109754

Waste Characterization Strategy Form

Project Title:	**TA-21 MDA-B**
Solid Waste Management Unit or Area of Concern #:	**TA-21, 21-015**
Activity Type:	**Excavation**
Project Manager/Waste Generator:	**Mitch Goldberg**
LANL Waste Management Coordinator:	**Gordon Jio**
Completed by:	**Glenn Siry**
Date:	**30 May 2010**

Description of Activity 1: This Waste Characterization Strategy Form (WCSF) specifies how wastes generated due to excavation of the waste disposal cells at MDA-B will be characterized and managed based upon the general waste stream classifications as required by the receiving TSDF. The waste generating activities include:

- Excavation of Overburden cover up to the first sign of waste.
- Excavation of the waste from the disposal cells.
- Sort and Segregation of excavated waste.
- Size Reduction of Oversized Waste Items
- Characterization of excavated waste including inspection and sampling.

Description of Activity 2: This Waste Characterization Strategy Form (WCSF) also specifies how sampling wastes generated once confirmation sampling has determined that residential cleanup levels cannot be achieved will be characterized and managed. The number of borehole samples and their locations will be evaluated and selected based on the results of confirmation sampling (of the side walls and trench bottoms) and observations during excavation of the waste from MDA-B. Candidate borehole locations will be determined based on the following criteria:

- Residential cleanup levels were not attained because the depth of the excavation limited the equipment and/or because of safety concerns.
- Areas of heavy staining, severe fracturing, and/or high moisture content exist.
- After excavation of trench contents, residuals containing contamination above residential cleanup levels exist.
- Waste areas of the excavation exist that contained a significantly high hazard.

This WCSF does not include characterization and waste generation activities associated with operations at the Definitive Identification Facility (DIF) (EP2010-0207). The excavation and confirmation activities at MDA-B are expected to generate the following waste streams:

1. Industrial Debris
2. Asbestos Containing Material (ACM) - Industrial Debris
3. Polychlorinated Biphenyl (PCB) Remediation Waste (non-Rad)
4. PCB Items and Articles ($\geq$500 ppm, non-Rad)
5. Universal Waste
6. Non-Hazardous/Non-Radiological liquids
7. Hazardous Lab Pack (non-Rad)
8. Bulk Hazardous (non-Rad)
9. Rad Debris (Clive Debris, includes ACM & PCB up to WAC limit)
10. Rad Debris (Clive Oversize Debris, includes ACM & PCB up to WAC limit)
11. Rad Soil (Clive up to 10% Debris, includes ACM)

12. Radioactive Liquid Waste (RLW) for Rad Liquids (or stabilized and shipped to Clive)
13. PCB Rad Items and Articles (≥500 ppm)
14. Mixed Low Level Waste (MLLW) – Macro
15. MLLW – Hi Hg (≥260 ppm)
16. MLLW – Liquids

Detailed characterization, handling, storage, and disposal requirements for these waste streams are provided in the following documents:

- TA21-MDAB-PLAN-00014, *Waste Management Plan for Material Disposal Area (MDA) B*
- TA21-MDAB-PLAN-00017, *Material Disposal Area B Sampling and Analysis Plan*

Waste items associated with the waste streams identified in this WCSF are clarified in the MDA B Waste Management Plan, TA21-MDAB-PLAN-00014. Identifying waste items excavated from the trench will be associated to the waste streams identified in this WCSF by field personnel. **Relevant Site History and Description:** The MDA-B consists of approximately 6 acres of land at TA-21 located on DP Mesa. MDA-B is a less than Hazard Category 3 or Radiological and Low Chemical Hazard Site, which is posted as a Radiation Control Area. MDA-B was the first common disposal site for contaminated materials from the Laboratory, operating from 1944 to 1948. MDA-B may contain both hazardous and radiological chemicals. No formal records of the wastes or construction design exist for MDA-B. The MDA-B Process Waste Review (EP2007-0236) provides the context for knowledge of waste generation and management during the operational period. From 1966 to 1990 the surface for MDA-B and adjacent property was open to the public for recreational vehicle and automobile parking. The following documents are important references for this WCSF:

- LA-UR-06-6918, *EP2006-0783, Investigation/Remediation Work Plan for Material Disposal Area B, Solid Waste Management Unit 21-015, at Technical Area 21, Revision1*
- NMED 1/31/07, *Approval with Modifications for the Investigation/Remediation Work Plan for Material Disposal Area B, Solid Waste Management Unit 21-015, at Technical Area 21, Revision1, Los Alamos National Laboratory*
- ENV-RCRA: 07-223, *Request for Approval of an Area of Contamination for the Investigation of Solid Waste Management Unit 21-015, Material Disposal Area B, at Technical Area 21, Los Alamos National Laboratory.*
- NMED 10/2/07, *Approval of An Area of Contamination for the Investigation and Remediation of SWMU 21-015, Material Disposal Area B, at Technical Area 21, Los Alamos National Laboratory.*

CHARACTERIZATION STRATEGY

This WCSF identifies the based upon the general waste stream classifications as required by the receiving TSDF. However, other types of waste may be an encountered. An amendment to this WCSF shall be prepared and submitted for review and approval if any of the waste streams change in description or characterization approach or a new waste stream is generated. All wastes will be managed in accordance with SOP-5238, *Characterization and Management of Environmental Program Waste*. All waste generated due to excavation at MDA-B will initially be managed within the boundary of the Area of Contamination (AOC) until characterization data are available to make a waste determination for treatment and/or disposal. Characterization of waste will be completed using the following:

- **Acceptable knowledge (AK):** Process knowledge and waste disposal records for the waste materials at MDA-B are very limited. In this case AK refers to the following:
  - Waste Materials/Items with a composition that is known to be hazardous or otherwise regulated (e.g., batteries, thermometers, pumps with mercury seals, leaded glass, lead bricks, lead shielding, asbestos insulated furnaces). These items do not have to be sampled to be characterized as hazardous. They do

require characterization for radiological composition to meet the WAC of the treatment and/or disposal facility.

- Unspent chemicals from sealed (never opened) containers with readable labels.
- Consistent/homogeneous waste streams (e.g., several cubic yards of concrete from the same area that is relatively homogenous).
- Waste materials/items with liquids and/or residues that can be sampled. In this case the analytical results from the liquid and/or residue can be used as AK to support treatment and/or disposal of the material/item from which it originated.

- **Environmental Sampling Data:** Excavation of MDA-B includes the collection of investigation samples (e.g., direct push data for overburden outside the trenches) to confirm waste removal and/or provide nature and extent for future investigations. This data can be used as AK for the disposal of some waste materials and items.

- **Process Knowledge/Existing Documents:** The excavation of MDA-B will include operations that will generate materials/items not associated with the historical waste being excavated (e.g., personnel protective equipment, fire suppression foam, used for HazCat® kits). Information that is known due an MSDS and/or procedures can be used as AK to characterize these types of materials/items. However, if they have contacted contaminated materials (e.g., soil) from MDA B, the data for the contacted materials must also be used for waste characterization.

