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RIVER PROTECTION PROJECT IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL PLAN

M. G. Briggs
Fluor Federal Services

Richland, WA 99352
U.S. Department of Energy Contract DE-AC06-99RL14047

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Abstract: This document replaces HNF-1517, Rev 2 which is deleted. It incorporates updates to reflect changes in programmatic direction associated with the vitrification plant contract change and associated DOE/ORP guidance. In addition it incorporates the cancellation of Project W-465, Grout Facility, and the associated modifications to Project W-520, IHLW Disposal Facility. It also includes document format changes and section number modifications consistent with CHG procedures.

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RPP-6968
Revision 0
(Formerly HNF-1517)

River Protection Project Immobilized Low-Activity Waste Disposal Plan

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

CH2MHILL
Hanford Group, Inc.
Richland, Washington
Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

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RPP-6968
Revision 0
(Formerly HNF-1517)

River Protection Project Immobilized Low-Activity Waste Disposal Plan

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TERMS

A-E	architect-engineer
ACDR	advanced conceptual design report
BNFL	BNFL Inc.
CD	Critical Decision
CDR	conceptual design report
CENRTC	capital equipment/expense not related to construction
CHG	CH2M HILL Hanford Group, Inc.
CSB	Canister Storage Building
CWBS	contractor work breakdown structure
D&D	decontamination and decommissioning
DNFSB	Defense Nuclear Facilities Safety Board
DOE	U.S. Department of Energy
DOE-HQ	U.S. Department of Energy–Headquarters
DOE-RL	U.S. Department of Energy, Richland Operations Office
DOT	U.S. Department of Transportation
DST	double-shell tank
Ecology	Washington State Department of Ecology
EIS	Environmental Impact Statement
FSAR	final safety analysis report
FY	fiscal year
HLW	high-level waste
ICD	interface control document
IHLW	immobilized high-level waste
ILAW	immobilized low-activity waste
IWSP	Immobilized Waste Storage Project
JMNS	justification for mission need statement
LAW	low-activity waste
LLMW	low-level mixed waste
LLW	low-level waste
MRM	management review meeting
MYWP	multi-year work plan
NEPA	*National Environmental Policy Act of 1969*
NRC	U.S. National Regulatory Commission
NS&L	Nuclear Safety and Licensing
ORP	Office of River Protection (U.S. Department of Energy)
ORR	Operational Readiness Review
PA	performance assessment
PEP	project execution plan
PRD	Project Requirements Division (U.S. Department of Energy, Office of River Protection)
PSAR	preliminary safety analysis report
PSE	preliminary safety evaluation
PSER	preliminary safety evaluation report
QAPP	quality assurance program plan

RCRA	*Resource Conservation and Recovery Act of 1976*
RFP	request for proposal
ROD	Record of Decision
RPP	River Protection Project
RPP-WTP	River Protection Project - Waste Treatment Plant
NS&L	Nuclear Safety and Licensing
SAR	safety analysis report
SEMP	Systems Engineering Management Plan
SSC	structures, systems, and components
SST	single-shell tank
TPC	total project cost
TSD	treatment, storage, and disposal
TWRS	Tank Waste Remediation System
WBS	work breakdown structure
WMH	Waste Management Federal Services of Hanford, Inc.

1.0 INTRODUCTION

This document originally was issued in 1997 (HNF-1517, Revision 0) and subsequently updated in 1999 (HNF-1517, Revision 1). Revision 1 update was prepared to reflect several important programmatic events that occurred. Specific events necessitating Revision 1 update were as follows:

- The evolution of the BNFL Inc. Privatization Phase 1A contract (DE-AC06-96RL13308) to Privatization Phase 1B
- New programming direction related to the establishment of the U.S. Department of Energy (DOE), Office of River Protection (ORP)
- Transition of DOE responsibility from the U.S. Department of Energy, Richland Operations Office (RL) to ORP
- Transition of the tank waste remediation mission contract responsibility from the Project Hanford Management Contract team to CH2M HILL Hanford Group, Inc. (CHG)
- Reformatting to reflect the structure in HNF-1883, *Tank Waste Remediation System Program Plan.*

This revision reflects current guidance provided by ORP and documents transition of the contract to CHG from Fluor Hanford. This revision also includes the following programmatic changes/additions:

- Work scope realignment of Project W-520, Immobilized Low-Activity Waste (ILAW) Disposal Facility, to a double-lined trench architecture
- Cancellation of Project W-465, Grout Vault Interim Storage Project
- Addition of sample transportation and disposal planning
- Addition of melter transportation and disposal planning.

This document contains additional formatting and section numbering realignment consistent with the structure identified in HNF-1883. The format of this document may be changed in the future to reflect format consistency with the River Protection Project (RPP) project execution plan (PEP) currently under development. Editorial changes and documentation reference updates are incorporated for accurate cross-reference of source information. Appendix A includes a cross-reference map from the previous version to this version to assist the reviewer in locating previous information.

The original planning of this document was based on the privatization need dates as described in the 90 percent confidence case in the *Report to Congress, Treatment and Immobilization of Hanford Radioactive Tank Waste*. This revision is based on RPP-00-127, *River Protection*

Project-FY 2001 Bridge Change Request, submitted to the DOE for approval. RPP-00-127 incorporated the guidance provided in Letter 00-PGO-002, *River Protection Project Key Planning Assumptions*. This document will be reviewed annually, and updated accordingly, to ensure it is consistent with current multi-year activity planning and that it reflects the appropriate subproject technical baseline documents.

1.1 DOCUMENT PURPOSE

This document has a two-fold purpose. First, it provides Immobilized Low-Activity Waste (ILAW) Disposal Subproject program planning that addresses topics of special interest to the Washington State Department of Ecology (Ecology). This program status reporting was originally prepared in accordance with the requirements of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement), Milestone M-90-01, which established the requirement to initiate program planning. This revision is part of an annual review of the program planning, focuses around the current Tri-Party Agreement requirements, and is consistent with the guidelines found in Section 11.5 of the Tri-Party Agreement Action Plan. Appendix A provides a cross-reference table that identifies this document's response to the requirements in the Tri-Party Agreement Action Plan, Section 11.5.

Second, this document provides an upper-tier management plan that will be used as the basis for more detailed planning of construction activities. Requirements for design and construction management planning are derived from applicable DOE guidance in DOE O 430.1A, *Life Cycle Asset Management* and the associated Good Practice Guides.

The Immobilized Tank Waste Storage and Disposal Project (work breakdown structure [WBS] 1.01.09) consists of the following three subprojects:

- ILAW Disposal Facility Subproject (WBS 1.01.09.01)
- Canister Storage Building (CSB) Subproject (WBS 1.01.09.02)
- Immobilized High-Level Waste (IHLW) Storage Modules, Phase 2 Subproject (WBS 1.01.09.03).

This document discusses the planning for the disposal of the Immobilized Low-Activity Waste Disposal Facility Subproject, hereafter called the ILAW Disposal Subproject.

The CSB Subproject and IHLW Storage Modules, Phase 2 Subproject planning is presented in RPP-6969, *River Protection Project Immobilized High-Level Waste Interim Storage Plan.*

2.0 HANFORD SITE MISSION

As part of the Hanford Site mission, the U.S. Department of Energy-Headquarters (DOE-HQ), as directed by the U.S. Congress, established the ORP (Public Law 105-261, *Strom Thurmund National Defense Authorization Act for Fiscal Year 1999,* Section 3139) to manage all aspects of the Tank Waste Remediation System (TWRS). The ORP mission statement is as follows:

> *"To store, treat, immobilize, and dispose of the highly radioactive Hanford Site tank waste (including current and future tank waste and cesium and strontium capsules) in an environmentally sound, safe, and cost-effective manner. The long-term goal is to protect the Columbia River from future tank waste leaks."*

2.1 RIVER PROTECTION PROJECT MISSION

The RPP will provide for safe storage and management of legacy and new waste, retrieval and disposal of the immobilized waste, decontamination and decommissioning of RPP facilities, and closure of RPP sites.

To support the environmental remediation and restoration effort at the Hanford Site, RL, predecessor to the ORP, established a two-phased approach of using private contractors to treat and immobilize the radioactive waste currently stored in underground tanks throughout the Site. Phase 1 consisted of two proof-of-concept demonstration facilities, one for IHLW and one for ILAW. Phase 2 consisted of two full-scale production facilities, an IHLW facility and an ILAW facility.

After immobilization, the high-level waste (HLW) will be held in interim storage for eventual shipment to a national geologic repository and the ILAW will be disposed of onsite in disposal facilities approved by the standards established in the *Resource Conservation and Recovery Act of 1976* (RCRA) and DOE O 435.1A, *Radioactive Waste Management.*

RL initiated the implementation of this two-phased privatization approach by awarding a contract to BNFL in 1996. RL subsequently amended this contract in 1998 to proceed with the Phase 1B development of the facility design for processing of HLW and low-activity waste (LAW) into immobilized product forms. This contract was cancelled in May 2000 because of unacceptable increases in the estimated cost of the tank waste treatment services. ORP currently is involved with the solicitation of bids to award a new contract to proceed with the vitrification design and construction through a request for proposal (RFP) process. It is anticipated that this new vitrification contract will be awarded by January 2001 to design, construct, and commission a government-owned and contractor-operated River Protection Project - Waste Treatment Plant (RPP-WTP).

The planning identified herein reflects the DOE Project Integration Office guidance provided in Letter 00-PGO-002. This guidance identifies the 90 percent trend case planning with an initial start of Phase 1 ILAW delivery to the waste disposal facility in August 2008 with completion in February 2018.

Phase 2 is a full-scale production effort that depends on the results of the Phase 1 demonstration proof-of-concept and will treat and immobilize the balance of the remaining Site waste. Current ILAW Phase 2 planning reflects an immobilization and hot disposal operations completion date in 2028.

ORP, through CHG, will supply the radioactive waste feed for Phase 1 processing and will receive the IHLW and ILAW products from the RPP-WTP for interim storage and disposal, respectively. For Phase 2, retrieval and feed delivery, as well as waste treatment and immobilization, will be accomplished by the RPP-WTP operations contractor. ORP will continue to have the responsibility for receipt and disposal of ILAW during Phase 2, in addition to interim storage of IHLW.

Receipt and acceptance of ILAW will be based on the RPP-WTP operations contractor activities conducted to qualify, verify, document, and certify the products along with ORP oversight activities conducted to audit, review, inspect, and evaluate the treatment and immobilization process and products. The acceptance process is expected to result in IHLW canisters and ILAW packages certified for safe and environmentally compliant transport and disposal.

2.2 RIVER PROTECTION PROJECT IMMOBILIZED WASTE STORAGE AND DISPOSAL MISSION

The ORP established the RPP Immobilized Waste Storage and Disposal Project to perform storage and disposal functions for IHLW and ILAW products generated as part of the RPP vitrification effort. In response, CHG identified the Immobilized Waste Storage Project (IWSP) to manage the activities necessary to develop and perform immobilized waste storage and disposal. To accomplish its mission, the Immobilized Tank Waste Storage and Disposal Project is divided into three subprojects: the ILAW Disposal Facility Subproject, the CSB Subproject (Phase 1 IHLW Interim Storage), and the IHLW Storage Modules (Phase 2 Interim Storage) Subproject. This document discusses the ILAW Disposal Subproject planning for development and construction of a disposal facility that will meet the requirements set forth for the activities related to this subproject.

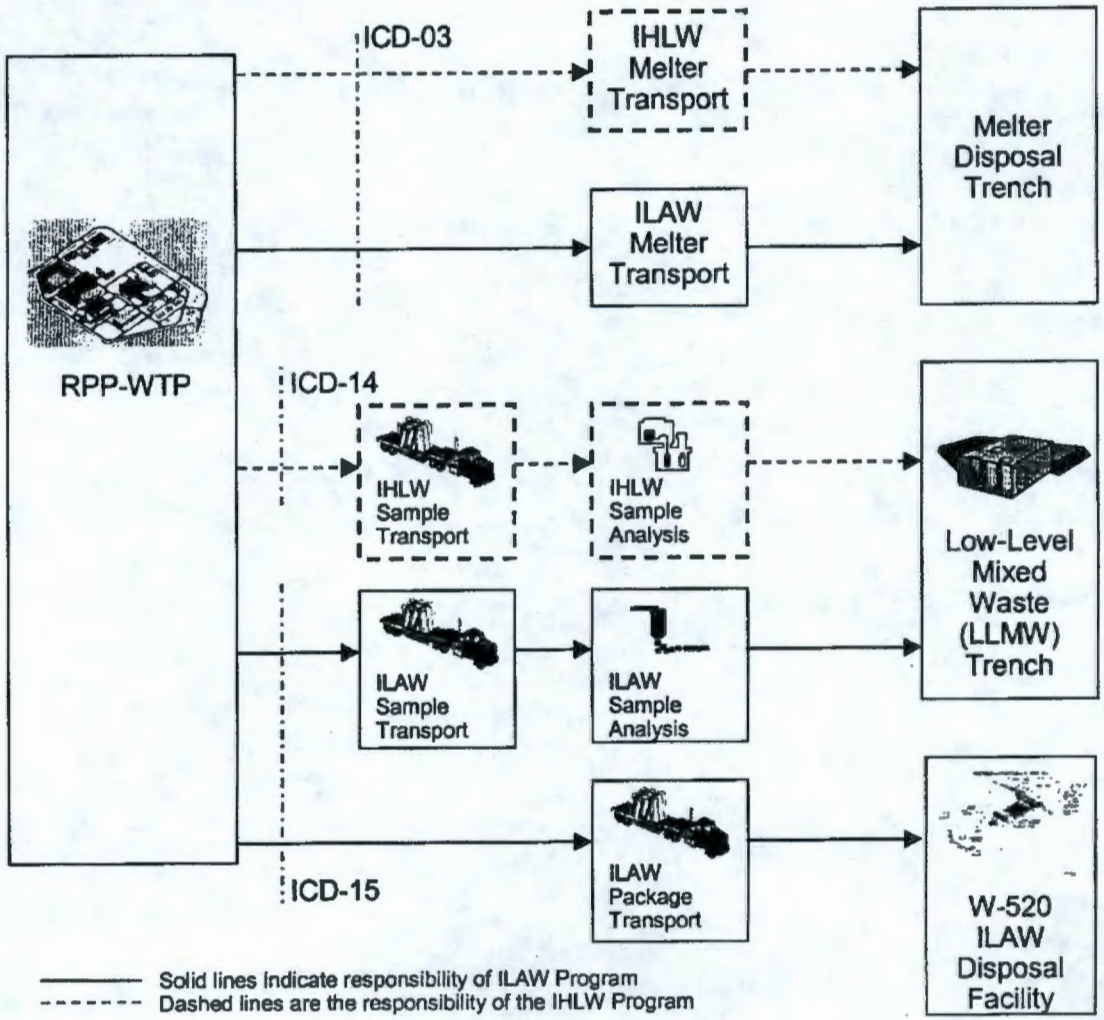
2.3 IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT MISSION AND OBJECTIVES

The mission of the ILAW Disposal Subproject is to receive the certified ILAW packages produced at the RPP-WTP, transport the packages to a disposal facility in the Hanford Site 200 East Area, and dispose of the packages in an approved, environmentally safe facility.

This mission includes the following activities (Figure 2-1 reflects the relationships between these programmatic functions):

- Transportation and disposal of ILAW

Figure 2-1. Program Functional Relationships.



- Receive compliant ILAW packages produced at the RPP-WTP.
- Transport the ILAW packages, in a designed/procured transportation system, to a designated Hanford Site disposal facility.
- Provide an approved permanent disposal facility for the long-term, environmentally safe disposition of ILAW packages that meets the disposal requirements and is approved by the DOE and Ecology.
- Operate the disposal facility during receipt of ILAW packages and secure the packages in preparation for long-term disposal.
- Provide a disposal facility closure technique that stabilizes the disposal facility and protects the environment and the public from inadvertent exposure.

- ILAW failed/used melter transport and disposal
  - Transport failed/used ILAW melters from the RPP-WTP to an approved disposal trench.
  - Receive and dispose of failed/used IHLW melters as LAW.
  - Provide an approved disposal trench and closure system for all IHLW and ILAW melters.
- ILAW sample transportation and disposal
  - Transport ILAW samples from the RPP-WTP to a sample testing facility.
  - Dispose of tested samples as laboratory waste.

The primary objective of the ILAW Disposal Subproject is to provide onsite transportation systems and disposal facilities for Phase 1 and Phase 2 ILAW packages in accordance with the subproject mission. Disposal facility construction will be accomplished through the establishment of several line-item projects to accommodate the process flow. The Phase 1 line-item project (WBS 1.01.09.01) will provide the onsite ILAW transportation system and the initial development of a permitted disposal facility to receive and dispose of the vitrified Phase 1 ILAW. Additional line-item projects to support the disposal of ILAW generated during Phase 2 will be identified, on an as-needed basis, to construct additional disposal trenches at the Phase 1 facility to allow for flexibility in requirement definition and funding.

Specific subproject objectives of the ILAW Phase 1 and Phase 2 line-item projects are as follows:

- Develop and provide the transportation systems required to receive and transport ILAW packages to the disposal facility.

- Design and construct a disposal facility that accommodates the flexibility and funding necessary to receive ILAW from the vitrification facility and provide disposal through the life cycle of the RPP mission.
- Obtain all necessary construction and operations permits and authorizations to support construction of the disposal facilities. The operation dates for the interim storage capability shall be on a schedule consistent with the ILAW production schedule and the Tri-Party Agreement provisions.
- Develop and implement all necessary operational and equipment/facility plans for subproject disposal operations and closure.
- Support environmental, safety, and health requirements through *National Environmental Policy Act of 1969* (NEPA) compliance and safety analyses.
- Integrate with applicable Site projects and other agencies to the extent necessary to maintain subproject goals and objectives.
- Establish subproject baseline planning and target goals.

2.4 IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT HISTORY

The Hanford Site consists of 560 square miles of shrub steppe, sand, and sagebrush located on the Columbia River in southeastern Washington State. The DOE, the successor agency to the Atomic Energy Commission, manages the Site. As a plutonium production complex, the Site played a pivotal role in the nation's defense for more than 50 years, beginning in the 1940's with the development of the Site under the Manhattan Project. As part of the production and post-cleanup processes, approximately 204 million liters of radioactive waste, contained in 177 underground storage tanks, were accumulated.

The Site is currently engaged in the world's largest and most complex environmental cleanup project with many challenges to be resolved in the face of overlapping technical, political, regulatory, and cultural interests. In 1996, the DOE issued DOE/EIS-0189, *Final Environmental Impact Statement for the Tank Waste Remediation System* (EIS). This EIS evaluated alternatives for the management and disposal of mixed radioactive and hazardous waste currently stored in 177 underground storage tanks and other miscellaneous tanks associated with the Site's tank farm operations, as well as the management and disposal of cesium and strontium capsules stored at the Site.

In February 1997, a Record of Decision (ROD) for the EIS was published (62 FR 8693, "Record of Decision for the Tank Waste Remediation System, Hanford Site, Richland, Washington") that selected the phased implementation alternative. This ROD established the framework for a two-phased approach consisting of a demonstration phase (Phase 1) followed by a full-scale production phase (Phase 2). The selected approach included interim storage of ILAW during Phase 1 followed by permanent disposal operations in Phase 2. To support this decision, the

DOE petitioned the U.S. Nuclear Regulatory Commission and obtained a ruling that the LAW fraction of the tank waste was not HLW and therefore was not subject to U.S. Nuclear Regulatory Commission regulation (97-TWR-009, *Classification of Hanford Low-Activity Tank Waste Fraction*). This ruling allowed the ILAW to be disposed as LLW at the Hanford Site.

Concurrent with the EIS process, new Tri-Party Agreement milestones were negotiated to reflect the selected approach. The M-90 milestone series established schedule dates for storage and disposal of immobilized tank wastes, with Phase 1 operations commencing in 2002 and Phase 2 operations starting in 2012. To meet the aggressive schedule, the ILAW Project selected the existing mothballed grout vaults for modification to provide the initial increment of storage capacity needed until disposal authorization could be obtained (WHC-SD-W465-AGA-00, *Alternatives Generation and Analysis Report for Immobilized Low-Level Waste Interim Storage Architecture*). The permanent disposal facility was to be a series of concrete vaults located at the Project W-520 site between the Plutonium-Uranium Extraction Plant and the 200 East Area steam plant.

