

[6450-01-P]

**DEPARTMENT OF ENERGY****Record of Decision for the Solid Waste Program, Hanford Site, Richland, Washington: Storage and Treatment of Low-Level Waste and Mixed Low-Level Waste; Disposal of Low-Level Waste and Mixed Low-Level Waste, and Storage, Processing, and Certification of Transuranic Waste for Shipment to the Waste Isolation Pilot Plant.****AGENCY:** Department of Energy**ACTION:** Record of Decision

**SUMMARY:** The U.S. Department of Energy (DOE) is making decisions regarding low-level radioactive waste (LLW), mixed low-level waste (MLLW), which contains both radioactive and chemically hazardous components, and transuranic (TRU) waste (including mixed TRU waste) at the Hanford Site in southeastern Washington State. These decisions are made pursuant to the *Final Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement* (HSW EIS, DOE/EIS-0286, January 2004). DOE prepared the HSW EIS according to requirements of the National Environmental Policy Act (NEPA), Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500-1508), and DOE NEPA implementing procedures (10 CFR Part 1021) to evaluate the potential environmental impacts of alternatives for storage, treatment, transportation, and disposal of certain radioactive and mixed wastes at Hanford. The HSW EIS scope includes wastes that are currently stored or projected to be generated at Hanford and offsite locations through the end of Hanford's routine waste management operations. Key operations evaluated were storage, treatment, and disposal of LLW and MLLW generated at Hanford and other sites; storage, processing, and certification of TRU waste generated at Hanford and other DOE sites for shipment to the Waste Isolation Pilot Plant



(WIPP) in New Mexico; and disposal of Hanford's vitrified immobilized low-activity waste (ILAW) and melters from the vitrification process.

DOE has decided to implement the preferred alternative described in the Final HSW EIS, modified as described below. This decision is based on the environmental impact analyses in the HSW EIS, including analysis of impacts to worker and public health and safety; costs; applicable regulatory requirements; and public comments. DOE will limit the volumes of LLW and MLLW received at Hanford from other sites for disposal to 62,000 m<sup>3</sup> of LLW and 20,000 m<sup>3</sup> of MLLW. Also, effective immediately, DOE will dispose of LLW in lined disposal facilities, a practice already used for MLLW. In addition, DOE will construct and operate a lined, combined-use disposal facility in Hanford's 200 East Area for disposal of LLW and MLLW, and will further limit offsite waste receipts until the facility is constructed. LLW and MLLW requiring treatment will be treated at either offsite facilities or existing or modified onsite facilities, as appropriate. Storage, processing and certification of TRU waste for subsequent shipment to WIPP will occur at existing and modified onsite facilities. DOE expects the preferred alternative, as described in this Record of Decision (ROD), will have small environmental impacts, provide a balance among short- and long-term environmental impacts and cost effectiveness, be consistent with applicable regulatory requirements, and provide DOE with the capability to accommodate projected waste receipts from the Hanford Site and offsite DOE facilities.

**ADDRESSES:** For copies of the Final HSW EIS and further information about the HSW EIS,

contact:

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The Final HSW EIS and related information can also be viewed in the

DOE Public Reading Room  
Washington State University, Tri-Cities Campus  
100 Sprout Road, Room 130W  
Richland, WA 99352  
Telephone: 509-376-8583  
Monday-Friday, 10:00 a.m. to 4:00 p.m.

The Final HSW EIS is also available for review on the Internet at

<http://www.hanford.gov/eis/eis-0286D2> and on the DOE NEPA Web page

(<http://www.eh.doe.gov/nepa/eis/eis0286F>).

**FOR FURTHER INFORMATION CONTACT:** For information concerning the HSW EIS or onsite management operations at Hanford contact Mr. Michael Collins at the address or telephone number provided above.

Information on the DOE NEPA process may be requested from

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## **SUPPLEMENTARY INFORMATION:**

### **Purpose and Need for Action**

DOE needs to provide capabilities to continue or modify the way it manages existing and anticipated quantities of solid LLW, MLLW, and TRU waste at the Hanford Site located in southeastern Washington in order to: protect human health and the environment; facilitate cleanup at Hanford and other DOE facilities; take actions consistent with DOE's decisions under the *Waste Management Programmatic Environmental Impact Statement* (WM PEIS, DOE/EIS-0200, May 1997); comply with applicable local, state, and federal laws and regulations; and meet other obligations such as the *Hanford Federal Facility Agreement and Consent Order* (also referred to as the Tri-Party Agreement, or TPA).

Specifically, DOE needs to:

- Continue to operate and modernize existing treatment, storage, and disposal facilities for LLW and MLLW, and storage and processing facilities for TRU waste;
- Construct additional disposal capacity for LLW and MLLW;
- Develop capabilities to treat MLLW for disposal at Hanford;
- Close onsite disposal facilities and provide for post-closure facility stewardship at disposal sites; and

- Develop additional capabilities to process and certify TRU waste for disposal at WIPP.