- **Radiological Analysis:** The type of radiological analysis required will be determined by the isotopic distribution and quantity of contamination detected by Field Screening and AK. Since the majority of known isotopes at MDA B are alpha emitters, the use of gamma spectroscopy is limited to identification of fission daughters when present and certain decay products. Alpha spectroscopy and liquid scintillation will be used in conjunction with gamma readings to provide a complete isotopic distribution and quantification of radiological contamination.

  In situ gamma field measurements (e.g.; ISOCS) can be used to determine gamma emitting radioactivity quantification and isotopic identification. When used in conjunction with a isotopic distribution, in-situ gamma measurements can provide characterization data and an assessment of MAR.

- **Direct Sampling:** Samples collected by trained sampling personnel in accordance with TA21-MDAB-PLAN-00017.

- **Field Screening**: Field surveys for detection of radioactivity will include direct measurements of surface areas (direct scans) and removable surface measurements of surface areas (smear surveys) performed by an RCT. Other measurements may include in situ gamma field measurements and field scanning measurements (see description of in-situ gamma measurements under Radiological Analysis). These measurements will also tentatively identify items/containers that are transuranic (TRU).

  Field screening will also include industrial hygiene instrumentation to monitor IDLH, toxic gases, dust, and other parameters that could present a hazard to personnel who must enter the enclosures periodically to sort/segregate waste items, collect samples, label waste containers, and close waste containers. IH field screening may also be used to determine the presence, or lack thereof, of many hazardous materials. These indications should be considered when making the hazardous determination.

- **HazCat ® Identification**: The excavation of waste from the disposal trenches/cells at MDA-B are expected to generate anomalies, unknowns, and chemicals that must be segregated into RCRA compatibility groups and identified to determine the appropriate facility to which it will be relocated or shipped. Sampling personnel may utilize HazCat® Kits (or equivalent) to perform field sampling and testing to categorize and identify anomalies, unknowns, and chemicals using common reagents, logic charts, and simple tests (e.g., pH paper).

Identification of materials using HazCat methods will generally be performed at the DIF but may also be performed inside the excavation enclosures under limited conditions. Procedures for handling Anomalies at MDA B are TA21-MDAB-DOP-00011, MDA B Waste Anomaly and Unidentified Item Identification and Handling and TA21-MDAB-DOP-00019, DIF Operations.

- **Characterization Table provides a overview of the characterization strategy, Table 1.**

The selection of waste containers will be based on U.S. Department of Transportation requirements, waste types, and estimated volumes of waste to be generated. A waste determination must be made as soon as possible after the waste is generated. A Waste Acceptance Criteria (WAC) waste exception form (WEF) can be used if the generator does not meet the 45 day deadline for Hazardous and MLLW removed from the AOC. Each waste container will be individually labeled with a unique container identification number and with information regarding waste classification, contents, and date generated.

Reviews of pertinent documentation relating to disposal at MDA B has been completed. These reviews do not indicate the presence of RCRA listed wastes. Therefore only RCRA Characteristically Hazardous wastes are expected. However, should the excavation reveal containers appearing to contain unused chemicals, an appropriate evaluation will be performed to determine if RCRA listed waste codes are required for the waste. A copy of either the ENV-RCRA approved due diligence or the NMED contained-in approval letter must accompany all waste profiles prepared for the subject waste(s).

Waste #1: Industrial Debris - This waste stream will consist of non-radiological and non-hazardous demolition debris (i.e., walls, ceilings, roofing, structural steel, rebar, concrete, stairwells, air vents, wood, glass windows, doors) and clean soils (i.e., fill, base course, and soil) that were buried or used for fill at MDA-B. This waste stream will encompass the overburden/layback that does not meet New Mexico residential limits for return to the MDA B, soils removed from the waste layer of MDA B and borehole cuttings from confirmation sampling.

Anticipated Regulatory Status: Industrial

Characterization Approach: Waste characterization of Industrial Debris will depend upon the type of equipment/material that is being characterized. The following bullets provide the different cases:

- ***Porous Materials (e.g., concrete, asphalt, roofing material, wood)*** - Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected in accordance with SOP-5194, *Chip Sampling of Porous Surfaces* or subcontractor equivalent procedure. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled (e.g.: cement would not require sampling for asbestos unless the asbestos were visible; if oil or grease staining is observed samples will be analyzed for PCBs; TCLP testing would not be required for steel piping).

- ***Soils*** – Per the NMED- approved investigation/remediation work plan, waste characterization will be based upon the analytical results obtained from direct sampling of the soil. A representative sample will be collected for a minimum of every 50 yd^3 for all soils removed from the overburden/layback to determine that the overburden/layback soil is NOT hazardous and meets NM residential screening levels prior to reuse as fill at the site. Soils from the waste layer will be field screened and if necessary sampled in accordance with Table 1 and TA21-MDAB-PLAN-00017. Soils from the waste layer determined to not be radiological or hazardous and overburden/layback not meeting NM residential limits will be handled as Industrial Waste.

- ***Non-porous Materials (e.g., structural steel, rebar, stairwells, grating)*** - Characterization will be based upon AK, field screening for gross alpha, beta, and gamma contamination, and if necessary wipe samples (to determine presence of radiological/hazardous materials that are not fixed). If additional sampling is required in order to meet the requirements of this waste stream, transportation, and the waste acceptance criteria of the

receiving TSDF then sampling for the contaminants identified in Table 1 shall be performed as required. Samples will be collected and analyzed as follows in accordance with TA21-MDAB-PLAN-00017.

NOTE: Metal removed from radiological areas must be managed in accordance with LANL Notice RN0808, *Requirements for Recycling Metal from Areas Posted for Radiological Hazards* and Attachment 19 of P930-1, *LANL Waste Acceptance Criteria.* They cannot be recycled but, per DOE requirements, must be disposed in a facility whose permit allows the acceptance of these wastes. Metals removed from MDA B are considered to have a radiological history as the metals have been buried in an area of known contamination and do not have a documented history of being non-radiological. Therefore metals from MDA B are not candidates for recycle.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the Soil and Debris. The Industrial Debris will be size reduced when cost effective, containerized as required, and sampled in accordance with TA21-MDAB-PLAN-00017, as required. The containers will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until sufficient data are available to make a waste determination. Waste determined to be Industrial Debris may be removed from the AOC and stored in an appropriate location until shipment to the TSDF. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Overburden and Layback soils that are determined to be non-hazardous and meet residential screening levels may be reused as fill in the deeper portions of the excavation (NMED 1/31/07). Overburden/layback will be managed within the boundaries of the TA-21 in secure, designated accumulation areas appropriate to the type of waste. The soil that cannot be reused will remain containerized and transferred to a storage area appropriate for the type of waste pending treatment and/or disposal at an authorized off-site facility.