In March 1998, DOE/RL-97-69, *Final Report for the Hanford Site 200 Area Plateau Composite Analysis and Immobilized Low-Activity Tank Waste Performance Assessment* (PA) was issued to the DOE-HQ Federal Review Group. The PA was conditionally approved in October 1999. The two conditions were that reports on recent waste form performance be submitted to DOE-HQ (fulfilled by 00-DPD-018, *Initial Data Package from the Tank Focus Area on the 55 Test Glasses for Hanford Immobilized Low-Activity Waste (ILAW) Studies*) and that minor items be addressed in the next performance assessment. Following the conditional approval of the PA, the ILAW disposal facility received its Disposal Authorization Statement from DOE-HQ in accordance with requirements in DOE O 435.1A (99-DPD-065, *Transmittal of the Disposal Authorization Statement [DAS] for the Hanford Site Low-Level Waste Interim Storage Architecture*). The Disposal Authorization Statement also had the following conditions:

- Waste acceptance criteria shall be developed and approved through the Radioactive Waste Management Basis.
- A closure plan will be written and approved by the ORP Field Manager by October 25, 2000 (Completed – RPP-6911, *Preliminary Closure Plan for the Immobilized Low-Activity Waste Disposal Facility*).
- A monitoring plan will be written, approved by the ORP Field Manager, and implemented by October 25, 2000 (Completed - RPP-6877, *Remote-Handled Immobilized Low-Activity Waste Disposal Facility Pre-Operational Disposal Plan*).
- A maintenance plan will be written and approved by the ORP Field Manager by March 30, 2000 (Completed – DOE/ORP-2000-01, *Maintenance Plan for the Hanford Immobilized Low-Activity Tank Waste Performance Assessment* and DOE/ORP-2000-19, *Annual Summary of ILAW Performance Assessment*).
- Changes in disposal technology, disposal unit, or waste form must be analyzed according to the maintenance plan approved by the DOE (DOE/ORP-2000-07, *White Paper Updating the Conclusions of 1998 ILAW Performance Assessment*; and

DOE/ORP-2000-19, *Annual Summary of Immobilized Low-Activity Waste (ILAWP Performance Assessment)*; and reflected in the 2001 ILAW PA).

In 1999, additional engineering studies were performed to reevaluate the architecture selection decision because of the revised Tri-Party Agreement schedule and new design data from BNFL. The effort resulted in a decision (99-DPD-066, *Decision to Change the Immobilized Low-Activity Waste [ILAW] Disposal Baseline to Proceed with the Remote-Handled Trench Alternative*) to change the baseline from the vault concept to the remote-handled waste disposal trench architecture, thus eliminating the need for initial ILAW interim storage. This document reflects this change.

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3.0 SCOPE OF IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT

This document presents the organizational and management approaches that will be used to control and execute the ILAW Disposal Subproject. Included under this document is the project management planning for the subproject and lower-tier line-item projects that are a part of this effort, including identification and management of subproject milestones and schedule. This document presents cost and schedule information derived from the Immobilized Tank Waste Storage and Disposal Project, ILAW Subproject portion of the RPP-00-127 baseline. Specifically, this document covers the following key elements:

- Mission and objectives
- Scope
- Definition and background
- Subproject and line-item construction project management and controls
- Schedule management, including milestone tracking and reporting
- Cost control
- Risk assessment and mitigation approach
- Identification of responsible organizations and interfacing organizations and projects
- Acquisition strategy development and implementation
- Approach to quality, safety, environmental protection, systems engineering, and test and evaluation.

3.1 IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT REQUIREMENTS

The ILAW Disposal Subproject has established design basis functions and requirements necessary to provide for disposal of Phase 1 and Phase 2 ILAW packages. Design requirements for Project W-520, ILAW Disposal Facility, have been established and will be contained in detailed Level 1 system specifications that will establish the basis for conceptual and post-conceptual design activities. It is expected that the Phase 2 Level 1 specification will be similar to the Phase 1 Level 1 specification. The ILAW Disposal Subproject design basis documents include system definition, characteristics, interfaces, performance requirements, and applicable system constraints.

System constraints include federal government regulations, Washington State regulations, and DOE Orders applicable to the design, construction, and operation of the ILAW disposal system that establish a uniform policy for the Site. The regulations contain the requirements for permitting and regulatory approvals. The Site-specific information supplements nationally recognized codes and standards.

4.0 PROGRAM/PROJECT BACKGROUND AND TECHNICAL APPROACH

This section provides a general description of the processes and considerations associated with waste vitrification, including waste source characterization, process flow, projected ILAW inventories, and the identified disposal concept.

4.1 GENERAL CHARACTERISTICS OF TANK WASTE

In general, the neutralized waste consists of insoluble solids that tend to settle to the bottom of tanks and supernates that were treated by evaporation. These treated supernates resulted in soluble salt cake that is stored primarily in single-shell tanks (SST). More concentrated supernates generally have been transferred to newer double-shell tanks (DST) for safer storage. Current plans are for supernates, salt cake, and sludge to be retrieved from all 177 tanks and separated into HLW and LAW components. The LAW will be treated to remove cesium, strontium, and technetium, and then immobilized in a glass waste form to become the ILAW. A more detailed description of the tank waste chemical characteristics and variability is contained in HNF-SD-WM-TI-740, *Standard Inventories of Chemicals and Radionuclides in Hanford Site Tank Wastes*. This material is regulated as hazardous waste because of its chemical and radiological characteristics and the presence of listed hazardous chemicals as identified in WAC 173-030, "Dangerous Waste Regulations," Part 070.

4.2 WASTE PROCESSING LOGIC

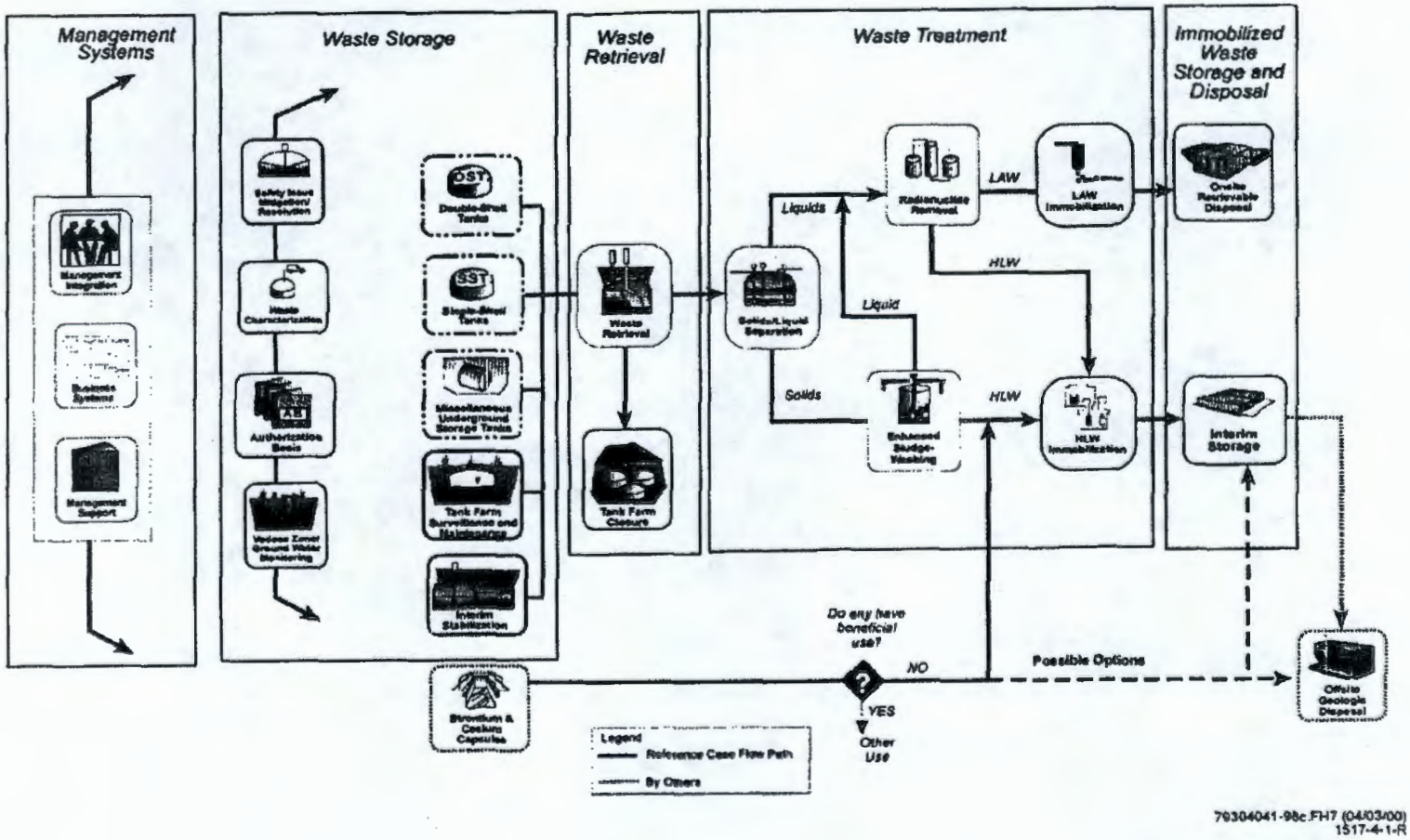
Figure 4-1 shows the overall activities for HLW and LAW treatment, vitrification, storage, and disposal of Hanford Site tank wastes. Retrieval and pretreatment operations will prepare the DST and SST waste for vitrification. Waste will be retrieved from most tanks in a manner that separates soluble and insoluble material (sludge). These wastes will be fed into the LAW and HLW feed streams by the following process.

- Soluble salts and supernate solutions (liquids) will be staged for pretreatment as LAW vitrification feed after treatment to remove soluble cesium, technetium, strontium, and transuranics. The resulting LAW feed will be processed to produce the ILAW packages. These packages will be delivered to the ORP for onsite disposal. The solids (sludge) will be pretreated after transfer from the DST and fed into the HLW feed stream.

- The separated radionuclides from the soluble waste process will be blended with pretreatment sludge before being fed into the HLW vitrification process.

IHLW canisters will be delivered to the ORP for interim storage and eventual disposition at a national geologic repository.

Figure 4-1. Vitrification Waste Processing Flow.



The candidate Envelope A, B, and C (LAW) feed source tanks for Phase 1 are identified in HNF-SD-WM-SP-012, *Tank Farm Contractor Operation and Utilization Plan,* and include the basic quantity and extended order quantity delivery order, which is consistent with the guidance provided in Letter 00-PGO-002.

Planning assumptions by the ILAW Disposal Subproject assume that a pilot vitrification complex will be constructed during Phase 1 for proof-of-concept and a second, larger facility will be constructed for Phase 2 providing full-scale ILAW production capability. The full-scale production facility will have the capacity and throughput to vitrify the remaining portion of the Hanford Site tank waste, beyond Phase 1 quantities, by 2028.

4.3 PROJECTED INVENTORIES FOR LOW-ACTIVITY WASTE PRODUCTS

The current planning for the ILAW packaging is to place the ILAW into stainless steel canisters 2.3 m high by 1.2 m in diameter. Each package will contain approximately 2.55 m^3 of ILAW. Phase 1 pre-production waste inventory is anticipated to generate approximately 13,500 packages of ILAW (34,500 m^3). Phase 2 production is assumed to generate an additional 66,500 packages (169,500 m^3) for a total of 204,000 m^3 of ILAW (80,000 packages). Table 4-1 summarizes the current schedule and anticipated ILAW delivery assumptions.

Table 4-1. Summary of Immobilized Low-Activity Waste Package Production.

Item	Phase 1[a]	Phase 2[b]	Total
Hot operations start date	June 2008	October 2010	June 2008
Hot operations end date	February 2018	September 2028	September 2028
Post-closure monitoring start	--	--	October 2018
Post-closure monitoring end	--	--	September 2046
Anticipated waste inventory[c]	13,500 packages (34,500 m^3)	66,500 packages (169,500 m^3)	80,000 packages (204,000 m^3)
Nominal package receipt rate	3 per day	15 per day	--
Peak package receipt rate	5 per day	29 per day	--
Nominal waste package size	2.3 m high by 1.2 m diameter		--

[a]Phase 1 dates are based on Office of River Protection guidance provided in 00-BMA-073, *Contract No. AC06-99RL14047 – Process to Arrive at a Multi-Year Work Plan (MYWP) Submittal*, and 00-PGO-002, *River Protection Project Key Planning Assumptions.*

[b]Phase 2 dates are identified in the RPP-00-127, *River Protection Project FY2001 Bridge Change Request,* planning schedule contained in Appendix B.

[c]Package counts and volume are based on each package containing 6 MT of immobilized low-activity waste with a volume of 2.55 m^3.

The RPP-00-127 baseline planning includes identifying a single project (W-520) to develop the overall ILAW remote-handled waste trench disposal facility and associated transportation and

infrastructure. The identification of several Phase 2 line-item projects to construct additional disposal trenches to receive Phase 2 waste is included in the baseline as ILAW Future Projects.

4.4 IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL DEVELOPMENT AND IMPLEMENTATION PLANNING

4.4.1 Immobilized Low-Activity Waste Disposal Architecture Selection

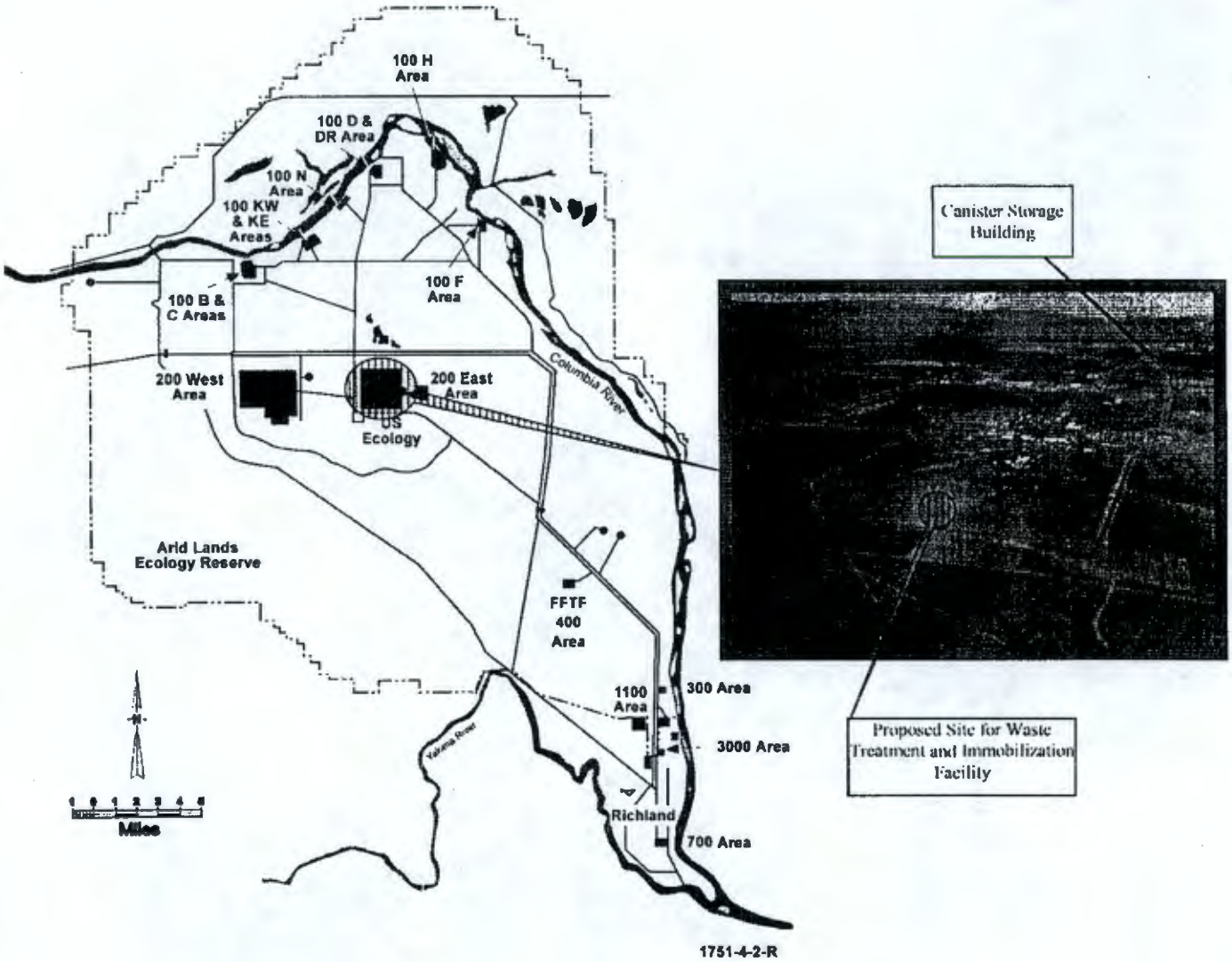
In 1996, the TWRS EIS selected a vitrified waste form for the LAW fraction of tank waste, and specified that it would be disposed onsite in a near-surface disposal facility. An architecture selection process was initiated in 1997 to determine the best way to provide the needed disposal capability.

The initial alternatives analysis (HNF-SD-TWR-AGA-004, *Analysis of Alternatives for Immobilized Low-Activity Waste Disposal,*) evaluated 12 alternatives, including trenches, vaults, existing canyon buildings, overpacks, and disposal in emptied tanks. The preferred alternative was a flexible modular design concept with the first module providing shielded underground vaults and mobile gantry buildings to place the packages in the vaults.

The modular concept was selected because it was recognized that the future availability of an alternate disposal capacity (such as the canyon buildings) may make additional new construction less attractive. Conceptual design of the disposal infrastructure and the first disposal module was initiated under Project W-520. The *Tank Waste Remediation System Complex Site Evaluation Report* (WHC-SD-WM-SE-021) identified a preferred site in the 200 East Area within the Hanford Site. This site consists of a 36.5 ha parcel as identified in Figure 4-2. The DOE approved the site location in Letter 97-SID-285, *Approval of Tank Waste Remediation System Complex Site Evaluation Report.*

When the privatization Part B-1 contract was awarded to BNFL in 1998, a reanalysis of the ILAW disposal alternatives was initiated. This analysis (HNF-4003, *Reanalysis of Alternatives for Immobilized Low-Activity Waste Disposal*) concluded that the grout vaults, which had previously been reserved for interim storage of ILAW, also would be suitable for disposal, and additional capacity should be provided by new vaults similar to the Project W-520 concept. However, during the decision process for this analysis, a new design concept was brought forward that involved portable shield walls and an open trench design similar to the mixed waste disposal facilities in the 200 West Area of the Hanford Site. The remote-handled waste disposal trench was subsequently developed and evaluated and was clearly more attractive than the other alternatives, primarily because of substantial capital cost savings over the life of the program. In December 1999, ORP concurred with the decision board recommendation to proceed with the remote-handled waste trench as the ILAW disposal baseline.

Figure 4-2. Canister Storage Building Location within the Hanford Site.



4.4.2 Existing Government/Commercial Low-Activity Waste Disposal Facilities

Several government and commercial organizations in the United States and the international nuclear community operate facilities for the disposal of LAW. Most of these facilities are near-surface trenches or vaults that may or may not be lined or designed according to RCRA requirements, depending on the type of waste involved and its classifications. Other facilities, such as Centre de l'Aube in France, are based on the tumulus (burial mound) concept. In general, the current operating LAW facilities dispose of solid waste from a variety of sources such as contaminated laboratory materials or low-activity process or decontamination components, including filters, or cemented and containerized ion exchangers. At the Hanford Site, many of these activities are conducted by US Ecology commercially and the solid waste disposal program, which includes the Waste Receiving and Processing Facility, for the DOE. Similar activities are conducted at other DOE sites. Procedures have been established for receiving and disposing of heterogeneous waste with various nonradioactive components from different sources and diverse packaging.

The current approach for disposal is a near-surface, remote-handled waste trench system similar to systems used at other locations for disposal of radioactive waste.

