



Department of Energy  
Washington, DC 20585

FEB 24 2000



Ms. Janice Archuleta  
New Mexico Environmental Department  
P.O. Box 26100  
2044 Galisteo Street  
Santa Fe, NM 87502

Dear Ms. Archuleta:

Enclosed is a copy of the Department of Energy (DOE) Record of Decision (ROD) announcing the Department's configuration for treatment and disposal of low-level and mixed low-level radioactive waste. The ROD is provided under the May 1997 *Waste Management Programmatic Environmental Impact Statement*, which analyzed the potential environmental impacts of low-level and mixed low-level waste treatment and disposal. On December 10, 1999, the Department announced its preferred alternatives for these waste types. The enclosed ROD is consistent with those preferred alternatives.

For the management of low-level waste (LLW), the Department has decided to perform minimum treatment at all sites, and to make the Hanford Site in Washington and the Nevada Test Site (NTS) available to all DOE sites for LLW disposal. In addition, DOE will continue, to the extent practicable, disposal of on-site LLW at the Idaho National Engineering and Environmental Laboratory (INEEL), the Los Alamos National Laboratory in New Mexico, the Oak Ridge Reservation (ORR) in Tennessee, and the Savannah River Site (SRS) in South Carolina. INEEL and SRS also will continue to dispose of LLW generated by the Naval Nuclear Propulsion Program.

For mixed low-level waste (MLLW), the Department has decided to treat MLLW at the Hanford Site, INEEL, ORR, and SRS. Sites will either treat their MLLW on-site or ship it to one of these sites, consistent with the Site Treatment Plan negotiated among DOE, the host state and/or the Environmental Protection Agency under the Federal Facility Compliance Act. In addition, the Hanford Site and NTS will be available to all DOE sites for MLLW disposal.

If you have any questions or require additional information about the Department's LLW and MLLW treatment and disposal ROD, please contact me or have a member of your staff contact Ms. Linda Lingle, Principal Deputy Assistant Secretary for Congressional and Intergovernmental Affairs, at (202) 586-5450.

Sincerely,

Carolyn L. Huntoon  
Assistant Secretary for  
Environmental Management

Enclosure



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[6450-01-P]

**Record of Decision for the Department of Energy's Waste Management Program:  
Treatment and Disposal of Low-Level Waste and Mixed Low-Level Waste;  
Amendment of the Record of Decision for the Nevada Test Site**

**AGENCY:** Department of Energy

**ACTION:** Record of Decision

**SUMMARY:** For the management of low-level waste (LLW) analyzed in the *Final Waste Management Programmatic Environmental Impact Statement* (WM PEIS), the Department of Energy (DOE) has decided to perform minimum treatment at all sites and continue, to the extent practicable, disposal of on-site LLW at the Idaho National Engineering and Environmental Laboratory (INEEL), the Los Alamos National Laboratory (LANL) in New Mexico, the Oak Ridge Reservation (ORR) in Tennessee, and the Savannah River Site (SRS) in South Carolina. In addition, the Department has decided to make the Hanford Site in Washington and the Nevada Test Site (NTS) available to all DOE sites for LLW disposal. INEEL and SRS also will continue to dispose of LLW generated by the Naval Nuclear Propulsion Program. For the management of mixed low-level waste (MLLW) analyzed in the WM PEIS, the Department has decided to treat MLLW at the Hanford Site, INEEL, ORR and SRS, and to dispose of MLLW at the Hanford Site and NTS. The Department also has decided to amend its 1996 ROD for the NTS Environmental Impact Statement, to implement the Expanded Use Alternative for waste management activities at NTS.

The Department acknowledges the impacts this decision will have in the States of Nevada and Washington, which will continue their role in supporting the nation's goal to clean up the nuclear weapons complex, much as they supported the nation's nuclear weapons program. This decision enables the Department to integrate waste management activities among sites to promote expeditious, compliant, and cost effective cleanup.

**FOR FURTHER INFORMATION:** Copies of the Final WM PEIS and this Record of Decision (ROD) are available in DOE public reading rooms and selected libraries located across the United States; the WM PEIS also is available on the internet at [www.osti.gov/bridge](http://www.osti.gov/bridge) (select "Advanced Search," go to the box labeled "Select Field" and scroll down to "Identifying Number," then key in "DOE/EIS-0200-F"). A list of the public reading rooms can be accessed on the Internet at <http://www.em.doe.gov> under "Publications" and then "List of Publications." To request copies of the WM PEIS, this ROD, or a list of the reading rooms and public libraries, contact: The Center for Environmental Management Information, P.O. Box 23769, Washington, DC 20026-3769; telephone 1-800-736-3282 (in Washington, DC, 202-863-5084).

For further information on the WM PEIS or this ROD, contact: Ms. Karen Guevara, WM PEIS Program Manager, U.S. Department of Energy, Office of Environmental

Management, 19901 Germantown Road, Germantown, MD 20874; telephone 301-903-4981.

For general information on DOE's National Environmental Policy Act (NEPA) process, contact: Ms. Carol M. Borgstrom, Director, Office of NEPA Policy and Assistance (EH-42), U.S. Department of Energy, Office of Environment, Safety and Health, 1000 Independence Avenue, SW, Washington, DC 20585-0119; telephone 202-586-4600, or leave a message at 1-800-472-2756.