Debris characterized as LLW will be removed from the Area of Contamination and managed in a radioactive waste staging or storage area until it can be shipped for disposal in accordance with wastes #9 through #11 of this WCSF. Debris characterized as Hazardous or MLLW will be managed as in accordance with this WCSF wastes #8 or #14/15 and treated and/or disposed of at an authorized off-site facility.

Borehole cuttings will be containerized at the point of generation. The cuttings will initially be managed as non-hazardous waste and stored within the boundaries of the Area of Contamination in secure, designated accumulation areas until analytical results are available to make a waste determination. Cuttings may be land applied if they meet the criteria in Quality Procedure QPP-011, Land Application of Drill Cuttings.

Waste #2: ACM-Industrial Debris - This waste stream will consist of non-radiological and non-hazardous demolition debris with asbestos content (i.e., walls, ceilings, roofing, structural steel, rebar, concrete, stairwells, air vents, wood, glass windows, doors) and clean soils (i.e., fill, base course, and soil) that were buried or used for fill at MDA-B that have asbestos content.

Anticipated Regulatory Status: New Mexico Special Waste/Industrial

Characterization Approach: Waste characterization of ACM-Industrial Debris will depend upon the type of equipment/material that is being characterized. The following bullets provide the different cases:

- ***Porous Materials (e.g., concrete, asphalt, roofing material, wood)*** - Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected in accordance with SOP-5194, *Chip Sampling of Porous Surfaces* or subcontractor equivalent procedure. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled (e.g.: cement would not require sampling for asbestos unless the asbestos were visible; materials such as floor tile and transite siding with obvious signs of asbestos can be determined to be ACM by visual inspection).

- ***Soils*** - Soils from the waste layer will be field screened and if necessary sampled in accordance with Table 1 and TA21-MDAB-PLAN-00017. If oil or grease staining is observed samples should be analyzed for PCBs and if necessary TPH. Soils from the waste layer determined to not be radiological or hazardous but known to contain ACM will be handled as ACM - Industrial Waste.

- ***Non-porous Materials (e.g., structural steel, rebar, stairwells, grating)*** - Characterization will be based upon AK, field screening for gross alpha, beta, and gamma contamination, and if necessary wipe samples (to determine presence of radiological/hazardous materials that are not fixed). If additional sampling is required in order to meet the requirements of this waste stream, transportation, and the waste acceptance criteria of the receiving TSDF then sampling for the contaminants identified in Table 1 shall be performed as required. Samples will be collected and analyzed as follows in accordance with TA21-MDAB-PLAN-00017.

NOTE: Metal removed from radiological areas must be managed in accordance with LANL Notice RN0808, *Requirements for Recycling Metal from Areas Posted for Radiological Hazards* and Attachment 19 of P930-1, *LANL Waste Acceptance Criteria.* They cannot be recycled but, per DOE requirements, must be disposed in a facility whose permit allows the acceptance of these wastes. Metals removed from MDA B are considered to have a radiological history as the metals have been buried in an area of known contamination and do not have a documented history of being non-radiological. Therefore metals from MDA B are not candidates for recycle.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the Soil and Debris. The ACM-Industrial Debris will be size reduced when cost effective, containerized as required by regulation, and sampled in accordance with TA21-MDAB-PLAN-00017, as required. The containers will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until sufficient data are available to make a waste determination. Waste determined to be ACM-Industrial Debris may be removed from the AOC and stored in an appropriate location until shipment to the TSDF. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Soil that can be determined to be non-radioactive and non-hazardous (RCRA) will remain containerized and transferred to a storage area appropriate for the type of waste pending treatment and/or disposal at an authorized off-site facility.

Debris characterized as LLW will be removed from the Area of Contamination and managed in a radioactive waste staging or storage area until it can be shipped for disposal in accordance with wastes #9 through #11 of this WCSF. Debris characterized as Hazardous or MLLW will be managed as in accordance with this WCSF wastes #8 or #14/15 and treated and/or disposed of at an authorized off-site facility.

Waste #3: PCB Remediation Waste - This waste stream consists of non-radioactively contaminated PCB-impregnated insulated electrical wiring, doors and window frames with PCB caulking, ballasts, transformers, and other PCB contaminated items/material with greater than 50 ppm PCBs or spill clean-up residues with 10 ug/100 cm2 or 10 ppm contamination. Soils observed to have staining will be segregated and also sampled for PCBs.

Anticipated Regulatory Status: Industrial with PCB

Characterization Approach: Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected as described in TA21-MDAB-PLAN-00017. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled. PCB remediation waste determined to be LLW with PCB concentrations <500 ppm (such as paints) do not require further PCB analysis unless required by the waste acceptance criteria of the receiving TSDF.

Transformers that contain liquids, are intact, and meet the WAC of the disposal facility may be packaged for shipment and disposal as is. Damaged transformers and other equipment found to contain suspect PCB liquid sampled for PCB analysis. The liquid samples will be screened for radionuclides. Further radiological

analysis will be performed if the field screening indicates radiological content. The equipment will be characterized based upon the analytical results of the liquid.

Storage and Disposal Method: PCB remediation waste excavated from the MDA-B waste cells will be raked, screened, and/or sifted to provide initial segregation. The PCB remediation waste will be containerized as required by regulation, and sampled in accordance with TA21-MDAB-PLAN-00017, when necessary. The PCB remediation waste containers will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until sufficient data are available to make a waste determination. Waste determined to be PCB remediation waste may be removed from the AOC and stored in an appropriate location until shipment to the TSDF. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

PCB remediation waste characterized as LLW will be removed from the Area of Contamination and managed in a radioactive or PCB waste staging or storage area until it can be shipped for disposal in accordance with wastes #9 through #14 of this WCSF.

Waste #4: PCB Items and Articles (≥500 ppm, non-rad) - This waste stream consists of non-radioactively contaminated PCB-impregnated and/or PCB containing equipment including transformers, switchgear, ventilation equipment, piping, pumps, tanks, ductwork, hoods, scales, machining equipment and PCB soils.

Anticipated Regulatory Status: PCB

Characterization Approach: Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected as described in TA21-MDAB-PLAN-00017. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled.

Transformers that contain liquids, are intact, and meet the WAC of the disposal facility may be packaged for shipment and disposal as is. Damaged transformers and other equipment found to contain suspect PCB liquid will be sampled for PCB analysis. The liquid samples will be screened for radionuclides. Further radiological analysis will be performed if the field screening indicates radiological content. The equipment will be characterized based upon the analytical results of the liquid.

Storage and Disposal Method: PCB items and articles waste excavated from the MDA-B waste cells will be raked, screened, and/or sifted to provide initial segregation. The PCB items and articles waste will be containerized as required by regulation, and sampled in accordance with TA21-MDAB-PLAN-00017, when necessary. The PCB items and articles will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until sufficient data are available to make a waste determination. Waste determined to be PCB items and articles waste may be removed from the AOC and stored in an appropriate location until shipment to the TSDF. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

PCB remediation waste characterized as LLW will be removed from the Area of Contamination and managed in a radioactive or PCB waste staging or storage area until it can be shipped for disposal in accordance with waste #13 of this WCSF.

