INTRODUCTION

We are pleased to present the 1999 *Hanford Waste Management Project Strategic Plan*. This plan supports the U. S. Department of Energy mission and strategy, as documented in the September 1997 *U. S. Department of Energy Strategic Plan* and the Richland Operations Office 1996 *Hanford Strategic Plan*. The Plan is integrated with the Fluor Daniel Hanford, Inc. management and integration strategy. The 1999 Plan reflects current needs for Waste Management Project services in support of Hanford Site cleanup, and updates the objectives and actions for the previously established strategic goals: (1) waste treatment, storage, and disposal; (2) waste minimization and pollution prevention; (3) providing support services; and (4) organizational excellence. Overall direction for the Project is provided by the Waste Programs Division, U. S. Department of Energy, Richland Operations Office. Waste Management Federal Services of Hanford, Inc., manages and operates the Project for Fluor Daniel Hanford, Inc., as part of the Project Hanford Management Contract. Other subcontractors, including Numatec Hanford Corporation, COGEMA Engineering Corporation, and Waste Management Federal Services, Inc., Northwest Operations, support the Project in specialized areas.

This Plan documents a proactive approach for planning and budgeting, with a major focus on reducing costs and increasing the efficiency of operations to achieve Site cleanup objectives. The key elements of the strategy are identification and quantification of the needs for waste management services, assessment of capabilities, and development of cost-effective actions to meet the needs and to continuously improve performance. Accomplishment of specific actions as set forth in the Plan depends on continued availability of the required resources and funding.

The Plan calls for leadership in the integration of Site waste management activities, expanding use of campaign plans to optimize the application of resources in treating and disposing of waste, contracting of selected services, and working to define and apply only those regulations necessary for safe and environmentally compliant operations. We must close unneeded facilities, while maintaining or acquiring the capabilities to meet future needs for waste management services. We will be responsive to temporary peaks and valleys in workloads through consolidation of our support organizations and increased flexibility of our work force and by seeking additional non-Hanford government-funded work. In addition, we will actively support local diversification activities.

We look forward to working together and with our regulators and stakeholders to achieve the Project goals set forth in this Strategic Plan.

H. E. Bilson, Director Waste Programs Division DOE-RL	J. D. Williams, Project Director Waste Management Fluor Daniel Hanford, Inc.	E. S. Aromi, President and General Manager Waste Management Federal Services of Hanford, Inc.

EXECUTIVE SUMMARY

This 1999 Hanford Waste Management Project Strategic Plan sets forth the major goals, objectives, and strategies for accomplishing the Project mission. The Plan describes and quantifies the requirements for waste treatment, storage, and disposal and for cross-cutting support services that the Project provides to other Hanford Site programs. Strategies are presented to meet these requirements while improving the quality and efficiency of operations and reducing the cost of services. The Project will continue to focus on safety in all of its activities. Four strategic goals have been established.

Safe and Expeditious Disposal of Waste - The Project will apply systems engineering in the development of baseline waste disposition maps for all assigned treatment, storage, and disposal activities in support of Site cleanup. The Project also will support national efforts (e.g., the Environmental Management Initiative) to accelerate cleanup and reduce waste management costs across the U. S. Department of Energy complex. The Plan discusses the types, quantities, treatment, and disposal methods for the major waste streams. Strategies are summarized as follows.

Low-Level Waste. The receipt, treatment, storage, and disposal of low-level waste will be conducted safely to meet all customer requirements and schedules, and at minimum cost. The Plan discusses the types, quantities, and disposal methods for low-level waste.

Mixed Low-Level Waste. The treatment rates will be increased to work off the backlog of stored waste and to eliminate long-term storage. Existing treatment technology will be applied when available to minimize costs. The use of local contractors will be emphasized and the capabilities of other Department of Energy sites will be utilized where cost savings can be realized. A project management plan will be developed to define costs and schedules for new capability to treat remote-handled waste as required by Milestone M-91 of the Hanford Federal Facility Agreement and Consent Order.

Transuranic Waste. Certification will be obtained and waste will be ready for shipment to the Waste Isolation Pilot Plant in Fiscal Year 1999, in support of the national transuranic waste program. Stored, retrieved, and newly generated waste will be processed at the Waste Receiving and Processing Facility and future remote-handled waste facilities.

Liquid Effluents: Effluent treatment, storage, and disposal services will be provided to meet customer requirements. Additional sources of feed will be explored and campaign plans will be implemented to optimize costs and maintain capability during periods of low throughput.

Waste Minimization and Pollution Prevention - The goal is to eliminate or minimize waste generation, pollutant releases to the environment, and the use of toxic substances in all Hanford Site activities. The Project has the lead role in ensuring that the Hanford Site complies with all federal and state requirements for pollution prevention, waste reduction, and resource conservation. The Project will establish and meet specific targets for each of these areas, in line with national guidelines.

Responsive and Cost-Effective Support Services - Cross-cutting support services include analytical services, environmental services, waste generator services, and transportation and packaging services. The Project will operate the two major onsite analytical laboratories, the 222-S Laboratory Complex and the Waste Sampling and Characterization Facility, as an integrated system, and will continue to broaden the customer base to improve efficiency and reduce costs. Environmental Services will pursue continued

improvements and efficiencies in providing permitting and regulatory compliance support for Site facilities, and in conducting environmental monitoring programs. Generator Services will complete implementation of a commercial approach in the planning, verification, packaging, certification, and acceptance of waste. The Project will work to improve customer services by consolidating similar operations into centralized facilities, and by managing waste on a turnkey basis from the point of generation through ultimate disposition. Transportation and packaging services will upgrade packaging systems in accordance with safety basis documents and standardized waste container designs.

Organizational Excellence - The Project is dedicated to achieving organizational excellence in the management of all activities and operations, using commercial, business-oriented approaches. The Project will use efficient and effective management systems, including streamlining the organizational structure and maintaining up-to-date information databases on needs and resources. Cost reduction will be emphasized by consolidating related services, closing unneeded facilities, and defining and applying only those regulations necessary for safe and environmentally compliant operations. The use of campaign plans for major waste processing activities will be expanded to improve operations and delivery of services. The Project will collaborate with the Project Hanford Management Contract Office of Economic Transition to support commitments to diversify the local economy. Commercial contracting of services and privatization of Project operations will be pursued where feasible and economically beneficial. The safety and health of the work force and the public, protection of the environment, and regulatory compliance will continue to be the highest priorities in all planning and operations. The Project will apply the principles of the **I**ntegrated Environment, **S**afety, and Health **M**anagement **S**ystem to provide a safe and productive work environment Performance measurement and evaluation will provide the basis for continuous improvement.

Achievement of Project goals and objectives requires strong leadership and the timely application of sufficient financial, human, infrastructure, and technical resources. Limited funding for essential services is anticipated to require adjustments to current strategies over the next five years. Examples of potential adjustments include the M-91 baseline, transuranic waste retrieval and processing rates, variations in solid and liquid waste receipts, and changes in analytical services requirements.

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MISSION

The mission of the Hanford Waste Management Project is to provide integrated management for the treatment, storage, and disposal of solid waste and liquid effluents. The Project also provides specialized support services and expertise to other Hanford projects and contractors, including analytical services, waste generator services, environmental services, transportation and packaging, and waste minimization. The Project has responsibility for oversight, coordination, and technical evaluation of designated offsite waste streams. Project operations are conducted in a safe and environmentally sound manner that is in compliance with applicable regulations and standards.

VISION

The Hanford Waste Management Project will be recognized for its leadership in waste treatment, storage, and disposal planning and operations for the Hanford Site. The Project will strongly support achieving the objectives of Hanford cleanup and closure of the Site. We will provide the most reliable, efficient, and cost-effective waste management services in the DOE Complex.

CORE VALUES

The Hanford Waste Management Project embraces the following values established by the U. S. Department of Energy, Richland Operations Office for the Hanford Site:

SAFETY – The safety and health of our workers and the public will not be compromised. We place a high priority on managing and reducing the risks in the workplace as well as risks to the public and the environment.

RESULTS – We are committed to environmental and scientific excellence. We will meet or exceed the needs and expectations of our customers. Our employees are encouraged to seek creative and innovative solutions and to continuously find ways to improve what we do.

TEAMWORK – We work as a team to accomplish our missions. We regard all concerned parties as essential members of the team and value and plan for their participation. “Win-Win” solutions are essential elements of the way we do business. We value the diversity of our employees and all other members of the team.

INTEGRITY – We conduct ourselves with the highest standards of professionalism and ethical behavior. We honor our commitments and comply with applicable laws and regulations. We are proper stewards of the taxpayer’s interest.

REQUIREMENTS FOR PROJECT SERVICES

Successful accomplishment of the mission will require the storage, treatment, and disposal of a broad range of radioactive solid waste; the management of liquid effluents; and cross-cutting support services as assigned to the Hanford Waste Management Project (HWMP).

The major requirements for Project sevices are described in the following sections. Although the specific quantities of waste and levels of service are subject to change, this information is provided to support the overall strategies. The Project services are expected to be required until the planned Hanford Site closure in fiscal year (FY) 2046.

The Project scope currently does not include spent fuel, high-level tank waste, sanitary waste, or waste that is the responsibility of the Hanford Environmental Restoration Contractor (ERC). The latter includes waste buried before 1970 and waste buried outside the 200 Area between 1944 and 1974.

Solid Waste

Since 1944, the Hanford Site has disposed of 650,000 m^3 of solid low-level waste (LLW), including about 260,000 m^3 disposed under HWMP.

Figure 1. Low-Level Burial Grounds.

The Project is forecasted to receive 140,000 m^3 of LLW for disposal in the Low-Level Burial Grounds (LLBG) (Fig.1). This quantity represents about 27% of DOE newly generated LLW. Of this forecasted volume, 30,000 m^3 is from offsite generators.

Through February 1999, the Project has disposed of 77 defueled reactor compartments in the LLBG. The Project is forecasted to receive eight to nine defueled reactor compartments per year through FY 2013 (Fig. 2).

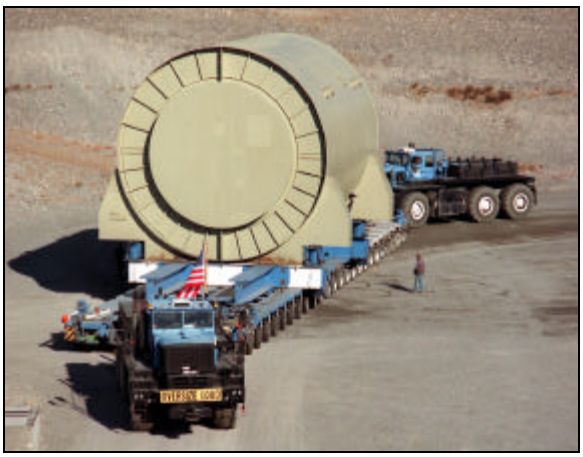

Figure 2. Defueled Reactor Compartment Transport.