## **SUPPLEMENTARY INFORMATION:**

### **Background**

The WM PEIS (DOE/EIS-0200F), issued in May 1997, studied the potential nation-wide impacts of managing four types of radioactive waste (LLW, MLLW, transuranic waste, and high-level waste) and non-wastewater hazardous waste generated by defense and research activities at 54 sites around the United States. The WM PEIS analyzes the potential environmental impacts of broad alternatives for DOE's waste management program, and was designed to provide part of the basis for DOE decisions on programmatic configurations of sites for waste management activities. WM PEIS analyses include evaluating potential impacts associated with transporting wastes by truck and by rail.

Three RODs have been issued under the WM PEIS. These are the transuranic waste ROD (63 FR 3629, January 23, 1998), the non-wastewater hazardous waste ROD (63 FR 41810, August 5, 1998), and the high-level waste ROD (64 FR 46661, August 26, 1999).

This ROD applies only to the treatment and disposal of LLW and MLLW as analyzed in the WM PEIS<sup>1</sup>. DOE prepared this ROD in accordance with NEPA (42 U.S.C. §4321 *et*

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<sup>1</sup> After the Final WM PEIS was issued in May 1997, DOE issued "Accelerating Cleanup: Paths to Closure." In that document, DOE provided estimates of waste volumes that would result from the planned operations and accelerated cleanup processes at DOE sites. Because some of the estimates differed from those provided in the WM PEIS, DOE examined the LLW and MLLW volumes to determine if the updated volume estimates constitute significant new information relevant to environmental concerns that would warrant preparation of a supplemental EIS or a new PEIS. This examination extended only to LLW and MLLW volumes, because the transuranic, hazardous and high-level waste volume estimates did not change from those analyzed in the Final WM PEIS.

The treatment and disposal site locations were chosen based on factors that would not be affected by the changed waste volume estimates. Waste volume considerations could have influenced the choice of treatment and disposal sites only if the estimated volume of LLW, the estimated volume of MLLW, or the expected nationwide distribution of waste had changed dramatically, none of which occurred. Therefore, DOE has concluded that its decisionmaking process for LLW and MLLW can proceed without preparing a supplemental EIS or a new PEIS.

seq.), the Council on Environmental Quality's regulations for implementing NEPA (40 CFR Parts 1500-1508), and DOE's NEPA Implementing Procedures (10 CFR Part 1021).

### **Definitions of LLW and MLLW**

*Low-Level Waste* is all radioactive waste not classified as high-level waste, transuranic waste, spent nuclear fuel, or by-product tailings containing uranium or thorium from processed ore (as defined in Section 11(e)2 of the Atomic Energy Act of 1954 [42 U.S.C. 2011 *et seq.*]), and not classified as hazardous waste under the Resource Conservation and Recovery Act (RCRA). Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as LLW provided that the concentration of transuranics is less than 100 nanocuries per gram. Since the World War II Manhattan Project, DOE and its predecessor agencies have generated LLW from a variety of activities, including weapons production, nuclear reactor operations, environmental restoration activities, and research.

*Mixed Low-Level Waste* is managed according to requirements established under RCRA for hazardous waste and the Atomic Energy Act of 1954 for its radioactive components. The hazardous component of MLLW is subject either to Environmental Protection Agency regulations promulgated under RCRA or State hazardous waste regulations promulgated under RCRA. DOE has generated MLLW as a result of research, development, production of nuclear weapons, and environmental restoration activities.

### **Alternatives Considered for Treatment and Disposal of LLW and MLLW**

In the WM PEIS, the term "alternative" generally refers to a nationwide configuration of sites for treating, storing, or disposing of a waste type. The WM PEIS analyzed No Action, Decentralized, Regionalized, and Centralized Alternatives for LLW and MLLW treatment and disposal. As shown in Tables 3.4-2 and 3.6-2 for LLW, and Tables 3.4-1 and 3.6-1 for MLLW, the number of sites considered for treatment and disposal of LLW and MLLW under the action alternatives is greatest for the Decentralized Alternatives and fewest for the Centralized Alternatives. The WM PEIS action alternatives for LLW and MLLW did not include storage alternatives; LLW and MLLW will be stored at the site where they are generated until they are treated and disposed of.

For LLW treatment, in addition to these categories of alternatives, the WM PEIS evaluated two treatment *approaches*: minimum treatment and volume reduction. Minimum treatment is defined as the least amount of LLW treatment required to allow either on-site disposal or transportation to another site for disposal. Minimum LLW treatment includes ~~basic handling, packaging, and solidification~~ of liquid and fine particulate LLW. Therefore, in all LLW alternatives, *all sites with LLW perform at least minimum treatment on all of their LLW*, regardless of whether the waste is further treated using volume reduction methods and regardless of whether the waste is to be disposed of on-site or at another site. For volume reduction, the WM PEIS analyzed thermal

treatment (e.g., incineration), compaction, and size reduction (e.g., shredding) to decrease the volume of LLW needing disposal.

For MLLW treatment, the WM PEIS analyzed thermal treatment (e.g., incineration), separations processes, evaporation, and solidification (e.g., grouting) to meet RCRA land disposal restrictions.

The following summarizes the alternatives that DOE analyzed for treatment and disposal of LLW and MLLW.

No Action Alternative. For each waste type, the WM PEIS analyzed a single "no action" alternative involving the use of currently existing or planned waste management facilities at DOE sites. Although the no action (or "status quo") alternative may not comply with applicable laws and regulations, analysis of such an alternative is required under NEPA regulations, and provides an environmental baseline against which the impacts of other alternatives can be compared. Under the No Action Alternative for LLW, LLW would be treated using existing facilities and then disposed of at the six existing DOE LLW disposal sites as follows: INEEL, LANL, and ORR would each dispose of its own LLW; and the Hanford Site, NTS, and SRS would each dispose of its own waste and waste from specific DOE sites. Under the No Action Alternative for MLLW, no new facilities would be constructed, not all MLLW would be treated to meet RCRA land disposal restrictions, and MLLW would be placed in indefinite storage.