Waste #5: Universal Waste - This waste stream consists of batteries, fluorescent bulbs, mercury switches.

Anticipated Regulatory Status: Universal Waste

Characterization Approach: Characterization will be based upon AK and wipe samples (to determine presence of radiological/hazardous materials not fixed). Radiological wipe samples and/or smears will be collected for radiological characterization determination, all surfaces can be accessed for wiping, and none of the contamination is fixed.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the surrounding soil and by regulated waste type (e.g., fluorescent bulbs, mercury switches, batteries, etc), as necessary. If the material is characterized as Universal Waste, it will be managed as such

when it is removed from the Area of Contamination boundaries and treated and/or disposed of at an authorized off-site facility. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #6: *Non-hazardous/non-radiological liquids:* This waste stream may be generated from storm-water run-on collected within excavations (reasonable efforts will be implemented to minimize its generation) and/or retention/detention basins (if contamination is possible due to a spill). If storm-water run-on is observed, it will be collected, containerized and managed according to the provisions below.

Anticipated Regulatory Status: SWWS

Characterization Approach: Waste characterization of this waste stream will be based upon the analytical results obtained from the direct sampling of containerized waste. Samples will be collected from the storage container in accordance approved procedures, see TA21-MDAB-PLAN-00017 MDA B Sampling and Analysis Plan. Samples will be screened for gross alpha, beta, and gamma. Other constituents may be analyzed as needed to meet the receiving disposal facility's WAC.

Storage and Disposal Method: Storm water (if generated due to a flooded excavation and/or spill contamination in a retention/detention basin) will be collected using hand/motorized pumps and containerized into an appropriate container at the point of generation. Storm water will be managed in approved containers within the boundaries of the Area of Contamination until analytical data are available to make a waste determination. It is anticipated that this waste will be a candidate for treatment on-site at the LANL SWWS treatment facility (if Waste Acceptance Criteria area met). If it cannot be treated at an on-site facility, due to operational limitations or inability to meet the WAC, it will be adsorbed/solidified as appropriately in accordance with the appropriate TSDF Waste Acceptance Criteria. If radiological screening indicates radioactive content the waste will be handled in accordance with Waste Stream #12.

Waste #7: Hazardous Lab Pack (non-radiological) - This waste stream may be generated from the discovery of intact small carboys, plastic vials/containers, and various glass bottles/containers that were buried at MDA-B prior to packaging as waste.

Anticipated Regulatory Status: Hazardous Waste

Characterization Approach: Laboratory debris found to contain liquid (aqueous or otherwise) or gases will be segregated as anomalies and/or unknown items and packaged for characterization in the Definitive Identification Facility (DIF). Waste characterization and generation activities at the DIF are addresses in EP2010-020, *WCSF: MDA-B Anomalies, Unknowns, and Chemicals.*

Waste characterization of this waste stream will be based upon AK and the analytical results obtained from the direct sampling of containerized waste. Samples will be collected from the storage container in accordance with TA21-MDAB-PLAN-00017 MDA B Sampling and Analysis Plan. Samples will be screened for gross alpha, beta, and gamma to determine possible radiological contamination. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

Storage and Disposal Method: Collected liquid will be packaged in approved containers and initially managed in the AOC until characterization data or HazCat field analysis data are available to make a waste determination and/or identify the material for off-site treatment and/or disposal. Collected liquid that is characterized as Hazardous Lab Pack material will be managed as such when it is removed from the Area of Contamination boundaries for treated and/or disposed of at an authorized off-site facility. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014. If the collected liquid is characterized as LLW or MLLW it will managed in a radioactive waste staging, storage area on the AOC, or less than 90 day waste accumulation area until it can be shipped for disposal in accordance with waste stream #12 or #16.

Waste #8: Bulk Hazardous (non-radiological) - This waste stream primarily consists of non-radiological liquids from equipment and/or piping that is drained of residual liquids, plastic vials/containers, and various glass bottles/containers that were buried at MDA-B and decontamination fluids. Other hazardous but non-radiological material are also anticipated such as soils, piping, machinery, and debris.

Anticipated Regulatory Status: Hazardous Waste

Characterization Approach: D&D and Laboratory debris found to contain liquid (aqueous or otherwise) or gases will be segregated as anomalies and/or unknown items and packaged for characterization in the Definitive Identification Facility (DIF). Waste characterization and generation activities at the DIF are addresses in EP2010-020, *WCSF: MDA-B Anomalies, Unknowns, and Chemicals.*

Waste characterization of this waste stream will be based upon the analytical results obtained from the direct sampling of containerized waste. Samples will be collected from the storage container in accordance with TA21-MDAB-PLAN-00017 MDA B Sampling and Analysis Plan. Samples will be screened for gross alpha, beta, and gamma to determine possible radiological contamination. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

Storage and Disposal Method: Storage and Disposal Method: Collected material will be packaged in approved containers and initially managed in the AOC until characterization data or HazCat field analysis data are available to make a waste determination and/or identify the material for off-site treatment and/or disposal. Hazardous material that is characterized as non-radiological hazardous material will be managed as such when it is removed from the Area of Contamination boundaries for treated and/or disposed of at an authorized off-site facility. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014. If the collected material is characterized as MLLW it will managed in a storage area on the AOC or less than 90 day waste accumulation area until it can be shipped for disposal in accordance with waste stream #14 through #16.

Waste #9: Radiological Debris (Clive Debris, includes ACM) - This waste stream will consist of demolition debris including walls, ceilings, roofing, structural steel, rebar, concrete, stairwells, air vents, wood, glass windows, doors, and other construction materials that were buried at MDA-B that may be size reduced or otherwise do not require disposal as oversized debris. Debris is defined as material having at least one dimension greater than a 60 mm particle size. In accordance with the Waste Acceptance Criteria standard debris includes materials that are less than 10 inches in at least one dimension and no longer than 12 feet in any dimension. Debris containing PCBs up to the limits of the WAC of the disposal facility are permissible in this waste stream.

Anticipated Regulatory Status: LLW

Characterization Approach: Waste characterization of this waste stream will be based upon the analytical results obtained from the direct sampling of containerized waste. Samples will be collected from the storage container in accordance with TA21-MDAB-PLAN-00017 MDA B Sampling and Analysis Plan. Samples will be screened for gross alpha, beta, and gamma to determine possible radiological contamination. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

- ***Porous Materials (e.g., concrete, asphalt, roofing material, wood)*** - Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected in accordance with SOP-5194, *Chip Sampling of Porous Surfaces* or subcontractor equivalent procedure. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled (e.g.: cement would not require sampling for asbestos unless the asbestos were visible; if oil or grease staining is observed samples will be analyzed for PCBs; TCLP testing would not be required for steel piping).

