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Environmental Restoration and Waste Management Site-Specific Plan for the Richland Operations Office: Detailed Information

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1.0 INTRODUCTION

1.1 INTRODUCTION TO THIS AND RELATED PLANNING DOCUMENTS

This document is part of the site-specific plan for the U.S. Department of Energy-Richland Operations Office (DOE-RL). This document is a companion document to the *Environmental Restoration and Waste Management Site Specific Plan for the Richland Operations Office: Philosophy and Overview* (DOE-RL 1989b) and *The Hanford Site Environmental Restoration and Waste Management Five-Year Plan Activity Data Sheets* (DOE-RL 1989c). Although there are three documents that make up the complete DOE-RL plan, this detailed information volume was prepared so it could be used as a stand-alone document. The philosophy and overview volume and the activity data sheet (ADS) volume are not needed to understand this document. They are considered supplements to the information in this document.

The philosophy and overview document presents some information in ways that this detailed information document does not, such as a concise description of the extent of the waste and the status of restoration at the Hanford Site and a description of the cultural changes required in Hanford Site operations and interactions with outside organizations. The philosophy and overview document also presents nontechnical summaries of the detailed planning in this document and, for this reason, is useful as an introduction to this document.

The DOE-RL site-specific planning documents were prepared to implement and support the U.S. Department of Energy-Headquarters (DOE-HQ) national plan issued in August 1989. The national plan, entitled *Environmental Restoration and Waste Management Five-Year Plan* (hereinafter referred to as the DOE-HQ Five-Year Plan) (DOE-HQ 1989b), is the cornerstone of the U.S. Department of Energy's (DOE) long-term strategy in environmental restoration and waste management. The DOE-HQ Five-Year Plan addresses overall philosophy and waste-related activities under the responsibilities of the DOE Assistant Secretaries for Environmental Programs, Defense Programs, and Nuclear Energy, and the Director of the Office of Energy Research.

1.2 SCOPE

Three major chapters in this plan (2.0, 3.0, and 4.0) provide the supporting details for the activities in three areas: waste management operations, environmental restoration, and corrective activities. References to specific ADSs are provided when appropriate. These references are expressed as "ADS-RL XXXX," which refers to the identification number of the sheet in the ADS document (DOE-RL 1989c). This detailed information document covers the activities in the ADSs that were issued in August 1989 to support the fiscal year (FY) 1991 budget submission.

This plan provides a summary of environmental and waste management activities planned at the Hanford Site. Activities planned through FY 1995

are covered in more detail than longer range activities. This plan covers activities funded by Nuclear Energy, Energy Research, and Defense Programs within the DOE. A new DOE-HQ organization, Environmental Restoration and Waste Management, was formed in October 1989. This plan does not take into account this change because the ADSs upon which this plan is based were completed in August 1989. The activities now included in Environmental Restoration and Waste Management are included in the scope of the other organizations in this plan.

Waste management operations include those activities associated with the minimization, treatment, storage, or disposal of all radioactive, hazardous, or mixed wastes generated as a result of ongoing operations at active facilities. Environmental restoration is concerned with the assessment and cleanup of facilities and sites that are no longer part of active operations. Environmental restoration includes remedial actions and decontamination and decommissioning. Corrective activities are those projects and activities required to bring active and standby facilities into compliance with environmental regulatory requirements and internal DOE requirements for air, surface water, and solid waste.

The *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989b), hereinafter referred to as the Tri-Party Agreement, signed in May 1989, is a legally enforceable agreement between the DOE, the U.S. Environmental Protection Agency (EPA), and the State of Washington Department of Ecology (Ecology). It covers cleanup of the Hanford Site, compliance with the *Resource Conservation and Recovery Act of 1976*[1] (RCRA), integration of RCRA and *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) activities, public involvement, and prioritization of work.

This detailed information document provides implementation details in support of and consistent with the Tri-Party Agreement. However, this document covers additional activities, particularly in the waste management area. It also integrates the activities of the Tri-Party Agreement, which are primarily related to cleanup and regulatory compliance, with all other planned environmental and waste management activities. Other examples of activities discussed in this plan but not in the Tri-Party Agreement are as follows:

- Environmental restoration decontamination and decommissioning activities
- *National Environmental Policy Act* (NEPA) compliance
- Research and development activities
- Many specific upgrades to waste management and chemical processing facilities.

[1]Throughout this document, references to RCRA are intended to include the implementing State of Washington regulations.

1.3 PURPOSE

The three documents that make up the site-specific plan serve multiple planning purposes. These documents are written to do the following:

- Provide Hanford Site implementation detail for the DOE-HQ Five-Year Plan (DOE-HQ 1989b)
- Describe the activities and strategy for waste management operations, environmental restoration, and corrective actions, with emphasis on the FY 1989-1995 time period. Activities are consistent with the Tri-Party Agreement (Ecology et al. 1989b)
- Summarize long-range planning and scheduling for waste management and environmental restoration activities, consistent with the Tri-Party Agreement
- Assist in the evolution from a production-oriented culture toward a culture of open communication, clearly understood and demonstrated priorities for environmental stewardship, and accountable management
- Provide a baseline for planning, budgeting, and measuring progress for the FY 1989-1995 time period
- Meet the requirement of DOE Order 5400.1, *General Environmental Protection Program* (DOE-HQ 1988a) that each field organization have a long-range plan
- Describe the policies of the DOE and its contractors related to meeting waste management and environmental restoration objectives
- Prioritize work needed in FY 1989-1995 on the basis of potential risks to the public, workers, and the environment
- Reaffirm the FY 1990 program and provide the basis for the FY 1991 budget
- Identify current technology development activities and provide a basis for research, development, and demonstration (RD&D) of new and innovative technologies.

1.4 MISSION

The Hanford Site was acquired by the Federal Government in 1943 for the construction and operation of facilities to produce plutonium for the atomic weapons program during World War II. The Hanford Site encompasses approximately 560 mi^2 within the Columbia River Basin of southeastern Washington State (Figure 1-1). For over 20 years, Hanford Site facilities were primarily dedicated to the production of plutonium for national defense and management of the wastes generated by chemical processing operations. In

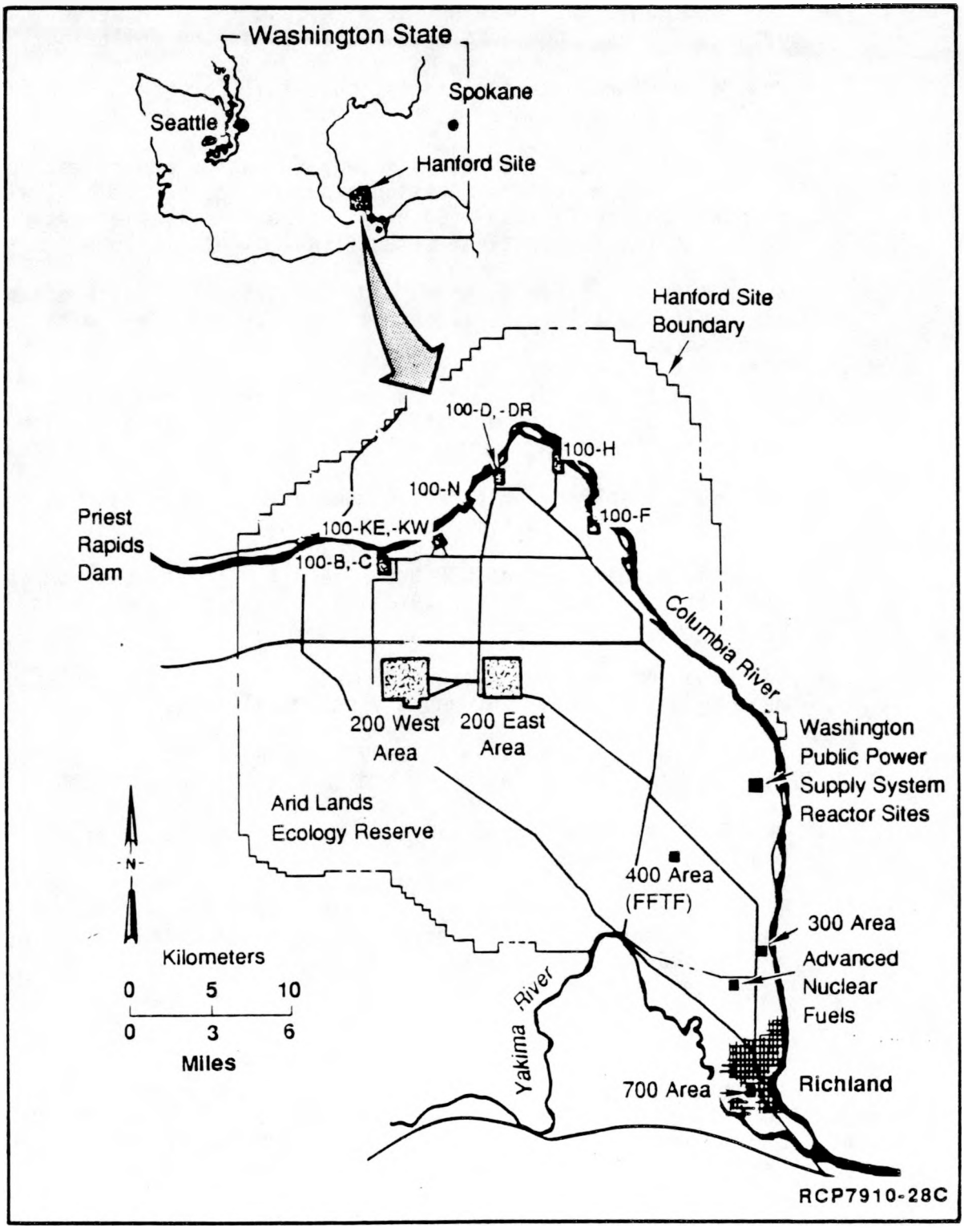


Figure 1-1. Location and Regional Map of the Hanford Site.

later years, programs at the Hanford Site have become increasingly diverse, involving research and development for advanced reactors, renewable energy technologies, waste disposal technologies, and cleanup of contamination from past practices. Currently, the DOE is evaluating continued reduction of the production mission at the Hanford Site and reorienting site activities toward research and development and cleanup of waste units resulting from past operations.

1.5 POLICY

It is the policy of the DOE-RL, as an operational unit of the DOE, to conduct its operations in a safe and environmentally sound manner. Secretary Watkins has made it clear that protection of the environment and the public are responsibilities of paramount importance in all of our operations. We are firmly committed to ensuring the incorporation of all departmental and national environmental protection goals in the daily conduct of our business. We have an equal commitment to advance the goals of restoring and enhancing environmental quality and ensuring public health.

It is the DOE-RL's policy and practice to conduct our operations in compliance with the letter and spirit of applicable environmental statutes, regulations, and standards. We are committed to good environmental management of all our programs and facilities and to correcting existing environmental problems before they pose a threat to the quality of the environment or public welfare. Consistent with the Secretary's goals, we will work with the appropriate offices of the State of Washington and the EPA to implement the requirements of the DOE-HQ Five-Year Plan to achieve environmental compliance and cleanup and meet our obligations under the NEPA.

The DOE-RL's contractors also share the responsibilities for good environmental management. We expect our management and operating contractors to conduct program and project operations in an environmentally sound manner that limits the risks to the environment and protects the public health. Our contractors must recognize and accept that the department's criteria for awarding their fees reflect DOE's increased emphasis on environment, safety, and health.

In addition, it is the DOE-RL's policy to undertake appropriate measures to prevent the generation of contaminants, wastes, and other residual materials requiring disposal or release to the environment through source reduction and recycling. When the generation of such wastes cannot be avoided, we will take actions to reduce their volume and toxicity through treatment.

Our goal is to create a pollution-prevention ethic within the work place. To this end, all program mission statements and project plans shall recognize a requirement for pollution prevention. Further, pursuant to DOE policy, a program to develop employee pollution prevention awareness through specific training, special campaigns, and incentive programs will be implemented at the Hanford Site. As part of this program, employee initiative in

the establishment of sound pollution prevention and waste minimization practices will be encouraged by all levels of facility management.

1.6 PRIORITIES

Activities that may be conducted in the FY 1989-1995 period are assigned to one of four priority levels. The priority levels of individual activities are listed on the activity data sheets (DOE-RL 1989c). These priority levels were established by the DOE-HQ in March 1989.

- Priority 1

  Priority 1 includes activities necessary to prevent near-term adverse impacts to workers, the public, or the environment. Examples include containment to prevent the spread of contamination, actions to prevent or minimize releases to the environment, and ongoing waste management activities required to maintain safe conditions. Also included as Priority 1 are ongoing activities that, if terminated, could result in significant program and/or resource impacts. Impacts could include significant increased risk to the environment or to workers or significant increased costs.

- Priority 2

  Priority 2 includes those activities required to meet the terms of agreements (in place or in negotiation) between DOE and local, state, and federal agencies, such as the Tri-Party Agreement (Ecology et al. 1989b). These agreements represent legal commitments to complete activities on the schedules agreed to by the DOE.

- Priority 3

  Priority 3 includes activities required for compliance with external environmental regulations that were not captured by Priority 1 or 2. Other actions included in Priority 3 are in compliance with DOE orders that implement external regulations or that set specific DOE regulatory standards, actions that would reduce risks or costs, and actions that would prevent disruption of the DOE mission.

- Priority 4

  Priority 4 includes activities that are not required by regulation but that would be desirable. Examples of Priority 4 actions include complying with DOE orders that are more stringent than external regulations, implementing good management practices, reducing personnel exposures below levels required by regulations or standards, and accelerating actions to satisfy an agreement or milestone ahead of schedule.

The DOE-RL and its contractors recognize the importance of completing all of the activities listed and the necessity and commitment to achieve full compliance with the law in the shortest achievable time. The DOE-RL will continue to work with the EPA and Ecology to ensure that work is being performed in accordance with agreed-upon priorities and legally binding agreements, such as the Tri-Party Agreement. It currently appears that lower priority activities may not be funded. A determination of which future activities may not be funded has not yet been made. This determination, to be made by DOE-HQ, will depend on funding constraints and the relative urgency of individual activities at the Hanford Site versus other DOE sites.

Section 1.8 and Chapters 2.0, 3.0, and 4.0 present summary tables and graphs of activity titles, priorities, and costs. These are based on the ADSs issued in August 1989 (see Section 1.9), which reflect the activities that the DOE-RL has determined to be necessary to be accomplished, as reflected by their priority level.

1.7 MANAGEMENT AND EXTERNAL INTERACTIONS

The following sections define the roles and responsibilities for organizations performing environmental activities at the Hanford Site. The sections also discuss the roles of external agencies with respect to the environmental activities at the Hanford Site.

1.7.1 The U.S. Department of Energy Management Structure and Approach

The DOE consists of line organizations fully responsible for their own activities. Operational programs and activities related to environmental protection, radiation and reactor safety, and worker and public health and safety are included in those responsibilities.

The DOE-HQ has established and manages the various field offices around the country, including DOE-RL. The DOE-HQ sets national energy policy; provides guidance to the field offices, including Headquarters-level DOE orders; provides oversight for field office activities; assembles budget requests from field office input for submittal to the U.S. Congress; prepares and issues top-level plans such as the DOE-HQ Five-Year Plan (DOE-HQ 1989b), and guides preparation of field office plans (such as this plan).

The DOE-HQ has assigned to the DOE-RL the responsibility and authority for the management of the Hanford Site, including responsibility for the Hanford Site's environmental activities. The DOE-RL prepares budget submittal necessary to meet environmental requirements. The DOE-RL also reviews and approves all submittal related to Hanford Site environmental activities being transmitted to agencies and organizations outside of the Hanford Site.

Within the DOE-RL, the Environmental Restoration Division is assigned responsibility for Hanford Site environmental management activities. The Environmental Restoration Division reports to the Office of Assistant Manager

for Operations. Within the Environmental Restoration Division are two branches: the Restoration Branch and the Policy and Permits Branch. The Restoration Branch plans and oversees remedial actions for inactive waste sites and Decontamination and Decommissioning (D&D) of surplus facilities. The Policy and Permits Branch supports Hanford Site operational programs to ensure environmental compliance and to implement environmental policy, represents DOE-RL with the State of Washington and the EPA Region 10, and coordinates preparation of environmental permits for the site.

The Waste Management Division is responsible for waste management operations and supports waste management activities at other DOE sites. The Waste Management Division reports to the Office of Assistant Manager for Operations and contains the Operations Branch and the Programs Branch. The Waste Management Division is responsible for the programmatic and environmental compliance aspects of waste management facilities and operations [e.g., B Plant, Grout Treatment Facility, tank farms, single-shell tanks (SST), 324 and 325 Buildings Hot-Cell Cleanout, and Civilian Greater-Than-Class-C Low-Level Waste Management], and the Hanford Environmental Compliance project. The Hanford Environmental Compliance project is comprised of 15 construction subprojects, with a $180 million budget through completion, that provide enhanced environmental operations at the Hanford Site.

The Operations Division is responsible for the operation of production facilities and for environmental compliance within these facilities. The Operations Division reports to the Office of Assistant Manager for Operations and contains the Reactor Operations Branch, the Nuclear Processing Branch, and the Nuclear Energy Programs Branch.

The Research and Development Division is responsible for the operation of the research and occupational medical facilities and environmental compliance within these facilities. The Research and Development Division reports to the Office of Assistant Manager for Research and Projects and contains the Laboratory Management Branch, which is responsible for ensuring environmental compliance of the research and development and medical services contractors' facilities.

The Project Management Division is responsible for engineering- and construction-related activities, for steampower plants, and for certain other utility and maintenance functions. The Project Management Division reports to the Assistant Manager for Research and Projects and contains the Technical Services Branch, which has responsibility for ensuring environmental compliance for these activities.

The Safety and Environment Division oversees the safe operation and environmental management of the site. The Safety and Environment Division reports to the Office of Assistant Manager for Safety, Environment and Security and contains the Environmental Oversight Branch, which provides compliance oversight of all site-related environmental activities and manages the environmental surveillance program.

The Quality Assurance Division has oversight responsibility for the adequacy of the quality assurance programs. The Quality Assurance Division

reports to the Assistant Manager for Safety, Environment and Security and contains the Verification Branch, which performs independent verification activities, and the Engineering Branch, which verifies that contractor quality assurance programs and other selected documents comply with governing requirements.

The Financial Resources Division is responsible for coordinating the identification of operating and capital funding needs for environmental management activities. The Financial Resources Division reports to the Office of Assistant Manager for Administration and contains the Budget Analysis Branch. The Budget Analysis Branch ensures the inclusion of environmental protection upgrades and corrective activities in budget requests.

The Site Management Division is responsible for various support services. The Site Management Division reports to the Assistant Manager for Administration and contains the Support Services Branch, which has responsibility for environmental compliance of the laundry services, central landfill, and certain other support facilities.

Other DOE-RL organizations are involved in environmental restoration and waste management activities. These include the Waste Vitrification Project Division, Safeguards and Security Division, Procurement Division, Personnel Division, Office of Chief Counsel, and Office of Communications.

Each operating division is responsible for completing identified environmental corrective activities in facilities under its direction.

1.7.2 Hanford Site Prime Contractor Organization and Responsibilities

The Hanford Site contractors include the following: Westinghouse Hanford Company (Westinghouse Hanford), the operating and engineering contractor (including its subcontractor Boeing Computer Services Richland, Inc.); the Pacific Northwest Laboratory (PNL) operated by Battelle Memorial Institute; Kaiser Engineers Hanford, the engineering and construction services contractor; and the Hanford Environmental Health Foundation. Each contractor is responsible for the safe, environmentally sound maintenance and operation of its designated facilities, specific facility upgrades, operational support, waste management, and monitoring of operations and effluents for environmental compliance. Plant or building managers have first-line responsibility to operate their facilities in a safe, environmentally sound manner.

Most waste operations activities, environmental corrective activities and remedial actions, and D&D of surplus facilities conducted at the Hanford Site are performed by or under contract to Westinghouse Hanford, the operations and engineering contractor. Westinghouse Hanford has been assigned the responsibility for management of the defense waste management program, implementation of the environmental restoration program and the Tri-Party Agreement (Ecology et al. 1989b), and management of the Hanford Environmental Compliance Project. The engineering and construction services contractor, Kaiser Engineers Hanford, ensures that environmental design requirements are

met and provides project and construction support. The Hanford Environmental Health Foundation provides nonradiological environmental, effluent, and sanitary water surveillance services for the Hanford Site. The research and development contractor, PNL, performs environmental research and development, provides an independent site-wide environmental surveillance program, remediates assigned facilities, and applies waste management technology to support operations and environmental restoration at other DOE sites. The PNL is responsible for waste management and environmental compliance at its assigned facilities. The PNL will manage and staff the newly created Environmental Science Research Center, which will conduct research and development activities to support technologies for waste site characterization and environmental cleanup and site characterization. Environmental technology initiatives will be defined in the Office of Energy Research five-year plan.

Hanford Site contractors also conduct programs that apply waste management technology to support waste management operations, environmental restoration, and environmental corrective activities at other DOE sites.

Significant amounts of restoration and other work described in this plan are likely to be performed by subcontractors. They are required to comply with applicable parts of this plan and the DOE-HQ Five-Year Plan (DOE-HQ 1989b). This will be ensured through appropriate statements of work and project reviews by the prime contractors.

1.7.3 Interaction With Offsite Agencies and Organizations

Several federal, state, and local agencies are responsible for enforcing environmental regulations at the Hanford Site. Principal among these agencies are the EPA; the State of Washington Departments of Ecology and Health; the Benton-Franklin County Health Department; and the Benton, Franklin, and Walla Walla Counties Air Pollution Control Authority. These agencies issue permits, review compliance reports, participate in joint monitoring programs, inspect facilities and operations, and/or enforce compliance with applicable regulations.

The EPA develops, promulgates, and enforces environmental protection standards and regulations as directed by statutes passed by the U.S. Congress. In instances where regulatory authority can be delegated, the EPA delegates regulatory authority to Ecology for state programs that meet or exceed EPA requirements. Where regulatory authority is not delegated (e.g., CERCLA), EPA Region 10 (which includes the State of Washington and the Hanford Site) is responsible for reviewing and evaluating compliance with the EPA regulations as they pertain to the Hanford Site. This includes interpreting regulations, consulting with DOE-RL and its contractors to aid regulation implementation, inspecting facilities and operations at the Hanford Site, and assisting appropriate state agencies in regulating operations at the Hanford Site.

Other external organizations are also involved in the Hanford Site's environmental activities. The U.S. Army Corps of Engineers regulates activities and land use up to the high-water marks on the banks of the Columbia River on the Hanford Site. The U.S. Department of Transportation regulates interstate transport of commodities, hazardous substances, and hazardous waste. The state of Washington Department of Health provides radiological support to State agencies, is the primary authority for Washington State drinking water and radionuclide air emission permit programs, and participates with DOE-RL in radiological monitoring of the environment. The Washington State Departments of Fisheries and Game assist in wildlife and fisheries management on and around the Hanford Site. The Washington State Department of Agriculture certifies and licenses all Hanford Site applications of pesticides. The Agency for Toxic Substances and Disease Registry is required to perform health assessments for each of the four National Priority List (NPL) sites at the Hanford Site (see Chapter 3.0).

The Tri-Party Agreement (Ecology et al. 1989b) is a legally enforceable agreement that establishes jurisdictions, authorities, and other legal responsibilities among the parties. The Tri-Party Agreement represents a commitment by DOE-HQ and DOE-RL to the citizens of the Pacific Northwest to meet specific milestones and complete specified actions by the year 2018. The agreement includes three attachments: (1) a letter from the Department of Justice recognizing the enforceability provision of the Tri-Party Agreement, (2) an action plan for carrying out the Tri-Party Agreement, and (3) a mutual funding agreement between DOE and the State of Washington. The action plan defines how the parties will work together, describes the processes and procedures to be followed, defines the units to be addressed, and provides a schedule with enforceable milestones for conduct of work. Note that this agreement does not cover all environmental requirements.

1.7.4 Public Involvement

The DOE is committed to the participation of affected states, Indian nations, and the public in the planning and implementation process. Activities such as involvement of these parties in preparation of major planning documents, such as this site-specific plan, will continue without consideration of whether they are specifically required by law.

The local Indian tribes have a strong interest in activities at the Hanford Site because of their historical roots to the area occupied by the Hanford Site as well as their religious beliefs. The DOE recognizes their interest and rights based on the 1855 treaties and will continue to involve affected Indian nations in Hanford Site activities. Section 8.5 contains more information on Indian interests.

Cleaning up past-practice waste sites and permitting active treatment, storage, and/or disposal (TSD) units require considerable public involvement. Details of how public input for the Hanford Site will be sought,

accepted, and acted upon have been developed into the Hanford Site Community Relations Plan (Ecology et al. 1989a). The DOE-RL was assigned the responsibility by the EPA for developing the Community Relations Plan. The EPA and Ecology must approve the plan.

The goal of the plan is to meet or exceed all legal community involvement requirements of the CERCLA, RCRA, and the *Washington Hazardous Waste Management Act of 1975-1976* [Revised Code of Washington (RCW) 70.105]. Community involvement for specific cleanup activities will also be required to meet the public participation requirements of the NEPA, as necessary.

Following are the objectives of the Community Relations Plan.

- Present understandable, consistent information to the public.
- Assist in establishing two-way communication between the three agencies and affected or interested communities.
- Provide opportunities for the public to become involved in the decision-making processes for permitting, closure, and selecting remedial alternatives.

To accomplish the objectives of the Community Relations Plan, certain activities are planned, including the following.

- Conduct informational meetings to be held throughout the state, additional public meetings as required, and public hearings when they are specifically requested for draft permits.
- Provide speakers to group meetings and forums whenever possible.
- Accept and respond to written comments by the EPA, Ecology, and other regulatory agencies during specific comment periods.
- Provide briefings for elected and appointed officials, agency representatives, and Native American tribes.
- Conduct media activities such as news releases, editorial board meetings, and news conferences.
- Produce publications such as brochures, fact sheets, and a newsletter.
- Operate information repositories at Seattle, Richland, and Spokane, Washington; and Portland, Oregon.

A similar level of involvement will be sought for planning and decision making in the waste management area, particularly where related to the Hanford Defense Waste Environmental Impact Statement (HDW-EIS) (DOE-HQ 1987b) and

decisions on treatment, storage, and/or disposal of Hanford Site waste inventories. There has been a commitment for a supplemental EIS to address the issue of SST waste disposal. Additional NEPA documentation may also be prepared which will be subject to public review.

Additional material on public involvement, as well as cultural change within the DOE, is located in the philosophy and overview document (DOE-RL 1989b). Included is discussion of a new openness with the public, two-way dialogue with affected parties and the public, an active public outreach program, more seeking of public advise, and easier and more timely access to information.

This site-specific plan will be issued for a 90-day public review; comments received will be considered in the July 1990 update.

1.8 FUNDING SUMMARY

Total summary costs for waste management operations, environmental restoration, and corrective activities are presented in Table 1-1. These costs are those projected to be necessary by the approved ADSs issued in August 1989 (DOE-RL 1989c), which cover the period FY 1989 to FY 1995. All priority levels are included (1 through 4) as defined in Section 1.6. Section 1.9 gives more detail on the ADS planning process. Figure 1-2 presents this information in bar graph form. The data are further broken down by priority in Table 1-2 and Figure 1-3.

Further detail on costs for specific activities is located in Chapters 2.0, 3.0, and 4.0 for waste management operations, environmental restoration, and corrective activities, respectively.

Table 1-3 presents the final approved budget for fiscal year 1990 and proposed budget for fiscal year 1991 as of December 6, 1989. These are presented by "budget and reporting" (B&R) numbers, which are what the Office of Management and Budget report to. These numbers reflect a Gramm-Rudman-Hollings budget reduction of 4.3% in fiscal year 1990 (the present funding year) for defense programs and a 5.3% reduction for non-defense programs. There has been verbal indication that this budget reduction will be reduced to only 1.4% to 1.5% for most programs. This should be finalized in the early February 1990 period.

At this funding level, all priority 1 and 2 activities, shown in this plan and the activity data sheets published in August 1989, would be funded in FY 1991 and some priority 3 activities will be funded. In 1990, funding covers all priority 1 activities and most priority 2 activities. Management is in the process of evaluating each activity, based on the latest information and the final funding guidance to determine exactly what activities may be impacted.

Table 1-1. Total Funding Summary for the Hanford Site by Category.

Hanford Operations Five-Year Plan Total Funding Summary ($000)[a]							
Programs	FY 1989 Approp.	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
Waste Management Operations	241,122	363,725	495,903	554,261	622,645	709,089	659,163
Environmental Restoration	61,553	99,400	137,856	164,763	156,358	215,020	287,385
Corrective Activities	22,848	27,742	24,968	25,113	23,142	14,242	13,743
Total Cost	325,523	490,867	658,727	744,137	802,145	938,351	960,291

[a]Projected necessary funds as listed in Activity Data Sheets issued on August 1989 (DOE-RL 1989c).

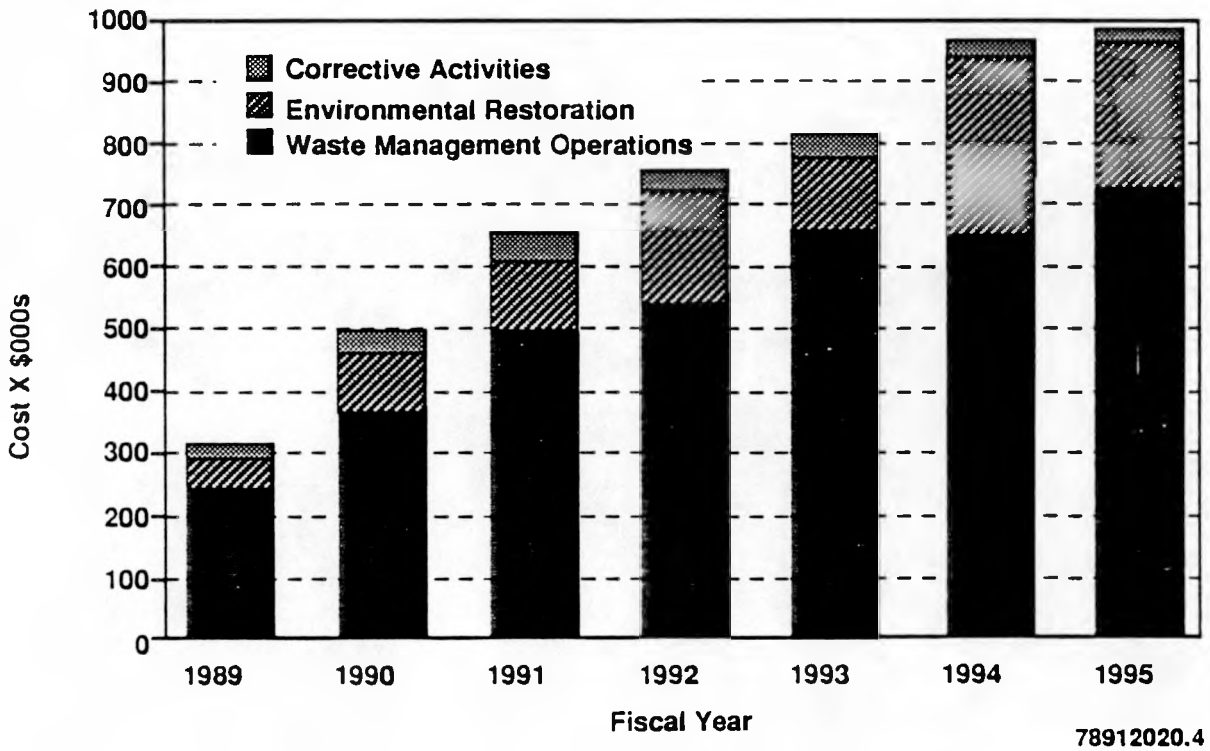


Figure 1-2. Total Costs for All Activities.

Table 1-2. Total Funding Summary by Category and Priority.

Hanford Operations Five-Year Plan

Total Funding Summary ($000)

Categories	FY 1989 Approp.	FY 1990 Presidents Budget	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
Waste Management Operations							
Priority No. 1	151,590	203,222[a]	207,511	215,960	229,730	225,963	218,911
Priority No. 2	73,508	120,439	232,223	270,161	294,414	364,935	300,383
Priority No. 3	15,982	29,476	36,748	51,422	59,574	67,764	67,442
Priority No. 4	42	10,588	19,421	16,718	38,927	50,427	72,427
TOTAL	241,122	363,725[a]	495,903	554,261	622,645	709,089	659,163
Environmental Restoration							
Priority No. 1	58,444	71,614	82,909	90,158	79,420	88,429	107,865
Priority No. 2	2,420	17,778	35,171	51,912	58,797	91,146	141,315
Priority No. 3	689	9,038	17,236	20,253	16,101	22,055	25,415
Priority No. 4	0	970	2,540	2,440	2,040	13,390	12,790
TOTAL	61,553[b]	99,400	137,856	164,763	156,358	215,020[b]	287,385[b]
Corrective Activities							
Priority No. 1	18,430	13,124	0	0	0	0	0
Priority No. 2	4,418	9,588	22,798	23,143	23,142	14,242	8,743
Priority No. 3	0	150	0	0	0	0	5,000
Priority No. 4	0	4,880	2,170	1,970	0	0	0
TOTAL	22,848	27,742	24,968	25,113	23,142	14,242	13,743
TOTAL COST	325,523	490,867	658,727	744,137	802,145	938,351	960,291

[a]This differs from the total in the DOE-HQ five-year plan task force data system. The difference was due to a last minute change from a DOE-HQ (DP) program request based on the discovery that between RL and Idaho field offices, West Valley support by PNL was not completely covered.

These differences from the totals in the DOE-HQ e year plan task force data system are from cha
mad n July 1989 based on direction from the DOE-HQ ram offices (NE & DP). Apparently these change
were not picked up in the five-year plan task force data system.

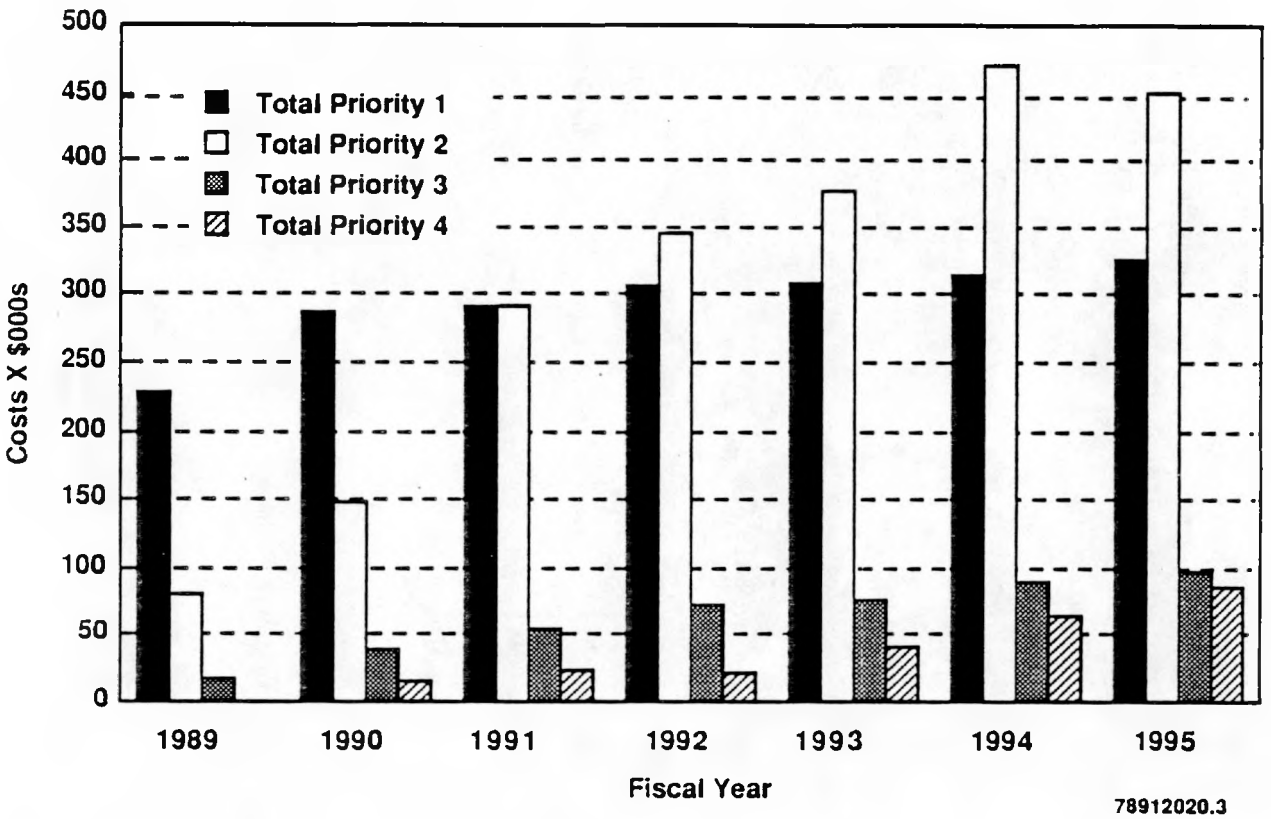


Figure 1-3. Costs by Priority for All Activities.

Table 1-3. Richland Operations Office Funding Summary for Fiscal Year 1990 (Initial Approved Funding Plan for Defense Waste and Environmental Restoration Programs). (sheet 1 of 6)

	FY 1990 1/2/	FY 1991 1/
OPERATING EXPENSES		
CORRECTIVE ACTIONS		
GF-71-01-86 DEFENSE WASTE	3452	9133
GF-71-03-86 NUCLEAR MATERIALS PRODUCTION	4670	5566
TOTAL CORRECTIVE ACTIONS	8122	14699
ENVIRONMENTAL RESTORATION (INACTIVE SITES)		
GF-72-89 RCRA		
ASSESSMENT	0	701
CLEANUP	4737	8556
GF-72-91 RCRA/CERCLA		
ASSESSMENT	59080	87513
CLEANUP	2407	4320
GF-72 DECONTAMINATION AND DECOMMISSIONING a/	4594	0
GF-72 HAZARDOUS WASTE AND COMPLIANCE TECHNOLOGY b/	4263	0
SUBTOTAL REMEDIAL ACTIONS	75081	101090
GF-72-93 DECONTAMINATION AND DECOMMISSIONING	11101	20223
GF-72-93 HAZARDOUS WASTE AND COMPLIANCE TECHNOLOGY	316	9928
TOTAL ENVIRONMENTAL RESTORATION	86498	131241

a/ NMP D&D FUNDS INCLUDED IN REMEDIAL ACTIONS PROGRAM TOTAL. TO BE MOVED TO GF-72-92 B&R IN FY 1990 AFP.

b/ HAZARDOUS WASTE FUNDS INCLUDED IN REMEDIAL ACTIONS PROGRAM TOTAL. FUNDING SHIFTED UNDER NEWLY FORMED OFFICE OF TECHNOLOGY DEVELOPMENT. TO BE MOVED TO GF-72-93 B&R . IN FY 1990 AFP.

Table 1-3. Richland Operations Office Funding Summary for Fiscal Year 1990 (Initial Approved Funding Plan for Defense Waste and Environmental Restoration Programs). (sheet 2 of 6)

	FY 1990 1/2/	FY 1991 1/
WASTE MANAGEMENT		
DEFENSE WASTE		
GF-73-01-01 CONTINUITY OF OPERATIONS	17453	70000
GF-73-01-51 WASTE RESEARCH AND DEVELOPMENT	16163	21982
GF-73-01-81 CHANGES IN INVENTORIES	-850	1700
GF-73-01-84 HANFORD WASTE VITRIFICATION PLANT	15599	25000
GF-73-01-96 TREATMENT	66500	42045
GF-73-01-97 STORAGE	38000	49100
GF-73-01-98 DISPOSAL	35300	51900
SUBTOTAL DEFENSE WASTE	188165	261727
MATERIALS PRODUCTION		
GF-73-03-01 CONTINUITY OF OPERATIONS	28244	30872
TOTAL WASTE MANAGEMENT	216409	292599
TOTAL OPERATING EXPENSES	311029	438539

Table 1-3. Richland Operations Office Funding Summary for Fiscal Year 1990 (Initial Approved Funding Plan for Defense Waste and Environmental Restoration Programs). (sheet 3 of 6)

	FY 1990 1/2/	FY 1991 1/
CAPITAL EQUIPMENT		
CORRECTIVE ACTIONS		
35-GF-71-01 DEFENSE WASTE	239	250
WASTE MANAGEMENT		
DEFENSE WASTE		
35-GF-73-01-A CONTINUITY OF OPERATIONS	1576	8701
35-GF-73-01-D TREATMENT	400	2000
35-GF-73-01-E STORAGE	2300	6900
35-GF-73-01-F DISPOSAL	1900	2000
35-GF-73-01-I HANFORD WASTE VITRIFICATION PLANT	0	3305
SUBTOTAL WASTE MANAGEMENT	6176	22906
NUCLEAR MATERIALS PRODUCTION		
35-GF-73-03-A CONTINUITY OF OPERATIONS	909	1880
TOTAL WASTE MANAGEMENT	7085	24786
TOTAL CAPITAL EQUIPMENT	7324	25036

Table 1-3. Richland Operations Office Funding Summary for Fiscal Year 1990 (Initial Approved Funding Plan for Defense Waste and Environmental Restoration Programs). (sheet 4 of 6)

	FY 1990 1/2/	FY 1991 1/
CONSTRUCTION		
CORRECTIVE ACTIONS		
GENERAL PLANT PROJECTS	1306	649
89-D-172 HANFORD ENVIRONMENTAL COMPLIANCE	7943	6800
TOTAL CORRECTIVE ACTIONS	9249	7449
WASTE MANAGEMENT		
GENERAL PLANT PROJECTS	6410	10798
91-D-171 WASTE RECEIVING & PROCESSING FACILITY	0	2700
90-D-171 LABORATORY VENTILATION & ELECTRICAL	1053	4100
90-D-172 WASTE TRANSFER LINES	1244	4000
90-D-173 B PLANT CANYON CRANE REPLACEMENT	1436	4300
90-D-174 DECONTAMINATION LAUNDRY FACILITY	2680	9900
90-D-175 LANDLORD SAFETY COMPLIANCE	440	2640
89-D-172 HANFORD ENVIRONMENTAL COMPLIANCE	18470	35660
89-D-173 TANK FARM VENTILATION UPGRADE	14738	3400
88-D-173 HANFORD WASTE VITRIFICATION PLANT	27849	75500
87-D-173 242-A EVAPORATOR/CRYSTALLIZER UPGRADE	670	0
TOTAL WASTE MANAGEMENT	74990	152998
TOTAL CONSTRUCTION	84239	160447
TOTAL DEFENSE WASTE AND ENVIR RESTORATION a/	402592	624022

a/ EXCLUDES RICHLAND LANDLORD AND TRANSPORTATION MANAGEMENT ACTIVITIES CONSISTENT WITH FY 1991 FIVE-YEAR PLAN.

Table 1-3. Richland Operations Office Funding Summary for Fiscal Year 1990 (Initial Approved Funding Plan for Defense Waste and Environmental Restoration Programs). (sheet 5 of 6)

	FY 1990 1/2/	FY 1991 1/
NUCLEAR ENERGY RESEARCH AND DEVELOPMENT		
OPERATING EXPENSES		
CORRECTIVE ACTIONS		
AF-71-80 FACILITIES	178	400
WASTE MANAGEMENT		
AF-73-65 SPACE REACTOR POWER SYSTEMS	43	75
AF-73-80 FACILITIES	1131	1834
TOTAL OPERATING EXPENSES	1352	2309
CONSTRUCTION		
WASTE MANAGEMENT		
39-AF-73 FACILITIES	474	830
TOTAL NUCLEAR ENERGY R&D	1826	3139
REMEDIAL ACTION AND WASTE TECHNOLOGY		
OPERATING EXPENSES		
AH-10-30 WEST VALLEY	1575	1050
AH-10-40 LOW LEVEL WASTE	125	325
AH-10-50-02 BYPRODUCTS	75	0
TOTAL REMEDIAL ACTION	1775	1375

Table 1-3. Richland Operations Office Funding Summary for Fiscal Year 1990 (Initial Approved Funding Plan for Defense Waste and Environmental Restoration Programs). (sheet 6 of 6)

MULTIPROGRAM ENERGY LABORATORIES - FACILITIES SUPPORT		
OPERATING EXPENSES		
KG-73-01 CONTINUITY OF OPERATIONS	284	390
CONSTRUCTION		
39-KG-73-O1 CONTINUITY OF OPERATIONS	2083	2000
39-KG-73-96 TREATMENT	0	970
TOTAL CONSTRUCTION	2083	2970
TOTAL MULTIPROGRAM ENERGY LABS	2367	3360
GRAND TOTAL RICHLAND OPERATIONS OFFICE	406785	630521

1/ FUNDING TOTALS CONSISTENT WITH DECEMBER 6, 1989, MEMO FROM R. P. WHITFIELD, EM-40.
2/ FY 1990 GRH REDUCTIONS: 4.3% DEFENSE PROGRAMS; 5.3% NON-DEFENSE PROGRAMS.

TOTAL DEFENSE WASTE AND ENVIRONMENTAL RESTORATION	402592	624022
ADDITIONS:		
TRANSPORTATION MANAGEMENT - OE	1855	2985
TRANSPORTATION MANAGEMENT - CE	0	105
LANDLORD - OE	3889	9762
LANDLORD - CE	9599	11100
LANDLORD - GPP	3320	8572
LANDLORD - 90-D-175 SAFETY COMPLIANCE	3579	8230
LANDLORD - 91-D-175 300 AREA ELEC. DIST.	0	900
	424834	665676

1.9 PLANNING PROCESS

The ADSs will be prepared and reviewed in accordance with the schedule outlined in the DOE-HQ Five-Year Plan (DOE-HQ 1989b). The preparation of this information will coincide with the annual budget preparation process. The DOE-RL site-specific plan will be updated annually to reflect changes that are developed during the ADS completion process.

The DOE-HQ Five-Year Plan will be updated annually, in accordance with the schedule outlined in Figure 1-4. The annual updates will be prepared with field office input in the form of ADSs.

The ADSs are the backbone of the site-specific and headquarters plans. These sheets are two-page reports on activities that are planned in the categories of waste management operations, environmental restoration, and corrective activities. Included in these sheets is information on budget and requirements for the activity, the category, the priority, milestones, and a brief narrative description. These sheets for the DOE-RL were issued as a document in August 1989 (DOE-RL 1989c). An example ADS is shown in Figure 1-5.

Federal and state regulators and affected Indian nation representatives will be involved in the review of the site-specific plan and ADSs each year. The schedule for their review of the draft plan will be during the spring of each year. The draft plan will also be available for public review and comment for approximately 90 days after issuance. Comments will be incorporated into the next scheduled update.

1.10 PLAN ORGANIZATION

The remainder of this plan is divided into nine major chapters. Chapters 2.0 through 4.0 present DOE-RL activities in the categories of waste management operations, environmental restoration, and corrective activities. Funding details and schedules are located in these chapters. Chapter 5.0 provides an overview of the applicability of quality assurance on these activities. Chapter 6.0 lists those activities that are intentionally not within the scope of the plan. Chapter 7.0 discusses the Tri-Party Agreement (Ecology et al. 1989b). Chapter 8.0 lists applicable requirements, statutes, and DOE orders, and summarizes Indian nation treaty rights. Chapter 9.0 is an overview of the NEPA activities. Chapter 10.0 lists required routine reports submitted to regulatory agencies and DOE-HQ and presents the status of records management activities.

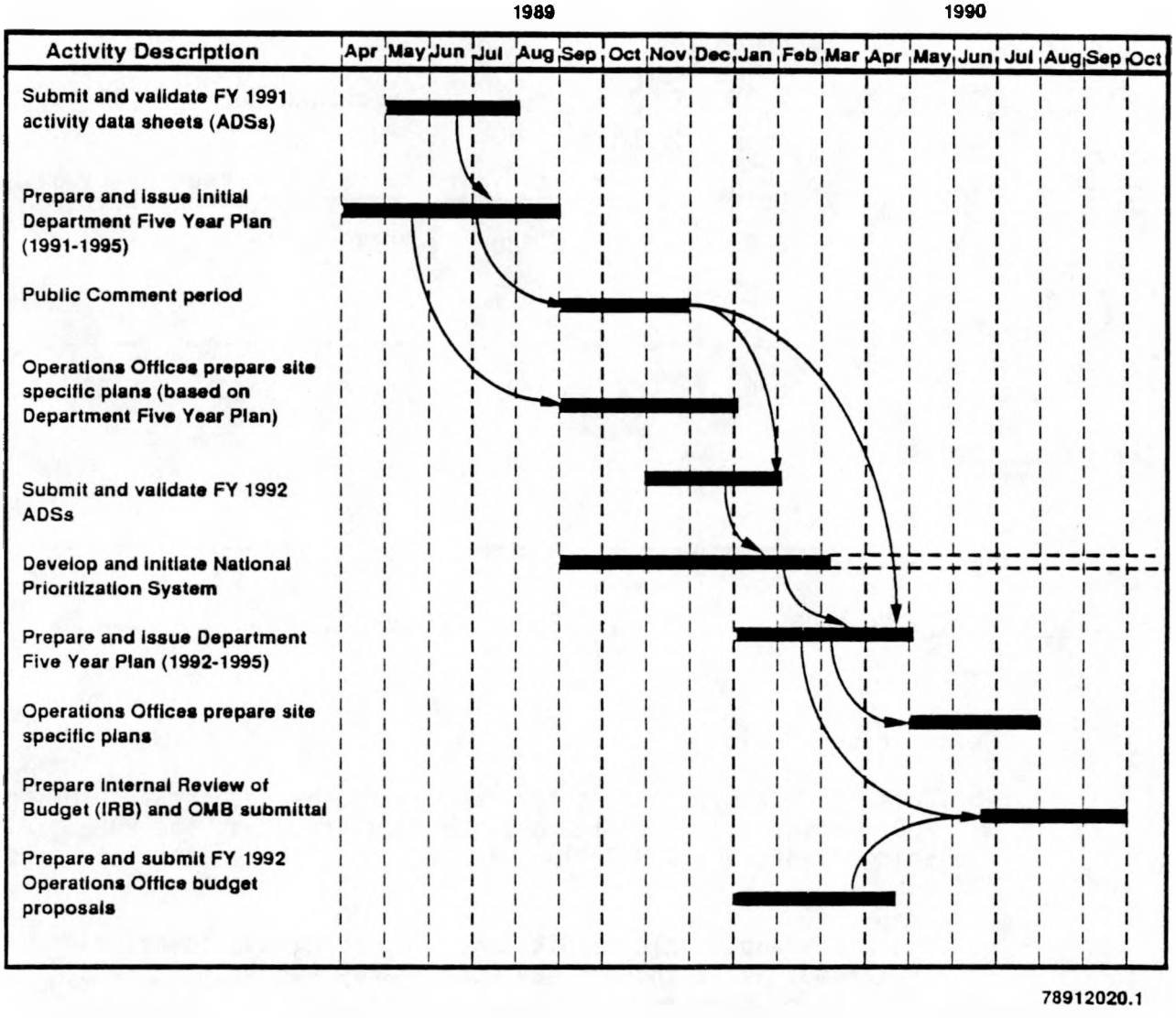


Figure 1-4. Schedule for Preparation of Future Activity Data Sheets and Site-Specific Plans.

ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT FIVE-YEAR PLAN
ACTIVITY DATA SHEET

Operations Office: RL — ID NUMBER: RL-0011-01/05-31
Installation: Hanford
Facility/Waste Area Grouping: Continuity of Operations — CATEGORY: WM
Program B&R Code: GF-73-03-01 — PRIORITY: 3
Activity Title: Chemical Processing
Continuity of Operations

FUNDING SUMMARY: Budget Authority ($000's)

	FY 1989 Approp.	FY 1990 Amended Presid. Budget	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
Operating	2490	3939	4181	4181	4181	4181	4181
Capital	600	950	1880	1535	1234	1174	1174
Plant:							
GPP							
Line-item							
Total	3090	4889	6061	5716	5415	5355	5355
RD&D (non-add)							
Operating							
Capital							
Plant							
Total							

KEY WORDS: Waste Minimization, DOE Orders, RCRA/CERCLA, CAA, CWA

NARRATIVE:

o Description -

Includes the activities directly related to the technical compliance with DOE orders and Federal and State regulations at the PUREX, Plutonium Finishing Plant, UO_3 and T Plant facilities. These activities are as follows:

- o Identify applicable regulations and coordinate to assure hazardous waste and effluent compliance requirements and discharge standards are met.
- o Support preparation of facility procedures, specifications, documentation, and response plans consistent with RCRA/CERCLA requirements.
- o Develop criteria for effluent discharge activities to assure regulatory compliance.

Figure 1-5. Example Activity Data Sheet. (sheet 1 of 2)

ENVIRONMENTAL RESTORATION AND WASTE MANAGEMENT FIVE-YEAR PLAN
ACTIVITY DATA SHEET

ID NUMBER: RL-0011-01/05-31

NARRATIVE: (Con't)

- Replace or upgrade facility environmental monitoring equipment to remain within compliance.
- Operations, engineering, and laboratory support for waste minimization applications (i.e., efforts to reduce the volume of wastes requiring treatment; efforts to reduce the volume of solid wastes significantly reducing special handling and retrievable storage requirements (TRU) and the volume of low-level, mixed, and hazardous wastes).

- Basis for Cost Estimate - Estimates are based on current working projections, considered to be budget quality consistent with the FY 1991 budget submittal, and built from historical data extrapolated to consider escalation through FY 1991 and any known scope adjustments. Definitive equipment replacements/ upgrades have not been identified for FY 1992-1995; estimates are extrapolated based on prior year requirement levels.
- Milestones - Items include operations, laboratory, and engineering manpower. Additional resources cover the replacement or upgrades of environmental monitoring equipment (CENRTC).
- Alternatives: None

Level of Confidence: High (operating)

Prepared by: J C Fulton

Approved by: J R Fitzmaurice

Figure 1-5. Example Activity Data Sheet. (sheet 2 of 2)

2.0 WASTE MANAGEMENT OPERATIONS

2.1 INTRODUCTION

2.1.1 Requirements

The DOE-RL is committed to achieving compliance with laws, regulations, and agreements to protect human health and the environment in the management of waste at the Hanford Site. The primary DOE orders governing waste management are as follows:

DOE Order 5820.2A, *Radioactive Waste Management*
DOE Order 5400.1, *General Environmental Protection Program*
DOE Order 5400.3, *Hazardous and Radioactive Mixed Waste Program.*

Compliance with these DOE orders ensures the protection of the health and safety of the public, DOE and Hanford Site contractor employees, and the environment. These DOE orders require the reduction of waste generation and compliance with all applicable federal, state, and local environmental, safety, and health laws and regulations.