Decentralized Alternative. For each waste type, the WM PEIS analyzed a single decentralized alternative for treating and disposing of waste at a large number (16) of DOE sites. Unlike the "no action" alternative, a decentralized alternative may require the siting, construction and operation of new facilities or the modification of existing facilities. Under the LLW Decentralized Alternative, as shown in Table 7.3-2, LLW would undergo only minimum treatment at all DOE waste generating sites and would be disposed of at 16 DOE sites. Under the MLLW Decentralized Alternative, as shown in Table 6.3-2, MLLW would be treated on-site at DOE waste generating sites and would be disposed of at 16 DOE sites.

Regionalized Alternatives. For each waste type, the WM PEIS analyzed several alternatives to consolidate waste management activities by transporting wastes to fewer sites for treatment or disposal. For LLW, the WM PEIS analyzed seven Regionalized Alternatives, with volume reduction treatment at 11 or fewer DOE sites, followed by disposal at up to 12 sites. For MLLW, the WM PEIS analyzed four Regionalized Alternatives, ranging from treatment at 37 DOE sites to treatment at only four sites, followed by disposal at 12, six or a single DOE site.

Centralized Alternatives. For each waste type, the WM PEIS analyzed one or more alternatives for consolidating waste management activities at a small number of centralized sites for treatment or disposal. For LLW, the WM PEIS analyzed five Centralized Alternatives, with volume reduction treatment at seven sites or at a single

site, followed by disposal at a single site. For MLLW, the WM PEIS analyzed one Centralized Alternative, with MLLW treatment and disposal occurring at a single site.

Preferred Alternatives. The WM PEIS identified preferred alternatives using criteria established (after considering public comments) in Section 1.7.3 of the Final WM PEIS. For *LLW treatment*, DOE identified its preferred alternative to be minimum treatment of LLW at all sites that generate LLW (the Decentralized Alternative). For *MLLW treatment*, DOE identified its preferred alternative to be a combination of regionalized and decentralized alternatives, consisting of treatment at the Hanford Site, INEEL, ORR and SRS, or on-site treatment, as would be consistent with Site Treatment Plans issued under the Federal Facility Compliance Act, Pub. L. 102-386.

The Final WM PEIS also identified DOE's preferred alternatives for LLW and MLLW disposal as regional disposal at two or three disposal sites, to be selected from the six candidate sites at which DOE currently disposes of LLW or MLLW: the Hanford Site, INEEL, LANL, NTS, ORR, and SRS. On December 10, 1999, DOE published (64 FR 69241) a Notice of Preferred Alternatives announcing its preferred LLW and MLLW disposal sites. For *LLW disposal*, DOE identified its preferred alternative to be disposal at the Hanford Site and NTS. In addition, to the extent practicable and consistent with current practice, DOE would continue disposal of on-site LLW at INEEL, LANL, ORR, and SRS. INEEL and SRS also would continue to dispose of LLW generated by the Naval Nuclear Propulsion Program. This preferred alternative for LLW disposal is a combination of the preferred LLW disposal alternative identified in the Final WM PEIS (i.e., regionalized disposal at two sites – the Hanford Site and NTS) and the Decentralized Alternative described in the Final WM PEIS (disposal of on-site generated LLW at four sites – INEEL, LANL, ORR, and SRS). For *MLLW disposal*, DOE identified its preferred alternative to be disposal at the Hanford Site and NTS (a Regionalized Alternative).

### **Public Comments on Preferred Alternatives and DOE Responses**

In response to the December 1999 Notice, the Department received eight letters as discussed below.

The Governor of Nevada, in the context of addressing concerns about DOE's activities regarding Yucca Mountain (which is outside the scope of the WM PEIS), urged the Secretary of Energy "to continue to assist the state in assuring that adequate health, safety, and environmental safeguards are in place to ensure the safety of Nevada's citizens upon receipt of the additional low-level and mixed waste at the NTS." The "~~Mitigation of Impacts from Treatment and Disposal of LLW and MLLW~~" section of this ROD includes several commitments that address this request, including: 1) assistance to States, Tribal and local governments, and other public entities concerning human health, environmental, and economic impacts; 2) stringent application of administrative controls, including disposal facility waste acceptance criteria and stable waste form requirements; 3) implementation of transportation planning and control programs to reduce

transportation risk; and 4) rigorous quality assurance programs for the characterization of LLW and MLLW. Previously, the Department entered into a Memorandum of Agreement with the State of Nevada (July 1998) to provide State regulators with greater involvement in waste disposal matters.

In a separate letter, the Nevada Department of Transportation indicated concern with vehicle configuration and routing as it would relate to safe operations on various highway systems. While the WM PEIS evaluated potential impacts associated with transporting wastes by truck and by rail (as noted in the "Background" section of this ROD), this ROD does not make transportation routing or mode decisions. In implementing this decision, DOE will comply with all applicable Department of Transportation regulations. In addition, as mentioned above, a later section of this ROD lists mitigation measures DOE will continue during LLW and MLLW treatment and disposal; two of these address the Nevada Department of Transportation's concern: 1) training to ensure DOE and non-DOE emergency response personnel are knowledgeable of emergency response procedures; and 2) implementation of transportation planning and control programs to reduce transportation risk.