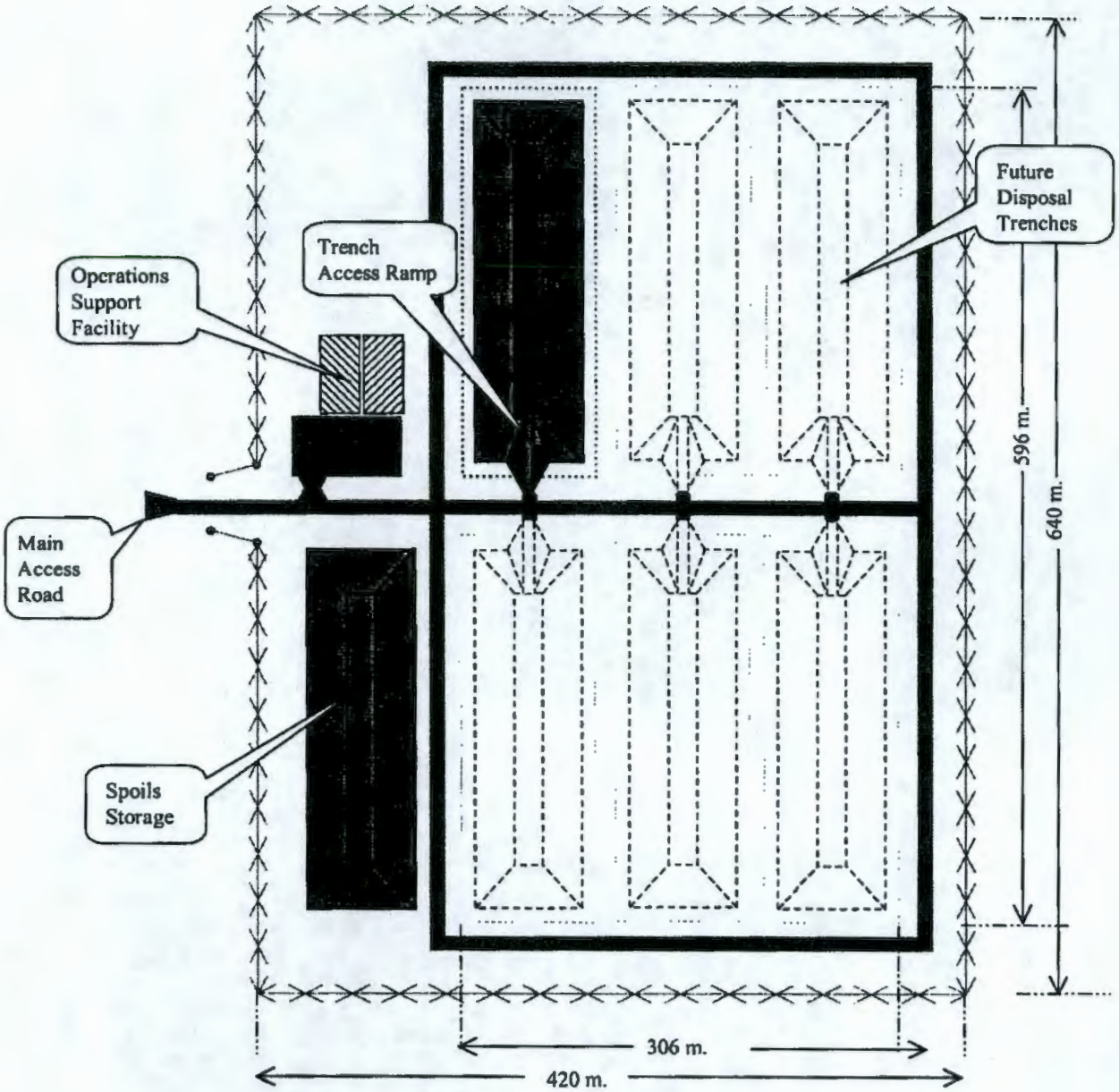
4.4.3 Disposal Facility Description

The Project W-520 ILAW disposal facility will consist of the near-surface, remote-handled waste trench facility characterized in Figure 4-3. This facility will consist of up to six trenches designed specifically to receive and dispose of the ILAW packages produced by the RPP-WTP operations contractor during Phase 1 and Phase 2. The disposal facility concept is developed around multiple line-item projects to develop and expand the facility as required to accommodate the ILAW packages.

Project W-520, which will develop the overall disposal facility including the infrastructure necessary to provide operations and maintenance support. This infrastructure includes utilities, roads, fencing, and facilities required for support of the receipt, placement, and storage of the ILAW packages. The Project W-520 design will provide the first disposal trench to support the Phase 1 production and the designed closure system. The facility design will identify the locations of the additional trenches required to receive Phase 2 packages, but final design of these trenches will remain flexible to accommodate potential requirement changes and support out-year funding to avoid large up-front capital costs.

Project W-520 will include design and procurement of the transportation system to move the ILAW packages from the RPP-WTP to the disposal facility. This system will include the remote-handling features required to effectively load/unload the ILAW packages from a shielded transportation container. The design also will identify the trench systems required to unload and store the packages for disposal.

Figure 4-3. Project W-520 Immobilized Low-Activity Waste Concept Layout.



4.4.4 Immobilized Low-Activity Waste Sample Disposition

The ILAW Disposal Subproject has partial responsibility for design, procurement, and construction of systems to transport ILAW qualification samples. These samples will be transported from the RPP-WTP to the testing laboratory for ILAW compliance verification, to certify the ILAW for long-term disposal. Upon completion of the analysis of these samples, they will be transported to an onsite low-level mixed waste trench for disposal. The current planning associated with this function is contained in RPP-6227, *Storage and Disposal Program Product Sampling Support.*

The current planning for the disposition of these samples is that 222-S Laboratory will dispose of these samples. Based on the quantity, volume, and characteristics of these samples, the laboratory should be able to dispose of this material as laboratory waste in the low-level mixed waste trench (separate from the ILAW Disposal Facility); therefore, no additional assessment of the sample disposition is identified in the current baseline planning.

4.4.5 Immobilized Low-Activity Waste Melter Transportation and Disposal

The ILAW Disposal Subproject will have the responsibility for design, procurement, and construction of systems to transport failed/used melters from the RPP-WTP to the ILAW melter disposal trench. This trench will receive and dispose of the failed/used ILAW melters and the failed/used IHLW melters, which will be certified as LAW. IHLW melters will be categorized as non-HLW and will meet all Hanford Site solid waste acceptance criteria before delivery to the LAW disposal trench.

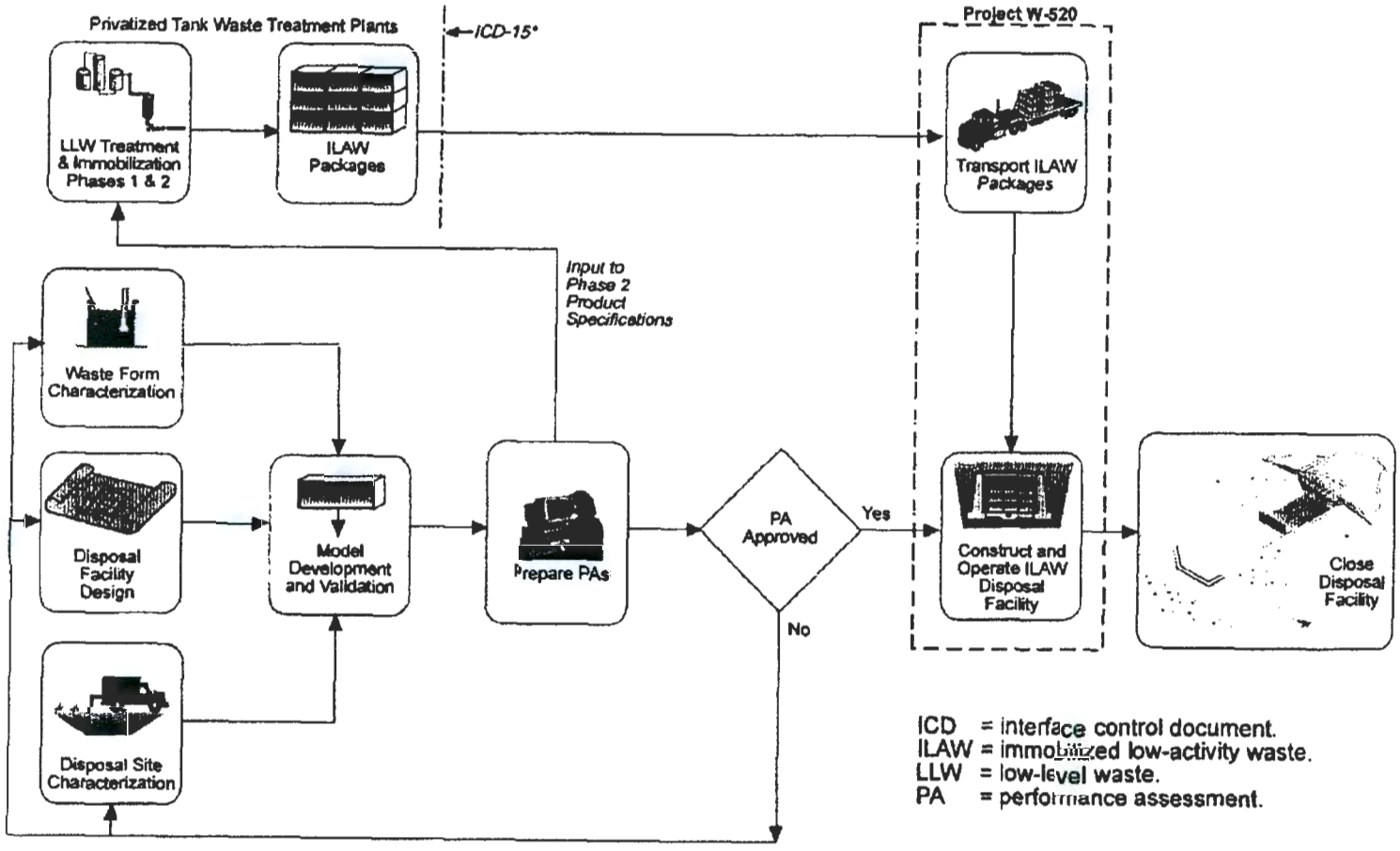
The current planning for failed/used melter disposal is to place the melters in disposal packages and place the loaded packages into a dedicated onsite disposal trench, separate for the ILAW Disposal Facility and the low-level mixed waste trench.

An alternative generation and analysis is scheduled to be performed during FY 2001 to identify the melter transportation requirements. A decision report will be provided to the ORP for concurrence.

5.0 RIVER PROTECTION PROJECT IMMOBILIZED LOW-ACTIVITY WASTE STORAGE AND DISPOSAL LOGIC

Figure 4-1 presents the overall process flow for the ILAW treatment, vitrification, and disposal of Hanford Site tank waste. Figure 5-1 presents the functional logic for the ILAW Disposal Subproject. This logic indicates the ILAW Disposal Subproject functions and identifies the interface between the LAW RPP-WTP operations contractor and the ILAW disposal program. The RPP-00-127 baseline provides the schedule and cost basis for this document, and its supporting documentation provides more detailed logic diagrams with appropriate logic ties to other programs and projects, interface activities, and detailed activity descriptions. Section 6.0 provides the WBS for the ILAW Disposal Subproject, and Section 7.0 provides the schedule and milestone information.

Figure 5-1. Immobilized Low-Activity Waste Disposal Subproject Functional Flow.



* BNFL-5193-ID-15, 2000, *Interface Control Document for Immobilized Low-Activity Waste*, Rev. 4 as amended, Draft, BNFL Inc., Richland, Washington.

6.0 WORK BREAKDOWN STRUCTURE

A WBS is identified in the RPP-00-127 baseline for planning, execution, and control of the subproject work. This WBS represents the framework in which work will be estimated, scheduled, budgeted, performed, and managed. The WBS defines all authorized ILAW Disposal Subproject work regardless of funding source by relating elements of work to each other and to the final products. Because it describes all work to be done on the subproject, the WBS provides the basis for technical, schedule, and cost control baseline management. The subproject will regularly monitor the status of each active element to determine if the planned work is being accomplished on schedule and within budget.

6.1 SUBPROJECT WORK BREAKDOWN STRUCTURE

The subproject WBS is divided into discrete packages for performance tracking and reporting. Major work activities for the ILAW Disposal Subproject have been defined as shown in Table 6-1 and are detailed in activity data sheets, which are held as backup to the approved baseline. These data sheets are available from the RPP IWSP files. Appendix C contains WBS dictionary sheets for the ILAW Disposal Subproject major activities at the function level (Level 5).

Table 6-1. Subproject Work Breakdown Structure. (2 sheets)

Identification number	Title
1.01.09.01	Immobilized LAW Disposal Facility (Subproject)
1.01.09.01.01	Dispose Immobilized LAW Onsite
1.01.09.01.01.01	ILAW Project Management
1.01.09.01.01.01.01	ILAW Project Management
1.01.09.01.01.02	ILAW Systems Definition
1.01.09.01.01.02.01	Maintain ICD #15
1.01.09.01.01.02.02	Prepare/Maintain Technical Requirements for Disposal
1.01.09.01.01.02.03	Project Management Plan Update
1.01.09.01.01.02.04	Define Requirements for ILAW Sample Transport
1.01.09.01.01.02.05	Define Requirements for ILAW Melter Disposal
1.01.09.01.01.02.06	Design/Procure ILAW Sample Transport System
1.01.09.01.01.02.07	Design/Procure/Fabricate ILAW Failed Melter Transport System
1.01.09.01.01.02.08	Design/Permit/Prepare Failed Melter Disposal Trench
1.01.09.01.01.03	ILAW Performance Assessment
1.01.09.01.01.03.02	Data Collection for 2001 Performance Assessment
1.01.09.01.01.03.03	2001 Performance Assessment
1.01.09.01.01.03.04	Data Collection for Performance Assessment

Table 6-1. Subproject Work Breakdown Structure. (2 sheets)

Identification number	Title
1.01.09.01.01.04	Project W-520, ILAW Disposal Facility
1.01.09.01.01.04.01	ILAW Disposal Facility Conceptual Design
1.01.09.01.01.04.02	ILAW Disposal Facility Advanced Conceptual Design/Validation
1.01.09.01.01.04.03	ILAW Disposal Facility Design
1.01.09.01.01.04.04	ILAW Disposal Facility Equipment Procurement
1.01.09.01.01.04.05	ILAW Disposal Facility Construction
1.01.09.01.01.04.06	Startup and Test for ILAW Disposal Facility
1.01.09.01.01.04.07	Perform Management Self-Assessment for ILAW Disposal
1.01.09.01.01.04.08	Perform Contractor Independent ORR for ILAW Disposal Facility
1.01.09.01.01.04.09	Perform DOE-ORP ORR/Obtain CD-4 for ILAW
1.01.09.01.01.04.10	Obtain ILAW Disposal Facility Environmental Documentation
1.01.09.01.01.04.11	ILAW Disposal Facility Authorization Basis Development/Approval
1.01.09.01.01.06	ILAW Future Projects
1.01.09.01.01.06.01	ILAW Project Management
1.01.09.01.01.06.02	Technical Baseline Update
1.01.09.01.01.06.03	Maintain Technical Baseline
1.01.09.01.01.06.04	CDR, ACDR, and Validation
1.01.09.01.01.06.05	Design
1.01.09.01.01.06.06	Construction
1.01.09.01.01.06.07	Permits
1.01.09.01.01.06.08	Authorization Basis
1.01.09.01.01.07	ILAW Operations
1.01.09.01.01.07.01	Dispose of Failed Melters
1.01.09.01.01.07.02	ILAW Disposal Facility Operations
1.01.09.01.01.07.03	Operations and Monitoring (ILAW)
1.01.09.01.01.07.04	Maintain ILAW Part 1 Performance Assessment
1.01.09.01.01.07.05	Startup/ORR for Failed Melter Disposition
1.01.09.01.04	Close ILAW Disposal Facility
1.01.09.01.04.01	ILAW D&D
1.01.09.01.04.01.01	Close ILAW Disposal Facilities
1.01.09.01.04.01.03	Closure/D&D
1.01.09.01.04.01.04	Initiate Post-Closure Monitoring

ACDR = advanced conceptual design report.
CDR = conceptual design report.
D&D = decontamination and decommissioning.
ICD = interface control document.
ILAW = immobilized low-activity waste.
ORP = Office of River Protection.
ORR = Operational Readiness Review.

6.2 WORK BREAKDOWN STRUCTURE DESCRIPTIONS

The scope of work for the *Dispose of ILAW Onsite* function is to provide for the development and implementation of those requirements necessary to satisfy the objectives of the mission elements for the ORP ILAW functions assigned from the Immobilized Tank Waste Storage/ Disposal Project. This scope of work is broken down into the following seven cost accounts.

WBS 1.01.09.01.01.01, ILAW Project Management

The scope of work for this cost account is the baseline development and the overall programmatic control of all ILAW activities. This includes, but is not limited to, multi-year work plan (MYWP) management, baseline management, identification of all studies necessary to establish technical baselines, program support, and audit/oversight. This function has the overall responsibility to ensure the program goals are established and are consistent with the ILAW project mission and objectives.

WBS 1.01.09.01.01.02, ILAW Systems Definition

The purpose of this cost account is to ensure the technical baselines are established correctly and that all mission/objectives are assigned correctly within project requirements. This function has the responsibility to ensure that all major technical areas are properly allocated and defined. This consists of interface control document (ICD) maintenance; technical requirements definition; and program documentation development, which consists of closure plans, program management plans, monitoring plans, and project Level 1 specifications.

This cost account also includes the planning, requirements definition, design, procurement, and fabrication activities for the ILAW sample and ILAW melter transport and disposal.

WBS 1.01.09.01.01.03, ILAW Performance Assessment

The purpose of the PA cost account is to provide the necessary evaluations and analysis of the proposed radioactive waste disposal facility site to demonstrate there is reasonable expectation that the disposal system will meet the established performance objectives for the long-term protection of the public and that the environment will not be adversely effected by the closure of the system. These evaluations and analysis include geological, hydrology, and chemical evaluations of the surface and subsurface zones that could be influenced by the disposal facility. The information derived from these assessments will be factored into the facility design and closure system requirements to ensure compliance with the U.S. Environmental Protection Agency standards and DOE O 435.1A.

WBS 1.01.09.01.01.04, Project W-520, IHLW Disposal Facility

This cost account has the responsibility for management, baseline control, and implementation of the requirements assigned to this project. The goals of this function include requirement definition, conceptual planning, detailed design, procurement, and construction of the various components of the project to ensure that project planning and implementation meet the purpose and intent of the requirements and comply with environmental permitting constraints.

WBS 1.01.09.01.01.06, ILAW Future Projects

This cost account will be used to identify the project requirements and implementation strategies necessary to expand the Project W-520 capabilities to help meet the ILAW project mission and objectives. These projects will be initiated as specific requirements are identified. The future projects currently identified are the additional trenches 2 through 6 of the ILAW Disposal Facility consistent with Phase 2 requirements. It includes the activities associated with conceptual development, detailed design, construction, and permitting.

WBS 1.01.09.01.01.07, ILAW Operations

This function has the responsibility for the overall operations of the ILAW Disposal Facility during waste receipt and disposal. This function also has the responsibility to ensure that the environmental and safety requirements are satisfied and operations are maintained within the defined parameters. It includes the transport and disposition of the ILAW canisters, qualification samples, and failed/used melters.

WBS 1.01.09.01.04.01, ILAW Decontamination and Decommissioning

This cost account has the responsibility for decontamination and decommissioning of the operational ILAW facility and closure of the disposal facility. This function includes site stabilization for long-term disposal, disposition of equipment used during operations, and initiation of disposal facility monitoring and reporting.

6.3 WORK BREAKDOWN STRUCTURE OBJECTIVES

The objectives of the WBS are to ensure that program requirements are defined and that proper controls are established to so that ORP ILAW mission objectives are identified and monitored for compliance. The WBS is used as the primary planning tool for schedule, cost, and technical baseline management.

As Phase 1 and Phase 2 line-item projects are validated, contractor participants will be responsible for developing contractor work breakdown structure (CWBS) dictionaries at the work package level (Level 7) in support of the ILAW subproject WBS. Each CWBS dictionary will specify the work to be performed, including how the work will be accomplished and by whom. The CWBS dictionary also will identify the technical work scope and planning documents that provide the detailed descriptions of the work activities and other significant data.

6.4 PROJECT COSTS

Table 6-2 provides the total projected cost for the ILAW Subprojects (W-520 and future Phase 2 line-item projects). The cost figures are provided for the life of the subproject and are presented according to the established ILAW Disposal Subproject WBS, Level 6. The RPP-00-127 baseline provides a more detailed cost breakdown for each discrete project element.

The total project cost (TPC) estimates for the RPP ILAW line-item projects are developed as part of each project's line-item conceptual design activities. The TPC consists of a total estimated cost (plant and capital equipment funding) and other project costs, including operating expense and capital equipment/expense not related to construction (CENRTC) funding. Other project costs are based on estimates conducted as part of the project budget submission to DOE-HQ, validated, and provided by the project team. A more definitive TPC will be developed for the ILAW Disposal Subproject as part of the respective project's conceptual design activities.