## **Background**

On October 27, 1997, DOE announced its intent to prepare the HSW EIS (62 FR 55615) to support programmatic needs and plans, and provide additional capabilities and flexibility to continue to manage LLW, MLLW, and TRU waste at the Hanford Site. The HSW EIS also evaluated the potential environmental impacts of transporting, storing, processing, and certifying TRU waste from Hanford and offsite DOE generators. The Draft HSW EIS was approved in April 2002, and the U.S. Environmental Protection Agency (EPA) published a Notice of Availability of the Draft HSW EIS on May 24, 2002 (67 FR 36592). Responding to requests from the public, DOE extended the initial 45-day public comment period for the Draft HSW EIS to 90 days. DOE received about 3,800 comments on the Draft HSW EIS from individuals, organizations, agencies, and Tribes.

In response to public comments, DOE expanded the scope of the HSW EIS and issued a Notice of Revised Scope for the HSW EIS on February 12, 2003 (68 FR 7110). The revised scope included the disposal of ILAW and melters at the Hanford Site. DOE also expanded its impact analyses for waste disposal and transportation. A Revised Draft HSW EIS was approved in March 2003, and EPA published a Notice of Availability on April 11, 2003 (68 FR 17801). In response to requests from the public, DOE extended the initial 45-day public comment period to 62 days. DOE's responses to all comments received during the public comment period on the Draft HSW EIS (including the complete text of written comment documents and transcripts of public

meetings) were published in the Revised Draft HSW EIS, Volume III.

DOE received about 1,600 comments on the Revised Draft HSW EIS from individuals, organizations, agencies, and Tribes. In response to public comments, DOE provided clarifying information and expanded analyses in the Final HSW EIS. The complete text of written comment documents and transcripts of public meetings, and DOE's response to public comments on the Revised Draft HSW EIS, were published in Volumes III and IV of the Final EIS. The Final HSW EIS was approved in January 2004, and EPA published a Notice of Availability for the Final HSW EIS on February 13, 2004 (69 FR 7215).

The Final HSW EIS addresses actions by DOE to manage LLW, MLLW, ILAW, melters, and TRU waste under Hanford's solid waste program. The HSW EIS analyzed wastes through the end of site operations which, for the purpose of the analyses, was assumed to be 2046. The wastes analyzed included:

- 283,000 m<sup>3</sup> of waste previously disposed of at Hanford in the Low Level Burial Grounds (LLBGs);
- Up to 348,000 m<sup>3</sup> of LLW that is in storage or is forecast to be received from onsite and offsite sources;
- Up to 198,000 m<sup>3</sup> of MLLW that is in storage or is forecast to be received from onsite and offsite sources;
- Up to 350,000 m<sup>3</sup> of ILAW forecast to be received from the treatment of Hanford tank

waste;

- Up to 6,825 m<sup>3</sup> of melters used in the vitrification process; and
- Up to 47,550 m<sup>3</sup> of TRU waste that is in storage or is forecast to be received from onsite and offsite sources.

Section 9(a)(1)(H) of the WIPP Land Withdrawal Act exempts mixed TRU waste designated for disposal at WIPP from certain provisions of the Solid Waste Disposal Act, 42 U.S.C. § 6901 *et seq.*:

With respect to transuranic mixed waste designated by the Secretary for disposal at WIPP, such waste is exempt from treatment standards promulgated pursuant to section 3004(m) of the Solid Waste Disposal Act (42 U.S.C. 6924(m)) and shall not be subject to the land disposal prohibitions in section 3004(d), (e), (f) and (g) of the Solid Waste Disposal Act.

(WIPP Land Withdrawal Act Amendments, Public Law No. 104-201, 110 Stat. 2422 (September 23, 1996), § 3188(a) at Stat. 2853.) For a more complete discussion of the Department's implementation of this provision see the Department's Revision of the Record of Decision for the Department of Energy's Waste Isolation Pilot Plant Disposal Phase, issued concurrently with this ROD. This HSW EIS ROD confirms the Department's prior designation of the mixed TRU waste analyzed in the HSW EIS for disposal at WIPP.

DOE initially designated up to 175,600 m<sup>3</sup> of TRU waste for disposal at WIPP in the ROD for the Department of Energy's Waste Isolation Pilot Plant Disposal Phase. 63 FR 3624, January 23, 1998

(WIPP ROD). That decision included both contact-handled (CH) and remote-handled (RH) TRU waste in storage at the various DOE facilities across the country, as well as TRU waste projected to be generated over the life of the repository. Of that amount approximately 57,000 m<sup>3</sup> of CH-TRU waste and 2,800 m<sup>3</sup> of RH-TRU were attributed to the Hanford site. WIPP Disposal Phase Supplemental EIS-II (WIPP SEIS II). page 3-3<sup>1</sup>

This ROD provides for the storage, processing, and certification for shipment to WIPP of approximately 40,000 m<sup>3</sup> of CH TRU waste and 2,600 m<sup>3</sup> of RH TRU waste at Hanford and confirms the WIPP ROD's prior designation of this waste for disposal at WIPP.<sup>2</sup> This inventory of TRU-waste at Hanford is less than previously analyzed for Hanford in the WIPP SEIS-II and designated for disposal by the WIPP ROD. The reduction in inventory is in part the result of further characterization and reassessment of waste assumed to be TRU waste and TRU waste projected to be generated at the Hanford site at the time the WIPP SEIS-II and the accompanying ROD to dispose of up to 175,600 m<sup>3</sup> of TRU waste at WIPP were issued.<sup>3</sup>

The Hanford TRU waste volume analyzed in the HSW EIS and addressed in this ROD does not include potential TRU waste from the Hanford tanks. These wastes have not been determined to be TRU waste and accordingly have not been designated for disposal at WIPP.

