐ Suspended Solids/Aqueous
- ☐ Suspended Solids/Non-Aqueous

Solid

- ☐ Powder/Ash/Dust
- ☑ Solid
- ☐ Sludge
- ☐ Absorbed/Solidified Liquid
- ☐ Debris

Matrix Type *(check only one)*

- ☑ Homogeneous
- ☐ Heterogeneous

Estimate Annual Volume (m^3):

Section 3 - Process and Waste Description

Process Description:
AOC-21-028(C). INVESTIGATIVE DRILLING AT TA-21 FOR UPPER LA CANYON ACA PROJECT. AOC21-028(C).

Waste Description:
LL DRILL CUTTINGS in plastic liner, small amount of PPE

Section 4 - Characteristics

Ignitability *(check only one)*
- ☐ < 73 F (< 22.8 C)
- ☐ 73 - 99 F (22.8 - 37.2 C)
- ☐ 100 - 139 F (37.8 - 59.4 C)
- ☐ 140 - 200 F (60.0 - 99.3 C)
- ☐ > 200 (> 99.3 C)
- ☐ EPA Ignitable - Non-liquid
- ☐ DOT Flammable Gas
- ☐ DOT Oxidizer
- ☑ Not Ignitable

Corrosivity *(check only one)* (pH)
- ☐ <= 2.0
- ☐ 2.1 - 4.0
- ☐ 4.1 - 6.0
- ☐ 6.1 - 9.0
- ☐ 9.1 - 12.4
- ☐ >= 12.5
- ☐ Liquid Corrosive to Steel
- ☑ Non-aqueous

Reactivity *(check as many as apply)*
- ☐ RCRA Unstable
- ☐ Water Reactive
- ☐ Cyanide Bearing
- ☐ Sulfide Bearing
- ☐ Pyrophoric
- ☐ Shock Sensitive
- ☐ Explosive [Specify DOT Div.]
- ☑ Non-Reactive

Boiling Point *(check only one)*
- ☐ <= 95 F (<= 35 C)
- ☐ >95 F (> 35 C)
- ☑ Not Applicable

Identify for all contaminants listed	Characterization Method: AK	TCLP	Total	None or Non-detect	Concentration of Contaminants: Contaminant present at Minimum	Maxiumum	Regulatory Limit
Toxicity Characteristic Metals					(10,000 ppm = 1%)		
Arsenic	☐	☑	☐	☑	to	ppm	5.0 ppm
Barium	☐	☑	☐	☐	0.611 to	0.611 ppm	100.0 ppm
Cadmium	☐	☑	☐	☐	0.007 to	0.007 ppm	1.0 ppm
Chromium	☐	☑	☐	☐	0.024 to	0.024 ppm	5.0 ppm
Lead	☐	☑	☐	☐	0.027 to	0.027 ppm	5.0 ppm
Mercury	☐	☑	☐	☑	to	ppm	0.2 ppm
Selenium	☐	☑	☐	☑	to	ppm	1.0 ppm
Silver	☐	☑	☐	☑	to	ppm	5.0 ppm
Toxicity Characteristic Organics							
Benzene	☐	☑	☐	☑	to	ppm	0.5 ppm
Carbon tetrachloride	☐	☑	☐	☑	to	ppm	0.5 ppm
Chlorobenzene	☐	☑	☐	☑	to	ppm	100.0 ppm
Chloroform	☐	☑	☐	☑	to	ppm	6.0 ppm
Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
p-Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
m-Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
o-Cresol	☐	☑	☐	☑	to	ppm	200.0 ppm
1,4-Dichlorobenzene	☐	☑	☐	☑	to	ppm	7.5 ppm
1,2-Dichloroethane	☐	☑	☐	☑	to	ppm	0.5 ppm
1,1-Dichloroethylene	☐	☑	☐	☑	to	ppm	0.7 ppm
2,4-Dinitrotoluene	☐	☑	☐	☑	to	ppm	0.13 ppm
Hexachlorobenzene	☐	☑	☐	☑	to	ppm	0.13 ppm
Hexachlorobutadiene	☐	☑	☐	☑	to	ppm	0.5 ppm
Hexachloroethane	☐	☑	☐	☑	to	ppm	3.0 ppm
Methyl ethyl ketone	☐	☑	☐	☑	to	ppm	200.0 ppm
Nitrobenzene	☐	☑	☐	☑	to	ppm	2.0 ppm
Pentachlorophenol	☐	☑	☐	☑	to	ppm	100.0 ppm
Pyridine	☐	☑	☐	☑	to	ppm	5.0 ppm
Tetrachloroethylene	☐	☑	☐	☑	to	ppm	0.7 ppm
Trichloroethylene	☐	☑	☐	☑	to	ppm	0.5 ppm
2,4,6-Trichlorophenol	☐	☑	☐	☑	to	ppm	2.0 ppm
2,4,5-Trichlorophenol	☐	☑	☐	☑	to	ppm	400.0 ppm
Vinyl chloride	☐	☑	☐	☑	to	ppm	0.2 ppm
Herbicides and Pesticides							
Chlordane	☑	☐	☐	☑	to	ppm	0.03 ppm
2,4-D	☑	☐	☐	☑	to	ppm	10.0 ppm
Endrin	☑	☐	☐	☑	to	ppm	0.02 ppm
Heptachlor (& its epoxide)	☑	☐	☐	☑	to	ppm	0.008 ppm
Lindane (gamma-BHC)	☑	☐	☐	☑	to	ppm	0.4 ppm
Methoxychlor	☑	☐	☐	☑	to	ppm	10.0 ppm
2,4,5-TP (Silvex)	☑	☐	☐	☑	to	ppm	1.0 ppm
Toxaphene	☑	☐	☐	☑	to	ppm	0.5 ppm