Table 6-2. Immobilized Low-Activity Waste Life-Cycle Cost Summary.

ILAW Disposal Subproject Estimated Life-Cycle Costs (FY 2000 - FY 2046)																				
Type of funding	FY00 cost to date	FY01 ($)	FY02 ($)	FY03 ($)	FY04 ($)	FY05 ($)	FY06 ($)	FY07 ($)	FY08 ($)	FY09 ($)	FY10 ($)	FY11 ($)	FY12 ($)	FY13 ($)	FY14 ($)	FY15 ($)	FY16 ($)	FY17 ($)	FY18 – FY 46 ($)	Total activity cost ($)
1.01.09.01.01.01 ILAW Project Management																				
Exp	310	503	503	463	510	508	506	506	510	508	508	508	505	466	514	514	516	512	502	9572
1.01.09.01.01.02 ILAW Systems Definition																				
Exp	743	842	463	2274	5699	7709	4262	140	539	4951	4951	4951	4931	1640	1640	1640	1647	1634	1608	52264
1.01.09.01.01.03 ILAW Performance Assessment																				
Exp	3633	3533	3347	3007	222	–	–	–	–	–	–	–	–	–	–	–	–	–	–	13742
CENRTC	46	264	253	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	563
1.01.09.01.01.04 Project W-520 ILAW Disposal Facility																				
Exp	25	1431	709	722	947	912	970	2837	525	–	–	–	–	–	–	–	–	–	–	9078
CENRTC	–	–	–	–	–	314	304	–	–	–	–	–	–	–	–	–	–	–	–	618
Cap	–	–	–	500	4459	13171	21459	4049	–	–	–	–	–	–	–	–	–	–	–	43637
1.01.09.01.01.05 ILAW Facility Closure																				
Exp	–	–	–	–	–	441	1052	501	13192	907	907	7097	904	7097	907	7101	984	7214	28471	70469
Cap	–	–	–	–	–	–	–	–	95	24019	23828	12200	23924	11819	23924	23924	12319	23971	59689	239711
1.01.09.01.01.07 ILAW Operations																				
Exp	–	–	–	–	537	487	3166	1280	3110	18413	18316	23084	22993	12809	12665	12679	12579	12576	49358	216860
1.01.09.01.01.07 ILAW D&D																				
Exp	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	54906	54906
Total cost: $725,380																				

Notes: All costs are rounded to the nearest thousand dollars.
Previous year (fiscal years 1995 to 1999) costs are $13.960K, *which is included in the total cost.*
Forecast figures are in fiscal year 2000 constant dollars (i.e., no escalation).

CENRTC = capital equipment/expense not related to construction.
D&D = decontamination and decommissioning.
FY = fiscal year.
ILAW = immobilized low-activity waste.

7.0 RIVER PROTECTION PROJECT IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SCHEDULE

7.1 TRI-PARTY AGREEMENT CONTROLLING MILESTONES

Tri-Party Agreement milestones govern the ILAW Disposal Subproject. Table 7-1 shows a summary of the ILAW milestones and their due dates. A complete list of Tri-Party Agreement milestones and deliverables is included in Appendix D of the Tri-Party Agreement Action Plan attached to the Tri-Party Agreement as modified by the *Final Determination Pursuant to the Hanford Federal Facility Agreement and Consent Order*.

Table 7-1. Tri-Party Agreement Milestones. (2 sheets)

Milestone	Description	Due date[a]
	Milestones that are the responsibility of the ILAW Disposal Subproject	
M-20-00 (As it pertains to the ILAW Disposal Project)	Submit Part B permit applications or closure/post closure plans for all RCRA[b] TSD units.[c] Permit applications, closure, and post-closure plans will be submitted to Ecology for approval. Individual unit submittals (enforceable as interim milestones) will occur as shown in Appendix D (*Hanford Federal Facility Agreement and Consent Order*). Preclosure work plans will be prepared and submitted for approval for TSD units, which will achieve closure in conjunction with the disposition of the facility in which they are contained.	February 28, 2004
M-20-57	Submit ILAW Disposal Facility Certified Part B Permit Application to Ecology.	August 30, 2002
M-90-00	Complete acquisition of new facilities, modifications of existing facilities, and/or modifications of planned facilities as necessary for storage of Hanford Site IHLW and ILAW, and disposal of ILAW.	To be established 9 months after approval of project management plan
M-90-08	Initiate ILAW Disposal Facility Construction. Initiation of construction occurs when the contractor commences excavation of the RCRA Disposal Facility.	July 31, 2004
M-90-09-T01	Complete ILAW Disposal Facility Detailed Design.	March 30, 2004
M-90-10	Initiate placement of ILAW canisters in ILAW Disposal Facility. (Low-Activity Waste packages placed within these facilities will be retrievable.)	January 31, 2007
	Milestones that could impact the ILAW Disposal Project (but not under ILAW control)	
M-62-09	Start (Hot) Commissioning – Phase 1 Treatment Complex.	December 31, 2007
M-62-10	Start Commercial Operations – Phase 1 Treatment Complex.	December 31, 2009
M-62-00A	Completed Pretreatment Processing and Vitrification of Hanford High-Level (HLW) and Low-Activity (LAW) Phase 1 Tank Wastes.	February 28, 2018
M-62-00	Compete Pretreatment Processing and Vitrification of Hanford High-Level (HLW) and Low-Activity (LAW) Tank Wastes.	December 31, 2028

Table 7-1. Tri-Party Agreement Milestones. (2 sheets)

Milestone	Description	Due date[a]

[a]These dates are as identified in the *Final Determination Pursuant to the Hanford Federal Facility Agreement and Consent Order*, March 29, 2000, Washington State Department of Ecology, Olympia, Washington.

[b]*Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq.

[c]TSD units as identified in the *Hanford Federal Facility Agreement and Consent Order*, 1996, as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Richland Operations Office, Richland, Washington.

[d]The completion date for this activity will be established 9 months after approval of a project management plan.

Ecology = Washington State Department of Ecology.
ILAW = immobilized low-activity waste.
TSD = treatment, storage, and disposal.

7.2 OTHER REQUIREMENTS

Other compliance requirements and guidelines identified for the project include orders, regulations, and codes that constrain and control the project design, construction, and operations. The key requirements come from the *Code of Federal Regulations*, *Washington Administrative Codes*, and DOE Orders. The Level 1 specifications will discuss the primary requirements that have been identified for the ILAW Disposal Subproject.

7.3 SCHEDULE REQUIREMENTS AND BASIS

The subproject baseline schedule included in this plan is the RPP-00-127 baseline submitted for approval and identifies major DOE and RPP milestones. The activities making up the subproject baseline schedule have been identified and are included in milestone logs, which are maintained under project change control. Table 7-2 identifies the major subproject activities and associated start and finish dates. The schedule dates reflected in this table are consistent with program planning contained in the WBS (see Section 6.0).

DOE planning guidance provided in Letter 00-PGO-002 was used as the basis to develop the RPP-00-127 baseline relative to the ILAW Disposal Subproject. In summary, the ILAW Disposal Subproject will support the Phase 1 production scheduled to start in FY 2008 and ending in FY 2018 and a Phase 2 ILAW production campaign scheduled for completion in FY 2028.

Project W-520 will meet the needs of the Phase 1 production and will establish the planning basis for expansions to accommodate the Phase 2 ILAW production. Additional future projects will be identified to support disposal facility expansion activities.

Table 7-2. Major Immobilized Low-Activity Waste Disposal Subproject Activities and Schedule Dates.

Major subproject activities	Start*	Finish*
Phase 1		
1.01.09.01.01.04 Project W-520 ILAW Disposal Facility		
Conceptual design	Oct. 2000	May 2001
Advanced conceptual design	Oct. 2002	June 2003
Design	July 2003	Mar. 2005
Equipment procurement	Apr. 2005	Mar. 2006
Construction	Apr. 2005	Mar. 2007
Startup	Apr. 2007	Feb 2008
Phase 2		
1.01.09.01.01.06 ILAW Future Projects		
Conceptual design	Aug. 2005	Apr. 2006
Detailed design (five discrete design packages)	Jan. 2008	Sept. 2018
Construction (five separate construction packages)	Sept. 2008	Sept. 2025
Facility Operations		
1.01.09.01.01.07 ILAW Operations		
Project W-520 "hot operations"	Aug. 2008	Sept. 2018
Phase 2 "hot operations"	Oct. 2010	Sept. 2028
Facility Closure		
1.01.09.01.04.01 ILAW Decontamination & Decommissioning		
Project W-520 closure (Phase 1)	Oct. 2018	Sept. 2020
Phase 2 Closure	Oct. 2026	Sept. 2028
Post-closure monitoring	Oct. 2028	Sept. 2046

*Start dates reflect the beginning of the month and finish dates reflect the end of the month.

ILAW = immobilized low-activity waste.

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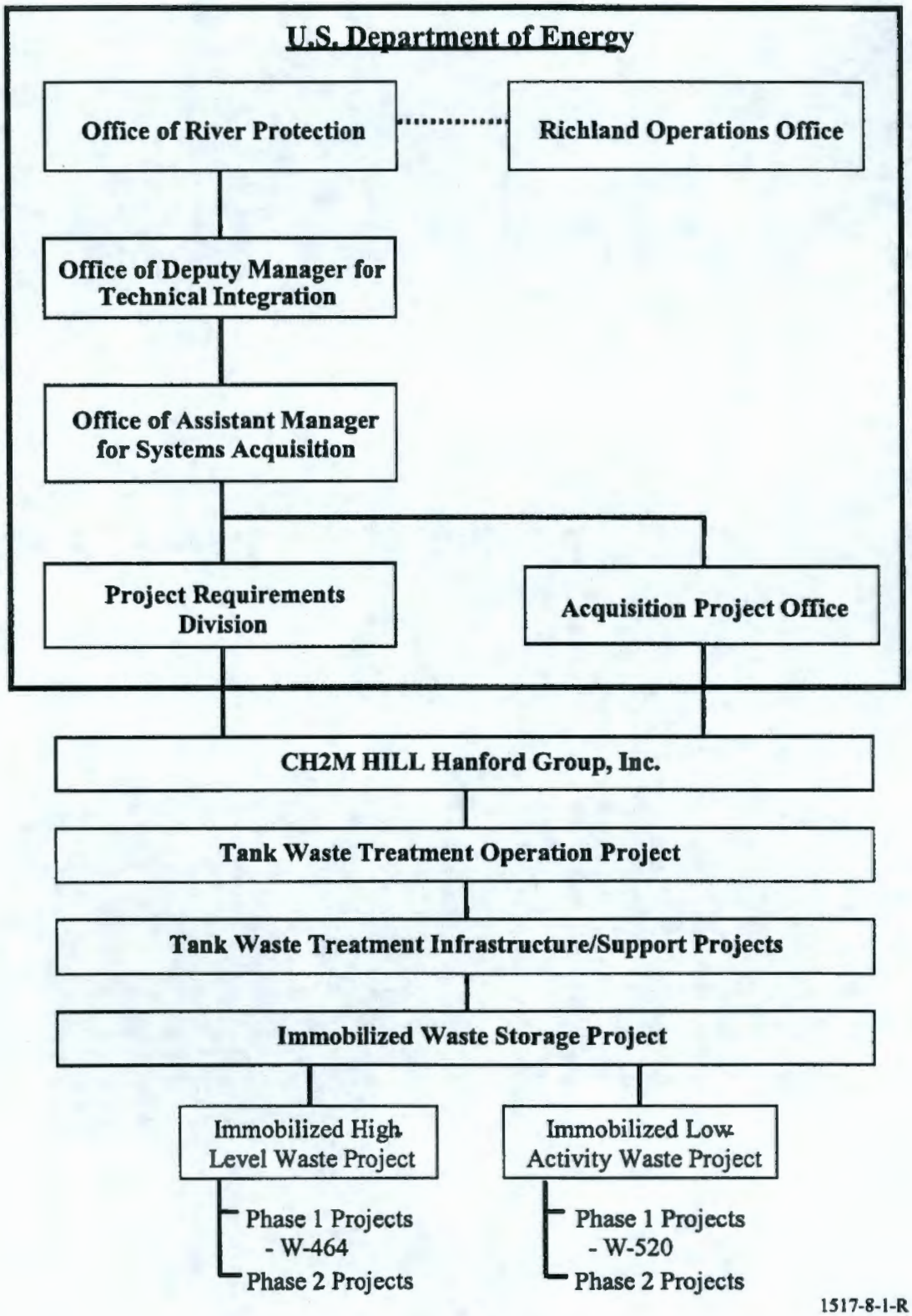
8.0 PROJECT ORGANIZATION, ROLES, AND RESPONSIBILITIES

The ILAW Disposal Subproject is based on a team concept. Active participants include the ORP; performing RPP program and project organizations; and as appropriate, subcontracted architect-engineering and construction contractors. The performing subproject organizations provide program and project management along with technical assistance for the ORP during all phases of the project. Appropriate onsite support services, quality, safety, environmental, and health organizations provide specialized expertise, as needed.

Figure 8-1 shows the organizational relationships of the ILAW Disposal Subproject. Appendix D provides the overall project responsibility matrix. DOE O 430.1A and associated Good Practice Guides provide the responsibility, authority, and activities required of each participating organization throughout the project. A more definitive subset is developed before definitive design using guidance in Site procedures specific to line-item projects. The respective line-item execution plans provide detailed project responsibilities that supplement the relationships identified in this document.

Figure 8-1. Organizational Relationship Chart.



9.0 MANAGEMENT APPROACH

The ILAW Disposal Subproject management and control process consists of the following elements: business operations; engineering; integrated environmental, safety, and health management; quality assurance; risk management; configuration management; interface management; and qualifications and training.

The line-item project management approach will be identified in a specific project execution plan (PEP), which will detail the planning, organizational interfaces, management control systems, and reporting requirements. The PEP will be part of the line-item project baseline planning and will be a controlled document subject to disciplined configuration management procedures.

9.1 BUSINESS OPERATIONS

Business Operations includes the following elements: project execution plans, acquisition strategy, schedule baseline management, cost baseline management, performance measurement and reporting, work authorization, funds management, contingency management, meetings and reviews, project validations, and critical decisions (CD).

9.1.1 Project Execution Plans

A PEP will be developed for each Phase 1 and Phase 2 validated line-item project. Each PEP will outline the project management principles identified in HNF-IP-0842, *RPP Administration,* Volume IV; DOE O 430.1A; and GPG-FM-010, *Project Execution and Engineering Management Planning*. Each PEP will identify the management planning, organizational interfaces, acquisition strategies, and reporting requirements necessary for successful project execution. The PEP is considered an essential component of the project baseline development and will be controlled through a configuration management process. The PEP will be updated, as necessary, to provide guidance to overall project planning and execution.

The PEP will be developed in conjunction with conceptual design activities to ensure the management planning is consistent with the line-item project baseline. The PEP identifies the project management system and project planning that will be used in the execution of the project. It outlines the management and system definition activities necessary to satisfy design, construction, procurement, testing, and facility startup requirements identified in the project baselines (cost, schedule, and technical criteria).

The assigned project manager will monitor project execution activities to ensure the PEP is used and updated consistent with project planning and baseline management. The PEP is a living document developed specifically to support successful project execution and will be updated to document revisions in project planning. It will be reviewed periodically and supplemented as necessary to maintain the validity of the management approach and to ensure requirement compliance.

9.1.2 Acquisition Strategy

A construction/procurement acquisition strategy will be developed during the conceptual design phase of each line-item project to determine the optimized approach for project execution. This process will consider contracting strategies, execution planning, life-cycle management, and market analyses. Value engineering will be an integral part of this process of identifying the optimized strategy for construction and procurement, and will include operational considerations.

The acquisition strategy identified for each line-item project will be documented in the PEP for implementation management. This identified strategy will be monitored throughout project execution to ensure that it remains viable with emerging developments.

The acquisition strategy identified for Project W-520 to accommodate Phase 1 procurement and construction is the use of a fixed-price, competitive-bid contract. Long-lead materials, including items and components, may be procured by the line-item project construction subcontractors or by the CHG procurement organization. The construction management organization will perform the subcontract oversight for construction.

The acquisition strategies for subsequent line-item projects for Phase 2 disposal activities will be identified at project inception, consistent with overall facility objectives.

A dedicated onsite RPP organization will plan facility startup. An in-house group or a qualified subcontractor under the direction of the RPP operations organization will perform actual startup activities.

9.1.3 Schedule Baseline Management

The current ILAW Disposal Subproject baseline schedule is contained in RPP-00-127. An Immobilized Tank Waste Storage and Disposal Project, ILAW Subproject summary planning schedule is provided in Appendix B.

For each project identified in the subproject summary WBS, separate detailed schedules are prepared that identify the activities needed to successfully complete that portion of the subproject work scope. Each detailed schedule identifies the logic ties and interfaces necessary to coordinate the completion of each phase of the work scope and its relationship with other elements of the subproject summary schedule. These schedules will contain sufficient detail to allow integration of all detail schedules into the subproject summary schedule. These schedules also identify the critical path and control path activities.

The schedules are resource loaded with the staff hours associated with the particular skill mix identified for each activity and include the other direct costs. Schedule control of the subproject is implemented through critical path schedule analyses (resulting in the identification of schedule float) and establishment of milestones and corrective actions for schedule variances (determined by earned-value methodology). CHG and its subcontractors will analyze schedule variances and evaluate trends on schedule performance using ORP-approved methodologies. Performance reporting and variance analyses are reported through the subproject project manager. When

variance analyses reveal potential problems, CHG and its associated subcontractors will ensure that participants take immediate corrective actions.

Changes to the subproject baseline are processed in accordance with CHG procedures, as approved by the ORP. HNF-IP-0842, Volume VIII, Section 1.1 identifies the change control process that will be used for schedule baseline management. The change request approval authority matrix is contained in Appendix E.

9.1.4 Cost Baseline Management

The current cost baseline is the subproject cost estimate identified in the RPP-00-127 baseline. The cost estimate level of detail is specified in the general guidance for preparing program plans issued annually by the ORP and is generally at the activity level. The subproject cost estimate includes contingency as identified in the validated line-item project cost estimate. The budget authorization requirement will consider the requirements of contract commitments and phase funding allowances. Carryover of funds to support the budget authorization/budget outlay profile is required.

CHG will maintain cost baseline management through corrective action in response to cost variances reflected in regular earned-value analyses of established cost performance baselines. CHG will prepare project status reports for the subproject and each line-item project, taking into account the cost-performance index. CHG and its subcontractors will prepare, and seek appropriate approval for, documentation of corrective actions of cost estimate changes using the change order class guidance contained in HNF-IP-0842, Volume VIII, Section 1.1; DOE O 430.1A; and GPG-FM-009, *Baseline Change Control.*

CHG has the primary responsibility for preparing and reporting cost performance data to the DOE ORP Project Requirements Division (PRD). The status report to the PRD includes identification of significant variances, corresponding variance analyses, and recommended corrective actions. The project status for each subproject WBS element is prepared by the CHG subproject and line-item project managers based on the status of the work element and is reported monthly at the ORP status review meetings. Forecast data and trend analysis are based on the latest performance data, current assessed conditions, current and projected pricing factors and rates, and knowledgeable forecasts of projected conditions.

Changes to the project and subproject cost baselines are processed and managed through an approved change control process in accordance with approved threshold levels as identified in HNF-IP-0842, Volume VIII, Section 1.1. CHG will ensure that all subproject cost estimates and revised estimates are based on current schedules and the basis for cost estimates is consistent with the documented subproject scope baseline.

9.1.5 Performance Measurement and Reporting

The subproject uses earned-value methodology to measure performance. CHG and its subcontractors will use and maintain internal cost and schedule performance measurement

information that provides the project managers with timely, accurate, and objective performance data. Performance is measured against the cost and schedule baselines for each line-item project and the subproject.

Line-item projects submit monthly status information to the subproject for integration into the overall reporting documentation. Reporting format and content complies with DOE O 430.1A and GPG-FM-006, *Performance Analysis and Reporting*. The line-item projects will support the overall subproject weekly and monthly planning and other reporting systems. Status reports will be available at the monthly status meetings.

9.1.6 Work Authorization

Overall, work authorization occurs by contractual arrangement between the ORP contracting officer and CHG. The DOE contracting officer authorizes all funding and work scope. CHG provides the internal process to authorize specific projects within the ORP guidance.