Solid mixed low-level waste (MLLW) includes land disposal restriction (LDR)-compliant solids, inorganic solids, debris, lead, organic lab packs, organic solids, inorganic lab packs, mercury, remote-handled (RH) MLLW, and greater-than-class-3 (GTC3) MLLW. The Project has 9,200 m^3, or about 11% of the MLLW in storage at DOE sites. The Project plans to receive 64,000 m^3, or about 45% of DOE's newly generated MLLW. In addition, 200 m^3 of waste is projected to be received from the Hanford Site ERC and offsite generators with approved Federal Facility Consent Agreement site treatment plans, for treatment and return to the generators. Volumes of offsite waste receipts could be affected when the LLW/MLLW Records of Decision are issued as part of the Waste Management Programmatic Environmental Impact Statement process.

Of the transuranic waste (TRUW) stored at DOE sites, the Project has approximately 12% (16,000 m^3) of the contact-handled (CH) and 9% (200 m^3) of RH TRUW. This includes 15,000 m^3 of suspect TRUW in retrievable storage. The HWMP is projected to receive 24% (7,300 m^3) of the CH and 89% (1,700 m^3) of the newly generated RH TRUW.

Liquid Effluents

Requirements for 200 Area liquid effluent treatment services are forecasted to remain about the same as in FY 1998 (approximately 110 million L or 30 million gal. This assumes that pump-and-treat processing of 200-UP-1 continues through FY 2005. Liquid effluents from the TWRS Privatization Project will require treatment. This treatment includes effluents from plant startup and operations, which are expected to begin in FY 2006. Additional treatment needs may arise with expanded vadose zone activities and requirements.

Disposal of 200 Area liquid effluents meeting discharge requirements has decreased from the previous level of 1.1 billion L (300 million gal) per year to about 260 million L (70 million gal) in FY 1999. These levels will continue until startup of TWRS Privatization Project operations. Facilities generating waste streams include the Plutonium Finishing Plant, 222-S Laboratory Complex, 242-A Evaporator, and the Waste Encapsulation and Storage Facility.

Requirements for TWRS tank waste concentration services are forecasted at 7.6 million L (2 million gal) per year from FY 1999 through FY 2001. From FY 2002 through FY 2012, volumes are expected to decrease slightly. Major feed sources are salt-well liquor and dilute noncomplexed tank waste.

The volume of nonradioactive liquid effluent industrial waste water to be treated in the 300 Area Treated Effluent Disposal Facility (TEDF) is expected to be 260 million L (70 million gal) in FY 1999. The volume is forecasted to decrease slightly in FY 2000 and FY 2001. This volume will continue to decrease in the out years as selected 300 Area facilities are closed.

The capability to divert unplanned radioactive liquid waste from the 307 Retention Basins to a load-out facility must be maintained.

Analytical Services

Analytical services are critical to the success of the Hanford mission. Projections indicate that 56,000 samples will require analysis in FY 1999 with a decrease to 50,000 samples in FY 2003. The number of individual analyses forecasted for FY 1999 is 140,000, decreasing to 110,000 in FY 2003.

With the completion of the TWRS Characterization Program, and the retrieval and pretreatment studies in FY 2002, the needs for high-activity (greater than 100 mR/hr) sample analysis will decrease from 20 to 15 AEUs (analytical equivalency unit - a standard metric for TWRS characterization samples) per year. The initial effect of this decrease will occur in FY 1999. Analytical support also will be required for salt well pumping. Sample analysis needs could increase substantially if the TWRS Privatization Project uses HWMP analytical services. Transition Project needs for alpha analytical services are anticipated to decrease from 7,600 samples in FY 1999 to 4,500 in FY 2001. Deactivation of the Plutonium Finishing Plant will continue through FY 2014 generating approximately 4,500 samples per year. The Spent Nuclear Fuel Project will generate 3,000 samples per year through FY 2003. Disposal of TRUW at the Waste Isolation Pilot Plant (WIPP) will require certification of analytical services in FY 1999. Approximately 230 alpha samples per year will require laboratory analysis for TRUW processing.

The majority of the samples requiring analysis have radiation levels of less than 10 mR/hr beta-gamma and less than 10 nCi/g alpha. With

yearly fluctuations of up to 15 %, forecast needs for low-activity sample analyses should remain near present levels over the next 5 years. One significant increase in the expected workload is vapor sampling and analysis for waste retrieval and for Waste Receiving and Processing Facility (WRAP) waste drums before shipment to WIPP. Additional characterization needs are expected from expanded vadose zone monitoring.

There is an ongoing need for regulatory-driven protocol sampling of different media in a variety of locations and environments (Fig. 3).

Figure 3. Liquid Effluent Sampling.

Transportation and Packaging

Onsite and offsite movement of hazardous waste and materials is an integral part of many Hanford Site activities. Effective management and implementation of the Transportation and Packaging Program is essential to ensure compliance with federal, state, and local regulations. There is an ongoing need for in-house experts to ensure that offsite shipments are made in accordance with the U. S. Department of Transportation and U. S. Nuclear Regulatory Commission regulations and that packaging certifications and approvals are maintained. The onsite transportation program will continue to be streamlined to integrate commercial practices and seamless generator services across the Hanford Site.

The DOE Complex-wide Environmental Management (EM) integration effort will continue to require transportation and packaging support to resolve interface issues. There will continue to be a need for DOE-RL and Fluor Daniel Hanford, Inc. (FDH) to be represented at the national level on packaging and transportation activities, not only in waste management, but also in the transportation of spent fuel. Examples of specific needs are packaging and shipment of TRUW to WIPP, transfer of spent fuel from the K Basins to the Canister Storage Building, and transportation of vitrified high-level waste to the high-level waste repository.

CAPABILITIES AND SERVICES

The major HWMP capabilities and services that will be used to meet the Project needs are described in Appendix B. Categories include solid waste treatment, storage, and disposal (TSD); liquid effluent management; and support services.

STRATEGIC GOALS

This 1999 Strategic Plan is designed to support the September 1997 *U. S. Department of Energy Strategic Plan*, (Fig. 4), as well as the 1996 DOE-RL H*anford Strategic Plan* for Site cleanup. National goals, objectives, and strategies as defined in the Environmental Quality business area of the Energy Secretary's plan were used as the basis for developing the *Hanford Waste Management Project Strategic Plan*.

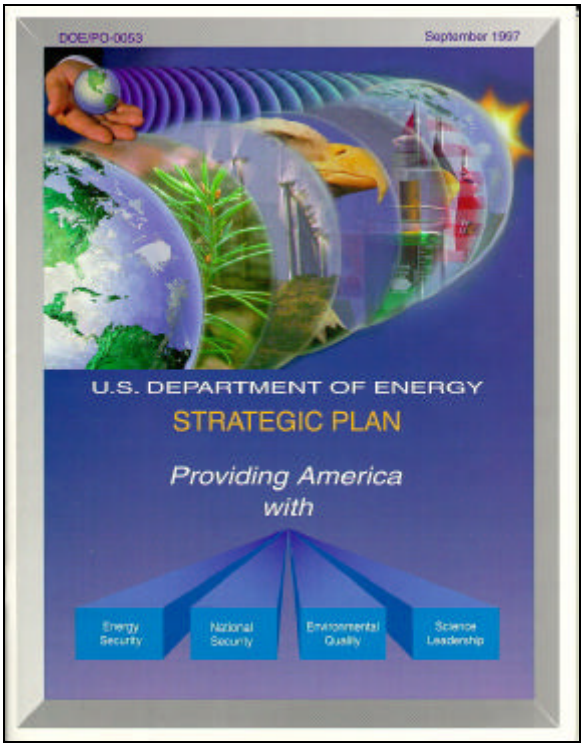

Figure 4. U. S. Department of Energy Strategic Plan.

The following section presents HWMP strategic goals, objectives, and strategies. The HWMP strategies provide the framework for planning over the lifetime of Project Hanford, and are a key element in achieving the Site cleanup mission. Near-term strategies and actions are integrated with the *Waste Management Project Fiscal Year 1999 Multi-Year Work Plan.* Long-term objectives are identified to support preparation of the Waste Management Project Baseline Summaries (PBS).

Waste Management Federal Services of Hanford, Inc. (**WMH**) **provides centralized waste management services for all Hanford Site contractors**. Services include treatment, storage, and disposal of solid waste and liquid effluents; analytical services; waste generator services; environmental services; transportation and packaging; and waste minimization services. Specific activities include forecasting of needs, and developing and maintaining baselines for all HWMP activities (e.g., Hanford waste disposition maps, waste acceptance criteria, safety analyses, *National Environmental Policy Act of 1969* documentation, and quality plans) that maintain the viability of the TSD activities and other operations. Additional activities include maintaining a centralized Hanford Site waste database, integrating services on the Hanford Site with those of the DOE Complex, and implementing commercial approaches to operations.

WASTE TREATMENT, STORAGE, AND DISPOSAL

In the *U. S. Department of Energy Strategic Plan,* a major objective under the Environmental Quality business area is to safely and aggressively clean up the environmental legacy of nuclear weapons and civilian nuclear research programs, minimize future waste generation, and permanently dispose of the nation's radioactive waste. Under this Goal, several objectives have been defined, each having one or more specific strategies. The HWMP has direct responsibilities in the achievement of several of the objectives, and provides support functions to others.

The Project provides leadership and expertise for waste treatment, storage, and disposal. Hanford Site TSD disposition maps are maintained to define the types and quantities of solid waste and to identfy required treatment and disposal paths.

STRATEGIC GOAL

Safely and expeditiously dispose of waste generated by Hanford Site defense materials production and other government and civilian nuclear programs; prepare transuranic waste for shipment to WIPP.

OBJECTIVE 1

Dispose of low-level solid waste.

The HWMP provides leadership and services to manage LLW produced by other onsite projects and programs (excluding waste disposal at the Environmental Restoration Disposal Facility). This activity is to be performed within the current Waste Management area in the 200 Area Plateau controlled zone, as defined by the Future Site Uses Working Group.

A performance assessment analysis performed for the LLBG was peer-reviewed and approved by DOE to ensure adequate environmental protection from radionuclide contamination. The performance assessment, along with a site-wide composite analysis, will be maintained and updated throughout LLBG operations.

Strategy 1

Maintain the waste acceptance criteria; perform acceptance and verification, and support transportation of the waste from the generator to TSD; provide approved storage, treatment as required, and final disposal.

- *A disposal scenario is provided in Figure 5; actual volumes are shown as small circles on this and subsequent graphs.*

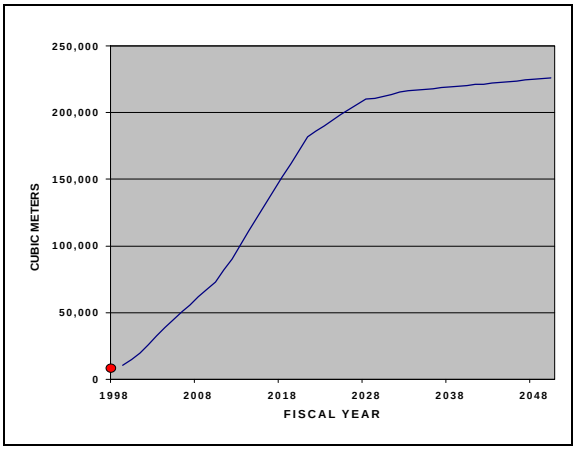

Figure 5. Cumulative Low-Level Waste Volumes Projected for Disposal on the Hanford Site.