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1 The volume of RH TRU waste projected in the WIPP-SEIS-II for Hanford was conservatively estimated to be higher than the 2,800 m<sup>3</sup> volume in the Basic Inventory which was used for analytical purposes in the EIS. However, only 2,800 m<sup>3</sup> of RH-TRU waste at Hanford were included in the 175,600 m<sup>3</sup> of TRU waste designated for disposal at WIPP in the SEIS-II ROD.

2 The CH TRU waste volume may increase or decrease depending on volume reduction or volume expansion due to the treatment or packaging for shipment to WIPP. The RH-TRU waste volume reflects the packaged amount expected to be shipped to WIPP.

3 The volume of RH-TRU waste in the HSW EIS is also less than the estimates for Hanford used in the Department's application for recertification of compliance (CRA) submitted to EPA in March 2004, in accordance with sections

## **Action Alternatives Considered in the HSW EIS**

The HSW EIS considered the range of reasonable alternatives for management of solid LLW, MLLW, TRU waste, ILAW, and melters at the Hanford Site. Currently, Hanford's solid waste program activities include transportation, storage, treatment, and disposal of LLW and MLLW, as well as transportation, storage, processing, and certification of TRU waste for shipment to WIPP. The HSW EIS considered use of both existing and proposed waste management facilities in carrying out these activities. In response to comments on the Revised Draft HSW EIS, the transportation analysis was updated to account for Year 2000 Census data, to use a more recent version of the RADTRAN computer modeling code, and expanded to consider specific transportation routes between Hanford and sites that might transfer LLW and MLLW for disposal at Hanford, and sites that might transfer their TRU waste to Hanford for storage, processing, and certification pending shipment to WIPP.

The following sections describe the action alternatives considered in the Final HSW EIS.

### **Storage Alternatives**

The specific storage methods for waste awaiting treatment and/or disposal depend on the chemical and physical characteristics of the waste as well as the type and concentration of

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8(d)-(f) of the WIPP Land Withdrawal Act. For analytical purposes the volumes provided in the CRA are relatively more conservative.

radionuclides in the waste. As described in the HSW EIS, in most cases, alternatives for storage of LLW, MLLW, and TRU waste consisted of using existing capacity at the Central Waste Complex (CWC), the T Plant Complex, the LLBGs, or other onsite facilities. Additional storage capacity was not expected to be needed to accommodate future waste receipts, because as waste in storage is treated, processed, or certified for disposal, space would become available for newly received waste. Although construction and operation of new storage facilities is not proposed in any of the action alternatives, the HSW EIS analyzed the impacts of using existing storage capacity for completeness.

#### **Treatment and Processing Alternatives**

Action alternatives for waste treatment examined in the Final HSW EIS applied two general approaches in developing alternatives for treating and processing wastes. The first approach would maximize the use of offsite treatment and develop additional onsite capacity to treat waste that could not be accepted at offsite facilities. DOE would establish additional contracts or agreements with a permitted offsite facility (or facilities) to treat most of Hanford's CH-MLLW and non-conforming LLW that does not meet Hanford's waste acceptance criteria for disposal. DOE would develop new onsite treatment capability by modifying the T Plant Complex as necessary for treatment of RH-MLLW and MLLW in non-standard containers, e.g., oversize boxes or large items. (CH waste containers can be safely handled by direct contact using appropriate health and safety measures. RH waste containers require special handling or shielding during waste management operations.) DOE would develop new onsite processing capability by

modifying the T Plant Complex as necessary for processing and certification of RH TRU waste and TRU waste in non-standard containers for shipment to WIPP.

The second approach for developing alternatives for treating and processing wastes maximizes the use of onsite treatment capabilities. If treatment capacity does not currently exist at Hanford, a new waste processing facility (or facilities) would be constructed to treat MLLW and non-conforming LLW and to process and certify RH TRU waste and TRU waste in non-standard containers for shipment to WIPP.

In both approaches, the Waste Receiving and Processing Facility (WRAP) and mobile processing units (referred to as Accelerated Process Lines, or APLs) would continue to process and certify CH TRU waste in standard containers for shipment to WIPP.

### **Disposal Alternatives**

The final step in the waste management process is disposal. Disposal facilities at Hanford accept waste suitable for near-surface disposal in accordance with the Hanford Site solid waste acceptance criteria. The HSW EIS evaluated alternatives or updated previous plans for disposal of LLW, MLLW, ILAW, and melters at Hanford, including expansion, reconfiguration, and closure of onsite disposal facilities.

Disposal alternatives in the HSW EIS assumed continued use of existing disposal facilities at

Hanford until new disposal capacity can be developed and permitted. All disposal facilities would meet applicable state and federal requirements. Facilities for disposal of MLLW would be constructed to regulatory standards for new MLLW facilities with double liners and leachate collection systems. LLW disposal in either lined or unlined trenches was evaluated in various alternatives. At the end of operations, all disposal facilities would be closed by applying an engineered barrier (cap) (i.e., a cover of soil and other material placed over waste sites) to reduce water infiltration and the potential for intrusion.