The Hanford Advisory Board (one of several site-specific advisory boards chartered under the Federal Advisory Committee Act) advised that before off-site LLW and MLLW are imported into the Hanford Site, "there should be adequate opportunity for public education and involvement." The Department believes it has provided adequate opportunity for public education and involvement during the process of reaching the decisions presented in this ROD. The Department provided a 150-day public comment period for the WM PEIS and received more than 1,500 comments. The Final WM PEIS responded to these, including comments of the Hanford Advisory Board. In addition, since publication of the Final WM PEIS, the Department has continued to share information and discuss the pending decisions in various public forums. The pending decision was among the topics discussed in the Intersite Discussions convened by the League of Women Voters in the Summer of 1998 and a LLW Seminar sponsored by the Nevada Citizens' Advisory Board in August 1998, both of which were attended by members of the Hanford Advisory Board. Further, the Department issued a September 1998 *Information Package on Pending LLW and MLLW Disposal Decisions*, which was provided to all site-specific advisory boards (including the Hanford Advisory Board), and others.

In a separate letter, the Hanford Advisory Board also advised that no off-site wastes be disposed of in LLW burial grounds on the Hanford Site until regulators determine whether waste previously disposed of there has been accurately characterized as LLW and not MLLW. This site-specific implementation issue is beyond the scope of the WM PEIS. However, DOE will consult with regulators to determine an appropriate course of action.

An individual from Washington State stated that DOE was in violation of NEPA when it named preferred disposal sites because the May 1997 WM PEIS only covered LLW and MLLW treatment. In fact, however, the WM PEIS analyzed both treatment and disposal of LLW and MLLW.

The State of Arkansas Department of Finance and Administration noted its support of the Department's stated preferences for LLW and MLLW disposal and offered no further comments. The State of Missouri Office of Administration stated that the agency had completed its review and had no comments or recommendations to offer. A letter from the South Carolina Department of Natural Resources provided no comments or recommendations on the December 1999 notice.

Upon consideration of comments received during the WM PEIS public comment period and, as detailed above, on the December 1999 notice, the Department has reached the following decisions for LLW and MLLW treatment and disposal.

### **LLW Treatment**

Tables 7.16-1 and 7.16-2 in the Final WM PEIS compare alternatives with respect to the treatment of LLW. In general, the tables present estimates of potential worker and off-site population fatalities, the ability of sites to meet air and groundwater quality standards, and costs for the various LLW alternatives analyzed in the WM PEIS. Chapter 7 also discusses other types of LLW impacts, including cultural resource and environmental justice concerns. All of the environmental factors were considered in identifying environmentally preferable alternatives and in making the decision stated below.

*Environmentally Preferable Alternatives:* For LLW treatment, seven of the alternatives analyzed in the WM PEIS (the Decentralized, Regionalized 1, 3, 6 and 7, and Centralized 1 and 2 Alternatives) would result in similarly low environmental impacts and are the environmentally preferable LLW treatment alternatives. These alternatives involve only minimum treatment (as defined earlier), and thus would result in the fewest potential worker fatalities. No alternative would present environmental justice concerns. None of these alternatives would result in off-site transportation risks for treatment, because each site would treat its own waste on-site.

*Decision:* The Department has decided to implement the Preferred Alternative specified in the Final WM PEIS for the treatment of LLW. Under this decision, each site will perform minimum treatment on its LLW, although each site may perform additional treatment ~~as would be useful to decrease overall costs.~~ This decision does not preclude DOE's use of commercial treatment facilities, consistent with current DOE orders and policy.

*Basis for Decision:* DOE has decided to pursue minimum treatment as its overall strategy for LLW treatment because volume reduction would not offer sufficient benefits to offset

the increase in human health effects and costs it would entail. All DOE sites with LLW must perform at least minimum treatment on all of their LLW, regardless of whether the waste is further treated using volume reduction methods. A programmatic volume reduction treatment strategy would pose greater worker hazards, because workers would be exposed to risks from additional treatment processes. The analyses did not demonstrate that these more immediate worker risks would be offset by corresponding long-term human health or environmental risk reduction due to volume reduction. Volume reduction also could pose additional transportation impacts; because not all sites have volume reduction treatment facilities, some LLW would have to be shipped for treatment. Finally, volume reduction would cost twice as much as minimum treatment, and the increased treatment costs generally would not be offset by potential savings from disposing of less waste or other benefits.

### **Disposal of LLW**

Tables 7.16-1 and 7.16-2 in the Final WM PEIS compare alternatives with respect to the disposal of LLW. In general, the tables present estimates of potential worker and off-site population fatalities, the ability of sites to meet air and groundwater quality standards, and costs for the various LLW alternatives analyzed in the WM PEIS. Chapter 7 also discusses other types of LLW impacts, including cultural resource and environmental justice concerns. All of the environmental factors were considered in identifying environmentally preferable alternatives and in making the decision stated below.

*Environmentally Preferable Alternatives:* For LLW disposal, the Decentralized and Regionalized Alternatives pose the least environmental impacts and are the environmentally preferable disposal alternatives. The Decentralized and all Regionalized Alternatives pose similar transportation fatality impacts, which are lower than for the Centralized Alternatives. Potential fatalities from facility operation are low and similar for all alternatives. No alternative would present environmental justice concerns.

*Decision:* The Department has decided to establish regional LLW disposal at two DOE sites: the Hanford Site and NTS. Specifically, the Hanford Site and NTS will each dispose of its own LLW on-site, and will receive and dispose of LLW that is generated and shipped (by either truck or rail) by other sites that meets the waste acceptance criteria. In addition, DOE will continue, to the extent practicable, disposal of on-site LLW at INEEL, LANL, ORR, and SRS. INEEL and SRS also will continue to dispose of LLW generated by the Naval Nuclear Propulsion Program.