The DOE-RL is committed to meeting the milestones set forth in the Tri-Party Agreement (Ecology et al. 1989b). The Tri-Party Agreement is described in Chapter 7.0. The Tri-Party Agreement milestones are included throughout the description of waste management activities below.

2.1.2 Strategy/Overview

The waste management goals of the DOE-RL are to minimize the generation of waste and to maintain safe and environmentally sound storage, treatment, and disposal of: (1) radioactive waste, (2) hazardous waste, and (3) radioactive waste containing hazardous components (mixed waste). Strategies to achieve these goals have been developed for the following waste types:

- Double-shell (DST) tank waste
- Solid transuranic (TRU) waste
- Cesium and strontium capsules
- Single-shell tank (SST) waste
- Transuranic solid wastes buried before 1970
- Transuranic-contaminated soil sites
- Solid low-level waste (LLW)
- Mixed waste

- Hazardous waste
- Contaminated liquid effluents.

The strategy to handle the first six types of waste is described in the HDW-EIS (DOE-HQ 1987b). The HDW-EIS record of decision issued in April 1988 set forth the following strategies.

- Disposal in a geologic repository:

  -DST waste
  -TRU solid waste
  -Cesium/strontium capsules.

- Continue disposal technology development and evaluation before making disposal decision:

  -SST waste
  -TRU-contaminated soil sites
  -Pre-1970 buried, suspect TRU-contaminated solid waste.

The strategy to dispose of DST waste is to separate the waste into three fractions, high-level waste (HLW), TRU, and LLW. The HLW and TRU waste will be processed into a solid, vitrified material similar to glass and disposed of in a geologic repository. The LLW will be mixed with a cement-like material and allowed to harden in near-surface concrete vaults.

The strategy to dispose of solid TRU waste retrievably stored since 1970 is to sort and package the waste in the proposed Waste Receiving and Processing Facility for shipment to the Waste Isolation Pilot Plant (WIPP) in New Mexico.

Newly generated 55-gal drums of TRU waste are labeled TRU or TRU-mixed waste, certified for acceptance by the WIPP and stored for eventual shipment to WIPP.

Cesium and strontium capsules will continue to be stored for eventual disposal in a geologic repository.

The strategy to dispose of SST waste, TRU solid wastes buried before 1970, and TRU-contaminated soil sites is to defer disposal decisions until disposal technology is developed and evaluated. This activity will be performed in concert with other site environmental remediation activities.

The strategy to store and dispose of solid LLW is to continue to use onsite near-surface trenches. Performance assessments have been initiated to demonstrate compliance with the performance objectives of DOE Order 5820.2A.

The strategy for contact-handled LLW-mixed waste is to store it in RCRA-approved buildings for eventual treatment in the Waste Receiving and

Processing Facility or for disposal in RCRA-approved, double-lined, near-surface trenches.

Remote-handled mixed waste is stored in a similar manner as solid LLW. Trenches that comply with RCRA regulations will be used for final disposal. Exact methods are dependent on performance assessments and completion of the NEPA process started by the HDW-EIS (DOE-HQ 1987b).

Nonradioactive hazardous waste will continue to be shipped offsite for treatment and disposal until treatment and disposal processes are developed at the Hanford Site.

The strategy to dispose of contaminated liquid effluent presently discharged to the soil column is to apply the best available technology for treatment and disposal. Plans and schedules have been prepared to discontinue the disposal of contaminated liquids into the soil column at the Hanford Site.

Wastes will continue to be stored in a manner that protect human health and the environment. Storage will continue until treatment and disposal processes are implemented.

An overview of the present inventory and projected receipts is provided as follows:

Types of wastes	Present inventory in cubic meters	Projected receipts in cubic meters
Double-shell tank wastes	78,000	20,000
Single-shell tank wastes	139,000(1)	None
Encapsulated cesium and strontium	4	None
Solid transuranic wastes	10,000	5,300
Solid low-level waste	552,000(2)	350,000
Radioactive hazardous wastes	1,800	10,000
Hazardous wastes	None(3)	Not projected
Contaminated liquid effluents	N/A(4)	N/A

(1) The 26,800 m^3 of interstitial liquor is contained within the pores of the salt cake and sludge.

(2) Considered to be disposed of.

(3) Temporary storage pending offsite treatment/disposal.

(4) The 33 streams will be cleaned up, 19 streams by FY 1995.

2.2 DESCRIPTION OF WASTE MANAGEMENT OPERATIONS

Waste Management consists of the safe and effective management of active and standby facilities and the storage, treatment and disposal of radioactive, hazardous, and mixed waste. The major missions are waste minimization,

DST waste, SST waste, capsules, solid wastes, and elimination of liquid radioactive effluent discharge to the soil column.

2.2.1 Waste Minimization

2.2.1.1 Strategy. At the Hanford Site, the waste minimization and pollution prevention awareness programs are being integrated into a single, coordinated initiative.

Each of the four Hanford Site contractors (Westinghouse Hanford, PNL, Kaiser Engineers Hanford, and Hanford Environmental Health Foundation) are responsible for establishing and implementing their respective waste minimization and pollution prevention awareness programs, training, and procurement programs as appropriate to their missions and needs. Plant or building managers have primary responsibility for operating their facilities in a safe, environmentally sound manner. Each first line manager involved in generating waste is responsible for developing and implementing plans for minimizing waste and encouraging pollution prevention awareness.

2.2.1.2 Implementation. Formal waste minimization programs have been in existence at the Hanford Site for roughly three years. The emphasis recently has been collecting information on waste minimization accomplishments for regulatory reports and increasing the awareness of employees of the benefits of waste minimization. In the fall of 1988, emphasis toward stronger, more structured programs began. By early 1989, waste minimization task forces at the two largest contractors, Westinghouse Hanford and PNL had been assembled.

The four Hanford Site contractors' waste minimization and pollution prevention awareness programs incorporate a waste minimization 'philosophy' at every level of work. Top management support, characterization of waste generation, development of a cost allocation system, technology transfer, and program evaluation are key elements applicable to the four separate contractors in their operation of the Hanford Site.

- Top Management Support
  - Waste minimization coordinators have been identified at each facility.
  - Facility-specific waste minimization plans are being formulated by the waste generators. Specific goals for reducing the volume or toxicity of waste streams will be identified.
  - Plans are being formulated to provide independent assessments/ evaluations of the facility-specific programs and to implement forthcoming recommendations.
  - Several relevant employee training programs have been revised to include pollution prevention/waste minimization concepts.

- Waste minimization/pollution prevention is being considered for incorporation into Hanford Site contractors' incentive programs.

- Applicable slogans have been posted and publications have included appropriate feature articles about the waste minimization effort.

- Waste minimization success stories have been communicated with other DOE contractors.

- An environmental awareness program has been developed for the Hanford Site's primary contractor to educate and involve employees.

- Characterization of Waste Generation/Cost Allocation System

  - Efforts to better track and report the source and destination of wastes have been initiated.

  - An integrated system is in place for tracking hazardous materials inventory.

  - Plans are being formulated for better control and tracking of procured materials.

  - Plans are being formulated for determining the true costs of waste.

  - Plans are being formulated for changing the current cost allocation system so that departments and managers are charged the fully-loaded waste management costs.

- Encourage Technology Transfer

  - Technical information is being exchanged through company publications, workshops, and meetings within and among the four contractors and other DOE contractors. Plans to further encourage the transfer of technical information from outside sources are being formulated.

- Program Evaluation

  - The Hanford Sites' waste minimization/pollution prevention program will be reviewed for effectiveness on an annual basis and the program plan will be updated every three years.

2.2.1.3 Waste Minimization in Hanford Programs. The development of waste minimization plans and the implementation of waste minimization training are included in the FY 1990 budgets of the following Hanford Site programs:

- Chemical Processing (waste minimization at the Plutonium Uranium Extraction Plant [PUREX], Plutonium Finishing Plant, Uranium Oxide [UO_3] Plant, and T Plant) (ADS RL-0011)
- Double-Shell Tank Waste Storage Facilities (ADS RL-0019)
- Tank Core Sampling Operations (ADS RL-0022)
- The 242-A Evaporator Facilities (ADS RL-0056)
- Advanced Reactor Division Operations (ADS RL-0076)
- Pacific Northwest Laboratory Research Facilities (ADS RL-0138 and RL-0139)
- Defense Reactor Division Facilities (ADS RL-0172)
- Chemical Processing Facilities (ADS RL-0173)
- Nuclear Energy Research, Advanced Nuclear Systems (ADS RL-0174)
- Nuclear Energy Research, Defense Power Systems (ADS RL-0175)
- Defense Waste Operations (ADS RL-0176).

2.2.1.4 New Facilities (Projects) to Eliminate Waste Streams. There are several new projects to treat waste streams and reduce the amount of waste generated, which are also described in Section 2.2.6. They are included in this section to highlight their contribution to the reduction of waste generation.

- Treated Effluent Disposal Facility and Secondary Waste Disposal Facility (ADS RL-0001)
- Hanford Site Laundry System (ADS RL-0028)
- Hanford Environmental Compliance Projects to minimize discharges to soil (ADS RL-0086)
- T Plant Project to reduce liquid discharge (ADS RL-0103)
- Plutonium Finishing Plant Project to evaporate and solidify waste (ADS RL-320)
- Plutonium Finishing Plant Project to reduce LLW by incineration (ADS RL-321)

- Pacific Northwest Laboratory Project to build a new facility to detoxify hazardous waste (ADS RL-0137)

- Pacific Northwest Laboratory Project to build a waste minimization demonstration process (ADS RL-0325).

2.2.1.5 Development of Waste Minimization Technology. There are four programs that focus on the development of waste minimization technology:

- Develop technology to minimize the generation of TRU waste (ADS RL-0004)

- Develop technology to minimize the waste generated during PUREX and Plutonium Finishing Plant deactivation (ADS RL-0046)

- Develop Catalyzed Electrochemical Plutonium Oxide Dissolution to eliminate waste generated from current dissolution methods (ADS RL-0179)

- Complete the 242-A Evaporator process condensate treatability studies (ADS RL-0338).

2.2.2 Double-Shell Tank Waste

2.2.2.1 Storage. A cut-away sketch of a DST is illustrated in Figure 2-1. Twenty-eight tanks are in service with a total capacity of 118,400 m^3. There are 78,000 m^3 of DST waste that have accumulated as of 12/31/88 with a total radionuclide content of 111 MCi. More wastes are expected with the primary source coming from continued PUREX operations (ADS RL-0184).

Neutralized current acid waste from PUREX is self-boiling and can be stored in four DSTs that are specially designed to contain self-boiling waste. These four DST are called 'aging waste tanks' and are located in the 200 East Area (two in the AY Tank Farm and two in the AZ Tank Farm). Only the two AZ aging waste tanks currently contain neutralized current acid waste.

A unique feature of aging waste tanks is the incorporation of air-lift circulators to control boiling of the waste due to radiolytic decay. Circulators are necessary to prevent pressure surges, to minimize entrainment of radionuclides in the off-gas caused by uneven boiling and to prevent overheating of tanks from sludge hot spots.

The remaining 24 DSTs are designed to store low-heat waste and are called 'nonaging waste tanks'. The Plutonium Finishing Plant waste is stored in one of three nonaging waste tanks in the SY Tank Farm in the 200 West Area. The other 21 nonaging waste tanks are located in the 200 East Area in the AN, AP and AW Tank Farms.

The complexant concentrate, resulting mostly from former fractionization processes at B Plant, and neutralized cladding removal waste from PUREX are stored in six select tanks within the AN, AP, and AW Tank Farms. The

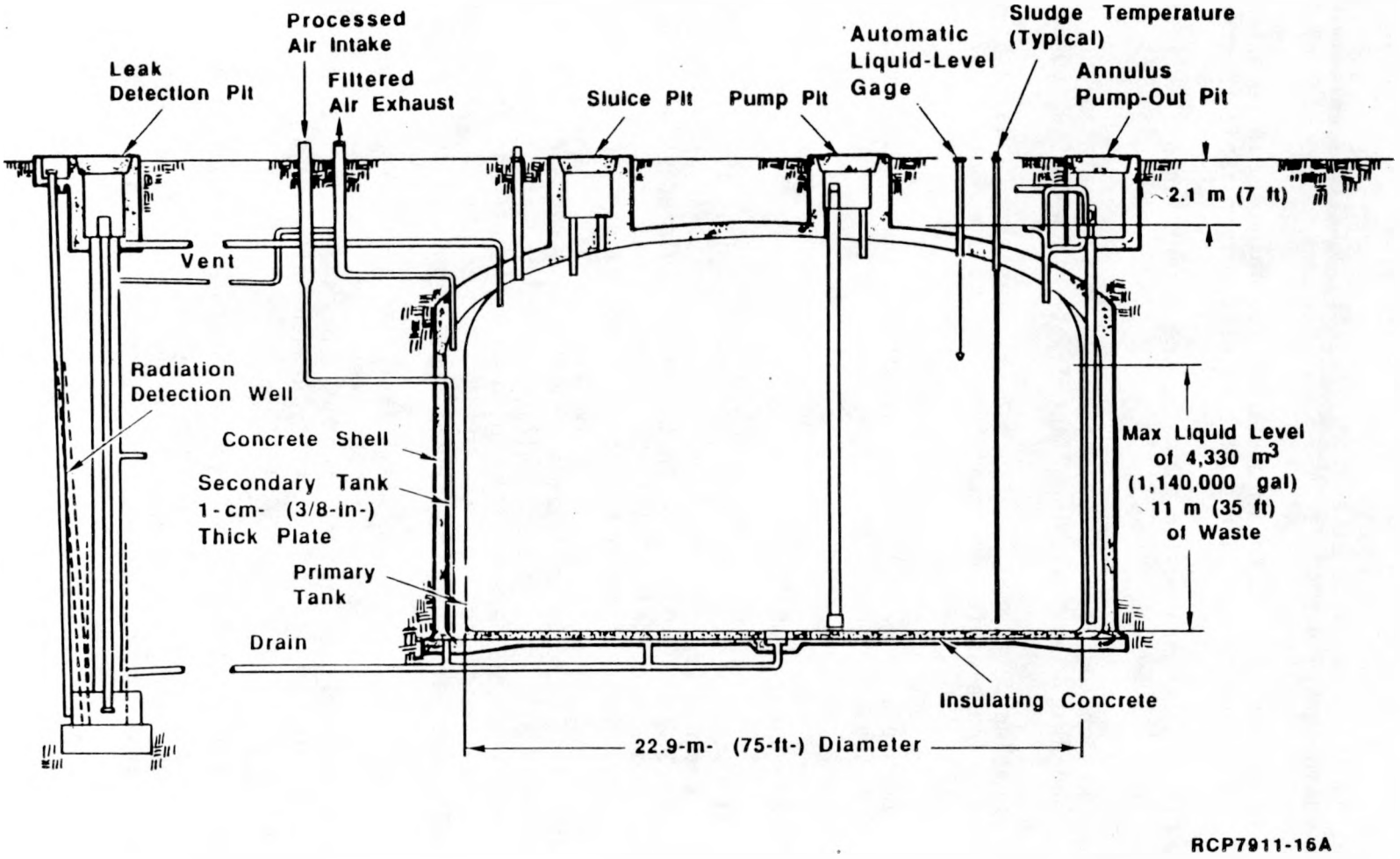


Figure 2-1. Cutaway View of a Double-Shell Tank.

remaining DSTs either store LLW, are used for staging material transfers or are designated as spares.

Several million liters of dilute LLW are received annually from operating facilities throughout the Hanford Site. The streams from the 200 Areas are transferred by underground piping and collected in the DST system. The streams from the 100 and 300 Areas are delivered by railcar to the 204-AR Unloading Facility and transferred to the DST system (ADS RL-0053). These dilute LLW streams are received and concentrated in the 242-A Evaporator/Crystallizer shown in Figure 2-2. The concentrated bottoms product from evaporation of DST supernatants and SST interstitial liquors are referred to as 'double-shell slurry'. The Evaporator/Crystallizer is presently shut down since the process condensate may contain a listed waste which cannot be discharged to the soil column.

Current operations of DSTs focus on the following activities:

- Assuring safe storage
- Surveillance of DSTs to comply with DOE Order 5820.2A requirements
- Evaporating the condensate from neutralized current acid waste, and the decanted supernatant from the Plutonium Finishing Plant, complexant concentrate, neutralized cladding removal waste, and double-shell slurry waste in order to store a concentrated slurry in the least amount of space (ADS RL-0019 and RL-0322).

A major effort is devoted to projecting the volume of liquid waste to be received from Hanford Site sources over the next 20 years and determining if there will be adequate tank space available.

Current waste volume projections forecast a potential tank space shortage in the mid-1990s. This potential space shortage has given increased importance to the maximum operation of the Evaporator/Crystallizer and the Grout Treatment Facility in the next one- to five-year period.

2.2.2.2 Treatment

2.2.2.2.1 Evaporator/Crystallizer Operation (ADS RL-0056). Liquid radioactive and mixed waste currently undergo evaporation in the Evaporator/Crystallizer Facility (Figure 2-2). Approximately 5M to 10M gal of waste volume reduction are achieved on an annual basis.

Waste concentration has saved over 100M gal of waste storage space in DSTs. The Evaporator/Crystallizer facility is the cornerstone of waste management's treatment facilities in that it maximizes the use of available DST space and minimizes the need to construct additional DSTs.

The Evaporator/Crystallizer is undergoing a $15 million capital life extension upgrade to ensure liquid waste treatment capabilities (by concentration) for an additional 10 years. In addition, a 12.5M gal interim storage process condensate basin will be constructed in FY 1990 (ADS RL-0338).

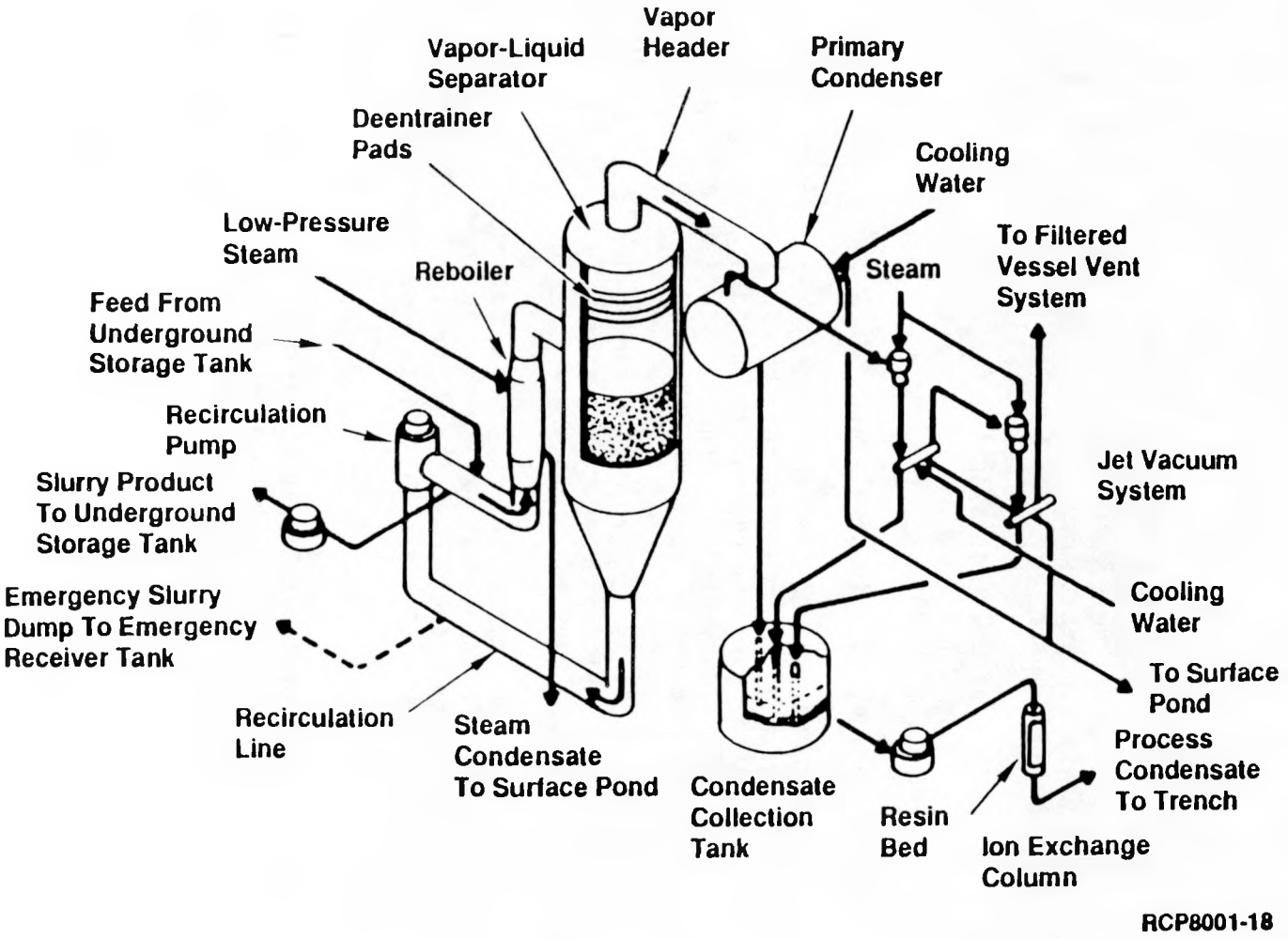


Figure 2-2. The 242-A Evaporator/Crystallizer Simplified Schematic.

Plans are being made to install a process condensate treatment process in FY 1992.

2.2.2.2.2 Grout Treatment Facility Operation (ADS RL-0185 and RL-0168). Liquid LLW stored in DSTs is treated in the Grout Treatment Facility prior to disposal in near-surface concrete vaults (Figures 2-3 and 2-4). The Grout Treatment Facility blends low-level liquid with cement, fly ash, blast furnace slag, and designated diluents to make a slurry which is pumped to the near-surface vaults where it solidifies into a solid grout. This process results in a waste form which ensures protection of public health and safety and the environment by chemically and physically immobilizing radionuclides and hazardous chemicals.

The Grout Treatment Facility processes liquid LLW in approximate 1M gal campaigns. A Tri-Party Agreement milestone is to complete 14 grout campaigns through FY 1994.

Meeting the 1994 milestone will recover enough DST space to avoid construction of new DSTs. In keeping with this plan of action, DOE-RL has not requested funding for new DSTs.

A demonstration campaign in the Grout Treatment Facility was initiated in August 1988 and completed in July 1989. In this campaign, a nonhazardous LLW, phosphate/sulfate waste from the decontamination of N Reactor process systems, was grouted and disposed of in near-surface grout vaults. Following the construction of new vaults and preparations for the next campaign in FY 1991, the double-shell slurry, which contains hazardous components, will be grouted. Thereafter, the low-level fractions from AR Vault/B Plant pretreatment will be grouted.

2.2.2.2.3 Pretreatment of Double-Shell Tank Waste in 244-AR Vault and B Plant (ADS RL-0009, RL-0010, RL-0020, RL-0042, RL-0089, RL-0108). Future plans are to pretreat 7M to 8M gal of DST waste to separate it into HLW, TRU,and LLW fractions (Figure 2-5). The low volume HLW and TRU fractions will be stored for future vitrification in the Hanford Waste Vitrification Plant. The high volume LLW fraction will be stored in DSTs for future immobilization in grout at the Grout Treatment Facility.

Four waste streams will be pretreated in the 244-AR Vault and in B Plant. These streams are as follows:

- High-level neutralized current acid waste from the reprocessing of spent fuel at PUREX
- The neutralized cladding removal waste from the fuel decladding process at PUREX
- The complexant concentrate waste resulting from past strontium recovery operations

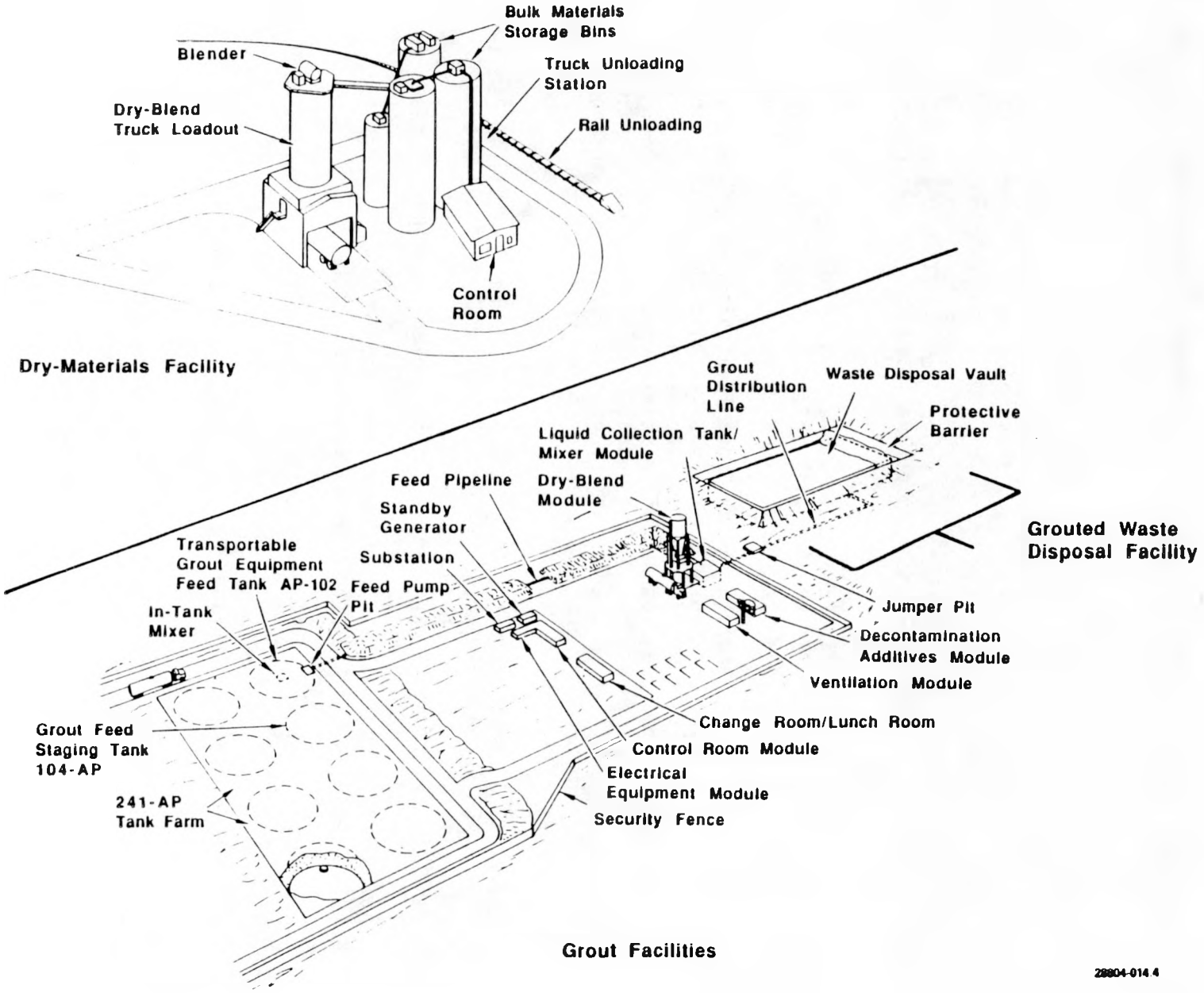


Figure 2-3. Grout Treatment Facility.

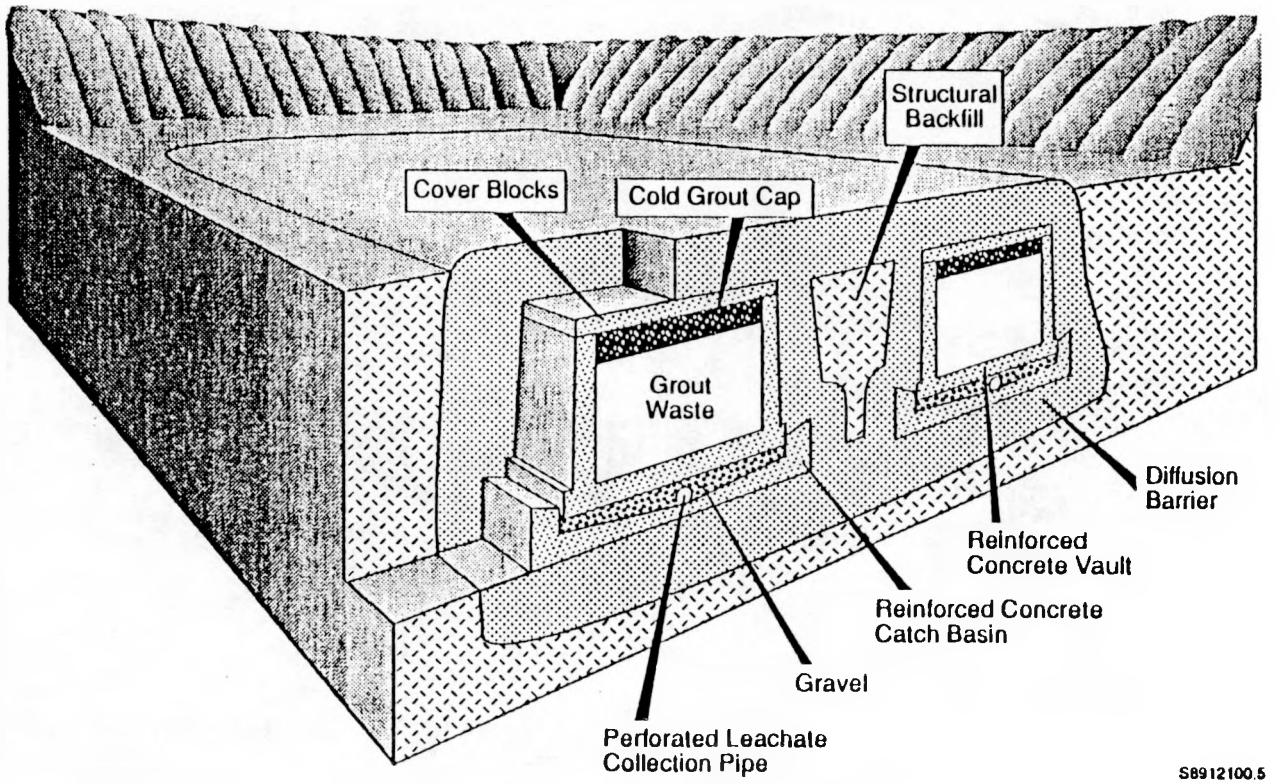


Figure 2-4. Grouted Waste Disposal Vaults.

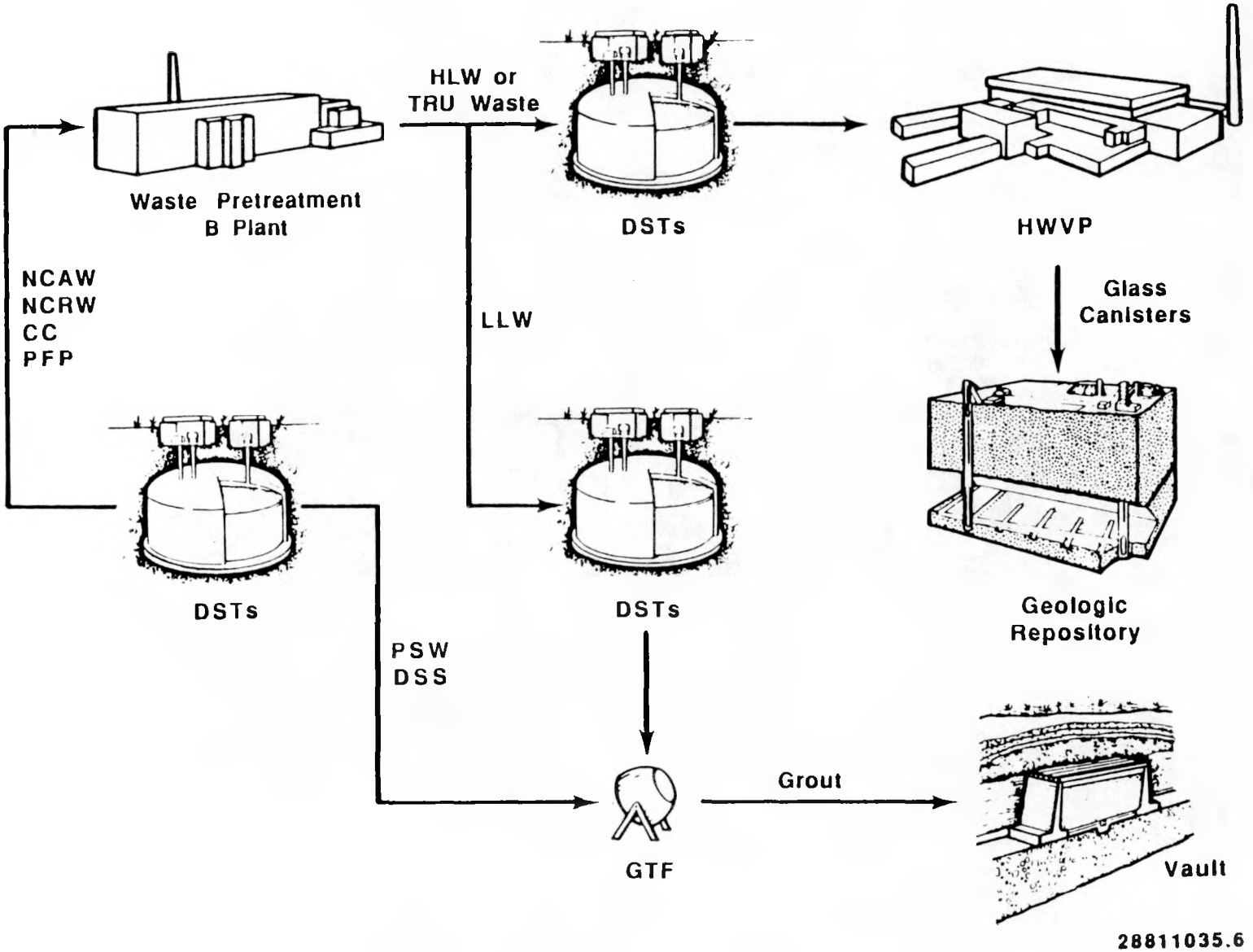


Figure 2-5. Double-Shell Tank Waste Treatment, Storage, and Disposal Flowchart.

- The TRU Plutonium Finishing Plant waste from plutonium reclamation and processing at the Plutonium Finishing Plant.

The potential pretreatment processes include solid-liquid separation and sludge washing, ion-exchange, TRU solvent extraction, selective leaching, and organic destruction. Solid-liquid separation and sludge washing of neutralized current acid waste will be accomplished in the 244-AR Vault. The remaining pretreatment processes will be performed in B Plant. A demonstration of neutralized current acid waste pretreatment in the 244-AR Vault and B Plant is planned to start in October 1993 (a Tri-Party Agreement milestone).

2.2.2.2.4 Treatment of High-Level Waste and Transuranic Fractions from Double-Shell Tank Waste (ADS RL-0014). The HLW and TRU fractions of DST waste will be sent to the Hanford Waste Vitrification Plant and treated by combining them with glass-forming materials in a glass melter, thereby immobilizing the waste in a glass matrix (Figure 2-6). The glass will be packaged in special stainless steel canisters which will be stored onsite until a geologic repository is available to permanently dispose of this waste.

Current Hanford Waste Vitrification Plant design activities are important to meet the Tri-Party Agreement milestone for the initiation of Hanford Waste Vitrification Plant construction (July 1991). Other Tri-Party Agreement milestones are the completion of construction (June 1998) and the initiation of treatment operations (December 1999). Consideration is being given to accelerate the Hanford Waste Vitrification Plant construction schedule by two years. This would allow completion of construction and initiation of operations in June 1996 and December 1997, respectively.

The Hanford Waste Vitrification Plant is designed with a 40-year life which should allow for the vitrification of SST waste if the decision is made to retrieve some or all of this waste.

2.2.2.3 Disposal. A flowchart for DST wastes is shown in Figure 2-5. The Hanford Waste Vitrification Plant will produce a projected 1,060 vitrified glass canisters (0.62 m^3 each) of HLW beginning in the late 1990's for eventual shipment to a HLW repository.

The Hanford Waste Vitrification Plant will also produce a projected 500 vitrified glass canisters (also 0.62 m^3 each) of TRU waste for shipment to the WIPP.

The Grout Treatment Facility has converted phosphate/sulfate waste into grout filling one underground, concrete vault (5,000 m^3) in July 1989. Disposal of double-shell slurry grout will begin during the next campaign schedule for FY 1991.

There is a Tri-Party Agreement milestone to fill 14 vaults with grout by the end of FY 1994. Eventually, a minimum of 44 vaults (5,000 m^3 each) of grouted LLW will be disposed of at the Hanford Site.

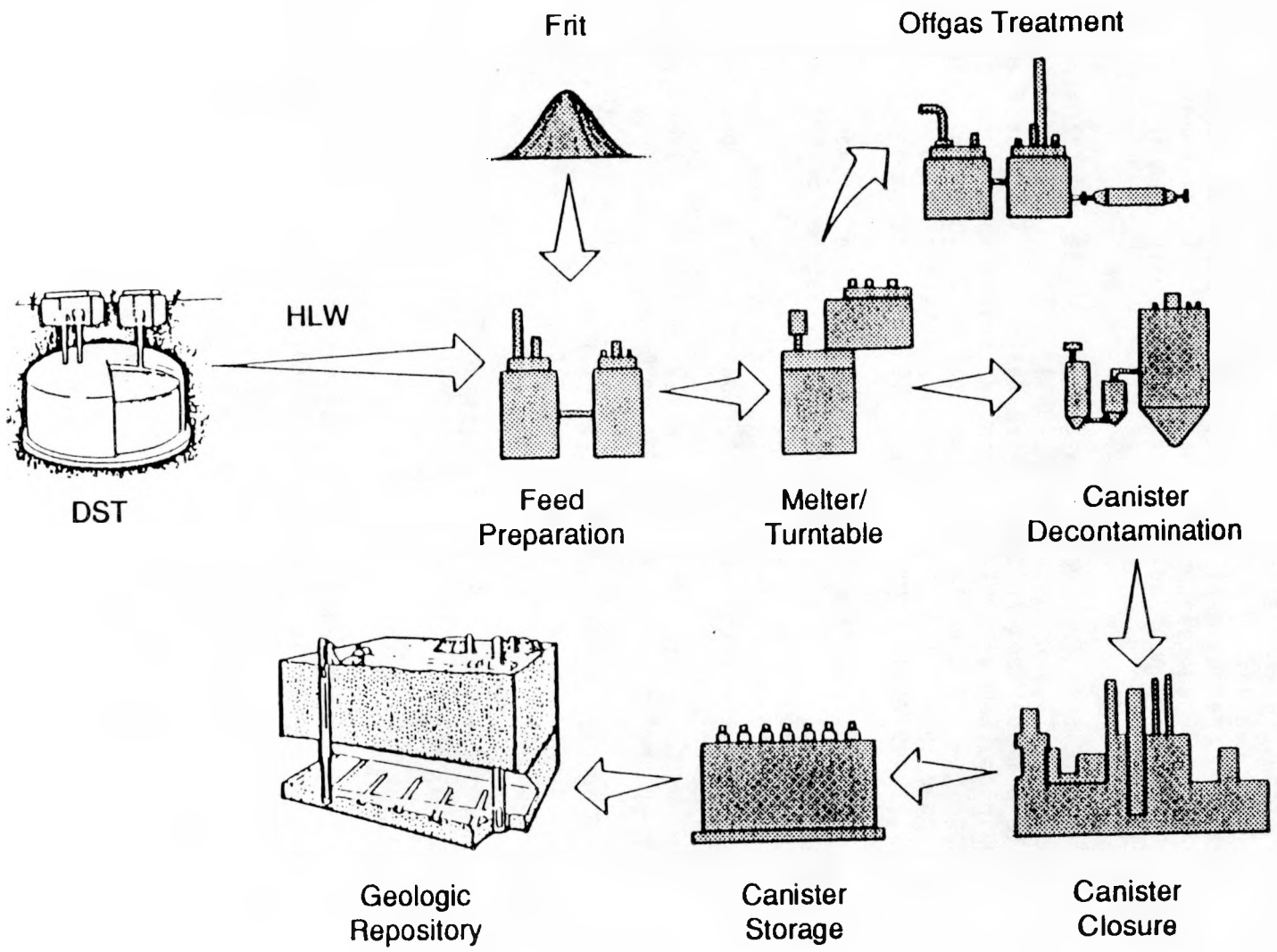


Figure 2-6. Hanford Waste Vitrifi on Plant Process Flowsheet.

2.2.3 Single-Shell Tank Waste

2.2.3.1 Storage. The waste management program is funding the interim storage, surveillance and the interim stabilization and isolation of the SST waste. The Environmental Restoration Remedial Action Program is funding characterization and assessment, and will fund future remedial actions and closure.

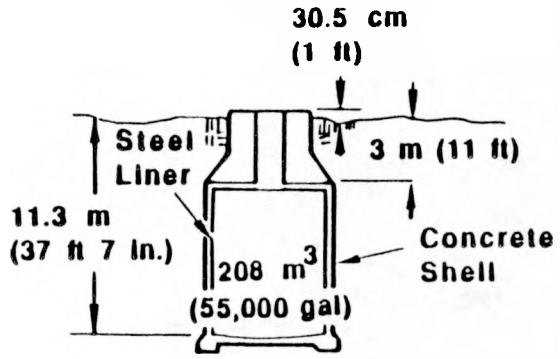
There are approximately 139,000 m^3 of waste (containing 134 MCi of radionuclides as of 12/31/88), consisting of damp salt cake and sludge contained in 149 underground storage tanks. These tanks range in capacity from 210 to 3,800 m^3 (Figure 2-7).

Within the interstices of the salt cake and sludge, there are 26,800 m^3 of interstitial liquor (containing 23 MCi of radionuclides as of 12/31/88). Interstitial liquor removal by salt well pumping is illustrated in Figure 2-8. Removal of pumpable liquid to the DST system is called 'interim stabilization.' Interim stabilization is scheduled to be completed by September 1996 (Tri-Party Agreement milestone).

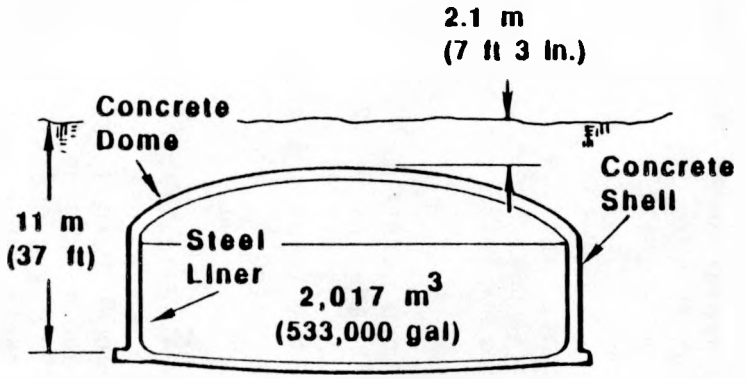
The waste represents an accumulation from 1944, the initiation of operations at the Hanford Site, until 1980 when all transfers of newly-generated waste were directed to DSTs. Former processing included removal of water by pumping supernatant from the tanks for evaporation and returning the concentrated salt solution back to the tanks. The early fuel reprocessing activities did not remove uranium and it was sent to the tanks. During the late 1950s, a major program was undertaken to recover the uranium. Programs implemented in the late 1960s removed the bulk of the radiocesium and radiostrontium for encapsulation.

Surveillance is required to provide identification of failure of containment. Monitoring and leak detection systems are incorporated in the engineered system to serve this purpose. Liquid level monitoring, where a liquid surface exists, is used as the primary means of leak detection. Liquid observation wells have been installed in any tank that contains or has the potential to contain more than 50,000 gal of interstitial liquor. A series of drywells located external to the tanks are routinely monitored to detect any change in gross gamma-ray radiation. Tanks in which high temperatures could occur are equipped with thermocouples for temperature measurements.

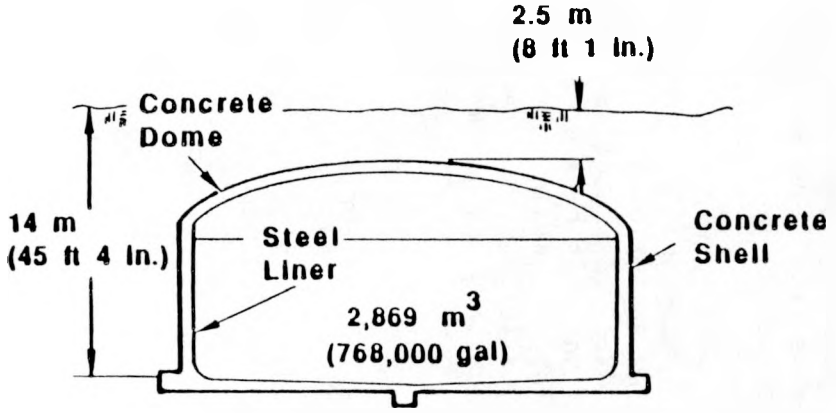
Area radiation monitors are located within the tank farms to provide indication of a gross loss of confinement which would represent an immediate radiation hazard to personnel. Forced ventilation currently provides cooling for 10 tanks containing materials which, through radioactive decay, generate heat that could exceed established concrete temperature limits. Single-stage high-efficiency particulate air filters allow atmospheric breathing for tanks that do not require cooling. Gases generated by radiolytic decomposition disperse in this manner. All engineered systems undergo preventative maintenance, inspection and calibration in accordance with approved procedures.



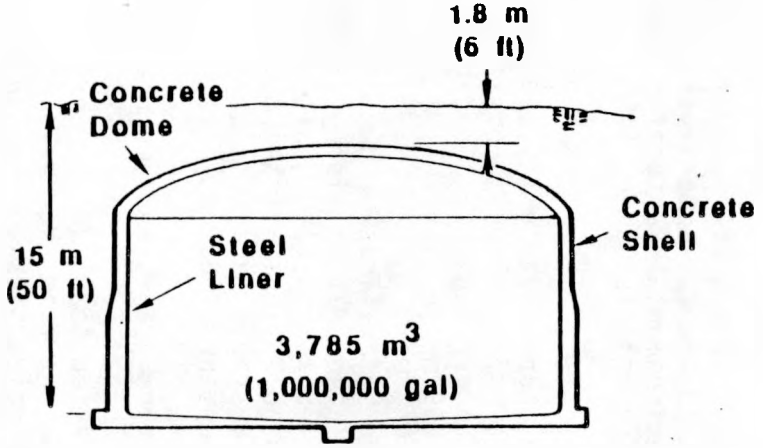
6.1-m- (20-ft-) Diameter Single-Shell Tank
Type I



22.9-m- (75-ft-) Diameter Single-Shell Tank
Type II



22.9-m- (75-ft-) Diameter Single-Shell Tank
Type III



22.9-m- (75-ft-) Diameter Single-Shell Tank
Type IV

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Figure 2-7. Cross-Sectional Views of Hanford Single-Shell Tanks.

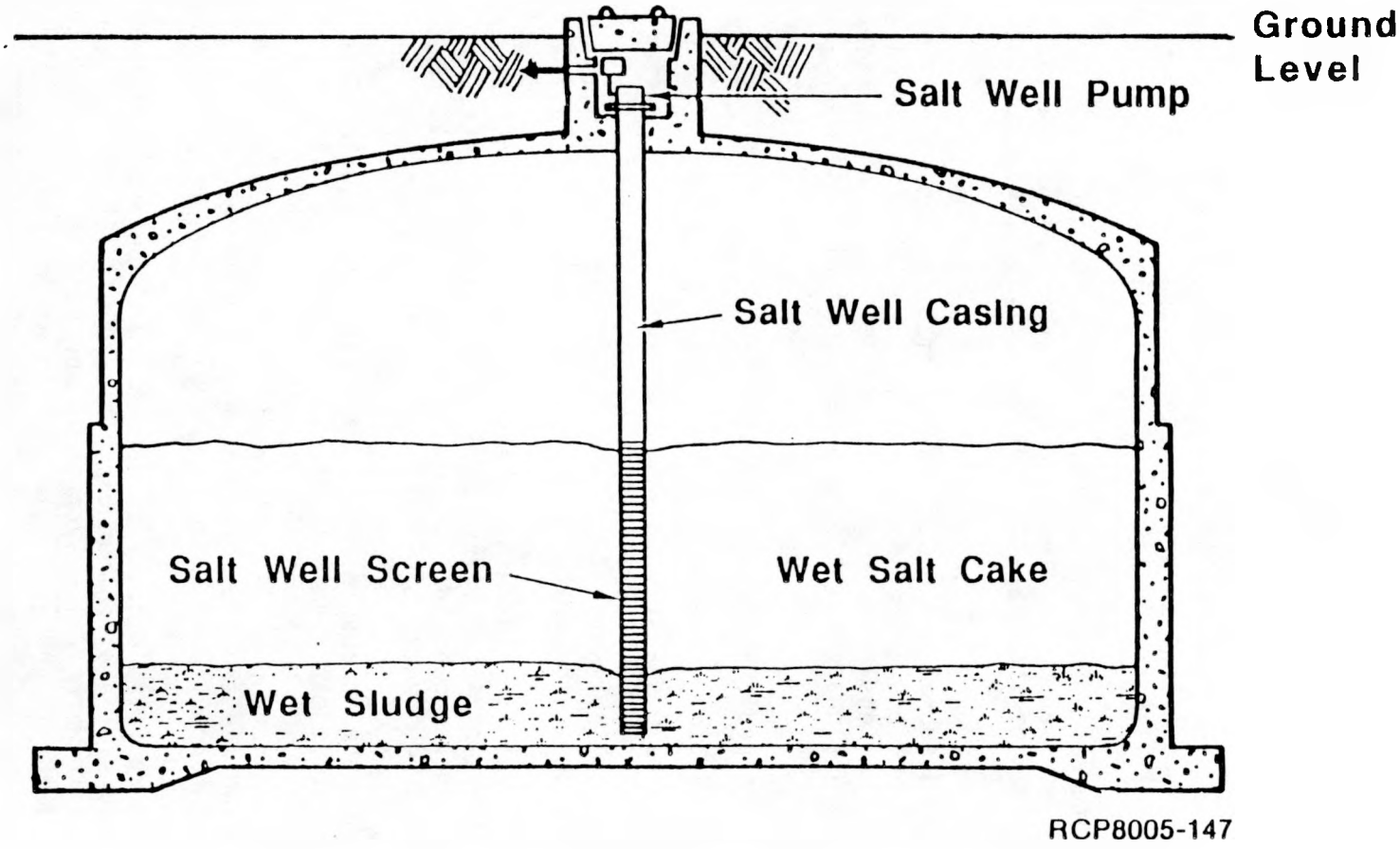


Figure 2-8. Pumping of Solutions from Single-Shell Tanks.

2.2.3.2 Treatment. Future plans include completion of interim stabilization and isolation of all 149 SSTs by September 1996, including those tanks subjected to heat management (ADS RL-0057). This is considered treatment because the process of interim stabilization removes pumpable liquid from within the solids, thus changing the solids/liquid ratio.

The process of interim isolation includes the removal of unnecessary pipelines, the blanking of remaining lines, and the sealing of openings to prevent inadvertent inward leakage of liquid, primarily rain water or snow melt. Only lines required for surveillance are left in place.

Future plans for retrieval of SST waste and treatment are being evaluated. Decisions regarding future treatment of SST wastes are dependent on the results of the characterization activity (see Section 2.2.3.3, 'Disposal').

2.2.3.3 Disposal. The SST characterization and assessment in support of remedial actions and closure are funded by the Environmental Restoration Remedial Actions Program (Chapter 3.0). These Environmental Restoration Remedial Actions activities are described in Section 3.2.3.

2.2.4 Encapsulated Cesium and Strontium

2.2.4.1 Storage (ADS RL-0034, RL-0041, and RL-0341). During the late 1960's and early 1970's a program was undertaken to remove cesium and strontium from liquid waste in SSTs. The cesium and strontium were placed in double-walled metal cylinders about 50 cm in length and 6 cm in diameter which were then stored in the Waste Encapsulation and Storage Facility.

The facility layout is shown in Figure 2-9, and the capsules are stored in a series of water-filled pools shown on the right side of the sketch. Storage of the capsules is a continuing activity that requires cooling water, makeup water, ventilation, and facility maintenance.

When the encapsulation process was completed in 1985, 1,576 cesium and 640 strontium capsules were produced. As of 12/31/88, 1,349 cesium capsules (containing 121 MCi) and 597 strontium capsules (containing 56 MCi) were stored in the pool cells. The remainder of the capsules either have been dismantled and the radioisotopes will not be returned to the Hanford Site, or they are currently being returned from commercial users to the site.

The radiolytic decay of cesium and strontium produces heat. The surface temperature of a strontium capsule is 430 °C (806 °F) in air and 71 °C (160 °F) in water. The surface temperature of a cesium capsule is 200 °C (392 °F) in air and 58 °C (136 °F) in water (Figure 2-10).

2.2.4.2 Treatment. There are presently no plans to treat the capsules before disposal, although a study of treatment options is planned.