- *Provide direct burial of Category 1 LLW in trenches (Figure 6). The forecasted waste disposal volume is 100,000 m^3 from FY 1999 through FY 2046.*

Figure 6. Burying Low-Level Waste.

- Planned volumes for the next 3 years are 4,400 m^3 in FY 1999; 2,500 m^3 in FY 2000, and 2,900 m^3 in FY 2001.

- Sort an estimated 660 m^3 of Category 1 LLW for verification and certification at WRAP or 2706-T before disposal.

- Continue storage of 180 m^3 of LLW that is in a liquid form not suitable for disposal. Contracting for commercial treatment is planned beginning in FY 2007.

- *Stabilize Category 3 LLW (Figure 7) before burial in the LLBG.*

  - The forecasted waste volume is 43,000 m^3 from FY 1999 through FY 2046.

  - Stabilization of this waste will increase the volume to about 130,000 m^3.

Strategy 2

Perform TSD functions in a cost-effective manner, using commercial approaches and practices where possible.

- *Work with customers to coordinate bulk disposal of waste.*

Strategy 3

Provide additional capacity based on forecasted needs. The Solid Waste Environmental Impact Statement ROD will provide the required NEPA documentation.

- *Use a new deep trench configuration for LLW to reduce burial ground operating and closure costs, starting no later than FY 2001.*

Figure 7. Stabilization of Category 3 LLW.

Strategy 4

Continue to receive and dispose, on the Hanford Site, waste from other DOE sites and federal agencies as directed by DOE. The Programmatic EIS ROD for the DOE Complex might affect other DOE sites' needs for Hanford services.

- *These services are to be provided on a cost-reimbursement basis with the generation site paying for all incremental costs.*

- *Support the DOE-EM integration effort (EM Initiative or EMI) to accelerate cleanup at all sites and to reduce total disposal costs for the DOE Complex (Figure 8).*

- *Keep the Hanford rail system as an option until the Waste Management Programmatic*

EIS ROD for LLW and MLLW is released by DOE. This approach supports the EMI alternative case for disposing of waste from offsite generators in the LLBG (Fig. 8). Any use of the rail system will be coordinated with the DOE-RL Office of the Assistant Manager for Facility Transition.

Strategy 5

Support final capping and monitoring of the low-level disposal sites.

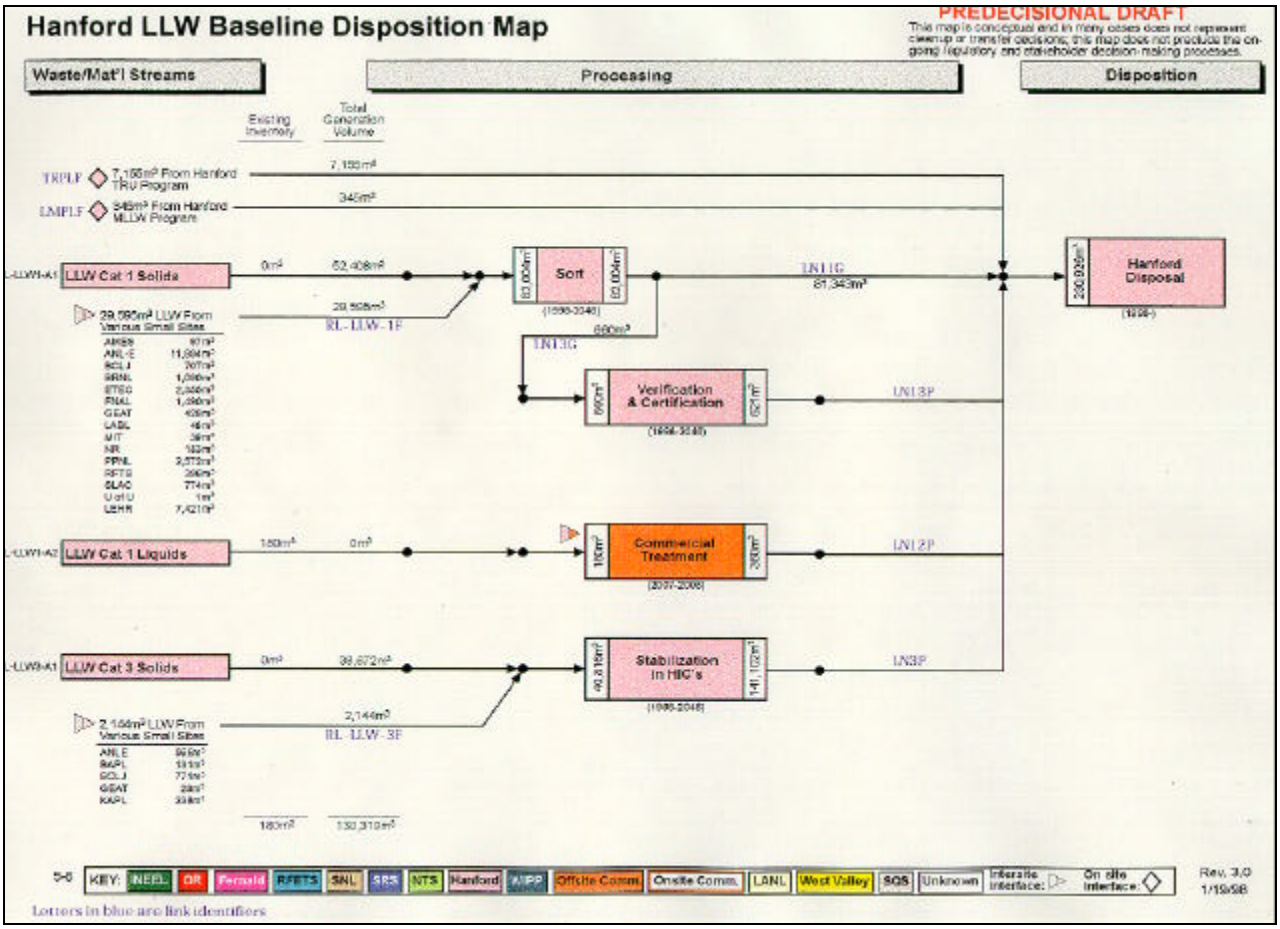

Figure 8. Hanford Low-Level Waste Baseline Disposition Map.

OBJECTIVE 2

Store, treat, and dispose of mixed low-level waste.

The Project will manage all MLLW produced by the PHMC Projects, DOE MLLW produced by Pacific Northwest National Laboratory (PNNL), and, as requested, MLLW produced by the ER Program. The current inventory of MLLW (9,200 m^3) is stored primarily in the CWC. Future receipts from onsite and offsite generators are forecasted at 53,000 m^3 through FY 2046. After treatment, a forecasted volume of 86,000 m^3 will be disposed in the mixed waste trenches. Startup of the mixed waste trenches in a disposal mode is planned for FY 1999, after obtaining U. S. Environmental Protection Agency approval of a delisting

petition for processing leachate (F039 listed waste) from the mixed waste trenches through 200 ETF. Additional mixed waste trenches will be provided as needed. Storage of selected waste awaiting disposal also will be provided in the mixed waste trenches. Where applicable, local contractors will be used for treating offsite waste.

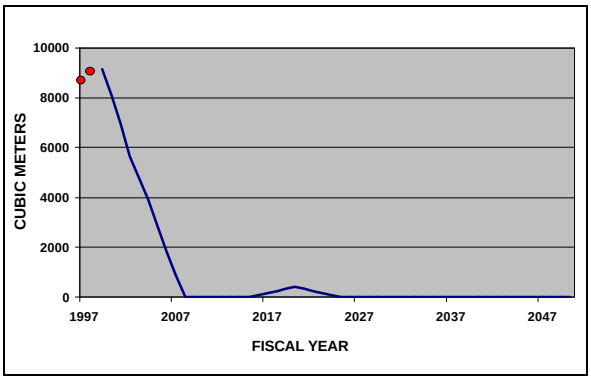

Figure 9. Strategy for Reducing Mixed Low-Level Waste in Storage on the Hanford Site.

Strategy 1

Increase treatment rates to work off the backlog of stored waste in CWC by the end of FY 2008, and eliminate long-term storage. A work-off scenario for reducing MLLW storage is illustrated in Figure 9. This scenario assumes an annual treatment rate of 1,600 m^3. After FY 2008 waste will be treated within 1 year following generation.

Activities include maintaining the waste acceptance criteria; performing acceptance and verification, and supporting transportation of the waste from the generator to TSD; and providing approved storage and treatment as required, and final disposal.

- *23,000 m^3 of MLLW will require treatment by FY 2008.*

- *Manage the CWC to provide waste storage within the existing capacity. CWC design capacity is approximately 80,000 drum equivalents, or 17,000 m^3. The usable capacity will vary with the mix of storage container types, and is approximately 64,000 drum equivalents.*

  - The expected use of Hanford Site storage for the various types of waste is illustrated in Figure 10.

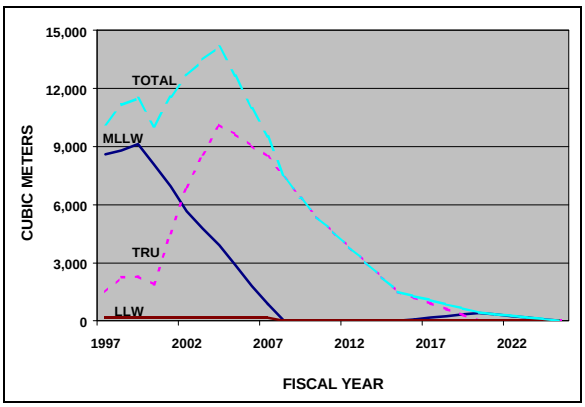

Figure 10. Projected Waste Storage on the Hanford Site under the Current Strategy.

- *Dispose of LDR-compliant MLLW in the Mixed Waste Trenches.*

  - Waste includes 940 m^3 of 183-H Solar Evaporation Basins (183-H) solidified liquid by FY 2001; 950 m^3 of 200 Area Effluent Treatment Facility (ETF)-compliant solids; 45 m^3 of tank farms soils by FY 2001; and 26,000 m^3 of long-length equipment by FY 2032. MLLW generated after FY 2032 (320 m^3) will be disposed in the mixed waste trenches (disposal volume: 28,000 m^3).

- *Meet regulatory "contained-in" determination requirements allowing disposal of selected MLLW as LLW.*

  - Dispose of LDR-compliant backlog soils (230 m^3) in FY 1999 (disposal volume: 230 m^3).

- *Sort and treat 183-H solids (2,700 m^3) and inorganic solids (1,300 m^3).*

- Treat 400 m^3 of MLLW by FY 2001 using non-thermal treatment processes for non-debris. A forecasted 800 m^3 of treated waste will be disposed in the mixed waste trenches in FY 2001.

- Store 69 m^3 of state-only waste pending disposal in FY 2001 in the mixed waste trenches.

- Stabilize 950 m^3 of MLLW powders from 200 Area ETF between FY 2002 and FY 2032 and dispose in the mixed waste trenches. Selection of where this MLLW will be treated is to be determined and will be coordinated with the EM integration effort (disposal volume: 1,900 m^3).