Several different configurations and locations were evaluated for new disposal facilities needed to manage each waste type. Disposal configurations included various options for the number and size of trenches, including facilities dedicated to a single type of waste and options for combined disposal of two or more waste types in the same facility. Alternatives for segregated disposal of LLW or MLLW consisted of multiple trenches similar to those currently employed for each waste type, multiple trenches of a deeper and wider configuration, or a single expandable trench for each waste type.

Alternatives for combined disposal of two or more waste types were also evaluated. The HSW EIS considered alternatives that included two combined-use disposal facilities; one for combined disposal of LLW and MLLW, and one for combined disposal of ILAW and melters. In addition, disposal of all waste types in a single modular combined-use facility was evaluated. To ensure that wastes placed in the same module are suitable for disposal together and are compatible with the engineered disposal system, disposal in combined-use facilities would involve construction of

separate modules for wastes with different characteristics.

The HSW EIS alternatives considered several different disposal locations for new or expanded disposal facilities, including use of LLBGs in the 200 West and 200 East Areas. New disposal sites in the 200 West Area near the CWC and near the PUREX facility located in the southeastern corner of the 200 East Area were also evaluated. Some alternatives evaluated combined-use disposal facilities near the existing Environmental Restoration Disposal Facility (ERDF).

### **Waste Volumes**

The potential environmental consequences of action alternatives in the HSW EIS have been evaluated for three waste volumes: a Hanford Only, a Lower Bound, and an Upper Bound waste volume. These alternative waste volume scenarios encompass the range of quantities that might be generated at Hanford, and which could be received from other sites. The Hanford Only and Lower Bound waste volumes were evaluated in the No Action Alternative. The Hanford Only waste volume was included in the HSW EIS in response to requests from the public as a base volume for considering the impacts of managing offsite waste. The three waste volumes are as follows:

- The **Hanford Only** waste volume consists of 1) currently stored and forecast volumes of LLW, MLLW, and TRU waste from Hanford Site generators, 2) forecast volumes of Hanford's ILAW and melters, and 3) waste that has previously been disposed of in the LLBGs.

- The **Lower Bound** waste volume consists of 1) the Hanford Only waste volume, 2) forecast volumes of LLW and small quantities of MLLW from other sites for disposal at Hanford under existing approvals, and 3) small quantities of TRU waste from other DOE sites that would be received at Hanford for interim storage, processing, certification, and shipment to WIPP.
- The **Upper Bound** waste volume consists of the Lower Bound waste volume plus the estimated total quantities of LLW, MLLW, and TRU waste that could be received from other sites through the end of Hanford site waste management operations. All of the action alternatives summarized below included an analysis of the Upper Bound volume consistent with DOE's decisions under the WM PEIS (63 FR 3629, January 23, 1998; 65 FR 10061, February 25, 2000; and 67 FR 56989, September 6, 2002).

### **Grouping of Action Alternatives**

There is a large potential number of combinations of the various waste streams, potential waste volumes, and individual options for their storage, treatment, and disposal. To facilitate the analysis and presentation of impacts, these potential combinations were grouped into five primary alternatives which comprise the range of reasonable alternatives for managing the waste types considered in the HSW EIS.

## **Summary of Action Alternatives**

Each action alternative included the Hanford Only, Lower Bound, and Upper Bound waste volumes. All of the action alternatives assumed continued use of existing waste management capabilities and facilities, such as operation of WRAP and the APLs to process and certify CH TRU waste, and use of existing disposal facilities until new ones can be designed, permitted, and constructed. All of these alternatives assumed all disposal facilities would be closed with an engineered barrier (cap) designed and installed to meet regulatory requirements applicable to MLLW disposal facilities.

### ***Alternative Group A – Disposal by Waste Type in Deeper, Wider Trenches –***

***Onsite and Offsite Treatment:*** New LLW and MLLW disposal trenches would be deeper and wider than those currently in use, and facilities for disposal of MLLW, ILAW, and melters would include liners and leachate collection systems. Different waste types would be disposed of in separate facilities. New LLW disposal facilities would be located in the 200 West Area and new MLLW, ILAW, and melter disposal facilities would be located in the 200 East Area. Existing facilities would be modified to provide processing capabilities for RH TRU waste and TRU waste in non-standard containers, as well as treatment capabilities for RH-MLLW and MLLW in non-standard containers. Most CH-MLLW would be treated in commercial treatment facilities.

### ***Alternative Group B – Disposal by Waste Type in Existing Design Disposal Trenches –***

***Onsite Treatment:*** Disposal trenches for LLW and MLLW would be of the same design as those currently in use. Different waste types would be disposed of separately. New LLW and ILAW

disposal facilities would be located in the 200 West Area, and new MLLW and melter disposal facilities would be located in the 200 East Area. A new facility would be built to provide processing capabilities for RH TRU waste and TRU waste in non-standard containers, as well as treatment capabilities for RH-MLLW, most CH-MLLW, and MLLW in non-standard containers.