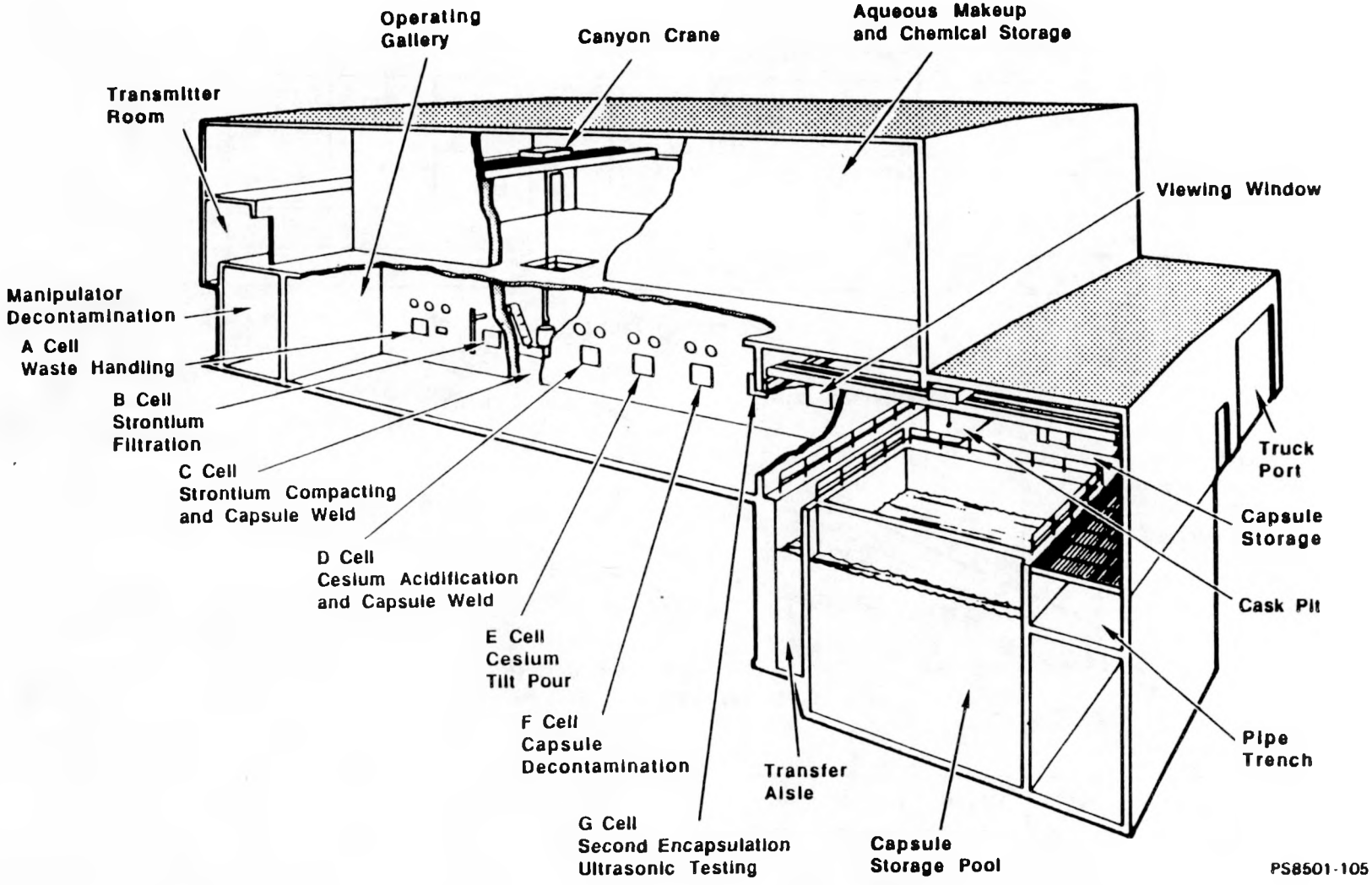
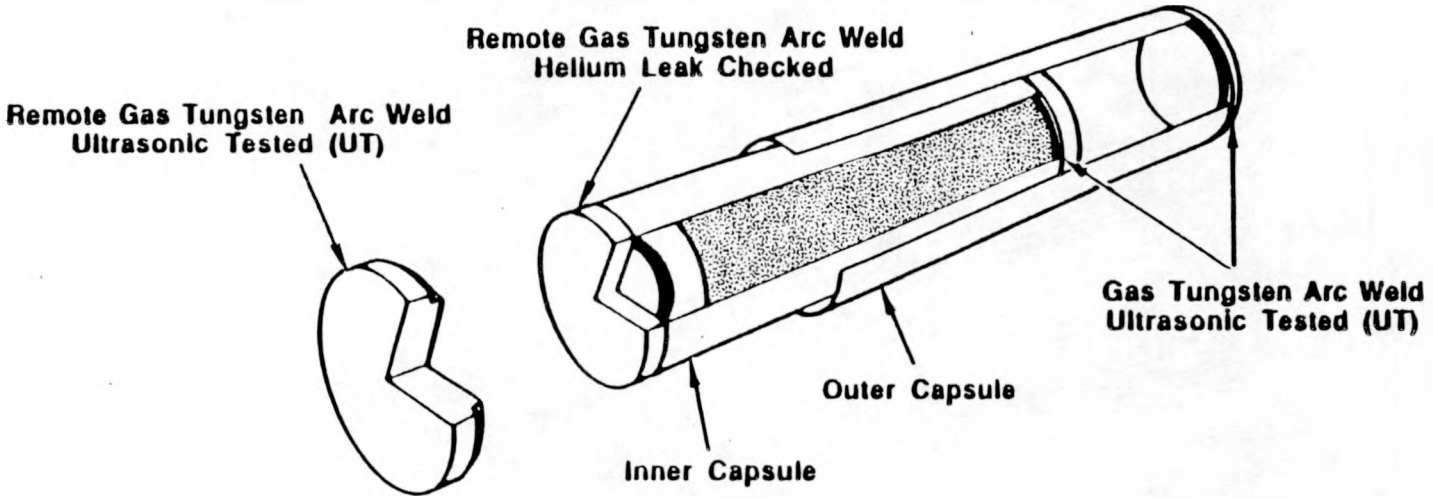


Figure 2-9. Waste Encapsulation and Storage Facility Layout.

	Form	Loading	Percent of Theoretical Density Based on Total Void Space of Capsule	Temperature			
				Air		Water	
				Center Line	Surface	Center Line	Surface
Strontium Fluoride	Compacted Powder	150 kCi (Max)	88	860 °C	430 °C	660 °C	71 °C
Cesium Chloride	Melt-Cast	70 kCi	65	450 °C	200 °C	327 °C	58 °C



	Capsule									
	Inner					Outer				
	Material	Wall Thickness	Outside Diameter	Total Length	Total Cap Thickness	Material	Wall Thickness	Outside Diameter	Total Length	Total Cap Thickness
Strontium Fluoride	Hastelloy C-276 (UT)	0.305 (UT)	5.72	48.38	1.02	Stainless Steel 316-L (UT)	0.277 (UT)	6.67	51.05	1.02
Cesium Chloride	Stainless Steel 316-L (UT)	0.241 (UT)	5.72	50.10	1.02	Stainless Steel 316-L (UT)	0.277 (UT)	6.67	52.77	1.02
Note: All Dimensions are in cm										

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Figure 2-10. Capsule Design Information for Encapsulated Waste.

2.2.4.3 Disposal. The HDW-EIS identified the HLW repository as the disposal site for cesium and strontium capsules. For assumption purposes, the HDW-EIS discussed the base case of overpacking the capsules for disposal. The final waste form of the cesium and strontium has not been determined.

2.2.5 Solid Waste

The four major categories of solid wastes are TRU waste, LLW, mixed waste, and hazardous waste. Each waste will be discussed with respect to storage, treatment, and disposal.

2.2.5.1 Solid Transuranic Waste. Prior to 1970, the concept of TRU waste did not exist. Solid waste containing TRU radionuclides was buried in near-surface trenches. Such waste is called 'pre-1970, suspect TRU-contaminated waste.'

Since 1970, solid TRU waste has been segregated from LLW and is retrievably stored in near-surface trenches or buildings. This waste is called 'retrievably stored TRU waste.'

Beginning in 1986, certain newly generated 55-gal drums of solid TRU waste have been certified to WIPP waste acceptance criteria and stored in the Transuranic Storage and Assay Facility. This waste is called 'certified TRU waste.'

2.2.5.1.1 Newly Generated Solid Transuranic Waste

2.2.5.1.1.1 Storage. Solid TRU waste is generated at a rate that usually varies between 150 and 400 m^3/yr. There were 336 m^3 of solid TRU waste generated in FY 1988 and 168 m^3 generated in FY 1989.

About half of the newly generated solid TRU waste is placed in 55-gal drums which are certified to WIPP-waste acceptance criteria and stored in the Transuranic Storage and Assay Facility. Drums that cannot be certified are returned to the generator for processing and preparation for certification (ADS RL-0160 and RL-0161).

Newly generated solid TRU waste too large to fit into a 55-gal drum is placed in metal boxes for which certification procedures remain to be developed. These metal boxes are stored at generator facilities or on asphalt pads in the burial grounds until treatment or certification processes are developed.

The lack of storage space at generating sites for uncertified solid TRU waste will make compliance with DOE Order 5820.2A temporary storage requirements increasingly difficult. The proposed solution is to qualify one of the new metal storage buildings in the Hanford Central Waste Complex to store uncertified solid TRU waste.

The future lack of storage space for certified waste at the Transuranic Storage and Assay Facility is being evaluated. The proposed solution is to

qualify one of the new metal storage buildings in the Hanford Central Waste Complex for future storage of certified solid TRU waste.

2.2.5.1.1.2 Treatment (ADS RL-0102). Newly-generated solid TRU waste is not presently treated. Treatment will begin when Module I of the Waste Receiving and Processing Facility begins operation in September 1996 (Tri-Party Agreement milestone).

The Waste Receiving and Processing Facility will be located in the central waste complex (Figure 2-11) (ADS RL-0337). The facility will provide treatment services such as waste package inspection, opening and sorting, assaying, waste segregation, compaction, repackaging and certification.

About 15,300 m^3 of solid TRU waste (current inventory plus future receipts) have been projected to be treated in the Waste Receiving and Processing Facility. It is estimated that approximately half of this volume is LLW that can be separated by opening, sorting and assaying the solid waste. Treatment of the TRU portion will result in additional volume reductions such that less than 7,000 m^3 of TRU waste is expected to be sent to WIPP for disposal.

2.2.5.1.1.3 Disposal. Newly-generated solid TRU waste will be certified and shipped to the WIPP for disposal. Shipment to WIPP will begin when the Waste Receiving and Processing Facility begins operation in September 1996.

2.2.5.1.2 Retrievably Stored Solid Transuranic Waste.

2.2.5.1.2.1 Storage. Since 1970, about 15,000 m^3 of solid TRU waste was placed in 55-gal drums or in boxes and was stored for eventual retrieval and transfer to WIPP. Most of the solid TRU waste is stored on asphalt pads and requires some degree of processing in order to provide certification prior to shipment.

The stored, solid TRU waste is contained in 58 concrete containers, 202 fiberglass-reinforced polyester boxes, 329 metal boxes, 96 plywood boxes, 456 miscellaneous containers, and 37,641 55-gal drums (as of December 31, 1988). These containers will be stored until the Waste Receiving and Processing Facility has the capability to handle retrieved TRU waste.

2.2.5.1.2.2 Treatment. A small portion of the drums (200) and boxes (5) will be retrieved during FY 1990 to characterize the waste. The information gained from the examination of the containers and contents will influence the design of treatment processes in the Waste Receiving and Processing Facility.

Treatment of retrievably stored, solid TRU waste will be initiated when the WRAP facility goes online in 1996.

2.2.5.1.2.3 Disposal. The plan is to retrieve stored solid TRU waste, treat it in the WRAP facility and ship repackaged solid TRU waste to the WIPP for disposal. Disposal would be initiated at some time after 1996 and would conclude by the year 2013 when WIPP closure is expected.

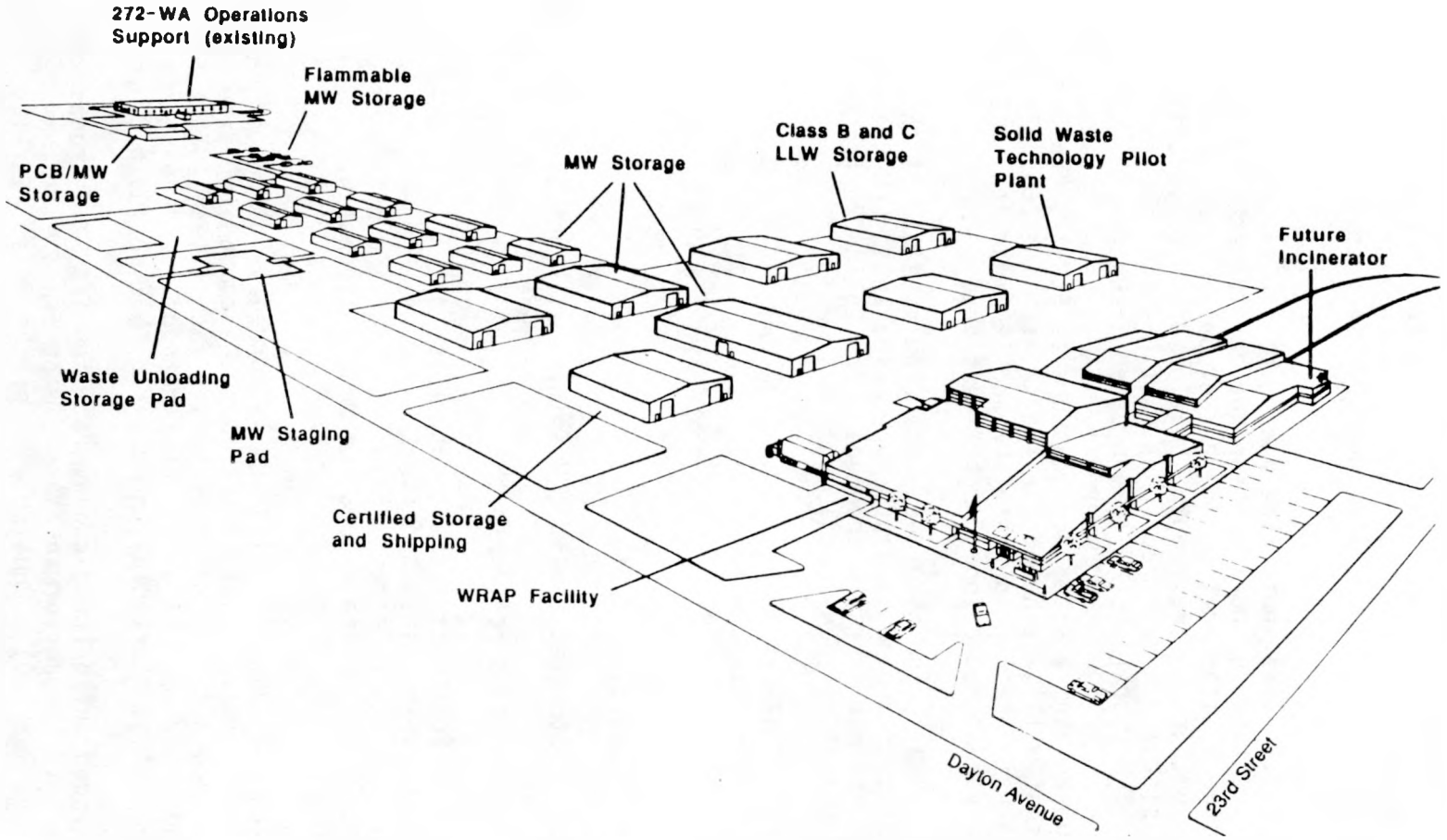

Figure 2-11. Artist's Conception of Proposed Hanford Central Waste Complex.

2.2.5.1.3 Pre-1970, Solid Suspect Transuranic-Contaminated Waste.

2.2.5.1.3.1 Storage. In addition to the stored solid TRU waste, there are nine pre-1970 solid waste sites and 24 contaminated soil sites that are suspected of containing TRU concentrations in excess of 100 nCi/g. The TRU waste will be left in these sites until further development and evaluation are completed.

2.2.5.1.3.2 Treatment. The record of decision for the HDW-EIS states the DOE-RL position to undertake further development and evaluation on all but one of these sites in the interest of determining which remedial action (treatment) options to implement. Development and evaluation associated with these sites, now referred to as past-practice units, is funded by Environmental Restoration and is addressed in Chapter 3.0 of this document.

The one remaining site, designated site 618-11, contains remote-handled TRU waste that will be exhumed for treatment. Treatment is expected to include analysis and sorting into LLW and TRU fractions. Further treatment may include volume reduction of both fractions.

2.2.5.1.3.3 Disposal. The waste from site 618-11 that is treated will be disposed of according to waste type. The solid LLW fraction will be disposed onsite in near-surface trenches. The solid TRU fraction will be shipped to the WIPP for disposal.

No disposal decisions have been made regarding the other TRU contaminated sites. Decisions regarding remedial actions will be developed as part of the Remedial Investigation/Feasibility Study (RI/FS) process described in Chapter 3.0.

2.2.5.2 Solid Low-Level Waste.

2.2.5.2.1 Storage. Solid LLW is typically not stored for more than a few days. Solid LLW may accumulate at the generating site, but it is periodically removed directly to the disposal site.

2.2.5.2.2 Treatment. Treatment of solid LLW is limited to compaction at certain generating sites and the 213-W waste compactor. Consideration is being given to the development of volume reduction processes to be included in the Waste Receiving and Processing Module II that will be operational in September 1999.

2.2.5.2.3 Disposal. Solid LLW is currently placed in near-surface trenches (landfills). Industrial trenches accommodate large pieces of waste such as 5 m long burial boxes from canyon facilities (ADS RL-0013, RL-0105, RL-0160, and RL-0161). Final disposal methods are dependent on the results of the NEPA process started by the HDW-EIS (DOE-HQ 1987b).

An advanced solid LLW disposal facility has been proposed as a contingency project if the performance assessment mandates a change in disposal practices (ADS RL-0196). Construction of the first facility would be complete in 1994.

Effective January 1, 1990 the use of cardboard box containers for LLW will be discontinued. This action achieves compliance with Chapter III, DOE Order 5820.2A.

Slightly less than 8,500 m^3 of solid LLW is forecast to be disposed in FY 1989 compared to 16,000 m^3 disposed of in FY 1988. It is forecast that between 200,000 and 400,000 m^3 will be disposed between FY 1989 and FY 2017.

Disposal of solid LLW at the Hanford Site requires a site-specific radiological performance assessment to comply with Chapter III, DOE Order 5820.2A. Performance assessments for the disposal of phosphate/sulphate waste grout, double-shell slurry grout, LLW, and SST waste are in various stages of completion.

2.2.5.3 Solid Mixed Waste.

2.2.5.3.1 Storage. Approximately 1,800 m^3 of solid mixed waste is in temporary storage segregated according to the hazardous characteristics of ignitability, corrosivity, reactivity, and toxicity. An additional 9,100 m^3 of solid mixed waste is forecast to be generated from FY 1989 through FY 2017.

Thirteen small 15 m x 24 m metal buildings have been recently constructed for temporary storage of mixed waste. Mixed waste has been moved from temporary storage into the 242-W Building with two more buildings (2402-WB and 2402-WD) to be filled in December 1989. The remaining 10 buildings will be filled with mixed waste by the end of FY 1990.

The new Westinghouse Hanford Mixed Waste Storage Facility is expected to be available for use in late FY 1990 and will consist of four separate buildings with a total floor space of 15,000 m^3, the equivalent of 56,000 55-gal drums of mixed waste. The new facility will be in full compliance with RCRA and Washington State Dangerous Waste Regulations, Washington Administrative Code (WAC) 173-303 and DOE Order 6430.1A. The solid mixed waste will be stored for future treatment in the Waste Receiving and Processing Facility.

2.2.5.3.2 Treatment. There is no current treatment process for solid mixed waste. Treatment of solid mixed waste is being evaluated as part of the design of Module II of the Waste Receiving and Processing Facility which is scheduled for startup in FY 1999.

2.2.5.3.3 Disposal. Solid mixed waste with a radiation reading greater than 200 mr/hr is disposed of in near-surface trenches. This is not considered disposal by RCRA definitions. Solid mixed waste with a radiation reading 200 mr/hour or less is stored pending the construction of treatment and disposal facilities.

Construction of a double-lined trench that meets stringent requirements for the disposal of mixed waste will begin within the next two years.

2.2.5.4 Solid Hazardous Waste.

2.2.5.4.1 Storage. The Nonradioactive Dangerous Waste Storage Facility (616 Building), and the PNL 305-B Waste Storage Facility are the only active facilities for nonradioactive hazardous waste (other than less than 90-day storage areas). These facilities are currently operating under RCRA interim status pending issuance of an operating permit from Ecology.

The design of the Nonradioactive Dangerous Waste Storage Facility meets the requirements of the applicable codes, standards, and regulations for the safe handling, storage, packaging, and sampling of hazardous waste. It is a permanent structure constructed of precast concrete. Six storage cells are provided in the storage facility, as shown in Figure 2-12, for the interim storage of hazardous waste. The cells are designated by waste type.

The storage cells have liquid-tight slabs sloped to a collection trench for the accumulation of spilled or leaking liquids. Each collection trench is covered by a removable steel grate for personnel protection. A curb surrounds each cell with a sloped ramp on one end for access. All of the storage cells are provided with emergency exit doors and surface-mounted industrial fluorescent light fixtures.

The 305-B Waste Storage Facility is a greater than 90-day waste storage facility used for the collection, consolidation, and packaging of PNL's hazardous waste and mixed waste. The facility is a two-story metal and concrete building located within the 300 Area and was recently upgraded to meet requirements for the storage of hazardous waste and mixed waste.

2.2.5.4.2 Treatment. There is currently no treatment facility for solid hazardous waste at the Hanford Site. Solid hazardous waste is shipped offsite for treatment and disposal.

The future treatment of hazardous waste generated by PNL is being planned. The proposed PNL Hazardous Waste Treatment Facility is scheduled to be operating in FY 1993 (ADS RL-0137). This facility will enable the development of treatment technology and will treat the small volume, non-radioactive, hazardous waste resulting from the research activities at PNL.

The future treatment of hazardous waste generated by other contractors at the Hanford Site is being planned for the Waste Receiving and Processing Facility, Module II, which is to be operational (Tri-Party Agreement mile-stone) in FY 1999.

The Hazardous Waste Remedial Action Program (HAZWRAP) Demonstration Project focuses on developing processes and equipment that reduce the quantity and toxicity of metal-bearing waste acids generated from metal finishing operations by using separation technologies (ADS RL-0325). The processes and equipment will be assembled for the Waste Acid Pilot Plant Demonstration in FY 1991.

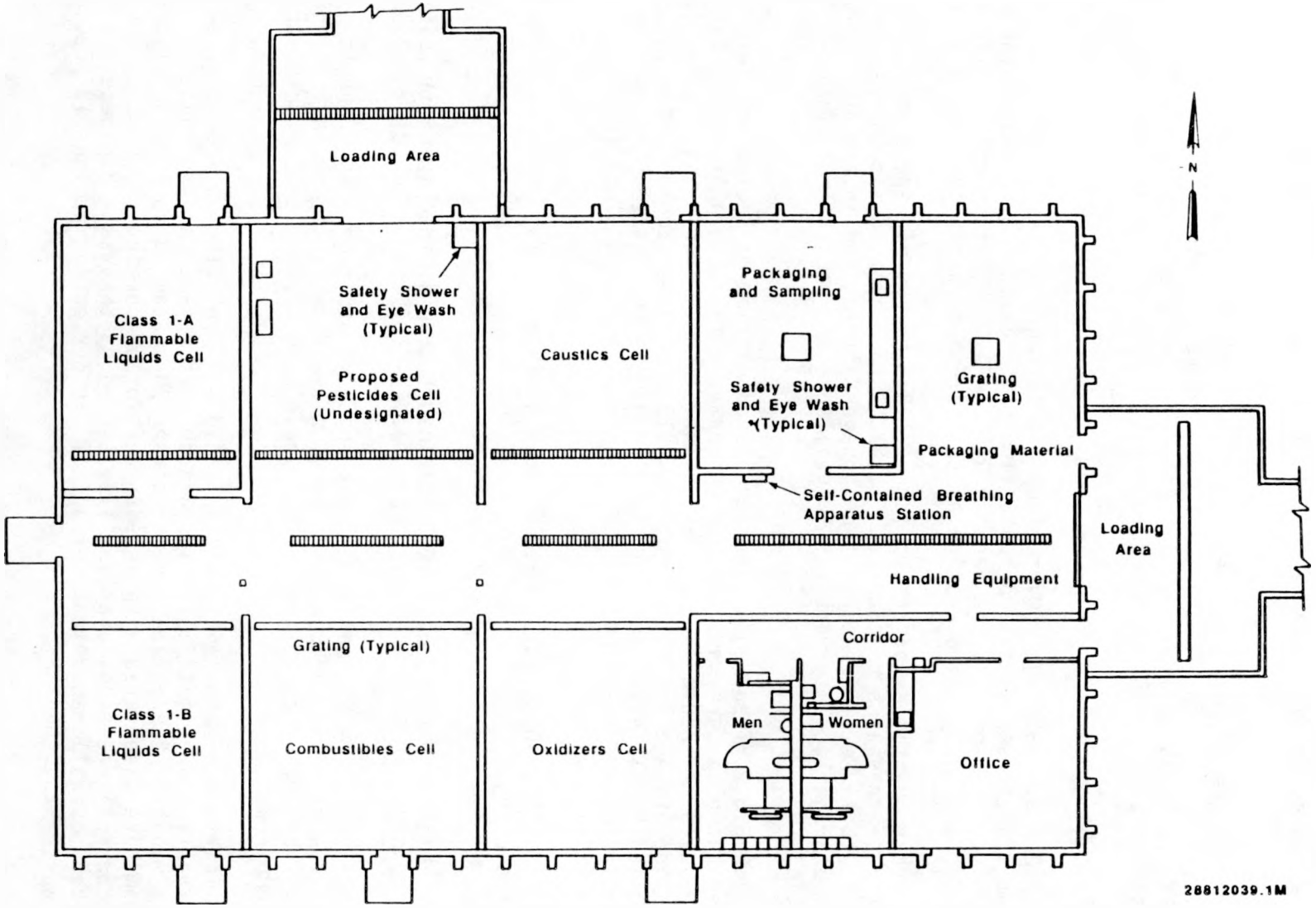

Figure 2-12. Nonradioactive Dangerous Waste Storage Facility Floor Plan.

2.2.5.4.3 Disposal. Hazardous waste is shipped offsite for disposal. Potential treatment and disposal options will be evaluated over the next several years to determine which, if any, wastes can be handled entirely onsite.

There are 17 polychlorinated biphenyl (PCB) transformers at the Fast Flux Test Facility (FFTF) that will be removed or retro-filled during FY 1990 and FY 1991 (ADS RL-0106). The PCBs will be shipped offsite for disposal. Transformers with PCBs at N Reactor will also be disposed of (ADS RL-0163).

2.2.5.5 Sodium Metal.

2.2.5.5.1 Storage. Over 1,000 metric tons of alkali metal, primarily sodium with lesser amounts of potassium, lithium, and mixtures of these elements, are stored at the Hanford Site. Most of the stored alkali metal is associated with the operation of the FFTF and is not considered waste.

Other quantities of sodium (about 140 metric tons) are surplus from deactivated research reactor facilities. Storage of sodium in the 3718-F Alkali Metal Treatment and Storage Building and in the 4843 Alkali Metal Storage Facility requires surveillance and monitoring (ADS RL-0047 and RL-0076).

2.2.5.5.2 Treatment. The surplus quantities of sodium are being safely stored but plans are under way to convert the metal to a hydroxide form at Idaho Falls for reuse in the PUREX plant at the Hanford Site. A new Sodium Hydroxide Storage Facility (Project W-012) and a new Sodium Hydroxide Distribution Facility (Project W-013) will handle the introduction of the slightly contaminated sodium hydroxide into the PUREX Plant (ADS RL-0104) where it will be used.

2.2.5.5.3 Disposal. Not applicable since surplus sodium will be treated for recycling.

2.2.6 Discontinue Disposal of Contaminated Liquids into the Soil Column (ADS RL-0001, RL-0086, RL-0090, RL-0103, RL-0181, and RL-0320).

2.2.6.1 Facility Effluents. A comprehensive program is underway to discontinue the discharge of contaminated liquid effluents to the soil column. Thirty-three liquid effluent streams have been identified for which action is required.

Thirteen of the contaminated liquid effluent streams are associated with Waste Management facilities and corrective actions are funded by the Waste Management Program. The remaining 20 contaminated liquid effluent streams are associated with Defense Reactor or Chemical Processing facilities and corrective actions are partially funded by the Waste Management Program. However, overall management for all of the corrective actions is provided by the Waste Management Program.

The cleanup of contaminated effluent streams has been prioritized into 19 Phase I streams and 14 Phase II streams. The Phase I effluents will have alternative treatment and disposal systems implemented by FY 1995. Phase II effluents will be addressed after the completion of Phase I. An FY 1990 study will provide detailed characterization of these streams (ADS RL-0335)

The treatment of Phase I streams, as depicted in Figure 2-13, includes (1) treatment based on the best available technology economically achievable, (2) a waste disposal system for secondary waste generated as a result of effluent treatment (e.g., spent resin) and (3) treated effluent disposal options. Treatment may consist of facility modification or end-of-pipe treatment systems.

In response to congressional request, a document entitled *Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site* (DOE-RL 1987) was issued and submitted to Congress in March 1987. Annual updates to this plan were issued in September 1988 (WHC 1988) and September 1989 (WHC 1989a).

2.2.6.2 Hanford Environmental Compliance Project. The Hanford Environmental Compliance Project is a compilation of subprojects supporting Hanford's intent to achieve site wide compliance with Washington State and Federal environmental regulations. Most of the Hanford Environmental Compliance Project is driven by the *Plan and Schedule to Discontinue Discharge of Contaminated Liquids to the Soil at the Hanford Site* (DOE-RL 1987).

The Hanford Environmental Compliance subprojects have several objectives:

- Discontinue practices that use the soil column to treat or retain contaminated liquids (Tri-Party Agreement milestone M-17-00)
- Provide the capabilities for analysis to ensure environmental standards are met
- Enhance treatment, storage and disposal of waste
- Minimize quantities of waste
- Minimize future environmental impact from Hanford Site operations.

The DOE has declared that the Hanford Environmental Compliance Project is a major project to be managed in accordance with DOE Orders 4700.1 and 5700.2. It is comprised of a total of 15 subprojects with a total estimated cost of $180 million. Table 2-1 provides a listing of the line item numbers, titles and funding associated with each. The phrase 'Starts' associates the project with the fiscal year in which design and construction are initiated. The design is preceded by engineering studies, functional design criteria, conceptual design, and the validation process.

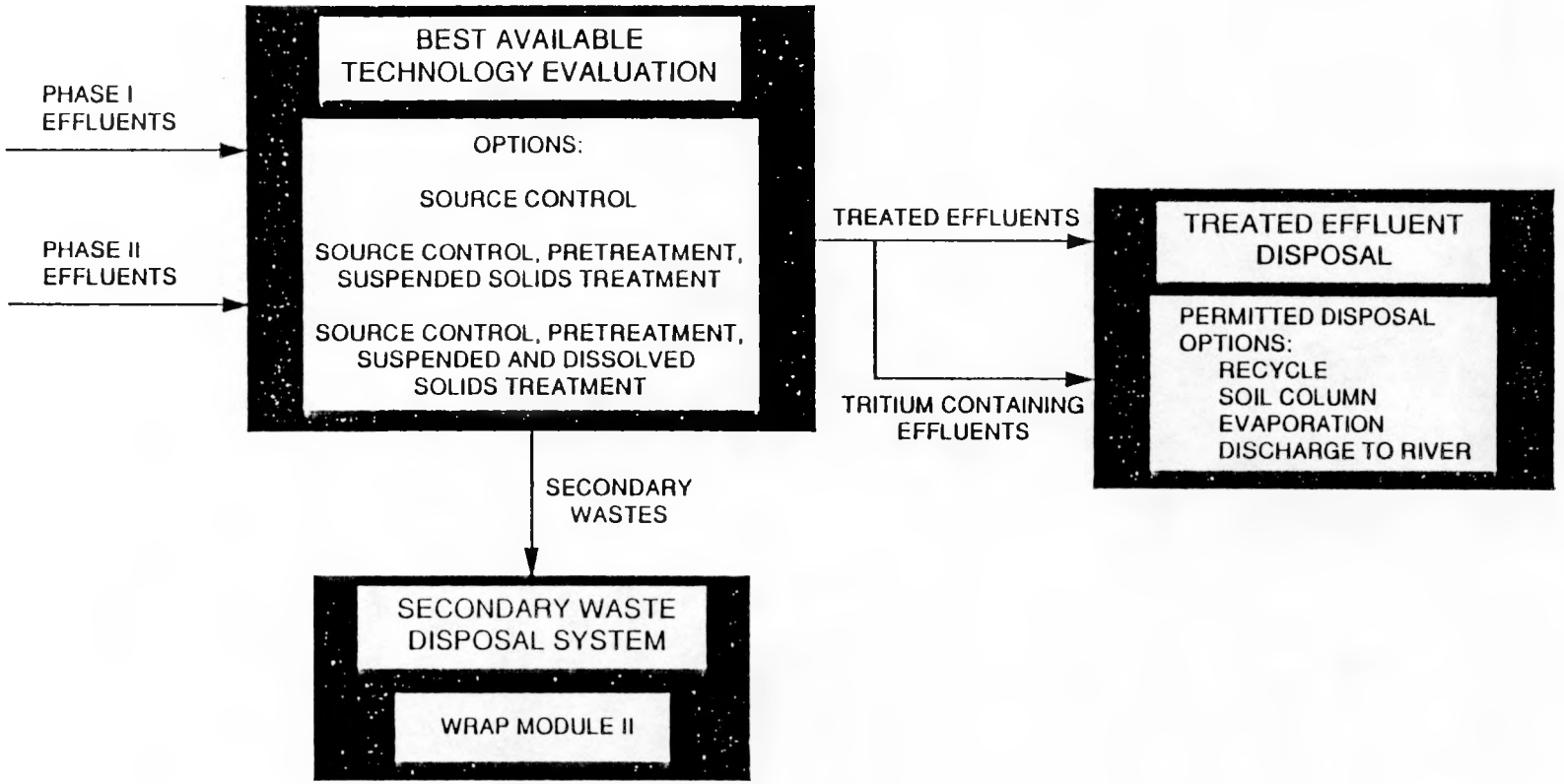

Figure 2-13. Soil Column Effluent Options.

Table 2-1. Hanford Environmental Compliance Subprojects. (Costs in $000's)

Subproject	Starts	FY 1989	FY 1990	FY 1991	FY 1992 and beyond	Total estimated cost
	FY 1989					
W-017H	Groundwater monitoring wells*	3,300	2,900	3,000	2,800	12,000
W-007H	B Plant Condensate Treatment Facility	2,600	7,500	3,900	700	14,700
W-020H	Cathodic protection*	4,200	2,500	--	--	6,700
V-791H	300/400 Area waste water facilities	1,500	--	--	--	1,500
W-016H	Radioactive mixed waste storage facilities*	400	2,900	1,800	3,600	8,700
	FY 1990					
B-680H	Plutonium Finishing Plant liquid low-level waste system modification	--	1,500	4,000	300	5,800
C-031H	Plutonium Finishing Plant liquid effluent treatment with transuranic extraction	--	3,200	8,100	6,700	18,000
W-010H	B Plant environmental compliance upgrades	--	800	2,700	--	3,500
W-011H	Environmental Support Facility	--	6,300	10,300	--	16,600
	FY 1991					
W-024H	B Plant radiological and containment upgrades	--	--	1,260	10,740	12,000
W-041H	Environmental hot cell expansion	--	--	2,400	11,400	13,800
C-018H	Plutonium Uranium Extraction Plant liquid effluent treatment	--	--	1,500	9,700	11,200
	FY 1992					
W-046H	242-A condensate treatment*	--	--	--	17,000	17,000
L-045H	300 Area treated effluent disposal facility	--	--	--	10,000	10,000
W-049H	200 Area treated effluent disposal facility - Phase I	--	--	--	28,500	28,500
	TOTAL	12,000	27,600	38,960	101,440	180,000

NOTE: Those subprojects which respond to the plan and schedule to discontinue discharge of contaminated liquids to the soil column include W-007H, B-680H, W-010H, W-024H, C-018H, W-046H, L-045H, and W-049H. Those subprojects that are included within the Waste Management Program are designated with a "W" in the number.

FY = fiscal year.

*These projects are corrective activities and are included here in order to show a complete list of HEC subprojects. Subproject W-046H was recently combined with W-0494H (subsequent to ADS preparation).

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The FY 1989 and FY 1990 subprojects have been validated for a an estimated cost of approximately $87.5 million. The subprojects beyond FY 1990 are based on preliminary assessments and engineering studies. The cost is currently estimated at approximately $92.5 million but will be refined through better project definition.The purpose, scope, and status of each subproject is further defined as follows.

2.2.6.2.1 The W-017H, Groundwater Monitoring Wells. This project is a corrective activity described in Section 4.2.3.2.

2.2.6.2.2 The W-007H, B Plant Process Condensate Treatment Facility. The purpose is to provide a best available technology treatment system for treating B Plant process condensate before disposal and ensure environmental compliance before initiation of pretreatment operations of neutralized current acid waste in October 1993 (Tri-Party Agreement milestone M-02-00). The estimated cost is $14.7 million. The subproject involves construction of a system to treat 150 L/min (40 gal/min) of B Plant process condensate to best available technology standards and provides space for future incorporation of equipment for treatment of steam condensate. Treatment may include the following options: filtration, ion exchange, or reverse osmosis. The subproject has been validated and authorization has been requested. The conceptual design was completed in October 1988. Definitive design was initiated in FY 1989. The subproject is scheduled for completion by FY 1993.

2.2.6.2.3 The W-020H, Cathodic Protection. This project is a corrective activity described in Chapter 4.0.

2.2.6.2.4 The V-791H, 300/400 Area Waste Water Facilities. The purpose is to provide upgrades to the 400 Area sanitary sewage system and the 300 Area water treatment system. The estimated cost is $1.5 million and includes replacing the 400 Area septic tank and drain field with a new waste treatment plant for sanitary waste and constructing a new settling pond for disposal of 300 Area water filter plant backwash. This subproject has been validated and authorization has been requested.

2.2.6.2.5 The W-016H, Radioactive Mixed Waste Storage Facilities. This project is a corrective activity described in Section 4.2.3.2.

2.2.6.2.6 The B-680H, Plutonium Finishing Plant Liquid Low-Level Waste System Modification. The purpose is to reduce the potential for radionuclide discharges to the soil column and cut back the 216-Z-20 crib flow by 80%. The estimated cost is $5.8 million. The subproject eliminates process equipment cooling water effluent by providing closed loop cooling. It provides a LLW treatment facility for drains and relines existing chemical sewer to preclude movement of contamination to the soil column. The subproject has been validated and is scheduled for completion by FY 1992.

2.2.6.2.7 The C-031H, Plutonium Finishing Plant Liquid Effluent Treatment with Transuranic Extraction. The purpose is to eliminate quantities of TRU from discharge to waste tank storage. It involves upgrading the waste retention facility and recovering plutonium currently discarded as waste. The estimated cost is $18.0 million. The subproject will upgrade the

241-Z tank storage area with double-containment storage and treatment tanks and associated piping. It will replace existing transfer lines with double-wall piping and leak detection, and install the transuranic extraction (TRUEX) process in Building 234-5Z. This subproject has been validated. Technology transfer is ongoing with Argonne National Laboratory. Solids and liquid technology studies were conducted in FY 1989.

2.2.6.2.8 The W-010H, B Plant Environmental Compliance Upgrades. The purpose is to provide engineered barriers reducing the potential for reportable releases of hazardous materials from the B Plant complex, enable B Plant to use and dispose of chemicals required in support of the Hazardous Waste Vitrification Plant and Grout Treatment Facility and reduce the potential for exposure to airborne radioactivity from the 221-B canyon. The estimated cost is $3.5 million. The subproject will provide spill containment and general upgrades for 211-B chemical tank farm, provide drain/overflow system and general upgrades for 221-B scale tanks and upgrade ventilation and monitoring system and seal exterior wall openings at 271-B. The subproject has been validated and is scheduled for completion in FY 1992.

2.2.6.2.9 The W-011H, Environmental Support Facility. The purpose is to provide a laboratory facility for the performance of new, full-range, low-level environmental sample analyses needed to meet regulatory requirements. The estimated cost is $16.6 million. The subproject provides 1,670 m^2 of lab space for environmental analysis and 370 m^2 for a shielded low-level radiochemistry laboratory. It includes all necessary support facilities, services, and utilities. This subproject is validated and an advanced conceptual design was completed in FY 1989.

2.2.6.2.10 The W-024H, B Plant Radiological and Containment Upgrades. The purpose is to restore a suspect cell drain system, eliminate potential contamination sources to the chemical sewer from the vessel vent system and eliminate a contaminated discharge to B Pond from the vessel vent system. The estimated cost is $12.0 million. The subproject involves the installation of an in situ liner in the cell drain system, the installation of control dampers and instrumentation on supply air system, and replacing the vessel ventilation system and rerouting the condensate system. The engineering study and functional design criteria were released in FY 1989. The conceptual design report was completed in FY 1989. The subproject is scheduled for completion in FY 1995.

2.2.6.2.11 The W-041H, Environmental Hot Cell Expansion (ADS RL-0096). The purpose is to provide laboratory capability for regulatory compliance activities to support waste characterization, sampling and site characterization, and to provide analytical support for Hazardous Waste Vitrification Plant and Grout Treatment Facility. The estimated cost is $13.8 million. The subproject involves the construction of a new hot cell facility adjacent to the 222-S Laboratory. Construction is scheduled to start in FY 1992 with operations to start in FY 1994.

2.2.6.2.12 The C-018H, PUREX Plant Liquid Effluent Treatment. The purpose is to provide best available technology treatment for radionuclides and chemical constituents of liquid effluents. The estimated cost is

$11.2 million. The proposed treatment may include the following options: filtration, carbon absorption, reverse osmosis or ion-exchange. The subproject is scheduled for completion by FY 1994.

2.2.6.2.13 The W-046H, 242-A Condensate Treatment. This project is a corrective activity described in Section 4.2.3.2. It has recently been combined with W-049H, 200 Area Treated Effluent Disposal Facility (subsequent to issuance of ADSs in August 1989).

2.2.6.2.14 The L-045H, 300 Area Treated Effluent Disposal Facility. The purpose is to provide treatment of 30 effluent streams which are currently disposed of in the 300 Area trenches and are targeted for priority closure. The estimated cost is $10.0 million. The subproject will likely include facility modifications or standby treatment. The engineering study and the functional design criteria were released in FY 1989; the conceptual design report is scheduled for transmittal to DOE in FY 1990. The subproject is scheduled for completion in FY 1995.

2.2.6.2.15 The W-049H, 200 Area Treated Effluent Disposal Facility. The purpose is to provide the disposal of treated-liquid effluents that result from primary treatment and provide disposal of secondary effluents. The estimated cost is $28.5 million. The treatment system may include the following features: standby treatment, retention basins, soil column disposal, recycling, discharge to Columbia River, sampling and diversion. The engineering study and functional design criteria were released in FY 1989 (the functional design criteria is yet approved); the conceptual design report is scheduled for transmittal to DOE in FY 1990. The subproject is scheduled for completion in FY 1995. Recent discussions with Ecology have resulted in a likely acceleration of the schedule to allow operation in June 1992.

2.2.7 Program Support

2.2.7.1 Continuity of Operations. The description of waste management continuity of operations in this section is based on FY 1991-1995 ADSs (DOE-RL 1989c). During the preparation of updated ADSs for FY 1992-1996, in progress as this was written, most of the base program was assigned to the primary waste management missions. While the description below addresses several topics, the next update of this program support section is expected to address only the following topics:

1. Environmental Surveillance and Control
2. 222-S Laboratory Operations
3. Planning and Technology
4. Inventories
5. Miscellaneous Support

The safe minimum operation level provides base program support to maintain continuity of operations. Activities include management, surveillance/maintenance of facilities and disposal sites, and operation of facilities for receipt, handling, and interim storage of radioactive, hazardous, and mixed wastes.

The base program supports operational monitoring activities for the tank farms, waste handling and treatment facilities, transportation, packaging, shipping and solid waste storage and disposal sites, as well as all site generators. The base program provides support for safety analysis report preparation, review and update; open audit item resolution, and associated safety and environmental operational improvements and upgrades; provides for training of operations and maintenance personnel; supports engineering, maintenance, and field support services for stabilization and isolation of SSTs.

The base program supports liquid and gaseous effluent environmental sampling and monitoring from operating facilities and monitoring of low-level waste disposed of in burial grounds or grout vaults. The base program provides for the preparation of operational waste volume projections for the near-term and long-term management of DST space.

The ADSs for continuity of operations are listed below.

Title	ADS #
Environmental Surveillance and Control Gaseous and Liquid Effluent Monitoring	RL-0002
Waste Operations Assessment Job Control Development	RL-0008
Chemical Processing	RL-0011, RL-0184
Solid Waste Management Solid Waste Operations	RL-0013
Environmental Monitoring Well Sampling, Analysis and Maintenance	RL-0021
Hanford Site Laundry System	RL-0028
Tank Farm Programs	RL-0057, RL-0338
Defense Reactor Program N Reactor	RL-0059
Defense Reactor Program N Reactor Effluent Monitoring/ Maintenance	RL-0060
Applied Technology and Strategic Planning	RL-0078
Underground Storage Tank Testing Hanford Site	RL-0080
The 308 Building Standby Surveillance Monitoring	RL-0107
Laboratories and Processes	RL-0114, RL-0323
Defense Waste Management Operation (PNL)	RL-0138
Energy Research Waste Management Operation (PNL)	RL-0139

Environmental Monitoring/Surveillance	RL-0153
Radionuclide Effluent Monitors	RL-0155
Site Impact of N Reactor Shutdown	RL-0156
Defense Reactor Program N Reactor RCRA Closure Implementation	RL-0164
Hanford Environmental Management Program	RL-0172, RL-0173, RL-0174, RL-0175 RL-0176, RL-0200
Air Permitting/Compliance	RL-0329, RL-0330, RL-0331, RL-0335

Other ADSs address miscellaneous activities at the Hanford Site not specifically addressed elsewhere in the text.

Title	ADS #
Inventory Administration	RL-0015
Maintain Inventories, all programs	RL-0026
200 Area Steam System Upgrades	RL-0027
Underground Storage (petroleum) Tank Upgrades	RL-0017
N Reactor Underground Storage (petroleum) Tank Upgrades	RL-0062
N Springs Treatment and Stabilization	RL-0082
Underground Storage (petroleum) Tank Upgrade-PNL	RL-0336
Defense Reactor Facility Assessment	RL-0012
Chemical Processing Facility Assessment	RL-0087
Facility Assessment of Existing Requirements	RL-0190

2.2.7.2 Analytical Laboratories Support. The analytical laboratory in the 222-S Facility provides radiochemical analytical support for waste management facilities, environmental restoration facilities, other operating facilities, and environmental monitoring activities (ADS RL-0114 and RL-0323). The laboratory is an integral part of each of these operating plants and activities in that the analyses are required to provide data for optimization of operating efficiency and/or for control of critical process parameters.

The laboratory also provides analytical support to process development programs to assist in improving plant processing capabilities and trouble-shooting of process upset conditions. In future years the laboratory will provide all of the process analyses for B Plant's treatment of DST wastes to

prepare feed streams for Hazardous Waste Vitrification Plant and Grout Treatment Facility.

In addition the laboratory must be prepared to provide analytical data that complies with the stringent EPA Protocol requirements. The low-level mixed waste laboratory, scheduled for the initiation of operations in January 1992, will provide analytical capabilities to analyze hazardous waste samples, including those containing low-levels of radioactivity as well as those that are strictly hazardous (ADS RL-0097).

The expanded laboratory hot cells, scheduled for the initiation of operations in June 1994, will provide analytical capabilities for waste analyses from DST wastes, SST wastes and B Plant pretreatment processing (ADS RL-0096). The hot cells will provide at least double the sample throughput capacity from that which is currently available at the 222-S Laboratory.

A $16.6 million Waste Sampling and Characterization Facility (ADS RL-0099) will be completed in FY 1991. This facility is needed to provide analytical support for LLW characterization.

In addition to analytical laboratory upgrades and the new Waste Sampling and Characterization Facility, a subsurface measurements calibration and test facility is needed to standardize and validate monitoring and characterization measurements involving downhole geophysical tools and groundwater sampling equipment. Geophysical components of the test facility include: calibration models, logging equipment, neutron activation logging tools, and nuclear transport modeling hardware and software. Groundwater measurement and sampling components of the facility include installation of test wells in a noncontaminated area, alternative well casing materials, alternative sampling hardware, and associated peripheral structures and equipment. This facility will help establish a uniform policy for installation of technically defensible and cost-effective monitoring systems.

Funding is available in FY 1990 for installation of geophysical borehole calibration standards. Funding for the other aspects of the subsurface measurements test facility is not identified. Required ADSs will be prepared during FY 1990 to document the requirements for establishment of the test facility and these ADSs will be included in the revised site-specific plan.

2.2.7.3 Environmental Monitoring and Control. This activity provides support to the general environmental monitoring capabilities for stack discharges (and other potential airborne releases), liquid effluent discharges and groundwater. It provides for monitoring trends and assessing the impact of operations to the environment and provides support to operations for effluent disposal facilities, maintenance upgrades and/or construction.

The activity provides for RCRA site characterization and site-wide effluent sampling of hazardous waste streams and provides well drilling support necessary to meet RCRA regulatory requirements. After the wells are drilled, this activity is responsible for required sampling/monitoring and analysis of data and associated reports (ADS RL-0021). It is responsible

for the assessing of any hazardous waste operational impacts upon the environment, recommending corrective actions and the implementation of those actions required.

An aggressive schedule is being undertaken to install RCRA groundwater monitoring wells at the rate of 29 in calender year 1989, 30 in 1990, and 50 per year thereafter until all land disposal units and SSTs are determined to have monitoring systems that comply with RCRA. After the drilling process is complete, a certain quantity of water must be removed from the well before a representative sample can be obtained from groundwater. In some locations the groundwater may be contaminated to levels that prevent the disposal of untreated well water. There are no treatment capabilities for contaminated well water but storage capabilities are being installed while the issue is being evaluated and discussed with regulatory authorities.

2.2.7.4 Vadose Zone Monitoring. Vadose zone monitoring is accomplished by making periodic nuclear logging measurements in boreholes, or wells, that were drilled specifically for monitoring subsurface regions surrounding active and inactive disposal facilities, such as cribs and tanks. The requirements for the vadose zone monitoring activities are explicit in DOE Order 5820.2A, RCRA regulations (40 CFR 261, 264, 265, 267, and 270 depending on the type of TSD facility), and WAC 173-303 and 173-304. Also, requirements for vadose monitoring are implicitly stated in DOE Orders 5400.1, 5400.3, and 5480.14, WACs, and RCRA regulations.

The present monitoring activity consists of passive gross gamma-ray logging, single-detector gamma-gamma (density) logging, and single-detector neutron-neutron (moisture content) logging in the tank farms. These logging systems are obsolete and are scheduled for replacement by special gamma-ray systems, compensated gamma-gamma systems, and compensated neutron-neutron systems. Hardware renovations will be accompanied by improved methods for calibration, data analysis, data interpretation, and data storage.

Currently, ADSs for vadose zone monitoring do not exist in the site-specific plan. These ADSs will be prepared during FY 1990 for inclusion in the next revision of the site-specific plan. Subject to DOE-HQ guidance, the entire vadose zone monitoring program may be incorporated in the new Environmental Management organization.

2.2.7.5 Groundwater Protection Management Program. The groundwater protection management program, and related planning documentation, required by DOE Order 5400.1 (DOE-HQ 1988a) is to be prepared by May 1990, reviewed annually, and revised as necessary. This activity is currently covered under ADS RL-0021 (Environmental Monitoring). Pending DOE-HQ guidance, this activity may be included in a new environmental management program. The first edition of the groundwater protection program has been issued (*Hanford Site Groundwater Protection Management Program*, DOE-RL 1989e).

The primary purposes of the Hanford Site groundwater protection program are to (1) establish a uniform groundwater protection strategy and policy for the Hanford Site, (2) comply with all DOE Order 5400.1 program elements,

(3) ensure effective resource management and regulatory compliance, and
(4) integrate and coordinate various groundwater related activities.

The basic groundwater protection strategy for the Hanford Site involves both near- and long-term action. Near-term action includes the phased elimination of liquid waste disposal to ground (except for tritium) for which the target completion date for Phase I streams is FY 1995. Long-term groundwater protection will be accomplished by removal, stabilization and/or treatment of stored wastes and wastes released to the ground. Engineered barriers will be used to restrict infiltration over disposal sites. Performance assessment and subsurface monitoring will be used to design appropriate engineered barriers and to assess effectiveness of controls. Both natural attenuation processes and groundwater treatment will be used to mitigate groundwater contamination.

Additional site-wide characterization of the groundwater regime, hydrologic model refinement and geotechnology development will be needed at an early date to support design and decision aspects of the above strategy and to promote effective resource management.

The specific requirements of DOE Order 5400.1 are:

- Document the groundwater regime
- Design and implement a groundwater monitoring program to support resource management and comply with applicable laws and regulations
- Implement a management program for groundwater protection and remediation
- Provide a summary and identification of areas that may be contaminated with hazardous waste
- Provide strategies for controlling these sources
- Implement a remedial action program.

The latter five elements are required by the Tri-Party Agreement and are implemented by existing operational groundwater monitoring, RCRA groundwater monitoring, and CERCLA/RCRA corrective action programs at the Hanford Site. The first element, document the groundwater regime, requires additional characterization activities that currently are not funded.

During FY 1990, work plans and associated ADSs to fully implement the groundwater protection program will be prepared for inclusion in the next revision of the site-specific plan. Specific work plans currently identified include:

- Performance assessment (vadose and groundwater pathways)
- Vadose zone characterization

- Effluent and groundwater characterization at liquid waste disposal sites
- Barriers development
- Soil and groundwater baseline data
- Documentation of the Hanford Site area groundwater regime.

The need for several million dollars is anticipated for the next five year period. Some reprioritization of other activities may be needed to meet the full intent of DOE Order 5400.1. These issues will be resolved concurrently with the reorganization required for the new Environmental Management organization.

2.2.7.6 Seismic Monitoring System. The Hanford Site is located approximately 200 miles east of the seismically active portion of the State of Washington, i.e., the strip of land between Cascade Mountain Range and the Pacific Ocean (western Washington). While there has not been a damage-causing seismic event in the short 47-year history of the Hanford Site, the Nuclear Regulatory Commission for licensing purposes considers faults associate with Gable Mountain and Rattlesnake Mountain to be capable of producing earthquakes of up to 5.5 and 6.5 magnitude (Richter scale) respectively.

The DOE Orders 5480.1 and 5480.5 require monitoring to record natural events or manmade activities which may substantially affect or threaten performance, reliability, or safe operation of DOE facilities. Even though no events have occurred in 47 years that have threatened performance or safe operation, there is a large uncertainty with respect to the occurrence of future seismic events. A conservative approach has been developed to design new facilities to meet rigid seismic standards and to continue site seismic monitoring.

The Hanford Site is included as an alternative for a new production reactor and is included as such in the DOE EIS for the new production reactor. The Nuclear Regulatory Commission and DOE nuclear power plant safety policies make it imperative that the seismic network remain fully operative at least until the record of decision is made for the new production reactor. This decision is currently scheduled for December 1991.

Currently, seismicity is monitored at the Hanford Site through about 40 stations located on the Hanford Site, adjacent to the Hanford Site, and throughout eastern Washington. This monitoring is accomplished in a cooperative effort with the University of Washington and the United States Geologic Survey. No ADSs currently exist for this activity. The ADS will be developed during FY 1990 for inclusion in the next revision of the site-specific plan. Approximately $400,000 per year are required to maintain seismic monitoring.

2.2.8 Research, Development, and Demonstration

2.2.8.1 The Research, Development, and Demonstration for Waste Minimization. Several studies are planned in Chemical Processing facilities that will result in the reduction of waste generated (ADS RL-0046).