- ***Non-porous Materials (e.g., structural steel, rebar, stairwells, grating)*** - Characterization will be based upon AK, field screening for gross alpha, beta, and gamma contamination, and if necessary wipe samples (to determine presence of radiological/hazardous materials that are not fixed). If additional sampling is required in order to meet the requirements of this waste stream, transportation, and the waste acceptance criteria of the receiving TSDF then sampling for the contaminants identified in Table 1 shall be performed as required. Samples will be collected and analyzed as follows in accordance with TA21-MDAB-PLAN-00017.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the surrounding soil. The Debris will be size reduced, containerized in IP-1's, and sampled as described in TA21-MDAB-PLAN-00017. The containers will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until analytical data are available to make a waste determination. If the debris is characterized as LLW it will be removed from the Area of Contamination and managed in a radioactive waste staging or storage area until it can be shipped for disposal. If the debris is characterized as Hazardous or MLLW, it will be managed in a storage area on the AOC or less than 90 day waste accumulation area shipment and disposal will be in accordance with waste streams #14 through #16. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #10: Radiological Oversize Debris (Clive Oversize Debris, includes ACM) - This waste stream will consist of demolition debris including walls, ceilings, roofing, structural steel, rebar, concrete, stairwells, air vents, wood, glass windows, doors, and other construction materials that were buried at MDA-B that require disposal as oversized debris. In accordance with the Waste Acceptance Criteria waste material is considered oversize debris if the debris has at one dimension greater than 12 feet or does not have one dimension less than 10 inches. Debris is defined as material having at least one dimension greater than a 60 mm particle size. Debris containing PCBs up to the limits of the WAC of the disposal facility are permissible in this waste stream.

Anticipated Regulatory Status: LLW

Characterization Approach: Waste characterization of this waste stream will be based upon the analytical results obtained from the direct sampling of containerized waste. Samples will be collected from the storage container in accordance with TA21-MDAB-PLAN-00017 MDA B Sampling and Analysis Plan. Samples will be screened for gross alpha, beta, and gamma to determine possible radiological contamination. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

- ***Porous Materials (e.g., concrete, asphalt, roofing material, wood)*** - Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected in accordance with SOP-5194, *Chip Sampling of Porous Surfaces* or subcontractor equivalent procedure. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled (e.g.: cement would not require sampling for asbestos unless the asbestos were visible; if oil or grease staining is observed samples will be analyzed for PCBs; TCLP testing would not be required for steel piping).

- ***Non-porous Materials (e.g., structural steel, rebar, stairwells, grating)*** - Characterization will be based upon AK, field screening for gross alpha, beta, and gamma contamination, and if necessary wipe samples (to determine presence of radiological/hazardous materials that are not fixed). If additional sampling is required in order to meet the requirements of this waste stream, transportation, and the waste acceptance criteria of the receiving TSDF then sampling for the contaminants identified in Table 1 shall be performed as required. Samples will be collected and analyzed as follows in accordance with TA21-MDAB-PLAN-00017.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the surrounding soil. The Debris will be size reduced, containerized in IP-1's, and sampled as described in TA21-MDAB-PLAN-00017. The containers will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until analytical data are available to make a waste

determination. If the debris is characterized as LLW it will be removed from the Area of Contamination and managed in a radioactive waste staging or storage area until it can be shipped for disposal. If the debris is characterized as Hazardous or MLLW, it will be managed in a storage area on the AOC or less than 90 day waste accumulation area, and shipped for disposal in accordance with waste streams #14 through #16. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #11: Radiological Soil (Clive up to 10% Debris, includes ACM): This waste stream consists of fill, base course, and soil that is mixed with small quantities of waste (i.e., glass, deteriorated card board, vials, stoppers, bits of plastic, personal protective equipment [PPE]) or was in direct contact with waste materials from the Material Disposal Area B (MDA-B) trenches/disposal cells. Soil/Soil-Like Properties are defined as follows:

- Greater than 70 percent by weight compactable material less than 3/4" particle size and 100 percent compactable material less than 4" particle size
- Maximum dry density greater than 70 pounds per cubic foot (dry weight basis)

Petroleum contaminated soils are included in this waste stream but may require segregation in accordance with the Waste Acceptance Criteria of the receiving TSDF. Soils discolored or containing spilled material will require segregation and sampling.

Anticipated Regulatory Status: LLW

Characterization Approach: Waste characterization will be initially based upon the results obtained from field screening of the soil. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

If the soil is observed to have staining it will be segregated and also sampled for TPH. Soils observed to be in contact with PCB contaminated materials will be sampled and analyzed for PCBs. Other constituents may be analyzed as necessary to meet the WAC of the disposal facility. Detailed sampling requirements are provided in TA21-MDAB-PLAN-00017.

Storage and Disposal Method: Soil material excavated from the MDA-B waste cells will be raked/screened/sifted to segregate regulated/prohibited waste items from the soil. The soil will be containerized in IP-1's. The containers will be removed from the enclosure(s) and managed within the boundaries of the Area of Contamination until data is available to make a waste determination; AK data is acceptable for initial characterization. If the soil is characterized as LLW it will be removed from the Area of Contamination and managed in area radioactive waste staging or storage area until it can be shipped for disposal. If the soil is characterized as Hazardous or MLLW, it will be managed in a storage area on the AOC or less than 90 day waste accumulation area and treated and/or disposed of at an authorized off-site facility in accordance with waste stream #14. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #12: RLW for Radiological Liquids (or stabilized for disposal at Clive) - This waste stream consists of liquid wastes generated from the decontamination of excavation, dismantling, and sampling equipment. It may also include decontamination water generated due to decontamination of contaminated personnel exiting the work areas inside the enclosures at MDA-B and dust suppression liquids utilized during the excavation operation. This waste stream will be generated only when required by operational needs. Debris containing PCBs up to the limits of the WAC of the disposal facility are permissible in this waste stream.

Anticipated Regulatory Status: LLW, Radioactive Liquid Waste (RLW)

Characterization Approach: Waste characterization of radiological liquids will be based upon the AK from the known constituents requiring decontamination and when necessary analytical results obtained from the direct sampling of containerized waste fluids. Liquids may be relocated to the DIF for sampling purposes.

Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

Storage and Disposal Method: Decontamination fluids will be managed in approved containers within the boundaries of the Area of Contamination until analytical data are available to make a waste determination. It is anticipated that this waste will be a candidate for treatment on-site at the TA-50 Radioactive Liquid Waste Treatment facility (RLWTF) or the LANL Sanitary Waste Water System (SWWS) treatment facility. If it cannot be treated on-site, due to operational limitations or inability to meet the on-site WAC, the liquids may be adsorbed/solidified and disposed/treated at the appropriate off-site TSDF. MLLW liquids will be handled in a storage area on the AOC or less than 90 day waste accumulation area in accordance with waste stream #16.

Waste #13: PCB Radiological Items and Articles (≥ 500 ppm) - This waste stream consists of radioactively contaminated PCB-impregnated equipment including transformers, switchgear, ventilation equipment, piping, pumps, tanks, ductwork, hoods, scales, and machining equipment.