Use of the term "regional" disposal does not impose geographical restrictions on which DOE sites may ship waste to a disposal site; the term is used only to be consistent with the WM PEIS analysis of regionalized alternatives. This decision also does not preclude DOE's use of commercial disposal facilities, consistent with current DOE orders and policy.

This decision is the preferred alternative that DOE announced in the December 1999 Notice discussed above. Under this decision, DOE will implement a combination of the preferred LLW disposal alternative identified in the Final WM PEIS (i.e., regionalized disposal at two DOE sites – the Hanford Site and NTS) and the Decentralized Alternative (disposal of on-site generated LLW at four sites – INEEL, LANL, ORR, and SRS).

*Basis for Decision:* DOE's decision is based on low impacts to human health, operational flexibility, and relative implementation cost. The Hanford Site and NTS provide environmental safety benefits inherent to arid sites, where evaporation rates exceed rainfall by approximately 10 to 1 or more. The local geology at NTS greatly restricts the potential for any contamination to move into the groundwater, which is located 800 feet below the surface. Both the Hanford Site and NTS LLW disposal facilities have expansion capability and can dispose of a wide range of radionuclides. Using two disposal facilities provides operational flexibility to align waste streams with facility waste acceptance criteria and access to an alternate disposal facility should the other facility's operations be interrupted for any reason.

### **MLLW Treatment**

Tables 6.16-1 and 6.16-2 in the Final WM PEIS compare alternatives with respect to the treatment of MLLW. In general, the tables present estimates of potential worker and off-site population fatalities, the ability of sites to meet air and groundwater quality standards, and costs for the various MLLW alternatives analyzed in the WM PEIS. Chapter 6 also discusses other types of MLLW impacts, including cultural resource and environmental justice concerns. All of the environmental factors were considered in identifying environmentally preferable alternatives and in making the decision stated below.

*Environmentally Preferable Alternatives:* For MLLW treatment, all action alternatives are environmentally preferable because their potential environmental impacts (including transportation impacts) are not substantially different, are small, and present long-term benefits. The No Action Alternative could pose less risk than action alternatives to workers and communities surrounding DOE's sites for the first 20 years. Longer-term risks from no action are likely to exceed those for the first 20 years, not only from continuing routine storage operations, but also from degradation of storage facilities and containers. (Under the No Action Alternative, MLLW would be indefinitely stored rather than disposed of.)

*Decision:* DOE has decided to implement the Preferred Alternative specified in the Final WM PEIS for the treatment of MLLW. DOE will conduct regional MLLW treatment at the Hanford Site, INEEL, ORR, and SRS, or on-site, as would be consistent with current Site Treatment Plans. Current Site Treatment Plans were negotiated among DOE, the host state, and/or the Environmental Protection Agency under the Federal Facility Compliance Act, and may undergo periodic renegotiation. Use of the term "regional" treatment does not impose geographical restrictions on which DOE sites may ship waste

(by either truck or rail) to a given treatment site; the term is used only to be consistent with the WM PEIS analysis of regionalized alternatives. DOE's decision does not preclude DOE's use of commercial treatment facilities, consistent with DOE orders and policy.

*Basis for Decision:* The four regional treatment sites offer unique treatment capabilities needed by other sites in the DOE complex. This decision takes advantage of infrastructure capabilities that already exist or have been decided upon at the Hanford Site, INEEL, ORR and SRS – which are capable of MLLW treatment to meet RCRA land disposal restrictions. The decision also avoids environmental impacts and costs associated with construction of new facilities.

Potential impacts from the selected configuration are within those estimated for regionalized and decentralized alternatives as analyzed in the WM PEIS. With the appropriate project-specific NEPA review, any site could conduct MLLW treatment on-site. The potential environmental impacts of all alternatives for treatment of MLLW evaluated in the WM PEIS are small, with no individual alternative clearly showing the lowest overall impacts. The No Action Alternative is not acceptable because it would not meet DOE's long-term waste management goals nor comply with applicable RCRA requirements.

### **MLLW Disposal**

Tables 6.16-1 and 6.16-2 in the Final WM PEIS compare alternatives with respect to the disposal of MLLW. In general, the tables present estimates of potential worker and off-site population fatalities, the ability of sites to meet air and groundwater quality standards, and costs for the various MLLW alternatives analyzed in the WM PEIS. Chapter 6 also discusses other types of MLLW impacts, including cultural resource and environmental justice concerns. All of the environmental factors were considered in identifying environmentally preferable alternatives and in making the decision stated below.

*Environmentally Preferable Alternatives:* For MLLW disposal, all of the alternatives have low and similar impacts, with Regionalized Alternative 3 being the environmentally preferable alternative because disposal would require the fewest engineered enhancements to avoid exceeding drinking water standards. No alternative would present environmental justice concerns.

The No Action alternative is based on indefinite storage and does not prepare the waste for disposal, i.e., permanent isolation from the human environment. For the 20-year waste management period considered in the WM PEIS, the potential impacts under the No Action alternative for MLLW disposal are smaller than those identified under the action alternatives, and on this short-term basis, the No Action alternative could be considered to be the environmentally preferred alternative. However, the No Action alternative does not include shipment (or transportation impacts) of MLLW for disposal.

Further, the No Action alternative would not protect human health and the environment from such long-term threats as deteriorating containers or loss of institutional control and cannot be considered environmentally preferable.