- Improve controls on the Plutonium Finishing Plant processes to minimize generation of liquid waste.
- Develop processes to stabilize waste generated during PUREX and Plutonium Finishing Plant deactivation to minimize liquid and solid waste generation.
- Develop methods to minimize solid and liquid wastes during the decontaminating and disposing of equipment in the PUREX failed equipment tunnel.
- Minimize the volume of TRU solid wastes generated at Plutonium Finishing Plant by using improved solid waste segregation techniques (see also ADS RL-0004).
- Eliminate liquid waste to tank farms by developing azeotropic distillation of liquid process wastes from the Plutonium Finishing Plant.
- Separate large volume of non-TRU waste from slag and crucible scrap in Plutonium Finishing Plant thus decreasing the process liquid waste that is sent to tank farms after dissolution.
- Minimize carbon tetrachloride in liquid wastes.
- Develop thermally-unstable complexing agents that will replace the complexing agents currently used in chemical separation processes, organic cleanup systems and decontamination processes. Such thermally-unstable complexing agents would be broken down into nonhazardous components when the waste was heated.
- Improve scrap dissolution processes in PUREX and the Plutonium Finishing Plant to decrease the volume of liquid wastes.

The PNL has an ongoing project to demonstrate waste minimization processes applicable to DOE-DP waste (ADS RL-0325). The project objective is to demonstrate processes/equipment that reduce the volume, quantity, and toxicity of metal-bearing waste acids generated from metal finishing operations by using separation technologies. The milestone is to conduct a waste acid pilot plant Demonstration in FY 1991.

There are other activities that support waste minimization.

- Technology will be developed for minimizing the generation of TRU waste (ADS RL-0004).

- Tank core sampling technology will be improved to minimize waste generated (ADS RL-0022).

- The development of a continuous catalyzed electrochemical plutonium oxide dissolution dissolver will provide a side benefit of reduced waste volumes (ADS RL-0179).

2.2.8.2 The Research, Development, and Demonstration for Waste Treatment. The DST waste retrieval equipment will be developed and demonstrated for individual waste types in DSTs (ADS RL-0051). Improved segregation will be developed for TRU and non-TRU waste streams.

The DST waste pretreatment processes will be developed and demonstrated for the 244-AR Vault and B Plant (ADS RL-0009, RL-0010, and RL-0052). Tasks include the following:

- Retrieval and transfer technology development

- Pretreatment technology and flowsheet development

- Process equipment development

- Process sampling equipment development and demonstration

- Process control sample analysis methods development.

Solid TRU waste treatment processes will be developed for retrievably stored TRU waste to support the design of the Waste Receiving and Processing Facility (ADS RL-0079). Technology must be demonstrated to retrieve TRU waste, characterize drums and boxes by nondestructive methods, sort non-TRU items from TRU items, and stabilize waste for repackaging and certification (ADS RL-0094).

The PNL Hazardous Waste Treatment Facility is a proposed facility in which regulated nonradioactive, hazardous wastes can be detoxified, solidified and/or converted to a less hazardous form (ADS RL-0137). This less hazardous form can be stored, packaged and shipped as a nonhazardous waste for disposal in a cost effective compliant manner. This facility will develop and implement technology for treatment of PNL hazardous waste, but the technology will also be usable at other DOE sites.

The 300 Area research facility upgrades are required for compliance with federal, state and local requirements pertaining to air and liquid effluents (ADS RL-0148, RL-0183, RL-0345, and RL-0346). These facilities are strategically important laboratories that provide support to the development of treatment processes at the Hanford Site.

The catalyzed electrochemical plutonium oxide dissolver process will be developed and demonstrated for low-plutonium content waste (ADS RL-0179). The process, currently under development, is a significant, innovative new process for dissolving PuO_2 or leaching plutonium from scrap or waste residues without the use of fluoride. Complete dissolution eliminates the need for recycling

or disposal. The recovery of plutonium from TRU waste can reduce the classification of waste to LLW thereby reducing disposal costs.

Purge water treatment will be developed and implemented (ADS RL-303). This RD&D activity provides safe and environmentally acceptable methods for treatment and disposal of purge water generated during RCRA groundwater monitoring well installation, maintenance, remediation, and sampling. The technology developed will be applicable for the treatment and disposal of purge water generated during aquifer testing.

Hanford Site groundwater could potentially contain RCRA 'listed' waste. As a result, water generated by well installation, maintenance, remediation and sampling might have to be handled as listed waste.

The past practice of disposing of purge water in the soil column (dumping it on the ground) may no longer be acceptable, depending upon whether the groundwater is listed at the particular well location. Purge water containing listed waste will be collected, transported to a central facility, stored, and treated using the best available technology economically achievable prior to discharge to a permitted liquid disposal site.

The 242-A Evaporator/Crystallizer process condensate treatment studies and installation of treatment equipment are scheduled for the third quarter of FY 1992 (ADS RL-0338). The 242-A Evaporator/Crystallizer is presently shut down since the process condensate may contain a listed waste which cannot be discharged to the soil column. The liquid will be stored until the condensate treatment equipment is installed.

The HLW treatment at West Valley and the Hanford Site is being developed by PNL (ADS RL-0144 and RL-0350). The Hanford Site is providing the vitrification and process technology to support the West Valley Demonstration Project (ADS RL-0350).

The PNL is also providing basic technology enhancements to the Hanford Waste Vitrification Plant such as dismantlement of spent glass melters and increasing the waste content in the canisters (ADS RL-0144).

2.2.8.3 The Research, Development, and Demonstration for Waste Storage. The DST waste storage methods will be improved by the development of improved core sampling equipment and improved methods to characterize waste tank samples (ADS RL-0022). This effort will improve the process to assure waste compatibility.

2.2.8.4 The Research, Development, and Demonstration for Waste Disposal. The LLW disposal sites will have site closure methods developed that meet performance objectives (ADS RL-0003 and RL-0180). The technology development program will investigate treatment of fractured and highly-porous media at LLW sites.

Tasks performed by PNL for the national LLW management program include characterization of LLW for long term performance (ADS RL-0120). In many cases the information developed can also support efforts to manage hazardous wastes and to dispose of wastes from restoration activities.

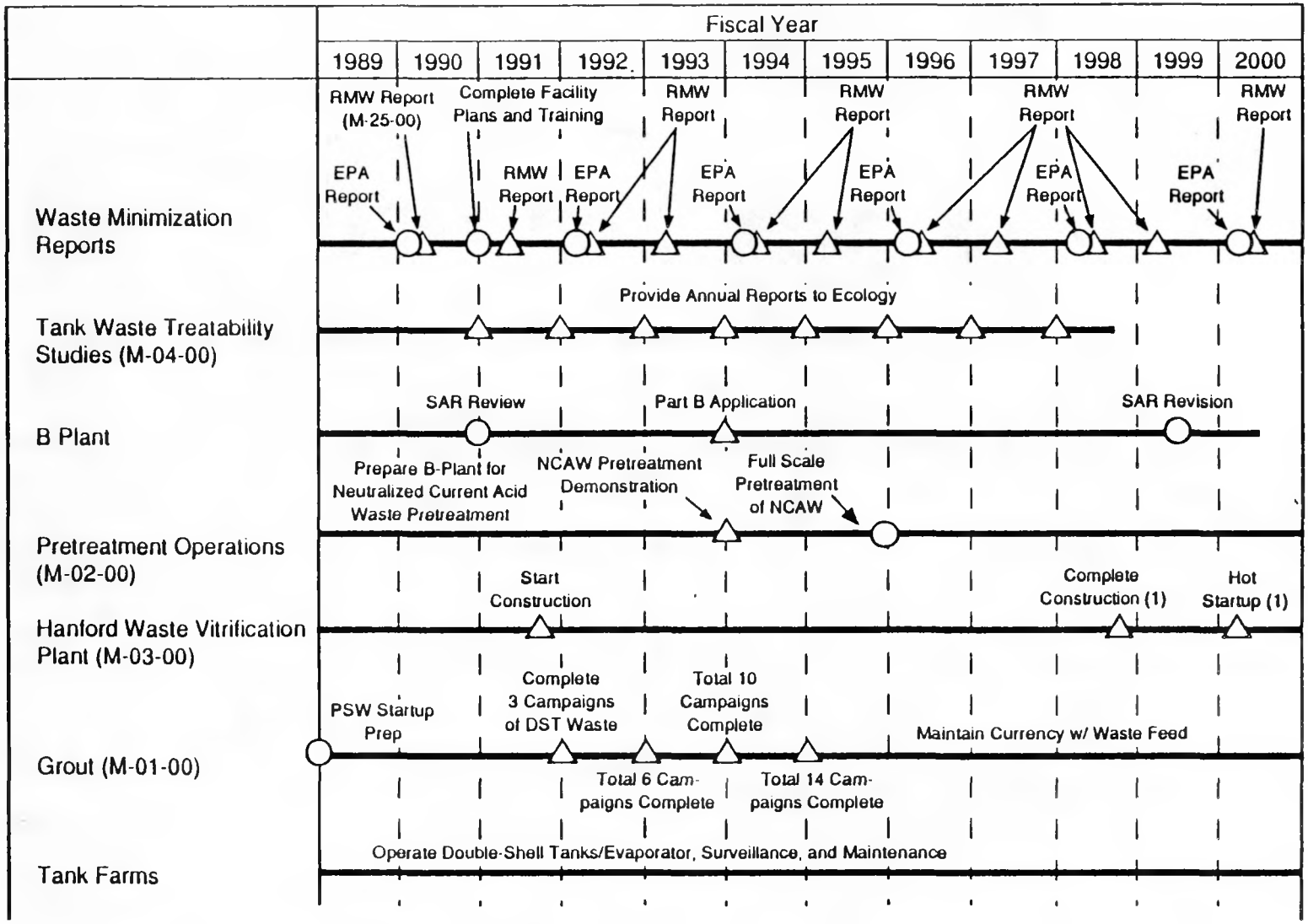
The TRU waste disposal processes will be developed in support of the design of the Waste Receiving and Processing Facility (ADS RL-0004). Included are tasks to evaluate, select and test methods for processing spent ion exchange resins into a final waste form.

The Materials Characterization Center supports the DOE/RL's waste-form production and waste disposal projects by characterizing approved reference and testing materials; supplying reference and testing materials for experimental use; leading activities to enhance the quality and inter-laboratory consistency of analytical data; and conducting independent testing to confirm data obtained by others (ADS RL-0182). The emphasis of the center's work for Defense Programs is the development of tests and data supporting the qualification of defense HLW for disposal in a repository.

2.2.8.5 The Research, Demonstration, and Development for Other Activities. A containment system will be developed to permit the rapid and cost-effective air-rotary installation of RCRA groundwater wells (ADS RL-0109). The air-rotary system is expected to replace the less cost-effective cable tool drill rigs.

2.3 SCHEDULE AND BUDGETS

Figure 2-14 is a schedule of Hanford Site Waste Management activities. Table 2-2 is a listing of operating and capital proposed costs from individual ADSs for waste management by sheet number and title. The listing is divided by priority level of the sheets. Table 2-3 summarizes the data by category (TSD, waste minimization, etc.). Figure 2-15 is a bar graph of total waste management costs by year and priority level.



(1) These are the Tri-Party Agreement milestones. Approval has been obtained to accelerate the schedule on these items by two years (June 1996 and December 1997).

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Figure 2-14. Waste Management Operations Schedule. (sheet 1 of 5)

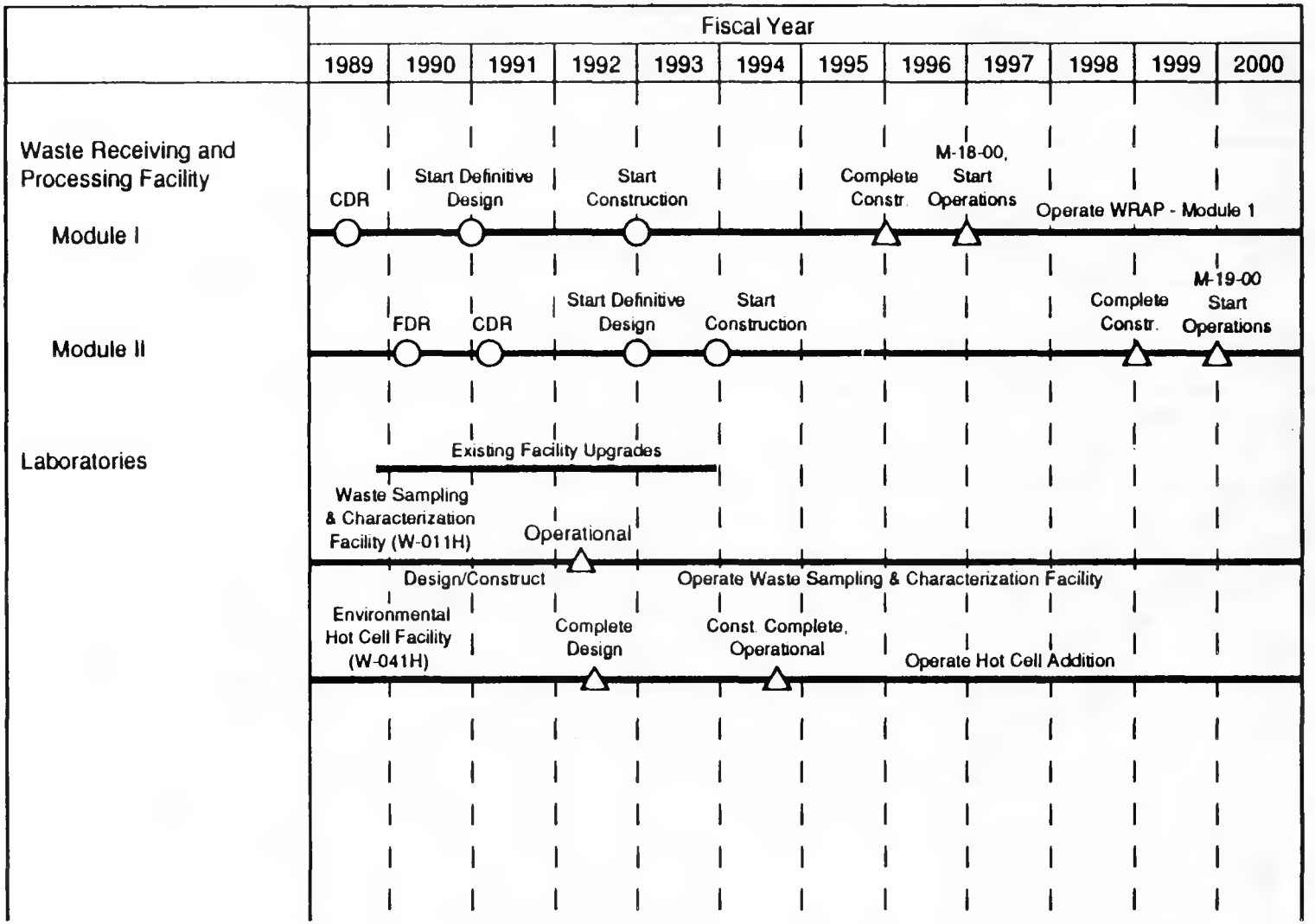
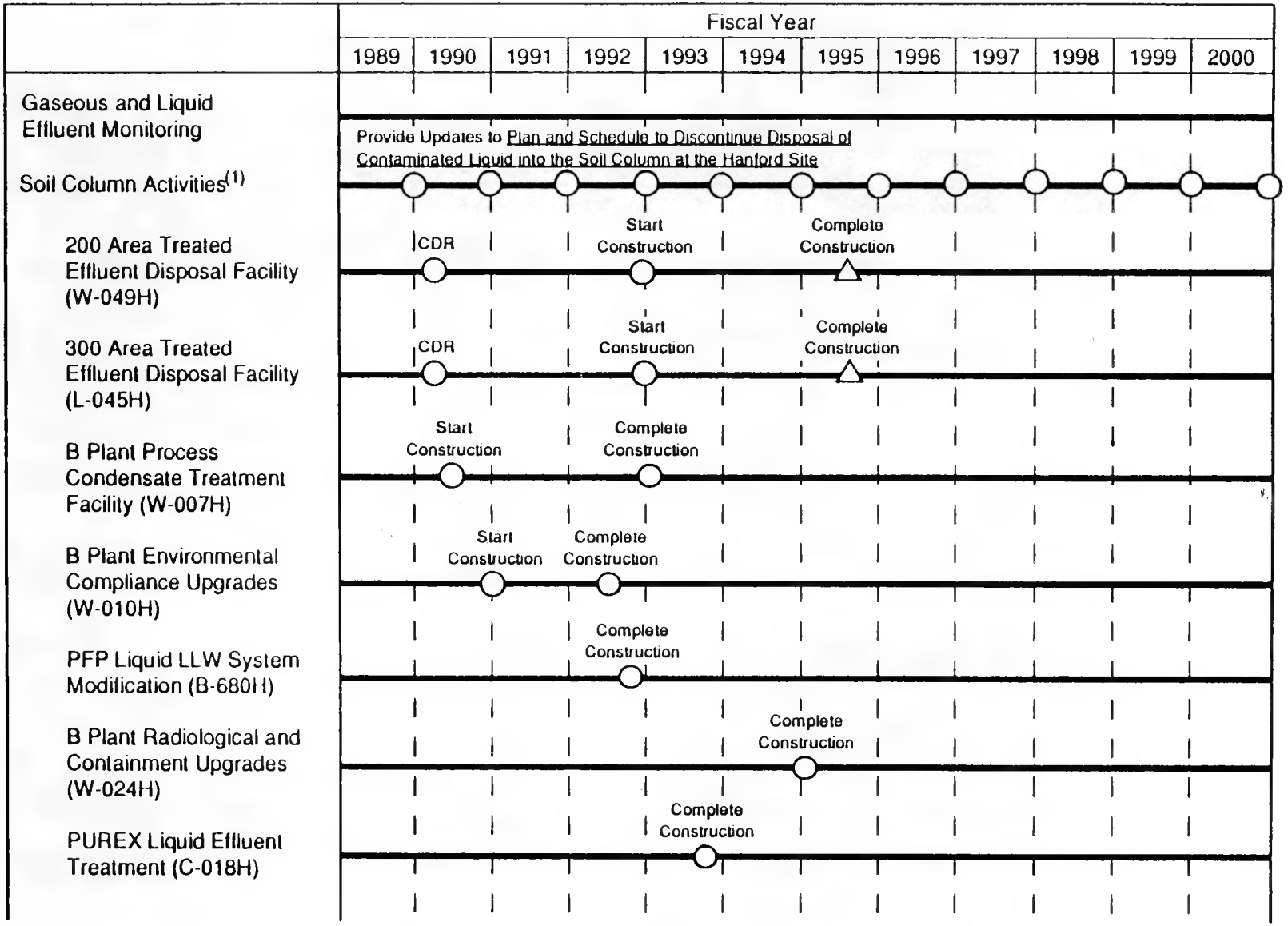


Figure 2-14. Waste Management Operations Schedule. (sheet 2 of 5)



(1) Related TPA milestone M-17-00, Complete Liquid Effluent Treatment Facilities/Upgrades for all Phase I streams by June 1995.

S8909011.3

Figure 2-14. Waste Management Operations Schedule. (sheet 3 of 5)

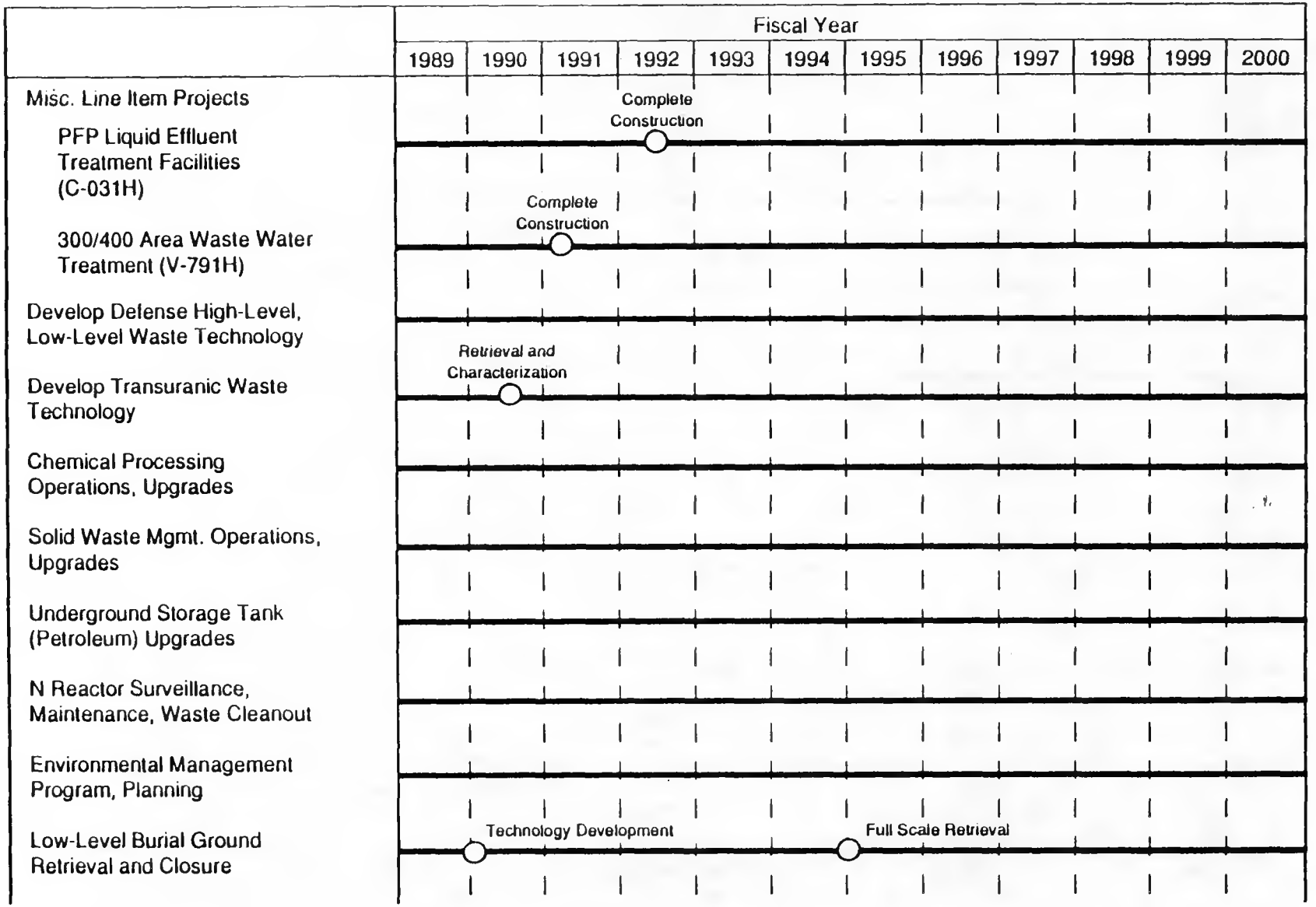


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Figure 2-14. Waste Management Operations Schedule. (sheet 4 of 5)

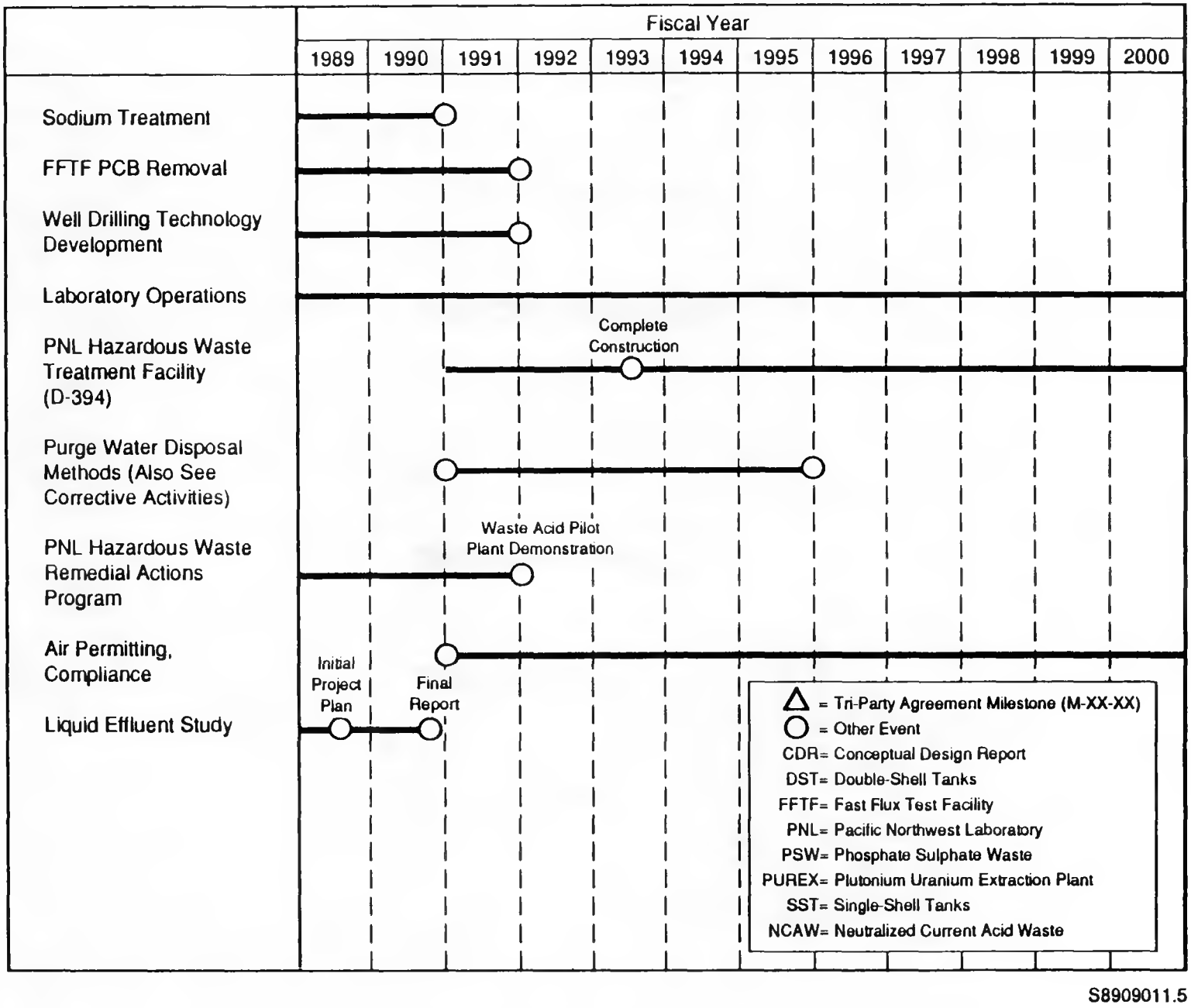

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Figure 2-14. Waste Management Operations Schedule. (sheet 5 of 5)

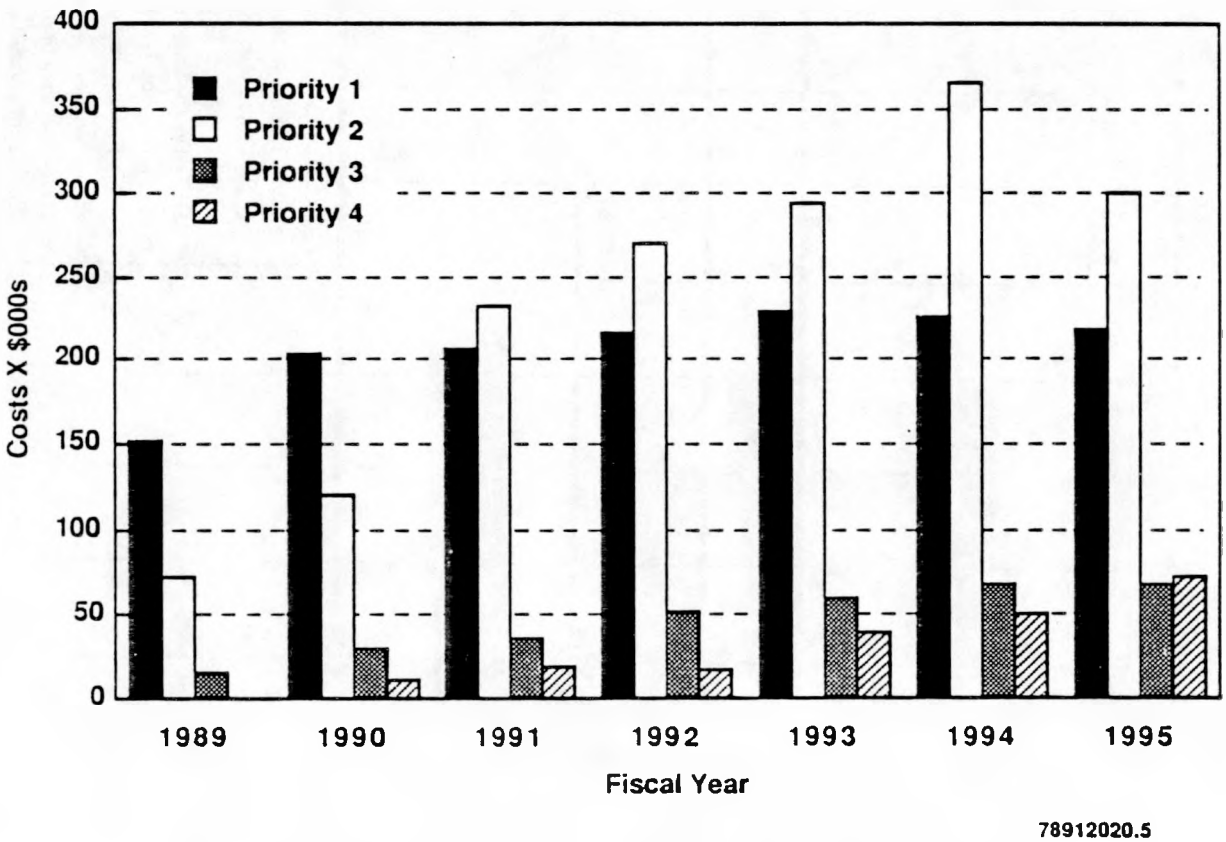

Figure 2-15. Waste Management Costs by Year and Priority.

Table 2-2. Waste Management Operations Costs Listed by Data Sheet and Priority. (sheet 1 of 4)

ACTIVITY DATA SHEET NUMBER	ACTIVITY DATA SHEET TITLE	(COSTS, $,000) FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
PRIORITY 1								
RL-0002	GASEOUS AND LIQUID EFFLUENT MONITORING	7000	8233	10762	11733	11590	10002	9944
RL-0008	WASTE OPERATIONS JOB CONTROL DEVELOPMENT	477	310	312	0	0	0	0
RL-0013	SOLID WASTE OPERATIONS	7608	11631	11691	12683	13285	13700	14327
RL-0015	INVENTORY ADMINISTRATION	1191	1155	1195	1225	1225	1225	1225
RL-0019	TANK FARMS STORAGE OPERATIONS	21657	43729	34309	42164	32721	31908	33671
RL-0021	WELL SAMPLING, ANALYSIS, AND MAINTENANCE	4848	6843	7785	8408	9158	9658	9658
RL-0022	TANK FARMS STORAGE OPERATIONS RD&D	731	1406	1511	1536	1536	1120	1120
RL-0026	MAINTAIN INVENTORIES, ALL PROGRAMS	827	550	510	480	480	480	480
RL-0027	200 AREA STEAM SYSTEM UPGRADES	1080	532	3940	2735	18380	9790	565
RL-0034	CESIUM CAPSULE RECOVERY EFFORT	6100	3500	500	200	200	200	200
RL-0041	CESIUM/STRONTIUM STORAGE & SURVEILLANCE	17219	19732	22279	24319	23316	23176	22417
RL-0047	RCRA STORAGE FACILITY MONITORING	19	21	22	22	11	11	11
RL-0053	340 FACILITY LIQUID WASTE OPERATIONS	815	856	896	893	890	887	883
RL-0057	TANK FARMS CONTINUITY OF OPERATIONS	20739	21963	24243	25252	28305	37104	35763
RL-0060	N REACTOR EFFLUENT/MONITORING/MAINT.	4245	4210	3472	2231	1812	1784	1726
RL-0078	APPLIED TECHNOLOGY AND STRATEGIC PLANNING	2337	3759	3885	3885	3885	3885	3885
RL-0104	SODIUM TREATMENT	1882	761	0	0	0	0	0
RL-0107	308 BLDG. STANDBY SURVEILLANCE MONITORING	0	0	500	500	500	500	500
RL-0114	LABORATORIES AND PROCESSES OPERATIONS	6529	8971	10115	12845	14383	15483	16056
RL-0138	DEFENSE WASTE MANAGEMENT OPERATIONS-PNL	0	985	1130	1165	1195	1120	1195
RL-0139	ENERGY RESEARCH WASTE MGMT. OPERATIONS	0	345	390	390	400	375	400
RL-0156	SITE IMPACT - N REACTOR STANDBY	4335	6935	6935	7141	7355	7576	7803
RL-0160	SOLID WASTE OPERATIONS-ADV. REACTOR DIV.	65	67	75	77	80	82	85
RL-0161	SOLID WASTE OPRNS.-NUCLEAR MATLS. PROG.	7687	5293	6079	5620	5567	5718	5673
RL-0184	CHEM. PROC. CONTINUITY OF OPERATIONS	8236	9485	10075	9756	9756	9479	9124
RL-0185	GROUT DISPOSAL PROGRAM	21240	33600	39500	40500	43700	40700	42200
RL-0338	EVAPORATOR CONTINUITY OF OPERATIONS	0	3000	5200	200	0	0	0
RL-0345	FACILITIES COMPLIANCE/RENOVATION (PNL)	600	2200	200	0	0	0	0
RL-0350	WEST VALLEY PROGRAM SUPPORT (PNL)	4123	3150	0	0	0	0	0
SUBTOTAL		151590	203222	207511	215960	229730	225963	218911
PRIORITY 2								
RL-0001	TREATED EFFLUENT DISPOSAL FACILITY	3023	6106	14379	27000	30250	18850	3900
RL-0010	DEFENSE HIGH LEVEL WASTE TECHNOLOGY	7906	15571	12641	12545	13045	13709	14435
RL-0014	HANFORD WASTE VITRIFICATION PLANT	31320	45400	103805	146375	164720	255450	220245
RL-0028	NEW HANFORD SITE LAUNDRY FACILITY	252	3077	10160	4555	480	600	100

Table 2-2. Waste Management Operations Costs Listed by Data Sheet and Priority. (sheet 2 of 4)

ACTIVITY DATA SHEET NUMBER	ACTIVITY DATA SHEET TITLE	(COSTS, $,000) FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
PRIORITY 2, CONTINUED								
RL-0042	B PLANT NCAW PRETREATMENT	6912	10488	21509	27014	24319	21580	20171
RL-0051	TANK FARMS TREATMENT RD&D	571	1099	1180	1200	1200	875	875
RL-0056	TANK FARMS TREATMENT OPERATIONS	8683	10504	12527	8612	10553	20596	24717
RL-0079	WASTE RECEIVING/PROCESSING FACILITY RD&D	398	2614	4500	3770	3940	2575	1000
RL-0086	SOIL COLUMN DISP. PLAN & SCHEDULE SUPPORT	2724	1281	627	495	80	0	0
RL-0089	B PLANT RAIL SPUR DECONTAMINATION	0	0	1200	0	0	0	0
RL-0090	B PLANT SOIL COLUMN DISPOSAL PLAN PROJECTS	4686	8550	8160	5300	4900	1840	100
RL-0094	LLW BURIAL GROUND RETRIEVAL AND CLOSURE	0	2000	4400	4532	4715	6611	7689
RL-0096	ENVIRONMENTAL HOT CELL EXPANSION	375	356	2565	11253	1520	90	0
RL-0097	ENVIRONMENTAL LABORATORY UPGRADE	4827	3291	14188	5823	1837	1000	1000
RL-0099	WASTE SAMPLING AND CHAR. FACILITY DESIGN	231	6446	10465	60	0	0	0
RL-0102	WASTE RECEIVING AND PROCESSING FACILITY	1600	0	5500	10284	32771	21159	6151
RL-0164	N REACTOR RCRA CLOSURE IMPLEMENTATION	0	756	317	243	84	0	0
RL-0323	LAB & PROCESSES CONTINUITY OF OPERATIONS	0	1100	4100	1100	0	0	0
RL-0335	TPA LIQUID EFFLUENT STUDY	0	1800	0	0	0	0	0
SUBTOTAL		73508	120439	232223	270161	294414	364935	300383
PRIORITY 3								
RL-0004	DEFENSE TRANSURANIC WASTE TECHNOLOGY	600	109	400	200	0	0	0
RL-0011	CHEM. PROCESSING CONTINUITY OF OPERATIONS	3090	4889	6061	5716	5415	5355	5355
RL-0017	UNDERGROUND STORAGE TANK UPGRADES	0	0	50	1090	4090	40	0
RL-0020	244AR VAULT PRETREATMENT ACCELERATION	0	0	2100	11200	9100	10200	11300
RL-0046	CHEM. PROC. CONTINUITY OF OPERATIONS RD&D	0	1000	1500	2000	2000	2000	2000
RL-0052	244AR VAULT PRETREATMENT ACCEL. RD&D	0	0	200	1100	800	1000	1000
RL-0059	N REACTOR CONTINUITY	43	91	97	97	97	97	97
RL-0062	N REACTOR UNDERGROUND ST. TANK UPGRADES	0	170	193	192	0	0	0
RL-0076	ARD WASTE MANAGEMENT AND STORAGE	370	389	473	966	1130	277	277
RL-0080	UNDERGROUND STORAGE TANK TESTING	0	18	23	36	45	45	45
RL-0082	N SPRINGS TREATMENT AND STABILIZATION	389	0	0	0	0	0	0
RL-0103	T PLANT RCRA/CERCLA UPGRADES	0	50	120	250	0	1080	1050
RL-0106	PCB TRANSFORMER REMOVAL AT FFTF	175	500	830	0	0	0	0
RL-0108	B PLANT PRETREATMENT ACCELERATION	0	6908	0	0	0	0	0
RL-0109	DRILLING TECHNOLOGY DEVELOPMENT	297	100	600	0	0	0	0
RL-0120	DEFENSE LOW-LEVEL WASTE TECHNOLOGY - PNL	185	400	980	1150	780	705	660
RL-0137	PNL HAZARDOUS WASTE TREATMENT FACILITY	0	0	970	3230	600	600	600
RL-0144	DEFENSE HLW TECHNOLOGY R&D PROGRAM	400	1150	1425	1700	1850	1600	1000
RL-0148	FACILITIES COMPLIANCE/RENOVATION - PNL	0	0	0	600	2200	5000	5500
RL-0153	ENV. MONITORING/SURVEILLANCE - PNL	4102	4985	6417	6610	5800	5800	4990

Table 2-2. Waste Management Operations Costs Listed by Data Sheet and Priority. (sheet 3 of 4)

ACTIVITY DATA SHEET NUMBER	ACTIVITY DATA SHEET TITLE	(COSTS, $,000) FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
PRIORITY 3, CONTINUED								
RL-0155	RADIONUCLIDE EFFLUENT MONITORS - PNL	0	100	350	0	0	0	0
RL-0163	N REACTOR WASTE CLEANOUT	1538	1763	1099	986	632	403	403
RL-0172	HEMP - DEFENSE REACTOR FACILITIES	1115	539	365	365	365	365	365
RL-0173	HEMP - CHEMICAL PROCESSING FACILITIES	1376	1567	1747	1747	1747	1747	1747
RL-0174	HEMP - NUCLEAR ENERGY FACILITIES	587	719	764	764	764	764	764
RL-0175	HEMP - SPACE & DEFENSE POWER SYSTEMS	49	45	75	75	75	75	75
RL-0176	HEMP - DEFENSE WASTE FACILITIES	1142	1219	1313	1313	1313	1313	1313
RL-0179	DEMO. OF CEPOD DISSOLUTION TECHNOLOGY	0	150	400	450	600	0	0
RL-0182	MATERIAL CHARACTERIZATION CENTER - PNL	130	265	265	265	265	265	265
RL-0183	FACILITIES COMPLIANCE/RENOVATION - PNL	0	0	0	0	1500	5000	4500
RL-0196	ADVANCED LLW DISPOSAL FACILITIES	0	1000	1500	1500	10000	10000	10000
RL-0303	PURGE WATER DISPOSAL METHODS	0	0	1800	1800	1800	1800	1800
RL-0320	LLW PROCESS WASTE SOLIDIFICATION	0	300	400	0	500	2000	2500
RL-0321	SOLID WASTE REDUCTION SYSTEM (PFP)	0	700	600	0	0	2400	5000
RL-0325	HAZWRAP DEMONSTRATION PROJECT (PNL)	394	330	280	0	0	0	0
RL-0336	UNDERGROUND STORAGE TANK UPGRADES - PNL	0	20	120	100	100	100	0
RL-0337	SAFETY ANALYSIS, WASTE STORAGE	0	0	1431	2720	3706	7733	4836
RL-0346	329 FACILITY COMPLIANCE RENOVATION (PNL)	0	0	1800	3200	2300	0	0
SUBTOTAL		15982	29476	36748	51422	59574	67764	67442
PRIORITY 4								
RL-0003	DEFENSE LOW-LEVEL WASTE MANAGEMENT	42	724	944	391	300	300	300
RL-0009	DEFENSE HIGH-LEVEL WASTE TECHNOLOGY	0	0	1000	1000	1000	1000	1000
RL-0012	DEFENSE REACTOR FACILITY ASSESSMENT	0	200	200	200	200	200	200
RL-0087	CHEM. PROCESSING FACILITY ASSESSMENT	0	500	500	0	0	0	0
RL-0105	SOLID WASTE MANAGEMENT EQUIPMENT REPL	0	500	500	750	750	750	750
RL-0168	GROUT DISPOSAL CONFINEMENT STRUCTURE	0	0	300	700	5300	300	100
RL-0180	APPLIED TECHNOLOGY AND STRATEGIC PLANNING	0	0	200	200	200	200	200
RL-0181	TF LIFE EXTENSIONS & OPER. ENHANCEMENTS	0	1425	2900	1250	17100	29850	30450
RL-0190	FACILITY ASSESSMENTS OF EXISTING RQMTS	0	600	600	600	600	600	600
RL-0200	HEMP - DEFENSE WASTE	0	2014	2013	2013	2013	2013	2013
RL-0322	TF LIFE EXTENSION/OPERATION ENHANCEMENT	0	2225	2900	6250	8100	11850	33450

Table 2-2. Waste Management Operations Costs Listed by Data Sheet and Priority. (sheet 4 of 4)

ACTIVITY DATA SHEET NUMBER	ACTIVITY DATA SHEET TITLE	(COSTS, $,000) FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
PRIORITY 4, CONTINUED								
RL-0329	AIR PERMITTING/COMPLIANCE - WASTE MGMT.	0	0	2205	2205	2205	2205	2205
RL-0330	AIR PERMITTING/COMPLIANCE - CHEM. PROC.	0	0	519	519	519	519	519
RL-0331	AIR PERMITTING/COMPLIANCE - N REACTOR	0	0	640	640	640	640	640
RL-0341	CESIUM CAPSULE RECOVERY	0	2400	4000	0	0	0	0
SUBTOTAL		42	10588	19421	16718	38927	50427	72427
TOTAL		241122	363725	495903	554261	622645	709089	659163

Table 2-3. Funding Summary by Subcategories for Waste Management.

Programs	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
Waste management operations							
Continuity of operations	76,604	109,645	152,401	122,547	135,334	137,910	127,463
Changes in inventories	2,018	1,705	1,705	1,705	1,705	1,705	1,705
Treatment	28,383	49,827	68,071	92,009	116,062	131,714	124,902
Storage	46,245	74,427	67,640	77,609	71,983	69,876	92,339
Disposal	48,681	70,224	87,896	100,054	119,370	101,794	84,089
Research, development, and demonstration	3,354	8,017	12,605	11,962	11,471	8,640	6,420
Waste minimization	394	1,330	1,780	2,000	2,000	2,000	2,000
Hanford Waste Vitrification Plant	31,320	45,400	103,805	146,375	164,720	255,450	220,245
Remedial actions and waste technology	4,123	3,150	--	--	--	--	--
Total Waste Management	241,122	363,725	495,903	554,261	622,645	709,089	659,163

FY = fiscal year.

PST89-5134-2-4

3.0 ENVIRONMENTAL RESTORATION

3.1 OVERVIEW

The DOE has the overall responsibility for the production of nuclear materials and the manufacture of nuclear weapons used in safeguarding this nation's security. Within the DOE, the organization charged with this responsibility is Defense Programs. This responsibility is carried out at several DOE sites scattered across the country, including the Hanford Site. One of the Hanford Site's missions is to produce nuclear materials, primarily plutonium. As a part of this mission, the Hanford Site generates radioactive, hazardous (chemically hazardous), and mixed wastes. Before the enactment of relatively recent environmental legislation, primarily RCRA and CERCLA, the DOE managed the storage and disposal of these wastes under requirements established by authority of the Atomic Energy Act. Since passage of RCRA and CERCLA, the DOE, including DOE-RL, has established programs to achieve compliance with these laws. The DOE programs include activities to comply with regulations for the generation, TSD, and transportation of wastes produced in operating facilities, and for the characterization and cleanup of wastes at inactive waste sites. In addition, the DOE has also set up programs for management and action on radioactively contaminated surplus facilities. The programs set up for surplus facilities are called D&D programs, are driven by the Atomic Energy Act, and are controlled by DOE orders.

The environmental restoration program within the scope of this site-specific plan (DOE-RL 1989b) is divided into three subprograms: (1) Environmental Restoration Remedial Actions, (2) environmental restoration decontamination and decommissioning, and (3) technology development and demonstration. A brief discussion of each of these programs follows.

3.1.1 Environmental Restoration Remedial Action Program

The Environmental Restoration Remedial Action program was established to comply with regulations for characterization and cleanup of inactive waste sites. The program specifically includes inactive site identification and characterization, technology development and demonstration, remedial design and cleanup action, and postclosure activities of inactive radioactive, chemically hazardous, and mixed waste sites. The primary objective of the Environmental Restoration Remedial Action program is to bring all known waste sites at the Hanford Site into compliance with applicable federal, state, and local environmental laws and regulations. Secondary objectives include the following:

- Providing identification, emphasis, and accountability for all environmental restoration remedial action needs resulting from past Hanford Site hazardous waste activities

- Providing an identifiable, coherent program by which all activities supporting Environmental Restoration Remedial Action can be coordinated and reported

- Preparing and managing the budgeting and scheduling of CERCLA, RCRA 3004(u), and selected TSD closure activities for all of the Hanford Site.

The Hanford Site covers about 560 mi^2 in the State of Washington, and is bordered partially on the East by the Columbia River, and the South by the City of Richland. In order to carry out the mission and objectives outlined in the previous paragraph, the Hanford Site has been divided into four aggregate areas (Figure 3-1), 78 operable units (Table 3-1), and about 1,500 waste management units. The waste management unit is the entity which is assessed, characterized and remediated, and of the 1,500 waste management units which have been identified, about 1,127 are addressed by the Environmental Restoration Remedial Action program (Appendix A). The remainder of the waste management units are not addressed by Environmental Restoration Remedial Action because they are D&D units, active TSD units, or are otherwise not applicable to Environmental Restoration Remedial Action. Assessment, characterization, and remediation activities on individual waste management units are carried out in groupings called operable units. Operable units form the basis for planning, scheduling, budgeting, and establishing the working order (the order in which work will take place, which should not be confused with priority levels described in Section 1.6), and some of the applicable environmental restoration milestones for the DOE and the Tri-Party Agreement (Ecology et al. 1989b).

3.1.2 Environmental Restoration Decontamination and Decommissioning

Many DOE-owned nuclear facilities at the Hanford Site which were used for nuclear materials production have been retired from service and declared excess. There are currently about 115 separate facilities which the Hanford surplus facilities program manages, consisting of large concrete and cement block structures used to house chemical separations processes, nuclear production reactors, underground effluent water systems and storage tanks, and ancillary buildings. The majority of these facilities have residual radioactive contamination requiring surveillance, maintenance, and ultimate disposal. The Hanford surplus facilities program office has the responsibility for managing and monitoring these facilities at the Hanford Site for the DOE.

Certain activities related to D&D of structures by DOE may be subject to RCRA. Whenever D&D activities result in the generation of hazardous wastes, the TSD of those wastes shall be subject to the Tri-Party Agreement.

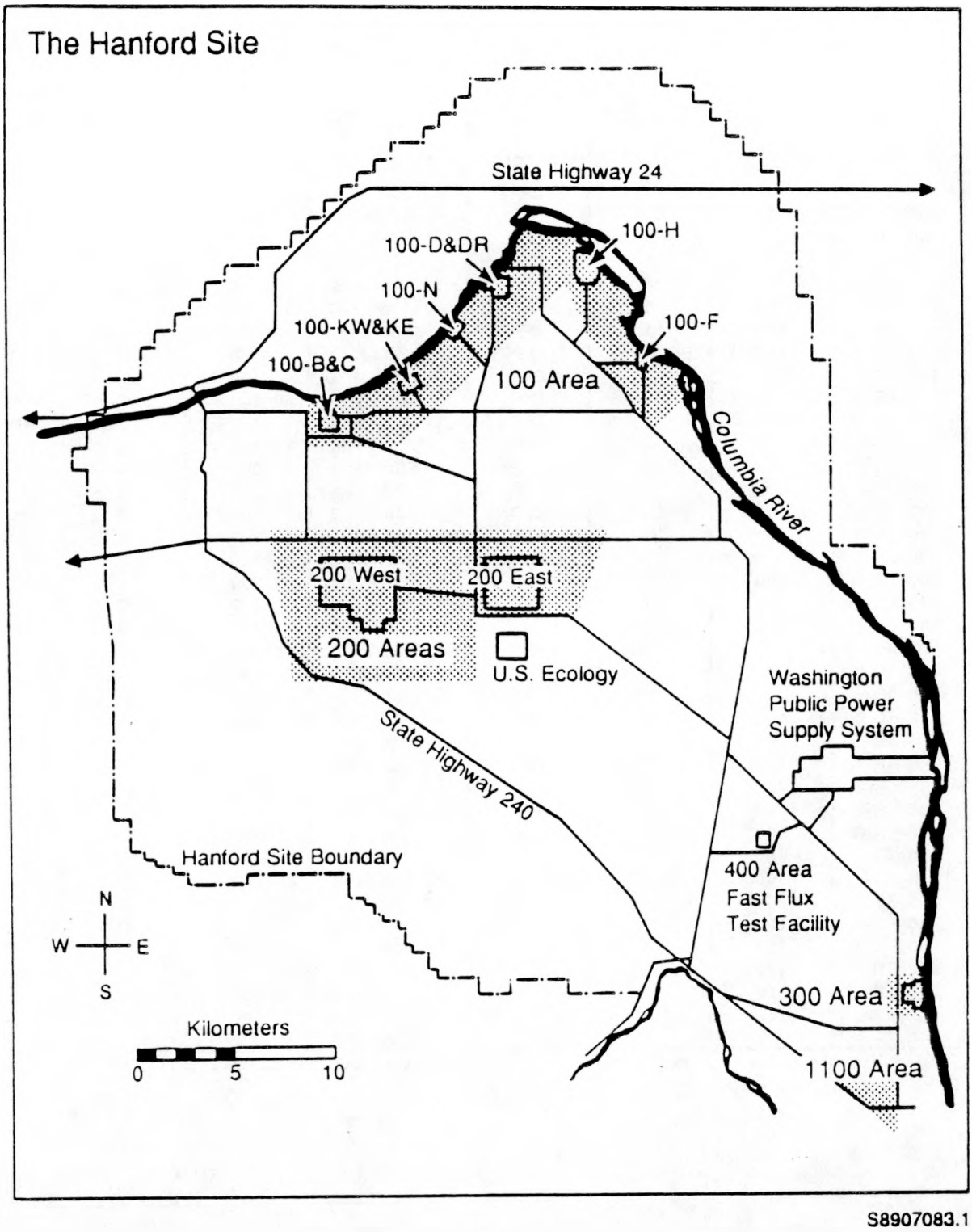

Figure 3-1. Proposed Aggregate National Priorities List Sites for the Hanford Site.

Table 3-1. Hanford Site Environmental Restoration Remedial Actions Program Operable Units Listing.

OPERABLE UNIT	AGGREGATE AREA	WORKING ORDER	CATEGORY
1100-EM-1	1100	1	CPP
300-FF-1	300	2	CPP
300-FF-5	300	2A	CPP
200-BP-1	200	3	CPP
100-HR-1	100	4	RPP
100-HR-3	100	4A	RPP
100-DR-1	100	5	RPP
100-BC-1	100	6	CPP
100-BC-5	100	6A	CPP
100-KR-1	100	7	CPP
100-KR-4	100	7A	CPP
100-NR-1	100	8	RPP
100-FR-1	100	9	CPP
100-NR-3	100	10	RPP
200-UP-2	200	11	CPP
100-BC-2	100	12	CPP
200-BP-5	200	13	CPP
100-DR-2	100	14	RPP
200-ZP-1	200	15	CPP
100-KR-2	100	16	CPP
200-BP-4	200	17	
200-BP-11	200	18	RPP
200-PO-2	200	19	
200-PO-5	200	20	
100-BC-3	100	B	CPP
100-BC-4	100	B	CPP
100-DR-3	100	B	RPP
100-FR-2	100	B	
100-HR-2	100	B	RPP
100-KR-3	100	B	CPP
100-NR-2	100	B	
100-IU-1	100	B	
200-BP-2	200	B	
200-PO-1	200	B	
200-PO-4	200	B	
200-SO-1	200	B	
200-TP-1	200	B	
200-TP-2	200	B	
200-TP-4	200	B	
200-ZP-2	200	B	
200-IU-3	200	B	
300-FF-2	300	B	CPP
300-FF-3	300	B	CPP
100-IU-2	100	C	
100-IU-3	100	C	
1100-EM-2	1100	C	
1100-EM-3	1100	C	
1100-IU-1	1100	C	
200-BP-10	200	C	
200-BP-3	200	C	
200-BP-6	200	C	
200-BP-8	200	C	
200-BP-9	200	C	
200-NO-1	200	C	
200-PO-6	200	C	
200-RO-1	200	C	
200-RO-2	200	C	
200-RO-3	200	C	
200-TP-3	200	C	
200-UP-1	200	C	
200-ZP-3	200	C	
200-IU-4	200	C	
300-IU-1	300	C	
300-FF-4	300	C	
100-IU-4	100	D	
100-IU-5	100	D	
200-SS-1	200	D	
200-SS-2	200	D	
200-IU-1	200	D	
200-IU-6	200	D	
200-IU-2	200	D	
200-IU-5	200	D	
200-BP-7	200	*	RPP
200-PO-3	200	*	RPP
200-RO-4	200	*	RPP
200-TP-5	200	*	RPP
200-TP-6	200	*	RPP
200-UP-3	200	*	RPP

RPP = RCRA past practice
CPP = CERCLA past practice

* = Single-shell tank operable unit which has not been prioritized.