**Alternative Group C – *Disposal by Waste Type in Expandable Design Facilities – Onsite and Offsite Treatment:*** A single, expandable disposal facility (similar to the ERDF) would be used for each waste type. Different waste types would be disposed of in separate facilities. A new LLW disposal facility would be located in the 200 West Area and new MLLW, ILAW, and melter disposal facilities would be located in the 200 East Area. Treatment alternatives would be the same as those described for Alternative Group A.

**Alternative Group D – *Single Combined-use Disposal Facility – Onsite and Offsite Treatment:*** LLW, MLLW, ILAW, and melters would be disposed of in a single combined-use facility. Disposal would occur at one of three locations.

*Alternative Group D<sub>1</sub>:* in the 200 East Area near the PUREX facility

*Alternative Group D<sub>2</sub>:* in the 200 East Area LLBGs

*Alternative Group D<sub>3</sub>:* at the ERDF.

Treatment alternatives would be the same as those described for Alternative Group A. Alternative

Group D<sub>1</sub> was identified as the preferred alternative in the Final HSW EIS.

**Alternative Group E – Dual Combined-use Disposal Facilities – Onsite and Offsite**

**Treatment:** Two combined-use disposal facilities would be constructed. One facility would be used for disposal of LLW and MLLW, and a second would be used for disposal of ILAW and melters. Disposal would occur in one of three combinations of locations.

*Alternative Group E<sub>1</sub>:* ILAW and melters at ERDF, LLW and MLLW within the existing 200 East Area LLBGs

*Alternative Group E<sub>2</sub>:* ILAW and melters at ERDF, LLW and MLLW in the 200 East Area near the PUREX facility

*Alternative Group E<sub>3</sub>:* ILAW and melters in the 200 Area near the PUREX facility, LLW and MLLW at ERDF.

Treatment alternatives would be the same as those described for Alternative Group A.

**No Action Alternative**

Analyzing a No Action Alternative is required under NEPA regulations and provides an environmental baseline against which the impacts of other alternatives can be compared. The HSW EIS No Action Alternative would continue ongoing waste management activities. However, the HSW EIS No Action Alternative did not include development of new capabilities to manage wastes that cannot currently be treated, or which are otherwise not suitable either for shipment to

WIPP or for onsite disposal under the Hanford Site solid waste acceptance criteria. Under the No Action Alternative, these wastes would be stored indefinitely with no path forward for ultimate disposition and DOE would not be able to meet all applicable regulatory requirements or TPA milestones for management of those wastes.

Hanford's treatment and processing capacity under the No Action Alternative would be limited to existing onsite capabilities and previously established contracts with offsite facilities to treat small quantities of MLLW. Disposal of LLW in the LLBGs would continue using trenches of the current design. The trenches would be backfilled with soil but would not be capped. Two existing MLLW trenches would be filled to capacity and capped in accordance with applicable regulations. Processing and certification of some CH TRU waste at WRAP and the APLs would continue, and certified wastes would be shipped to WIPP. Any wastes that could not be treated, processed, certified, or disposed of would require indefinite storage. The CWC would be expanded to store most unprocessed or uncertified TRU waste and most untreated LLW and MLLW, as well as melters and other treated MLLW exceeding existing disposal capacity. Small quantities of waste could also be stored at other locations, such as T Plant or the LLBGs. ILAW would be stored in concrete vaults to be constructed near the PUREX facility located in the southeastern corner of the Hanford Site 200 East Area.

### **Environmentally Preferable Alternative**

All of the action alternative groups were estimated to result in low environmental impacts, with small differences in impacts among the alternative groups. No occupational fatalities or

increased incidences of cancer or fatal chemical exposures associated with normal operations would be expected from any of the action alternatives. Although potential adverse impacts on soils, air quality, noise levels, visual resources, socioeconomic conditions, resource availability, and land use could occur with any of the alternatives, these impacts would be low. Potential transportation impacts, including incidence of cancer and fatalities from accidents, would be very small. Because transportation impacts are related to the number of shipments, such impacts would increase with increasing waste volumes being shipped to, from, and within the Hanford Site. The maximum potential transportation impacts calculated for all the action alternatives were associated with the upper bound volume and would possibly result in up to 75 accidents, up to a total of three potential fatalities resulting from those accidents, and up to 10 potential latent cancer fatalities during routine transport. A substantial portion of these potential transportation impacts would be from shipments of TRU waste generated at Hanford that DOE had previously decided to ship to WIPP for disposal.

No single alternative group could be identified as the environmentally preferable alternative for all types of impacts considered in the HSW EIS. Although Alternative Group D<sub>1</sub> may result in greater potential impacts to the shrub-steppe habitat at Hanford than the other alternative groups, it shows slightly lower impacts to other resource areas. On balance Alternative Group D<sub>1</sub> would be environmentally preferable for most types of potential impacts.