Capital work is controlled within the subproject by cost account plans following project authorizations from ORP. CHG will write a letter of instruction to the various subcontractors performing work under this program, identifying the specific work requirements, funds limitations, and performance criteria to provide funding accountability. CHG will include specific instructions with these letters identifying the mechanism to document and process changes to maintain the baseline integrity.

9.1.7 Funds Management

Allocation and authorization of funds come from the ORP to CHG and then to the appropriate subproject level. Control of fiscal year cost is accomplished in accordance with financial planning ceilings. Line-item project expense and CENRTC funding that is authorized but not spent (i.e., carry-over funding) within a fiscal year can remain with the subproject for use to meet the next fiscal year CENRTC line-item needs in accordance with the subproject cost, schedule, and technical baselines. Uncosted commitments are carried over as budget outlay.

CHG, as requested by the PRD, provides cost, commitment, and funding authority information at monthly status review meetings. This information is used in a monthly project report to keep ORP and management advised of current cost and commitment levels and helps identify potential funding impacts. Controls are established to ensure that costs and commitments do not exceed available funding limits as identified by contractual agreement.

9.1.8 Contingency Management

Formal contingency is included in the subproject activities approved as part of the validated line-item projects. The ILAW Disposal Subproject will include contingency as a part of the subproject TPC. Contingency covers costs that may result from unforeseen and unpredictable conditions and uncertainties within the defined line-item project scope. Contingency analysis is

performed on all line-item project cost estimates to determine contingency requirements. Contingency is managed and controlled as part of the cost baseline.

9.1.9 Meetings and Reviews

The subproject conducts a monthly management review meeting (MRM) with the ORP. The line-item projects may, if deemed necessary, have a dedicated MRM separate from the subproject MRM. The subproject team leader is responsible for recording action items, agreements, and commitments resulting from the MRM. Monthly reviews focus on immediate decisions, critical issues, cost and schedule variances/assessments, corrective actions, general status of work in progress, and actions requiring RPP support to the ORP (e.g., preparation for and/or attendance at offsite meetings). Data from the monthly status report are used as much as possible to identify significant issues. The review is exception-oriented and focuses on major issues that require management involvement.

9.1.10 Project Validations

Line-item projects are validated at the conceptual design phase to ensure that the cost, schedule, and technical baselines are established consistent with DOE budget objectives and satisfy the intent of the justification for mission need statement (JMNS). These validations will consist of verification that the planning identified in DOE O 430.1A has been accomplished consistent with the guidance provided in GPC-FM-002, *Critical Decision Criteria,* to support CD-2 and any direction provided by ORP. An independent review of the design and construction cost estimates will be conducted to support validations. The validation is based on the technical information and cost estimates developed during conceptual design activities and contained in the conceptual design report (CDR).

Validation for Project W-520 is scheduled for FY 2001.

9.1.11 Critical Decisions

CD points have been identified to support Project W-520 consistent with DOE direction. These critical decision points are identified as follows:

- CD-1, "Authorization to Begin Conceptual Design," was approved by DOE-HQ on January 13, 1998, as part of the initial Project W-520 conceptual design authorization.
- CD-2, "Authorization to Begin Definitive Design," is planned for July 2003.
- CD-3, "Authorization to Begin Construction Activities," is planned for April 2005.
- CD-4, "Authorization to Begin Operations," is planned for February 2008.

The same process of approvals will be identified for the Phase 2 projects. All CDs will be authorized by the appointed DOE representative.

9.2 ENGINEERING

Engineering includes system engineering, technical baseline control, and test and evaluation planning.

9.2.1 Systems Engineering

The ILAW Disposal Subproject uses HNF-SD-WM-SEMP-002, *Systems Engineering Management Plan for the Tank Farm Contractor* (SEMP), as the basis for tailoring the systems engineering process to apply scientific and engineering principles to accomplish the following goals:

- Transform an operational need into a system of defined performance and configuration characteristics through iterative, disciplined, and documented processes.
- Ensure that all necessary, related parameters are integrated to optimize a system design that meets the program cost, schedule, and technical performance goals.
- Maintain a controlled definition of the system over its life cycle.

The RPP systems engineering approach will provide the following benefits:

- An orderly and structured approach to systems development
- A common understanding of program goals and expectations by all participants
- An integrated schedule of activities showing how they relate to each other
- Documented evidence of the current condition or status
- Traceability of significant program characteristics and systems engineering configuration at any point in the program life cycle
- Control of project cost, schedule, and technical performance
- Assurance that the system being built will satisfy the goals established in the JMNS.

The SEMP provides guidance to migrate Hanford Site projects that were established before the release of the SEMP to the approved systems engineering process. The requirement definition for Project W-520 and all future line-item projects will be developed consistent with this guidance.

Level 1 specifications will be developed to document Project W-520 and future project requirements consistent with mission objectives.

9.2.2 Technical Baseline Control

A technical baseline has been established for the ILAW Disposal Subproject as depicted by the subproject WBS and specific activities. A more detailed technical baseline will be developed for each line-item project following conceptual design. The subproject technical baseline defines the technical data needs and requirements necessary to establish the line-item projects and includes the more detailed technical data developed by the line-item project to design, construct, start up, and operate the facilities. More specifically, the line-item project technical baseline includes the functions and requirements, process flow diagrams, performance specifications, interface control documentation, and design packages. The design packages include specifications, drawings, quality assurance provisions, safety analysis basis, and test and inspection planning.

The RPP team ensures that configuration management and systems engineering activities are performed to define and control the line-item project baselines and associated deliverables. These activities are applied to all systems and subsystems necessary to achieve functional requirements and ensure delivery of products that satisfy the integrated technical baseline and overall subproject objectives. At all times during the life of the line-item projects, configuration documentation is maintained in an orderly manner and is available in project files, subject to audit. This documentation includes, but is not limited to, systems descriptions, system specifications, conceptual and definitive system designs, system and material inspection reports, test reports, operating and surveillance procedures, and vendor documentation.

Technical baseline change control is managed through HNF-IP-0842, Volume VIII, Section 1.1, consistent with DOE requirements in DOE O 430.1A. The approval authority for changes to the defined technical baseline is identified in Appendix E and implements the change control board guidance identified in Volume VIII, Section 1.1.

9.2.3 Testing and Evaluation Planning

The ILAW Disposal Subproject will implement a test and evaluation program, consistent with guidance in GPG-FM-005, *Test and Evaluation,* based on systems engineering principles to ensure completed facilities and installed systems meet the performance specifications and operational needs. The subproject will prepare, approve, control, and maintain detailed test plans, specifications, and procedures in accordance with HNF-2029, *River Protection Project Testing and Evaluation Management Plan*. These test plans and procedures will address testing requirements for plant systems, subsystems, and individual pieces of equipment. The test planning and schedule activities will coordinate development testing with design to ensure that requirements testing is identified. Plant testing will be coordinated with facilities during construction, turnover, and startup to avoid operations interference. The subproject testing activities include acceptance testing, operational testing, and operational verification.

The subproject startup program is a sequence of activities culminating in successful startup of the ILAW remote-handled waste trench disposal facility. Startup activities physically begin during construction acceptance testing, continue with operational testing, and are completed with final

operational verification. The Project W-520 startup plan will define these activities for Phase 1 operational planning.

9.2.3.1 Construction Testing. Construction acceptance testing activities include factory acceptance tests and construction acceptance tests that demonstrate compliance with procurement and construction specifications. Satisfactory completion of these tests is required to allow transition of the project from the construction phase to the startup phase.

The architect-engineer (A-E) will prepare test requirements and acceptance criteria for factory acceptance tests and construction acceptance tests for inclusion in procurement and construction specifications. The A-E, construction contractor, vendors, and subcontractors will prepare detailed test plans and/or acceptance test procedures in accordance with identified requirements. The A-E and CHG will review and approve all test plans and procedures. The responsible organization (i.e., construction contractor, vendor, subcontractor) will perform factory acceptance testing and construction acceptance testing. The ORP representative will witness the tests, along with CHG (and the A-E if requested), to ensure that all test objectives are met. The project turnover package will include all test data and final test reports.

The construction acceptance tests culminate with turnover of individual structures, systems, and components (SSC) to CHG for operational testing. CHG will determine the scope of each individual segment and the turnover sequence. All test data and test reports will be transferred to CHG with the turnover of each segment. The construction contractor is responsible for controlling the vendor and construction test data until final turnover. Information copies of all vendor data will be provided to CHG as requested to support operational testing.

9.2.3.2 Operational Testing. Operational testing is performed to demonstrate integration of the entire facility. Systems will be brought online and operated under anticipated standard operating conditions and off-normal conditions using simulated, nonradioactive ILAW packages. Operational testing is performed using the actual plant equipment, operating procedures, and personnel. To ensure correct performance of the facility and associated systems, all test activities are performed in accordance with requirements contained in detailed test procedures. These test procedures will be prepared by the startup organization and approved by the subproject Test Review Board.

As part of the operational testing, operations manuals will be developed and verified to ensure correct operation of the equipment and facility. These manuals will include emergency shutdown procedures and off-normal response instructions. Maintenance considerations shall be included with this evaluation process.

The startup organization will prepare a final operational test report that documents completion of operational testing and system verification. This report will be submitted to the DOE RPP Readiness Review Board for approval, indicating readiness for the Dry-Run Demonstration.

9.2.3.3 Dry-Run Demonstration. An operational dry-run (operational verification) will be performed following completion of operational testing to demonstrate that operator training, operational procedures, and process equipment are in a final satisfactory state of readiness to safely and efficiently receive, transport, and dispose of ILAW. The dry run will be performed as

part of the readiness review process and will culminate with receipt of CD-4 for the DOE to document approval of the facility to accept ILAW material from the vitrification facility. The ORP will be offered the opportunity to witness this dry run.

9.3 INTEGRATED ENVIRONMENTAL, SAFETY, AND HEALTH MANAGEMENT SYSTEM

The ILAW Disposal Subproject maintains environmental, safety, and health management program planning necessary to ensure the effective protection of the workers, public, and the environment. This planning is developed around the principles identified in RPP-MP-003, *Integrated Environmental, Safety, and Health Management Information System Plan*. These principles are applied to all aspects of the subproject to include onsite transportation considerations and disposal of the ILAW packages, including design, construction, and facility operations/closure.

The following discussions provide details on the environmental management, safety, and health aspects of the Integrated Environmental, Safety, and Health Management System program and the relationship with the ILAW Disposal Subproject.

9.3.1 Environmental Management

The ILAW Disposal Subproject will follow the environmental protection program described in HNF-1773, *Environmental Program Description for the Tank Farm Contractor*, to ensure that all subproject activities comply with federal, state, and local regulations, laws, and standards for the protection of the environment and the safety and health of employees and the public. The subproject will keep regulating agencies informed of all associated plans and major activities.

The subproject and subordinate line-item projects will cooperate with the DOE and other federal, state, and local agencies and stakeholders, as appropriate, to ensure that activities comply with environmental protection regulations and requirements. The necessary environmental permits and approvals will be processed at the appropriate times to ensure compliance with regulatory requirements. Regulatory integration and public involvement are the responsibility of the CHG organization charged with coordinating regulatory requirements and activities for the subproject.

The ILAW Disposal Subproject has prepared an environmental plan, RPP-6270, *The Remote-Handled Immobilized Low-Activity Waste Disposal Facility Environmental Permits and Approvals Plan*, which delineates how the subproject will accomplish the environmental planning for Project W-520. This environmental plan describes the environmental permits, approval, and other requirements that might affect the Remote-Handled ILAW Disposal Facility. Included with this plan is the intent to submit a revised Noticed of Intent to expand disposal on the Hanford Site.

A "Notice of Intent" provides the regulatory notification of the intent to store ILAW on the Hanford Site. The CHG team will process a Part A, Form-3 permit application that will be submitted to Ecology and the U.S. Environmental Protection Agency based on the

Project W-520 ILAW disposal approach. For each applicable regulation, the permitting plan provides the following: a summary of data requirements, a discussion of alternatives, a recommended implementation strategy, and an estimated cost of implementing the recommended alternative. After approval of this application, a Part B permit will be submitted to RL for certification.

The applicable environmental requirements identified for Project W-520 permitting plan are as follows:

- *Clean Air Act of 1970*, as amended in 1977 and overhauled and expanded in 1990, which helps protect public health and welfare through operations management, emissions control, and monitoring
- DOE Order 5400.1, *General Environmental Protection Program*
- DOE Order 5400.5, *Radiation Protection of the Public and Environment*
- NEPA, which was enacted to ensure that environmental matters are considered before federal actions are initiated that might affect quality of the environment
- RCRA, which was enacted as a comprehensive program to mandate that hazardous waste be treated, stored, and disposed of to minimize the present and future threat to human health and the environment
- RPP-PRO-154, *Responsibilities and Procedures for all Hazardous Material Shipments,* which documents the Hanford onsite transportation safety program
- "State Environmental Policy Act of 1971" (*Revised Code of Washington* [RCW] 43.216), which is the Washington State equivalent of NEPA and is considered an implementing regulation
- WAC 173-303, "Dangerous Waste Regulations," which is the Washington State equivalent to RCRA and is considered an implementing regulation.

The DOE Orders require that monitoring be performed to determine any impact on the environment from activities involved with potential emissions of radionuclides.

9.3.2 Nuclear Safety Activities and Authorization Basis Process

This section covers the tasks needed to support project activities to design and construct a facility that operates safely, protect the health of the public and employees, and preserve the environment.

The following discussion provides the approach the ILAW Disposal Subproject will use to implement the Project Safety Program in accordance with RPP-PRO-703, *Safety Analysis Process – New Project* and DOE Order 5480.23, *Nuclear Safety Analysis Reports*.

9.3.2.1 Nuclear Safety Activities - Project Support. The ILAW Disposal Subproject is developing a comprehensive graded approach to safety. This approach integrates the appropriate levels of safety analysis and review to provide a continuous flow of safety inputs and requirements into the subproject baseline using life-cycle considerations. This approach is implemented by establishing or performing the following activities:

- Preliminary safety evaluation (PSE) studies will be performed during the conceptual design stage of Project W-520 to establish the critical safety requirements for the disposal facility. These studies are expected to establish a set of safety functions to be further analyzed and tracked during preliminary and detailed design. The PSE study results will be documented in a preliminary safety evaluation report (PSER) as part of the CDR. The primary objective of the PSE is to identify significant safety functions to support CDR budget validation and to establish the authorization basis for project implementation. The PSER will not be submitted to the DOE as an authorization basis document. However, because a facility hazard categorization constitutes a safety basis, the DOE will have to approve the PSER (which contains a facility hazard categorization) as part of the CDR package to be in compliance with DOE Orders 5480.23 and 5481.1B, *Safety Analysis and Review System*.

- Detailed safety analyses will be performed, as necessary, depending on the PSE results (i.e., items needing further analysis) throughout the preliminary and detailed design phase of Project W-520. These studies will be used to establish the basis for the preliminary safety analysis report (PSAR) to be submitted to the DOE for approval before the start of procurement and construction.

- The PSER and PSAR will be reviewed and updated during design activities of future disposal expansion projects to ensure the safety basis is maintained and approved consistent with facility requirements and safety objectives.

- Safety requirements will be addressed in the project design packages using the safety equipment list, specific procurement requirements, and specific testing during startup.

The PSER and PSAR will undergo a Tier 1 CHG functional review and a DOE review for approval as outlined in HNF-IP-0842, Volume IV, Section 5.14 and RPP-PRO-703, *Safety Analysis Process – New Project*.

9.3.2.2 Safety Authorization Basis Documentation and Approval Process. The ILAW Disposal Subproject will implement a safety process in accordance with CHG guidance on implementing the safety authorization basis. Detailed task descriptions, listings of responsibilities, estimated staffing loads, and the schedule for completing the activities required to provide an adequate safety authorization basis are included in Appendix D.

9.3.2.3 Project Level. An integrated safety authorization basis will be developed to address the Project W-520 interfaces with other Site projects and private contractors.

The baseline for the new integrated authorization basis will be a DOE-approved final safety analysis report (FSAR) that addresses Project W-520. The addendum will address the following issues:

- Site characteristics and natural phenomena data (i.e., boundaries, demographics, climatology, meteorology, geology) similar to those of the existing approved RPP authorization basis
- Overall vitrified waste management strategy on the Hanford Site (transportation, interim storage, and disposal)
- ILAW description (i.e., radioactive material inventory, conditioning process, general characteristics, certifications)
- ILAW facility general description and purpose
- Overall hazard identification and control strategy
- General nuclear safety functions that must be maintained
- Identification and discussion of applicable federal, DOE, state, and local rules and requirements
- Interface with other Site projects and vitrification facilities
- Site transportation basis (i.e., requirements, procedures, shipping, maintenance)
- Operational safety basis and organization.

The Project W-520 FSAR will form the basis for developing the ILAW Disposal Facility safety analysis report (SAR). This SAR will be updated or amended as each additional line-item project SAR that interfaces with the ILAW Disposal Facility is developed and approved for facility operation.

9.3.2.4 Subproject Level. The Project W-520 FSAR will provide the basis for disposal operations. The FSAR will be reviewed and updated or amended as necessary during design activities of future disposal expansion projects to ensure that the safety basis is maintained and approved consistent with facility requirements and safety objectives.

9.3.2.5 Transportation of Immobilized Low-Activity Waste. This includes the transportation of the radioactive materials within the Hanford Site boundaries. These areas are not accessible to the public and therefore are not subject to U.S. Department of Transportation regulations. Contractor-approved procedures and safety evaluations will authorize and control transportation and packaging operations. These procedures, although not subject to U.S. Department of Transportation regulation, comply with their requirements.

The strategy for ILAW packaging and transportation operations is addressed in HNF-SD-ENV-EE-002, *Environmental Requirements Checklist for the Immobilized Low-Activity Waste Interim Storage Project W-465*. The permitting plan identifies the activities needed to conduct the design and safety evaluations for the onsite transportation program as described in RPP-PRO-154.

9.3.2.6 Safety Activity Schedule. Table 9-1 provides the anticipated Project W-520 safety-related tasks and responsible organization. The tasks and associated information will be identified in more detail in the specific engineering task plans once the results of the PSE are known.

Table 9-1. Safety-Related Activities. (2 sheets)

Tasks	Responsible and performing organizations	Observations/project stages	DOE approval required	Tier Review	
				1	2
Preliminary safety evaluation	RPP NS&L	Conceptual design	Validation as part of the conceptual design report – facility hazard categorization needs to be approved	X	X
Prepare safety analysis tank plan	RPP NS&L	During preliminary safety evaluation development	No	--	--
Development and DOE approval of a preliminary safety analysis report	RPP NS&L CHG Safety Analysis Group	During detailed design and before start of procurement and construction	Authorization to start procurement/construction	X	X
Prepare final safety analysis report	RPP NS&L CHG Safety Analysis Group CHG Safety Analysis Group	Facility construction; update with additional disposal modules added to Project W-520 complex	Yes	X	X

Table 9-1. Safety-Related Activities. (2 sheets)

Tasks	Responsible and performing organizations	Observations/project stages	DOE approval required	Tier Review	
				1	2
Development of transportation criteria related to safety issues	RPP NS&L WMH	Procurement specifications for transportation vehicle and shipping casks	None	--	--
Safety analysis report for packaging	RPP NS&L WMH	After detailed design, construction, and cold testing	Required before hot operations	X	X
Unreviewed safety question screening	RPP NS&L	Check that construction activities are covered by current authorization basis and subsequent additions to project scope remain within initial approved authorization basis	None	--	--
Development and approval of a final safety analysis report	RPP NS&L	Construction and inactive testing	Required before start of hot operations	X	X

CHG = CH2M HILL Hanford Group, Inc.
DOE = U.S. Department of Energy.
RPP NS&L = River Protection Project Nuclear Safety and Licensing.
WMH = Waste Management Federal Services of Hanford, Inc.

9.4 QUALITY ASSURANCE

The ILAW Disposal Subproject quality assurance activities are covered by HNF-IP-0842, Volume XI, Section 1.0. This program addresses the requirements of RPP-MP-600, *Quality Assurance Program Description for the Tank Farm Contractor*, which is based on 10 CFR 830.120, "Quality Assurance Requirements" and DOE O 414.1A, *Quality Assurance.*

The scope of Project W-520 is defined as transportation and disposal of the qualified, ILAW products provided by the RPP-WTP operations contractor. Project W-520 and future ILAW line-item projects will implement the quality requirements necessary to ensure identified SSCs (design features) and delivered systems/meet the project performance features to support the operations phase of the facility through the planned life cycle.