- Commercially stabilize 3,400 m^3 of waste between FY 2001 and FY 2032. Return 6,800 m^3 for disposal in the mixed waste trenches. 5 m^3 will be returned to Battelle Columbus.

Figure 11. ATG, Inc. In-barrel Compaction.

- *Sort and treat debris (23,000 m^3) and selected MLLW, including waste from the Hanford ERC (55 m^3) and Naval Reactors (22 m^3).*

  - Treat 32 m^3 of MLLW in the macro-secure demonstration by the end of FY 1999 and dispose in Hanford mixed waste trenches (disposal volume: 58 m^3).

  - Treat 1,600 m^3 of MLLW debris in FY 1999 through FY 2001 using the ATG, Inc. commercial nonthermal macroencapsulation process (Fig. 11) and return for disposal in the Hanford Site mixed-waste trenches (disposal volume: 2,800 m^3).

  - Treat 16 m^3 of MLLW in FY 1999 using the Idaho National Engineering and Environmental Laboratory (INEEL) Waste Experimental Reduction Facility (WERF) (Fig.12) thermal process . Return the waste to the Hanford Site for stabilization and disposal in the mixed waste trenches (disposal volume: 8 m^3). Based on the success of this effort, an additional 100 m^3 per year of MLLW will be treated at WERF in FY 2000 through FY 2003.

Figure 12. Waste Experimental Reduction Facility at INEEL.

  - Treat 21,000 m^3 of MLLW using the macroencapsulation process (Figure 13)

or other approved treatment processes between FY 2001 and FY 2032 for disposal in the mixed waste trenches. Selection of where this MLLW will be treated is to be determined and will be coordinated with the EM integration effort (disposal volume: 42,000 m^3).

Figure 13. Macroencapsulated MLLW at T Plant Complex.

- *Disposition waste containing radioactive lead solids (550 m^3) through FY 2032.*

  - Treat 460 m^3 of MLLW in FY 2001 through FY 2008 in a commercial lead macroencapsulation process and return for disposal in the mixed waste trenches (disposal volume: 920 m^3).

  - Treat 90 m^3 of MLLW between FY 2009 and FY 2032 using a macroencapsulation process. Selection of where this MLLW will be treated is to be determined and will be coordinated with the EM integration effort. 180 m^3 of treated MLLW will be returned for disposal in the mixed waste trenches.

- *Sort and treat organic lab packs (580 m^3) and organic solids (1,200 m^3).*

  - Treat 1,200 m^3 of MLLW between FY 2001 and FY 2010 in a commercial thermal treatment process (Phase 1). 1,700 m^3 of treated MLLW will be returned and disposed in the mixed waste trenches.

  - Treat 580 m^3 of MLLW between FY 2011 and FY 2032 in a commercial thermal treatment process (Phase 2) and return for disposal in the mixed waste trenches.

- *Treat inorganic lab packs (370 m^3) in WRAP and/or 2706-T and dispose in the mixed waste trenches (lab packs cannot be placed in gloveboxes in WRAP).*

  - Treat 370 m^3 of inorganic lab packs between FY 2001 and FY 2032 (disposal volume: 370 m^3).

- *Treat waste mercury (16 m^3) between FY 2002 and FY 2032 at WRAP by amalgamation for disposal in the mixed waste trenches (disposal volume: 240 m^3).*

- *Continue storage of GTC 3 MLLW (1 m^3) pending future decisions on treatment and disposal. HWMP will coordinate with the EM integration effort and the Solid Waste EIS.*

Strategy 2

Perform TSD functions as inexpensively as possible using commercial approaches and practices where applicable.

- *Continue to support the Mixed Waste Focus Area, which is a multi-site effort to provide technical and engineering solutions to national waste management problems.*

Strategy 3

Maximize the use of 2706-T decontamination, treatment, verification, and certification capabilities and contract with local companies that have unique capabilities for treatment of MLLW. ATG, Inc. has been contracted to process several waste streams at their Richland

facility. This supports two Project Hanford Management goals: cost reduction (on a fixed-unit price basis) and diversification of the local economy. Other capabilities, such as those at WERF, will be used when cost effective.

Strategy 4

Dispose of LDR-compliant MLLW in the Mixed Waste Trenches.

- *Initiate disposal no later than FY 2000.*
  - Projected MLLW disposal is shown in Figure 14.
- *Expand MLLW disposal capacity as needed.*
  - Trenches have a maximum air-space volume of 24,000 m^3 for disposal, allowing for capping.
  - The next MLLW trench to be placed in operation isTrench 31, planned for FY 2004.
  - Operation of the follow-on trench to supportTWRS Privatization is planned for FY 2006.

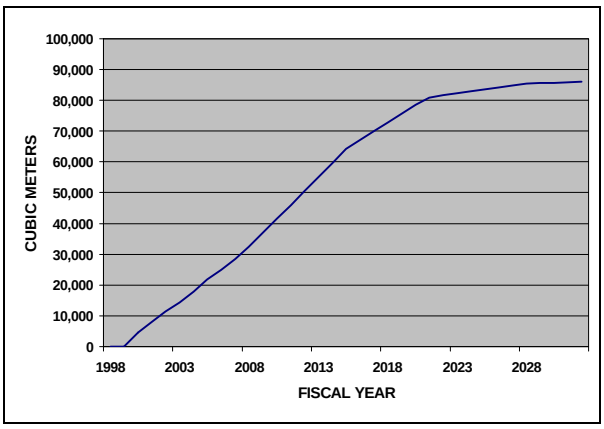

Figure 14. Cumulative Mixed Low-Level Waste Disposal on the Hanford Site.

Strategy 5

Provide coordination and support services for the receipt, transport, and placement of defueled reactor compartments for burial and for the future closure of Trench 94.

- *Dispose of an average of eight to nine defueled reactor compartments per year through FY 2013.*

Strategy 6

Continue to receive, treat, and return waste from other DOE sites and federal agencies as directed by DOE. Support is to be provided on a cost-reimbursement basis with the generating site paying all incremental costs.

Strategy 7

Develop a project management plan for providing new treatment capabilities for remote-handled and large container MLLW. The project management plan will identify technology development needs, which will be integrated with needs for the DOE Complex. The plan also will establish a schedule to determine whether it is more feasible to contract for this work, or to construct or modify a Hanford Site facility. T Plant canyon potentially could be used for this treatment. Although presently being used only for storage of Shippingport fuel, the canyon will be maintained in a standby condition until a decision is reached on where the RH MLLW will be treated.

- *Submit a project management plan (PMP) by June 1999 to establish schedules for treating, storing, and disposing of RH and large container CH MLLW, starting in FY 2008. RH MLLW (4,000 m^3) will be treated in accordance with Tri-Party Agreement milestone M-91 for disposal in the mixed waste trenches (disposal volume: 1,700 m^3).*
- *Initiate treatment of RH MLLW by June 2008.*

Strategy 8

Use waste management expertise to develop disposal methodology with TWRS Privatization Project for glass melters.

Strategy 9

Support closure of the burial grounds by designing closure covers for placement on the MLLW trenches.

Strategy 10

Examine capabilities at other DOE sites that could be used. The HWMP will support integration of these capabilities to accelerate cleanup at all sites and to reduce total DOE Complex treatment and disposal costs.

OBJECTIVE 3

Provide storage, retrieval, treatment, and preparation of TRUW for shipment to WIPP.

The key dates for overall TRU program planning are identified in Figure 15. Limited funding may require changes to the schedule. Interim waste forms will be converted by certification, treatment, and packaging to a final form ready for shipment to WIPP.

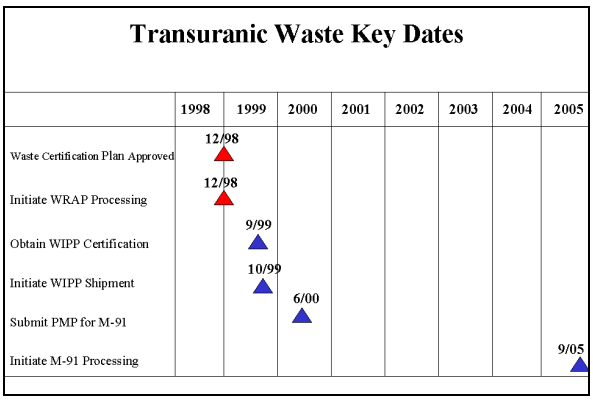

Figure 15. TRU Program Key Dates.

Strategy 1

Process stored, retrieved, and newly generated contact-handled waste at WRAP.

- *Process 10,000 m^3 between FY 2000 and FY 2032.*

Strategy 2

Develop the capability to process an estimated 11,000 m^3 of RH and large container TRU waste.

- *Submit by June 2000 a PMP to provide the RH and large container processing capability required by TPA milestone M-91-03. Alternatives considered include modification of T Plant Complex or other existing facilities, construction of new facilities, and use of commercial services.*

  - The processing of RH and large container waste is expected to generate: 7,100 m^3 of RH TRUW that will be sent to WIPP for disposal; 3,300 m^3 of LLW that will be sent to the LLBG for disposal; and 220 m^3 of CH TRUW that will be sent to WRAP for repackaging.

  - Maintain T Plant canyon in a standby condition until a decision on M-91 is reached.

- *Implement the PMP to achieve the follow-on M-91 milestones, including start of operation in June 2005 and completion of processing in FY 2028.*

Strategy 3

Certify waste for shipment (via TRUPACT) to WIPP in support of the national transuranic waste program (Figure 16). Figures 17 and 18 show quantities of certified CH and RH TRUW available for shipment.

- *Certify CH TRUW through FY 2032.*

Figure 16. Testing/Training for TRUPACT II Loading Process at WRAP.

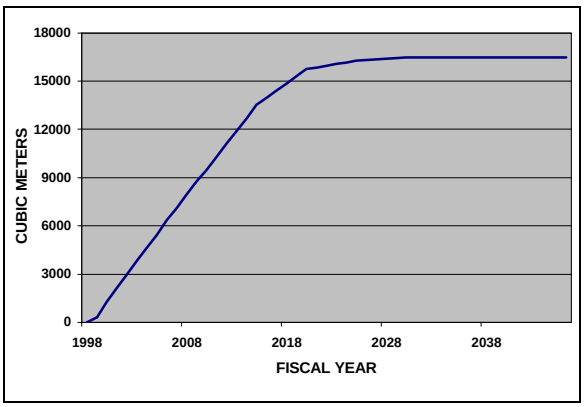

Figure 17. CH TRUW Projected to be Certified for Shipment.

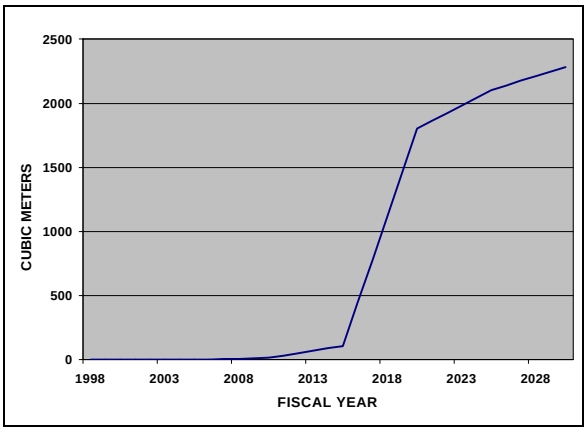

Figure 18. Remote-Handled TRUW Projected to be Certified for Shipment.