Compared to the other action alternative groups, the preferred alternative identified in the Final HSW EIS (Alternative Group D<sub>1</sub>) would have slightly lower long-term impacts on water

quality and slightly lower long-term dose impacts if groundwater is used for drinking water and other uses, but somewhat greater potential for disturbance of shrub-steppe habitat over the operational period. Incremental doses from radionuclides in groundwater at 100 meters from disposal facilities would not exceed the 4-millirem-per-year DOE benchmark (based on radiation dose conversion factors as published in Federal Guidance Reports 11 and 12 [EPA-520/1-88-020 and EPA-402-R-93-081, respectively]). Due to differences in the new disposal facility design, construction, operation, location, and waste packaging and/or encapsulation (which affect the concentration, location, and time of any release), constituents migrating from the new lined, combined-use disposal facilities, when added to impacts remaining from past waste disposal activities, would not be expected to result in exceedences of maximum contaminant levels<sup>4</sup> in groundwater at points beyond the disposal facility boundary.

### **Transportation of Waste**

Shipments of LLW, MLLW and TRU waste to Hanford and subsequent shipment of TRU waste from Hanford to WIPP are the subject of previous decisions made under the WM PEIS (63 FR 3629, 65 FR 10061, and 67 FR 56989) and WIPP Disposal Phase Final Supplemental EIS SEIS-II (DOE/EIS-0026-S-2). In response to public interest in potential transportation impacts and risks of shipping offsite waste to Hanford and shipments of TRU waste from Hanford to WIPP, the HSW EIS includes an updated route-specific transportation analysis of potential LLW,

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<sup>4</sup> Contaminant concentration limits for drinking water supplied by public water systems as set by EPA or the Washington State Department of Health were used as a benchmark in the HSW EIS to compare the potential impacts of alternatives.

MLLW, and TRU waste shipments using Year 2000 census data and an updated version of the RADTRAN computer modeling code. The transportation analyses conducted in the HSW EIS confirmed conclusions previously reached by the WM PEIS.

### **Comments on the Final HSW EIS**

Comments on the Final HSW EIS were received from the Confederated Tribes of the Umatilla Indian Reservation, the Confederated Tribes and Bands of the Yakama Indian Nation, members of Congress, EPA, the State of Washington Department of Ecology, and the Oregon Department of Energy. The major concerns raised in the comments, along with DOE's responses, are as follows:

- *Opposition to the importation to Hanford of waste from other sites, primarily LLW and MLLW for disposal, in the face of the need to clean up the Hanford Site:* DOE has decided to restrict receipt of LLW and MLLW from other sites for disposal at Hanford. DOE is also pursuing a strategy whereby Hanford's TRU waste, high-level waste, and spent nuclear fuel will be shipped offsite to federal repositories built to provide the high degree of isolation from the human environment required for these wastes. DOE expects that the benefits of these actions, coupled with other remediation programs at Hanford, will contribute significantly to attaining sound cleanup goals for Hanford.
- *Opposition to disposal of LLW in unlined trenches and the threat this poses to Hanford's groundwater:* DOE has decided to dispose of LLW in lined trenches, effective immediately.

DOE will use existing lined trenches until the new lined, combined-use disposal facility is available, which is expected in approximately the 2007 time frame.

- *Mitigation necessary to protect groundwater and the Columbia River:* DOE has decided to institute new mitigation measures, including installation of secondary leak detection capability in the new lined, combined-use disposal facility, in addition to existing mitigation measures summarized in “**Mitigation Measures**” below.
- *Declaration of irretrievable and irreversible commitment of groundwater as a means of abrogating cleanup responsibilities:* As stated in the HSW EIS, DOE believes that already present contamination from past practices precludes the beneficial use of groundwater beneath portions of the Hanford Site for the foreseeable future, as a matter of protecting public health. DOE will continue to use ongoing cleanup programs to address contaminants resulting from past practices. DOE intends to meet its responsibilities for cleanup and site remediation and is not changing existing groundwater remediation activities or commitments. Groundwater protection, monitoring and remediation will continue to be performed consistent with the TPA, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) past-practice requirements.
- *Adequacy of groundwater analyses in the Final HSW EIS:* As stated in the HSW EIS, there are uncertainties in the data about the geology and groundwater at Hanford and in the analytical approaches available to estimate potential environmental impacts. DOE accounted for uncertainties by using conservative assumptions in the groundwater analyses. Accordingly, DOE believes that sufficient information currently exists to enable DOE to

make informed decisions regarding waste management. DOE will continue to support ongoing investigative efforts to improve its technical and analytical capabilities.

- *Adequacy of the existing groundwater monitoring system near unlined disposal trenches:* Groundwater monitoring wells including those near unlined disposal trenches will be installed, operated, and removed from service consistent with the TPA and applicable regulations. DOE will install 17 additional wells around the LLBGs to meet its commitment under the M-24 series of TPA milestones. (The M-24 series of TPA milestones also has mechanisms for determining future Hanford Site groundwater monitoring needs.) Other monitoring needs for the LLBGs will be established through ongoing permitting processes with the State of Washington Department of Ecology. The *Hanford Site Groundwater Strategy* (DOE/RL-2002-59, February 2004) addresses monitoring as part of a larger program to protect the groundwater, monitor the groundwater, and continue remediating existing contamination. Other TPA milestones establish dates for completing investigations of existing sites where waste was disposed of and deciding how these sites will be closed.
- *“Long-term stewardship” is not being adequately addressed at Hanford:* Accelerating cleanup at the Hanford Site and disposing of additional LLW and MLLW from Hanford and other DOE sites requires attention to long-term stewardship both now and in the future. Hanford Site closure and long-term stewardship are being addressed consistent with the TPA and applicable CERCLA and DOE requirements, including monitoring, periodic reassessments of past decisions, and institutional controls. These requirements address the potential application of new technologies during periodic reassessments. DOE will continue to refine and implement the *Hanford Long-Term Stewardship Program: Preparation for*

*Environmental Management Cleanup Completion* (DOE/RL-2003-39, August 2003), which has been developed with the input of regulators and stakeholders over the last several years. Because of the need to prepare for its post-cleanup mission, DOE has established the Office of Legacy Management to monitor, maintain, and reassess sites after they are closed. Decisions made in this ROD are consistent with existing and planning efforts.