A project-specific quality assurance project plan (QAPP) will contain the project quality assurance requirements. The subproject will use the requirements from RPP-MP-600 and HNF-IP-0842, Volume XI, Section 1.0 as the baseline to produce the line-item project-specific QAPP. Project W-520 can only influence the quality of the immobilized product by confirming, documenting, and enforcing the continued quality of the product received at the disposal facility from the vitrification facility.

9.5 RISK MANAGEMENT

The ILAW Disposal Subproject will use risk planning, assessment, and management (see Figure 9-1) to identify significant risk factors and to formulate mitigation plans. Risk management is conducted in accordance with HNF-SD-WM-PMP-018, *Tank Waste Remediation System Risk Management Plan,* and HNF-IP-0842, Volume IV, Section 2.6. Identified risks will be incorporated into an RPP risk management list for assessment and analyses. Risk assessment will be an ongoing, iterative, integrated process. The process will provide information used to manage programmatic (cost and schedule), technical, environmental, safety, and health risks.

9.5.1 Perceived Sources of High Risk

The following high-risk item is identified for Project W-520 and the ILAW Disposal Subproject:

- External reviews/approvals: The ILAW Disposal Subproject includes several activities that require review and approval by external authorities. The subproject cannot impose schedule commitments on the reviewing organizations. Activities that require external approval and the associated approving organization are listed in Table 9-2.

9.5.2 Risk Management Approach

Each of the identified risk factors will be evaluated and a mitigation plan developed to address each of the items. The previously identified items have been assessed and the following methodologies developed to monitor the development of these issues:

- The approvals of the various environmental permits require actions by agencies outside CHG direct control. To ensure acceptance of the disposal approach and to maintain the subproject schedules, these permits must be approved in a timely fashion. These activities will be monitored continuously and the project will interface regularly with the associated organizations to expedite approvals.

9.6 CONFIGURATION MANAGEMENT

Configuration management is an integrated approach to controlling the technical requirements to preserve a project technical baseline. HNF-1900, *Configuration Management Plan for the Tank Farm Contractor,* provides the requirements for the program that documents functional and physical characteristics of a product to be controlled during its life cycle, controls the changes to those characteristics, and maintains the information on the status of the product.

Implementation of configuration management within the project is described in HNF-IP-0842, Volume VIII, Section 3.1. These relationships are active throughout the product's life cycle, and when a change occurs to any of the relationships, the others are evaluated to determine impacts.

Figure 9-1. Programmatic Risk Management Process.

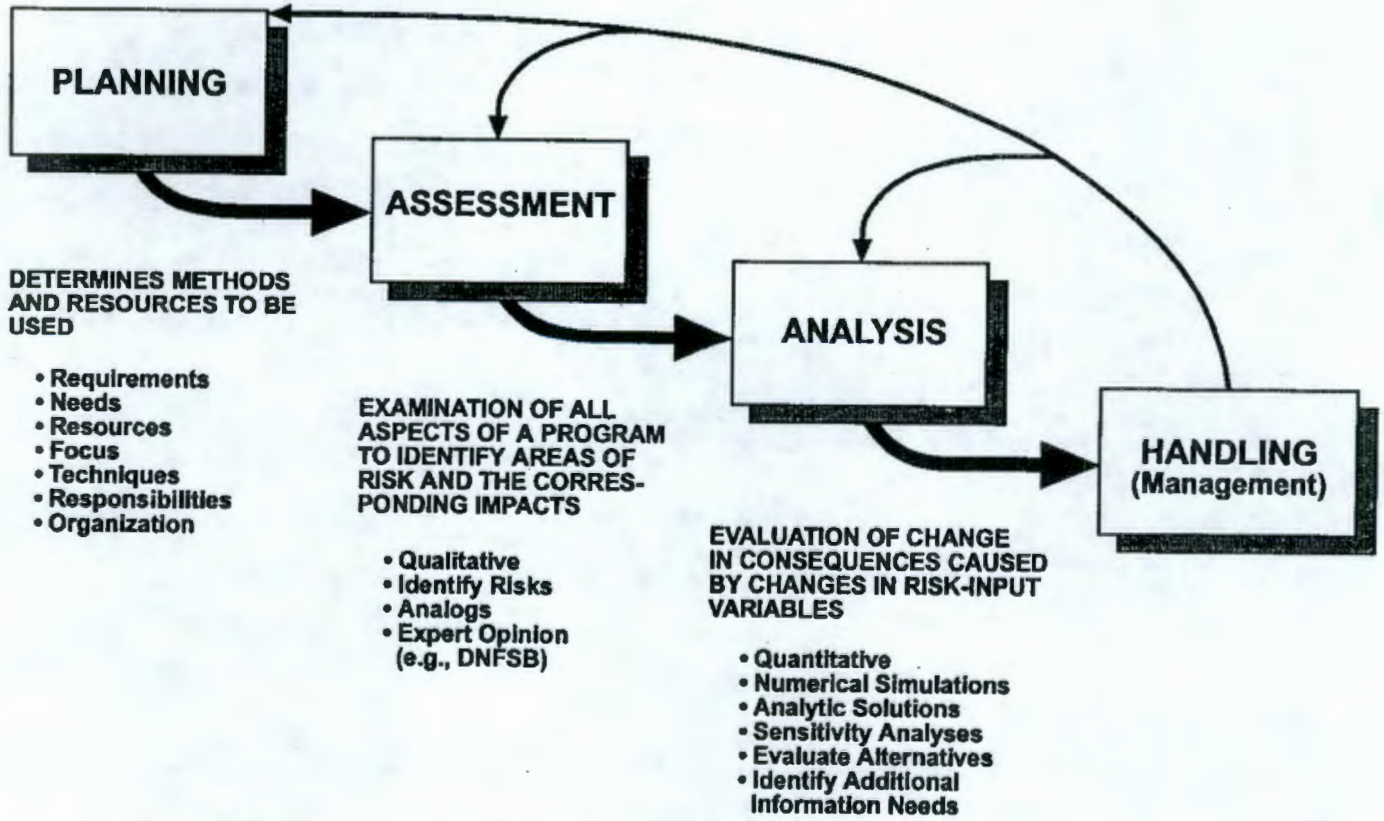


Table 9-2. Immobilized Low-Activity Waste Disposal Subproject Activities with External Approvals.

ILAW Disposal Subproject activity	Approval organization
Performance assessments	DOE-HQ, Deputy Assistant Secretary for Waste Management (conditional approval)
Preliminary safety analysis report	ORP
Final safety analysis report	
RCRA* Part A Permit	Washington State Department of Ecology
RCRA* Part B Permit	
Validation and capital funding	DOE-HQ
NRC incidental waste determination	NRC (approved)
Design (Critical Decision 2)	DOE-HQ unless delegated to ORP
Construction (Critical Decision 3)	
Project execution plan	ORP
Approval to operate (Critical Decision 4)	DOE-HQ unless delegated to ORP

**Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq.

DOE-HQ = U.S. Department of Energy–Headquarters.
ILAW = immobilized low-activity waste.
NRC = U.S. National Regulatory Commission.
ORP = Office of River Protection.

Each project-specific PEP will identify the organization responsible for coordinating configuration management implementation. Configuration management will be used, along with other management processes, to manage the ILAW Disposal Subproject integrated baseline.

The Hanford Records Management Information System maintains the project technical files and ensures that information is available to support the subproject and line-item projects. The subproject uses this system to ensure that information contained in this document is complete and accurate, thereby ensuring that requirements for the ILAW Disposal Subproject meet the goals for Phase 1 and Phase 2 objectives. Information resources, including baseline creation, information collection, processing, controlled distribution, management, and disposition (retirement), are managed throughout the life cycle of the project.

9.7 INTERFACE MANAGEMENT

Interface management includes technical, administrative, and coordination activities necessary to ensure that all ILAW Disposal Subproject interface requirements (technical and programmatic) are identified and appropriately resolved. The interface management approach is documented in HNF-IP-0842, Volume IV, Section 2.8. This process, along with federal, state, and local regulations, will be used to ensure that the storage and disposal of ILAW is accomplished, consistent with subproject requirements.

9.7.1 Organization Interfaces

The interface with federal and state agencies will be controlled in accordance with applicable federal and state regulations. The interface coordination with the various federal, state, and local agencies will help ensure that all regulatory and programmatic requirements for the ILAW Disposal Subproject are identified and issues resolved in a timely and satisfactorily fashion. These interfaces are essential to support compliance with the Tri-Party Agreement.

Coordination with other onsite organizations will be accomplished to ensure that services and operational constraints/requirements are clearly delineated. This includes construction-related interfaces for utility services, operational interfaces, and use of onsite resources (e.g., roads, facilities, security).

Interface with the RPP-WTP contractor will be critical in defining the technical requirements for packaging, transportation, and disposal of the ILAW package, samples, and the failed/used melters. These technical interfaces will be identified and controlled through an ICD that defines the functional elements necessary for each key component.

- These interface requirements for transfer and acceptance of ILAW packages are identified in BNFL-5193-ID-15, *Interface Control Document for Immobilized Low-Activity Waste.* This ICD also addresses the transportation and disposition of ILAW samples.

- The interface requirements for receipt and transfer of failed/used ILAW melters are identified in BNFL-5193-ID-03, *Interface Control Document for Radioactive Solid Waste.* This interface also addresses disposition of other failed equipment and components.

9.8 QUALIFICATIONS AND TRAINING

The ILAW Disposal Subproject conducts staff qualification and training in accordance with RPP-MD-024, *Training Qualification Monitoring and Reporting,* and DOE Order 5480.20A, *Personnel Selection, Qualification, and Training for DOE Nuclear Facilities.* This Order requires the following requirements be applied to contractors awarded DOE procurement, management, and operating contracts for operable nuclear facilities:

- Implement the requirements of DOE Order 5480.20A as they apply to the facility and the position.

- Prepare and submit a training implementation matrix to the ORP manager for review and approval.

- Prepare and submit procedures that establish the requirements for granting exceptions to specific training or qualification requirements for an individual to the ORP manager for review and approval.

- Provide written requests for certification extensions to the ORP manager for approval.
- Prepare and submit an assessment of the need for a simulator to the ORP manager for review and approval (Category A test and research reactors only).
- Perform periodic systematic evaluations of training and qualifications.

The overall planning strategy is identified in RPP-MP-011, *Qualification and Training Plan.* The principles identified therein will be used to identify and coordinate the training requirements and qualification processes necessary to meet the needs of the ILAW line-item projects.

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APPENDIX A

TRI-PARTY AGREEMENT REQUIREMENTS MATRIX

This appendix provides a cross-reference to two different sets of information. First, it provides a compliance reference matrix identifying where the Tri-Party Agreement Action Plan requirements are addressed in this document. Second, it provides a cross-reference between the section locations of information contained in this document versus where it was located in the previous revision of this document (HNF-1715, REV 1).

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APPENDIX A

TRI-PARTY AGREEMENT REQUIREMENTS MATRIX

Tri-Party Agreement Action Plan Section H.5 requirement	RPP-6968 location	HNF-1517 REV 1 location	Comments
Project goals statement	Section 2.3	Section 2.0	Contained within mission statements.
Project objectives statement	Section 2.3	Section 2.3	Provides a flowdown of the various objectives from the Office of River Protection down to the subproject level.
Background (i.e., history, considerations, actions)	Section 2.4	Section 4.0	Provides a brief discussion on the legacy of Hanford Site waste accumulation.
Waste stream information	Sections 4.1 and 4.2	Sections 4.1 and 4.2	Provides a discussion of tank waste characterization and waste stream process flow.
Current commercial disposition activities	Section 4.4.2	Section 4.4	Provides a brief discussion of current low-level facilities.
Waste stream stability/suspected migration	Sections 4.1 and 4.2	Section 4.1	Provides a general description of the waste status. Actual waste stream stability/migration is not relevant to this program.
Summary of management evaluations and options	Section 4.4.1	--	No specific discussion is currently provided because the project is in concept development.
Discussion on applicable regulatory requirements	Section 9.3.1	Section 11.3.1	Provides a listing of "key" environmental regulations.
Facility description including boundaries	Section 4.4.3	Section 4.5	Provides a brief discussion of the proposed open trench system location and layout.
Description of approach	Section 4.4	Sections 4.5 and 4.6	Provides a simplified discussion of the currently identified disposal approach.
Top-level WBS with appended dictionary	Section 6.0	Section 6.0	Provides a breakdown of the currently approved top-level WBS.
	Appendix C		Provides WBS dictionary sheets for ILAW activities.
Project treatment, storage, or disposal capability including performance and specification requirements	Section 3.1	Section 5.1	No treatment, storage, and disposal currently associated with the ILAW Disposal Facility.
Project schedule constraints including Tri-Party Agreement* milestones	Section 7.0 and Table 7-2	Section 8.0 and Table 4	ILAW Subproject major activities and schedule summary.
	Section 7.0 and Table 7-1	Section 8.1 and Table 3	Summary of ILAW Tri-Party Agreement milestones.

Tri-Party Agreement Action Plan Section 11.5 requirement	RPP-6968 location	HNF-1517 REV 1 location	Comments
Schedule and critical path analysis including appended GANT Schedule	Section 9.1.3	Section 11.1.3	Provides general discussion of schedule control process.
	Appendix B	Appendix F	Overall storage and disposal subproject WBS summary schedule.
Key deliverables/product descriptions	--	--	Deliverables are discussed throughout the document in various sections as the requirement applies.
	--		Product deliverables are primarily identified in Section 7.0 in schedule and milestone descriptions.
Performance measurement discussion	Section 9.1.5	Section 11.1	The business operations section discusses the various performance measurement and control processes in place. Specific performance discussion is contained in Section 9.1.5.
Project controls	Sections 9.1.3 and 9.1.4	Sections 11.1.3 and 11.1.4	Address the various functions performed by the CHG Project Controls Group and include costs control/management and schedule-related activities.
Interface control	Section 9.7	Section 14	Identifies the key governing documents and primary organizational coordination activities.
Reporting and notification requirements/process	Section 9.1.5	Section 11.1.5	Provides methodologies for identifying, tracking, and reporting progress and issues.
Change management/control	Sections 9.1.3, 9.1.4, 9.2.2, and 9.6	Sections 11.1.3, 11.1.4, 11.2.2, 11.4, and 13.0	Change management is addressed consistent with the management of the various project baselines (e.g., cost, schedule, and technical). The project execution plan addresses how these activities and controls are interrelated.

**Hanford Federal Facility Agreement and Consent Order*, 1996, as amended, Washington State Department of Ecology, Olympia, Washington; U.S. Environmental Protection Agency, Washington, D.C., and U.S. Department of Energy, Washington, D.C.

CHG = CH2M HILL Hanford Group, Inc.
ILAW = immobilized low-activity waste.
WBS = work breakdown structure.

APPENDIX B

STORAGE AND DISPOSAL PROGRAM SCHEDULE

This schedule consists of the Immobilized Low-Activity Waste Subproject portion of the *River Protection Project Fiscal Year 2001 Bridge Change Request* (RPP-00-127) baseline information, which was submitted to the U.S. Department of Energy, Office of River Protection for approval on June 30, 2000. The information contained herein addresses the information contained in Letter 00-PGO-002, *River Protection Project Key Planning Assumptions*, dated April 10, 2000.

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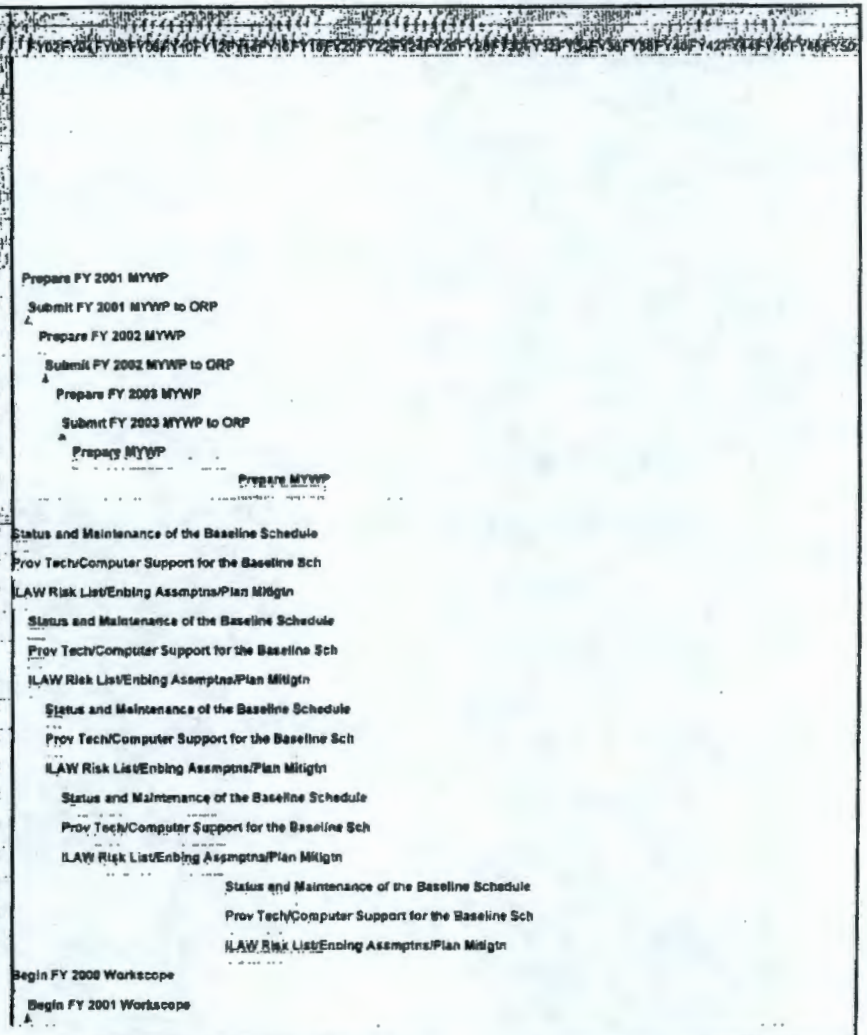
Activity ID	Activity Description	Early Start	Early Finish
1 Hanford Environmental Management			
1.01 Tank Waste Remediation System			
1.01.09 Immobilized Tank Waste Storage/Disposal (TW09)			
1.01.09.01 Immobilized LAW Disposal Facility			
1.01.09.01.01 Disposal Immobilized LAW On-Site			
1.01.09.01.01.01 ILAW Project Management			
1.01.09.01.01.01.01 ILAW Project Management (460.005)			
1.01.09.01.01.01.01.A1 Prepare ILAW Multi-Year Work Plan			
T946005A1	Prepare FY 2001 MYWP	01JUN00	26SEP00
T946005A1A	Submit FY 2001 MYWP to ORP		26SEP00
T946005A2	Prepare FY 2002 MYWP	01JUN01*	26SEP01
T946005A2A	Submit FY 2002 MYWP to ORP		26SEP01
T946005A3	Prepare FY 2003 MYWP	03JUN02*	26SEP02
T946005A3A	Submit FY 2003 MYWP to ORP		26SEP02
T946005A4	Prepare MYWP	02JUN03*	26SEP12
T946005A5	Prepare MYWP	03JUN13*	24SEP18
1.01.09.01.01.01.01.B1 ILAW FYWP Baseline Maintenance and Reporting			
T946005B1A	Status and Maintenance of the Baseline Schedule	01OCT99	29SEP00
T946005B1B	Prov Tech/Computer Support for the Baseline Sch	01OCT99	29SEP00
T946005B1C	ILAW Risk List/Enbling Assmptns/Plan Mitigtn	01OCT99	29SEP00
T946005B2A	Status and Maintenance of the Baseline Schedule	02OCT00	28SEP01
T946005B2B	Prov Tech/Computer Support for the Baseline Sch	02OCT00	28SEP01
T946005B2C	ILAW Risk List/Enbling Assmptns/Plan Mitigtn	02OCT00	28SEP01
T946005B3A	Status and Maintenance of the Baseline Schedule	01OCT01	30SEP02
T946005B3B	Prov Tech/Computer Support for the Baseline Sch	01OCT01	30SEP02
T946005B3C	ILAW Risk List/Enbling Assmptns/Plan Mitigtn	01OCT01	30SEP02
T946005B4A	Status and Maintenance of the Baseline Schedule	01OCT02	26SEP12
T946005B4B	Prov Tech/Computer Support for the Baseline Sch	01OCT02	26SEP12
T946005B4C	ILAW Risk List/Enbling Assmptns/Plan Mitigtn	01OCT02	26SEP12
T946005B5A	Status and Maintenance of the Baseline Schedule	01OCT12	24SEP18
T946005B5B	Prov Tech/Computer Support for the Baseline Sch	01OCT12	24SEP18
T946005B5C	ILAW Risk List/Enbling Assmptns/Plan Mitigtn	01OCT12	24SEP18
T946005Z1	Begin FY 2000 Workscope	01OCT99*	
T946005Z2	Begin FY 2001 Workscope	02OCT00*	