Strategy 4

Develop and implement a PMP for retrieval of CH waste . The PMP will identify opportunities for cost reductions which would support retrieval operations with limited funding. TRUW will be retrieved from trenches and caissons for treatment and disposal at WIPP. The following baseline of actions and schedules is subject to change based on approval of the PMP.

- *Begin retrieval from 218-W-4C LLBG Trench T-04 no later than FY 2000 and complete in FY 2004.*
- *Begin retrieval from remaining LLBG trenches no later than FY 2005 and complete in FY 2020.*
- *Begin retrieval from alpha caissons no later than FY 2006 and complete by FY 2010.*
- *Continue storage of CH TRUW (73 m^3) that contains polychlorinated biphenyls (PCB) pending future decisions on disposition. HWMP will coordinate with the EM integration effort to resolve this issue.*

Strategy 5

Maintain centralized management and integration of all Hanford Site TRUW treatment, certification, and shipments in accordance with the requirements of the WIPP waste acceptance criteria. A WIPP certification program will be in place by May 1999 and will be managed by the HWMP TRU Program Office.

- *Investigate the feasibility and incentives of early shipment of nonhazardous TRUW to WIPP, pending approval for WIPP to accept mixed TRUW.*

Strategy 6

Use WRAP and the future M-91 capability to support cleanup requirements of the DOE

Complex. This support would be provided on a cost-reimbursement basis with the generating site paying for all incremental costs, as is now the case for disposal of LLW from offsite generators.

Strategy 7

Plan and schedule TRUW processing so that no additional storage is required. Knowledge of container contents will be used to minimize characterization costs.

OBJECTIVE 4

Provide liquid effluent storage, treatment, and disposal services.

The Project will provide liquid effluent services for the site until completion of the clean-up mission.

Strategy 1

Operate the 200 Area processing facilities to meet customer needs.

- *Provide temporary storage of liquid effluents in the Liquid Effluent Retention Facility (LERF) pending routing to the 200 Area ETF.*
  - Pursue regulatory acceptance of storing RCRA-compliant effluents for periods in excess of 1 year to provide more flexibility in campaigning operations.
  - Initiate shutdown of LERF by the end of FY 2029.
- *Treat low-level liquid effluents in the 200 Area ETF on a campaign basis to allow discharge to the state-approved land disposal site.*
  - The projected baseline volumes of liquid effluent to be treated are shown in Figure 19. The projection assumes that 200 ETF treats ERC groundwater through FY 2005, and that 60 – 64 million L per year (16 to 17 million gal per year) are treated in support of the TWRS Privatization Project Phase I operations beginning in FY 2006.

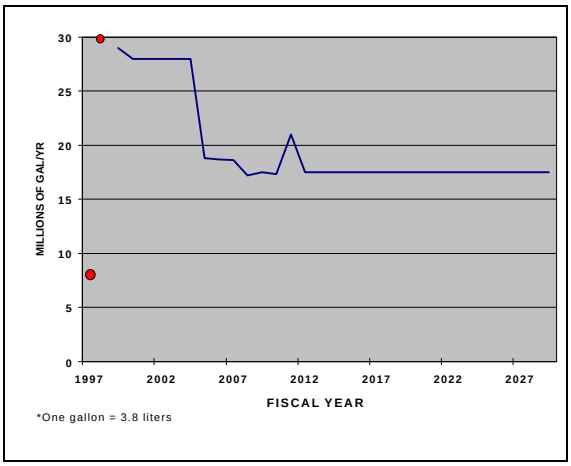

Figure 19. Projected Volume of 200 Area Liquid Effluent Treated.

  - Treat 95 million L (25 million gal) in FY 1999, 61 million L (16 million gal) in FY 2000, and 19 million L (5 million gal) from FY 2001 through FY 2003.
  - Explore new sources of feed, from both onsite and offsite customers as directed by DOE.
  - A delisting petition has been initiated to support processing of F039 leachate from the mixed waste trenches. On approval, 4,500 drums will be eligible for disposal in the mixed waste trenches without further treatment.
  - Develop campaign plans to optimize costs and maintain operability during periods of low throughput. Planning will consider reduction of facility support, sharing of staff with other onsite activities or facilities, and

constraints such as maintaining minimum flows needed to support operability.

- Initiate shutdown of the 200 Area ETF by the end of FY 2029.

- *Maintain the current level of operations of the 200 Area Treated Effluent Disposal Facility (TEDF) through FY 2032 for collection and disposal of effluents that meet disposal requirements. (Fig. 20).*

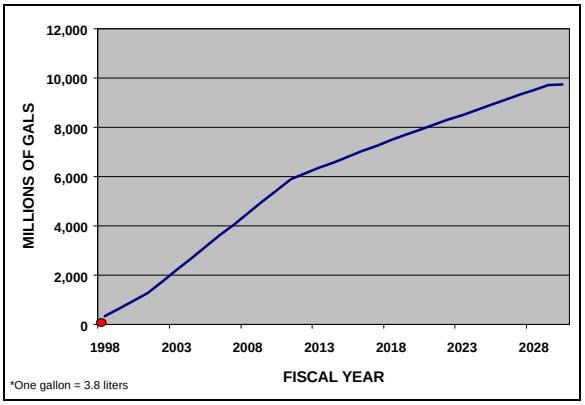

Figure 20. Projected Volumes of Liquid Effluents to the 200 Area Treated Effluent Disposal Facility.

- *Transition 200 TEDF to the site landlord in FY 2033.*

- *Operate the 242-A Evaporator on a campaign basis to concentrate high-level tank waste as required by TWRS Privatization Project.*

  - Treat 11 million L (3 million gal) per year in two annual campaigns from FY 2000 through FY 2002.

  - Treat 3.8 to 11 million L (1 to 3 million gal) per year from FY 2003 through FY 2012.

  - Initiate shutdown of the 242-A Evaporator by the end of FY 2018.

Strategy 2

Operate the 300 Area liquid effluent treatment facilities to support 300 Area operations and programs. 300 Area facilities support will end in FY 2030.

- *The 300 Area TEDF will operate on a continuous basis to treat non-radioactive liquid effluents for discharge to the Columbia River (Fig. 21).*

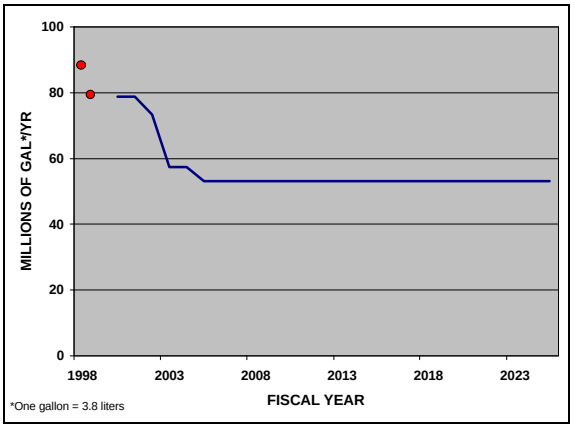

Figure 21. Projected Volumes of Liquid Effluents Treated in the 300 Area Treated Effluent Disposal Facility.

  - Treat 300 million L (80 million gal) in FY 1999, and 280 million L (75 million gal) each in FY 2000 and FY 2001.

  - As process volumes decrease, investigate alternative operational modes that may be more cost effective.

- *Transition 300 Area TEDF to the site landlord in FY 2031.*

- *Collect potentially radioactive 300 Area effluents through FY 2030 for monitoring and diversion.*

  - Operate the 300 Area Retention Process Sewer and the 307 Retention Basins to collect and monitor potentially contaminated effluents.

- Transfer the nonradioactive fraction to the 300 Area Retention Process Sewer for processing in 300 Area TEDF.

- Maintain system capability to transfer radioactive effluents to the double-shell tanks in the 200 East Area.

Strategy 3

Provide specialized liquid effluent support as required.

- *Maintain and implement liquid effluent acceptance criteria for the Hanford Site.*

- *Manage the miscellaneous streams to maintain the permits and ensure that the requirements of the discharge permits are met. Miscellaneous streams include wastewater from hydro-testing, maintenance and construction activities, cooling water and condensate discharges, and storm water run-off.*

- *Prepare biennial tritium treatment technology report.*

  - Issue the next report by August 31, 1999.

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WASTE MINIMIZATION AND POLLUTION PREVENTION

STRATEGIC GOAL

Eliminate or minimize waste generation, pollutant releases to the environment, and the use of toxic substances in all Hanford Site activities.

OBJECTIVE 1

Comply with federal, state, and DOE requirements for waste reduction and resource/energy conservation.

Strategy 1

Meet regulatory and DOE pollution prevention/waste minimization (P2/WMin) requirements.

- *Ensure that a viable P2/WMin Program is in place.*
- *Ensure that plans, reports, and certifications are completed.*
- *Maintain consistent generator P2/WMin programs among the Hanford Site contractors.*
- *Support the national DOE P2/WMin Program.*

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Strategy 2

Obtain the necessary funding and management support to fully implement a successful P2/WMin Program (Fig. 22).

Figure 22. PUREX Storage Tunnel Locomotive Battery Removal. Batteries are Now Recycled, Significantly Reducing the Volume of MLLW Requiring Disposal.

- *Develop alternative strategies to diversify funding of the site P2/WMin Program if DOE direct national program funding is not provided in the outyears.*
- *Continue to offer P2/WMin services to other DOE sites as requested by DOE.*

OBJECTIVE 2

Prevent pollution, minimize waste, and conserve energy and resources.

Strategy 1

Meet or exceed the Secretary of Energy's waste reduction goals.

- *Establish annual Hanford Site-specific goals and issue performance measures.*
- *Update Hanford Site and Project Hanford Management Contract strategies for achieving goals.*

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Strategy 2

Identify priority areas and implement projects to achieve measurable P2/Wmin results.

- *Maintain a process for evaluating, selecting, and implementing high return-on-investment projects*
- *Assess waste streams for waste minimization opportunities and recommend to field management.*
- *Develop and implement P2/WMin tools and methodologies.*
- *Reduce hazardous product use by identifying, testing, and implementing alternatives*

Strategy 3

Increase personnel involvement in P2/WMin through awareness and training.

- *Share P2/WMin techniques and accomplishments through onsite and offsite networking.*
- *Educate personnel in P2 techniques.*
- *Develop recognition programs for personnel efforts to improve environmental conditions through pollution prevention.*

Strategy 4

Achieve national recognition as a center of expertise for waste minimization and pollution prevention programs.

SUPPORT SERVICES

STRATEGIC GOAL

Provide support services to the Hanford Site in designated areas of specialized capability and expertise.

OBJECTIVE 1

Provide responsive and cost-effective analytical services.

Strategy 1

Manage and integrate Hanford analytical services to provide analytical, field support, and process development services; and optimize the use of a combination of onsite and offsite analytical laboratories (Fig. 23).

Figure 23. 222-S Laboratory Analytical Hot Cells.