- *Lack of information on retrieval and treatment of tank waste:* As stated in the HSW EIS, DOE is preparing the “Environmental Impact Statement for Retrieval, Treatment, and Disposal of Tank Waste and Closure of Single-Shell Tanks at the Hanford Site,” referred to as the Tank Closure Environmental Impact Statement (TC EIS). The State of Washington Department of Ecology is a cooperating agency involved in the preparation of the TC EIS. The public will have an opportunity to comment on the Draft TC EIS.
- *Limited availability of thermal treatment capability for some types of mixed waste, and DOE’s plans for managing such wastes are unclear:* DOE is determining how best to manage waste for which no final disposition plans currently exist. Though the availability of thermal treatment for radioactive waste is limited, DOE is actively seeking the services necessary to treat thermally some Hanford-generated MLLW in the commercial sector.
- *Worker safety:* DOE will increase efforts to protect and enhance worker safety and has recently given new direction to Hanford contractors establishing DOE’s expectations of measurable safety improvements. DOE’s Integrated Safety Management System principles will continue to be applied to ensure extensive worker involvement in planning work. DOE will conduct special emphasis reviews of particular issues as appropriate.

## **DECISIONS:**

### **Storage and Treatment of Low-Level Waste and Mixed Low-Level Waste**

DOE has decided to implement the actions described in the preferred alternative, Alternative Group D<sub>1</sub>, for storing and treating LLW and MLLW. LLW and MLLW will continue to be stored in existing facilities such as the CWC. Most LLW and MLLW will be treated under agreements with offsite treatment facilities. Existing onsite treatment capabilities and facilities will also continue to be used as appropriate. For wastes that cannot be treated at existing onsite or offsite facilities, such as RH waste or waste in non-standard containers, treatment capacity will be established at Hanford by modifying the T Plant Complex as needed. Although DOE expects most offsite waste to be treated elsewhere before receipt at Hanford, small quantities of offsite waste (up to 100 m<sup>3</sup> of MLLW) will be received as necessary for onsite treatment.

### **Disposal of Low-Level Waste and Mixed Low-Level Waste**

DOE has decided to implement the actions described in the preferred alternative, Alternative Group D<sub>1</sub>, for disposing of LLW and MLLW at Hanford, including the waste resulting from the vitrification process (ILAW and melters), should they be determined to be LLW or MLLW, up to the volumes evaluated in the HSW EIS, subject to the limitations on receipt of offsite waste described below. DOE will construct a new lined, combined-use facility for disposal of this waste near the PUREX facility located in the southeastern corner of the Hanford Site 200 East Area. The

combined-use facility will contain separate modules for wastes with differing characteristics as necessary to ensure that wastes placed in the same module are suitable for disposal together and do not adversely affect disposal system components. The new facility is projected to be available for waste disposal in 2007.

DOE will continue to dispose of MLLW in lined facilities having leachate collection systems. In addition, effective immediately, DOE will dispose of LLW in the existing lined facilities and will subsequently dispose of LLW in the new lined, combined-use disposal facility when it becomes operational. After the end of disposal operations, the LLBGs and the new lined, combined-use facility will be closed by applying an engineered barrier (cap) to reduce water infiltration and the potential for intrusion.

Also effective immediately, DOE will limit the total receipt of additional waste from offsite generators for disposal at Hanford to 62,000 m<sup>3</sup> of LLW and 20,000 m<sup>3</sup> of MLLW. This is less than 25 percent of the Upper Bound volume of waste evaluated for offsite generators in the HSW EIS. Until the new disposal facility is operational, DOE will limit receipt of LLW and MLLW from offsite generators for disposal at Hanford to no more than 13,000 m<sup>3</sup>, of which no more than 5,000 m<sup>3</sup> will be MLLW.

#### **Storage, Processing, Certification, and Shipment of TRU Waste**

DOE has decided to implement the actions described in the preferred alternative, Alternative

Group D<sub>1</sub>, to process and certify TRU waste for shipment to WIPP. WRAP and APLs will continue to process and certify most CH TRU waste. For TRU waste that cannot be processed and certified at existing facilities, such as RH or non-standard containers, DOE will develop onsite capability by modifying the T Plant Complex as necessary to store, process, certify, and ship TRU waste to WIPP in quantities up to the Upper Bound waste volume evaluated in the Final HSW EIS (up to 46,000 m<sup>3</sup> of Hanford TRU waste and up to 1,550 m<sup>3</sup> of offsite TRU waste). If, through the certification process, any of this waste is determined to be LLW, it will be disposed of at Hanford in lined trenches according to existing procedures, Hanford Site solid waste acceptance criteria, and consistent with applicable regulatory requirements.