Section 5 - Additional Constituents and Contaminants

Additional Constituents and Contaminants. Please account for 100% of waste. Range should be given within guidelines of individual constituents. List all other constients (including inerts) not identified above and attach any applicable analysis. No chemical formula allowed in this field. Continue in Section 3 Additional information as necessary. CAS numbers are needed for all chemical constituents, for material without a CAS number, enter "No CAS Number".

CAS No.	Name of constituent	Minimum		Maximum
----	DRILL CUTTINGS	99.5	to	99.75
----	plastic liner & PPE	1	to	1.5
	Total of max. ranges of this section and page 2			101.25 in %

Additional Information

If additional information is available on the chemical, physical, or radiological character of the waste not covered on this form, provide it below

Section 6 - Work Control Documentation

Do the procedures for this process cover how to manage this waste? ☑ Yes ☐ No *(provide comments)*

Do the procedures for this process address controls to prevent changes to waste constituents and concentrations or addition or removal of waste to/from containers? ☑ Yes ☐ No *(provide comments)*

Comments:

Section 7 - Packaging and Storage Control

Describe how the waste will be packaged in according to the applicable WAC.
DOT APPROVED CONTAINERS

Identify the storage management controls that will be used for this waste stream: *(check all that apply)*
☐ Tamper Indication Devices ☐ Limited use locks with log-in for waste ☐ Locked cabinet or building ☑ Other (describe) secured area

Section 8 - Waste Certification Statements

☑ Waste appears to meet WAC attachment for: LLW

☐ Waste stream needs exception/exemption for treatment, storage, or disposal.

☐ Waste does not meet the criteria for any known TSDF. (DOE approval is required. Contact the office of the Principle Associate Director for Weapons Programs [PADWP] for assistance.)

Waste Generator Certification: Based on my knowledge of the waste and/or chemical/physical analysis, I certify that the waste characterization information on this form is correct and that it meets the requirements of the applicable waste acceptance criteria. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

Signature: *REBECCA J COEL-ROBACK (146032)* Date: *02/14/11 10:36 AM*

Waste Management Coordinator: I have reviewed this form and any associated attachments and the characterization information provided appears to be complete and accurate. I certify, to the best of my knowledge, that the waste characterization information provided by the waste generator meets the requirements of the applicable WAC.

Signature: *JEAN-MICHEL LE SCOUARNEC (13501* Date: *02/15/11 08:33 AM*

Attachment 1 - Additional Radionuclides

Please list the supplimentary radionuclides and their concentration values.

Nuclear Abbr.	Concentration			Unit
	Low	Typical	High	
Am-241	0.68	0.68	0.68	pCi/g
Bi-214	1.28	1.28	1.28	pCi/g
Cs-137	2.92	2.92	2.92	pCi/g
K-40	30.60	30.60	30.60	pCi/g
Pb-212	1.92	1.92	1.92	pCi/g
Pb-214	1.48	1.48	1.48	pCi/g
Pu-238	0.17	0.17	0.17	pCi/g
Pu-239	1.31	1.31	1.31	pCi/g
Ra-226	1.28	1.28	1.28	pCi/g
Ra-228	1.71	1.71	1.71	pCi/g
Tl-208	0.58	0.58	0.58	pCi/g
U-234	7.22	7.22	7.22	pCi/g
U-235	0.35	0.35	0.35	pCi/g
U-238	0.89	0.89	0.89	pCi/g

[redacted]

TA-21CAP WASTE

1. WSCF: EP2010-0249

2. WASTE STREAM #1: DRILL CUTTINGS (IDW)

3. SAMPLE EVENT 3013, WST02-10-24903, see doc tab

4. AOC: 21-028(C).

5. DUE DILIGENCE FOR SMWU/AOC 21-028(C) see doc tab

6. FIELD IMPLEMENTATION PLAN FOR THE PHASE II INVESTIGATION WORK PLAN FOR MIDDLE LOS ALAMOS AGGREGATE AREA (JULY 2010) DID NOT PROPOSE SAMPLING AND ANALYSIS FOR PESTICIDES AND HERBICIDES FOR SWMU21-028(C) SINCE THEY WERE DETERMINED TO BE NOT PRESENT AND ARE THEREFORE NONE OR NON-DETECT.

7. A due diligence review performed for this waste stream, did not identify any listed sources. Therefore the F-, K-, P- and U-listed hazardous waste codes do not apply. The ENV-RCRA approved due diligence for this waste stream and the associated analytical data is provided as an attachment to the profile.
[see documentation tab]