

MIXED LOW-LEVEL WASTE DISPOSAL AT THE NEVADA TEST SITE FULFILLING THE DOE COMPLEX-WIDE NEEDS

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ABSTRACT

Mixed low-level waste (MLLW) disposal capabilities at the Nevada Test Site (NTS) are being expanded in order to accept waste generated at other sites within the U.S. Department of Energy (DOE) Complex. The February 25, 2000 Waste Management Programmatic Environmental Impact Statement Record of Decision (WMPEIS ROD) for MLLW identified the NTS as one of two regional MLLW disposal sites for the DOE Complex. In response, the DOE, Nevada Operations Office (NV) has taken actions by developing an aggressive strategy for expanding the disposal capabilities of the NTS. Existing operations only include MLLW generated at DOE/NV sites within the state of Nevada. To expand these operations, a strategic plan was completed in May 2000 that identified regulatory requirements, public and stakeholder interactions, design and construction requirements, waste verification requirements, and operational capabilities. Based on this plan, DOE/NV anticipates the NTS Mixed Waste Disposal Program (MWDP) to be operational in 2002. The key elements of this Program include the development of a waste verification program and facility, a disposal facility with 20,000 cubic meter capacity, and the ability to accommodate various waste forms.

The purpose of this paper is to present DOE/NV's noteworthy progress in the development of the NTS MWDP in order to fulfill DOE complex-wide waste management needs.

INTRODUCTION

On February 25, 2000, the DOE executed the Waste Management Programmatic Environmental Impact Statement Record of Decision (WMPEIS ROD). This action identified the NTS as one of two national Mixed Low Level Waste (MLLW) disposal sites for the Complex.

DOE/NV currently operates the Pit 3 Mixed Waste Disposal Unit (MWDU) located at the Area 5 Radioactive Waste Management Site, at the Nevada Test Site (NTS). The NTS is located approximately 65 miles northwest of Las Vegas, Nevada. The Pit 3 MWDU is an unlined pit, for the disposal of on-site generated MLLW, and is currently operated under the Resource Conservation and Recovery Act (RCRA) Interim Status Standards. Disposal capability is limited to waste generated on-site, or within the state of Nevada for

which DOE/NV has responsibility for Corrective Actions. To expand the capability of the current NTS MLLW Disposal Program, the unit design and operation must be modified to meet RCRA Permitting Standards and a RCRA Permit must be obtained from the Nevada Division of Environmental Protection (NDEP). In addition, RCRA requires that facilities receiving waste generated from off-site sources, must have a program in place (referred to as a verification program) to verify that waste received at the facility matches the description on the manifest.

STRATEGIC PLAN

The following actions have been initiated by DOE/NV to support the permitting and operational effort for MLLW disposal.

- \$** Revising the NTS Part B Permit Application to include the alternate liner justification for the Pit 3 MWDU disposal unit and the verification program.
- \$** Development of a RCRA compliant MLLW verification program.
- \$** Modifications to the Pit 3 MWDU to meet the RCRA permitting standards have been designed.
- \$** Development of a MLLW Generator Coordinator Program.

Upon completion of the revision, DOE/NV will submit the Permit Application to NDEP for approval.

Programmatic Assumptions

The programmatic assumptions for the basis of this Strategic Plan are provide below.

- \$** The current WM PEIS and the NTS EIS RODs associated with MLLW generators, waste transportation, verification, and disposal operations at the NTS provide the basis for this Strategic Plan. Changes to or additional RODs may impact the implementation of this Strategic Plan.
- \$** Any changes to the current NTS regulatory framework including compliance agreements, joint oversight agreements, state and federal regulations, and/or DOE Orders will not impact the regulatory components of this Strategic Plan.
- \$** NDEP issues a RCRA Permit for off-site-generated MLLW disposal at the NTS within one year of application receipt.
- \$** NDEP determines that real-time radiography (RTR), Radioactive Waste Acceptance Program (RWAP), and stringent manifest and packaging reviews are valid methods for verifying that the MLLW meets the Land Disposal Restrictions treatment standards for stabilization, macro-encapsulation, and vitrification.

- NDEP approves a provision in the RCRA Permit to allow negotiating alternative verification methods for MLLW streams not compatible with RTR.
- \$ NDEP approves the Pit 3 MWDU proposed alternative liner and monitoring program.
- \$ The current NDEP approved Pit 3 MWDU Groundwater Monitoring Plan will remain intact without substantial modification.
- \$ Disposal of off-site-generated MLLW will be accomplished using in place NTS Disposal Operating Programs, processes, and procedures, and utilize existing facilities when possible.
- \$ The design basis for this Strategic Plan is a disposal capacity of 20,000 cubic meters, with a provision for future expansion.
- \$ Waste received that is determined to be nonconforming will be mitigated or returned to the generator in accordance with current U.S. Environmental Protection Agency policy. Costs, including non-routine on-site costs, will be borne by the generator.
- \$ A MLLW Generator Coordinator Program will be established in conjunction with the current Low-Level Waste (LLW) Generator Program.
- \$ The MLLW verification facilities will be available for use by the LLW Verification Program.
- \$ The MLLW verification and disposal operation costs will be included in the MLLW generator fees.