- *Evaluate customer needs to ensure the availability of analytical resources. Develop a plan to optimize laboratory capacity to meet long term requirements.*
- *Provide guidance on analytical capabilities and limitations; evaluate new or proposed Site analytical services.*
- *Facilitate the use of data quality objectives and ensure that data quality requirements are met.*
- *Conduct performance assessments of analytical services to provide the basis for continuing improvement.*
- *Continue analytical services integration with other DOE sites through the National Analytical Management Program and the DOE Analytical Managers group.*

Strategy 2

Operate the 222-S Laboratory Complex, the Waste Sampling and Characterization Facility (WSCF) and other laboratories (as assigned) as a system to meet analytical service capability and capacity requirements of the Hanford Site.

Strategy 3

Continue to broaden the 222-S Laboratory and WSCF customer base to improve efficiency and reduce the cost of services.

- *Screen all Project Hanford Management Contract analytical work to provide assurance that contractually obligated turn-down requirements are met.*
- *Integrate the activities identified in the FY 1998 integration initiative into WSCF.*
- *Increase sharing of common support services and analytical staff between 222-S and WSCF and with other Project Hanford Management Contract laboratories where*

appropriate.

- *Where alternative suppliers can be identified, eliminate services that do not generate sufficient revenue to support the cost.*
- *Provide analytical services support as needed for WIPP certification.*
- *Establish support needs for the TWRS Privatization Project.*
- *Establish requirements for expanding 222-S core capability to include higher levels of alpha-bearing samples in support of Hanford Site programs.*

OBJECTIVE 2

Provide responsive and cost-effective waste generator services.

WMH Generator Services will provide full-range waste management support to waste generators. Services include acceptance, verification, packaging, and transport of waste from the generating facility to Waste Management TSD facilities.

Strategy 1

Coordinate all solid and liquid waste management functions, beginning at the point of generation, for each of the Project Hanford Management contractors. Continue to expand the role of HWMP to include characterization strategies targeted for final disposition of waste. Exceptions would be only those functions that are facility-unique (e. g., Plutonium Finishing Plant plutonium-processing gloveboxes).

Ensure that a trained workforce is available to meet generators' needs through the concept of resource pooling. HWMP staff could provide support across several generators with a primary focus on waste management activities. This would allow HWMP to recognize customer needs and prioritize support in a cost-effective manner.

Strategy 2

Perform similar services for Hanford Site contractors outside of the Project Hanford Management Contract, and develop services for offsite generators. The intent is to provide turnkey waste management services at the generator location.

Strategy 3

Combine and consolidate similar operations (e. g., less than 90-day pads) into centralized facilities. Standardize and streamline administrative processes and waste movement operations. Manage waste from the point of generation based on ultimate disposition. Involvement in project planning minimizes false starts and incorrect packaging.

OBJECTIVE 3

Provide responsive and compliant environmental services.

Strategy 1

The HWMP is committed to be a leader in environmental compliance. All operations and services will be performed in a manner that will positively affect the environment. The Project will endeavor to avoid environmental fines and penalties. The approach to permitting of facilities will be based on applying only the necessary requirements. A goal of zero fines and penalties has been targeted. Personnel will take that extra step to achieve environmental excellence as part of our culture.

Strategy 2

Environmental Services (ES) staff will work with all customers, regulators, and stakeholders to effectively communicate all environmental issues associated with HWMP operations. ES will aggressively support all customers including RL, FDH, and PHMC subcontractors by providing the highest quality services and products, on schedule and within budget. ES will function as a member of the community and be looked upon as a good neighbor. ES will conduct business in a professional and objective manner.

Strategy 3

Develop and implement a systematic way to ensure environmental commitments and compliance actions are assigned and completed as scheduled.

OBJECTIVE 4

Provide responsive and cost-effective transportation and packaging services.

Transportation and packaging operations will focus on public health, environmental safety, and regulatory compliance; and will promote responsive and cost-effective packaging and transportation operations needed to meet Hanford Site requirements. The transportation and packaging of materials and waste will continue to be a necessity as Hanford Site cleanup continues into the 21st century (Fig. 24). Offsite generators will ship selected waste to the Hanford Site.

Strategy 1

Continue to contract transportation and packaging services with emphasis on streamlining Hanford Site operations and integration of resources with HWMP Waste Generator Services to achieve improved operational efficiency and cost effectiveness.

Strategy 2

Support the upgrading of Hanford Site packaging systems as defined in the safety-basis documents. This effort will ensure that HWMP handles, packages and transports all radioactive and hazardous waste safely and effectively. All of the Site packaging systems will be reviewed at a rate of 20% per year until FY 2002.

Figure 24. Development of Long Length Contaminated Equipment Packaging System and Trailers.

Strategy 3

Pursue standardization of designs for the waste containers used at the Hanford Site, implement local fabrication to promote vendor response to Site customer needs, and reduce fabrication and shipping cost of the new containers.

ORGANIZATIONAL EXCELLENCE

STRATEGIC GOAL

Achieve organizational excellence in management of the HWMP.

OBJECTIVE 1

Use efficient and effective management systems.

Strategy 1

Strengthen and streamline the organization structure, with clearly defined responsibilities and accountabilities to meet customer needs.

- *Maintain an efficient and productive workforce through the selection, development, and training of qualified personnel.*

- *Consolidate and integrate onsite waste treatment, storage, and disposal functions (e. g., the Waste Encapsulation and Storage Facility) under the HWMP.*

Strategy 2

Develop and maintain a centralized information base for HWMP services and on the capability, capacity, and availability of resources needed to meet customer requirements.

- *Update forecasts of customer requirements for solid and liquid waste storage, treatment, and disposal; and for analytical services. Use the Solid Waste Integrated Forecast Technical (SWIFT) Report as a centralized database for all onsite and offsite solid waste customers. Issue semi-annual projections of analytical services needs.*

- *Develop catalog information describing capabilities, capacities, and availability of HWMP facilities and services.*

- *Analyze HWMP requirements for new technology that can be applied to improve waste treatment, storage, and disposal operations; or to reduce costs.*

  - Issue annual forecasts of technology needs.

- *Increase availability and access to Project information by maintaining Waste Management WEB pages for WMH and DOE-RL.*

Strategy 3

Use the *HWMP Strategic Plan* as a planning basis for budget development, including preparation of the MYWP and the Project baseline summaries; and for establishing work priorities through the integrated priority list.

- *Revise the Strategic Plan annually to reflect the latest DOE strategic plans, and selected alternatives evaluated in the Waste Management Project Technical Baseline. The next revision to the HWMP Strategic Plan is planned for March 2000.*

OBJECTIVE 2

Reduce costs of Project operations and services.

Strategy 1

Consolidate or close unneeded services and

facilities, and extend useful life of required facilities.

- *Complete transition of the 3714 Geotechnical Engineering Laboratory to the ERC by September 1999.*

- *Complete turnover of 224-T TRUSAF to Facilities Stabilization in FY 1999.*

- *Complete initial (Phase 1) cleanout of the 340 Waste Handling Facility and deactivate the Radioactive Liquid Waste System in FY 2002. The facility will continue at a minimum operation level to support the 307 Retention Basins.*

- *Transfer the 616 Non-radioactive Dangerous Waste Storage Facility to the Landlord in FY 2000, for reuse or demolition.*

- *Transfer pressurized water reactor spent fuel to the Spent Nuclear Fuel Project and maintain T Plant canyon until a decision is made on Tri-Party Agreement milestone M-91.*

- *If T Plant canyon is not used for M-91 or to support the Canyon Disposal Initiative, deactivate and transition to the Facility Stabilization Project.*

Strategy 2

Identify, evaluate, and implement "Breakthrough Opportunities" to accelerate schedules and reduce costs of Site-wide operations.

Strategy 3

Reduce unit costs of Project services. Figure 25 shows recent reductions in LLW disposal costs on the Hanford Site.

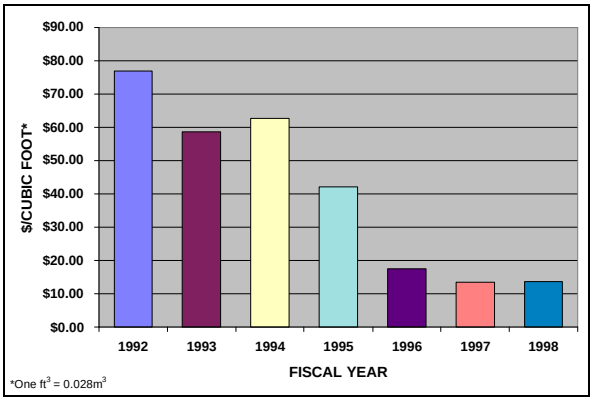

Figure 25. Reductions in Hanford Category 1 Low-Level Waste Disposal Costs.

- *Develop and implement a charging strategy for non-Hanford Site customers.*

Strategy 4

Use a defined process with champions to systematically define and apply only those regulations necessary for safe and environmentally compliant operations.

Strategy 5

Continue to emphasize effective management of equipment and facilities utilization.

- *Manage assigned equipment and vehicle inventory to reduce costs while maintaining capability to provide needed services.*

- *Continue consolidation of occupancy buildings.*

- *Achieve 93% workstation utilization in WMH by September 1999.*

- *Achieve full compliance with Y2K requirements for systems application hardware and software for databases and process plants by July 1999.*

- *Initiate senior management facility walk-throughs and complete 50% of Project*

facilities in FY 1999, and the remainder in FY 2000.

Strategy 5

Broaden the HWMP customer base to improve efficiency and reduce cost of operations and services.

OBJECTIVE 3
Improve operations and delivery of services.

Strategy 1

Expand the use of campaign plans for the major waste processing activities. The potential for integrating individual plans will be explored to identify opportunities to optimize the use of capabilities and capacities and to adjust resources to improve efficiencies. As an example, WRAP processing could be alternated and integrated with periodic retrieval campaigns to increase efficiencies of the combined operations. Processing facilities could elect to prepare more detailed run plans to better plan and execute operating activities.

Campaign plans will logically group similar activities to be completed over a defined time period. Examples include a *Comprehensive Environmental Response Compensation, and Liability Act* (CERCLA) *of 1980* campaign at the 200 Area ETF, a six-month solid waste retrieval campaign, a MLLW campaign at WRAP, or a campaign for waste shipment for treatment at a commercial vendor. The campaign plans will define resource and schedule requirements and define any prerequisite actions that must be completed.

OBJECTIVE 4
Support local diversification opportunities.

Strategy 1

Collaborate with Project Hanford Management Office of Economic Transition to support diversification commitments. Economic and local diversification opportunities will be incorporated as a basic planning priority in developing HWMP programs.

Strategy 2

Use commercial contracting of services where cost savings to DOE can be realized. Local and minority procurement of goods and services will be emphasized consistent with PHMC and DOE objectives.

- *Contracts in place to date include solid waste processing at the local facility of ATG, Inc., and analytical services contracts both locally (Quanterra, Inc.) and across the nation (e.g., Thermo NUtech).*

Strategy 3

Continue to evaluate privatization (operation by a private contractor) of HWMP operations where cost savings or other benefits to DOE can be realized.

- *Detailed evaluations have been completed on the LLBG and WSCF. Additional evaluations will be identified and completed.*

Strategy 4

Continue support to Waste Management Federal Services, Inc., Northwest Operations (WMNW) and integration of services with WMH. Business with potential commercial markets will continue to be managed by WMNW to encourage expansion of non-government work in the local economy. Evaluations of additional work scope that might be transitioned to WMNW will continue as a planning priority.