Anticipated Regulatory Status: LLW with PCB

Characterization Approach: Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Characterization will be based upon AK and the results of field screening. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples, if required, will be collected as described in TA21-MDAB-PLAN-00017. In accordance with Table 1 sampling is required only if the analyte is reasonably expected to be present in or on the material to be sampled.

Transformers that contain liquids, are intact, and meet the WAC of the disposal facility may be packaged for shipment and disposal as is. Damaged transformers and other equipment found to contain suspect PCB liquid will be sampled for PCB analysis. The liquid samples will be screened for radionuclides. Further radiological analysis will be performed if the field screening indicates radiological content. The equipment will be characterized based upon the analytical results of the liquid.

Storage and Disposal Method: PCB items and articles waste excavated from the MDA-B waste cells will be raked, screened, and/or sifted to provide initial segregation. The PCB items and articles waste will be containerized as required by regulation, and sampled in accordance with TA21-MDAB-PLAN-00017, when necessary. The PCB items and articles will be removed from the enclosure(s) and initially managed within the boundaries of the Area of Contamination until sufficient data are available to make a waste determination. Waste determined to be PCB items and articles waste may be removed from the AOC and stored in an appropriate location until shipment to the TSDF. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #14: *Mixed Low Level Waste for Macroencapsulation* - This waste stream consists of Debris as defined in 40 CFR.268 (Debris is defined as material having at least one dimension greater than a 60 mm particle size) that has been shown to be Characteristically Hazardous and Radiologically contaminated. The general types of waste to be found in this Debris stream are: gloves, leaded gloves, booties, wipes, smears, laboratory coats, beakers, pipettes, rubber hoses, plastic vials/containers, various glass bottles/containers, ventilation equipment, piping, pumps, tanks, ductwork, hoods, scales, machining equipment, other operational equipment, glove boxes, demolition debris including walls, structural steel, rebar, concrete, stairwells, air vents, wood, glass windows, doors, and other construction materials that were buried at MDA-B. Debris containing PCBs up to the limits of the WAC of the disposal facility are permissible in this waste stream. This waste stream also includes MLLW contaminated with Low Mercury (<260 ppm Hg).

Anticipated Regulatory Status: MLLW

Characterization Approach: Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Hazardous waste characterization will be based upon AK and/or the analytical results

obtained from direct sampling of the materials. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples collected to characterize equipment will be collected and analyzed in accordance with TA21-MDAB-PLAN-00017.

Laboratory debris found to contain liquid (aqueous or otherwise) or gases will be segregated as anomalies and/or unknown items and packaged for characterization in the Definitive Identification Facility (DIF). Waste characterization and generation activities at the DIF are addresses in EP2010-020, *WCSF: MDA-B Anomalies, Unknowns, and Chemicals*. These wastes will typically be addressed by waste streams: # 7, # 12, or #16.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the surrounding soil. The containers will be removed from the enclosure(s) and managed within the boundaries of the Area of Contamination until analytical data are available to make a waste determination. When the debris is characterized as MLLW, it will be managed as such when it is removed from the Area of Contamination boundaries and treated and/or disposed of at an authorized off-site facility. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #15: *Mixed Low Level Waste – High Mercury (≥ 260 ppm)* - This waste stream consists of Debris as defined in 40 CFR.268 that has been shown to be Characteristically Hazardous and Radiologically contaminated containing high levels of mercury. The general types of waste to be found in this Debris stream are: flasks, switches not suitable for disposal as Universal waste, plastic vials/containers, various glass bottles/containers, broken thermometers, piping, vacuum pumps, tanks, ductwork, hoods, scales, machining equipment, and other operational equipment, that were buried at MDA-B. This waste stream also includes MLLW contaminated with Mercury in concentration of ≤260 ppm Hg.

Anticipated Regulatory Status: MLLW

Characterization Approach: Radiological waste characterization will be conducted using the flow chart provided as Attachment 1 to this WCSF. Hazardous waste characterization will be based upon AK and/or the analytical results obtained from direct sampling of the materials. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria. Samples collected to characterize equipment will be collected and analyzed in accordance with TA21-MDAB-PLAN-00017.

Laboratory debris found to contain liquid (aqueous or otherwise) or gases will be segregated as anomalies and/or unknown items and packaged for characterization in the Definitive Identification Facility (DIF). Waste characterization and generation activities at the DIF are addresses in EP2010-020, *WCSF: MDA-B Anomalies, Unknowns, and Chemicals*. These wastes will typically be addressed by waste streams: # 7, # 12, or #16.

Storage and Disposal Method: Material excavated from the MDA-B waste cells will be raked, screened, and/or sifted to segregate waste items from the surrounding soil. The containers will be removed from the enclosure(s) and managed within the boundaries of the Area of Contamination until analytical data are available to make a waste determination. When the debris is characterized as MLLW with High Mercury content, it will be managed as such when it is removed from the Area of Contamination boundaries for treatment and disposal at an authorized off-site facility. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

Waste #16: *Mixed Low Level Waste – Liquids* - This waste stream may be generated from equipment and/or piping that is drained of residual liquids prior to packaging as waste. Unknown liquids typically will be treated first as anomalies and handled at the DIF in accordance with the DIF Detail Operating Procedure. Most liquids identified at the DIF will be handled under the WCSF for Anomalies EP-2010-0207.

Anticipated Regulatory Status: MLLW

Characterization Approach: D&D and Laboratory debris found to contain liquid (aqueous or otherwise) or gases will be segregated as anomalies and/or unknown items and packaged for characterization in the Definitive Identification

Facility (DIF). Waste characterization and generation activities at the DIF are addresses in EP2010-020, *WCSF: MDA-B Anomalies, Unknowns, and Chemicals.*

Waste characterization of this waste stream will be based upon the analytical results obtained from the direct sampling of containerized waste. Samples will be collected from the storage container in accordance with TA21-MDAB-PLAN-00017 MDA B Sampling and Analysis Plan. Samples will be screened for gross by alpha, beta, and gamma to determine possible radiological contamination. Sampling will be performed in accordance with Table 1 when the AK and field screening results do not provide sufficient information to characterize the waste as defined for this waste stream in order to meet transportation and waste acceptance criteria.

Storage and Disposal Method: Storage and Disposal Method: Collected material will be packaged in approved containers and initially managed in the AOC until characterization data or field analysis data (including HAZCat) are available to make a waste determination and/or identify the material for off-site treatment and/or disposal. Hazardous material that is characterized as non-radiological hazardous material will be managed in accordance with waste streams #7 & #8. Detailed storage and disposal requirements are provided in TA21-MDAB-PLAN-00014.