PMP1 | Office of River Protection | Immobilized Tank Waste Storage/Disposal (ILAW) | June 30, 2000 | Bridge Change Request | FY 2001 | Sheet 1 of 17

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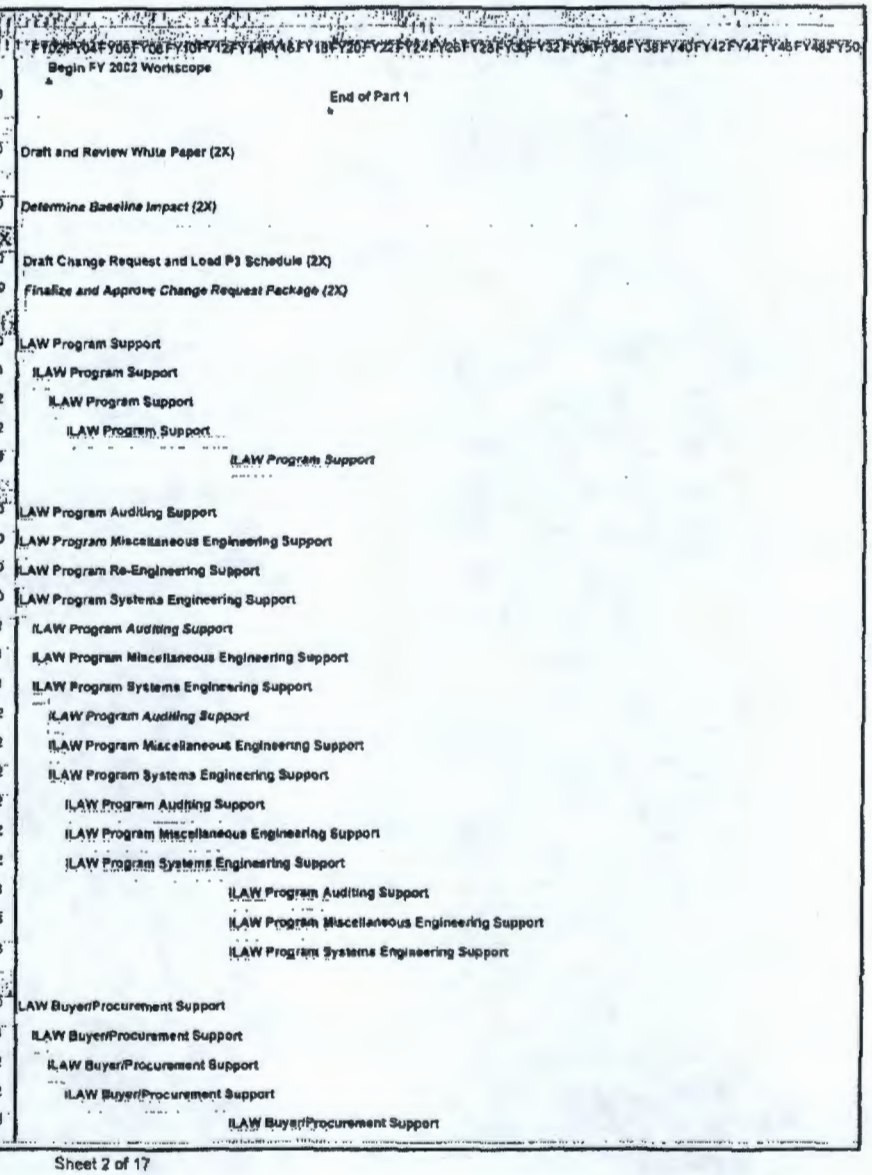
Activity ID	Activity Description	Early Start	Early Finish
T946005Z3	Begin FY 2002 Workscope	01OCT01	
T946005ZZ	End of Part 1		28SEP18
1.01.09.01.01.01.01.C1 ILAW Prog Impact Studies White Paper (2X)			
T946005C1A	Draft and Review White Paper (2X)	01FEB00	07FEB00
1.01.09.01.01.01.01.C2 ILAW Prog Impact Studies Baseline Impact (2X)			
T946005C1B	Determine Baseline Impact (2X)	08FEB00	29FEB00
1.01.09.01.01.01.01.C3 ILAW Prog Impact Studies Change Request Pkg (2X)			
T946005C1C	Draft Change Request and Load P3 Schedule (2X)	31MAR00	11APR00
T946005C1D	Finalize and Approve Change Request Package (2X)	12APR00	31MAY00
1.01.09.01.01.01.01.D1 ILAW Program Support			
T946005D1A	ILAW Program Support	01OCT99	29SEP00
T946005D2A	ILAW Program Support	02OCT00	28SEP01
T946005D3A	ILAW Program Support	01OCT01	30SEP02
T946005D4A	ILAW Program Support	01OCT02	28SEP12
T946005D5A	ILAW Program Support	01OCT12	24SEP18
1.01.09.01.01.01.01.D2 ILAW Program Auditing and Engineering			
T946005D1B	ILAW Program Auditing Support	01OCT99	29SEP00
T946005D1C	ILAW Program Miscellaneous Engineering Support	01OCT99	29SEP00
T946005D1E	ILAW Program Re-Engineering Support	01OCT99	29SEP00
T946005D1F	ILAW Program Systems Engineering Support	01OCT99	29SEP00
T946005D2B	ILAW Program Auditing Support	02OCT00	28SEP01
T946005D2C	ILAW Program Miscellaneous Engineering Support	02OCT00	28SEP01
T946005D2F	ILAW Program Systems Engineering Support	02OCT00	28SEP01
T946005D3B	ILAW Program Auditing Support	01OCT01	30SEP02
T946005D3C	ILAW Program Miscellaneous Engineering Support	01OCT01	30SEP02
T946005D3F	ILAW Program Systems Engineering Support	01OCT01	30SEP02
T946005D4B	ILAW Program Auditing Support	01OCT02	28SEP12
T946005D4C	ILAW Program Miscellaneous Engineering Support	01OCT02	28SEP12
T946005D4F	ILAW Program Systems Engineering Support	01OCT02	28SEP12
T946005D5B	ILAW Program Auditing Support	01OCT12	24SEP18
T946005D5C	ILAW Program Miscellaneous Engineering Support	01OCT12	24SEP18
T946005D5F	ILAW Program Systems Engineering Support	01OCT12	24SEP18
1.01.09.01.01.01.01.D3 ILAW Buyer/Procurement Support			
T946005D1G	ILAW Buyer/Procurement Support	01OCT99	29SEP00
T946005D2G	ILAW Buyer/Procurement Support	02OCT00	28SEP01
T946005D3G	ILAW Buyer/Procurement Support	01OCT01	30SEP02
T946005D4G	ILAW Buyer/Procurement Support	01OCT02	28SEP12
T946005D5G	ILAW Buyer/Procurement Support	01OCT12	24SEP18



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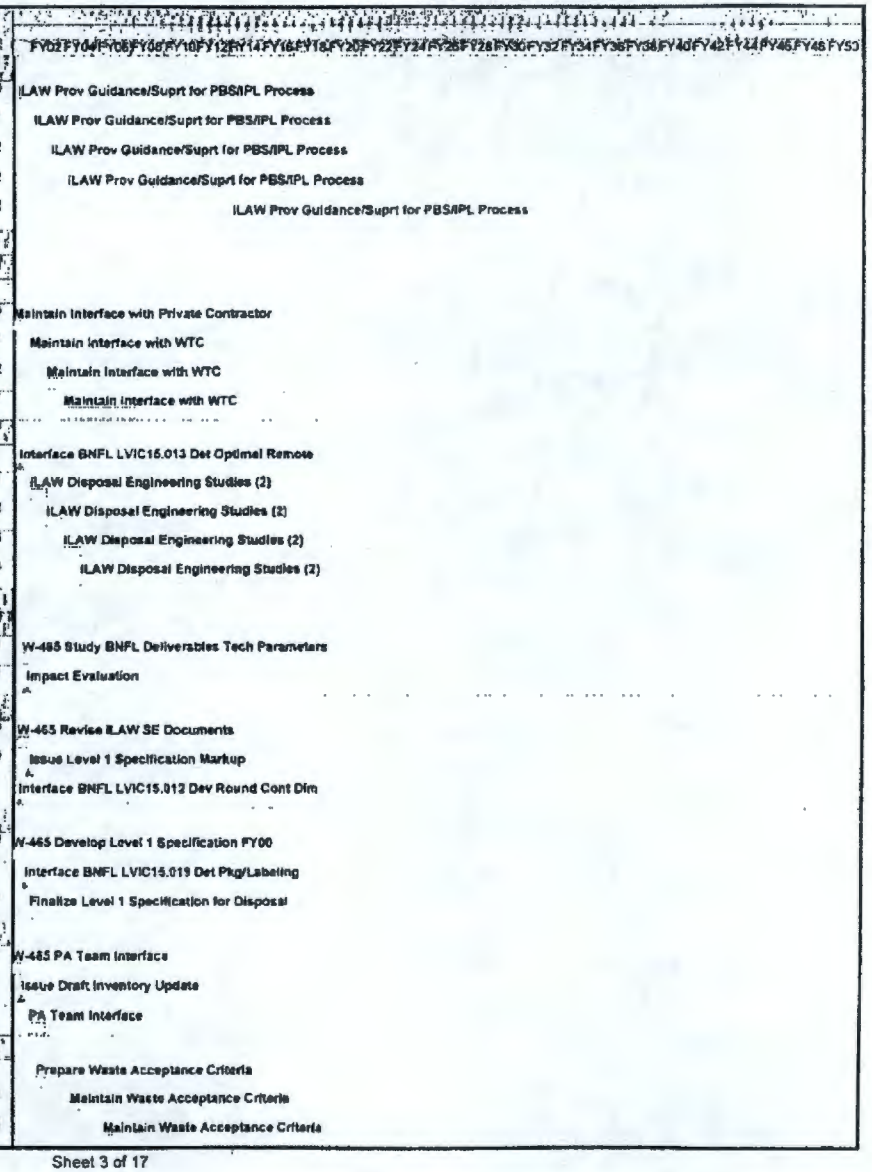
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.04 ILAW Prov Guidance/Suprt for PBS/IPL Process			
T946005D1H	ILAW Prov Guidance/Suprt for PBS/IPL Process	04JAN00	28APR00
T946005D2H	ILAW Prov Guidance/Suprt for PBS/IPL Process	02JAN01	30APR01
T946005D3H	ILAW Prov Guidance/Suprt for PBS/IPL Process	02JAN02	30APR02
T946005D4H	ILAW Prov Guidance/Suprt for PBS/IPL Process	02JAN03	30APR12
T946005D5H	ILAW Prov Guidance/Suprt for PBS/IPL Process	02JAN13	30APR18
1.01.09.01.01.02 ILAW Systems Definition			
1.01.09.01.01.02.01 Maintain I/O 415 (460.015)			
1.01.09.01.01.02.01.01 Maintain Interface with Private Contractor			
T946015A1	Maintain Interface with Private Contractor	01OCT99	29SEP00
T946015A2	Maintain Interface with WTC	02OCT00	28SEP01
T946015A3	Maintain Interface with WTC	01OCT01	30SEP02
T946015A4	Maintain Interface with WTC	01OCT02	31JAN07
1.01.09.01.01.02.01.07 Engineering Studies			
T946015F0A	Interface BNFL LVIC15.013 Det Optimal Remote	28JAN00	
T946015F1	ILAW Disposal Engineering Studies (2)	02OCT00*	28SEP01
T946015F2	ILAW Disposal Engineering Studies (2)	01OCT01	30SEP02
T946015F3	ILAW Disposal Engineering Studies (2)	01OCT02	30SEP03
T946015F4	ILAW Disposal Engineering Studies (2)	01OCT03	30SEP04
1.01.09.01.01.02.02 Prep/Maint Tech Reqmnts for Disposal (460.030)			
1.01.09.01.01.02.02.02 Study BNFL Deliverables Tech Parameters			
T946030A1C	W-465 Study BNFL Deliverables Tech Parameters	01MAY00*	31JUL00
T946030A1D	Impact Evaluation		31JUL00
1.01.09.01.01.02.02.03 Revise ILAW SE Documents			
T946030A1E	W-465 Revise ILAW SE Documents	03JAN00	29SEP00
T946030A1F	Issue Level 1 Specification Markup		29SEP00
T946030A1L	Interface BNFL LVIC15.012 Dev Round Cont Dim	31JAN00*	
1.01.09.01.01.02.02.04 Revise/Maintain the DRD and Level 1 Spec			
T946030A1A	W-465 Develop Level 1 Specification FY00	01OCT99	30DEC99
T946030A1M	Interface BNFL LVIC15.019 Det Pkg/Labeling	30JUN00*	
T946030A2	Finalize Level 1 Specification for Disposal	02OCT00	30APR01
1.01.09.01.01.02.02.05 PA Team Interface			
T946030A1G	W-465 PA Team Interface	01OCT99	14JUL00
T946030A1H	Issue Draft Inventory Update	01MAY00	
T946030A1N	PA Team Interface	02OCT00	28SEP01
T946030B1	Prepare Waste Acceptance Criteria	02APR01*	28SEP01
T946030B2	Maintain Waste Acceptance Criteria	01APR03*	30SEP03
T946030B3	Maintain Waste Acceptance Criteria	01APR05*	30SEP05



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Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.02.02.08 ILAW Disposal Closure Plan			
T946030A1B	Revise/Maintain ILAW Closure Plan	01OCT99	29SEP00
T946030A3	Maintain ILAW Disposal Closure Plan	02OCT00	28SEP01
T946030A4	Maintain ILAW Disposal Closure Plan	01OCT01	30SEP02
T946030A5	Maintain ILAW Disposal Closure Plan	01OCT02	30SEP03
T946030A6	Maintain ILAW Disposal Closure Plan	01OCT03	31JAN06
1.01.09.01.01.02.02.09 Maintain Technical Requirements			
T946030A1J	HSTD Baseline Update (incorp HNF-1517 Changes)	03JAN00	29SEP00
T946030C1	Maintain ILAW Technical Requirements	01MAY01	28SEP01
T946030C2	Maintain ILAW Technical Requirements	01OCT01	30SEP02
T946030C3	Maintain ILAW Technical Requirements	01OCT02	30SEP03
T946030C4	Maintain ILAW Technical Requirements	01OCT03	28SEP12
T946030C5	Maintain ILAW Technical Requirements	01OCT12	24SEP18
1.01.09.01.01.02.02.12 Rebaselining for Remote Trench			
T946030A1K	Rebaselining for Remote Trench	01OCT99	30JUN00
1.01.09.01.01.02.02.13 ILAW Monitoring Plan			
T946030E1	Prepare ILAW Monitoring Plan	18APR00	29SEP00
T946030E2	Update ILAW Monitoring Plan	01OCT02*	30MAY03
T946030E3	Update ILAW Monitoring Plan	03OCT05*	31MAY06
1.01.09.01.01.02.03 Project Management Plan Update (460.037)			
T946037A1A	Update ILAW Program Plan	03APR00	06SEP00
T946037A1B	ORP9.1.1(4) Submit Dft Revised ILAW Program Plan		29SEP00
T946037A2	Update ILAW Program Plan	02APR01*	06SEP01
T946037A3	Update ILAW Program Plan	01APR02*	05SEP02
T946037A4	Update ILAW Program Plan	01APR04*	07SEP04
1.01.09.01.01.02.04 Def Reqmnts for ILAW Sample Transport (460.040)			
1.01.09.01.01.02.04.01 ILAW Sample Transport Functional Requirements			
T946040AA1	ILAW Sample Transport Strategy/Planning	01OCT99	30DEC99
T946040AB1	ILAW Sample Transport Functional Requirements	03JAN00	31MAR00
T946040AB2	Interface BNFL LVIC15.021 Prod Sample Protocol	31JAN00*	
1.01.09.01.01.02.04.02 ILAW Sample Transport AGA/Decision Plan			
T946040AC1	Prep ILAW Sample Transport AGA and Decision Plan	03APR00	29SEP00
T946040AC4	ORP9.1.1(3) Strat/Pins-Trans/Disp of Mltrs/Smpls		29SEP00
1.01.09.01.01.02.05 Def Reqmnts for ILAW Melter Disposal (460.043)			
1.01.09.01.01.02.05.01 ILAW Melter Strategy/Functions and Requirements			
T946043A1	Prepare ILAW Melter Disposal Functional Reqmnts	02OCT00	31JAN01
T946043AA1	ILAW Melter Disposal Strategy/Planning	01OCT99	29SEP00
T946043AA2	Interface BNFL HVIC03.40 Dismantling IHLW Mltrs	01MAR00*	

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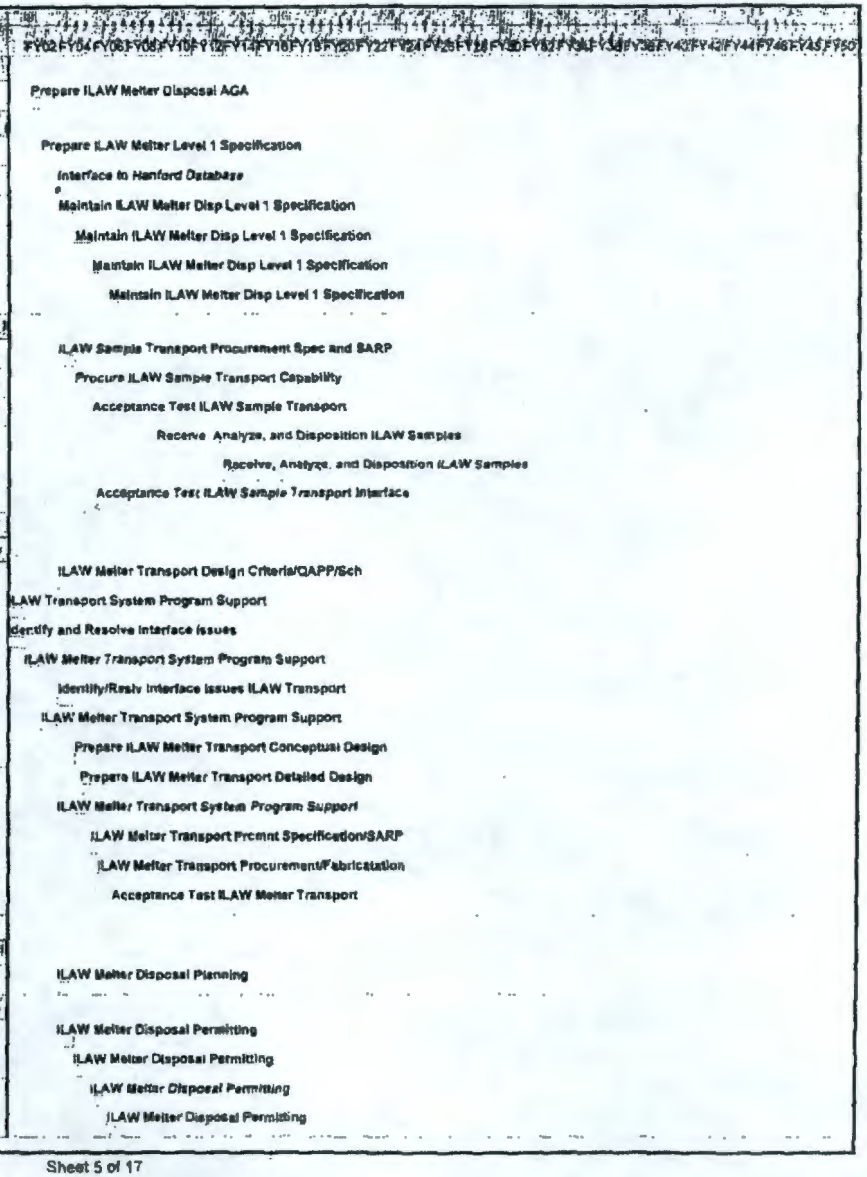
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.02.05.02 ILAW Melter AGA and Decision Plan			
T946043B1	Prepare ILAW Melter Disposal AGA	01FEB01	28SEP01
1.01.09.01.01.02.05.03 ILAW Melter Level 1 Specification			
T946043C2	Prepare ILAW Melter Level 1 Specification	01OCT01	30SEP02
T946043C2A	Interface to Hanford Database		30SEP02
T946043C3	Maintain ILAW Melter Disp Level 1 Specification	01OCT02	30SEP03
T946043C4	Maintain ILAW Melter Disp Level 1 Specification	01OCT03	30SEP04
T946043C5	Maintain ILAW Melter Disp Level 1 Specification	01OCT04	30SEP05
T946043C6	Maintain ILAW Melter Disp Level 1 Specification	03OCT05	28APR06
1.01.09.01.01.02.08 Des/Proc ILAW Sample Transport Sys (460.050)			
T946050A3	ILAW Sample Transport Procurement Spec and SARP	01OCT02	30SEP03
T946050A4	Procure ILAW Sample Transport Capability	01OCT03	30SEP04
T946050A5	Acceptance Test ILAW Sample Transport	01OCT04	31DEC04
T946050A6	Receive Analyze and Disposition ILAW Samples	29AUG08	28SEP12
T946050A7	Receive Analyze, and Disposition ILAW Samples	01OCT12	24SEP18
T9IC1501P	Acceptance Test ILAW Sample Transport Interface		31DEC04
1.01.09.01.01.02.07 Des/Proc/Fab ILAW Faild Mtr Trans Sys (460.055)			
1.01.09.01.01.02.07.01 Des/Proc/Fab ILAW Failed Melter/Transport System			
T946055A1	ILAW Melter Transport Design Criteria/QAPP/Sch	01OCT02	30SEP03
T946055A1A	ILAW Transport System Program Support	01OCT99	28SEP00
T946055A1B	Identify and Resolve Interface Issues	01OCT99	29SEP00
T946055A2	ILAW Melter Transport System Program Support	02OCT00	28SEP01
T946055A3	Identify/Resolv Interface Issues ILAW Transport	01OCT02	30SEP03
T946055A4	ILAW Melter Transport System Program Support	01OCT01	30SEP02
T946055A5	Prepare ILAW Melter Transport Conceptual Design	01OCT03	30JAN04
T946055A6	Prepare ILAW Melter Transport Detailed Design	02FEB04	30SEP04
T946055A7	ILAW Melter Transport System Program Support	01OCT02	30SEP04
T946055A8	ILAW Melter Transport Prcmnt Specification/SARP	01OCT04	31JAN05
T946055A9	ILAW Melter Transport Procurement/Fabrication	01FEB05	31JAN06
T946055AA	Acceptance Test ILAW Melter Transport	01FEB06	28APR08
1.01.09.01.01.02.08 Des/Perm/Imp Faild Mtr Disp Trnch (460.060)			
1.01.09.01.01.02.08.01 ILAW Melter Disposal Planning			
T946060A1	ILAW Melter Disposal Planning	01OCT02	31JUL03
1.01.09.01.01.02.08.02 ILAW Melter Disposal Permitting			
T946060B1	ILAW Melter Disposal Permitting	01OCT02	30SEP03
T946060B2	ILAW Melter Disposal Permitting	01OCT03	30SEP04
T946060B3	ILAW Melter Disposal Permitting	01OCT04	30SEP05
T946060B4	ILAW Melter Disposal Permitting	03OCT05	28APR06