Strategy 5

Provide support to local businesses and educational institutions.

- *Provide technical expertise for the Small Business Pollution Prevention Program to assist small businesses reduce waste products. (Figure 27).*
- *Promote assignment of excess equipment to local educational institutions.*

Figure 27. The Pollution Prevention Assessment Program Has Helped Over 20 Local Businesses Reduce Waste and Improve Profitability.

OBJECTIVE 5

Ensure the safety and health of our work force and the public.

Strategy 1

Implement the Integrated Safety Management System to ensure conformance with requirements and safe performance of work.

- *Define workscope and clear roles and responsibilities for ensuring safe performance.*
- *Establish and communicate safety standards and requirements for the analysis and control of hazards.*
- *Identify work hazards and apply appropriate controls.*
- *Ensure that all work is performed within the boundaries of approved work plans.*
- *Provide feedback on problems and successes to achieve continued improvements in safety perormance.*
- *Maintain a technically sound and updated authorization basis for Project facilities and activities.*

Strategy 2

Maintain toxic chemical management, emergency planning, and radiological control as identified in action plans.

Strategy 3

Promote pervasive worker involvement and teaming with management to achieve a culture of safe work in a safe workplace, and instill safety as a value.

- *Achieve and maintain Voluntary Protection Program star status.*
- *Develop safety improvement plans through the Employee Safety Councils that strive for increased personnel involvement, better work practices, and achievement of lower injury rate goals.*
- *Reward employees for participation in safety program activities through company safety recognition programs.*

OBJECTIVE 6

Implement a Quality Improvement Plan for all HWMP activities.

Strategy 1

Strengthen management involvement in assessing and improving Project quality performance.

Strategy 2

Clarify requirements, roles, and responsibilities to reduce the complexity of quality assurance systems.

Strategy 3

Improve the corrective action process, with emphasis on tracking systems and assessments.

OBJECTIVE 7

Measure and evaluate performance to provide the basis for continuous improvement of project management.

Strategy 1

Use self-assessments, feedback from DOE and FDH performance evaluations, and independent audits to address performance issues and to identify opportunities for improvement.

Strategy 2

Apply metrics for tracking production levels (e. g., the TRU/WRAP run plan), facility utilization, safety performance, environmental compliance, and customer satisfaction for solid waste, liquid effluents, and analytical services.

Strategy 3

WMH will support Waste Management, Inc. corporate efforts to review and assess waste management activities at several corporate locations. Relevant experience and lessons learned will be appplied to improve HWMP performance.

Strategy 4

Benchmark waste management services costs against other DOE sites and commercial practices.

KEY CUSTOMER AND STAKEHOLDER CONSIDERATIONS

Achievement of the HWMP goals and objectives requires close working relationships and coordinated planning among DOE-RL, FDH, WMH, and the other site contractors. Effective working relationships also must be maintained with state and local governments, Tribal Nations, private industry, and Congress.

Stakeholders actively participate in the development and review of the Solid Waste EIS and the Waste Management Programmatic EIS. Decisions arising from the EIS process are important in determining the direction and scope of waste management activities at Hanford.

It is especially important to recognize the complementary role that other Hanford Site contractors play in the waste management efforts. The interplay between environment, science, and economics establishes links among PHMC, PNNL, and ERC. In addition, our waste management services foster close relationships with many external DOE and U. S. Department of Defense programs.

On a national scale, HWMP will continue to actively participate in the Environmental Management integration effort. This effort has identified billions of dollars in potential future savings to the DOE Complex and enhancements to the Hanford Site baseline. Implementation of the identified actions can increase utilization of Hanford Site capabilities, resulting in higher efficiency, and has the potential for near-term decreases in onsite radionuclide inventories.

Achievement of Project goals and objectives requires the timely application of sufficient financial, human, infrastructure, and technical resources. Adjustments to current strategies may be necessary because of changes to the current baseline. Examples of potential adjustments include Tri-Party Agreement M-91 baseline, transuranic waste retrieval and processing rates, and variations in solid and liquid waste receipts and analytical services requirements.

APPENDIX A

GLOSSARY AND DEFINITION OF TERMS

Definition and explanation of the types of waste discussed in this plan are as follows:

- Low-Level Waste (LLW)

  LLW includes all radioactive waste not classified as high-level waste (HLW), transuranic waste (TRUW), or spent nuclear fuel (SNF).

- Mixed Low-Level Waste (MLLW)

  MLLW contains both low-level radioactive materials and low-level hazardous chemicals. The hazardous component of mixed waste has characteristics identified by any or all of the following statutes: the *Resource Conservation and Recovery Act of 1976*, as amended; the *Toxic Substances Control Act of 1976*, and state regulations.

- Transuranic Waste (TRUW)

  TRUW refers to radioactive waste that contains more than 100 nCi/g of alpha-emitting isotopes with atomic numbers greater than 92 and half-lives greater than 20 years.

Radioactive waste is divided further into two more categories dependent on surface dose rate of beta, gamma, and neutron radiation. These categories are referred to as contact-handled (CH) and remote-handled (RH) waste. Contact-handled packages are those with surface dose rates no greater than 200 mrem/hr. Remote-handled packages are those with surface dose rates that exceed 200 mrem/hr.

LLW is classified further according to radionuclide concentration into Category 1, Category 3, and Greater Than Category 3 (GTC 3). The higher the category number, the greater the activity and long-lived radionuclide concentration.

Radioactive waste can exist as material generated, stored, treated, or disposed. The distinctions among these various waste conditions or states are as follows:

- Generated waste – A material recently discharged from a facility production process or operation that is regarded as a waste because it has no economic value.

- Stored waste – A waste that, following generation (and usually some treatment), is being (temporarily) retained and monitored in a retrievable manner pending disposal.

- Treated waste – A waste that, following generation, has been altered chemically or physically to reduce its toxicity or prepare the waste for storage or disposal.

- Disposed waste – A waste that has been put in final emplacement to ensure its isolation from the biosphere and for which there is no intention of retrieval. Deliberate action is required to regain access to the waste.

- State-only dangerous waste – waste designated by the Washington Administrative Code, and not regulated under Title 40, Code of Federal Regulations, Part 261.

Other acronyms and definitions include:

CWC – Central Waste Complex

DOE – U. S. Department of Energy

DOE-RL – U. S. Department of Energy Richland Operations Office

EM – Environmental Management, DOE

EMI – Environmental Management Initiative

ER – Environmental Restoration

ERC – Environmental Restoration Contractor

ETF – 200 Area Effluent Treatment Facility

FDH – Fluor Daniel Hanford, Incorporated

FY – Fiscal Year

HWMP – Hanford Waste Management Project

INEEL – Idaho National Engineering and Environmental Laboratory

LDR – Land Disposal Restriction

LLBG – Low-Level Burial Grounds

LERF – Liquid Effluent Retention Facility

MYWP – Multi-Year Work Plan

P2/Wmin – Pollution Prevention and Waste Minimization

Package – For radioactive materials the packaging, together with the radioactive contents, as presented for transport

Packaging – For radioactive material, the assembly of components necessary to ensure compliance with packaging requirements. Packaging could consist of one or more receptacles, absorbent material, spacing structures, etc.

PNNL – Pacific Northwest National Laboratory

RCRA – Resource Conservation and Recovery Act of 1976

TEDF – Treated Effluent Disposal Facility

TSD – Treatment, storage, and/or disposal

TWRS – Tank Waste Remediation System

WERF – Waste Experimental Reduction Facility

WIPP – Waste Isolation Pilot Plant

WMH – Waste Management Federal Services of Hanford, Inc.

WMNW – Waste Management Federal Services, Inc., Northwest Operations

WRAP – Waste Receiving and Processing Facility

WSCF – Waste Sampling and Characterization Facility

APPENDIX B

CAPABILITIES AND SERVICES

The major HWMP capabilities and services include solid waste storage, treatment, and disposal; liquid effluents management; and support services.

Solid Waste Storage

The CWC (Fig. B-1) provides compliant storage for containerized LLW, MLLW, and TRUW. Total design storage capacity is 17,000 m^3, or about 80,000 drum equivalents (Fig. B-2). Approximately 80 % of the design capacity is usable working storage space. This reduction is because of segregation of incompatible waste types, and to the need for more efficient operations.

Figure B-1. Central Waste Complex.

The CWC includes a waste receiving and staging area for 520 m^3 of waste (2,500 drum equivalents); a mixed waste interim storage pad; 120 m^3 (600 drum equivalents) of low flash-point and alkali-mixed waste storage; radioactive and/or mixed waste storage facilities (the 2402-W and 2403-W building series) with 14,000 m^3 (65,000 drum equivalents) storage capacity; the 2404-W series storage buildings with 2,900 m^3 (14,000 drum equivalents) storage capacity; German log storage; and sodium storage modules with 35 m^3 (168 drum equivalents) storage capacity. 2401-W, 2402-W series, and 2404-W series buildings can store *Toxic Substances Control Act* - regulated polychlorinated biphenyls.

Figure B-2. Container Storage in the Central Waste Complex.

Solid Waste Treatment

The HWMP provides onsite and commercial solid mixed waste treatment, waste verification and repackaging, and decontamination services. WRAP (Fig. B-3) and the T Plant Complex, both operated by Waste Management Federal Services of Hanford, Inc. (WMH), and offsite contractors are used to provide treatment services.

Figure B-3. Waste Receiving and Processing Facility.

The WRAP mission is to process drums of LLW, MLLW, and TRUW for permanent disposal. WRAP inspects, treats, and repackages the waste to ensure that it meets the acceptance criteria of the appropriate disposal facility. Most of the waste handling operations are performed remotely to minimize exposure of personnel to radioactive materials. The facility has automated processes to examine and characterize waste using x-ray, gamma, and neutron assay equipment (Fig. B-4). Remote packaging is performed as required and the waste is readied for further treatment or transport for final disposal. WRAP also performs nondestructive examination and nondestructive assay of boxed TRUW.

Figure B-4. WRAP Linear Diode Array Image of Waste Drum and Contents.

WRAP treatment capabilities include amalgamation of mercury, neutralization for pH adjustment, solidification of liquids, and macroencapsulation. WRAP is designed to examine and process 6,825 drums per year. In addition, WRAP can perform nondestructive examination/nondestructive assay on 70 standard-size waste boxes per year.

Figure B-5. T Plant Complex.

The T Plant Complex (Fig. B-5) provides mixed waste treatment, waste verification and repackaging, and decontamination services for the Site. Spent fuel from the Shippingport pressurized-water reactor also is stored in the T Plant canyon. The 2706-T facility provides decontamination services, in addition to treatment, verification, and certification for low-activity waste.

Commercial contracts are in place with ATG Inc., for nonthermal stabilization of inorganic solids; macroencapsulation of debris; and thermal treatment of organic solids.

Solid Waste Disposal

The LLBG are used for disposal of Category 1 and Category 3 LLW from the Hanford Site and offsite generators. The LLBG Trench 94 is permitted for the disposal of 220 defueled reactor compartments (Fig. B-6). Six LLBG are located in the 200 West Area, and two in the 200 East Area. The capacity of the LLBG for solid waste disposal could be increased, in the deep trench configuration, to 14 million m^3.