Verification Program

The proposed NTS Verification Program will include the current DOE/NV Radioactive Waste Acceptance Program (RWAP) protocol, Real-Time-Radiography (RTR) capability and rigorous waste containers and documentation associated with U. S. Department of Transportation regulations.

All waste received for disposal must meet the specific treatment standards identified in 40 CFR 268 (Land Disposal Restrictions). At the point of generation, a waste is a mixed waste either because it exhibits a "characteristic," it is "listed," or it is a combination of both characteristic and listed. Only wastes that continue to exhibit the characteristic of hazardous or contain a listed waste after treatment will be subject to verification and disposal in a mixed waste disposal unit. Characteristic waste that is treated and no longer exhibits a characteristic will not be subject to verification. All waste received will not contain free liquids and will be in a stable form. The NTS Verification Program will limit the acceptable waste forms to items that can be verified using RTR. This includes stabilized waste (cement or grout), macro-encapsulated lead shielding, vitrified pellets,

and some types of waste meeting the alternative treatment standards for hazardous debris. To implement the NTS Verification Program, the following actions are required:

- Equipment **B** Upgrade an existing RTR system to operational status.
- Facilities **B** Modify an existing facility (Building 5-6, Area 5 RWMS) to accommodate installation of the RTR system.
- Operational Requirements **B** Train personnel, develop operational plans and procedures, and establish safety requirements and procedures.

A MLLW criteria must be established to limit the waste forms to those that are compatible with the NTS Verification Program. Waste forms for which there is no preferred verification method available would be prohibited. According to LDRs, waste forms such as incinerator ash, soil meeting the Alternative Soil Treatment Standards, and some types of contaminated debris may require a breaching and sampling facility. These waste forms could not be accepted under the proposed NTS Verification Program.

Disposal Unit Modification

Modifications to the Pit 3 MWDU to meet the RCRA permitting standards consists of:

- \$ Alternative Liner Justification **B** Develop an alternative liner justification document for inclusion in the RCRA Part B Permit Application. This includes installation of additional monitoring equipment.
- \$ Facilities Upgrade **B** Perform minor improvements to the existing Pit 3 MWDU to facilitate disposal of approximately 20,000 cubic meters of MLLW.

MLLW Generator Coordinator Program

Modify the current LLW Generator Coordinator Program by including MLLW. The MLLW Generator Coordinator's roll is to solicit waste forecasts for current and out-years, track forecasts against actual waste receipts, and assist waste generators with operational and technical problems. The Coordinator may also facilitate problem solving between generators, the waste approval organization and the disposal facility.

REGULATORY FRAMEWORK

Permitting Requirements

Revise the application to include a description of the disposal facility (i.e., alternative liner justification) and a description of the verification program. Other actions include permit negotiations, formal notifications, and legal reviews. DOE/NV has also included community outreach activities to facilitate public and stakeholder involvement.

Regulatory Guidance

The additional regulations that were considered during development of this strategic plan are as follows:

- \$** National Environmental Policy Act (NEPA) **B** Establishment and operation of a verification program and the increase in disposal volume for the Pit 3 MWDU have been previously analyzed in the NTS EIS under the Expanded Use alternative. Issuance of the NTS ROD and the WM PEIS ROD bound the actions proposed in this strategic plan.
- \$** Resource Conservation and Recovery Act **B** In addition to the permitting requirements, MLLW disposal operations must comply with RCRA standards (i.e., Title 40 Code of Federal Regulations, Parts 261 through 270).
- \$** DOE Orders **B** DOE Orders have no additional impact to the actions described in this strategic plan for existing disposal operations at the Area 5 RWMS.
- \$** Other Environmental Regulations **B** Other environmental regulations have no additional impact to the actions described in this strategic plan other than those that are already in place for disposal operations at the Area 5 RWMS.

CONCLUSION

DOE/NV is currently expanding the MLLW disposal capability at the NTS to include waste generated from off-site sources. This is accomplished by implementing a RCRA compliant verification program, modifying the existing Pit 3 MWDU, and obtaining a RCRA Permit. Waste that will be accepted under the plan includes stabilized waste (cement or grout), macro-encapsulated lead shielding, vitrified pellets, and some types of waste meeting the alternative treatment standards for hazardous debris.

DOE/NV anticipates that NTS MLLW disposal unit will be operationally ready to accept waste in 2002.