CHARACTERIZATION TABLE

Waste Description	Waste #1 Industrial Debris	Waste #2 ACM-Industrial Debris	Waste #3 PCB Remediation Waste (non-rad)	Waste #4 PCB Items and Articles (≥500 ppm/non-Rad)	Waste #5 Universal Waste	Waste #6 Non-Hazardous/ Non-Radiological Liquids	Waste #7 Hazardous Lab Pack (non-Rad)	Waste #8 Bulk Hazardous (non-Rad)	Waste #9 Rad Debris (Clive Debris, includes ACM)	Waste #10 Rad Debris (Clive Oversize Debris, includes ACM)	Waste #11 Rad Soil (Clive up to 10% Debris, includes ACM)	Waste #12 RLW for Rad Liquids(or stabilized for Clive)	Waste #13 PCB Rad Items and Articles (≥500 ppm)	Waste #14 MLLW Macroencapsulation	Waste #15 MLLW – Hi Mercury (≥260 ppm Hg)	Waste #16 MLLW Liquids
Volume (4)	3000 Cu. Yd.	1000 Cu. Yd.	100 Cu. Yd.	50 Cu. Yd.	20 Cu. Yd.	5000 Gallons	200 Gallons	200 Gallons	3000 Cu. Yd.	1000 Cu. Yd.	7000 Cu. Yd.	200 Gallons	50 Cu. Yd.	300 Cu. Yd.	200 Cu. Yd.	200 Gallons
Packaging	Appropriate Container	Appropriate Container	Appropriate Container	Appropriate Container	Appropriate Container	Appropriate Container	Appropriate Container	Appropriate Container	IP-1 minimum	IP-1 minimum	IP-1 minimum	IP-1 minimum	IP-1 minimum	IP-1 minimum	IP-1 minimum	IP-1 minimum
Regulatory Classification:																
Radioactive Waste									X	X	X	X	X	X	X	X
Reusable Material/Recycle	X															
Municipal Solid Waste (MSW)	X															
Waste Destined for LANL's SWWS or RLWTF[1]												X				
Hazardous Waste			X	X	X		X	X					X	X	X	X
Mixed (hazardous and radioactive) Waste													X	X	X	X
Polychlorinated Biphenyls (PCB) Contaminated Waste			X	X									X	X		X
New Mexico Special Waste (NMSW)		X														
Transuranic (TRU)									X	X		X		X	X	X
Industrial Waste	X	X	X													
Characterization Method																
Acceptable knowledge (AK): Existing Data/Documentation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
AK: Site Characterization/Field Screening	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Direct Sampling of Waste	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X		X	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X (If Indicated By Screening)	X
Analytical Testing																
Volatile Organic Compounds (EPA 8260-B)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X	X (As Needed)	X	X	X
Semivolatile Organic Compounds (EPA 8270-C)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X	X (As Needed)	X	X	X
Organic Pesticides (EPA 8081-A)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X	X (As Needed)			X
Organic Herbicides (EPA 8151-A)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X	X (As Needed)			X
PCBs (EPA 8082)		X (As Needed)	X	X		X (As Needed) See TSDF WAC	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X	X	X (As Needed)	X (As Needed)	X
Total Metals (EPA 6010-B/7471-A or EPA 6020)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X	X (As Needed)	X
Total Cyanide (EPA 9012-A)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)		X	X (As Needed)	X (As Needed)	X (As Needed)	X
High Explosives Constituents (EPA 8330/8321-A)							X (If Indicated	X (If Indicated	X (If	X (If Indicated	X (IF INDICATED	X (IF INDICATED	X (IF INDICATED	X (If Indicated	X (If Indicated	X (If Indicated

CHARACTERIZATION TABLE

Waste Description	Waste #1 Industrial Debris	Waste #2 ACM-Industrial Debris	Waste #3 PCB Remediation Waste (non-rad)	Waste #4 PCB Items and Articles (≥500 ppm/non-Rad)	Waste #5 Universal Waste	Waste #6 Non-Hazardous/ Non-Radiological Liquids	Waste #7 Hazardous Lab Pack (non-Rad)	Waste #8 Bulk Hazardous (non-Rad)	Waste #9 Rad Debris (Clive Debris, includes ACM)	Waste #10 Rad Debris (Clive Oversize Debris, includes ACM)	Waste #11 Rad Soil (Clive up to 10% Debris, includes ACM)	Waste #12 RLW for Rad Liquids(or stabilized for Clive)	Waste #13 PCB Rad Items and Articles (≥500 ppm)	Waste #14 MLLW Macroencapsulation	Waste #15 MLLW – Hi Mercury (≥260 ppm Hg)	Waste #16 MLLW Liquids
							By Screening)	By Screening)	IndicatedBy Screening)	By Screening)	BY SCREENING)	BY SCREENING)	BY SCREENING)	By Screening)	By Screening)	By Screening)
Asbestos (EPA 600M4)		X		X					X (As Needed)	X (As Needed)	X (As Needed)			X (As Needed)		
Total petroleum hydrocarbon (TPH)-GRO (EPA 8015-M)									X (If Stained)	X (If Stained)	X (If Stained)					
TPH-DRO (EPA 8015-M)									X (If Stained)	X (If Stained)	X (If Stained)					
Toxicity characteristic leaching procedure (TCLP) Metals (EPA 1311/6010-B)						X (If TAL+ 20 Indicates)	X (If TAL+ 20 Indicates)	X (If TAL+ 20 Indicates)	X (If TAL+ 20 Indicates)	X (If TAL+ 20 Indicates)	X (If TAL+ 20 Indicates)	X (If TAL+ 20 Indicates)				
TCLP Organics (EPA 1311/8260-B & 1311/8270-C)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X		X (As Needed)	X (As Needed)	X
TCLP Pest. & Herb. (EPA 1311/8081-A/1311/8151-A)						X (As Needed)	X (As Needed)	X	X (As Needed)	X (As Needed)	X (As Needed)	X		X (As Needed)	X (As Needed)	X
Gross Alpha (alpha counting) (EPA 900)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X	X	X	X	X	X	X	X	X	X	X
Gross Beta (beta counting) (EPA 900)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X	X	X	X	X	X	X	X	X	X	X
Tritium (liquid scintillation) (EPA 906.0)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X	X	X	X	X	X	X	X	X	X	X
Gamma spectroscopy (EPA 901.1)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X (As Needed)	X	X	X	X	X	X	X	X	X	X	X
Isotopic plutonium (HASL-300)									X	X	X	X	X	X	X	X
Isotopic uranium (HASL-300)									X	X	X	X	X	X	X	X
Total uranium (EPA 6020)									X	X	X	X	X	X	X	X
Strontium-90 (EPA 905)									X	X	X	X	X	X	X	X
Americium-241 (HASL-300)									X	X	X	X	X	X	X	X
Perchlorates (EPA 6850)							X (IF INDICATED)	X (IF INDICATED)				X (IF INDICATED)				X (IF INDICATED)
Nitrates/Nitrites (EPA 300.09-soil or 343.2-water)						X	X (As Needed)				X (IF INDICATED)	X				X
Dioxins/Furans (EPA 1613 B)	X (If a Fire is Evident)								X (If a Fire is Evident)	X (If a Fire is Evident)	X (If a Fire is Evident)			X (If a Fire is Evident)		
Oil/Grease (EPA 1665)	X (IF INDICATED)										X (IF INDICATED)					
Fluorine, chlorine, Sulfate (EPA 300)							X (As Needed)	X				X				X
TTO (EPA 8260-B and EPA 8270-C)[2]							X (As Needed)	X				X				X
Total Suspended Solids (TSS) & Total Dissolved Solids (TDS (EPA								X				X				X