Figure B-6. Defueled Reactor Compartment Disposal in the Low-Level Burial Ground.

Two *RCRA* Subtitle-C, lined trenches (each 24,000 m^3) will be used for disposal of LDR-compliant MLLW (Fig. B-7).

Figure B-7. Mixed Waste Trench.

After onsite characterization and packaging, TRUW will be sent to WIPP for disposal.

Nonradioactive hazardous waste is sent to offsite commercial facilities for treatment and disposal.

Liquid Effluents Management

The HWMP provides integrated liquid effluent management to support Hanford Site cleanup. The HWMP receives, treats, and disposes of liquid effluents from other onsite programs and projects, using treatment facilities in the 200 and 300 Areas. The 200 Area facilities are the Liquid Effluent Retention Facility (LERF), the 200 Area Effluent Treatment Facility (ETF), the 200 Area Treated Effluent Disposal Facility (TEDF), the 242-A Evaporator, and the 207 Basins.

LERF consists of three basins with a usable capacity of about 53 million L (14 million gal); an additional reserve capacity of one basin (about 26.5 million L [seven million gal]) is also maintained. The LERF receives and temporarily stores effluents from the 242-A Evaporator, the groundwater transfer system, and the truck-unloading facility (Fig. B-8). From LERF, the water is routed to the 200 Area ETF (Fig. B-9).

Figure B-8. 200 Area ETF Truck-Unloading Facility.

The 200 Area ETF treatment process removes toxic metals, radionuclides, and ammonia and destroys organics. The 200 Area ETF processing capacity varies with feed impurity, with a design capacity of 216 million L (57 million gal) per year. The ETF treatment process constitutes best available treatment technology and includes pH adjustment, filtration, ultraviolet light/peroxide destruction of organics, reverse osmosis, and ion exchange. Storage tanks hold the treated effluent for verification of acceptable discharge levels, before the effluent is transferred to a state-approved land disposal site north of the 200 West Area.

Figure B-9. 200 Area Effluent Treatment Facility.

The 200 Area TEDF is a collection and disposal system for non-RCRA-permitted waste streams. The 200 Area TEDF includes more than 19 kilometers (12 miles) of polyvinyl chloride pipe up to 36 centimeters (14 inches) in diameter connecting facilities to a second state-approved land disposal site located east of the 200 East Area. The 200 Area TEDF has a capacity of 13,000 L (3,400 gal) per minute, equivalent to 6.8 billion L (1.8 billion) gal per year.

The 242-A Evaporator (Fig. B-10) concentrates Tank Waste Remediation System (TWRS) tank waste to reduce the overall storage requirements. The Evaporator will also support TWRS Privatization operations. The facility has a volume reduction capacity of 270,000 L (70,000 gal) per day. The concentrated waste is returned to the TWRS waste tanks and the process condensate is transferred to the LERF. The 207 Basins provide diversion capability for evaporator condensate.

Figure B-10. 242-A Evaporator.

The 300 Area facilities include the 300 Area TEDF (Fig. B-11), the 307 Retention Basins, and the 340 Waste Handling facility. The Project also operates and maintains the Process Sewer System, the Retention Process Sewer System, and the Radioactive Liquid Waste System in the 300 Area.

The 300 Area Retention Process Sewer and the 307 Retention Basins provide for the collection and monitoring of potentially radioactive liquid effluents. The 307 Retention Basins consist of four 95,000 L (25,000 gallon) basins with overflow to the adjacent basin. The nonradioactive liquids are sent to the 300 Area Process Sewer. Radioactive liquids are discharged to the Radioactive Liquid Waste System.

The 300 Area TEDF treats wastewater from research and development laboratories and support facilities. The TEDF is designed for continuous receipt of wastewater with storage capacity of 5 days at the design flow rate of 1100 L (300 gal) per minute. The

treatment process constitutes best available treatment technology and includes coprecipitation, pH adjustment, filtration, ultraviolet light/peroxide destruction of organics, and ion exchange. Treated liquid effluent is monitored and discharged through an outfall to the Columbia River.

Figure B-11. 300 Area Treated Effluent Disposal Facility.

The 340 Waste Handling Facility is being shut down. The facility has been operated to receive, store, and provide loadout capability for LLW generated in 300 Area facilities. System capability to support 307 Basin operations will be retained.

Support Services

Analytical Services

The HWMP provides waste and environmental sample analysis, process control sample analysis, and site expertise in chemistry and data quality. The Hanford Analytical Laboratory Operations group under WMH operates onsite analytical laboratories, contracts commercial services, establishes site laboratory quality standards, and has responsibility for integrating all Hanford Site analytical services.

The Hanford Analytical Laboratory Operations provides high-level radioactive analytical services at the 222-S Laboratory complex (Fig. B-12). The 222-S Laboratory operates around the clock and has 6,500 m^2 (70,000 square feet) of space. Eleven hot cells are available to handle high-activity samples such as those from the Hanford Site tank farms. Sample-handling capabilities maintained at 222-S include organic, inorganic, and radiochemistry.

Figure B-12. 222-S Laboratory Complex.

The HWMP provides low-level radioactive analytical services at the Waste Sampling and Characterization Facility complex (WSCF) (Fig. B-13).

Figure B-13. Waste Sampling and Characterization Facility Complex.

WSCF is operated five days a week (one shift), and has 3,700 m^2 (40,000 square feet) of space.

A full range of services is maintained for organic, inorganic, radiochemistry, and selected industrial hygiene waste. Accreditations in the American Industrial Hygiene Association, Washington State Department of Ecology (RCRA), and the National Institute of Standards and Technology are maintained. WSCF supports its major customers, liquid effluents and site monitoring, with short turnaround time services and process control sample analysis. Support facilities for mobile laboratory operations and data management services are also located within the WSCF complex.

Numatec Hanford Corporation provides development services through their Chemistry, Analysis, and Technology Support organization, which includes Hanford Site analytical technology support, process chemistry support for the 222-S laboratory, and field measurement services.

Analytical technology support includes analytical methodology development on high- and low-activity materials and special analyses and measurement technologies.

222-S process chemistry support includes laboratory-scale process testing; measurement of physical properties; and statistical services for sampling, experimental design, and interpretation.

Field measurement and development services are provided by Numatec Hanford Corporation and COGEMA Engineering Corporation, centered at the 622 Weather Station complex. A wide range of field and mobile services are available for organic, inorganic, and radiochemistry waste. Customers include vapor sampling and analysis support TWRS and Solid Waste.

Sampling and Mobile Laboratories, operated by Waste Management Federal Services, Inc. Northwest Operations (WMNW), provides field sampling, U.S. Department of Transportation shipping, and field screening for all media in hazardous and radioactive environments up to 2 R per hour. Customers include those with RCRA and CERCLA sites and treatment, storage, and disposal facilities, plus Transition Projects. Sampling and Mobile Laboratories operates a protocol-driven sampling equipment cleaning facility in the WSCF complex, four fully equipped sample trucks (Fig. B-14), and two mobile sampling trailers.

Figure B-14. Mobile Field Operation.

WMH also manages a variety of contracts with commercial laboratories to provide low-level radioactive (less than 10 mR per hour) sample analyses, for organic, inorganic, and radiochemistry waste, and specialty services (e.g., drinking water analysis). Protocol services such as RCRA are also available. Additional contracts managed by the Environmental Restoration Contractor and Pacific Northwest National Laboratory also are accessible for specialized services as needed.

Waste Generator Services

WMH Waste Generator Services provides full-range waste management services to the Hanford Site contractors, with support from WMNW. Designated points of contact for each organization or facility assist, coordinate, and/or

perform waste planning, characterization, verification, packaging, and certification documentation. They also manage temporary storage and shipment of low-level, hazardous, transuranic and mixed waste. Points of contact also are designated for offsite waste generators to assist in waste acceptance and shipment of their radioactive waste to the Hanford Site.

Environmental Services

WMH Environmental Services provides technical, planning, permitting, and related regulatory support to WMH facilities, PHMC subcontractors, and other site contractors. WMH serves as the HWMP lead for permitting and compliance agreement negotiations, preparing site-wide regulatory report, and NEPA documentation.

WMNW provides technical planning, regulatory support and implementation for near-facility monitoring programs to ensure compliance with DOE Orders and federal law. Services also include project management and implementation of site-specific characterization programs including biological and ecological assessments.

Sampling and Well Services performs all activities required to safely and efficiently install and operate groundwater monitoring wells in clean, hazardous, and radiological environments; additional capability includes multi-media sampling. The Integrated Pest Management Program provides animal control operations, vegetation management, and noxious weed control for the Hanford site.

Transportation and Packaging

WMNW provides full-service transportation and packaging capabilities. WMNW provides packaging services for radioactive and hazardous cargo beginning with payload characterization and criteria development, followed by design, fabrication, testing (Fig. B-15), and analysis of the engineered package. Regulatory safety-basis documentation, certification, and licensing are then performed by WMNW, resulting in an approved package for onsite and offsite use.

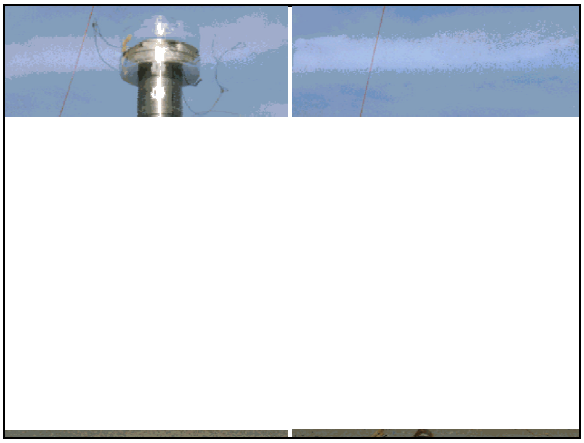

Figure B-15. Drop-testing of Packaging Used to Transport Large Quantities of Radioactive Material.

WMNW prepares packaging plans and logistical studies for major shipping campaigns (Fig. B-16), and prepares and delivers approved training courses in transportation safety and waste management.

Figure B-16. Packaging Design and Transportation Services.

WMNW is responsible for Project Hanford Management transportation and traffic logistics management as well as serving offsite customers with engineering and operational support. Complementary services include carrier selection and evaluation, automated

transportation management systems used by the U.S. Department of Energy (DOE) complex and commercial vendors, and international transport of hazardous and radioactive packages.

Pollution Prevention and Waste Minimization

WMH Pollution Prevention and Waste Minimization (P2/WMin) coordinates the development and implementation of a Hanford Site P2/WMin Program to comply with Federal, state, and DOE directives. The program Fig. B-17) is directed to the achievment of Site objectives through effective and efficient methodologies tailored to generator activities and operations. This includes establishing goals, developing strategies and plans for meeting the goals, identifying baselines, providing accurate and current data, identifying priority waste streams, developing P2/WMin tools and methodologies, providing technical assistance, championing Site-wide P2/WMin initiatives, and assisting in obtaining funding for P2/WMin.

Figure B-17. Pollution Prevention Display.