*Decision:* The Department's decision is to establish regional MLLW disposal operations at two DOE sites: the Hanford Site and NTS. The Hanford Site and NTS will each dispose of its own MLLW on-site, and will receive and dispose of MLLW generated and shipped (by truck or rail) by other sites, consistent with permit conditions and other applicable requirements. Use of the term "regional disposal" does not impose geographical restrictions on which DOE sites may ship waste to a disposal site; the term is used only to be consistent with the WM PEIS analysis of regionalized alternatives. This decision does not preclude DOE's use of commercial disposal facilities, consistent with current DOE orders and policy. This decision is the preferred alternative that DOE announced in its December 10, 1999 Notice of Preferred Alternatives.

*Basis for Decision:* DOE's decision to regionalize MLLW disposal at the Hanford Site and NTS is based on low impacts to human health, operational flexibility, and relative implementation cost. The Hanford Site and NTS are the only two DOE sites that have MLLW disposal facilities already constructed. Use of these existing facilities will avoid environmental impacts and costs associated with facility construction. Further, DOE does not foresee needing a third regional MLLW disposal facility for the estimated volume of MLLW to be disposed of during the next 20 years. Using two disposal facilities provides operational flexibility to align waste streams with facility waste acceptance criteria and access to an alternate disposal facility should the other facility's operations be interrupted for any reason.

#### **Mitigation of Impacts from Treatment and Disposal of LLW and MLLW**

Chapter 12 of the WM PEIS describes measures that DOE could take to minimize the potential impacts of its waste management activities. Mitigation measures are an integral part of the Department's operations, so as to avoid, reduce, or eliminate potentially adverse environmental impacts. Some of the more important mitigation measures that DOE will continue during the treatment and disposal of LLW and MLLW are:

- Development and implementation of pollution prevention plans.
- Assistance to States, Tribal and local governments, and other public entities concerning human health, environmental, and economic impacts.
- Development of "cleaner" waste treatment, storage and disposal technologies.
- Stringent application of administrative controls, including disposal facility waste acceptance criteria and stable waste form requirements.
- Maintenance and enhancement of pollution control systems to reduce toxicity of air and surface water effluents.
- Reuse of existing facilities rather than construction of new facilities.
- Training to ensure workers understand operational safety limits within which a facility can operate while limiting risks and adequately protecting the environment.

- Training to ensure DOE and non-DOE emergency response personnel are knowledgeable of emergency response procedures.
  - Implementation of transportation planning and control programs to reduce transportation risk.
  - Rigorous quality assurance programs for the characterization of LLW and MLLW.
- These are routine mitigation measures for which a mitigation action plan is not required. Site-specific, non-routine mitigation measures may also be identified and implemented in the course of further decision making under site-specific NEPA reviews.

#### **Amendment of the Record of Decision for NTS**

On December 9, 1996, DOE issued a ROD (61 FR 65551) for the *Final Environmental Impact Statement for the Nevada Test Site and Off-Site Locations in the State of Nevada* (NTS EIS). That ROD cited the then-pending Final WM PEIS and stated that subsequent programmatic decisions "may require changes to the Waste Management Program at NTS in the future," and "that in the interim, pending those programmatic decisions, DOE will maintain the current level of LLW and MLLW management activity as described in the No Action Alternative in the NTS EIS." For LLW, the decision meant that "disposal of LLW will continue for waste streams from current [DOE approved] on-site and off-site generators" and that "approval of other waste generators for disposal is pending future programmatic decisions." For MLLW, the decision meant that "DOE will continue to manage MLLW which is currently on-site or which may be generated by DOE at NTS."

The NTS EIS addressed the environmental impacts of four operational scenarios:

1) Continue Current Operations (No Action), 2) Discontinue Operations, 3) Expanded Use, and 4) Alternate Use of Withdrawn Lands. The ROD identified DOE's decision to implement a combination of elements of three of these alternatives. DOE decided that most activities would be pursued at levels described by the Expanded Use Alternative. In addition, DOE decided to undertake certain public education activities analyzed under the Alternate Use of Withdrawn Lands Alternative. As stated above, DOE also decided that, pending programmatic decisions, NTS LLW and MLLW management operations would be conducted under the Continue Current Operations Alternative.

Under the Continue Current Operations Alternative, the NTS EIS analyzed the environmental impacts for a ten-year period of disposal of 349,294 cubic meters of LLW in either of two Radioactive Waste Management Sites (Areas 3 and 5) at the NTS and 18,285 total shipments via legal weight trucks on public highways. Under the Expanded Use Alternative, the NTS EIS analyzed 1,041,422 cubic meters of LLW to be disposed of and 39,084 shipments. While there is a substantial difference in the volumes of waste and numbers of shipments under the two alternatives, DOE found in the NTS EIS that the incremental environmental impacts associated with waste management activities of Expanded Use as compared to Continue Current Operations were negligible.

Inasmuch as DOE is now making complex-wide decisions for its LLW and MLLW waste management program, which includes continuing to use the NTS for disposal of LLW

and initiating use of the NTS for disposal of MLLW, as addressed in the WM PEIS, DOE is also hereby amending its December 9, 1996, NTS EIS ROD. DOE will implement the Expanded Use Alternative for waste management activities at NTS, including LLW and MLLW disposal. This amendment is based on the analysis in the NTS EIS and is tiered from the WM PEIS and the associated programmatic decisions for LLW and MLLW.

Issued in Washington, D.C. this 18<sup>th</sup> day of Feb, 2000.