No decision is being made in this ROD to transfer TRU waste from other sites to Hanford for storage prior to disposal at WIPP. Such a decision would be made in a separate ROD or RODs revising, as appropriate, decisions previously made under the WM PEIS.<sup>5</sup> As stated in DOE's decision under the WM PEIS regarding the treatment and storage of TRU waste, DOE may, in the future, decide to ship TRU waste from sites that do not have the capability to manage this waste to sites that do have this capability, until the waste can be disposed of at WIPP. The sites that could receive such TRU waste are the Hanford Site, the Oak Ridge Reservation, the Savannah River Site, and the Idaho National Environmental and Engineering Laboratory. If DOE decides to ship additional offsite TRU waste to Hanford for storage, processing, or certification prior to shipment

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<sup>5</sup> Concurrently with the issuance of this ROD, DOE is issuing a revision to the WM PEIS ROD confirming its September 6, 2002, decision under the WM PEIS to transfer a small quantity of TRU waste from the Battelle West Jefferson North Site in Columbus, Ohio, to Hanford. This waste will be stored, certified, and processed pending shipment to WIPP for disposal. However, these shipments will not commence unless and until the preliminary injunction issued by the District Court for the Eastern District of Washington is lifted.

to WIPP, DOE would consider information from the WM PEIS and the HSW EIS in issuing a revised ROD.

### **Bases for Decisions**

DOE considered potential environmental impacts as identified in the HSW EIS, cost, applicable regulatory requirements, and public comments in arriving at its decisions. Of all of the action alternatives, DOE believes the slightly lower long-term impacts on water quality in Alternative Group D<sub>1</sub>, and the slightly lower long-term dose impacts if groundwater is used, offset a somewhat greater potential for disturbance of shrub-steppe habitat over the operational period. Future waste disposal operations would be combined in a single location in the 200 East Area that could provide a unified regulatory pathway to construction, operation, and post-closure maintenance of the disposal site. The use of lined facilities for disposal and significant limits on the receipt of LLW and MLLW from other sites for disposal at Hanford is responsive to public concerns and comments. In addition, the construction of a single disposal facility and modification of the T Plant Complex is expected to offer a cost advantage over other alternatives.

### **Mitigation Measures**

In addition to limiting receipt of offsite LLW and MLLW and disposing of LLW in lined trenches, DOE will adopt all practicable measures, which are described below, to avoid or minimize adverse environmental impacts that may result from implementing the actions described

in the Final HSW EIS under Alternative Group D<sub>1</sub>. All of these measures are either explicitly part of the alternatives or are already performed as part of routine operations.

- Storage, treatment, and disposal facilities will be designed, constructed, and operated in accordance with the comprehensive set of DOE requirements and applicable regulatory requirements that have been established to protect public health and the environment. These requirements encompass a wide variety of areas, including radiation protection, facility design criteria, fire protection, emergency preparedness and response, and operational safety requirements.
- Waste and other materials will be transported in accordance with applicable U. S. Department of Transportation and DOE requirements.
- RH MLLW and RH TRU waste will be transported, stored, treated, processed, and/or certified with appropriate shielding to protect workers and the public.
- LLW will be disposed of in facilities that incorporate double liners and leachate collection systems although not required by regulation. MLLW will continue to be disposed of in such facilities according to applicable regulations.
- Measures will be taken to protect construction and operations personnel from occupational hazards and the “As-Low-as-Reasonably-Achievable” principle will be implemented to minimize worker exposures to radioactive and chemical hazards.
- Emergency response plans will be in place to allow rapid response to potentially dangerous unplanned events.
- Water and other surface sprays will be used to control dust emissions, especially at borrow

sites, gravel or dirt haul roads, and during construction earthwork.

- Pollution control or treatment will be used to reduce or eliminate releases of contaminants to the environment and meet applicable regulatory standards.
- Environmental monitoring systems will be installed and operated to detect potential releases to the environment
- Secondary leak detection capability will be designed into the new lined, combined-use disposal facility.
- Disturbed areas will be mitigated consistent with the *Hanford Comprehensive Land-Use Plan Environmental Impact Statement Record of Decision* (64 FR 61615, November 12, 1999).
- LLW and MLLW disposal facilities will be closed with an engineered barrier (cap) designed and installed to meet regulatory requirements applicable to MLLW.
- LLW and MLLW containing more mobile contaminants will continue to be disposed of in high-integrity containers or by encapsulating the waste in grout.
- Consideration will be given to further protect the environment from contaminants of concern (e.g., iodine-129, technetium-99) in solid waste from the 200 Area Effluent Treatment Facility and as part of the development of the performance assessments and the waste acceptance criteria for the new lined, combined-use disposal facility.

- TRU waste stored in the LLBGs will continue to be retrieved consistent with existing TPA milestones. This waste will continue to be shipped from Hanford to WIPP for disposal.

Issued in Washington, D.C., this 23 day of June 2004.

  
Jessie Hill Roberson  
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