3.1.3 Environmental Restoration Technology Development and Demonstration

The environmental restoration technology development and demonstration programs within the scope of this plan are divided into two main categories: (1) technology development and demonstration activities within the Environmental Restoration Remedial Action program that are specific to the Hanford Site, and (2) HAZWRAP activities that focus on technology development and demonstration activities having applications at the national level. The HAZWRAP activities covered in this plan are being conducted at the Hanford Site.

3.1.4 Program Management

Most program management activities are part of specific programs such as the Hanford Site Environmental Restoration and Remedial Action and the Hanford surplus facilities program. However this plan also includes two program management activities which are totally separate from previously mentioned Hanford Site programs. These two programs are the Shippingport Station decommissioning project office and the office of defense facilities decommissioning program (national defense D&D lead site).

3.2 ENVIRONMENTAL RESTORATION/REMEDIAL ACTION PROGRAM ASSESSMENT AND CHARACTERIZATION

Most of the assessment, characterization, and related activities within this section of this plan are conducted within the Environmental Restoration Remedial Action program. Assessment and characterization of inactive sites consist of activities to identify contaminants, determine the extent of contamination, specify cleanup requirements, and select remedial actions. In addition to contaminant levels and extent of contamination, information is also needed to describe the geologic, hydrogeologic, and geochemical setting of each waste management unit. This allows predicting the fate and transport of contaminants to the environment and assessing any potential risks.

The major assessment and characterization activities involve performing Remedial Investigations/Feasibility Studies (RI/FS) under CERCLA, and performing RCRA Facility Investigations/Corrective Measure Studies (RFI/CMS) under RCRA. The NEPA also has requirements for documentation of environmental reviews associated with hazardous substances remedial action projects. The DOE has issued Notice 5400.4, *Integration of Environmental Compliance Processes* (DOE-HQ 1988), which establishes the policy for meeting the requirements of the NEPA and RI/FS processes for remedial actions under CERCLA. The intent of this policy is to integrate the requirements of NEPA with the planning and environmental review procedures of the CERCLA RI/FS process so that all such procedures run concurrently rather than consecutively.

Each RI/FS is an iterative process that requires a phased approach. The first task in each of the RI/FSs is the preparation of a work plan that outlines the activities to be performed. This plan is first prepared in draft by the DOE operating contractor and its subcontractors, reviewed by the DOE and support contractors, and revised for submission to EPA and Ecology. The EPA and Ecology in turn review the plans and provide comments which are incorporated into a second revision which is circulated for public review. After public review, comments are incorporated and the work plan is approved by the regulatory agencies and published. The reviews can have considerable impact on the scope of the work plan.

As the work plan for each operable unit is developed, the schedule for the RI/FS or RFI/CMS activities will be created and modified to reflect the requirements for that operable unit. Current schedules that are being used to plan activities for the operable units in lieu of specific work plan schedules are success oriented and have no contingency in the critical path activities. They are based on a 60-month duration for the RI/FS activities including work plan preparation and approval and represent a schedule compromise with the EPA and Ecology. Although a March 1988 generic RI/FS guidance document indicated that a 72 month RI/FS cycle was probably optimistic, the EPA and Ecology are willing to accept the 60-month RI/FS duration until more specific information is available for each operable unit.

With an iterative RI/FS or RFI/CMS process, numerous review cycles, the confidence in cost and schedule estimates will remain low until additional experience is gained with RI/FS or RFI/CMS activities at the Hanford Site. The 60-month schedule and the resultant cost estimates derived from this approach form the basis for the cost estimates used in this plan.

Assessment and characterization are implemented in several phases. The adequacy of existing information is first assessed, then field investigations are conducted if additional data are needed. These data are used to assess potential remedial actions for a site. The most appropriate course of action for a site is determined through a comparative analysis of each option as to technical feasibility and other factors (including cost effectiveness) in meeting cleanup requirements.

3.2.1 Preliminary Assessment/Site Inspection

An earlier preliminary assessment/site inspection supported the EPA's nomination of four aggregate areas of the Hanford Site to the NPL and completion of the informational requirements of the federal agency docket. The hazard ranking system evaluation of CERCLA inactive waste sites at the Hanford Site was a part of the preliminary assessment process. The preliminary assessment activities are complete and no further action is planned for the Environmental Restoration Remedial Action program.

3.2.2 Investigations and Studies

Under the Tri-Party Agreement, 19 operable units have been designated as CERCLA past-practice units, 15 operable units as RCRA Section 3004(u) past-practice units, and 44 operable units have yet to be designated as either RCRA or CERCLA. The schedules for preparing and submitting CERCLA RI/FS or RCRA RFI/CMS work plans, and for conducting investigations and studies are stipulated in the Tri-Party Agreement. As of September 1, 1989, seven work plans have been initiated and of these five have been sent to EPA and Ecology for review. Figure 3-2 shows the scheduled activities for the operable units within the scope of this implementation plan and are in accordance with the Tri-Party Agreement. The following detailed description of investigation and study activities utilized a generic work description approach. For specific information as to when the activities will take place for any one operable unit, see Figure 3-2.

3.2.2.1 Scoping Studies. Scoping studies will be started about two months before initiating the preparation of a RI/FS or RFI/CMS work plan. The main purpose of this study is to provide information for preparing the operable unit site description document, a key part of the RI/FS or RFI/CMS work plan. As part of the scoping study, existing data will be gathered, and some nonintrusive field data will be gathered and analyzed for use in the site description document. Data analysis and evaluation will also be used to determine if any interim response actions are required to be taken on the operable unit under investigation, and to update the Waste Information Data System. The Waste Information Data System describes each waste management unit in terms of its characteristics, and assigns the waste management unit to a specific operable unit. In this capacity, the Waste Information Data System becomes an integral part of the technical baseline by identifying which waste management units are included within the scope of the operable unit.

3.2.2.2 Work Plans. All operable units to be assessed and characterized under the RI/FS or RFI/CMS process must have work plans prepared and approved by the EPA and Ecology before the majority of remedial investigation work is started. The work plan document describes the operable unit, and the steps and processes that must be undertaken to arrive at a selected remedy. The preparation and approval time for a typical work plan is currently estimated to be 16 1/2 months, with the first nine months used for initial preparation and submittal of a draft work plan to EPA and Ecology for review. The submittal of the draft work plans for the first 20 operable units are interim milestones in the Tri-Party Agreement (Ecology et al. 1989b). Rationale for selection of the 20 operable units was based on a ranking system used for and reported in *Preliminary Operable Units Designation Project* (WHC 1989c). Development and agreement among the DOE, EPA, and Ecology on specific milestones for the investigation/study phase will be based upon detailed schedules which are to be prepared as part of the work plans. Negotiations and agreements are currently intended to take place just prior to final approval of the work plans. The schedules and budgets presented in Section 3.6 of this implementation plan are based upon the Tri-Party

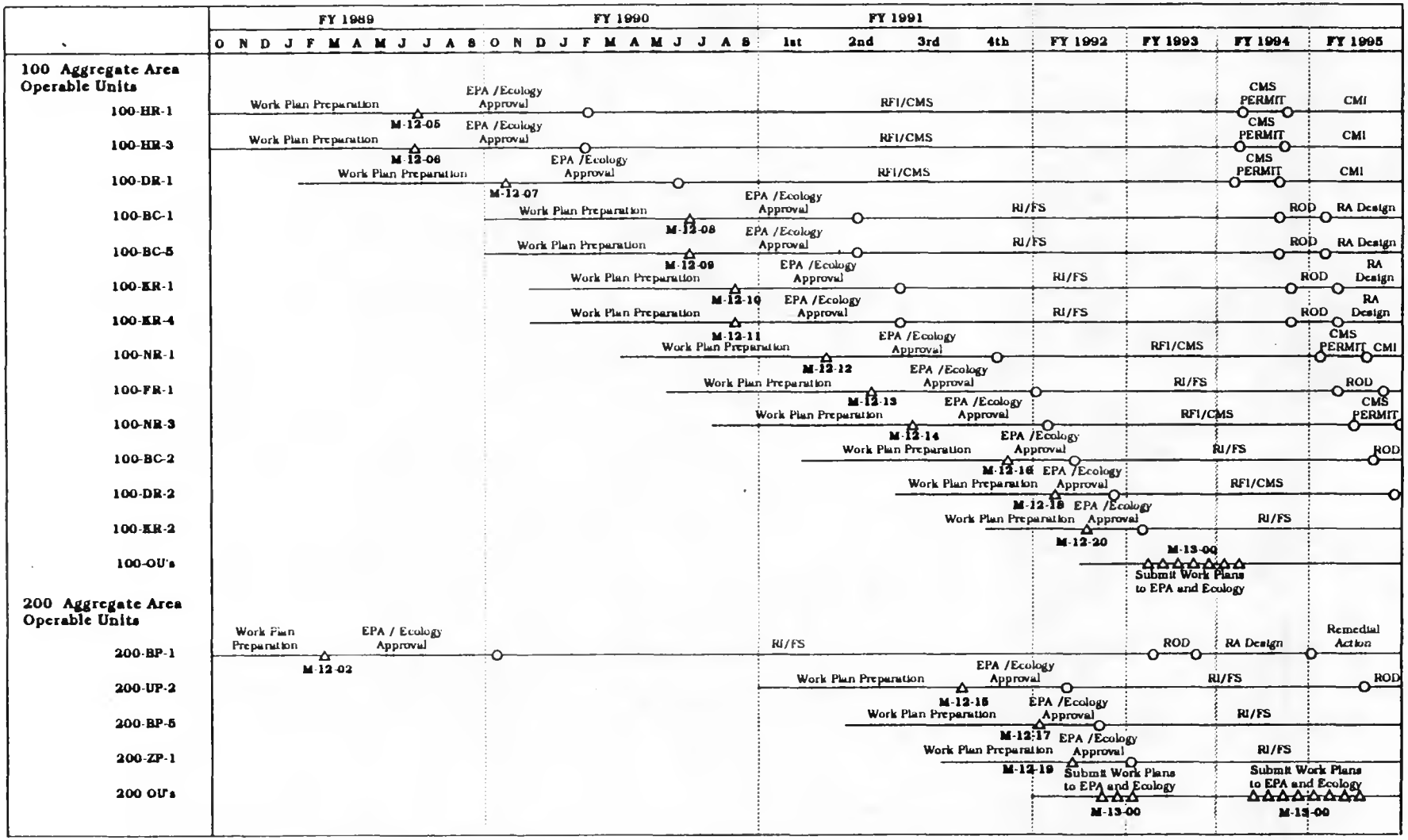

Figure 3-2. Environmental Restoration/Remedial Actions Program Five-Year Planning Schedule. (sheet 1 of 3)

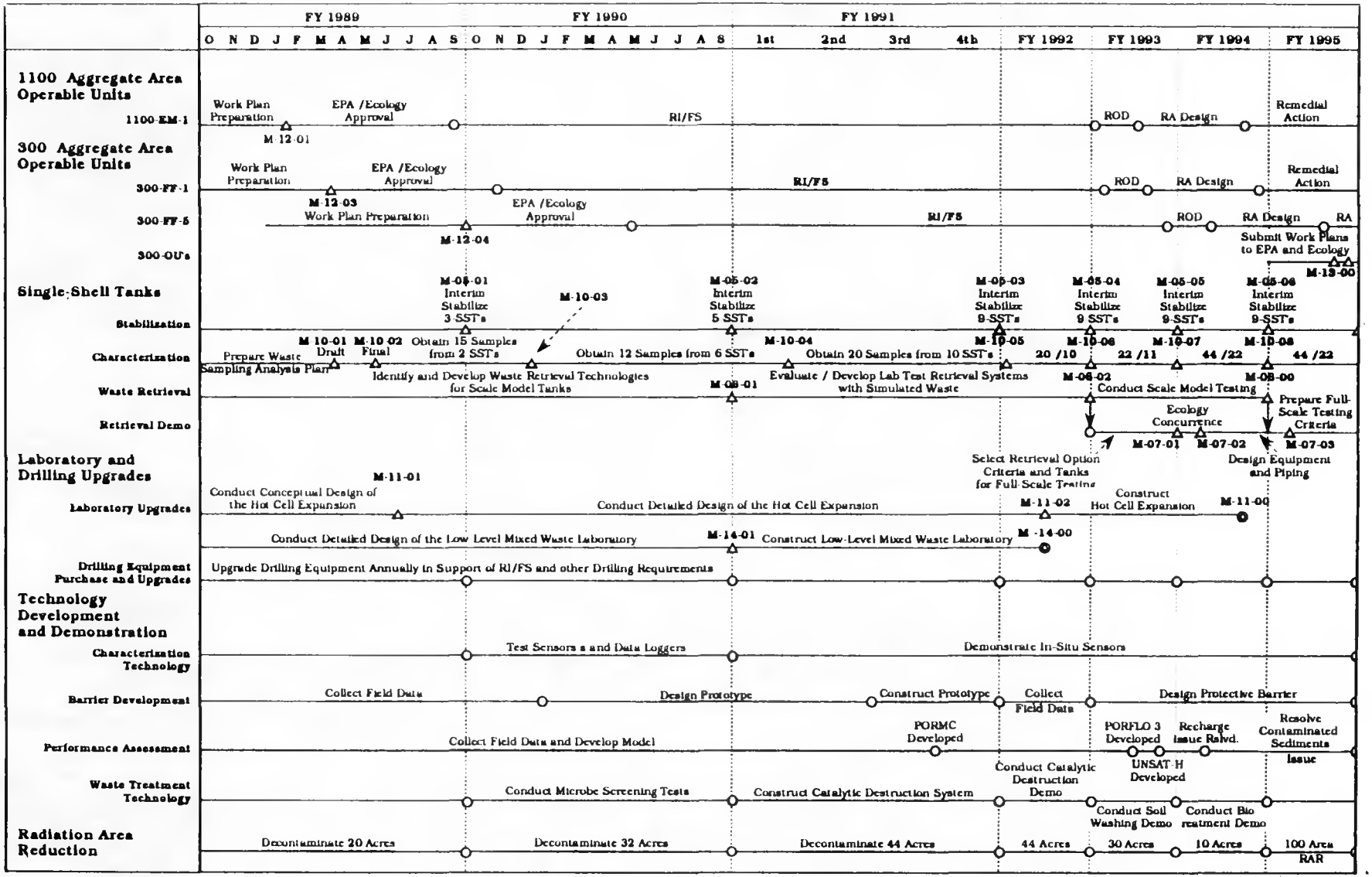

Figure 3-2. Environmental Restoration/Remedial Actions Program Five-Year Planning Schedule. (sheet 2 of 3)

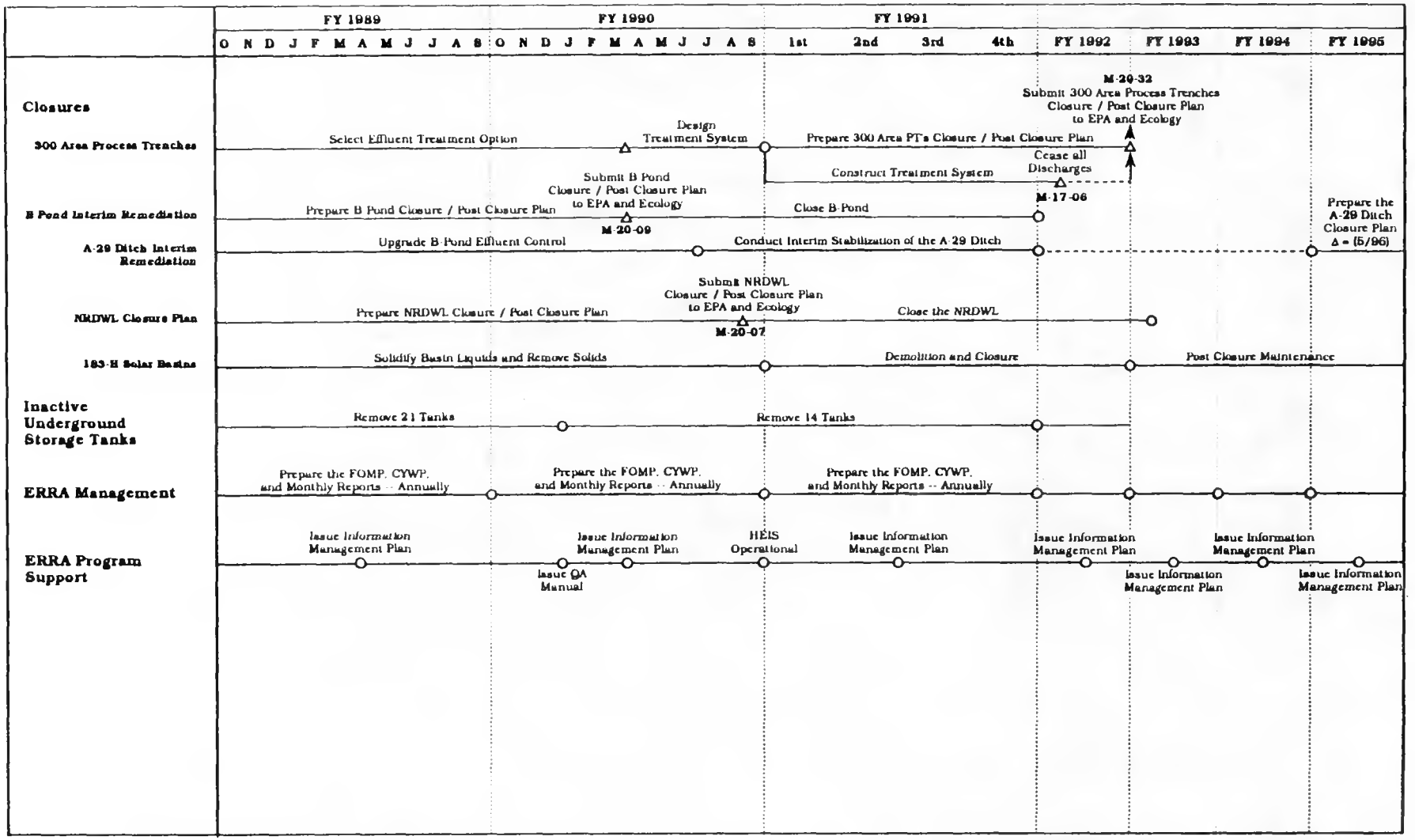

Figure 3-2. Environmental Restoration/Remedial Actions Program Five-Year Planning Schedule. (sheet 3 of 3)

Agreement. All other milestones which apply to the operable units are target dates and are based upon the generic planning approach described in Section 3.2. Since the physical scope of each operable unit varies one from another, one of the main purposes of the work plan is to define the operable unit characteristics as a basis for establishing and negotiating specific schedules, milestones, and budgets for the investigation and study phase.

3.2.2.3 Investigation Phase. A remedial investigation or RFI/CMS is to be conducted on each operable unit, and will be specifically defined by its respective work plan. These operable unit investigations are to be carried out in two phases. The investigation Phase I will consist of conducting radiation surveys, surveying and mapping the operable unit, taking and analyzing samples from the air, surface soils, vadose zone, aquifer, and any other applicable media, and for conducting facility investigations on RCRA units located within the operable unit. As the data is received and analyzed, it will be incorporated into the Hanford Environmental Information System for access and use in the study phase. Data from the Phase I investigation will be used by the study Phase I and II, and a determination will be made if more data is needed to prepare the proposed plan. If more data is needed, a work plan supplement will be prepared, and reviewed and approved by EPA and Ecology for conducting an investigation Phase II. The investigation Phase II activities may not exactly duplicate Phase I activities, but will be conducted in those areas where additional data are needed. At the conclusion of investigation Phase II, a report will be prepared, and reviewed and approved by EPA and Ecology. The submittal of this report in draft form will become a new interim milestone for each operable unit in the Tri-Party Agreement (Ecology et al. 1989b) when the new milestone is negotiated and approved by the EPA and Ecology.

3.2.2.4 Study Phase. A feasibility study or corrective measures study is to be conducted on each operable unit, and will be defined by its respective work plan. In all cases the conduct of the study activities will follow the RI/FS guidance document as published by the EPA. The studies on each operable unit will be carried out in three phases.

Phase I will start when the work plan has been approved by the EPA and Ecology, and will be conducted using existing data . The Phase I study's purpose is to start the definition of cleanup objectives and the development of remedial alternatives.

Although the Phase I and Phase II studies are to be conducted in series, Phase II will expand the information developed in Phase I using the data obtained from the Phase I investigation. The objective of study Phase II is to continue the development of remedial alternatives, to screen remedial alternatives, and to prepare the study Phase I and II report for review and approval by the EPA and Ecology.

Study Phase III will use additional field data from investigation Phase II. The objective of study Phase III is to evaluate the remedial alternatives, and to prepare the study Phase III report and the proposed plan for

the EPA, Ecology, and public review, and the EPA and Ecology approval. Upon approval of the proposed plan, a record of decision will be prepared per CERCLA requirements and issued by the EPA so that remedial actions on the operable unit can proceed under CERCLA requirements. In addition, appropriate NEPA documentation will be in place prior to remedial actions. The submittal of these reports in draft form will become the new interim milestones for each operable unit in the Tri-Party Agreement when the new milestones are negotiated and approved by the EPA and Ecology.

3.2.3 Single-Shell Tank Characterization, Development, and Demonstration

Six operable units out of the total of 78 include both RCRA 3004u past-practice units and the 149 SST TSD units, all located in the 200 Areas (Chemical Processing Areas). During FY 1989-1995, as part of the Hanford waste management operations program, 147 of the 149 SSTs are to be interim stabilized and isolated. The two remaining SSTs will be stabilized and isolated shortly thereafter. Refer to Section 2.2.3 for details. During this same time period, the Environmental Restoration Remedial Action program will support development of optimal waste retrieval and in-place disposal technologies for the several types of SST wastes. Promising technologies will then be evaluated for each waste type and one or more will be selected for testing using simulated waste in a scale-model (minimum 1:12 scale) tank.

Based upon the scale model testing, SST waste removal criteria will be developed, with EPA and Ecology concurrence. The criteria will be used to complete the design of waste removal equipment or in-place stabilization methods in support of a future full-scale tank farm closure demonstration. Other Environmental Restoration Remedial Action program actions in support of the Tri-Party Agreement include the recovery and analysis of at least 177 core samples from 83 SSTs. The sampling effort supports waste characterization, development of tank waste retrieval and in-place disposal technology, preparation of SST closure plans, and preparation of the supplemental EIS.

The SSTs have been determined by the EPA Region 10 and Ecology to be RCRA storage units requiring a system closure/corrective action work plan. These tanks stopped receiving waste in 1980 and are being addressed as part of the interim stabilization and isolation program. In accordance with the HDW-EIS (DOE-HQ 1987b) record of decision released in April 1988, additional development and evaluation will be conducted before making a final disposal decision on SST waste.

Before the RFI processes are completed on the operable units containing the SST TSD units, key actions on these units will be required which include SST waste characterization, barrier development, waste retrieval, waste processing, and criteria and standards development. The SST waste characterization will be conducted in a manner approved by the regulatory agencies and include assessing the application of hazardous waste characterization protocols to characterizing radioactive wastes. If variances to some of these

regulatory requirements are required, they will have to be approved by the regulatory agencies prior to initiating a full-scale characterization program. Criteria and standards based on applicable or guidance regulations will be developed to provide measures of performance.

The criteria and standards will eventually provide the basis for making final disposal recommendations for the SST waste. The National Academy of Sciences panel on SST disposal technology will provide technical review and oversight. As a result of the required prerequisites for SST operable units, the RFI/CMS process will not start on these operable units until the late 1990s or early into the next century.

Additional details on SSTs are located in Section 2.2.3.

3.2.4 Facility, Systems, and Equipment Upgrades

To support the characterization of SSTs and past-practice units numerous facility, system, and equipment upgrades are required. With the addition of six operable units per year and the remedial investigation for a single operable unit extending over four years, the need for drilling and laboratory support will continue to grow for the next five years. The drilling upgrades includes procedure development, drill rigs, drilling equipment, onsite support facilities, sampling equipment, sample trucks, decontamination facilities, and support vehicles. The laboratory upgrades includes procedure development, construction or modification of laboratory space for handling radioactive samples, analytical equipment, and data management systems. Additionally, a Hanford Site laboratory for analyses of soil and water samples will be constructed with initial operation scheduled for January 1992.

Additional program support detail is located in Section 2.2.7.

3.2.5 Environmental Restoration Remedial Action Management

The overall objective of Environmental Restoration Remedial Action management is to provide programmatic management and control so that the Hanford Environmental Restoration Remedial Action program is conducted in compliance with all applicable laws and regulations and according to sound management control system practices and procedures.

Environmental Restoration Remedial Action management includes overall management, planning, and program control activities as described in the *Environmental Restoration Field Office Management Plan* (DOE-RL 1989a). Day-to-day management of the Hanford Environmental Restoration Remedial Action program is accomplished through a program office staff including a program manager, end function managers, activity engineers and administrators, and clerical support. In addition, Environmental Restoration Remedial Action program management includes program control and other support activities

specializing in planning, cost estimating, and systems development and analysis. Program control provides cost and schedule information tracking, analysis, and reporting as well as developing, implementing, and documenting other management control systems.

3.2.6 Environmental Restoration Remedial Action Program Support

The objective of Environmental Restoration Remedial Action program support is to provide overall support in a variety of areas including community relations, media relations, records management, technical data management, configuration management, quality assurance and compliance with the requirements of the NEPA. Also included in Environmental Restoration Remedial Action program support is the funding for Ecology's support of the Tri-Party Agreement (Ecology et al. 1989b).

Community relations efforts include planning and implementation of the activities identified in the community relations plan for the Hanford Site (Ecology et al. 1989a) as well as the specific community relations activities required to meet the Tri-Party Agreement. Records, data, and configuration management efforts ensure compliance with applicable requirements for validation, retention, retrieval, and use of records and data. Quality assurance activities in Environmental Restoration Remedial Action program support include overall quality assurance planning, documentation for the Hanford Environmental Restoration Remedial Action program, and development and maintenance of a quality assurance manual. The NEPA support to the Hanford Environmental Restoration Remedial Action program includes NEPA compliance planning as well as preparation of a proposed programmatic EIS.

3.2.7 Environmental Restoration Remedial Action Technology, Development, and Demonstration

The objectives of Hanford Environmental Restoration Remedial Action technology development and demonstration program are to pursue technologies that have a high potential for resulting in a permanent and cost effective remediation. Within the scope of this plan, an acceptable, permanent, no-maintenance protective barrier will be designed and extensive analytical work with mathematical models will be conducted. Work in these areas will provide the capability to evaluate the long-term consequences of proposed waste site remediation, and to verify the environmental and health acceptability of such actions.

Other important technology development and demonstration work includes developing and demonstrating improved groundwater treatment capabilities, a high priority technical issue for the Hanford Site. Also included are adapting and demonstrating waste site characterization and stabilization techniques to improve worker safety and lower the total cost of inactive waste site remediation at the Hanford Site.

Much of the technology development and demonstration work is planned to be done by the Northwest Hazardous Waste Research, Development, and Demonstration Center; this work is funded by the newly formed Office of Technology Development.

Related RD&D activities conducted under waste management operations are discussed in Section 2.2.8.

3.3 ENVIRONMENTAL RESTORATION/REMEDIAL ACTION PROGRAM REMEDIATION

3.3.1 Closures

Within the Environmental Restoration Remedial Action program there are 169 TSD units which are subject to closure under RCRA. Out of the 169 TSD units, 149 are SSTs which were covered in Sections 3.2.3 and 2.2.3 in this plan. Activities on the remaining 20 TSDs are described in the following paragraphs, and include a description of separate closure actions that are being taken on three of the 20 TSDs within the scope of this implementation plan. (Reference Appendix A for a listing of all waste management units including TSDs within the Environmental Restoration Remedial Action program).

3.3.1.1 Process Trenches. The 300 Area process trenches (waste management unit 316-5) have three Tri-Party Agreement interim milestones which have been established, and include activities necessary to select a treatment option and to design and construct a treatment system so that discharges to the soil column will cease. A closure/postclosure plan for the 300 Area process trenches will also be prepared in parallel with the RI/FS activities. Submittal of this closure/postclosure plan is an interim milestone in the Tri-Party Agreement (See Figure 3-2.)

3.3.1.2 Nonradioactive Dangerous Waste Landfill. Closure activities on the Nonradioactive Dangerous Waste Landfill are using a phased approach. Phase I includes the preparation and approval of a plan of action. Following the approval of the plan of action, Phase II will include the preparation of the closure/postclosure plan and supporting documentation. Major information requirements for the closure/postclosure plan include the following:

- Maximum waste inventory
- Soil and sampling plan
- Final closure design
- Postclosure groundwater monitoring plan

- Interim status postclosure care plan
- State Environmental Policy Act checklist

The closure/postclosure plan takes about 12 months to prepare the draft for submittal to the EPA and Ecology for review and approval. Following the regulatory agencies approval, Phase III will be initiated and will involve conducting soil sampling and site characterization activities in accordance with the approved closure/postclosure plan. Phase IV will include the actual closure activities, consisting largely of the construction of the final cover, followed by Phase V, the postclosure activities. For specific milestones and timeframes for the above mentioned activities refer to Figure 3-2.

3.3.1.3 B Pond. The TSD closures may be required in advance of operable unit investigations of which they are a part. The TSD units will be closed under the authority of RCRA in accordance with TSD regulations. The B Pond TSD is located within the 200-BP-11 operable unit, a RCRA past-practice unit with the closure/postclosure plan scheduled to be submitted to the EPA and Ecology prior to the investigation of the 200-BP-11 operable unit. B Pond must have early action for two reasons.

- The 216-B-3-3 Ditch and 216-B-3 Pond will be taken out of service and interim stabilized. This action is being taken to remove from service operating disposal sites known to have received radioactive and hazardous waste discharges.
- In accordance with the Tri-Party Agreement, all hazardous waste land disposal units must be clean closed in accordance with RCRA by June 1995 or all liquid discharges must cease.

Actions to characterize B Pond are currently underway in support of the June 1995 clean closure milestone. The Tri-Party Agreement action plan states that any demonstration for clean closure of a land disposal unit (e.g., B Pond) must include documentation that ground water and soils have not been adversely impacted by that TSD unit. The Tri-Party Agreement action plan also includes schedules with enforceable milestones. For specific milestones and timeframes for the B Pond closure and A-29 Ditch interim stabilization activities refer to Figure 3-2.

3.3.1.4 Other Environmental Restoration Remedial Action Program Treatment, Storage, and Disposal Units. The remaining Environmental Restoration Remedial Action program TSDs are to be closed as part of the remediation phase of the operable unit to which it is assigned. During the investigation and study phase of the applicable operable units, closure plans for each TSD will be prepared and submitted in accordance with RCRA, and will be submitted along with the proposed plan for the operable unit in which it resides. Reference Appendix A for a complete listing of TSDs.

3.3.2 Environmental Restoration Remedial Action Radiation Area Reduction

The radiation area reduction objectives are to take field actions to reduce and prevent further radioactive surface contamination consistent with CERCLA requirements. The major elements of this effort include surveillance and maintenance, and decontamination and stabilization of acreage.

The radiation area reduction surveillance and maintenance includes efforts necessary to identify and document surface contamination problems and to prevent previously decontaminated and stabilized sites from deteriorating and becoming recontaminated by deep rooted vegetation and wind erosion. Its surveillance and maintenance also includes activities such as audits and surveys, sign/ posting maintenance, and herbicide application.

The goal of these activities is to reduce the total surface acreage on the Hanford Site that is radioactively contaminated, and to reduce the risk to workers and the public before final remedial action. Activities include engineering, surface stabilization by removal or replacement of top soil, surveying, sampling and analysis, revegetation, reposting and release. Current schedules include decontamination and stabilization of a total of 1,060 acres in and around the Hanford Site 200 Areas by FY 1994. Also included is the start of planning and engineering for cleanup of the BC Control Zone and the area north of 200 East Area. Decontamination and stabilization efforts in the Hanford Site 100 Areas are scheduled to begin in the early 1990s.

3.3.3 Remedial Actions

Work will be initiated on four RCRA operable units and four CERCLA operable units before 1995. No remediation will be completed during this five-year time period. The activities to be performed will depend on the records of decisions made at the conclusion of the investigations and studies being conducted for each operable unit. Reference Figure 3-2, sheets 1 and 2 for the specific operable units.

3.4 ENVIRONMENTAL RESTORATION DECONTAMINATION AND DECOMMISSIONING PROGRAMS

3.4.1 The Hanford Site Surplus Facilities Program

About 115 radioactively contaminated structures including surplus production reactors, chemical process buildings and structures, as well as ancillary structures are included within the scope of the surplus facility program. The program is divided into the following three major activity categories: (1) program management, (2) surveillance and maintenance, and

(3) D&D. The following paragraphs describe the activities which will take place during the FY 1989-1995 time period.

Program management will increase commensurately with the size and numbers of structures that will be undergoing D&D at any one period of time. Specific action covered by program management and support include program management, planning and scheduling, quality assurance, and records and data management.

Surveillance and maintenance will continue to ensure that radioactive contamination is controlled in accordance with DOE orders regarding environmental protection, safety, and health protection, and to keep facilities in an industrially and environmentally safe state until such time as they are decommissioned.

Activities currently under way in D&D include activities on portions of the 183-H Solar Basins cleanup in accordance with the interim closure plan; D&D activities on the 201-C Strontium Semiworks Complex and 100 Area ancillary facilities; and preparation of the final EIS based on the Draft EIS, Decommissioning of Eight Surplus Reactors at the Hanford Site, Richland, Washington, (DOE-HQ 1989a) for the eight shutdown 100 Area reactors. Future D&D activities within the FY 1989-1995 time period include the continuation of the foregoing activities, plus the possible start of D&D on the 100 Area reactors and 100 Area effluent facilities. Table 3-2 is a list of surplus facilities, and Figure 3-3 is a schedule for D&D of these facilities.

Certain activities related to D&D of structures by DOE may be subject to RCRA. Whenever D&D activities result in the generation of hazardous wastes, the TSD of those wastes shall be subject to the Tri-Party Agreement. Specific requirements (e.g., milestones) shall be incorporated into the action plan, as appropriate.

In the event that a contaminated structure is found to be the source of a release (or presents a substantial threat of a release) of hazardous substances, hazardous wastes, or hazardous constituents to the environment, the investigation and remediation of such a release (to include remediation of structures, as necessary), where subject to CERCLA or RCRA, shall be subject to the Tri-Party Agreement. Specific requirements shall be incorporated into the action plan as appropriate. Releases that have already been identified have been included in the action plan as waste management units and assigned to operable units.

As part of any action being taken under either RCRA or CERCLA for a contaminated structure, EPA and Ecology shall consider available information related to D&D activities, including EISs. All hazardous wastes generated by the D&D activities or stored at these storage areas shall be managed in accordance with applicable federal and state hazardous waste regulations.

3.4.1.1 Surveillance and Maintenance. The Hanford surplus facilities program includes a regular program of scheduled surveillance and maintenance. The purposes of the surveillance and maintenance functions are to: (1) ensure

Table 3-2. Surplus Facility Activities for Fiscal Year 1989-1995.

FACILITY NAME	AGGREGATE AREA	ACTIVITY	FY START	FY COMPLETE
100-B/C Effluent Lines	100	D&D	1991	1991
103-B Fuel Element Storage	100	D&D	1991	1991
103-D Fuel Element Storage	100	D&D	1993	1993
104--B1 Tritium Vault	100	D&D	1991	1991
104--B2 Tritium Lab	100	D&D	1991	1991
105-B Reactor Decommissioning	100	D&D	1995	2000
105-B Water Tunnels	100	D&D	1991	1991
105-C Reactor Decommissioning	100	D&D	1995	1998
105-C Water Tunnels	100	D&D	1991	1991
105-D Reactor Decommissioning	100	D&D	1993	1996
105-DR Reactor Decommissioning	100	D&D	1993	1997
105-DR Water Tunnels	100	D&D	1990	1990
105-F Basin Fill Removal	100	D&D	1989	1991
105-F Reactor Decommissioning	100	D&D	1991	1995
105-H Basin Fill Removal	100	D&D	1991	1991
105-H Reactor Decommissioning	100	D&D	1993	1996
105-KE Reactor Decommissioning	100	D&D	1995	1999
105-KE Water Tunnels	100	D&D	1992	1992
105-KW Reactor Decommissioning	100	D&D	1995	2000
105-KW Water Tunnels	100	D&D	1992	1992
108-F Laboratory/Office	100	D&D	1993	1993
111-B Decon. Station	100	D&D	1991	1991
115-B/C Gas Recirculation Bldg.	100	D&D	1989	1989
115-KE Gas Recirculation	100	D&D	1992	1992
115-KW Gas Recirculation	100	D&D	1995	1995
116-B Exhaust Air Stack	100	D&D	1991	1991
116-D Exhaust Air Stacks	100	D&D	1993	1993
116-DR Exhaust Air Stacks	100	D&D	1993	1993
116-KE Exhaust Air Stack	100	D&D	1993	1993
116-KW Exhaust Air Stack	100	D&D	1993	1993
117-C Exhaust Air Filter	100	D&D	1989	1989
117-DR Exhaust Air Filter Bldg.	100	D&D	1993	1993
117-KE Exhaust Air Filter	100	D&D	1992	1992
117-KW Exhaust Air Filter	100	D&D	1993	1993
119-DR Exhaust Air Sampling Bldg.	100	D&D	1993	1993
119-KE Exhaust Air Sampling	100	D&D	1993	1993
119-KW Exhaust Air Sampling	100	D&D	1993	1993
1706-KE/KEL/KER Test Facility	100	D&D	1994	1994
183-H Basin Cleanout	100	D&D	1989	1993
183-H Well Monitoring	100	Surveillance	1989	2017
201-C Strontium Semiworks	200	D&D		1993
B/C, KE/KW Riverlines	100	D&D	1991	1991
Surplus Production Reactors	100	EIS		1989

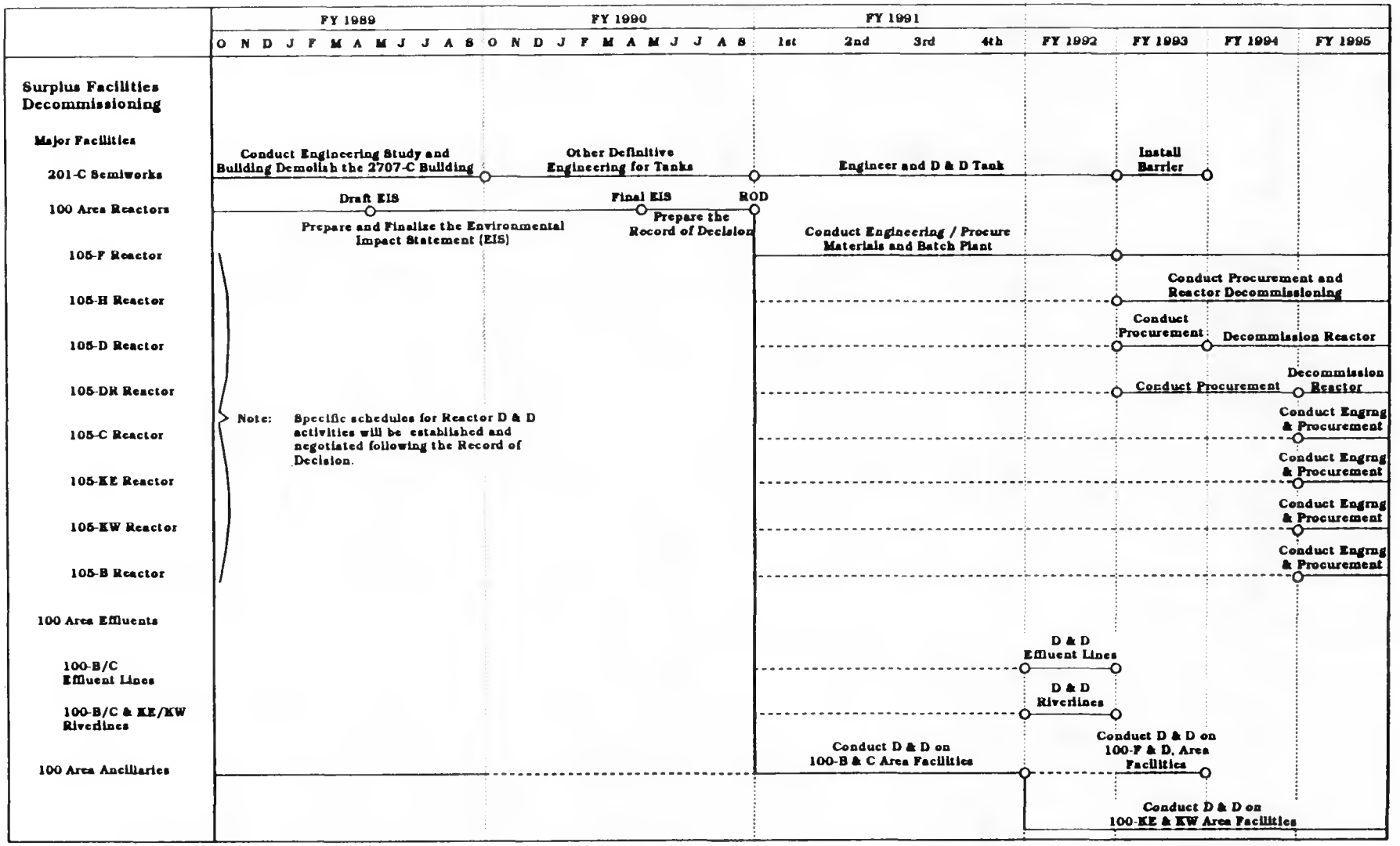

Figure 3-3. Environmental Restoration/Decontamination and Decommissioning Program Five-Year Planning Schedule.

that radioactive contamination is controlled in accordance with DOE orders regarding environmental protection, safety, and health protection, and (2) provide the security controls and safety evaluations and enhancements necessary to minimize potential hazards to the public and site personnel. The maintenance and surveillance activities include routine radiological monitoring, access control, and repairs to the buildings and structures. The annual cost for the maintenance and surveillance of the current inventory of surplus facilities is between $4.0 million and $5.0 million. Since the cost of maintenance and surveillance are high and will increase as the shutdown facilities continue to deteriorate, long-term solutions are currently being sought for managing the facilities. Possible alternatives range from decontaminating the facilities to allow reuse to complete decommissioning.

3.4.1.2 Surplus Reactors. The 100 Area reactors decommissioning project includes a total of eight radioactively contaminated graphite-moderated reactors, which were constructed between 1945 and 1955, their housing structures, and spent-fuel storage basins. The facilities have been shut down for approximately 20 years and require routine repair to control residual radioactive material. A draft EIS, which has been released for public review, discusses various methods of decommissioning.

3.4.1.3 Other Surplus Facilities. The 100 Area effluent facilities decommissioning projects include radioactively contaminated systems in the 100 Areas that supported operation of the reactors. These systems require routine surveillance and maintenance. They are scheduled to be characterized and their D&D method determined beginning in FY 1991.

The 100 Area ancillary facilities decommissioning project includes radioactively contaminated facilities in the 100 Area that supported operation of the reactors. These facilities require routine repair to control residual radioactivity. They are being decommissioned on an ongoing schedule extending to FY 1995.

The 201-C Strontium Semiworks Plant is a surplus process pilot plant. The D&D of this facility has been ongoing since FY 1984 and is scheduled to be completed in FY 1993.

3.4.2 Office of Defense Facilities Decommissioning Program

The DOE Office of Defense Waste and Transportation Management, through the Defense D&D Program, is responsible for the caretaking and disposition of inactive, DOE-owned or sponsored nuclear facilities that have been declared excess after use in national defense programs. Included are shutdown nuclear reactors, chemical processing plants, waste treatment systems, laboratories, feed materials and production plants, uranium enrichment facilities, and support facilities. These facilities are located at 16 sites across the country, and number more than 200.

The DOE-HQ provides overall Defense D&D program policy guidance, acts as an interdepartmental/interagency liaison, secures funding for the program, and approves the allocation of resources among the operations offices.

The DOE-RL is the designated lead operations office and manages the program through the Defense Facilities Decommissioning Program Office, and is supported by its onsite operating contractor who provides program management and technical support.

In early 1989, based on results of a survey of all DOE facilities, direction was given to include some 100 additional inactive facilities in the Defense D&D inventory. In addition, the Decommissioning Applied Technology Center at the Hanford Site was established to provide for the overall development, coordination, and implementation of a research and development and technology transfer program to support Defense program decommissioning activities. Implementation of these activities will require additional management oversight beginning in FY 1990, and later support for technology demonstrations at selected Defense D&D field sites.

3.4.3 Shippingport Station Decommissioning

The Hanford Site is the project office for the Shippingport Station decommissioning project, which is scheduled to be completed in early FY 1990. The project is a demonstration project for decommissioning methodology and is funded by the DOE nuclear energy surplus facilities management program. The project is managed through the DOE-RL Shippingport Station decommissioning project office with administrative and technical support being provided by their onsite operating contractor.

3.5 ENVIRONMENTAL RESTORATION TECHNOLOGY DEVELOPMENT AND DEMONSTRATION PROGRAMS

Environmental restoration technology development and demonstration programs are divided into two main categories: (1) HAZWRAP and (2) technology development and demonstration. The following activities will take place for these two categories within the FY 1989-1995 time period. Refer to Section 2.2.8 for RD&D activities under waste management operations.

3.5.1 Hazardous Waste Remedial Actions Program

The HAZWRAP for the Hanford Site consists of three categories of projects. The projects that will be active during FY 1989-1995 include: (1) demonstration projects, (2) research and development projects, and (3) the hexone tank waste treatment project.

Demonstration projects under HAZWRAP to be conducted between FY 1989 and 1995 include a waste acid pilot plant demonstration, an in situ vitrification demonstration for contaminated soil sites and underground storage tanks, a biological treatment demonstration on one groundwater stream, a study on the movement of and what happens to PCBs during in situ vitrification, and a demonstration of in situ heating. These demonstration projects are being conducted to advance the state of the art in waste treatment and minimization technologies in anticipation of reducing the overall cost for environmental restoration.

The HAZWRAP research and development projects, either ongoing or proposed to start during FY 1989-1995, include organic waste destruction by in situ heating, waste acid detoxification and reclamation, electrochemical oxidation of hazardous waste in situ, catalytic destruction of hazardous organics in aqueous wastes, biodegradation of hazardous waste using white rot fungi, biological treatment development, in situ biodehalogenation of contaminated aquifers, and biological treatment of groundwater. These research and development projects are being conducted to advance the state of the art in treatment technologies and to reduce the cost of environmental restoration.

The other project included under the HAZWRAP during FY 1989-1995 is the hexone tank waste treatment project. This project will demonstrate technology to treat mixed waste (primarily hexone, paraffin hydrocarbons, tributyl phosphate) stored in two underground waste tanks and dispose of any residues.

3.5.2 Technology Development and Demonstration

The technology development and demonstration objectives are to pursue technologies with high potential for acceptable, relatively low-cost and effective remediation methods. The technology development and demonstration efforts also support SST closure and remediation. One such method is to develop and support the design of an acceptable, permanent, no-maintenance protective barrier. Another technology development and demonstration activity is to support extensive analytical work with mathematical models for providing the capability to evaluate long-term consequences of actions to be proposed for waste site remediation and to provide the capability to verify the environmental and health acceptability of such actions. Other technology development and demonstration activities are the demonstration of improved groundwater treatment capabilities, a high priority issue for the Hanford Site; and the development, adaptation, and demonstration of waste site characterization and stabilization techniques to improve worker safety and to lower the total cost of inactive site remediation. The technology development and demonstration activities directly support the Tri-Party Agreement (Ecology et al. 1989b), and the resultant technologies are assumed to be available to support operable unit characterization, remedy selection, and remediation.

The Northwest Hazardous Waste Research, Development, and Demonstration Center conducts many of the activities listed above. In addition, the center supports program management, coordination, and related activities for the

Hanford Site's technology development and demonstration efforts, and as such supports the Tri-Party Agreement. (Note: The Tri-Party Agreement does not directly incorporate RD&D; however, it is assumed that RD&D will be necessary to meet its milestones). Funding for the center comes primarily from the Environmental Restoration Remedial Action program.

Another environmental restoration program is the Environmental Science Research Center, DOE's commitment to resolving problems associated with waste management and environmental restoration. Waste and inactive facilities that have accumulated at DOE defense production sites over the past 50 years include unique mixtures of chemical and radioactive materials which require careful attention to avoid negatively impacting human health and the environment. The Environmental Science Research Center goals are to: (1) reduce the time and costs required to characterize DOE waste problems, waste sites, and action alternatives, (2) reduce the time and costs of actual cleanup, and (3) to increase the legal and regulatory defensibility of the actions chosen by DOE.

3.6 SCHEDULE AND BUDGETS

The schedule and budgets included in this section follow the work breakdown structure for the Environmental Restoration Remedial Action, environmental RD&D, and HAZWRAP Programs and/or the ADS as presented in *The Hanford Site Environmental Restoration and Waste Management Five-Year Plan Activity Data Sheets* (DOE-RL 1989c). The purpose of Section 3.6 is to define when the activities which are described in Sections 3.2 through 3.5 will take place and to establish the dollar requirements to carry out the effort. The schedules included in this section of the implementation plan comply with and support the Tri-Party Agreement (Ecology et al. 1989b).

In some cases, an element of the work breakdown structure such as an operable unit may have more than one ADS. This case is true if during the time period covered by the plan, more than one major work category such as investigation and remediation is being conducted or different priorities have been assigned to the work breakdown structure element within the same work category.

3.6.1 Master Program and Long-Range Schedules

The schedules included are divided into three categories: (1) the Environmental Restoration Remedial Action master program schedule, (2) the environmental restoration decontamination and decommissioning master plan schedule, and (3) the Environmental Restoration Remedial Action and environmental restoration decontamination and decommissioning long-range schedule.

3.6.1.1 Environmental Restoration/Remedial Actions Master Program Schedule. Figure 3-2 shows the Environmental Restoration Remedial Action program's master program schedule and denotes the Tri-Party Agreement milestone with

the corresponding number listed near the interim or major milestone symbol. The Environmental Restoration Remedial Action master plan schedule covers the time period from FY 1989 through FY 1995 and utilizes a horizontal line to show activities for the work breakdown structure work element in the appropriate time period. The activities shown in this figure, represent the work effort that is required to support the Tri-Party Agreement.

3.6.1.2 Environmental Restoration Decontamination and Decommissioning Master Program Schedule. Figure 3-3 shows the major environmental restoration decontamination and decommissioning program's physical work breakdown structure and corresponds to the work effort that was described in the *Hanford Surplus Facilities Program Plan Fiscal Year 1989* (WHC 1989). The environmental restoration decontamination and decommissioning master plan schedule covers the time period from FY 1989 through FY 1995, and utilizes a horizontal line to shows activities for the work element in the appropriate time period.

3.6.1.3 Environmental Restoration Long Range Schedule. Figure 3-4 shows the long-range activities for both the Environmental Restoration Remedial Action and environmental restoration decontamination and decommissioning programs. The Environmental Restoration Remedial Action long-range schedule is based upon the Tri-Party Agreement and shows both the interim and major milestones that are currently part of that agreement. The environmental restoration decontamination and decommissioning long-range schedule is based upon planning that was released in the *Hanford Surplus Facilities Program Plan Fiscal Year 1989* (WHC 1989b).

3.6.2 Budgets

The budgets required to support the scope of work defined within environmental restoration at the Hanford Site are presented in Table 3-3 and Table 3-4.

3.6.2.1 Environmental Restoration Five-Year Budget Requirements. Table 3-3 shows the budget requirements for environmental restoration, and is organized by budget and reporting categories and ADS. The numbers listed on the tables are in thousands of dollars and correspond to the number which is shown on the referenced ADSs in DOE/RL 89-17 (DOE/RL 1989c). The priorities listed in this table were assigned according to guidance as described in Section 1.6, Priorities. Figure 3-5 presents a bar graph of costs by year and priority.

3.6.2.2 Long-Range Environmental Restoration Forecast. Table 3-4 shows the estimated costs by year or time period for both the Environmental Restoration Remedial Action and environmental RD&D programs, and covers the 30-year period through the FY 2018. The estimates in this long-range forecast follow the estimate provided in DOE/RL 89-17 (DOE-RL 1989c) through FY 1995.

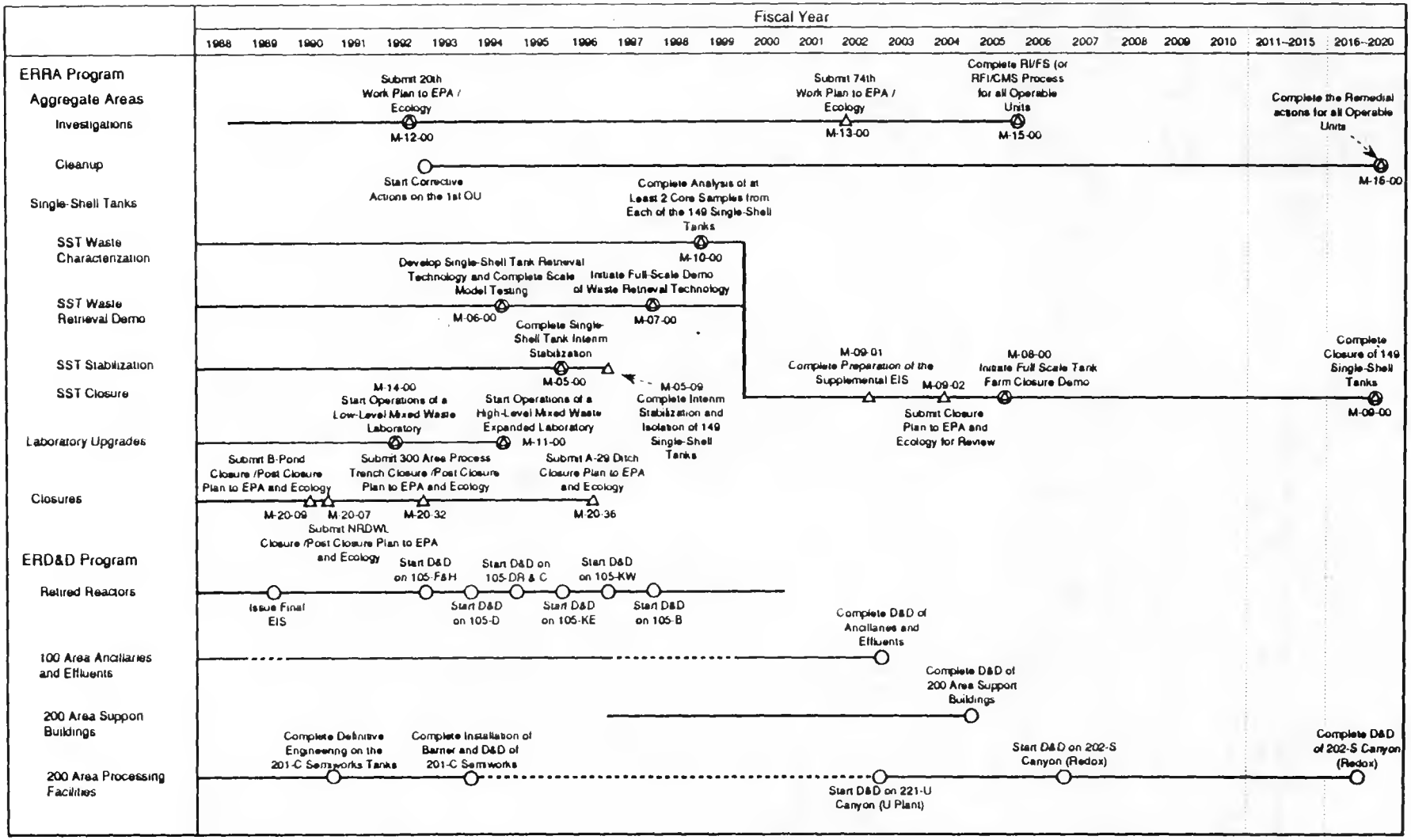

Figure 3-4. Environmental Restoration Long-Range Planning Schedule.