*Carolyn L. Huntoon*

Carolyn L. Huntoon

Assistant Secretary

for Environmental Management



## FACT SHEET: *Department of Energy Announces Its Decision for Treatment and Disposal of Low-Level and Mixed Low-Level Radioactive Waste*

**Today, the U.S. Department of Energy is announcing its decision for low-level waste (LLW) and mixed low-level waste (MLLW) treatment and disposal sites.**

*Six DOE sites currently dispose of LLW: Hanford, Idaho, Los Alamos, Nevada Test Site, Oak Ridge, and Savannah River. Of these six, only Hanford and Nevada Test Site have historically served as regional LLW disposal sites. In addition, all sites currently treat their own LLW. For MLLW, only Hanford and Nevada Test Site have disposal facilities, although neither site currently accepts waste from other sites for disposal. In addition, Hanford, Idaho, Oak Ridge and Savannah River host existing MLLW treatment facilities.*

*For LLW treatment, DOE has decided to continue the practice of each site treating its own waste. For LLW disposal, DOE has decided to continue to rely on the six sites that already have LLW disposal facilities and to continue to use the Hanford site and the Nevada Test Site for disposal of LLW from other DOE sites. For MLLW treatment, DOE has decided to continue to use Hanford, Idaho, and Oak Ridge to treat waste from other DOE sites, and to begin to use Savannah River to treat waste from other DOE sites. For MLLW disposal, DOE has decided to begin using the disposal facilities already constructed at the Hanford site and at the Nevada Test Site for off-site waste.*

The Department's decision follows a December 10, 1999 Notice of Preferred Alternatives. The decision on LLW and MLLW treatment and disposal sites allows DOE to move forward with the closure of former defense nuclear facilities like Rocky Flats and redirect the millions of dollars now being spent on waste storage back into actual cleanup work at the remaining sites.

Under the decision being announced today, the Department will continue to rely for future treatment and disposal on sites that already have the capacity and experience to handle LLW and MLLW. This decision, the result of some two years of additional study and discussion with affected parties, generally represents a continuation of treatment and disposal activities already underway at the identified sites. Because the decision reflects incremental change, it minimizes potential environmental impacts.

**Low-Level and Mixed Low-Level Radioactive Waste:** Since World War II and the Manhattan Project, DOE and its predecessor agencies have generated LLW and MLLW from a variety of activities including weapons production, nuclear reactor operations, environmental restoration, and research. LLW is defined as all radioactive waste not classified as either high-level waste, transuranic waste, spent fuel, or byproduct tailings containing uranium or thorium from processed ore. MLLW is low-level radioactive waste that also contains hazardous constituents. These wastes are now in storage or will be generated through future activities.

### **Decision Summary**

**LLW Treatment.** Under the selected approach each site will perform on-site treatment of its LLW as needed to prepare it for disposal, although each site may perform additional treatment as would be useful to decrease overall costs. This treatment strategy was selected because a programmatic strategy involving additional treatment, such as volume reduction, would pose greater worker hazards and increased transportation risks.

**MLLW Treatment.** The MLLW treatment decision is based on and intended to be consistent with Site

Treatment Plans negotiated under the Federal Facilities Compliance Act. It employs existing treatment capabilities at Hanford, Idaho, Oak Ridge, and Savannah River, which are capable of MLLW treatment to meet Resource Conservation and Recovery Act land disposal restrictions.

Since Hanford, Idaho, Oak Ridge, and Savannah River already have MLLW treatment facilities, the decision eliminates impacts from construction of new facilities, thus avoiding additional costs. Sites will either treat their MLLW on site or ship it to one of the four selected sites, consistent with the Site Treatment Plan negotiated between DOE, the host state, and/or the Environmental Protection Agency.

**LLW and MLLW Disposal.** The LLW and MLLW disposal decisions are based on low impacts to human health, operational flexibility, and lower implementation costs. The decision maximizes use of existing disposal facilities, thereby avoiding construction impacts and costs.

**Commercial Treatment and Disposal.** The WM PEIS did not analyze the use of commercial facilities for managing LLW and MLLW. However, none of these decisions preclude DOE's use of commercial treatment or disposal facilities, consistent with current DOE Orders and policy.

**Availability of Record of Decision:** This Record of Decision was published in its entirety in the *Federal Register* on February 25, 2000, and is posted at:

<http://www.em.doe.gov>

under "Publications" and then "List of Publications." on the Internet.

Copies of the Record of Decision are also available by calling 1-800-736-3282 (in D.C. 202-863-5084).



U.S. Department of Energy

# National Transportation Program



Transporting DOE

# Low-Level Radioactive Waste



Low-level waste being unloaded for disposal at the Nevada Test Site.

## Transport Regulations

Transport of LLW is strictly regulated. The U.S. Department of Transportation (DOT) regulates packaging, labeling, preparation of shipping papers, handling, marking, and placarding of shipments and establishes standards for personnel as well as conveyance (e.g., truck/train) performance and maintenance. DOT and the U.S. Nuclear Regulatory Commission (NRC) set radioactive material packaging standards. In addition, DOE LLW shipments must comply with all internal DOE requirements.

## What Is Low-Level Waste (LLW) and How Is It Generated?

Federal regulations define LLW as any radioactive waste that is not high-level waste, transuranic waste (contains man-made elements heavier than uranium), spent fuel, or byproduct materials such as uranium mill tailings. Simply put, LLW is unwanted radioactive material created in the process of handling and use of radioactive substances. It usually contains small amounts of short-lived radioactive material dispersed in large quantities of material and poses little transportation risk. However, some LLW presents a greater hazard. Sometimes, the radiation levels are

high enough to require protective shielding for handling and transport. Typical LLW consists of used protective clothing, rags, tools and equipment, used resins and residues, construction debris, and scrap metal.