CHARACTERIZATION TABLE

Waste Description	Waste #1 Industrial Debris	Waste #2 ACM-Industrial Debris	Waste #3 PCB Remediation Waste (non-rad)	Waste #4 PCB Items and Articles (≥500 ppm/non-Rad)	Waste #5 Universal Waste	Waste #6 Non-Hazardous/ Non-Radiological Liquids	Waste #7 Hazardous Lab Pack (non-Rad)	Waste #8 Bulk Hazardous (non-Rad)	Waste #9 Rad Debris (Clive Debris, includes ACM)	Waste #10 Rad Debris (Clive Oversize Debris, includes ACM)	Waste #11 Rad Soil (Clive up to 10% Debris, includes ACM)	Waste #12 RLW for Rad Liquids(or stabilized for Clive)	Waste #13 PCB Rad Items and Articles (≥500 ppm)	Waste #14 MLLW Macroencap sulation	Waste #15 MLLW – Hi Mercury (≥260 ppm Hg)	Waste #16 MLLW Liquids
160.1 and 160.2)																
Chemical Oxygen Demand (COD) (EPA 410.4)						X (As Needed)										
pH (EPA 904c)						X	X	X				X				X
Microtox or Biological Oxygen Demand[3]						X (As Needed)										
Waste Profile Form #	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

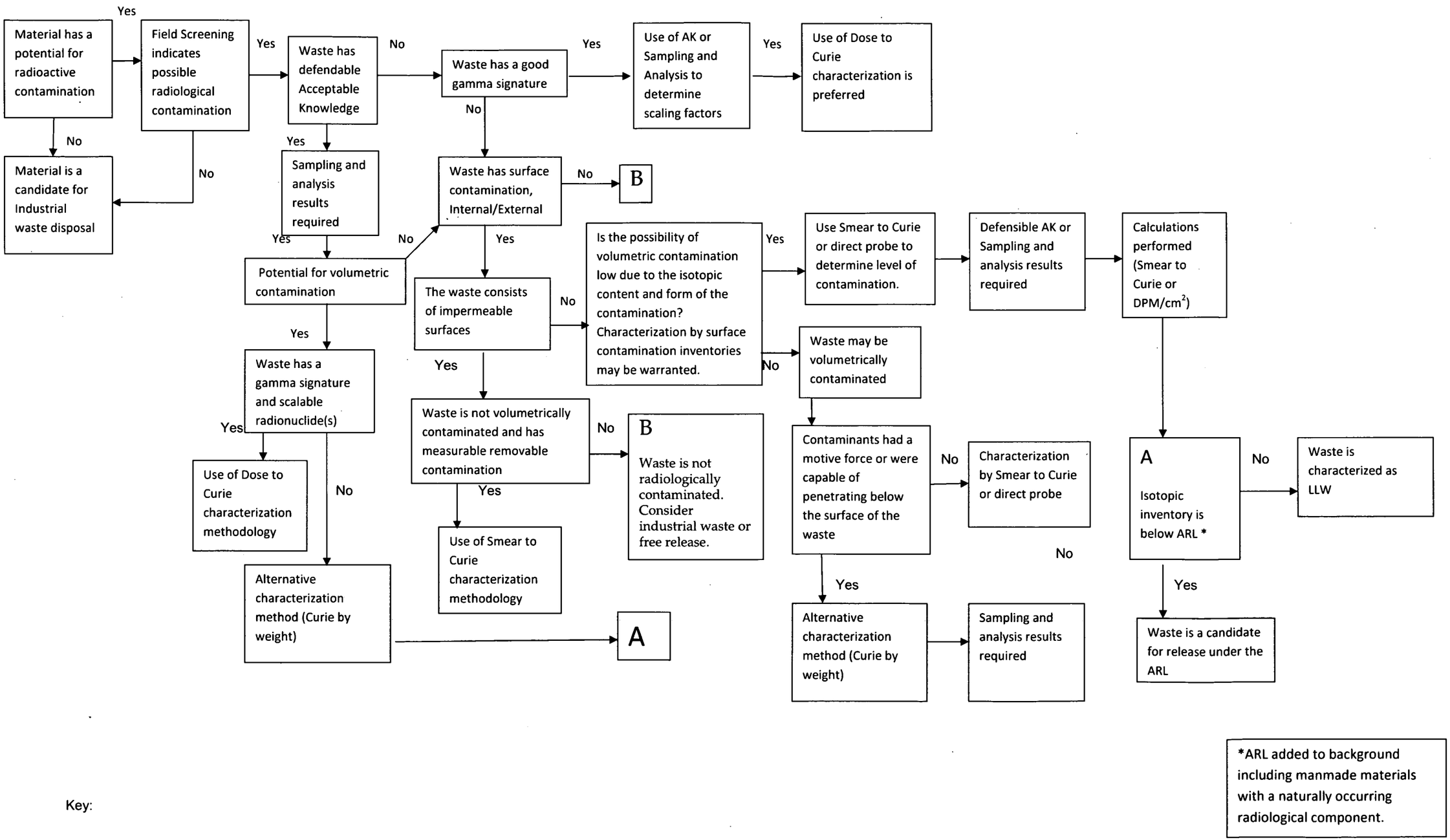
1 In addition to other analytes needed to characterize the waste, analyze for TSS, TDS, Oil and Grease, gross alpha, gross beta, tritium, and pH for liquids destined for the LANL Sanitary Waste Water System (SWWS). For wastes destined for the RLWTF additional constituents include TTO, TSS, COD, pH, Total 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 and EPA 8270-C.

3 Microtox analysis is not available, request BOD.

4 The waste volumes listed in this table are preliminary estimates. Each project will track actual volumes of waste excavated and shipped. This WCSF will not be amended if the actual waste volumes do not correspond to these preliminary estimates.

Radioactive Waste Characterization Flow Diagram for MDA B Activities



*ARL added to background including manmade materials with a naturally occurring radiological component.

Key:

Waste Characterization Strategy Form (continued)

Signatures	Date
Preparer: Glenn Siry	6-14-2010
ENV-RCRA Representative: Alan Church	6/14/10
WES-WGS-DO: Michelle Coriz	6/16/10
WDP: Andy Elicio	06/16/10
ADEP- Reg Management: Kathryn Lynnes	06/14/2010
Waste Management Coordinator: Gordon Jio	
Project Lead: Mitchell Goldberg	6/15/10

	Los Alamos National Laboratory