Table 3-3. Environmental Restoration Five-Year Budget Requirements. (sheet 1 of 3)

B & R CODE	ADS DESCRIPTION	ADS NUMBER	PRIORITY	A-106 NO	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
GF-72-89-01	300 AREA PROCESS TRENCHES	500	2	RA-034	500	5818	6292				
GF-72-89-01	SST CHARACTERIZATION & ASSESSMENT	531	1	RA-007	5653	10700	16666	20000	20000	22200	22200
					6153	**16518**	**22958**	**20000**	**20000**	**22200**	**22200**
GF-72-89-02	B POND INTERIM REMEDIATION	530	1	RA-035	1444	2170	2000				
GF-72-89-02	A-29 DITCH INTERIM REMEDIATION	546	1	RA-035	25	130	321				
GF-72-89-02	NRDWL CLOSURE PLAN	547	1	RA-036	400	650	235				
GF-72-89-02	183H SOLAR BASINS	581	1	DD-011	2644 a	6800	6000	6000			
					4513	**9750**	**8556**	**6000**	**0**	**0**	**0**
GF-72-91-01	Northwest Center -- RD&D	348	1	RA-008	3261	4560	4845	4950	4950	4950	4950
GF-72-91-01	1100-EM-1 OU RI/FS	501	1	RA-012	2567	1010	2570	2000	600		
GF-72-91-01	300-FF-1 OU RI/FS	502	1	RA-013	1005	1900	3520	3450	685	100	
GF-72-91-01	300-FF-5 OU RI/FS	503	1	RA-014	234	2100	1850	3750	2215	100	
GF-72-91-01	200-BP-1 OU RI/FS	504	1	RA-015	1039	3000	3215	3488	1700	554	185
GF-72-91-01	100-BC-1 OU RI/FS	505	2	RA-016	100	1265	1690	2926	2818	375	58
GF-72-91-01	100-BC-5 OU RI/FS	506	2	RA-017	100	1265	1690	2926	2818	375	58
GF-72-91-01	100-KR-1 OU RI/FS	507	2	RA-018		1265	1690	2926	2818	375	58
GF-72-91-01	100-KR-4 OU RI/FS	508	2	RA-019		1265	1690	2926	2818	375	58
GF-72-91-01	100-FR-1 OU RI/FS	509	2	RA-020		300	2910	1250	3305	1312	251
GF-72-91-01	200-UP-2 OU RI/FS	510	2	RA-021			2690	1560	2970	4376	825
GF-72-91-01	100-BC-2 OU RI/FS	511	2	RA-022			1591	2370	2635	2081	602
GF-72-91-01	200-BP-5 OU RI/FS	512	2	RA-023			1689	2500	2519	4500	1450
GF-72-91-01	200-ZP-1 OU RI/FS	513	2	RA-024			300	3229	1160	3620	4150
GF-72-91-01	100-KR-2 OU RI/FS	514	2	RA-025			300	2910	1250	3005	1312
GF-72-91-01	100-BC-3 OU RI/FS	515	2	RA-003				301	2910	1250	3305
GF-72-91-01	100-BC-4 OU RI/FS	516	2	RA-003				301	2910	1250	3257
GF-72-91-01	100-DR-3 OU RFI/CMS	517	2	RA-003				150	2472	1648	2945
GF-72-91-01	100-KR-3 OU RI/FS	518	2	RA-003					701	2885	1945
GF-72-91-01	300-FF-2 OU RI/FS	519	2								234
GF-72-91-01	300-FF-3 OU RI/FS	520	2								166
GF-72-91-01	100-HR-1 OU RFI/CMS	532	2	RA-026	645	2050	1870	3400	1218	233	
GF-72-91-01	100-HR-3 OU RFI/CMS	533	2	RA-027	693	1925	1850	2740	2850	475	
GF-72-91-01	100-DR-1 OU RFI/CMS	534	2	RA-028	382	2125	2150	3436	633	133	
GF-72-91-01	100-NR-1 OU RFI/CMS	535	2	RA-029		300	3335	1945	2670	852	226
GF-72-91-01	100-NR-3 OU RFI/CMS	536	2	RA-030		200	2433	1625	2945	1721	452
GF-72-91-01	100-DR-2 OU RFI/CMS	537	2	RA-037			701	2868	1945	2795	852
GF-72-91-01	200-BP-11 OU RFI/CMS	538	2	RA-004				2847	1590	2970	4600
GF-72-91-01	100-HR-2 OU RFI/CMS	539	2	RA-003					1591	2370	2635
GF-72-91-01	ERRA MANAGEMENT	545	1	RA-002	2480	2875	3234	3950	5300	8200	10200
GF-72-91-01	LABORATORY AND DRILLING UPGRADES	548	1	RA-011	4459	9222	7338	8000	8000	8000	8000
GF-72-91-01	TECHNOLOGY DEVELOPMENT AND DEMO'S	549	1	RA-008	1351	1890	2005	2050	2050	2050	2050

a This sheet was changed in the early July 1989 period based on direction from the DOE-HQ program office (NE / DP). Apparently this change was not picked up in the five-year plan task force data system.

Table 3-3. Environmental Restoration Five-Year Budget Requirements.
(sheet 2 of 3)

B & R CODE	ADS DESCRIPTION	ADS NUMBER	PRIORITY	A-106 NO	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
GF-72-91-01	200-BP-4 OU RI/FS	550	2	RA-032			300	3229	1160	3620	4150
GF-72-91-01	200-PO-2 OU RI/FS	551	2	RA-004				2847	1592	2970	4600
GF-72-91-01	200-PO-5 OU RI/FS	552	2	RA-004				700	3159	1860	4540
GF-72-91-01	100-FR-2 OU RI/FS	553	2	RA-003					1590	2370	2635
GF-72-91-01	100-NR-2 OU RI/FS	554	2	RA-003					300	2910	1250
GF-72-91-01	100-IU-1 OU RI/FS	555	2	RA-003					300	2910	1250
GF-72-91-01	200-BP-2 OU RI/FS	556	2	RA-004					150	2700	1600
GF-72-91-01	200-PO-1 OU RI/FS	557	2							1690	2500
GF-72-91-01	200-PO-4 OU RI/FS	558	2							1690	2500
GF-72-91-01	200-SO-1 OU RI/FS	559	2							700	3160
GF-72-91-01	200-TP-1 OU RI/FS	560	2							300	3230
GF-72-91-01	200-TP-2 OU RI/FS	561	2							300	3230
GF-72-91-01	200-TP-4 OU RI/FS	562	2							150	2700
GF-72-91-01	200-ZP-2 OU RI/FS	563	2								1690
GF-72-91-01	200-IU-3 OU RI/FS	564	2								1690
GF-72-91-01	100-IU-2 OU RI/FS	565	2								301
GF-72-91-01	100-IU-3 OU RI/FS	566	2								150
GF-72-91-01	ERRA PROGRAM SUPPORT	598	1	RA-002	4500	6700	7800	10950	12800	17000	20100
					22816	**45217**	**65256**	**94500**	**96097**	**104100**	**116100**
GF-72-91-02	RAR DECON OF ADDL ACREAGE	339	3	RA-010		960	2690	2790	2790	2790	3790
GF-72-91-02	INACTIVE UNDERGROUND STORAGE TANKS	340	3	RA-037			20	150			
GF-72-91-02	1100-EM-1 OU RA Design / RA	521	2	RA-033					1000	4000	8300
GF-72-91-02	300-FF-1 OU RA Design / RA	522	2							12000	21000
GF-72-91-02	300-FF-5 OU RA Design / RA	523	2							12000	21000
GF-72-91-02	200-BP-1 OU RA Design / RA	524	2								4000
GF-72-91-02	100-BC-1 OU RA Design / RA	525	2								4800
GF-72-91-02	100-BC- OU RA Design / RA	526	2								4800
GF-72-91-02	100-KR-1 OU RA Design / RA	527	2								2400
GF-72-91-02	100-KR-4 OU RA Design / RA	528	2								2400
GF-72-91-02	100-FR-1 OU RA Design / RA	529	2								1000
GF-72-91-02	100-HR-1 OU CMI Design / CMI	540	1							2000	8000
GF-72-91-02	100-HR-3 OU CMI Design / CMI	541	1							2000	8000
GF-72-91-02	100-DR-1 OU CMI Design / CMI	542	1							4000	9000
GF-72-91-02	100-NR-1 OU CMI Design / CMI	543	2								1000
GF-72-91-02	RADIATION AREA REDUCTION S & M	544	1	RA-010	1500	1555	1610	1610	1610	1610	1610
GF-72-91-02	RAR DECON OF ADDL ACREAGE	567	1	RA-010	544						
GF-72-91-02	INACTIVE UNDERGROUND STORAGE TANKS	568	1	RA-037	250	750					
					2294	**3265**	**4320**	**4550**	**5400**	**40400**	**101100**
	Total Environmental Restoration / Remedial actions				**35776**	**74750**	**101090**	**125050**	**121497**	**166700**	**239400**

Table 3-3. Environmental Restoration Five-Year Budget Requirements.
(sheet 3 of 3)

B & R CODE	ADS DESCRIPTION	ADS NUMBER	PRIORITY	A-106 NO	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
AH-10-20-92-01	324 & 325 BLDG. HOT CELL S & M (PNL)	169	1			500	525	550	550	550	550
AH-10-20-92-01	209-E S & M	583	1			71	75	80	85	90	95
					0	571	600	630	635	640	645
AH-10-20-92-02	324 & 325 BLDG. HOT CELL CLNOUT (PNL)	126	1		3792	0	3475	4450	4450	2000	
AH-10-20-92-02	324 & 325 BLDG. HOT CELL CLNOUT (PNL)	349	4							2450	4450
AH-10-20-92-02	SHIPPINGPORT D & D PROJECT	585	1		10000	450					
AH-10-20-92-02	VITRO TECH FOR WELDON SPRINGS (PNL)	591	1		220	900					
					14012	1350	3475	4450	4450	4450	4450
GF-72-92-01	AIR PERMITTING/COMPLIANCE (LL)	328	4			970	640	640	640	640	640
GF-72-92-01	100/200 AREAS S & M	569	1		3714	4259	4772	4772	4495	4395	4295
GF-72-92-01	HANFORD SITE D&D MGMT / ADMIN	570	1		2020	2503	2598	2408	2740	2740	2740
GF-72-92-01	DEFENSE D&D PROGRAM ADMIN	582	1		1138	2455	4965	4965	4965	4965	4965
GF-72-92-01	PNL SUPPORT FACILITIES S&M	584	1				425	425	425	425	425
GF-72-92-01	SURPLUS REACTOR D & D EIS	592	1		468	174					
GF-72-92-01	NON-ORPHAN FACILITIES S & M	593	1				500	500	500	500	500
					7340	10361	13900	13710	13765	13665	13565
GF-72-92-02	324 & 325 BLDG. HOT CELL CLNOUT (PNL)	343	1			1300					
GF-72-92-02	201-C SEMIWORKS D&D	571	1	DD-002	1723	886	1558	1810	1300		
GF-72-92-02	100 AREA REACTORS D&D	572	3	DD-005	140	3318	4730	5570	7000	15150	20575
GF-72-92-02	100 AREA ANCILLARY FACILITIES	573	3	DD-007 & 8	299		675	1300	5291	3100	1050
GF-72-92-02	EFFLUENT FACILITIES D&D	574	3	DD-006 & 9				1050			
GF-72-92-02	224-B CONCENTRATION FACILITY D&D	575	3	DD-003				2000			
GF-72-92-02	PNL SUPPORT FACILITIES D & D	587	4				1400	1300	900	9800	7200
GF-72-92-02	100/200/300 AREA SITE CLNUP N-OPH FAC	594	4				500	500	500	500	500
					2162	5504	8863	13530	14991	28550	29325
	Total Environmental Restoration D&D				23514	17786	26838	32320	33841	47305	47985
GF-72-93-01	HAZWRAP R&D PROJECTS - ONGOING (PNL)	186	1		423	379	0	0	0	0	0
GF-72-93-01	HAZWRAP R&D PROJECTS-PROPOSED (PNL)	324	3			1406	2457	1213	270	315	
GF-72-93-01	HAZWRAP DEMO PROJECTS-PROPOSED (PNL)	342	3			1004	2564	230			
GF-72-93-01	HAZWRAP DEMO PROJECTS - ONGOING (PNL)	588	1		790	955	352				
GF-72-93-01	UST REMEDIATION BY IN-SITU VTR (PNL)	590	3		250	2350	4100	5950	750	700	
GF-72-93-01	HEXONE TANK WASTE TREATMENT	597	1		800	770	455				
	Total Environmental Restoration / HAZWRAP				2263	6864	9928	7393	1020	1015	0
	Total Environmental Restoration				61553	99400	137856	164783	156358	215020	287385

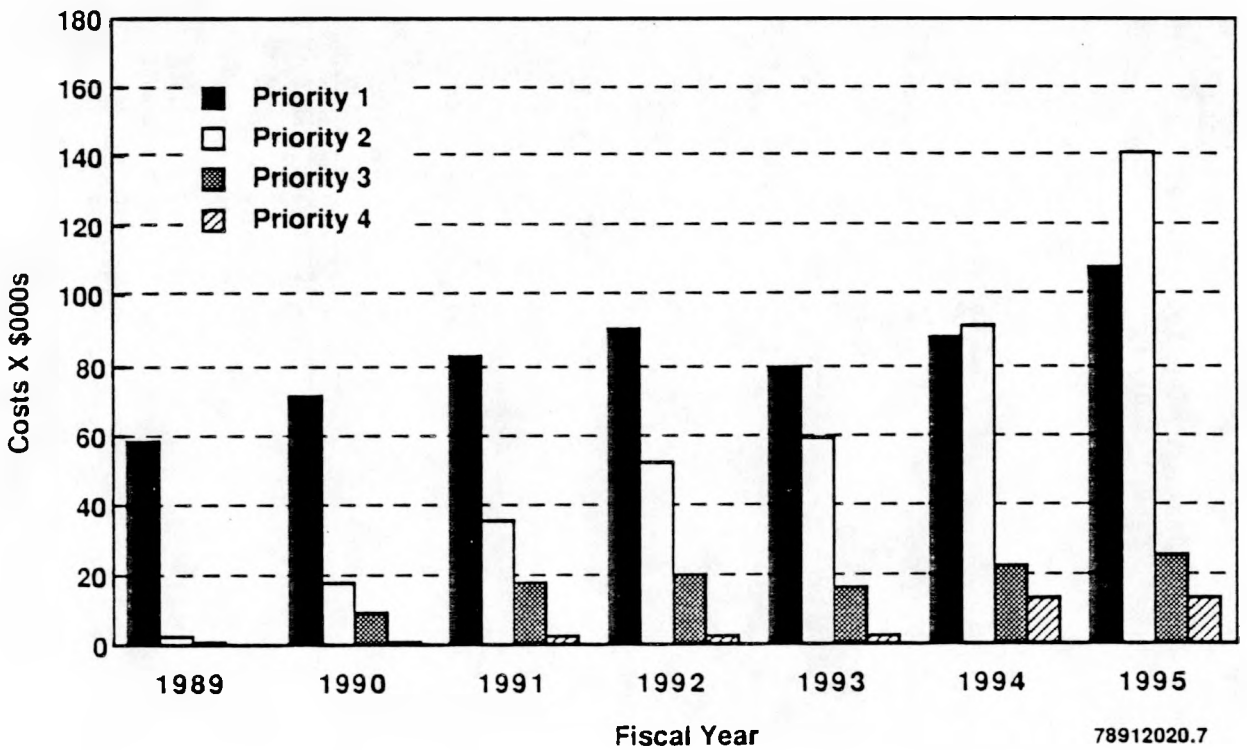

Figure 3-5. Environmental Restoration Costs by Year and Priority.

Table 3-4. Hanford Site Long-Range Environmental Restoration Budget Forecast.

	FISCAL YEAR										
	FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995	FY 1996 - FY 2000	FY 2001 - FY 2005	FY 2006 - FY 2010	FY 2011 - FY 2020
ER / Remedial Actions											
Remedial action											
Assessment and characterization	29.0	61.7	88.2	114.5	116.1	126.3	138.3	700.0	550.0	450.0	675.0
Cleanup activities	6.5	13.0	12.9	10.6	5.4	40.4	101.1	2587.0	6050.0	6950.0	8384.0
Subtotal	**36**	**75**	**101**	**125**	**122**	**167**	**239**	**3287**	**6600**	**7400**	**9059**
ER Decontamination and Decommissioning											
Maintenance and surveillance	3.7	4.3	4.8	4.8	4.6	4.5	4.4	14.6	12.0	11.5	16.1
Cleanup activities	20.3	11.4	22.0	27.5	29.2	42.8	43.6	116.0	73.0	107.5	129.9
Subtotal	**24**	**16**	**27**	**32**	**34**	**47**	**48**	**131**	**85**	**119**	**146**
Total Long Range Environmental Restoration	**60**	**90**	**128**	**157**	**155**	**214**	**287**	**3418**	**6685**	**7519**	**9205**

4.0 CORRECTIVE ACTIVITIES

4.1 OVERVIEW

Corrective activities consist of specific activities either required by environmental statutory/regulatory requirements or required to fulfill compliance agreements with federal, state, or local regulatory bodies, or both. These activities are required to ensure regulatory compliance for active facilities at the Hanford Site. Environmental corrective activities can be divided into three major categories: air, water, and solid waste. The ADSs, which provide details on each discrete activity, are presented in DOE/RL 89-17 (DOE-RL 1989c).

Corrective activities for the air category include assessment and upgrade of building exhaust air sampling systems to ensure compliance with the DOE requirements for the gaseous effluent management program. Air emission permits are in place at this time for all existing facilities; new permits are expected to be required for several new projects and facility modifications and for adding 87 new stack effluents pursuant to new state regulations expected to be issued.

There are currently no identified corrective activities in the water category. This is because there are no known Clean Water Act violations.

Solid waste management activities are more extensive than those for air and water. Obtaining RCRA operating permits for TSD facilities is a major solid waste management activity. The Hanford Site has one permit number under RCRA; it will have approximately 60 parts (one per TSD facility). The permit is not expected to be granted until 1995. The Hanford Site TSD facilities are presently under interim status. Other corrective activities include construction of mixed-waste storage and disposal facilities, PCB removal, installation of liquid effluent monitors, and development of disposal methods for groundwater monitoring well purge water.

4.2 MAJOR TASK DESCRIPTIONS

The following sections describe in more detail the corrective activities in the categories of air, water, and solid waste.

4.2.1 Air

Corrective activities for Clean Air Act compliance are described in this section.

Exhaust air sampling is presently out of compliance with DOE requirements. A complete assessment and upgrade to building exhaust air sampling

systems is needed to ensure the adequacy of the sampling systems for radioactive and particulate matter taking into account the current facility use, potential for events, and sampling conditions in accordance with DOE Orders 5820.2A (DOE-HQ 1988c) and 5400.4 (DOE-HQ 1989b). This is considered a Priority 4 activity (ADS RL-0145).

The Hanford Site will be out of compliance with Title 40 Code of Federal Regulations (CFR) 61, proposed rules (54 FR 9612), *National Emission Standards for Hazardous Air Pollutants* (EPA 1987c) if they are enacted as presently proposed. Installation and registration with the State of Washington of continuous sampling equipment for waste management air emission sources is required by these proposed rules. This is considered a Priority 4 activity (ADS RL-0177, RL-0326, and RL-0327).

4.2.2 Water

Corrective activities in the water category are regulated under the Clean Water Act. There are currently no known violations of the Clean Water Act and therefore, no such corrective activities at the Hanford Site. Solid waste regulations, by definition, govern many activities for liquid effluents, groundwater monitoring, etc. These activities are covered in Section . The recent reauthorization of the Clean Water Act may cause corrective activities to be added in future revisions to this plan, although none have been defined to date.

One DOE National Pollutant Discharge Elimination System permit exists for the Hanford Site. There are eight discharge points into the Columbia River that are covered by this permit. Seven are assigned to Westinghouse Hanford and one to PNL. This permit is being renewed. A permit renewal, according to the DOE-HQ definition, is not considered a corrective activity. Each outfall has specific permit parameters. The EPA has not yet provided DOE-RL with its proposed permit renewal language. Should EPA change the terms of the existing permit, additional corrective activities may be required.

4.2.3 Solid Waste

The DOE Order 5820.2A (DOE-HQ 1988c) establishes policies and guidelines by which the DOE manages its radioactive wastes. The RCRA and implementing state regulations (WAC 173-303) govern hazardous wastes and mixed wastes.

The following subsections summarize environmental corrective activity projects and activities related to solid waste management.

4.2.3.1 RCRA Hazardous Waste Permits. Regulatory compliance with RCRA for hazardous waste treatment, storage for more than 90 days, or disposal facilities is implemented through acquisition of permits. These permits, which specify requirements for operation, closure, and postclosure monitoring are granted by the EPA and Ecology. Permit applications are submitted by the DOE to the regulatory agencies in two parts: (1) Part A identifies the

facility, provides its design parameters, and identifies the hazardous waste to be handled, and (2) Part B provides detailed facility descriptions, describes current and future operations, and identifies how the facility will be closed (ADS RL-0006, RL-0054, RL-0083, RL-0084, RL-0085, RL-0091, RL-0093, RL-0300, RL-0302, RL-0305, RL-0306, and RL-0347).

For facilities that will not continue operating and which will be clean closed, only the Part A permit applications and closure plans are submitted. For facilities that will not continue to operate but will be closed with waste remaining in place, Part A permit applications, closure plans, and postclosure permit applications will be submitted. Submission of a Part A application is required for any facility which continued to manage hazardous wastes after the wastes became subject to RCRA or state dangerous waste regulations. An operating permit is issued after EPA and Ecology have reviewed the submitted application and supporting data, negotiated permit requirements, and obtained public comment on the draft permit. Closure plan approval follows a similar process.

Part A permit applications have been submitted to Ecology for all known facilities that have treated, stored for more than 90 days, or disposed of hazardous or mixed waste. Facilities that have handled hazardous waste or mixed waste and are intended to continue operation as TSD facilities in the future, will continue to operate under interim status pending issuance of an operating permit. Permit costs for these facilities are included in the cost summary for corrective actions for solid waste. See Table 4-1 for the current list of permits needed for Hanford Site facilities. Part B permit applications and closure plans are in various stages of preparation. A number of Part B permit applications have been submitted to Ecology and are currently under review.

Only permitting activities associated with existing facilities are categorized as corrective activities. Permit applications preparation costs for new facilities are included as part of the project cost and are included in the same category as construction of the facilities (generally waste management operations).

Petitions to withdraw Part A permit applications will be submitted to Ecology for the 221-T Alkali Metal Treatment and Storage Facility, and the 324 Sodium Treatment Pilot Plant. Petitions have been submitted and accepted for 332 Storage Facility and 2727-WA Sodium Storage Facility. These petitions have been submitted because further study of the missions of these facilities and the regulations has shown that the facilities are not TSD facilities and do not require permits. Petitions will also be submitted to Ecology to allow the T Plant Treatment Tank, 222-S Treatment Tank, PUREX Treatment Tanks, 204-AR Waste Unloading Facility, and 241-Z Treatment Tank to be managed as 'treatment-by-generator' facilities. If these petitions are granted, closure plans and Part B permit applications will not be required.

Table 4-1. Dangerous Waste Regulations Permitting Requirements. (sheet 1 of 2)

Facility	Applications required[a]	Operation[b]
1324-NA Percolation Pond	A/C	TD
183-H Solar Evaporation Basins	A/C/PC	T
1301-N Liquid Waste Disposal Facility	A/C/PC	D
100-D Ponds	A/C	D
1325-N Liquid Waste Disposal Facility	A/C/PC	D
1706-KE Waste Treatment System	A/C	T
105-DR Sodium Fire Facility	A/C	T
1324-N Surface Impoundment	A/C	T
303-M Oxide Facility	A/B	T
3718-F Alkali Metal Treatment Facility	A/B	TS
Physical and Chemical Treatment Facilities	A/B	O
303-K Storage Facility	A/C	S
325 Waste Treatment Facility	A/B	T
300 Area Waste Acid Treatment	A/B/C	TS
305-B Storage Facility	A/B	S
300 Area Process Trenches	A/C/PC	D
Thermal Treatment Test Facilities	A/B	O
304 Concretion Facility	A/C	TS
311 Tanks	A/B	S
300 Area Solvent Evaporator	A/C	T
324 Sodium Removal Pilot Plant	A/B	T
Biological Treatment Test Facilities	A/B	O
4843 Alkali Metal Storage Facility	A/B	S
Maintenance and Storage Facility	A/B	T
Nonradioactive Dangerous Waste Landfill	A/C/PC	D
Hanford Patrol Academy Demolition Site	A/B	T
616 Storage Facility	A/B	S
Simulated High-Level Waste Treatment Storage	A/C	TS
2101-M Pond	A/C	D
242-A Evaporator	A/B	T
Grout Treatment Facility	A/B	TD
216-A-36B Crib	A/C/PC	D
216-A-10 Crib	A/C/PC	D
216-B-63 Trench	A/C	D
216-B-3 Pond	A/C/PC	D
216-A-29 Ditch	A/C	D
B Plant	A/B	TS
PUREX	A/B	TS
PUREX Tunnels	A/B	S
Hanford Waste Vitrification Plant	A/B	TS
E-8 Borrow Pit	A/C	T
204-AR Waste Unloading Station	A/B	T
222-S Laboratories Tank and Pad	A/B	TS

Table 4-1. Dangerous Waste Regulations Permitting Requirements. (sheet 2 of 2)

Facility	Applications required[a]	Operation[b]
Hexone Storage and Treatment	A/C	TS
The 216-U-12 Crib	A/C/PC	D
The 2727-S Storage Facility	A/C	S
The 241-Z Treatment Tank	A/B	T
The 221-T Containment System Test Facility	A/C	T
Transuranic Storage and Assay Facility	A/B	S
T Plant Treatment Tank	A/B	T
The 216-S-10 Pond and Ditch	A/C	D
Ashpit Site	A/C	T
Single-Shell Tanks	A/C/PC	S
Hanford Central Waste Complex	A/B	TS
Double-Shell Tank Farms	A/B	S
Low-Level Burial Grounds	A/B/C	D

[a] A - Part A Permit application
B - Part B Permit application
C - Closure plan
PC - Postclosure plan.

[b] T - Treatment
D - Disposal
S - Storage
O - Other.

4.2.3.2 The RCRA Compliance. In addition to the permitting of TSD facilities, RCRA compliance is supported by the Hanford Environmental Compliance project. The four Hanford Environmental Compliance subprojects supporting corrective activities included in capital funding requirements through FY 1995 are as follows.

Groundwater Monitoring Wells (W-017H) — An estimated 165 wells with an average depth of approximately 300 feet will be installed in accordance with RCRA requirements. These wells provide long-term groundwater monitoring systems for areas of specific potential remedial concern. Twenty-nine will be installed in 1989, 30 in 1990, and 50 per year thereafter until EPA and Ecology determine that the monitoring system is in compliance. Estimated total cost is $12 million, not including operating expense. (ADS RL-0007 and RL-0304).

Mixed-Waste Storage Facilities (W-016H)	A storage facility will be constructed and permitted to store hazardous wastes before treatment or disposal. The facility will be sized to store anticipated receipts of mixed waste for seven years. The facility will comply with WAC 173-303 and 40 CFR 265 (EPA 1987b) and 40 CFR 268 (EPA 1988). Estimated total cost is $8.7 million, not including operating expense, and activities are to be completed by FY 1993. (ADS RL-0092, RL-0095, RL-0158, RL-0159, and RL-0301).
The 242-A Condensate Treatment (W-046H)	This subproject will provide a best available technology treatment system for the 242-A process and steam condensate. The process will include combinations of filtration, carbon absorption, reverse osmosis, and ion exchange. This subproject will provide the ability to meet proposed derived concentration guide limits. Estimated total cost is $17 million, not including operating expense, and activities are to be completed by FY 1996. (ADS RL-0344) This project also supports soil column activities described under waste management operations (Chapter 2.0) and has recently been combined with project W-049H, 200 Area Treated Effluent Disposal Facility (see Section 2.2.6.2.15).
Cathodic Protection (W-020H)	A cathodic protection system will be provided to protect waste transfer pipeline encasements, catch tanks, and associated underground facilities in the Hanford Site 200 East and West Areas. Estimated total cost is $6.7 million, not including operating expense, and activities are to be completed by FY 1990 (ADS RL-0055 and RL-0344).

A candidate Hanford Environmental Compliance subproject is construction of purge water treatment facilities (ADS RL-0005 and RL-0195). The Hanford Site is out of compliance with RCRA and the State of Washington regulations by disposing of potentially contaminated purge water from monitoring wells to the soil column. No approved treatment method currently exists for purge water. Work is planned to develop treatment and disposal methods.

Installation of liquid effluent monitoring systems (ADS RL-0154) is needed for compliance with DOE orders and RCRA. Key Hanford Site buildings are currently out of compliance. At a minimum, continuous flow monitoring, pH monitoring, and automatic grab sampling would be provided. A variety of buildings in the 300 Area are involved. Miscellaneous upgrades to chemical

processing facilities required to achieve compliance with federal and state requirements (ADS RL-0088 and RL-0307).

Potential RCRA deficiencies at the Hanford Site are found primarily in two bodies of information: (1) environmental status assessment findings, and (2) Tri-Party Agreement (Ecology et al. 1989b) commitments. Compliance actions have been scheduled or initiated for all items that have been identified.

Correction of all RCRA interim status items is currently planned in the Tri-Party Agreement. Milestone M-23-00 of the agreement is to "achieve compliance with interim status requirements (excluding groundwater monitoring and closure plans) by September 1991."

Potential RCRA deficiencies have been identified at the Hanford Site facilities through structured environmental assessments. The assessments performed indicate the status of all Hanford Site TSD facilities under interim status as well as the status of Hanford Site's facilities with respect to RCRA dangerous waste generator/accumulation standards. Table 4-2 summarizes the findings of the assessments. Interim status compliance actions are generally covered by the same activity data sheets as permitting activities (see Section 4.2.3.1).

Table 4-2 indicates the status of the assessed TSD units under RCRA interim status and the status of the assessed Hanford Site facilities with respect to generator/accumulation standards.

Dangerous waste interim status facilities can be summarized as follows:

- Fifty-six TSD facilities are under RCRA interim status
- Forty-eight facilities were assessed for RCRA interim status requirements (see Table 4-2)
- Eight facilities are under construction or permit withdrawal.

Assessment findings can be summarized as follows:

- Majority of potential deficiencies noted are administrative
- Several facilities do not meet minimum technological requirements; and therefore, are undergoing closure
- Few major upgrades identified for active facilities
- Substantial upgrades to existing tank systems are anticipated following assessment for compliance with new dangerous tank regulations.

Table 4-2. Interim Status Action Target Dates. (sheet 1 of 4)

UNIT	WAC 173-303-300 (WASTE ANALYSIS PLAN)	WAC 173-303-310 (SECURITY)	WAC 173-303-320 (INSPECTION)	WAC 173-303-330 (TRAINING)	WAC 173-303-340 (EMERGENCY EQUIPMENT)	WAC 173-303-350 (CONTINGENCY PLAN)	WAC 173-303-380 (RECORD KEEPING)	WAC 173-303-395 (OTHER GENERAL REQUIREMENTS)	40 CFR 265 SUBPART I (CONTAINER MANAGEMENT)	40 CFR 265 SUBPART J (TANK REQUIREMENTS)
MASF	A	A	N/A	A	A	A	N/A	A	N/A	A
SHLW TREATMENT AND STORAGE	A	A	A	A	A	A	A	A	A	N/A
305-B STORAGE FACILITY	A	A	A	A	A	A	A	A	A	N/A
241-Z (PFP) TREATMENT TANK	6/89 6/89 (C)	A	5/89 (3) 9/89 (8) (C)	4/89 4/89 (C)	A	A	A	A	N/A	(1)
LOW-LEVEL BURIAL GROUNDS	A	A	9/91 (4)	10/89	A	10/89	5/89 (*) 10/89 (E)	9/91 (2,4)	N/A	N/A
DOUBLE-SHELL TANK FARMS	A	A	A	A	A	10/89	9/89 10/89 (E)	A	N/A	(1)
242-A EVAPORATOR	A	A	5/89 (3) 9/89 (8) (C)	A	A	10/89	9/89 10/89 (E)	N/A	N/A	N/A
204-AR UNLOADING STATION	A	A	A	A	A	10/89	9/89 10/89 (E)	N/A	N/A	(1)
224-T (TRUSAF)	A	A	A	A	A	10/89	5/89 10/89 (E)	10/89(2)	A	N/A
PUREX TUNNELS	6/89 4/89 (C)	A	5/89 (3) 9/89 (8) (C)	A	A	6/89 6/89 (8) (C)	A	N/A	5/89 (3) 9/89 (8)	N/A
216-A-36B	N/A	A	7/89 8/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A
1325-N	6/89 (5) 6/89 (C)	A	6/89 6/89 (C)	N/A	N/A	N/A	6/89 6/89 (C)	N/A	N/A	N/A
1324-N	N/A	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1324-NA	6/89 (5) 6/89 (C)	A	A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1301-N CRIB	N/A	A	6/89 6/89 (C)	N/A	N/A	N/A	6/89 6/89 (C)	N/A	N/A	N/A
216-B-3 POND	TBD (5)	A	7/89 8/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A
216-A-29 DITCH	TBD (5)	A	7/89 8/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A

Table 4-2. Interim Status Action Target Dates. (sheet 2 of 4)

UNIT	WAC 173-303-300 (WASTE ANALYSIS PLAN)	WAC 173-303-310 (SECURITY)	WAC 173-303-320 (INSPECTION)	WAC 173-303-330 (TRAINING)	WAC 173-303-340 (EMERGENCY EQUIPMENT)	WAC 173-303-350 (CONTINGENCY PLAN)	WAC 173-303-380 (RECORD KEEPING)	WAC 173-303-395 (OTHER GENERAL REQUIREMENTS)	40 CFR 265 SUBPART I (CONTAINER MANAGEMENT)	40 CFR 265 SUBPART J (TANK REQUIREMENTS)
216-A-10	N/A	A	7/89 7/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A
216-B-63 TRENCH	10/89 (5)	A	7/89 8/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A
T PLANT 15-1 TANK	N/A (6)	A	9/89 (3) 9/89 (8) (C)	A	A	10/89	6/89 9/89 (C)	A	N/A	(1)(6)
222-S TREATMENT TANK & STORAGE PAD	3/90	A	5/89 (3) 9/89 (8) (C)	6/89 6/89 (C)	A	10/89	A	9/89 3/90 (E)	6/90	(1)
616 HAZARDOUS WASTE STORAGE	10/89	A	A	A	A	10/89	A	A	A	N/A
PUREX TANKS	6/89 4/89 (C)	A	10/89 (3) 9/89 (8) (C)	A	A	6/89 6/89 (C)	6/89 6/89 (C)	N/A	N/A	(1)
CENTRAL WASTE COMPLEX	A	A	A	A	A	5/89 6/89 (C)	A	A	5/89 9/89 (E)(9)	N/A
NONRADIOACTIVE DANGEROUS WASTE LANDFILL	8/90	A	6/89 6/89 (C)	6/89 6/89 (C)	A	6/89 6/89 (C)	6/89 6/89 (C)	A	N/A	N/A
300 AREA ACID TREATMENT SYSTEM	5/89 9/89 (E)	A	8/89 10/89 (E)	A	A	5/89 5/89 (C)	6/89 8/89 (C)	5/89 5/89 (C)	A	6/89 6/89 (C)
311 TANKS	5/89 9/89 (E)	A	A	A	A	A	6/89 8/89 (C)	5/89 5/89 (C)	A	5/89 6/89 (C)
303-K STORAGE FACILITY	A	A	A	A	A	A	6/89 10/89 (E)	A	A	N/A
303-M OXIDE FACILITY	10/89 7/90 (E)	A	10/89 9/89 (C)	A	A	A	10/89 7/90 (E)	5/89 5/89 (C)	A	N/A
300 AREA PROCESS TRENCHES	9/91	6/89 6/89 (C)	4/89 5/89 (C)	A	A	N/A	7/89 7/89 (C)	A	A	N/A

Table 4-2. Interim Status Action Target Dates. (sheet 3 of 4)

	WAC 173-303-300 (WASTE ANALYSIS PLAN)	WAC 173-303-310 (SECURITY)	WAC 173-303-320 (INSPECTION)	WAC 173-303-330 (TRAINING)	WAC 173-303-340 (EMERGENCY EQUIPMENT)	WAC 173-303-350 (CONTINGENCY PLAN)	WAC 173-303-380 (RECORD KEEPING)	WAC 173-303-395 (OTHER GENERAL REQUIREMENTS)	40 CFR 265 SUBPART I (CONTAINER MANAGEMENT)	40 CFR 265 SUBPART J (TANK REQUIREMENTS)
HANFORD PATROL ACADEMY DEMOLITION SITE	6/89 6/89 (C)	6/89 6/89 (C)	6/89 7/89 (C)	6/89 9/89 (C)	A	6/89 7/89 (C)	6/89 6/89 (C)	A	N/A	N/A
4843 ALKALI METAL STORAGE FACILITY	6/90	A	7/89 6/89 (C)	7/89 7/89 (C)	A	9/89 10/89 (E)	A	9/89 9/89 (C)	N/A	N/A
3718-F ALKALI METAL STORAGE FACILITY	9/90	A	7/89 6/89 (C)	N/A	N/A	10/89	N/A	9/89 9/89 (C)	N/A	N/A
SINGLE-SHELL TANKS	10/90	A	8/90	9/90	A	6/90	12/03	9/90	N/A	12/89
HEXONE STORAGE TANKS	7/89 8/89 (C)	A	7/89 9/89 (C)	7/89 8/89 (C)	12/89	7/89 8/89 (C)	A	7/89 8/89 (C)	N/A	7/89 8/89 (C)
183-H SOLAR EVAPORATION BASINS	A	A	10/89 8/89 (C)	A	12/89	10/89	10/89 8/89 (C)	7/89 8/89 (C)	N/A	10/89 8/89 (C)
2727-S STORAGE FACILITY	N/A	5/89 6/89 (C)	7/89 7/89 (C)	N/A	N/A	N/A	A	N/A	N/A	N/A
300 AREA SOLVENT EVAPORATOR	N/A	A	7/89 7/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A
105-DR SODIUM FIRE FACILITY	N/A	5/89 5/89 (C)	7/89 7/89 (C)	7/89 7/89 (C)	12/89	10/89	7/89 7/89 (C)	N/A	N/A	N/A
E-8 BORROW PIT	N/A	7/89 7/89 (C)	7/89 7/89 (C)	N/A	N/A	N/A	A	N/A	N/A	N/A
ASH PIT SITE	N/A	7/89 7/89 (C)	7/89 7/89 (C)	N/A	N/A	N/A	A	N/A	N/A	N/A
216-U-12 CRIB	N/A	A	7/89 8/89 (C)	N/A	N/A	N/A	A	N/A	N/A	N/A

Table 4-2. Interim Status Action Target Dates. (sheet 4 of 4)

	WAC 173-303-300 (WASTE ANALYSIS PLAN)	WAC 173-303-310 (SECURITY)	WAC 173-303-320 (INSPECTION)	WAC 173-303-330 (TRAINING)	WAC 173-303-340 (EMERGENCY EQUIPMENT)	WAC 173-303-350 (CONTINGENCY PLAN)	WAC 173-303-380 (RECORD KEEPING)	WAC 173-303-395 (OTHER GENERAL REQUIREMENTS)	40 CFR 265 SUBPART I (CONTAINER MANAGEMENT)	40 CFR 265 SUBPART J (TANK REQUIREMENTS)
2101-M POND	9/89 (5)	7/89 7/89 (C)	7/89 7/89 (C)	N/A	N/A	N/A	9/89	N/A	N/A	N/A
216-S-10 POND AND DITCH	12/89 (5)	12/89 7/89 (C)	7/89 8/89 (C)	N/A	N/A	N/A	12/89 10/89 (C)	N/A	N/A	N/A
100-D PONDS	12/89 (5)	7/89 7/89 (C)	7/89 7/89 (C)	N/A	N/A	N/A	7/89 8/89 (C)	N/A	N/A	N/A
304 CONCRETION FACILITY	N/A	A	7/89 7/89 (C)	N/A	N/A	N/A	7/89 7/89 (C)	N/A	N/A	N/A
1706-KE WASTE TREATMENT SYSTEM	N/A	A	7/89 6/89 (C)	N/A	N/A	N/A	6/89 6/89 (C)	N/A	N/A	N/A
B PLANT CANYON UNITS	1/91	A	5/91	5/90	A	9/91	12/89	8/91	8/90	7/91

(1) = REEVALUATION REQUIRED TO NEW STATE REGULATIONS. DATE WILL BE ESTABLISHED WHEN REEVALUATION COMPLETE.

(2) = DATE REFLECTS WHEN CONTAINER LABELING WILL BE COMPLETED.

(3) = POTENTIAL RCRA/AEA INCONSISTENCY FOR PHYSICAL INSPECTION REQUIREMENT RESOLUTION.

(4) = DATE REFLECTS WHEN ACCESSABLE MIXED WASTE IN THE RETRIEVAL STORAGE TRENCHES WILL BE RECONFIGURED.

(5) = WASTE ANALYSIS WILL ADDRESS PRESENT DISCHARGES TO THE UNIT. WASTE ANALYSIS OF UNIT WILL BE ADDRESSED UPON CLOSURE.

(6) = APPLICABILITY CONTINGENT UPON TREATMENT-BY-GENERATOR SUCCESS.

(7) = ACTION SCHEDULE TO BE COMPLETED BY JUNE 30, 1989.

(8) = PETITION FOR RULEMAKING WILL BE SUBMITTED AS PER MILESTONE M2201 CONCERNING RCRA/AEA PHYSICAL INSPECTION INCONSISTENCIES.(IF THE PETITION-FOR-RULEMAKING IS DENIED, DOE-HQ WILL BE CONTACTED ON ASSERTING RCRA/AEA INCONSISTENCIES)

(9) = SYSTEM COMPLIANT DUE TO TEMPORARY REPAIR. DATE REPRESENTS COMPLETION OF PERMANENT REPAIR.

A = ADEQUATE

N/A = NOT APPLICABLE

* = DATES FOR CLOSURE PLANS AND GROUNDWATER MONITORING ARE LISTED SEPARATELY AS SPECIFIC MILESTONES.

C = ACTUAL COMPLETION DATE

E = EXPECTED COMPLETION DATE

The summary of potential compliance actions is as follows (48 assessed facilities):

- Seventeen facilities require preparation or upgrade of waste analysis plans
- Zero facilities require additional security measures
- Four facilities require preparation or upgrade of inspection programs
- Three facilities require upgrade of training programs
- Three facilities require placement of additional emergency equipment
- Fourteen facilities require upgrade of contingency plans
- Ten facilities require upgrade of record keeping system
- Four facilities require improvement of container management practices
- Two facilities are expected to require upgrades to meet new tank requirements. Six facilities are being reevaluated due to new regulations and may be added to the list
- All facilities require preparation or upgrade of closure plans.

All potential RCRA interim status actions identified are scheduled to be completed by September 1991 with the exception of closure plans, the SST record keeping system, groundwater monitoring well installation, and major plant upgrades as negotiated. This is in accordance with Tri-Party Agreement (Ecology et al. 1989b) milestone M-23-00.

There are 16 operating facilities at the Hanford Site of which 12 had been assessed by July 1989 for compliance with all major environmental statutes, including RCRA interim status requirements. In addition, RCRA interim status assessments were conducted at 46 facilities. Assessment findings are summarized as follows:

- Generally, in compliance with applicable air and water requirements
- Vast majority of impacts are RCRA-related
- Majority of potential deficiencies noted are administrative
- Substantial upgrades to existing tank systems are anticipated following assessment for compliance with new dangerous waste tank regulations.

The Tri-Party Agreement (Ecology et al. 1989b) contains no commitment for completion of compliance activities of noninterim status facilities. However, the environmental status reports, which include assessment findings and action schedules for completion of potential deficiencies, have been transmitted to Ecology and the EPA.

A detailed report of the environmental status of each facility assessed is generated following each environmental status review. All potential deficient items identified in the reports are assigned compliance activities, scheduled completion dates, and responsible actionees. The compliance activities are tracked to completion in a computerized database system, the Environmental Compliance Tracking System. Out of 988 compliance activities originally, 465 have been completed; 523 compliance activities remain.

The Tri-Party Agreement action plan contains milestones associated with compliance with interim status requirements. These milestones are as follows:

- Milestone M-21-00: Submit RCRA interim status compliance assessments for all TSD units, April 1989 (complete)
- Milestone M-22-00: Establish enforceable action schedules for interim status assessment actions, December 1989
- Milestone M-23-00: Achieve compliance with interim status requirements (excluding groundwater monitoring and closure plans), September 1991
- Milestone M-24-00: Install RCRA groundwater monitoring wells at specified rates until all RCRA land disposal facilities and SSTs are determined to have RCRA compliant monitoring systems, annually, beginning in CY 1989
- Milestone M-25-00: Provide annual reports of studies/efforts that are in progress to identify alternatives to land disposal of radioactive mixed wastes, annually, beginning March 1990
- Milestone M-04-00: Provide annual reports of DST and SST waste treatability studies. Although related to interim status, this activity is budgeted and scheduled under waste management operations, Chapter 2.0.

4.2.3.3 **Polychlorinated Biphenyls.** Specific activities for PCBs are (1) to continue with removal of PCBs from electrical, hydraulic, and other equipment; and (2) to identify and implement a disposal method for PCB-contaminated radioactive waste oil. Replacement of light ballasts for the hot cells at the 324 and 325 buildings is needed to prevent creation of mixed wastes if the PCB-containing ballasts leak. They will be replaced with non-PCB ballasts as a corrective activity (ADS RL-0151). Activities are currently underway (or complete) to remove PCB contamination from several defueled submarine

reactor cores being disposed of at the Hanford Site. The contamination was discovered after the cores had been transported to the Hanford Site and accepted for disposal. Other PCB-related activities are covered under Waste Management Operations (ADS RL-0106 and RL-0163).

4.3 RESEARCH, DEVELOPMENT, AND DEMONSTRATION

There are no RD&D activities under corrective activities. This is due to the relatively well defined nature of the projects and activities in this category and the relatively short time allowed to bring facilities into compliance.

4.4 SCHEDULE AND BUDGETS

Figure 4-1 is a schedule of Hanford Site corrective activities. Table 4-3 contains additional detail on Tri-Party Agreement (Ecology et al. 1989b) milestones for RCRA Part B permit applications and closure plans for TSD units.

Table 4-4 is a listing of costs from individual ADS for corrective activities by sheet number and title. The listing is divided by priority level of the sheets. Figure 4-2 is a bar graph of total corrective activity costs by year and priority level.

Because of the tight time frame to implement the corrective activities, it is unlikely that there will be significant RD&D breakthroughs that will substantially decrease the cost of the corrective activities. The biggest potential cost savings rest with improvements to the well drilling and sampling programs. Technology transfer has been used extensively in determining the best available technology to use in corrective activities.