Medical and research facilities, nuclear power plants, and industry all produce LLW. DOE also generates LLW, largely from site cleanup and ongoing activities. Because LLW accounts for a large percentage of DOE's new waste volume, the Department promotes activities to reduce production of new waste that ultimately must be shipped.

**Packaging:** Proper packaging is a key element in transport safety. LLW must be packaged to protect workers, the public, and the environment during transport. The NRC requires that all LLW be in solid form (free of liquids) before shipment to a disposal facility. Often, the same package is used for both transport and disposal.

Selection of appropriate packaging is based on the level and form of radioactivity. Waste with the lowest level of radioactivity can be shipped in Excepted packaging that meets minimum DOT performance

requirements. Excepted packagings are only used to transport materials with extremely low levels of radioactivity that present no risk to the public or environment. *Industrial, Type A*, or *Type B* packagings are used for higher levels of radioactivity.

Federal regulations require that shipments of LLW be documented on shipping papers or "manifests." These documents certify the materials have been properly packaged and identified for transport. Manifests are also useful in identifying packages received at the ultimate destination.

#### Marking/Labeling/Placarding:

Package markings list important information such as the proper shipping name, material identification number, and shipper's name and

address. Labels for radioactive materials are placed on opposite sides of a package and identify its contents and level of radioactivity. Shipments with extremely low levels of radioactivity that would present no severe hazard if involved in a transport accident are excluded from labeling requirements. Some shipments are identified by diamond-shaped placards placed on all four sides of the vehicle.

**Inspections:** DOE LLW is transported primarily by truck. Vehicle and load are inspected by DOE and State inspectors (where required) before shipment. States may inspect shipments to confirm regulatory compliance.

**Training:** Carrier companies and drivers transporting LLW must meet DOT standards for training in order to transport hazardous materials. Federal regulations establish training requirements.

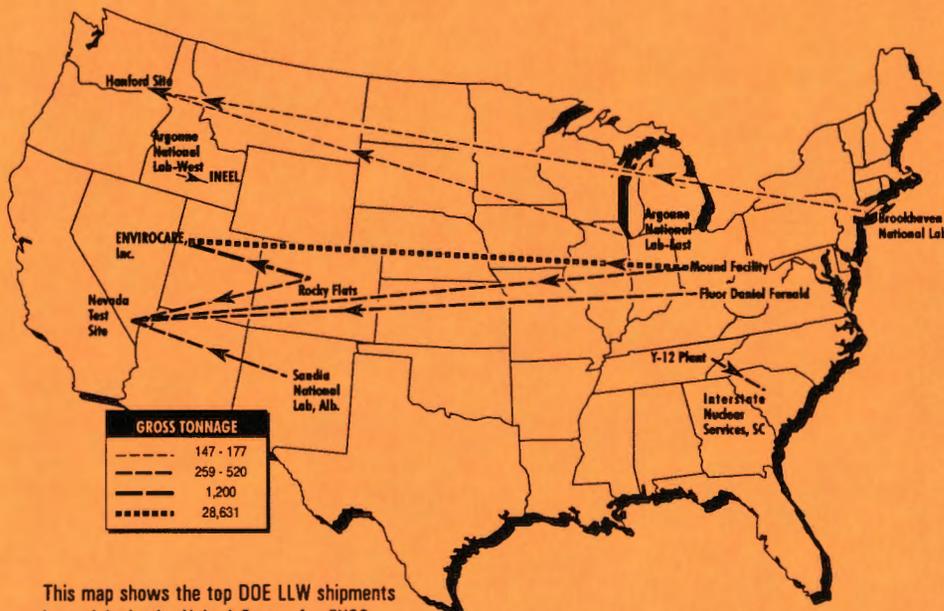
#### Emergency Preparedness

Should an accident involving a shipment of LLW occur, a response system is in place. DOE supports training and emergency planning through the Transportation Emergency Preparedness Program. State, Tribal, and local government officials respond to any such accident within their jurisdictions.

DOE also responds to transport emergencies at the request of States and Tribes. Radiological Assistance Program teams are available to provide field monitoring, sampling, decontamination, communications, and other related services. Technical assistance from the shipping site or appropriate DOE program is also available in the event of an accident.

#### Additional Information

Details on DOE plans for future treatment/disposal of LLW can be found in the Waste Management Programmatic Environmental Impact Statement (WM PEIS). Information on the WM PEIS is available at the DOE Environmental Management Website listed below.



This map shows the top DOE LLW shipments by weight in the United States for FY98.

Additional information on DOE's National Transportation Program may be obtained from:

National Transportation Program  
U.S. Department of Energy  
Albuquerque Operations Office  
P.O. Box 5400, MS SC-5  
Albuquerque, NM 87185-5400

Phone: 505-845-6134  
FAX: 505-845-5508

Website:  
<http://www.ntp.doe.gov/>

DOE Center for Environmental  
Management Information  
P.O. Box 23769  
Washington, DC 20026-3769

1-800-7EM-DATA  
1-800-736-3282

Website:  
<http://www.em.doe.gov/>

Transportation Resource Exchange Center  
ATR Institute  
University of New Mexico  
1001 University Blvd., SE  
Albuquerque, NM 87106-4342

Phone: 1-877-287-TREX(8739)  
FAX: 505-246-6001  
email: [trex@unm.edu](mailto:trex@unm.edu)

Website:  
<http://www.unm.edu/~trex>