

Appendix E. Definitions and References

E.1 Definitions

The following definitions and terms are used in this Report:

Access/Institutional Control and In-situ Treatment and Containment: The Environmental Restoration program plans to manage a significant portion of its contaminated media without physically removing or excavating them, thus generating no LLW or MLLW for disposal. If the degree of contamination is relatively low and the volumes relatively large, an appropriate response may be access/institutional control. Public access to the area of contamination is restricted either through land deeds or a barrier such as a fence and posted warnings. The type and degree of contamination may also warrant an in-situ response. These remediation strategies will allow the Environmental Restoration program to address these elements in place and thus minimize or eliminate the generation of LLW and MLLW.

Combustion: This technique transforms the waste to a less reactive form and reduces its volume. Incineration is used for combustible dry active waste and LLW containing certain organic liquids and waste oil. Incineration can achieve high-volume reduction factors.

Compaction: This technique reduces the physical volume of the waste by mechanical compression.

Contaminated Media: The Environmental Restoration program will address millions of cubic meters of soils, sediments, sludges, debris, and water potentially contaminated with radionuclides and hazardous constituents. This Report does not consider contaminated media as LLW or MLLW when the media are addressed through in-situ containment or treatment remediation strategies. LLW or MLLW are generated when remediation strategies generate excavated or removed materials that require disposal in specially engineered disposal facilities.

Deactivation: The deactivation process places a facility in a safe and stable condition that minimizes the long-term cost of a surveillance and maintenance program and is protective of workers, the public, and the environment until decommissioning is complete. Actions include the removal of fuel, draining and/or de-energizing of nonessential systems, removal of stored radioactive and hazardous materials, and related actions. Source: "DOE D&D Resource Manual" (DOE/EM-0246)

Decommissioning: Decommissioning takes place after deactivation and includes surveillance and maintenance, decontamination, and/or dismantlement. These actions are taken at the end of the life of a facility to retire it from service with adequate regard for the health and safety of workers and the public and protection of the environment. The ultimate goal of decommissioning is unrestricted release or restricted use of the site. Source: "DOE D&D Resource Manual" (DOE/EM-0246)

Dewatering: This is a process usually used as a liquid removal technique to treat wet solids. Pumping and gravitational drainage can be used to remove the water from semi-solid LLW. Ion-exchange resins are commonly treated using “in-container dewatering.”

Disposal Facilities: DOE Order 5820.2A defines a disposal facility as the land, structures, and equipment used for disposal of waste. A disposal site is the portion of a disposal facility that is used to dispose of waste. For LLW, it consists of a disposal unit and a buffer zone. A disposal unit is the discrete portion (e.g., a pit, trench, tumulus, vault, or bunker) of the disposal site into which waste is placed for disposal (Source: DOE Order 5820.2A). The Department has stipulated that waste management disposal facilities at only three sites (Hanford Site, Savannah River Site, and Nevada Test Site) accept waste from offsite generators. Environmental Restoration-operated disposal facilities are designed and constructed to manage LLW/MLLW generated by onsite remediation activities only.

Disposal Ready Volume Projections: LLW and MLLW are generated by a number of Department of Energy programs and disposed by Environmental Restoration-operated and Waste Management-operated facilities, as well as commercial facilities. LLW and MLLW volume projections vary depending on the point in time at which they were reported. Figure E.1 provides a conceptual outline of the flow of LLW and MLLW between the various Department of Energy programs. Projection data are available for a number of different volumes, from initial LLW generated from a remediation response to contaminated media to volumes transferred for treatment to volumes transferred for disposal. In general, data on treatment were not available. The projections reported in this Report represent the waste volumes requiring disposal in engineered facilities. Volume projections transferred by any generator to the Waste Management program for treatment and/or disposal represent the volumes at the time of transfer to the Waste Management program. As certain types of treatment, such as compaction or incineration, may significantly reduce volumes for final disposal, these volumetric projections may overstate required disposal capacities. Moreover, employing aggressive waste minimization techniques may further reduce the volume projections.

Disposal in Environmental Restoration Facilities: This disposition category consists primarily of disposal in the planned Environmental Restoration program-operated disposal facilities. Appendix A contains a detailed discussion of the Environmental Restoration program’s current and planned disposal facilities. Note that these disposal facilities will accept only onsite remediation LLW or MLLW.

Disposition to be Determined: Some sites did not report a final disposition remediation strategy for specific elements. Examples include collection and treatment or collection and storage (the Report did not consider these remediation strategies as final disposition types) where no additional responses were provided by the sites. Other sites did not have sufficient data to provide an initial volume of contaminated media. Finally, some sites dispositioned only fractions of certain elements. In all these instances, the Report segregated these elements into the “disposition to be determined” category.

Transfer to Commercial Facility for Disposal: The Environmental Restoration program plans to transfer some of its LLW and MLLW to commercial facilities for disposal (the Department currently transfers waste to the Envirocare facility in Utah; other commercial disposal facilities will be considered as they become available).

Transfer to Waste Management for Treatment & Disposal: In this Report, the transfer of any LLW or MLLW to the Waste Management program for treatment, storage, or disposal is considered a final disposition. At specific sites, the Waste Management program plays a central role in the management of LLW and MLLW remediation either onsite or offsite.

E.2 References

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