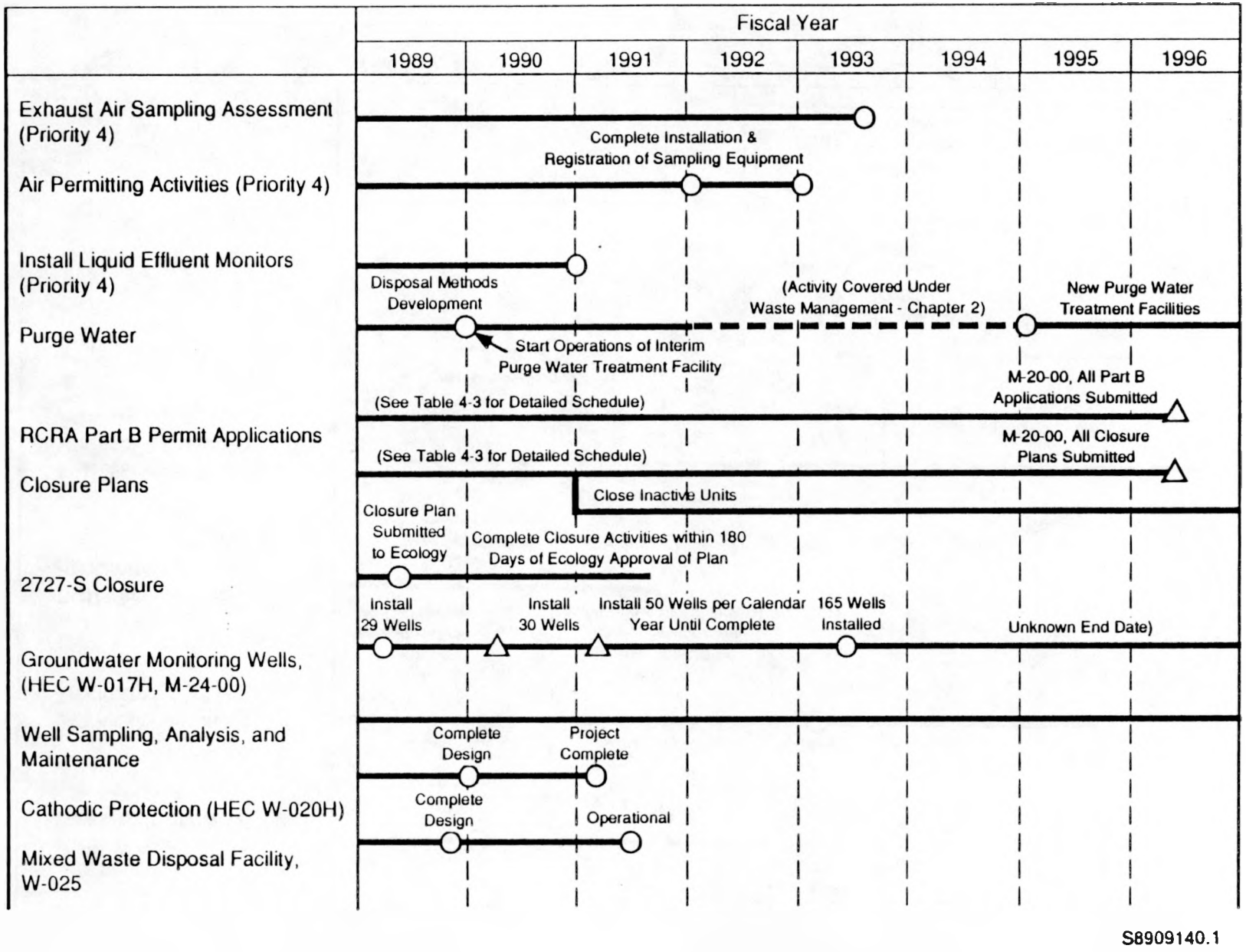

Figure 4-1. Corrective Activities Schedule. (sheet 1 of 2)

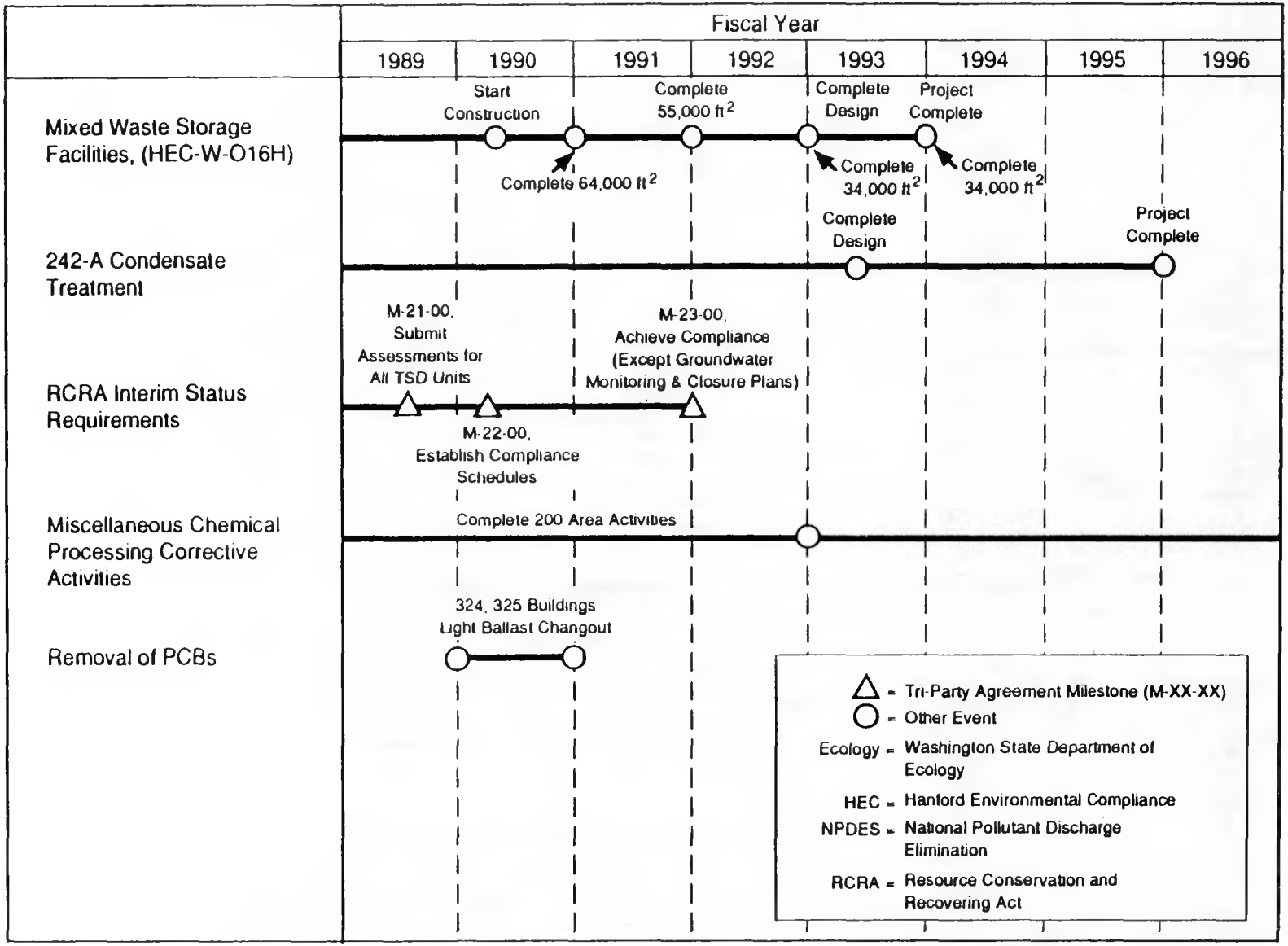

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Figure 4-1. Corrective Activities Schedule. (sheet 2 of 2)

Table 4-3. Milestones for the Permitting and Closures of Treatment, Storage, and/or Disposal Units. (sheet 1 of 4)

Tri-Party Agreement milestone number	Milestone	Due date
M-20-00	Submit Part B permit applications or closure plans for all RCRA TSD units. All Part B permit applications, closure plans, and postclosure permit applications will be submitted to Ecology and the EPA by May 1996. Individual unit submittals will occur as shown below as interim below as interim milestones.	May 1996
M-20-01	Submit HWVP Part B to Ecology and EPA.	July 1989 (Complete)
M-20-02	Submit 616 Storage Facility Part B to Ecology and EPA.	July 1989 (Complete)
M-20-03	Submit Single-Shell Tank System Closure/Corrective Action Work Plan to Ecology and EPA.	Sept. 1989 (Complete)
M-20-04	Submit 2101-M Pond Closure Plan to Ecology and EPA.	Sept. 1989 (Complete)
M-20-05	Submit Central Waste Complex-RMW Storage Part B to Ecology and EPA.	Oct. 1991
M-20-06	Submit Low-Level Burial Grounds Part B to Ecology and EPA.	Dec. 1989
M-20-07	Submit Nonradioactive Dangerous Waste Landfill Closure/Postclosure Plan to Ecology and EPA.	Aug. 1990
M-20-08	Submit 305-B Storage Facility Part B to Ecology and EPA.	Jan. 1990
M-20-09	Submit 216-B-3 Pond Closure/Postclosure Plan to Ecology and EPA.	March 1990
M-20-10	Submit 300 Area Waste Acid System Closure Plan to Ecology and EPA (includes 311 tanks).	June 1990
M-20-11	Submit PUREX Tunnels Part B to Ecology and EPA.	Sept. 1990

Table 4-3. Milestones for the Permitting and Closures of Treatment, Storage, and/or Disposal Units. (sheet 2 of 4)

Tri-Party Agreement milestone number	Milestone	Due date
M-20-12	Submit Central Waste Complex-WRAP Part B to Ecology and EPA.	Oct. 1991
M-20-13	Submit 303-K Storage Area Closure Plan to Ecology and EPA.	April 1990
M-20-14	Submit 4843 Sodium Storage Facility Part B to Ecology and EPA.	March 1991
M-20-15	Submit 304 Concretion Facility Closure Plan to Ecology and EPA .	April 1990
M-20-16	Submit Double-Shell Tanks Part B to Ecology and EPA.	June 1991
M-20-17	Submit 242-A Evaporator Part B to Ecology and EPA.	June 1991
M-20-18	Submit 3718-F Alkali Metal Treatment and Storage Facility Part B to Ecology and EPA.	June 1991
M-20-19	Submit Simulated High-Level Slurry Treatment/ Storage Closure Plan to Ecology and EPA.	Sept. 1989
M-20-20	Submit 325 Waste Treatment Facility Part B to Ecology and EPA.	Aug 1991
M-20-21	Submit B Plant Part B to Ecology and EPA.	Oct. 1991
M-20-22	Submit 222-S Laboratory Part B to Ecology and EPA.	Dec. 1991
M-20-23	Submit TRUSAF Storage Part B to Ecology and EPA.	June 1992
M-20-24	Submit PUREX Part B to Ecology and EPA.	Sept. 1992
M-20-25	Submit Hanford Patrol Academy Demolition Sites Part B to Ecology and EPA.	Nov. 1992
M-20-26	Submit Ashpit Demolition Site Closure Plan Ecology and EPA.	Nov. 1992

Table 4-3. Milestones for the Permitting and Closures of Treatment, Storage, and/or Disposal Units. (sheet 3 of 4)

Tri-Party Agreement milestone number	Milestone	Due date
M-20-27	Submit Hexone Storage and Treatment Closure Plan to Ecology and EPA.	Nov. 1992
M-20-28	Submit E-8 Borrow Pit Demolition Site Closure Plan to Ecology and EPA.	Nov. 1992
M-20-29	Submit Maintenance and Storage Facility Part B to Ecology and EPA.	Nov. 1993
M-20-30	Submit 303-M Oxide Facility Part B to Ecology and EPA.	Oct. 1992
M-20-31	Submit 1301-N/1325-N Closure Plan/Postclosure Plan to Ecology and EPA.	May 1994
M-20-32	Submit 300 Area Process Trenches Closure/ Postclosure Plan to Ecology and EPA.	Sept. 1992
M-20-33	Submit 216-A-10 Crib Closure/Postclosure Plan to Ecology and EPA.	March 1996
M-20-34	Submit 216-A-36B Crib Closure/Postclosure Plan to Ecology and EPA.	March 1996
M-20-35	Submit 1324-N/1324-NA Closure Plan to Ecology and EPA.	Sept. 1994
M-20-36	Submit 216-A-29 Ditch Closure/Postclosure Plan to Ecology and EPA.	May 1996
M-20-37	Submit 216-U-12 Crib Closure/Postclosure Plan to Ecology and EPA.	Nov. 1994
M-20-38	Submit 216-B-63 Trench Closure Plan to Ecology and EPA.	May 1996
M-20-39	Submit 216-S-10 Pond and Ditch Closure Plan to Ecology and EPA.	May 1996
M-20-40	Submit 100-D Ponds Class Plan to Ecology and EPA.	Feb. 1993
M-20-41	Submit 105-DR Closure Plan to Ecology and EPA.	Sept. 1990

Table 4-3. Milestones for the Permitting and Closures of Treatment, Storage, and/or Disposal Units. (sheet 4 of 4)

Tri-Party Agreement milestone number	Milestone	Due date
M-20-42	Submit Thermal Treatment Part B to Ecology and EPA.	Dec. 1993
M-20-43	Submit Physical/Chemical Treatment Part B to Ecology and EPA.	Dec. 1994
M-20-44	Submit Biological Treatment Part B to Ecology and EPA.	Dec. 1995
M-20-45	Submit petitions to Ecology to withdraw Part A permit applications for 332 Storage Facility, 1706-KE Treatment Facility, 2727-WA Sodium Storage Facility, 221-T Alkali Metal Treatment and Storage Facility, and 324 Sodium Treatment Pilot Plant.	June 1989 (Complete)
M-20-46	Submit petitions to Ecology to manage the following facilities as treatment by 'generator' facilities: T Plant Treatment Tank, 22-S Treatment Tank, PUREX Treatment Tanks, 204-AR Waste Unloading Facility, and 241-Z Treatment Tank.	June 1989 (Complete)

Table 4-4. Corrective Activity Costs by Data Sheet and Priority. (sheet 1 of 2)

ACTIVITY DATA SHEET NUMBER	ACTIVITY DATA SHEET TITLE	(COSTS, $,000) FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
PRIORITY 1								
RL-0006	2727-S DW STORAGE FACILITY CLOSURE	12	630	0	0	0	0	0
RL-0007	RCRA GROUNDWATER MONITORING WELL INSTALL.	8276	0	0	0	0	0	0
RL-0054	TANK FARMS PERMITS/INTERIM STATUS COMP.	1585	1584	0	0	0	0	0
RL-0083	DEFENSE REACTOR RCRA PERMITS/CLOSURES	1005	3002	0	0	0	0	0
RL-0085	NUCLEAR MAT'LS PROD. PART B PERMITTING	414	650	0	0	0	0	0
RL-0088	CORR. ACTIONS FOR CHEM. PROCESSING FACS.	987	1812	0	0	0	0	0
RL-0092	MIXED WASTE STORAGE FACILITIES	2150	3550	0	0	0	0	0
RL-0093	WASTE MGMT. PERMITTING/INTERIM STATUS	2386	0	0	0	0	0	0
RL-0095	MIXED WASTE DISPOSAL FACILITY INSTALLATION	797	1193	0	0	0	0	0
RL-0158	MIXED WASTE DISPOSAL FACILITY INSTALLATION	811	697	0	0	0	0	0
RL-0159	MIXED WASTE DISPOSAL FACILITY INSTALLATION	7	6	0	0	0	0	0
SUBTOTAL		18430	13124	0	0	0	0	0
PRIORITY 2								
RL-0005	PURGE WATER DISPOSAL METHODS DEVEL.	0	3800	0	0	0	0	0
RL-0055	TANK FARM PROGRAMS HEC LINE ITEM	4418	2700	0	0	0	0	0
RL-0084	NE RCRA PERMITS/CLOSURES	0	188	400	200	200	200	200
RL-0091	B PLANT PART B PERMIT APPLICATION	0	0	1286	195	0	0	0
RL-0300	TANK FARMS PERMITS/INTERIM STATUS COMP.	0	0	678	496	678	0	0
RL-0301	MIXED WASTE STORAGE FACILITIES	0	0	2050	1800	1800	0	0
RL-0302	WASTE MGMT. PERMITS/INTERIM STATUS COMP.	0	0	1349	717	142	0	0
RL-0304	RCRA WELLS INSTALLATION/DEVELOPMENT	0	2900	10489	11060	8260	7160	7160
RL-0305	DEFENSE REACTOR RCRA PERMITS/CLOSURES	0	0	1162	102	606	444	101
RL-0306	NUCLEAR MATL'S PRODUCTION PART B PERMITS	0	0	3794	2523	238	0	0
RL-0307	CHEM. PROC. PRODUCTION FACILITY CORR. ACT.	0	0	1259	1258	1228	1148	992
RL-0344	TANK FARMS HEC LINE ITEM SUBPROJECTS	0	0	262	3790	8790	5290	290
RL-0347	CHEMICAL DEMOLITION SITES PERMITTING	0	0	69	1002	1200	0	0
SUBTOTAL		4418	9588	22798	23143	23142	14242	8743
PRIORITY 3								
RL-0151	PCB REMOVAL	0	150	0	0	0	0	0
RL-0195	HEC PURGE WATER TREATMENT FACILITIES	0	0	0	0	0	0	5000
SUBTOTAL		0	150	0	0	0	0	5000

Table 4-4. Corrective Activity Costs by Data Sheet and Priority. (sheet 2 of 2)

ACTIVITY DATA SHEET NUMBER	ACTIVITY DATA SHEET TITLE	(COSTS, $,000) FY 1989	FY 1990	FY 1991	FY 1992	FY 1993	FY 1994	FY 1995
PRIORITY 4								
RL-0145	EXHAUST AIR SAMPLING ASSESSMENT	0	100	300	100	0	0	0
RL-0154	LIQUID EFFLUENT MONITORS INSTALLATION	0	860	0	0	0	0	0
RL-0177	AIR PERMITTING/COMPLIANCE	0	2140	1870	1870	0	0	0
RL-0326	AIR PERMITTING/COMPLIANCE	0	810	0	0	0	0	0
RL-0327	N REACTOR AIR PERMITTING	0	970	0	0	0	0	0
SUBTOTAL		0	4880	2170	1970	0	0	0
TOTAL		22848	27742	24968	25113	23142	14242	13743

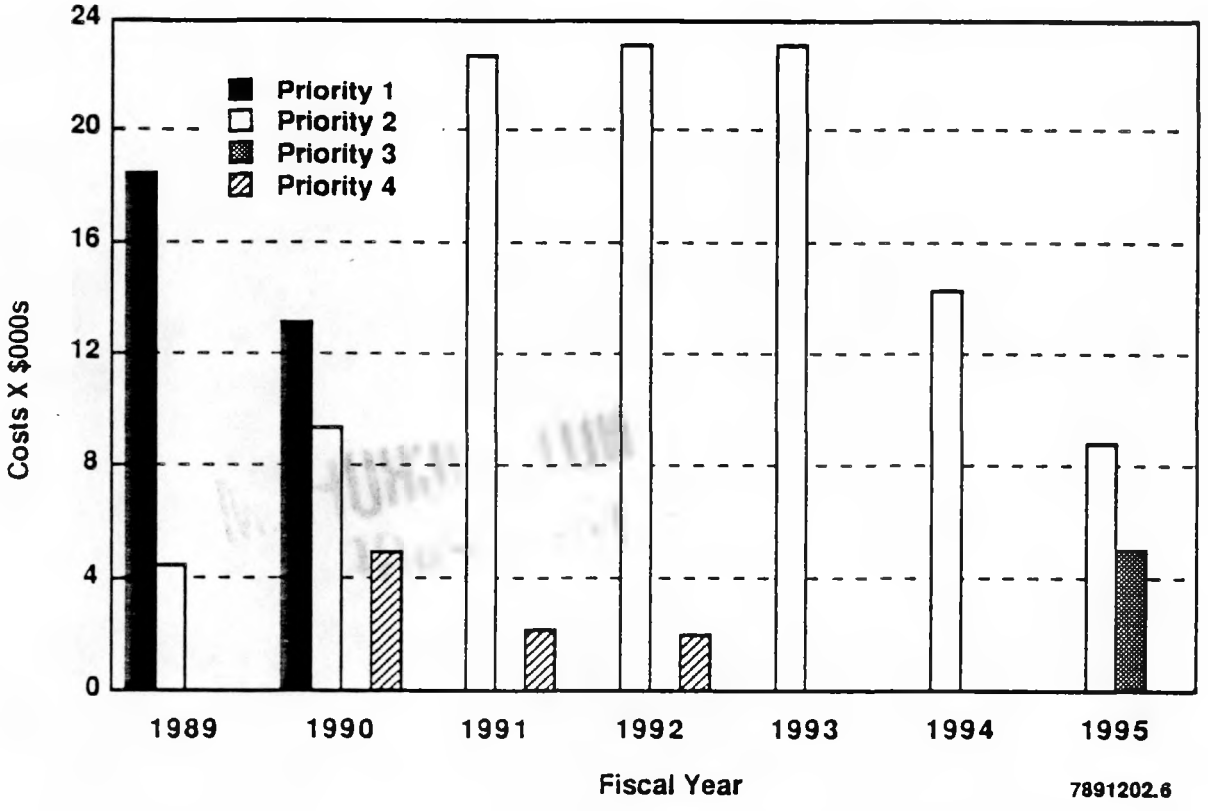

Figure 4-2. Corrective Activity Costs by Year and Priority.

5.0 QUALITY ASSURANCE

Quality assurance for environmental restoration, waste management operations, and environmental corrective activities on the Hanford Site shall be in accordance with DOE Order 5400.1, *General Environmental Protection Program* (DOE-HQ 1988a) and DOE-RL Order 5700.1A, *Quality Assurance* (DOE-RL 1983) and as specified by the Tri-Party Agreement (Ecology et al. 1989b). These documents establish the basic requirements for an effective Quality Assurance Program, which is implemented by Westinghouse Hanford through the use of a defined Quality Assurance Program.

To properly implement quality assurance requirements and ensure that consistency and completeness is achieved throughout all Hanford Site activities, Westinghouse Hanford is committed to establish the Quality Assurance Program in accordance with *Quality Assurance Program Requirements for Nuclear Facilities* (ASME 1989). To satisfy the requirements of the Tri-Party Agreement, the Quality Assurance Program for the above environmental activities shall include the EPA quality assurance requirements as expressed by *Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans* (EPA 1983).

Westinghouse Hanford is in the process of preparing a plan for implementing these requirements for Environmental Restoration Remedial Action work. This approach shall ensure that the method for and control of environmental activities are in accordance with approved regulatory standards, guidance documents, and site procedures such as the environmental investigations and instructions, and additional internal procedures.

6.0 BASE ASSUMPTIONS AND EXCLUDED ACTIVITIES

6.1 BASE ASSUMPTIONS

A number of assumptions were made in the preparation of this site-specific plan. Key assumptions are listed below.

- The Tri-Party Agreement (Ecology et al. 1989b) commitments will be met. Milestones in the Tri-Party Agreement are included in the site-specific plan as priority 2 items.
- The safe minimum operating level under waste management operations is included in the site-specific plan as priority 1 items.
- The Hanford Site will receive the 'minimum required level' budget in the FY 1990-1995 time frame.
- The plan assumes that no new environmental regulations will be issued between FY 1989-1995. Any new environmental regulations issued will have an unpredictable effect on FY 1989-1995 costs. Therefore, effects from new regulations cannot be factored in.
- Ongoing facility compliance assessments will continue to identify potential deficiencies. Where enough information is available to define needed corrective activities, an appropriate corrective activity will be included in updates to the site-specific plan.
- Base environmental activities are excluded, with the exception of environmental monitoring/surveillance.
- Landlord activities are excluded unless they can be tied directly to waste management operations.
- When facilities or waste sites constructed or in use prior to November 1988 become inactive, funding for their closure will be included in the environmental restoration category.
- The N Reactor is assumed to be in a wet standby or dry lay-up status. Should a decision be made to restart this reactor, significant changes to the plan would be needed.
- A minimum level of maintenance of waste management facilities will be performed, consistent with DOE orders and industrial codes and standards.
- Oversight funding (i.e., state, EPA, or outside agency involvement) will not increase from current levels. Although current information indicates that this is incorrect, it was an assumption used in the preparation of the ADSs.
- The WIPP will operate and receive TRU waste from the Hanford Site.

- The FFTF is assumed to be operating during the FY 1989-1995 time frame.
- Advanced Reactor Division missions, such as the Space Isotope Program, will be covered fully in the five-year modernization plan.
- The FY 1992-1995 costs are reported in FY 1991 dollars (no escalation assumed in outyears).

6.2 ACTIVITIES EXCLUDED FROM THE SCOPE OF THIS PLAN

There are a number of tasks that are important to the continued support of waste management and environmental activities that are outside the scope of this plan. Without these tasks, a number of key waste management and environmental activities could either not continue or would be adversely affected. The three main programs include landlord program, environmental base program, and safety and health base program. Each of these are discussed in the following sections. Facility maintenance and asbestos abatement are also not included in this plan and therefore are discussed in this section. In addition, there are a number of anticipated changes in regulations and statutes that may impact waste management and corrective actions in the next five years. These are discussed in Section 6.2.6.

6.2.1 Landlord Program

A Landlord program has been established at the Hanford Site to provide general purpose infrastructure support for multiprogram missions. The Hanford Site landlord program is a focal point, identifying facility deficiencies and providing funding for needed capital equipment replacements and upgrades.

The Landlord Program funds capital equipment and construction associated with the following systems and services:

Steam (Process and Heating)
Radioactive and Nonradioactive Laundry
General Purpose Buildings and Equipment
Telecommunications System
Railroad System
Road System
Process and Potable Water System
Medical Services
Security
Warehousing
Transportation
General Purpose Site Support Laboratory
Electrical Distribution System
Site Automated Data Processing Systems
Site Environmental Monitoring
Fire Services
Machine/Fabrication Shops
Process/Sanitary Sewer Systems
Site Sanitary Landfill

The Landlord Program does not operate or provide routine maintenance for these services, but rather determines deficiencies in the physical plant associated with these services and funds their upgrade or replacement. Without

these services, neither waste management nor environmental restoration activities could continue. Two major landlord line item activities (steam plant upgrade and radioactive laundry) are covered by this plan. The remaining landlord activities will be included in the next update of this plan since the responsibilities for the landlord program have been assumed by the recently established office of Environmental Restoration and Waste Management.

6.2.2 Environmental Base Program

Routine day-to-day activities addressing environmental requirements not directly related to waste management operations are included in the environmental base category.

Specific items covered under the environmental base programs are as follows.

- International Program Office Support. This activity provides a focal point in coordinating and integrating all activities associated with exchange of foreign and U.S. technology. Technology areas include treatment, storage, disposal, and transportation of HLW, TRU wastes, LLW, mill tailing, hazardous and mixed wastes, and remedial action. Use of technology exchange can accelerate and reduce the cost of DOE programs.

- Meteorological and Climatological Services. The Hanford Site must operate a climatological/meteorological station 24 hours per day throughout the year to support operational safety, emergency response, and annual dose estimates reported in sitewide annual reports.

These activities are required to maintain compliance with DOE orders and commitments made to the states of Washington and Oregon and surrounding communities.

6.2.3 Safety and Health Base Program

Safety and health activities specifically related to waste management operations are included in this plan. This plan does not cover safety and health items that are generic to all site operations. Key examples are radiation protection oversight, radiation standards development, and emergency readiness and preparedness activities.

6.2.4 Maintenance of Operating Facilities

Operating facilities are maintained as necessary to ensure continuity of operations, protection of the environment, and the continued safety and health of the public and workers. In accordance with DOE-HQ guidance, 3% to 5% of facility replacement cost should be invested annually in maintenance. Hanford Site facilities for waste management operations and other areas are currently

not supported at this level. Although not included in this plan, facility maintenance is expected to have a significantly higher proportion of the budget in the future.

6.2.5 Asbestos Abatement

Many Hanford Site facilities contain asbestos in materials such as insulation, building material, floor tile, gasket material, etc. Hanford Site contractors are committed to ensuring a work place free of airborne asbestos hazards. This is accomplished by identifying problem areas and performing encapsulation or removal activities as soon as possible after identification to mitigate the hazard. Legal requirements for asbestos abatement include Occupational Safety and Health Administration regulations, state regulations, and DOE orders. This site-specific plan includes asbestos abatement activities in certain facilities no longer in use, but does not include activities in operating facilities.

6.2.6 New Environmental Regulations

There are a number of proposed new regulations or changes to existing regulations that are in the review stage. Many of these are expected to be issued before FY 1995. A number of these, such as the reauthorization of the Clean Air Act or the draft EPA regulation on LLW likely will have significant impact on both waste operations and environmental corrective activities.

The State of Washington is in the process of being authorized to implement some recent EPA regulations, such as the new underground storage tank regulations. This will also impact Hanford Site operations. For example, the number of tanks at the Hanford Site under the underground storage tank regulations will likely increase about 50% (from 65 tanks to 97 tanks) because of the state's expanded definition of hazardous materials. State regulations must be as stringent as the federal regulations before states can be authorized to administer the regulatory compliance program.

A number of environmental compliance assessments are also underway at the Hanford Site, and there is a very high probability that additional corrective actions will be identified. Insufficient information exists to quantify the budget impact of these anticipated findings or even describe specific findings. The impacts of some of the present evaluations could range from no cost to millions of dollars to correct (e.g., State of Washington tank storage regulations).

As assessments progress and regulations develop, additional tasks will be identified. These will be reported in annual updates to this plan.

7.0 TRI-PARTY AGREEMENT

The Tri-Party Agreement (Ecology et al. 1989b) is an agreement among the DOE, the EPA, and Ecology. The primary objectives of the Tri-Party Agreement are to bring the Hanford Site into compliance with state and federal hazardous waste laws, and to clean up the Hanford Site in a timely manner. Other objectives include the following:

- Achieving compliance with RCRA interim and final status requirements for TSD operations
- Coordinating and integrating EPA and Ecology regulatory activities between RCRA and the CERCLA to streamline regulatory involvement
- Ensuring adequate public involvement in cleanup decisions
- Ensuring that the work is properly prioritized.

The specific scope of the Tri-Party Agreement includes: (1) those actions necessary to achieve RCRA interim status requirements at TSD units; (2) permitting and/or closure of TSD units; (3) investigation and remediation of inactive waste units in accordance with CERCLA or Section 3004(u) of RCRA; and (4) any other action or new facility necessary to ensure that these items are accomplished. For example, new laboratories are included in the Tri-Party Agreement because they are required to meet the sampling load that will result from the remedial investigations and closures.

The Tri-Party Agreement includes three attachments. Attachment 1 is a letter from the U.S. Department of Justice that recognizes the enforceability of the agreement. Attachment 2 is the action plan for the Tri-Party Agreement. The action plan defines the processes and procedures to be followed and provides the enforceable milestones and schedules that have been committed to. Attachment 3 is a funding agreement between DOE and Ecology that commits DOE to provide Ecology funding for oversight of activities carried out under the Tri-Party Agreement. Another key document, which is not part of the Tri-Party Agreement, is the *Community Relations Plan for the Hanford Site* (Ecology et al. 1989a). The community relations plan was written to meet the requirements for a community relations plan in support of CERCLA remedial actions, but also covers the remaining activities contained within the Tri-Party Agreement. The community relations plan discusses how the public will be involved in the Tri-Party Agreement activities. (Also see Section 1.7.4.)

A significant accomplishment of the Tri-Party Agreement was the integration of the state's authorities under RCRA with EPA's authorities under both RCRA and CERCLA. This should help in minimizing duplication of effort and, more important, it should reduce redundant enforcement authorities.

The following paragraphs further define the scope and milestones associated with the Tri-Party Agreement. The Tri-Party Agreement action plan

will be updated annually to incorporate changes and delineate activities for the upcoming year.

7.1 RCRA INTERIM STATUS COMPLIANCE

With the exception of RCRA groundwater monitoring wells and closure plans, the Tri-Party Agreement (Ecology et al. 1989b) calls for achieving RCRA interim status compliance by September 1991 at all existing TSD units on the Hanford Site. Provisions have been made to negotiate longer compliance schedules if significant facility modifications are required to achieve compliance. A detailed plan for accomplishing this will be available by December 1989. The RCRA groundwater wells will be installed at the rate of 29 in calendar year 1989, 30 in calendar year 1990, and 50 per year thereafter until a fully compliant system has been achieved. Individual closure plans have been scheduled for completion beginning in September 1989 and ranging over the next 8 years. Closure plan preparation for inactive disposal units has been deferred so that it coincides with the remedial investigations conducted as part of the CERCLA/RCRA 3004(u) cleanup program, although Ecology has the ability to require closure in advance of remedial investigations. Refer to Chapter 4.0 for further detail on interim status compliance.

7.2 RCRA FINAL STATUS PERMIT

Part A permit applications have been submitted covering 55 groupings of TSD units on the Hanford Site, recognizing that only one RCRA permit will be issued. A large percentage of the 55 TSD groupings on the Hanford Site are required to be permitted for operation or postclosure care. Disposal units and other Part B permit applications of selected units have been submitted to Ecology for review. The remainder will be submitted over the next six years.

7.3 CLOSURE OF SINGLE-SHELL TANKS

A major element of the Tri-Party Agreement is the closure of the 149 SSTs located on the Hanford Site. The Tri-Party Agreement calls for complete closure by year 2018. This is a very aggressive schedule considering the technology that needs to be developed and the time that may be required to dispose of the wastes in the tanks. The HDW-EIS (DOE-HQ 1987b) requires that a supplemental EIS be developed covering the final disposition of the tank wastes. Subsequent to the SST EIS, Ecology must approve the DOE-RL SST RCRA closure plan. To support this schedule the agreement calls for new hot-cell laboratory capability by June 1994. The Hanford Waste Vitrification Plant will be brought online by the end of calendar year 1999 (per the Tri-Party Agreement) to support closure of the SSTs if required. Recently, approval was granted to advance this date by two years. Interim stabilization of the tanks will be completed by September 1995 to minimize the potential of future leaks while awaiting final closure.

Initial characterization of the SSTs will be completed by September 1998. To support this date, expanded laboratory capability will be constructed and operational by June 1994.

7.4 CLEANUP OF INACTIVE WASTE SITES

There are approximately 1,100 waste units on the Hanford Site that will be assessed for remediation. These waste sites include liquid and solid engineered waste units, unplanned release units (spills), septic tanks, etc. Approximately 60% of these units contain mixed wastes. The Tri-Party Agreement (Ecology et al. 1989b) organizes these units into 74 operable units. An operable unit is a grouping of waste units for the purpose of conducting a remedial investigation and subsequent remedial action. The Tri-Party Agreement calls for completing the investigations for all operable units by year 2005 and completing all remedial actions by year 2018. To accomplish this, work plans for investigations will be developed at a rate of six per year. A key to the success of this effort is adequate laboratory capability. The Tri-Party Agreement provides for a new low-level/mixed-waste laboratory to be operational by January 1992.

7.5 CEASING DISPOSAL OF CONTAMINATED LIQUIDS TO THE SOIL COLUMN

In support of the Hanford Site cleanup, the Tri-Party Agreement includes those actions necessary to cease disposal of contaminated liquids to the soil column. Nineteen waste streams have been designated as Phase I (high priority) and will be treated or eliminated by June 1995. The Phase II (lower priority) waste streams will be addressed at a later date. Either the streams will be eliminated, or treatment systems will be installed. The treated effluent will then be disposed of into a new or existing site (i.e., pond) or possibly transported to the Columbia River.

7.6 HANFORD WASTE VITRIFICATION PLANT

The RCRA does not allow for the long-term storage of hazardous wastes, which are restricted from land disposal. The Hanford Waste Vitrification Plant will be brought online by the end of 1999 to treat much of the waste currently stored in DSTs. The Hanford Waste Vitrification Plant may be required to treat wastes that are retrieved from the SSTs. Construction of the Hanford Waste Vitrification Plant will commence in July 1991.

7.7 WASTE RECEIVING AND PROCESSING FACILITY

The Tri-Party Agreement includes a milestone for a Waste Receiving and Processing Facility, which will be constructed in two phases. Phase I, which will be operational in September 1996, will provide the capability to receive, assay, and package wastes. Once operational, Phase I will allow for the

removal of wastes from the current TRU waste storage pads for preparation prior to shipment to the WIPP in New Mexico. Such action will allow for closure of the storage pads under RCRA.

* Phase II of Waste Receiving and Processing will provide the treatment systems necessary for both TRU and mixed wastes prior to their final disposal. Phase II will be operational by September 1999. Low-level mixed wastes are currently being stored at the Hanford Site awaiting RCRA qualified treatment and disposal facilities.

8.0 ENVIRONMENTAL PROTECTION REQUIREMENTS

Federal laws, State of Washington statutes and regulations, DOE orders, and other regulations affect the environmental protection effort for the Hanford Site. Brief descriptions of the principal statutes and regulations are presented below. Tribal treaty rights also are covered in this section.

8.1 FEDERAL STATUTES

Federal environmental statutes, as enacted by the U.S. Congress, govern environmental protection activities at the Hanford Site. The following federal laws have major implications for the Hanford Site's environmental protection program.

Federal statutes	Implication
Resource Conservation and Recovery Act of 1976 (42 U.S. Code (USC) 6901-6987)/ *Hazardous and Solid Waste Amendments of 1984* (HSWA) (42 USC 6912 et seq.)	Protects public health and environment from activities associated with management and disposal of hazardous solid wastes. The Hanford Site has been designated a generator of hazardous waste in accordance with RCRA and has submitted Part A of a permit application designating itself as a TSD facility which handles hazardous waste.
Comprehensive Environmental Response, Compensation, and Liability Act (42 USC 9601 et seq.)/*Superfund Amendments and Reauthorization Act of 1986* (42 USC 11001 et seq.)	Establishes process for undertaking remedial actions at inactive waste sites containing hazardous substances. Establishes reporting requirements for storage and releases of hazardous substances. The Hanford Site has been placed on the NPL. The CERCLA remedial action process has been initiated on the Hanford Site in response to being listed on the NPL.
Emergency Planning and Community Right to Know Act of 1986 (SARA Title III) (42 USC 11001 et seq.)	Establishes framework for state and local emergency planning and provides mechanism for community awareness of hazardous chemicals present in a locality.
National Environmental Policy Act (NEPA) (42 USC 4321 et seq.)	Establishes national policy requiring disclosure and consideration of environmental impacts policy requiring disclosure and consideration of environmental impacts and protection of natural resources and the human environment during planning of proposed activities.

Federal statutes	Implication
Safe Drinking Water Act of 1974 (42 USC 300f et seq.)	Protects public health by setting standards for water supplied for public consumption and by protecting public drinking water sources.
Toxic Substances Control Act of 1976 (15 USC 2601 et seq.)	Protects human health and environment from exposure to hazardous/toxic chemical substances and mixtures. Westinghouse Hanford has implemented a program to clean up, treat, and dispose of all PCB-contaminated materials on the Hanford Site. In addition, a program has been implemented to remove and dispose of asbestos from buildings on the Hanford Site.
Federal Insecticide, Fungicide, and Rodenticide Act of 1975 (7 USC 136 et seq.)	Regulates the manufacture and use of pesticides. Pesticides are used on the Hanford Site to control growth of vegetation, primarily in contaminated areas.
Atomic Energy Act of 1954 (42 USC 2011, et seq.)	Authorizes the DOE to conduct nuclear materials production, research and development, and associated activities. Such activities shall be conducted in a safe and environmentally sound manner.
Clean Water Act of 1977 (33 USC 1251)	Sets standards for maintaining clean water. Requires National Pollutant Discharge Elimination System permits to discharge to navigable waters.
Clean Air Act (42 USC 7401 et seq.)	Provides for prevention and control of air pollution from stationary and mobile sources. Provides for the achievement and maintenance of air quality levels protective of public health and welfare through operational management, emissions control, and monitoring and ambient monitoring.

In addition to those federal laws having major implication for the Hanford Site's environmental protection program, the following laws also apply in specific circumstances.

Federal laws	Implication
Wild and Scenic Rivers Act of 1978 (16 USC 1271 et seq.)	Establishes a national wild and scenic rivers system to preserve and protect selected rivers of the nation.
Rivers and Harbors Act of 1899 (33 USC 401 et seq.)	Requires acquiring of a U.S. Army Corps of Engineers permit prior to altering the course, location, conditions of channels, or discharging dredge or fill materials into any navigable waters.
Noise Control Act of 1972 (42 USC 4901 et seq.)	Coordinates federal noise control research, sets noise emissions standards, and disseminates information to the public.
Migratory Bird Treaty Act (16 USC 703 et seq.)	Prohibits killing, capturing, transporting, etc., of protected migratory birds, their nests, and eggs.
Fish and Wildlife Coordination Act (16 USC 661 et seq.)	Authorizes the Secretary of the Interior to provide assistance to and cooperate with public and private organizations to protect fish and wildlife.
Hazardous Material Transportation Act (49 USC 1801 et seq.)	Gives additional regulatory and enforcement authority to the Secretary of Transportation to protect the nation from risks of transporting hazardous materials.
Endangered Species Act (16 USC 668)	Establishes a program for conserving endangered species and their ecosystems.
Bald and Golden Eagle Protection Act (16 USC 668)	Prohibits possessing, killing, transporting, disturbing, etc., bald and golden eagles, their nests, or eggs.
Archaeological Resource Preservation Act of 1979 (16 USC 470AA)	Protects archaeological resources located on public or Indian lands.
American Antiquities Act (16 USC 433)	Protects historic and prehistoric ruins, monuments, and objects of antiquity located on lands owned or controlled by the federal government.

8.2 STATE OF WASHINGTON STATUTES

The DOE activities at the Hanford Site must be in compliance with state and local laws and regulations that have been authorized by federal legislation. In addition, other state and local laws or regulations establish technical criteria that are utilized by the DOE in designing environmental protection facilities or projects.

State of Washington statutes	
RCW 27.53, *Archaeological Sites and Resources*	
RCW 43.20, *State Board of Health Regulations Regarding Disposal of Wastes, Garbage, and Solid Waste*	
RCW 43.21C, *State Environmental Policy Act*	WAC 197-10 to 197-910, *Guidelines for Interpreting and Implementing the State Environmental Policy Act.*
RCW 70.94, *Washington Clean Air Act*	WAC 173-400 to 173-495, *Washington Air Pollution Regulations-Department of Ecology.*
RCW 70.105, *Washington Hazardous Waste Cleanup Act*	WAC 173-303, *Dangerous Waste Regulations;* WAC 163-404, *Nonhazardous Solid Waste Regulations Minimum Functional Standards.*
RCW 70.107, *Washington Noise Control Act*	WAC 173-60, *Maximum Environmental Noise Levels;* WAC 173-162, *Motor Vehicle Noise Levels.*
RCW 75.20.100, *Hydraulics Project Act*	WAC 220-110, *Hydraulic Code Rules.*
RCW 90.48, *Washington Water Pollution Control Act*	WAC 173-216, *State Waste Discharge Permit Program;* WAC 173-220, *National Pollutant Discharge Elimination System Permit Program;* WAC 173-225, *Federal Water Pollution Control Act--Establishment of Implementation Procedures of Application for Certification.*

State of Washington statutes	
RCW 90.58, *Washington Shoreline Management Act of 1971*	WAC 173-16, *Shoreline Management Act Guidelines for Development of Master Programs*; WAC 173-18, *Streams and Rivers Constituting Shorelines of the State*; WAC 173-19, *State Master Program*; WAC 173-20, *Lakes Constituting Shorelines of the State*; WAC 173-22, *Adoption of Designations of Wetlands Associated with Shorelines of the State*.

8.3 U.S. DEPARTMENT OF ENERGY ORDERS

To regulate its operations, the DOE has implemented an extensive set of orders. Those with major implications for the environmental protection program are as follows.

Department of Energy orders	Implication
DOE Order 5480.1B, *Environment, Safety, and Health Program for Department of Energy Operations*	Establishes Environment, Safety, and Health Program for DOE operations.
DOE-RL Order 5480.1, *Environmental Protection, Safety and Health Protection Program for Richland Operations*	Supplements DOE Order 5480.1B for DOE-RL.
DOE Order 5400.1, *General Environmental Protection Program Requirements*	Establishes environmental protection program requirements, authorities, and responsibilities (more specific than requirements in DOE Order 5480.1B).
DOE Order 5480.14, *Comprehensive Environmental Response, Compensation, and Liability Act Program*	Establishes requirements for compliance with CERCLA regulations, defines actions to identify and evaluate inactive sites, and to effect remedial actions.
DOE Order 5480.5, *Safety of Nuclear Facilities*	Sets forth policy and direction for safety in DOE nuclear facilities.
DOE Order 5400.2, *Environmental Compliance Issue Coordination*	Sets forth policy, direction, and procedures for coordinating environmental issues of significance to DOE.

Department of Energy orders	Implication
DOE Order 5400.3, *Radiation Protection of the Public and the Environment*	Establishes a program and standards for radiation protection.
DOE Order 5400.4, *Comprehensive Environmental Response, Compensation*, and Liability Act Program	Provides direction for implementing a DOE CERCLA program.
DOE Order 5400.5, *Hazardous and Radioactive Mixed Waste Management*	Provides direction for implementing a DOE hazardous waste management program.
DOE Order 5400.xy, *Radiological Effluent Monitoring and Environmental Surveillance*	Establishes procedures for radiological monitoring and environmental surveillance for DOE facilities.
DOE Order 5440.1C, *National Environmental Policy Act* (NEPA)	Establishes DOE policy for implementing the NEPA.
DOE-RL Order 5440.1A, *Implementation of the National Environmental Policy Act at Richland Operations*	Supplements DOE Order 5440.1C for DOE-RL.
DOE 5484.1, *Environmental Protection, Safety, and Health Protection Information Reporting Requirements*	Establishes requirements and procedures for reporting and investigating matters of environmental protection, safety, and health protection significance.
DOE-RL Order 5484.1, *Environmental Protection, Safety and Health Protection Information Reporting Requirements*	Supplements DOE Order 5484.1. Establishes Environment, Safety, and Health reporting requirements for DOE-RL.
DOE Order 5820.2A, *Radioactive Waste Management*	Establishes policies and guidelines for management of radioactive waste and contaminated facilities.
DOE-RL Order 4330.2, *Water Treatment Plants and Distribution Systems*	Establishes requirements for operation and maintenance of the Hanford Site's potable water treatment plants and their distribution/storage systems.
DOE Order 5480.4, *Environmental Protection, Safety, and Health Protection Standards*	Establishes mandatory environmental, safety, and health standards, codes, and regulations to be evaluated in appraisals and surveillance.

Department of Energy orders	Implication
DOE-RL Order 5480.4A, *Environmental Protection, Safety, and Health Protection Standards for DOE-RL*	Supplements DOE Order 5480.4, assigns responsibilities and authorities and establishes reporting requirements for DOE-RL.
DOE Order 5482.1B, *Environment, Safety and Health Appraisal Program*	Establishes Environment, Safety and Health appraisal program for DOE.
DOE-RL Order 5482.1B, *Environment Safety, Health, and Quality Assurance Appraisal and Surveillance Program*	Supplements DOE Order 5482.1B, assigns responsibilities and authorities, and establishes reporting requirements for the DOE-RL.
DOE-RL Order 5000.3, *Unusual Occurrence Reporting System*	Establishes DOE policy and provides instructions for reporting, analyzing, and disseminating information on significant events.
DOE-RL Order 5484.2A, *Unusual Occurrence Reporting System at Richland Operations*	Establishes authorities and responsibilities and assigns reporting requirements for DOE-RL.
DOE Order 5500.2, *Notification Reporting and Response Levels*	Provides a DOE emergency notification and reporting system and establishes DOE emergency response levels and associated response actions.
DOE Order 5500.3, *Reactor and Nonreactor Nuclear Facility Emergency Planning, Preparedness, and Response Program for Department of Energy Operations*	Establishes requirements for developing DOE site-specific emergency plans and procedures for radiological emergencies.
DOE Order 5500.4, *Public Affairs Policy and Planning Requirements for Emergencies*	Establishes emergency plans and procedures for DOE public affairs actions in case of operational emergencies.
DOE Order 5700.6B, *Quality Assurance*	Establishes quality assurance requirements, including appraisal requirements.
DOE-RL Order 5700.1A, *Quality Assurance*	Establishes quality assurance requirements for DOE-RL.
DOE Order 6430.1A, *General Design Criteria*	Provides general design criteria for use in acquiring, modifying, or leasing of DOE facilities.

Department of Energy orders	Implication
DOE Order 4700.1, *Project Management System*	Establishes requirements and objectives and assigns responsibilities and authorities necessary for acquiring major systems.
DOE Order 5480.3, *Safety Requirements for the Packaging and Transportation of Hazardous Materials, Hazardous Substances, and Hazardous Wastes*	Establishes requirements for packaging and transporting hazardous materials, hazardous substances, and hazardous wastes.

8.4 LOCAL REGULATIONS

The Hanford Site also is subject to regulations imposed by local governments. The principal regulation impacting the environmental protection of the Hanford Site is the following:

Local regulations	Implication
General Regulation 80-7 of the Benton-Franklin-Walla Walla Counties Air Pollution Control Authority	Establishes requirements for implementing specific limits for nitrous oxides and particulates at the Hanford Site facilities in compliance with state air quality regulations.

8.5 INDIAN NATION TREATY RIGHTS AND SOVEREIGNTY

Section 1.1.1 of the DOE-HQ Five-Year Plan (DOE-HQ 1989b) provides that DOE will recognize tribal sovereignty and treaty rights related to tribal and ceded lands. The DOE will recognize this sovereignty and these rights for affected nations both for activities on the Hanford Site and transportation of waste offsite.

The Hanford Site is located on lands ceded to the United States Government by the Yakima and Umatilla Indians and is adjacent to lands ceded by the Nez Perce Indians. The Yakima Indian Nation and Confederated Tribes of the Umatilla Indian Reservations have reservations near the Hanford Site. Treaties with these entities in 1855 established the reservations and provided the basis for the ceded lands. The treaties also retained for the tribes certain rights and privileges on lands that had been ceded. As part of the 1855 treaty, the three Indian tribes were assured the right to fish at all of their usual and accustomed places. The treaty also retained the privilege of hunting, gathering roots and berries, and pasturing horses and cattle on open and unclaimed lands.

There are other Indian tribes in the area whose ceded lands did not include any portion of the Hanford Site. These tribes make use of the Columbia River for fishing or may be affected by transportation of wastes to or from the Hanford Site.

Although the Hanford Site is located outside the boundaries of any present Indian reservation, DOE, in Section 1.1.1 of the DOE-HQ Five-Year Plan (DOE-HQ 1989b), recognizes that tribes have retained treaty rights in off-reservation areas, including those lands ceded in the treaties.

Under the laws of the United States, Indian nations have been treated as 'dependent' sovereign nations, reserving unto the tribes all governmental power not granted to the United States. For instance, the Yakima Reservation, the exclusive homeland of the Yakima Nation, is explicitly subject to the laws of the governmental body of the Yakima Indian Nation. The treaty with the Yakimas ('1855 Treaty' or 'Stevens Treaty') clearly states that the signatory fourteen tribes and bands "for the purposes of this treaty are to be considered as one nation."

The treaty-reserved possessory or usage rights of Stevens Treaty tribes to off-reservation fisheries has long been recognized by the United States of America. The Stevens Treaty tribes' treaty-reserved rights to hunt, gather, pasture animals, and travel in open unclaimed lands within their ceded areas have long been recognized by the United States of America. Further, the Indian nation's cultural and religious relationship with the land, water, and all growing things within their native area, and their fundamental beliefs that the interdependence and protection of the land, water, and all living things are a sacred duty under the Creator's law, have been recognized and respected by the United States of America and the Supreme Court.

The tribes retained these rights as sovereign governments and in order for these rights to be respected and protected, a government-to-government relationship between the tribes and the United States must be maintained.

9.0 COMPLIANCE WITH THE NATIONAL ENVIRONMENTAL POLICY ACT

9.1 HANFORD SITE ACTIONS

The NEPA documentation will be prepared for all projects and activities as appropriate, per 52 FR 47662, *Compliance with the National Environmental Policy Act; Amendments to the DOE NEPA Guidelines* (DOE-HQ 1987a), and DOE Order 5820.2A (DOE-HQ 1988c). The appropriate level of NEPA documentation will be in place prior to construction activities. A State Environmental Policy Act also is in effect.

Figure 9-1 is a diagram of the NEPA process used for determining what documentation is required.

9.2 ACTIONS SUPPORTING RCRA AND CERCLA

The NEPA documentation will be prepared for site characterization activities on an operable-unit-by-operable-unit basis or on a site-by-site basis, supporting CERCLA and RCRA. Examples of typical NEPA documentation are categorical exclusions or memorandum-to-file/environmental evaluations. Prior to remedial action, additional NEPA reviews and documentation will be implemented, as appropriate, on an operable-unit-by-operable-unit basis.

An EIS is being prepared addressing alternative methods for decommissioning surplus plutonium production reactors. These eight reactors were constructed between 1943 and 1955, and the last was shut down in 1971. The draft EIS was issued in March 1989 (DOE-HQ 1989b).

In addition, DOE is considering the need for an EIS to address non-SST remedial actions to be completed by the Environmental Restoration Remedial Action program.

9.3 ACTIONS SUPPORTING WASTE MANAGEMENT

A supplemental EIS will be prepared for the disposal of SST waste. This supplements the HDW-EIS (DOE-HQ 1987b). Additional NEPA reviews will be conducted for the Hanford Waste Vitrification Plant, the Waste Receiving and Processing Facility, and the Grout Treatment Facility. Schedules are under negotiation.

An environmental assessment is currently being done for the Hanford Environmental Compliance project to determine the documentation requirements for the subprojects that comprise the Hanford Environmental Compliance project.

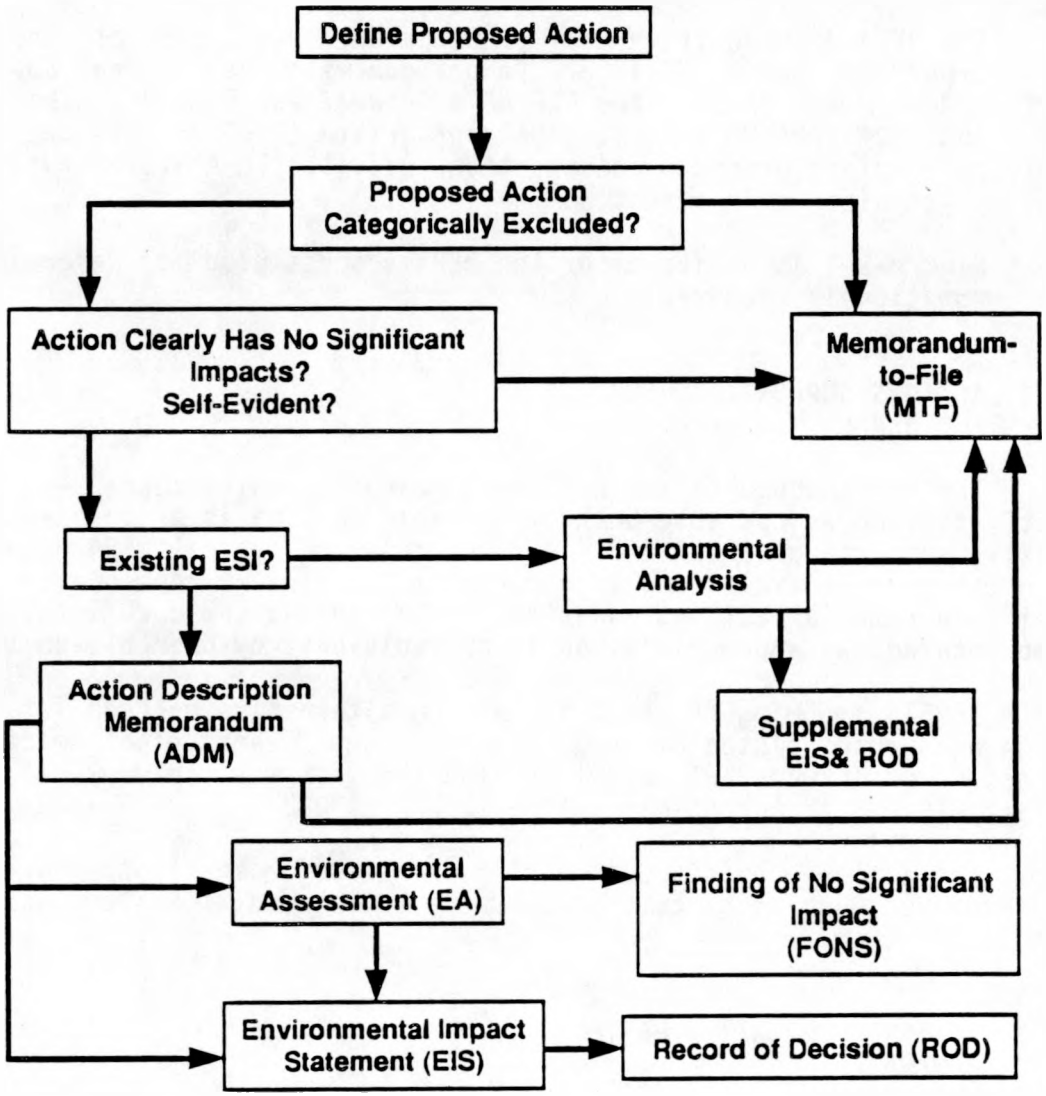

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Figure 9-1. National Environmental Policy Act Documentation Determination Process.

10.0 REPORTING AND DATA MANAGEMENT

10.1 REQUIRED REPORTS

The DOE-RL is responsible for submitting numerous plans and reports to federal, state, and local regulatory agencies, as well as to DOE-HQ. Table 10-1 provides the latest list of these reports and includes the frequency of issuance.

10.2 MAINTENANCE OF RECORDS

A plan is being formulated addressing the proposed strategy for identifying record and nonrecord documentation within each section of the environmental program. Procedures will be written in FY 1990 documenting methods for performing activities resulting in record documentation. In-process record control activities will be proceduralized and implemented by designated files custodians. For additional detail on records management refer to the Tri-Party Agreement (Ecology et al. 1989b).

10.3 MAINTENANCE OF SAMPLES

Procedures will be written in FY 1990 documenting the steps to be taken for storing various types of physical samples. Sample retention schedules and interim and long-term storage facilities will be defined.

Table 10-1. Routine Reports. (sheet 1 of 4)

Type of report/information	Frequency	Issue date
Generator Annual Dangerous Waste Report	Annual	March 1
TSD Facility Annual Dangerous Waste Report	Annual	March 1
Hazardous Chemical Inventory	Annual	March 1
Toxic Chemical Release Inventory Report	Annual	July 1
Hanford Radioactive Solid Waste Packaging, Storage, and Disposal Requirements	Annual	Sept. 30
Biennial Waste Minimization Report	Biennial (even number years)	March 31
Inventory of Federal Agency Hazardous Waste Facilities	Biennial (even number years)	Jan. 31
Asbestos Disposal Quarterly Report	Quarterly	Jan. 31, etc.
RCRA Groundwater Monitoring Report for Hanford Facilities	Quarterly	March 31, etc.
Tri-County Air Pollution Control Emission Summary	Annual (Report forms provided by state)	July 31
Hanford Site Waste Management Units Report	Annual	Jan. 31
Treatability Test Exclusion Notification	Quarterly	March 31, etc.
NPDES Effluent Monitoring Report	Monthly	
Water Bacteriological Analysis	Monthly	
Water Sample Analysis	Monthly	
Water Sample Information For Inorganic Chemical Analysis	Semiannual (two weeks after analysis)	May 31, Nov. 30

Table 10-1. Routine Reports. (sheet 2 of 4)

Type of report/information	Frequency	Issue date
Hanford Cultural Resources Management Plan	Annual	July 31
Radioactive Effluent and Onsite Discharge Data Reports	Annual	April 1
Hanford Site Environmental Report For Calendar Year 19XX	Annual	June 1
Hanford Site Environmental Protection Implementation Plan	Annual	Nov. 30
Hanford Site Groundwater Monitoring	Semiannual	June 30, Dec. 31
Federal Agency Pollution Abatement Plan Project Report (A-106)	Semiannual	May 1, Dec. 15
Environmental Restoration and Waste Management Site-specific Plan for the Richland Operations Office	Annual	July 31 (first issuance plan Dec. 1989)
Hanford Site Waste Management Plan	Annual	Dec. 31
Westinghouse Hanford Company Effluent Discharges and Solid Waste Management Report for Calendar Year 19XX--200/600 Areas	Annual	June 1
Westinghouse Hanford Company 100 Areas Environmental Releases for 19XX	Annual	July 31
Westinghouse Hanford Company Environmental Surveillance Annual Report--200/600 Areas Calendar Year 19XX	Annual	June 30
Westinghouse Hanford Company Environmental Surveillance Annual Report--100 Area	Annual	July 31

Table 10-1. Routine Reports. (sheet 3 of 4)

Type of report/information	Frequency	Issue date
Westinghouse Hanford Company Effluent Report for 300 and 400 Area Operations	Annual	July 31
Results of Groundwater Monitoring for Radionuclides in the Separations Area	Annual	June 30
Defense Waste Management and Environmental Programs Monthly Report	Monthly	
Permitting Status Report	Annual	Sept. 29
Quarterly Progress Reports for Tri-Party Agreement	Quarterly	Feb. 15, etc.
Preliminary Operable Units Designation Project Report	As required	
Studies and Efforts in Progress to Identify Alternatives to Land Disposal	Annual	March 31
Tank Waste Treatability Studies	Annual (start FY 1990)	Sept. 30
Environmental Restoration Remedial Action Program Field Office Management Plan	Annual (start FY 1990)	Sept. 30
Hanford Site Surplus Facilities Program Plan	Annual	Sept. 30
Hanford Site Waste Management Technology Plan	Annual	Sept. 30
Waste Management and Environmental Restoration Integration Plan	Annual	Jan. 31
Tank Farm Surveillance and Waste Status Summary Report	Monthly	

Table 10-1. Routine Reports. (sheet 4 of 4)

Type of report/information	Frequency	Issue date
Annual Status Report of the Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site	Annual	Sept. 30
Annual Waste Volume Projections	Annual	Sept. 30
Liquid Effluent Study	Bi-monthly	Aug. 31, etc.
Decontamination and Decommissioning (D&D) Bulletin	Two to four issues per year	To be determined
Defense D&D Overview	As required	July 31
Pesticide Applications Report	Weekly	

11.0 ACRONYMS AND METRIC CONVERSIONS

This chapter defines key acronyms used in this document, in the companion philosophy and overview document (DOE-RL 1989a), and in the ADSs found in DOE/RL 89-17 (DOE-RL 1989b). Also provided is a set of conversions to assist in converting metric units to English units or vice versa.

ADS	Activity Data Sheet
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1980
CFR	Code of Federal Regulations
D&D	Decontamination and Decommissioning
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy-Headquarters
DOE-RL	U.S. Department of Energy-Richland Operations Office
DST	Double-Shell Tank
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
FFTF	Fast Flux Test Facility
FY	Fiscal Year
HAZWRAP	Hazardous Waste Remedial Action Program, or Hazardous Waste and Compliance Technology Program
HDW-EIS	Hanford Defense Waste-Environmental Impact Statement
HLW	High-Level Waste
LLW	Low-Level Waste
NEPA	National Environmental Policy Act
NPL	National Priorities List
PCB	Polychlorinated Biphenyl
PNL	Pacific Northwest Laboratory
PUREX	Plutonium and Uranium Extraction Facility
RCRA	Resource Conservation and Recovery Act of 1976
RCW	Revised Code of Washington
RD&D	Research, Development, and Demonstration
RFI/CMS	RCRA Facility Investigation/Corrective Measures Study
RI/FS	Remedial Investigation/Feasibility Study
SST	Single-Shell Tank
TRU	Transuranic
TRUEX	Transuranic Extraction
TSD	Treatment, Storage, and Disposal

WAC	Washington Administrative Code
WIPP	Waste Isolation Pilot Plant

Metric/English Equivalents

1 cubic foot	= 7.48 gallons
1 cubic meter	= 35.31 cubic feet
1 cubic meter	= 264.2 gallons
1 square meter	= 10.76 square feet
1 foot	= 30.48 centimeters
1 meter	= 3.281 feet

12.0 REFERENCES

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DOE-HQ 1987a, "Compliance With the National Environmental Policy Act (NEPA); Amendments to the DOE NEPA Guidelines," *Federal Register*, Vol. 52, p. 47662, U.S. Department of Energy-Headquarters, Washington, D.C.

DOE-HQ 1987b, *Final Environmental Impact Statement, Disposal of Hanford Defense High-Level, Transuranic, and Tank Waste, Hanford Site, Richland, Washington*, DOE/EIS-0113, 5 Volumes, U.S. Department of Energy, Washington, D.C.

DOE-HQ 1988a, *General Environmental Protection Program*, DOE Order 5400.1, U.S. Department of Energy, Washington, D.C.

DOE-HQ 1988b, *Integration of Environmental Compliance Processes*, DOE Notice 5400.4, U.S. Department of Energy, Washington, D.C.

DOE-HQ 1988c, *Radioactive Waste Management*, DOE Order 5820.2A, U.S. Department of Energy, Washington, D.C.

DOE-HQ 1989a, *Draft Environmental Impact Statement, Decommissioning of Eight Surplus Reactors at the Hanford Site, Richland, Washington*, DOE/EIS-0119D, U.S. Department of Energy-Headquarters, Washington, D.C.

DOE-HQ 1989b, *Environmental Restoration and Waste Management Five-Year Plan*, DOE/S-0070, U.S. Department of Energy, Washington, D.C.

DOE-HQ 1989c, *Hazardous and Radioactive Mixed Waste Program*, DOE Order 5400.3, U.S. Department of Energy, Washington, D.C.

DOE-RL 1983, *Quality Assurance*, DOE-RL Order 5700.1A, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL 1987, *Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site*, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL 1989a, *Environmental Restoration Field Office Management Plan*, DOE/RL 89-29, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL 1989b, *Overview of the Hanford Five-Year Cleanup Plan*, DOE/RL 89-25, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL 1989c, *The Hanford Site Environmental Restoration and Waste Management Five-Year Plan Activity Data Sheets*, DOE/RL 89-17, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL 1989d, *Project Management System*, DOE Order 4700.1, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

DOE-RL 1989e, *Hanford Site Groundwater Protection Management Program*, DOE/RL 89-12, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

Ecology et al. 1989a, *Community Relations Plan for the Hanford Site*, Benton County, Washington, U.S. Environmental Protection Agency, Washington State Department of Ecology, U.S. Department of Energy-Richland Operations Office, Richland, Washington.

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EPA 1987b, *Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities*, Title 40, Code of Federal Regulations, Part 265, U.S. Environmental Protection Agency, Washington, D.C.

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EPA 1988, *Land Disposal Restrictions*, Title 40, Code of Federal Regulations, Part 268, as amended, U.S. Environmental Protection Agency, Washington, D.C.

WHC 1988a, *Hanford Waste Management Technology Plan*, WHC-EP-0212, Richland, Washington.

WHC 1988b, *Annual Status Report of the Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site*, WHC-EP-0196-1, Richland, Washington.

WHC 1989a, *Annual Status Report of the Plan and Schedule to Discontinue Disposal of Contaminated Liquids into the Soil Column at the Hanford Site*, WHC-EP-0196-2, Richland, Washington.

WHC 1989b, *Hanford Surplus Facilities Program Plan Fiscal Year 1989*, WHC-EP-0231-1, Richland, Washington.

WHC, 1989c, *Preliminary Operable Units Designation Project*, WHC-EP-0216, Richland, Washington.

APPENDIX A

Prioritized Listing of Operable Units. (sheet 1 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
1	1100-EM-1	1100-1	ACID PIT	CPP
		1100-2	SOLVENT PIT	CPP
		1100-3	ANTI FREEZE PIT	CPP
		1100-4	STORAGE TANK	CPP
		HORN RAPIDS DISPOSAL	LANDFILL	CPP
		UN-1100-5	SPILL	CPP
		UN-1100-6	SPILL	CPP
2	300-FF-1	300 AREA ASH PITS	PIT	CPP
		300 AREA FILTER BACKWASH POND	POND	CPP
		300 AREA RETIRED FILTER BACKWASH POND	POND	CPP
		300 AREA RETIRED RLWS	SEWER	CPP
		300 AREA RLWS AND 340 COMPLEX	SEWER	CPP
		300 AREA SANITARY SEWER SYSTEM	SEWER	CPP
		307 RETENTION BASIN	RETENTION BASIN	CPP
		316-1	POND	CPP
		316-2	POND	CPP
		316-3	TRENCH	CPP
		316-5 (300 AREA PROCESS TRENCHES)	TRENCH	TSD (D-3-1)
		618-12	BURIAL GROUND	CPP
		618-4	BURIAL GROUND	CPP
		618-5	BURIAL GROUND	CPP
		UN-300-1	SPILL	CPP
		UN-300-11	SPILL	CPP
		UN-300-14	SPILL	CPP
		UN-300-2	SPILL	CPP
		UN-300-41	SPILL	CPP
2A	300-FF-5	300-FF-1	SOURCE OU	CPP
		300-FF-2	SOURCE OU	CPP
		300-FF-3	SOURCE OU	CPP
3	200-BP-1	216-B-43	CRIB	CPP
		216-B-44	CRIB	CPP
		216-B-45	CRIB	CPP
		216-B-46	CRIB	CPP
		216-B-47	CRIB	CPP
		216-B-48	CRIB	CPP
		216-B-49	CRIB	CPP
		216-B-50	CRIB	CPP
		216-B-57	CRIB	CPP
		216-B-61	CRIB	CPP
		UN-200-E-110	SPILL	CPP
		UN-200-E-63	SPILL	CPP
		UN-200-E-9	SPILL	CPP
4	100-HR-1	116-H-1	TRENCH	RPP
		116-H-2	TRENCH	RPP
		116-H-3	FRENCH DRAIN	RPP
		116-H-4	CRIB	RPP
		116-H-5	OUTFALL STRUCTURE	RPP
	100-HR-1 Cont.	116-H-6 (183-H)	RETENTION BASIN	TSD (T-1-4)
		116-H-7	RETENTION BASIN	RPP
		116-H-9	CRIB	RPP
		1607-H2	SEPTIC TANK	RPP
		1607-H3	SEPTIC TANK	RPP
4A	100-HR-3	100-HR-1	SOURCE OU	RPP
		100-HR-2	SOURCE OU	RPP
		100-DR-1	SOURCE OU	RPP
		100-DR-2	SOURCE OU	RPP
		100-DR-3	SOURCE OU	RPP

Prioritized Listing of Operable Units. (sheet 2 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
5	100-DR-1	116-D-1A	TRENCH	RPP
		116-D-1B	TRENCH	RPP
		116-D-2	CRIB	RPP
		116-D-3	FRENCH DRAIN	RPP
		116-D-4	FRENCH DRAIN	RPP
		116-D-5	OUTFALL STRUCTURE	RPP
		116-D-6	FRENCH DRAIN	RPP
		116-D-7	RETENTION BASIN	RPP
		116-D-9	CRIB	RPP
		116-DR-1	TRENCH	RPP
		116-DR-2	TRENCH	RPP
		116-DR-5	OUTFALL STRUCTURE	RPP
		116-DR-9	RETENTION BASIN	RPP
		120-D-1	PONDS	TSD (D-1-1)
		126-D-1	ASH PIT	RPP
		130-D-1	STORAGE TANK	RPP
		1607-D2	SEPTIC TANK	RPP
		1607-D4	SEPTIC TANK	RPP
		1607-D5	SEPTIC TANK	RPP
6	100-BC-1	116-B-1	TRENCH	CPP
		116-B-10	FRENCH DRAIN	CPP
		116-B-11	RETENTION BASIN	CPP
		116-B-12	CRIB	CPP
		116-B-2	TRENCH	CPP
		116-B-3	CRIB	CPP
		116-B-4	FRENCH DRAIN	CPP
		116-B-5	CRIB	CPP
		116-B-6A	CRIB	CPP
		116-B-6B	CRIB	CPP
		116-B-7	OUTFALL STRUCTURE	CPP
		116-B-8	OUTFALL STRUCTURE	CPP
		116-B-9	FRENCH DRAIN	CPP
		116-C-1	TRENCH	CPP
		116-C-5	RETENTION BASIN	CPP
		118-B-5	BURIAL GROUND	CPP
		118-B-7	BURIAL GROUND	CPP
		120-B-1	SUMP	CPP
		126-B-1	ASH PIT	CPP
		128-B-1	BURNING PIT	CPP
		1607-B1	SEPTIC TANK	CPP
		1607-B2	SEPTIC TANK	CPP
		1607-B3	SEPTIC TANK	CPP
		1607-B4	SEPTIC TANK	CPP
		1607-B5	SEPTIC TANK	CPP
		1607-B6	SEPTIC TANK	CPP
		1607-B7	SEPTIC TANK	CPP
6A	100-BC-5	100-BC-1	SOURCE OU	CPP
		100-BC-2	SOURCE OU	CPP
		100-BC-3	SOURCE OU	CPP
		100-BC-4	SOURCE OU	CPP
7	100-KR-1	116-KE-4	RETENTION BASIN	CPP
		116-KW-3	RETENTION BASIN	CPP
		116-K-1	CRIB	CPP
		116-K-2	TRENCH	CPP
		116-K-3	OUTFALL STRUCTURE	CPP
7A	100-KR-4	100-KR-1	SOURCE OU	CPP
		100-KR-2	SOURCE OU	CPP
		100-KR-3	SOURCE OU	CPP

Prioritized Listing of Operable Units. (sheet 3 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
8	100-NR-1	116-N-1 (1301-N)	CRIB	TSD (D-1-2)
		116-N-2	STORAGE TANK	RPP
		116-N-3 (1325-N)	CRIB	TSD (D-1-2)
		124-N-4	SEPTIC TANK	RPP
		128-N-1	BURNING PIT	RPP
		UN-100-N-13	SPILL	RPP
		UN-100-N-17	SPILL	RPP
		UN-100-N-2	SPILL	RPP
		UN-100-N-20	SPILL	RPP
		UN-100-N-24	SPILL	RPP
		UN-100-N-26	SPILL	RPP
		UN-100-N-31	SPILL	RPP
		UN-100-N-9	SPILL	RPP
9	100-FR-1	116-F-1	TRENCH	CPP
		116-F-10	FRENCH DRAIN	CPP
		116-F-11	FRENCH DRAIN	CPP
		116-F-12	FRENCH DRAIN	CPP
		116-F-13	FRENCH DRAIN	CPP
		116-F-14	RETENTION BASIN	CPP
		116-F-2	TRENCH	CPP
		116-F-3	TRENCH	CPP
		116-F-4	CRIB	CPP
		116-F-5	CRIB	CPP
		116-F-6	TRENCH	CPP
		116-F-7	FRENCH DRAIN	CPP
		116-F-8	OUTFALL STRUCTURE	CPP
		116-F-9	TRENCH	CPP
		1607-F2	SEPTIC TANK	CPP
		1607-F3	SEPTIC TANK	CPP
		1607-F4	SEPTIC TANK	CPP
		1607-F5	SEPTIC TANK	CPP
		1607-F6	SEPTIC TANK	CPP
		UN-100-F-1	SPILL	CPP
10	100-NR-3	120-N-1 (1324-N)	POND	TSD (T-1-2)
		120-N-2 (1324-NA)	NEUTRALIZATION UNIT	TSD (T-1-2)
		120-N-3	FRENCH DRAIN	RPP
		120-N-5	TANK	RPP
		120-N-6	FRENCH DRAIN	RPP
		120-N-7	FRENCH DRAIN	RPP
		120-N-8	FRENCH DRAIN	RPP
		124-N-1	SEPTIC TANK	RPP
		124-N-10	SEPTIC TANK	RPP
		124-N-2	SEPTIC TANK	RPP
		124-N-5	SEPTIC TANK	RPP
		124-N-6	SEPTIC TANK	RPP
		124-N-7	SEPTIC TANK	RPP
		124-N-8	SEPTIC TANK	RPP
		124-N-9	SEPTIC TANK	RPP
		130-N-1	POND	RPP
		UN-100-N-11	SPILL	RPP
		UN-100-N-15	SPILL	RPP
		UN-100-N-18	SPILL	RPP
		UN-100-N-19	SPILL	RPP
		UN-100-N-21	SPILL	RPP
		UN-100-N-22	SPILL	RPP
		UN-100-N-23	SPILL	RPP
		UN-100-N-25	SPILL	RPP
		UN-100-N-33	SPILL	RPP
		UN-100-N-34	SPILL	RPP
		UN-100-N-4	SPILL	RPP

Prioritized Listing of Operable Units. (sheet 4 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	100-NR-3 Cont.	UN-100-N-5	SPILL	RPP
		UN-100-N-6	SPILL	RPP
		UN-100-N-8	SPILL	RPP
		UN-600-17	SPILL	RPP
11	200-UP-2	200 W CONSTR. SURFACE LAYDOWN AREA	BURIAL GROUND	CPP
		207-U	RETENTION BASIN	CPP
		216-U-1&2	CRIB	CPP
		216-U-12	CRIB	TSD (D-2-8)
		216-U-14	DITCH	CPP
		216-U-15	TRENCH	CPP
		216-U-16	CRIB	CPP
		216-U-17	CRIB	CPP
		216-U-3	FRENCH DRAIN	CPP
		216-U-4	REVERSE WELL	CPP
		216-U-4A	FRENCH DRAIN	CPP
		216-U-4B	FRENCH DRAIN	CPP
		216-U-5	TRENCH	CPP
		216-U-6	TRENCH	CPP
		216-U-7	FRENCH DRAIN	CPP
		216-U-8	CRIB	CPP
		241-U-151	DIVERSION BOX	CPP
		241-U-152	DIVERSION BOX	CPP
		241-U-302	CATCH TANK	CPP
		241-U-361	SETTLING TANK	CPP
		241-UX-154	DIVERSION BOX	CPP
		241-UX-302	CATCH TANK	CPP
		241-WR VAULT	VAULT	CPP
		2607-W5	SEPTIC TANK	CPP
		2607-W7	SEPTIC TANK	CPP
		UN-200-W-101	SPILL	CPP
		UN-200-W-117	SPILL	CPP
		UN-200-W-118	SPILL	CPP
		UN-200-W-125	SPILL	CPP
		UN-200-W-138	SPILL	CPP
		UN-200-W-19	SPILL	CPP
		UN-200-W-22	SPILL	CPP
		UN-200-W-33	SPILL	CPP
		UN-200-W-39	SPILL	CPP
		UN-200-W-46	SPILL	CPP
		UN-200-W-48	SPILL	CPP
		UN-200-W-55	SPILL	CPP
		UN-200-W-6	SPILL	CPP
		UN-200-W-60	SPILL	CPP
		UN-200-W-69	SPILL	CPP
		UN-200-W-78	SPILL	CPP
		UN-200-W-86	SPILL	CPP
12	100-BC-2	116-C-2A	CRIB	CPP
		116-C-2B	CRIB	CPP
		116-C-2C	CRIB	CPP
		116-C-3	OUTFALL STRUCTURE	CPP
		118-C-2	BURIAL GROUND	CPP
		1607-B8	SEPTIC TANK	CPP
13	200-BP-5	216-B-5	REVERSE WELL	CPP
		216-B-56	CRIB	CPP
		216-B-59A	TRENCH	CPP
		216-B-59B	RETENTION BASIN	CPP
		216-B-9TF	CRIB	CPP
		241-B-154	DIVERSION BOX	CPP

Prioritized Listing of Operable Units. (sheet 5 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-BP-5 - Cont.	241-B-302-B	CATCH TANK	CPP
		241-B-361	SETTLING TANK	CPP
		UN-200-E-45	SPILL	CPP
		UN-200-E-7	SPILL	CPP
14	100-DR-2	116-DR-3	TRENCH	RPP
		116-DR-4	CRIB	RPP
		116-DR-6	TRENCH	RPP
		116-DR-7	CRIB	RPP
		116-DR-8	CRIB	RPP
		118-D-5	BURIAL GROUND	RPP
		1607-D3	SEPTIC TANK	RPP
15	200-ZP-1	216-Z-1&2TF	CRIB	CPP
		216-Z-12	CRIB	CPP
		216-Z-13	FRENCH DRAIN	CPP
		216-Z-14	FRENCH DRAIN	CPP
		216-Z-15	FRENCH DRAIN	CPP
		216-Z-18	CRIB	CPP
		216-Z-1A	TILE FIELD	CPP
		216-Z-3	CRIB	CPP
		241-Z-361	SETTLING TANK	CPP
		2607-Z	SEPTIC TANK	CPP
		UN-200-W-103	SPILL	CPP
		UN-200-W-11	SPILL	CPP
		UN-200-W-23	SPILL	CPP
		UN-200-W-74	SPILL	CPP
		UN-200-W-75	SPILL	CPP
		UN-200-W-89	SPILL	CPP
		UN-200-W-90	SPILL	CPP
		UN-200-W-91	SPILL	CPP
		UN-200-W-159	SPILL	CPP
16	100-KR-2	116-KE-1	CRIB	CPP
		116-KE-2	CRIB	CPP
		116-KE-3	FRENCH DRAIN	CPP
		116-KW-1	CRIB	CPP
		116-KW-2	FRENCH DRAIN	CPP
		118-K-1	BURIAL GROUND	CPP
		130-K-1	STORAGE TANK	CPP
		130-K-2	STORAGE TANK	CPP
		130-KE-1	STORAGE TANK	CPP
		130-KE-2	STORAGE TANK	CPP
		130-KW-1	STORAGE TANK	CPP
		130-KW-2	STORAGE TANK	CPP
		1607-K4	SEPTIC TANK	CPP
		1607-K6	SEPTIC TANK	CPP
		UN-100-K-1	SPILL	CPP
17	200-BP-4	216-B-11A&B	REVERSE WELL	
		216-B-51	FRENCH DRAIN	
		216-B-7A&B	CRIB	
		216-B-8TF	CRIB	
18	200-BP-11	216-B-3 (B POND)	POND	TSD (D-2-5)
		216-B-3-1	DITCH	RPP
		216-B-3-2	DITCH	RPP
		216-B-3-3	DITCH	TSD (D-2-5)
		216-B-3A	POND	TSD (D-2-5)
		216-B-3B	POND	TSD (D-2-5)
		216-B-3C	POND	TSD (D-2-5)

Prioritized Listing of Operable Units. (sheet 6 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-BP-11 - Cont.	216-E-25	POND	RPP
		UN-200-E-14	SPILL	RPP
		UN-200-E-92	SPILL	RPP
19	200-PO-2	216-A-10	CRIB	TSD (D-2-2)
		216-A-15	FRENCH DRAIN	
		216-A-2	CRIB	
		216-A-21	CRIB	
		216-A-27	CRIB	
		216-A-31	CRIB	
		216-A-36A	CRIB	
		216-A-36B	CRIB	TSD (D-2-2)
		216-A-38-1	CRIB	
		216-A-4	CRIB	
		216-A-45	CRIB	
		216-A-5	CRIB	
		UN-200-E-117	SPILL	
		UN-200-E-13	SPILL	
		UN-200-E-22	SPILL	
		UN-200-E-25	SPILL	
		UN-200-E-39	SPILL	
		UN-200-E-40	SPILL	
		UN-200-E-97	SPILL	
20	200-PO-5	207-A	RETENTION BASIN	
		216-A-1	CRIB	
		216-A-16	FRENCH DRAIN	
		216-A-17	FRENCH DRAIN	
		216-A-18	TRENCH	
		216-A-19	TRENCH	
		216-A-20	TRENCH	
		216-A-23A	FRENCH DRAIN	
		216-A-23B	FRENCH DRAIN	
		216-A-24	CRIB	
		216-A-29	DITCH	TSD (D-2-3)
		216-A-34	DITCH	
		216-A-7	CRIB	
		216-A-8	CRIB	
		216-A-524	CONTROL STRUCTURE	
		241-A-302B	CATCH TANK	
		2607-EC	SEPTIC TANK	
		UN-200-E-56	SPILL	
		UN-200-E-67	SPILL	
B	100-BC-3	118-B-2	BURIAL GROUND	CPP
		118-B-3	BURIAL GROUND	CPP
		118-B-4	BURIAL GROUND	CPP
		118-B-6	BURIAL GROUND	CPP
B	100-BC-4	118-B-1	BURIAL GROUND	CPP
		118-C-1	BURIAL GROUND	CPP
		1607-B9	SEPTIC TANK	CPP
B	100-DR-3	118-D-1	BURIAL GROUND	RPP
		118-D-2	BURIAL GROUND	RPP
		118-D-3	BURIAL GROUND	RPP
		118-D-4	BURIAL GROUND	RPP
		118-DR-1	BURIAL GROUND	RPP
		128-D-1	BURNING PIT	RPP
		1607-D1	SEPTIC TANK	RPP

Prioritized Listing of Operable Units. (sheet 7 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
B	100-FR-2	118-F-1	BURIAL GROUND	
		118-F-2	BURIAL GROUND	
		118-F-3	BURIAL GROUND	
		118-F-4	BURIAL GROUND	
		118-F-5	BURIAL GROUND	
		118-F-6	BURIAL GROUND	
		118-F-7	BURIAL GROUND	
		126-F-1	ASH PIT	
		128-F-1	BURNING PIT	
		1607-F1	SEPTIC TANK	
B	100-HR-2	118-H-1	BURIAL GROUND	RPP
		118-H-2	BURIAL GROUND	RPP
		118-H-3	BURIAL GROUND	RPP
		118-H-4	BURIAL GROUND	RPP
		118-H-5	BURIAL GROUND	RPP
		126-H-1	ASH PIT	RPP
		128-H-1	BURNING PIT	RPP
		1607-H1	SEPTIC TANK	RPP
		1607-H4	SEPTIC TANK	RPP
B	100-KR-3	120-KW-2	FRENCH DRAIN	CPP
		120-KE-3	TRENCH	CPP
		120-KW-5	STORAGE TANK	CPP
		120-KE-1	REVERSE WELL	CPP
		120-KE-2	FRENCH DRAIN	CPP
		120-KE-6	STORAGE TANK	CPP
		120-KW-1	REVERSE WELL	CPP
		128-K-1	BURNING PIT	CPP
		130-K-3	STORAGE TANK	CPP
		1607-K1	SEPTIC TANK	CPP
		1607-K2	SEPTIC TANK	CPP
		1607-K3	SEPTIC TANK	CPP
		1607-K5	SEPTIC TANK	CPP
B	100-NR-2	116-N-4	STORAGE TANK	
		118-N-1	SILOS	
		124-N-3	SEPTIC TANK	
		UN-100-N-1	SPILL	
		UN-100-N-10	SPILL	
		UN-100-N-12	SPILL	
		UN-100-N-14	SPILL	
		UN-100-N-29	SPILL	
		UN-100-N-3	SPILL	
		UN-100-N-30	SPILL	
		UN-100-N-32	SPILL	
		UN-100-N-35	SPILL	
		UN-100-N-7	SPILL	
B	100-IU-1	600 AREA ARMY MUNITIONS BURIAL SITE	BURIAL GROUND	
		RIVERLAND RAILROAD CAR WASH PIT	PIT	
B	200-BP-2	216-B-14	CRIB	
		216-B-15	CRIB	
		216-B-16	CRIB	
		216-B-17	CRIB	
		216-B-18	CRIB	
		216-B-19	CRIB	
		216-B-20	TRENCH	
		216-B-21	TRENCH	
		216-B-22	TRENCH	
		216-B-23	TRENCH	

Prioritized Listing of Operable Units. (sheet 8 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-BP-2 - Cont	216-B-24	TRENCH	
		216-B-25	TRENCH	
		216-B-26	TRENCH	
		216-B-27	TRENCH	
		216-B-28	TRENCH	
		216-B-29	TRENCH	
		216-B-30	TRENCH	
		216-B-31	TRENCH	
		216-B-32	TRENCH	
		216-B-33	TRENCH	
		216-B-34	TRENCH	
		216-B-52	TRENCH	
		216-B-53A	TRENCH	
		216-B-53B	TRENCH	
		216-B-54	TRENCH	
		216-B-58	TRENCH	
		UN-200-E-83	SPILL	
B	200-PO-1	216-A-11	FRENCH DRAIN	
		216-A-12	FRENCH DRAIN	
		216-A-13	FRENCH DRAIN	
		216-A-14	FRENCH DRAIN	
		216-A-22	FRENCH DRAIN	
		216-A-26	FRENCH DRAIN	
		216-A-26A	FRENCH DRAIN	
		216-A-28	FRENCH DRAIN	
		216-A-3	CRIB	
		216-A-32	CRIB	
		216-A-33	FRENCH DRAIN	
		216-A-35	FRENCH DRAIN	
		216-A-40	TRENCH	
		216-A-41	CRIB	
		216-A-9	CRIB	
		218-E-1	BURIAL GROUND	
		218-E-13	BURIAL GROUND	
		241-A-151	DIVERSION BOX	
		241-A-302A	CATCH TANK	
		2607-E6	SEPTIC TANK	
		2607-EA	SEPTIC TANK	
		UN-200-E-10	SPILL	
		UN-200-E-11	SPILL	
		UN-200-E-12	SPILL	
		UN-200-E-15	SPILL	
		UN-200-E-19	SPILL	
		UN-200-E-20	SPILL	
		UN-200-E-26	SPILL	
		UN-200-E-28	SPILL	
		UN-200-E-31	SPILL	
		UN-200-E-33	SPILL	
		UN-200-E-35	SPILL	
		UN-200-E-42	SPILL	
		UN-200-E-49	SPILL	
		UN-200-E-58	SPILL	
		UN-200-E-60	SPILL	
		UN-200-E-65	SPILL	
		UN-200-E-88	SPILL	
		UN-200-E-96	SPILL	
		UN-200-E-114	SPILL	
		UN-200-E-142	SPILL	

Prioritized Listing of Operable Units. (sheet 9 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
B	200-PO-4	216-A-30	CRIB	
		216-A-37-1	CRIB	
		216-A-37-2	CRIB	
		216-A-42	RETENTION BASIN	
		216-A-6	CRIB	
		2607-EL	SEPTIC TANK	
		UN-200-E-66	SPILL	
B	200-SO-1	200-E POWERHOUSE DITCH	DITCH	
		216-C-1	CRIB	
		216-C-10	CRIB	
		216-C-2	REVERSE WELL	
		216-C-3	CRIB	
		216-C-4	CRIB	
		216-C-5	CRIB	
		216-C-6	CRIB	
		216-C-7	CRIB	
		216-C-9	POND	
		218-C-9	BURIAL GROUND	
		241-CX-70	STORAGE TANK	
		241-CX-72	STORAGE TANK	
		2607-E5	SEPTIC TANK	
		2607-E7A	SEPTIC TANK	
		HOT SEMI-WORKS VALVE PIT	VALVE PIT	
		UN-200-E-36	SPILL	
		UN-200-E-37	SPILL	
		UN-200-E-98	SPILL	
		UN-200-E-141	SPILL	
B	200-TP-1	216-T-21	TRENCH	
		216-T-22	TRENCH	
		216-T-23	TRENCH	
		216-T-24	TRENCH	
		216-T-25	TRENCH	
		216-T-32	CRIB	
		216-T-36	CRIB	
		216-T-5	TRENCH	
		216-T-7TF	CRIB	
B	200-TP-2	200-W POWERHOUSE POND	POND	
		216-T-13	TRENCH	
		216-T-18	CRIB	
		216-T-19TF	CRIB	
		216-T-20	TRENCH	
		216-T-26	CRIB	
		216-T-27	CRIB	
		216-T-28	CRIB	
		216-T-31	FRENCH DRAIN	
		241-TX-152	DIVERSION BOX	
		241-TX-155	DIVERSION BOX	
		241-TX-302B	CATCH TANK	
		2607-WT	SEPTIC TANK	
		UN-200-W-113	SPILL	
		UN-200-W-131	SPILL	
		UN-200-W-135	SPILL	
		UN-200-W-14	SPILL	
		UN-200-W-28	SPILL	
		UN-200-W-5	SPILL	
		UN-200-W-99	SPILL	

Prioritized Listing of Operable Units. (sheet 10 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
B	200-TP-4	216-T-1	DITCH	
		216-T-10	CRIB	
		216-T-11	TRENCH	
		216-T-2	REVERSE WELL	
		216-T-29	CRIB	
		216-T-3	REVERSE WELL	
		216-T-33	CRIB	
		216-T-34	CRIB	
		216-T-35	CRIB	
		216-T-8	CRIB	
		216-T-9	CRIB	
		218-W-7	BURIAL GROUND	
		218-W-8	BURIAL GROUND	
		241-T-361	SETTLING TANK	
		241-TX-154	DIVERSION BOX	
		241-TX-302C	CATCH TANK	
		2607-W3	SEPTIC TANK	
		2607-W4	SEPTIC TANK	
		UN-200-W-102	SPILL	
		UN-200-W-137	SPILL	
		UN-200-W-2	SPILL	
		UN-200-W-21	SPILL	
		UN-200-W-27	SPILL	
		UN-200-W-3	SPILL	
		UN-200-W-38	SPILL	
		UN-200-W-4	SPILL	
		UN-200-W-58	SPILL	
		UN-200-W-65	SPILL	
		UN-200-W-67	SPILL	
		UN-200-W-73	SPILL	
		UN-200-W-77	SPILL	
		UN-200-W-8	SPILL	
		UN-200-W-98	SPILL	
B	200-ZP-2	207-Z	RETENTION BASIN	
		216-Z-10	REVERSE WELL	
		216-Z-16	CRIB	
		216-Z-17	TRENCH	
		216-Z-4	TRENCH	
		216-Z-5	CRIB	
		216-Z-6	CRIB	
		216-Z-7	CRIB	
		216-Z-8	FRENCH DRAIN	
		216-Z-9	TRENCH	
		2607-W8	SEPTIC TANK	
		2607-WA	SEPTIC TANK	
		2607-Z8	SEPTIC TANK	
		UN-200-W-130	SPILL	
		UN-200-W-79	SPILL	
B	200-IU-3	600 AREA CENTRAL LANDFILL	LANDFILL	
		600 AREA ORIGINAL CENTRAL LONDFILL	LANDFILL	
		600 AREA NRDW LANDFILL	LANDFILL	TSD (D-6-1)
		6607-1	SEPTIC TANK	
		6607-2	SEPTIC TANK	
		UN-600-12	SPILL	
B	300-FF-2	300 AREA VITRIFICATION TEST SITE	TEST TREATMENT FACILITY	
		618-1	BURIAL GROUND	
		618-13	BURIAL GROUND	
		618-2	BURIAL GROUND	

Prioritized Listing of Operable Units. (sheet 11 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	300-FF-2 - Cont.	618-3	BURIAL GROUND	
		618-7	BURIAL GROUND	
		618-8	BURIAL GROUND	
		618-9	BURIAL GROUND	
B	300-FF-3	300 AREA INTERIM FILTER BACKWASH DISPOSAL	POND	
		309-TW-1	STORAGE TANK	
		309-TW-2	STORAGE TANK	
		309-TW-3	STORAGE TANK	
		315 RETIRED SANITARY DRAIN FIELD	DRAIN FIELD	
		323 TANK 1	TANK	
		323 TANK 2	TANK	
		323 TANK 3	TANK	
		323 TANK 4	TANK	
		331 LSL DRAIN FIELD	DRAIN FIELD	
		331 LSL TRENCH 1	TRENCH	
		331 LSL TRENCH 2	DRAIN FIELD	
		335 & 336 RETIRED DRAIN FIELDS	BURIAL GROUND	
		618-6	BURIAL GROUND	
		UN-300-10	SPILL	
		UN-300-12	SPILL	
		UN-300-13	SPILL	
		UN-300-17	SPILL	
		UN-300-18	SPILL	
		UN-300-39	SPILL	
		UN-300-4	SPILL	
		UN-300-40	SPILL	
		UN-300-42	SPILL	
		UN-300-43	SPILL	
		UN-300-44	SPILL	
		UN-300-45	SPILL	
		UN-300-5	SPILL	
		UN-300-7	SPILL	
C	100-IU-2	EAST WHITE BLUFFS LANDFILL	LANDFILL	
		WHITE BLUFFS LANDFILL	LANDFILL	
		J. A. JONES #2	LANDFILL	
C	100-IU-3	USBR 2,4-D BURIAL SITE	LANDFILL	
		WAHULKE SLOPE NIKE MISSILE BASE	MISSILE BASE	
C	1100-EM-2	1100 HOIST RAMS	STORAGE TANK	
		1100 HWSA	STORAGE TANK	
		1100 STEAM PAD TANK #2	STORAGE TANK	
		1100 STEAM PAD TANK #3	STORAGE TANK	
		1100 USED OIL TANK #4	STORAGE TANK	
		1100 USED OIL TANK #5	STORAGE TANK	
		1100 USED OIL TANK #6	STORAGE TANK	
		700 AREA WASTE SOLVENT TANK	STORAGE TANK	
C	1100-EM-3	3000 AREA 1208 HWSA	STAGING AREA	
		3000 AREA 1226 HWSA	STAGING AREA	
		3000 AREA 1234 STORAGE YARD	STORAGE FACILITY	
		3000 AREA 1240 HWSA	STAGING AREA	
		3000 AREA JONES YARD HWSA	STAGING AREA	
		3000 AREA UNDERGROUND USED OIL TANK	STORAGE TANK	
		UN-3000-1	SPILL	
C	1100-IU-1	6652-C SSL ACTIVE SEPTIC TANK	SEPTIC TANK	
		6652-C SSL INACTIVE SEPTIC TANK	SEPTIC TANK	
		6652-I ALE SEPTIC TANK	SEPTIC TANK	

Prioritized Listing of Operable Units. (sheet 12 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	1100-IU-1 - Cont.	6652-G ALE SEPTIC TANK RATTLESNAKE MTN. NIKE MISSILE BASE	SEPTIC TANK MISSILE BASE	
C	200-BP-10	218-E-2 218-E-2A 218-E-4 218-E-5 218-E-5A 218-E-9 UN-200-E-112 UN-200-E-61 UN-200-E-95	BURIAL GROUND BURIAL GROUND BURIAL GROUND BURIAL GROUND BURIAL GROUND BURIAL GROUND SPILL SPILL SPILL	
C	200-BP-3	216-B-35 216-B-36 216-B-37 216-B-38 216-B-39 216-B-40 216-B-41 216-B-42	TRENCH TRENCH TRENCH TRENCH TRENCH TRENCH TRENCH TRENCH	
C	200-BP-6	216-B-10A 216-B-10B 216-B-13 216-B-4 216-B-6 216-B-60 218-E-6 218-E-7 241-BX-154 241-BX-155 241-BX-302B 241-BX-302C 241-ER-152 2607-E3 2607-E4 TILE FIELD SOUTH OF 218-E-4 UN-200-E-1 UN-200-E-103 UN-200-E-2 UN-200-E-3 UN-200-E-41 UN-200-E-44 UN-200-E-52 UN-200-E-140 UN-200-E-54 UN-200-E-55 UN-200-E-69 UN-200-E-80 UN-200-E-85 UN-200-E-87 UN-200-E-90	CRIB CRIB FRENCH DRAIN REVERSE WELL REVERSE WELL CRIB BURIAL GROUND BURIAL GROUND DIVERSION BOX DIVERSION BOX CATCH TANK CATCH TANK DIVERSION BOX SEPTIC TANK SEPTIC TANK TILE FIELD SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL SPILL	
C	200-BP-8	207-B 216-B-2-1 216-B-2-2 216-B-2-3 216-B-63 2607-E9	RETENTION BASIN DITCH DITCH DITCH TRENCH SEPTIC TANK	TSD (D-2-6)

Prioritized Listing of Operable Units. (sheet 13 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
C	200-BP-9	200 AREA CONSTRUCTION PIT	LANDFILL	
		216-B-12	CRIB	
		216-B-55	CRIB	
		216-B-62	CRIB	
		216-B-64	CRIB	
		241-ER-151	DIVERSION BOX	
		241-ER-311	CATCH TANK	
		UN-200-E-64	SPILL	
C	200-NO-1	216-N-1	POND	
		216-N-2	TRENCH	
		216-N-3	TRENCH	
		216-N-4	POND	
		216-N-5	TRENCH	
		216-N-6	POND	
		216-N-7	TRENCH	
C	200-PO-6	200-E BURNING PIT	PIT	
		218-E-12A	BURIAL GROUND	
		218-E-8	BURIAL GROUND	
C	200-RO-1	216-S-10D	DITCH	TSD (D-2-7)
		216-S-10P	POND	TSD (D-2-7)
		216-S-11	POND	
		216-S-16D	DITCH	
		216-S-16P	POND	
		216-S-17	POND	
		216-S-172	CONTROL STRUCTURE	
		216-S-19	POND	
		216-S-25	CRIB	
		216-S-5	CRIB	
		216-S-6	CRIB	
		216-U-9	DITCH	
		2607-WZ	SEPTIC TANK	
		2904-S-160	CONTROL STRUCTURE	
		2904-S-170	CONTROL STRUCTURE	
		2904-S-171	CONTROL STRUCTURE	
		UN-200-W-139	SPILL	
C	200-RO-2	207-S	RETENTION BASIN	
		216-S-1&2	CRIB	
		216-S-13	CRIB	
		216-S-15	POND	
		216-S-18	TRENCH	
		216-S-23	CRIB	
		216-S-3	FRENCH DRAIN	
		216-S-7	CRIB	
		216-S-8	TRENCH	
		216-S-9	CRIB	
		218-W-9	BURIAL GROUND	
		241-S-302A	CATCH TANK	
		241-SX-302	CATCH TANK	
		UN-200-W-108	SPILL	
		UN-200-W-109	SPILL	
		UN-200-W-114	SPILL	
		UN-200-W-123	SPILL	
		UN-200-W-127	SPILL	
		UN-200-W-20	SPILL	
		UN-200-W-32	SPILL	
	200-RO-2 Cont.	UN-200-W-34	SPILL	
		UN-200-W-41	SPILL	
		UN-200-W-42	SPILL	

Prioritized Listing of Operable Units. (sheet 14 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-RO-2 Cont.	UN-200-W-49	SPILL	
		UN-200-W-50	SPILL	
		UN-200-W-52	SPILL	
		UN-200-W-82	SPILL	
		UN-200-W-83	SPILL	
		UN-200-W-85	SPILL	
C	200-RO-3	207-SL	RETENTION BASIN	
		216-S-12	TRENCH	
		216-S-14	TRENCH	
		216-S-20	CRIB	
		216-S-22	CRIB	
		216-S-26	CRIB	
		240-S-151	DIVERSION BOX	
		240-S-152	DIVERSION BOX	
		240-S-302	CATCH TANK	
		2607-W6	SEPTIC TANK	
		UN-200-W-116	SPILL	
		UN-200-W-30	SPILL	
		UN-200-W-35	SPILL	
		UN-200-W-43	SPILL	
		UN-200-W-56	SPILL	
		UN-200-W-57	SPILL	
		UN-200-W-61	SPILL	
		UN-200-W-87	SPILL	
C	200-TP-3	207-T	RETENTION BASIN	
		216-T-12	TRENCH	
		216-T-14	TRENCH	
		216-T-15	TRENCH	
		216-T-16	TRENCH	
		216-T-17	TRENCH	
		216-T-4-1D	DITCH	
		216-T-4-2	DITCH	
		216-T-4A	POND	
		216-T-4B	POND	
		216-T-6	CRIB	
		UN-200-W-63	SPILL	
		UN-200-W-7	SPILL	
C	200-UP-1	216-S-21	CRIB	
		216-S-4	FRENCH DRAIN	
		216-U-10	POND	
		216-U-11	DITCH	
		216-U-13	TRENCH	
		216-Z-11	DITCH	
		216-Z-19	DITCH	
	200-UP-1 Cont.	216-Z-1D	DITCH	
		216-Z-20	CRIB	
		2607-W9	SEPTIC TANK	
		UN-200-W-68	SPILL	
C	200-ZP-3	218-W-1	BURIAL GROUND	
		218-W-1A	BURIAL GROUND	
		218-W-2	BURIAL GROUND	
		218-W-2A	BURIAL GROUND	
		218-W-3	BURIAL GROUND	
		218-W-4A	BURIAL GROUND	
		218-W-11	BURIAL GROUND	
		2607-WWA	SEPTIC TANK	
		Z-PLANT BURNING PIT	PIT	
		UN-200-W-132	SPILL	
		UN-200-W-44	SPILL	

Prioritized Listing of Operable Units. (sheet 15 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
C	200-IU-4	HANFORD TOWNSITE LANDFILL	LANDFILL	
		HANFORD TRAILER CAMP LANDFILL	LANDFILL	
		213 J & K	STORAGE FACILITY	
		P-11	CRIB	
		UN-600-16	SPILL	
		UN-600-18	SPILL	
C	300-IU-1	316-4	CRIB	
		618-10	BURIAL GROUND	
		618-11	BURIAL GROUND	
		J. A. JONES #1	LANDFILL	
		UN-600-11	SPILL	
C	300-FF-4	4713-B FRENCH DRAIN	FRENCH DRAIN	
		4722-B FRENCH DRAIN	FRENCH DRAIN	
		4722-C FRENCH DRAIN	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #10	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #10A	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #1A	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #1B	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #2	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #3	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #4	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #5	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #6	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #7	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #8	FRENCH DRAIN	
		400 AREA FRENCH DRAIN #9	FRENCH DRAIN	
		403 FRENCH DRAIN	FRENCH DRAIN	
		4721 BUILDING	FRENCH DRAIN	
		400 AREA PROCESS POND AND SEWER	POND	
		400 AREA RETIRED FRENCH DRAIN	FRENCH DRAIN	
		400 AREA RETIRED SANITARY POND	POND	
		400 AREA RETIRED SEPTIC TANKS	SEPTIC TANK	
		400 AREA SAND BOTTOM TRENCH	TRENCH	
		400 AREA SANITARY SEWER	SEWER	
		400 AREA SANITARY TILE FIELD	TILE FIELD	
		4831 LAYDOWN HWSA	STAGING AREA	
		UN-400-1	SPILL	
D	100-IU-4	SODIUN DICHROMATE BARREL DISPOSAL	LANDFILL	
D	100-IU-5	WHITE BLUFFS PICKLING ACID	CRIB	
D	200-SS-1	200-E POWERHOUSE ASH PIT	ASH PIT	
		218-E-3	BURIAL GROUND	
		2607-E1	SEPTIC TANK	
		2607-E7B	SEPTIC TANK	
		2607-E8	SEPTIC TANK	
		2607-EH	SEPTIC TANK	
		2607-EK	SEPTIC TANK	
		2607-EM	SEPTIC TANK	
		2607-EP	SEPTIC TANK	
		2607-EQ	SEPTIC TANK	
		2607-ER	SEPTIC TANK	
		2607-GF	SEPTIC TANK	
		CHEMICAL TILE FIELD NORTH OF 2703-E	DRAIN FIELD	
D	200-SS-2	200 W DISPOSAL BASIN	ASH PIT	
		200 W ASH BURNING PIT	ASH PIT	
		200-W POWERHOUSE ASH PIT	BURNING PIT	
		216-W-LC	CRIB	

Prioritized Listing of Operable Units. (sheet 16 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-SS-2 - cont.	2607-W1	SEPTIC TANK	
		2607-W2	SEPTIC TANK	
		UN-200-W-88	SPILL	
D	200-IU-1	600 AREA EXPLORATORY SHAFT HWSA	STAGING AREA	
		600 AREA EXPLORATORY SHAFT SEPTIC TANK	SEPTIC TANK	
		6607-3	SEPTIC TANK	
D	200-IU-6	216-A-25	POND	
		216-N-8	POND	
D	200-IU-2	600 AREA NSTF SEPTIC TANK	SEPTIC TANK	
		600 AREA NSTF UNDERGROUND TANK	STORAGE TANK	
		1607-FSM	SEPTIC TANK	
D	200-IU-5	BATCH PLANT HWSA	STAGING AREA	
		2607-FSN	SEPTIC TANK	
		622-R	SEPTIC TANK	
		OLD CENTRAL SHOP AREA	TEST TRTMT. OR STG. FACILITY	
*	200-BP-7	241-B-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-201	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-202	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-203	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-204	SINGLE-SHELL TANK	TSD (S-2-4)
		241-B-151	DIVERSION BOX	RPP
		241-B-152	DIVERSION BOX	RPP
		241-B-153	DIVERSION BOX	RPP
		241-B-252	DIVERSION BOX	RPP
		241-B-301B	CATCH TANK	RPP
		241-BR-152	DIVERSION BOX	RPP
		241-BX-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BX-153	DIVERSION BOX	RPP
		241-BX-302A	CATCH TANK	RPP
		241-BXR-151	DIVERSION BOX	RPP
		241-BXR-152	DIVERSION BOX	RPP
		241-BXR-153	DIVERSION BOX	RPP
		241-BY-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-103	SINGLE-SHELL TANK	TSD (S-2-4)

Prioritized Listing of Operable Units. (sheet 17 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-BP-7 - Cont.	241-BY-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BY-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-BYR-152	DIVERSION BOX	RPP
		241-BYR-153	DIVERSION BOX	RPP
		241-BYR-154	DIVERSION BOX	RPP
		242-B-151	DIVERSION BOX	RPP
		244-BXR	RECEIVING VAULT	RPP
		2607-EB	SEPTIC TANK	RPP
		UN-200-E-101	SPILL	RPP
		UN-200-E-105	SPILL	RPP
		UN-200-E-109	SPILL	RPP
		UN-200-E-38	SPILL	RPP
		UN-200-E-43	SPILL	RPP
		UN-200-E-5	SPILL	RPP
		UN-200-E-75	SPILL	RPP
		UN-200-E-76	SPILL	RPP
		UN-200-E-79	SPILL	RPP
		UN-200-E-89	SPILL	RPP
	200-PO-3	216-A-39	CRIB	RPP
		216-C-8	FRENCH DRAIN	RPP
		241-A-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-A-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-A-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-A-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-A-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-A-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-A-152	DIVERSION BOX	RPP
		241-A-153	DIVERSION BOX	RPP
		241-A-350	CATCH TANK	RPP
		241-A-417	CONDENSATE TANK	RPP
		241-A-A	DIVERSION BOX	RPP
		241-A-B	DIVERSION BOX	RPP
		241-AR-151	DIVERSION BOX	RPP
		241-AX-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-AX-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-AX-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-AX-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-AX-151	DIVERSION BOX	RPP
		241-AX-152-CT	DIVERSION BOX	RPP
		241-AX-152-DS	DIVERSION BOX	RPP
		241-AX-155	DIVERSION BOX	RPP
		241-AX-501	VALVE PIT	RPP
		241-AX-A	DIVERSION BOX	RPP
		241-AX-B	DIVERSION BOX	RPP
		241-C-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-110	SINGLE-SHELL TANK	TSD (S-2-4)

Prioritized Listing of Operable Units. (sheet 18 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-PO-3 Cont.	241-C-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-201	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-202	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-203	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-204	SINGLE-SHELL TANK	TSD (S-2-4)
		241-C-151	DIVERSION BOX	RPP
		241-C-152	DIVERSION BOX	RPP
		241-C-153	DIVERSION BOX	RPP
		241-C-252	DIVERSION BOX	RPP
		241-C-301C	CATCH TANK	RPP
		241-CR-151	DIVERSION BOX	RPP
		241-CR-152	DIVERSION BOX	RPP
		241-CR-153	DIVERSION BOX	RPP
		241-ER-153	DIVERSION BOX	RPP
		2607-ED	SEPTIC TANK	RPP
		2607-EG	SEPTIC TANK	RPP
		2607-EJ	SEPTIC TANK	RPP
		UN-200-E-118	SPILL	RPP
		UN-200-E-16	SPILL	RPP
		UN-200-E-18	SPILL	RPP
		UN-200-E-27	SPILL	RPP
		UN-200-E-47	SPILL	RPP
		UN-200-E-48	SPILL	RPP
		UN-200-E-68	SPILL	RPP
		UN-200-E-70	SPILL	RPP
		UN-200-E-72	SPILL	RPP
		UN-200-E-81	SPILL	RPP
		UN-200-E-82	SPILL	RPP
		UN-200-E-86	SPILL	RPP
		UN-200-E-91	SPILL	RPP
		UN-200-E-94	SPILL	RPP
		UN-200-E-99	SPILL	RPP
		UN-200-E-100	SPILL	RPP
		UN-200-E-107	SPILL	RPP
	200-RO-4	241-S-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-S-151	DIVERSION BOX	RPP
		241-S-152	DIVERSION BOX	RPP
		241-S-302B	CATCH TANK	RPP
		241-S-A	VALVE PIT	RPP
		241-S-B	VALVE PIT	RPP
		241-S-C	VALVE PIT	RPP
		241-S-D	VALVE PIT	RPP
		241-SX-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-107	SINGLE-SHELL TANK	TSD (S-2-4)

Prioritized Listing of Operable Units. (sheet 19 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-RO-4 Cont.	241-SX-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-113	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-114	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-115	SINGLE-SHELL TANK	TSD (S-2-4)
		241-SX-151	DIVERSION BOX	RPP
		241-SX-152	DIVERSION BOX	RPP
		UN-200-W-10	SPILL	RPP
		UN-200-W-80	SPILL	RPP
		UN-200-W-81	SPILL	RPP
*	200-TP-5	241-TX-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-113	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-114	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-115	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-116	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-117	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-118	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TX-153	DIVERSION BOX	RPP
		241-TX-302A	CATCH TANK	RPP
		241-TXR-152	DIVERSION BOX	RPP
		241-TXR-153	DIVERSION BOX	RPP
		241-TY-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TY-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TY-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TY-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TY-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TY-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-TY-153	DIVERSION BOX	RPP
		241-TY-302A	CATCH TANK	RPP
		241-TY-302B	CATCH TANK	RPP
		242-T-151	DIVERSION BOX	RPP
		2607-WTX	SEPTIC TANK	RPP
		UN-200-W-100	SPILL	RPP
		UN-200-W-17	SPILL	RPP
		UN-200-W-29	SPILL	RPP
		UN-200-W-76	SPILL	RPP
*	200-TP-6	241-T-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-110	SINGLE-SHELL TANK	TSD (S-2-4)

Prioritized Listing of Operable Units. (sheet 20 of 20)

WORKING ORDER	OPERABLE UNIT	SITE NAME	UNIT TYPE	UNIT CATEGORY
	200-TP-6 - Cont.	241-T-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-201	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-202	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-203	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-204	SINGLE-SHELL TANK	TSD (S-2-4)
		241-T-151	DIVERSION BOX	RPP
		241-T-152	DIVERSION BOX	RPP
		241-T-153	DIVERSION BOX	RPP
		241-T-252	DIVERSION BOX	RPP
		241-T-301	CATCH TANK	RPP
		241-T-302	CATCH TANK	RPP
		241-TR-152	DIVERSION BOX	RPP
		241-TR-153	DIVERSION BOX	RPP
		UN-200-W-62	SPILL	RPP
		UN-200-W-64	SPILL	RPP
		UN-200-W-97	SPILL	RPP
*	200-UP-3	241-U-101	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-102	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-103	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-104	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-105	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-106	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-107	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-108	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-109	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-110	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-111	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-112	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-201	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-202	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-203	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-204	SINGLE-SHELL TANK	TSD (S-2-4)
		241-U-153	DIVERSION BOX	RPP
		241-U-252	DIVERSION BOX	RPP
		241-U-301	CATCH TANK	RPP
		241-U-A	DIVERSION BOX	RPP
		241-U-B	DIVERSION BOX	RPP
		241-U-C	DIVERSION BOX	RPP
		241-U-D	DIVERSION BOX	RPP
		241-UR-151	DIVERSION BOX	RPP
		241-UR-152	DIVERSION BOX	RPP
		241-UR-153	DIVERSION BOX	RPP
		241-UR-154	DIVERSION BOX	RPP
		244-UR	RECEIVING VAULT	RPP
		2607-WUT	SEPTIC TANK	RPP
		UN-200-W-71	SPILL	RPP

CPP = CERCLA past practice
RPP = RCRA past practice
TSD = Treatment, storage, and disposal
* = Single-shell tank operable unit which has not been prioritized.