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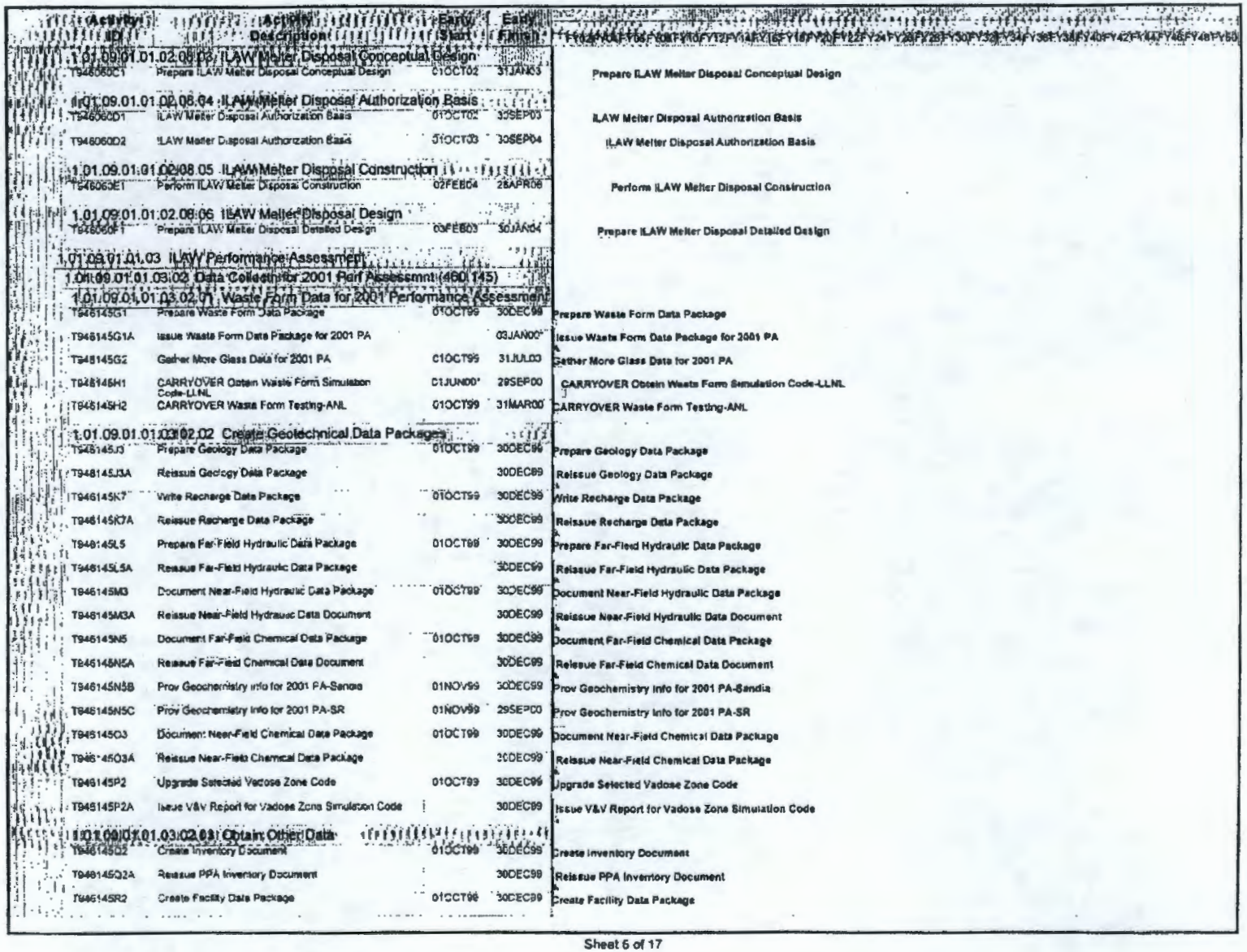
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.02.08.03 ILAW Melter Disposal Conceptual Design			
T946060C1	Prepare ILAW Melter Disposal Conceptual Design	01OCT02	31JAN03
1.01.09.01.01.02.08.04 ILAW Melter Disposal Authorization Basis			
T946060D1	ILAW Melter Disposal Authorization Basis	01OCT02	30SEP03
T946060D2	ILAW Melter Disposal Authorization Basis	01OCT03	30SEP04
1.01.09.01.01.02.08.05 ILAW Melter Disposal Construction			
T946060E1	Perform ILAW Melter Disposal Construction	02FEB04	28APR06
1.01.09.01.01.02.08.06 ILAW Melter Disposal Design			
T946060F1	Prepare ILAW Melter Disposal Detailed Design	03FEB03	30JAN04
1.01.09.01.01.03 ILAW Performance Assessment			
1.01.09.01.01.03.02 Data Collectn for 2001 Perf Assessmnt (460.145)			
1.01.09.01.01.03.02.01 Waste Form Data for 2001 Performance Assessment			
T946145G1	Prepare Waste Form Data Package	01OCT99	30DEC99
T946145G1A	Issue Waste Form Data Package for 2001 PA		03JAN00*
T946145G2	Gather More Glass Data for 2001 PA	01OCT99	31JUL00
T946145H1	CARRYOVER Obtain Waste Form Simulation Code-LLNL	01JUN00*	29SEP00
T946145H2	CARRYOVER Waste Form Testing-ANL	01OCT99	31MAR00
1.01.09.01.01.03.02.02 Create Geotechnical Data Packages			
T946145J3	Prepare Geology Data Package	01OCT99	30DEC99
T946145J3A	Reissue Geology Data Package		30DEC99
T946145K7	Write Recharge Data Package	01OCT99	30DEC99
T946145K7A	Reissue Recharge Data Package		30DEC99
T946145L5	Prepare Far-Field Hydraulic Data Package	01OCT99	30DEC99
T946145L5A	Reissue Far-Field Hydraulic Data Package		30DEC99
T946145M3	Document Near-Field Hydraulic Data Package	01OCT99	30DEC99
T946145M3A	Reissue Near-Field Hydraulic Data Document		30DEC99
T946145N5	Document Far-Field Chemical Data Package	01OCT99	30DEC99
T946145N5A	Reissue Far-Field Chemical Data Document		30DEC99
T946145N5B	Prov Geochemistry Info for 2001 PA-Sandia	01NOV99	30DEC99
T946145N5C	Prov Geochemistry Info for 2001 PA-SR	01NOV99	29SEP00
T946145O3	Document Near-Field Chemical Data Package	01OCT99	30DEC99
T946145O3A	Reissue Near-Field Chemical Data Package		30DEC99
T946145P2	Upgrade Selected Vadose Zone Code	01OCT99	30DEC99
T946145P2A	Issue V&V Report for Vadose Zone Simulation Code		30DEC99
1.01.09.01.01.03.02.03 Obtain Other Data			
T946145Q2	Create Inventory Document	01OCT99	30DEC99
T946145Q2A	Reissue PPA Inventory Document		30DEC99
T946145R2	Create Facility Data Package	01OCT99	30DEC99



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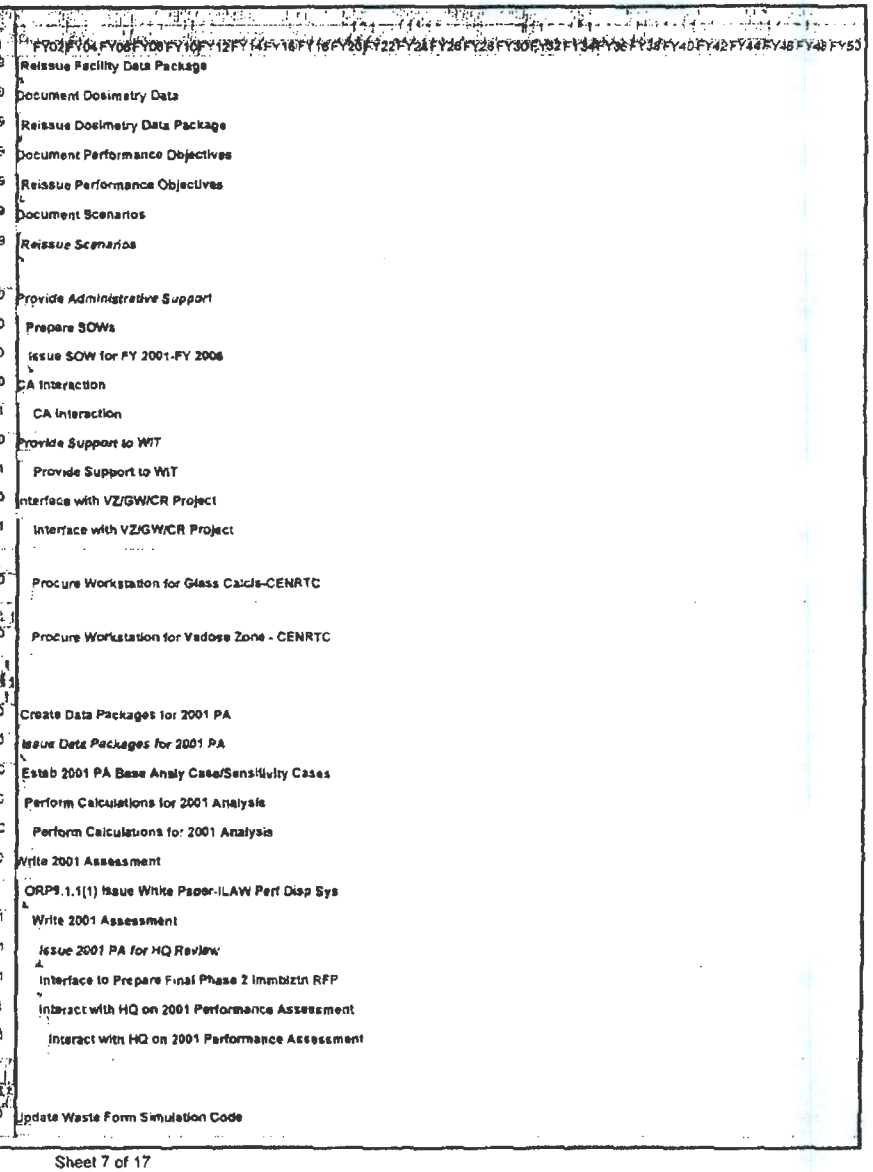
Activity ID	Activity Descriptions	Early Start	Early Finish
T946145R2A	Reissue Facility Data Package		30DEC99
T946145S2	Document Dosimetry Data	01OCT99	30DEC99
T946145S2A	Reissue Dosimetry Data Package		30DEC99
T946145T1	Document Performance Objectives	01OCT99	30DEC99
T946145T1A	Reissue Performance Objectives		30DEC99
T946145U1	Document Scenarios	01OCT99	30DEC99
T946145U1A	Reissue Scenarios		30DEC99
1.01.09.01.01.03.02.04 Coordination and Support			
T946145V1	Provide Administrative Support	01OCT99	29SEP00
T946145W2	Prepare SOWs	03APR00	15JUN00
T946145W2C	Issue SOW for FY 2001-FY 2006		15JUN00
T946145X3	CA Interaction	01OCT99	29SEP00
T946145X4	CA Interaction	02OCT00	28SEP01
T946145Y2	Provide Support to WIT	01OCT99	29SEP00
T946145Y3	Provide Support to WIT	02OCT00	28SEP01
T946145Z2	Interface with VZ/GW/CR Project	01OCT99	29SEP00
T946145Z3	Interface with VZ/GW/CR Project	02OCT00	28SEP01
1.01.09.01.01.03.02.05 Procure Workstation for Glass Calcls-CENRTC			
T946145F6	Procure Workstation for Glass Calcls-CENRTC	01SEP00	29SEP00
1.01.09.01.01.03.02.06 Procure Workstation for Vadose Zone-CENRTC			
T946145P5	Procure Workstation for Vadose Zone - CENRTC	01SEP00	29SEP00
1.01.09.01.01.03.03 2001 Performance Assessment (460.155)			
1.01.09.01.01.03.03.01 2001 Performance Assessment			
T946155A0	Create Data Packages for 2001 PA	04JAN00	01FEB00
T946155A0B	Issue Data Packages for 2001 PA		01FEB00
T946155A1	Estab 2001 PA Base Analy Case/Sensitivity Cases	02FEB00	01MAY00
T946155B0	Perform Calculations for 2001 Analysis	02MAY00	02OCT00
T946155B1	Perform Calculations for 2001 Analysis	03OCT00	01NOV00
T946155C0	Write 2001 Assessment	01OCT99	29SEP00
T946155C0A	ORP9.1.1(1) Issue White Paper-ILAW Perf Disp Sys	28APR00	
T946155C1	Write 2001 Assessment	02OCT00	30MAR01
T946155C1A	Issue 2001 PA for HQ Review		30MAR01
T946155C1B	Interface to Prepare Final Phase 2 Immbiztn RFP		30MAR01
T946155D0	Interact with HQ on 2001 Performance Assessment	02APR01	28SEP01
T946155D1	Interact with HQ on 2001 Performance Assessment	01OCT01	31DEC01
1.01.09.01.01.03.04 Data Collectn for Perf Assessment (460.160)			
1.01.09.01.01.03.04.01 Waste Form Data for Performance Assessment			
T946160B1	Update Waste Form Simulation Code	01OCT99	29SEP00



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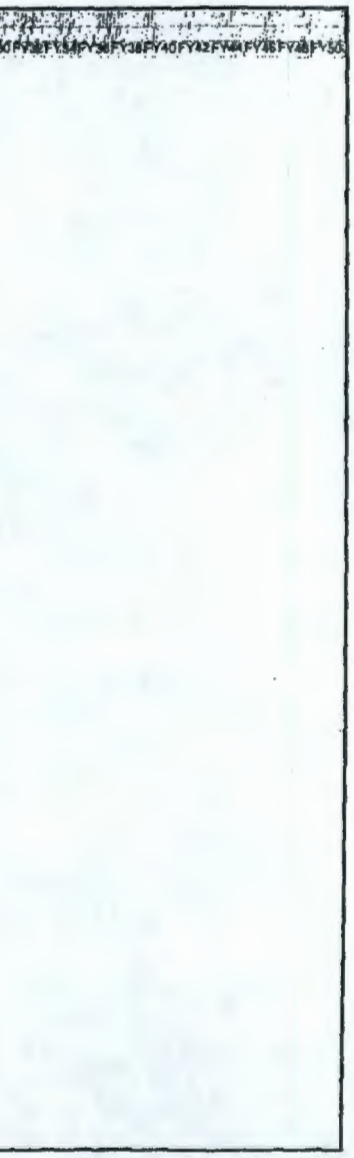
Activity ID	Activity Description	Early Start	Early Finish
T946160B2	Update Waste Form Simulation Code	02OCT00	28SEP01
T946160B3	Update Waste Form Simulation Code	01OCT01	30SEP02
T946160B4	Update Waste Form Simulation Code	01OCT02	30SEP03
T946160C1	Waste Form Simulations	01OCT99	29SEP00
T946160C2	Waste Form Simulations	02OCT00	28SEP01
T946160C3	Waste Form Simulations	01OCT01	30SEP02
T946160C4	Waste Form Simulations	01OCT02	30MAY03
T946160D0	Natural Analogue Testing	01OCT01	30SEP02
T946160D2	Natural Analogue Testing	01OCT02	30SEP03
T946160F2	Waste Form Measurements - PNNL	01OCT99	29SEP00
T946160F3	Waste Form Measurements - ANL	01OCT99	29SEP00
T946160F4	Waste Form Measurements -PNNL	02OCT00	28SEP01
T946160F5	Waste Form Measurements - ANL	02OCT00	28SEP01
T946160F6	Waste Form Measurements -PNNL	01OCT01	30SEP02
T946160F8	Waste Form Measurements - ANL	01OCT01	30SEP02
T946160F9	Waste Form Measurements - PNNL	01OCT02	30MAY03
T946160FA	Waste Form Measurements - ANL	01OCT02	30MAY03
T946160G0	Prep Waste Form Data Package for 2005 PA	02JUN03	30SEP03
T946160G1	Prep Waste Form Data Package for 2005 PA	01OCT03	31DEC03
T946160G11	Issue Waste Form Data Package for 2005 PA		31DEC03
T946160G1A	EMSP Ion-Exchange Processes/Mech in Glasses		31DEC03
T946160G1B	TFA Peer Review of Glass Performance Strategy		31DEC03
T946160G1C	TFA Glass Comp Effects on Long-Term Performance		31DEC03
1.01.09.01.01.03.04.02	Create Geotechnical Data Packages		
T946160H0	Obtain Borehole #2 Samples	02OCT00	30MAR01
T946160H0B	Issue Borehole #2 Summary Report		28SEP01
T946160H2	Obtain Borehole #3 Samples	01OCT01	29MAR02
T946160H2A	Issue Borehole #3 Summary Report		30SEP02
T946160J0	Plan Natural Analogue and Background Work	02OCT00	30MAR01
T946160J1	Gather Natural Analogue and Background Data	01OCT01	30SEP02
T946160J2	Gather Geologic Data	01OCT99	29SEP00
T946160J3	Gather and Document Geologic Data	02OCT00	28SEP01
T946160J4	Document Geologic Data	01OCT02	30SEP03
T946160K0	Perform Tracer Measurements	02APR01	28SEP01
T946160K2	Perform Tracer Measurements	01OCT01	30SEP02
T946160K4	Obtain Recharge Data	01OCT99	29SEP00
T946160K5	Obtain Recharge Data	02OCT00	28SEP01



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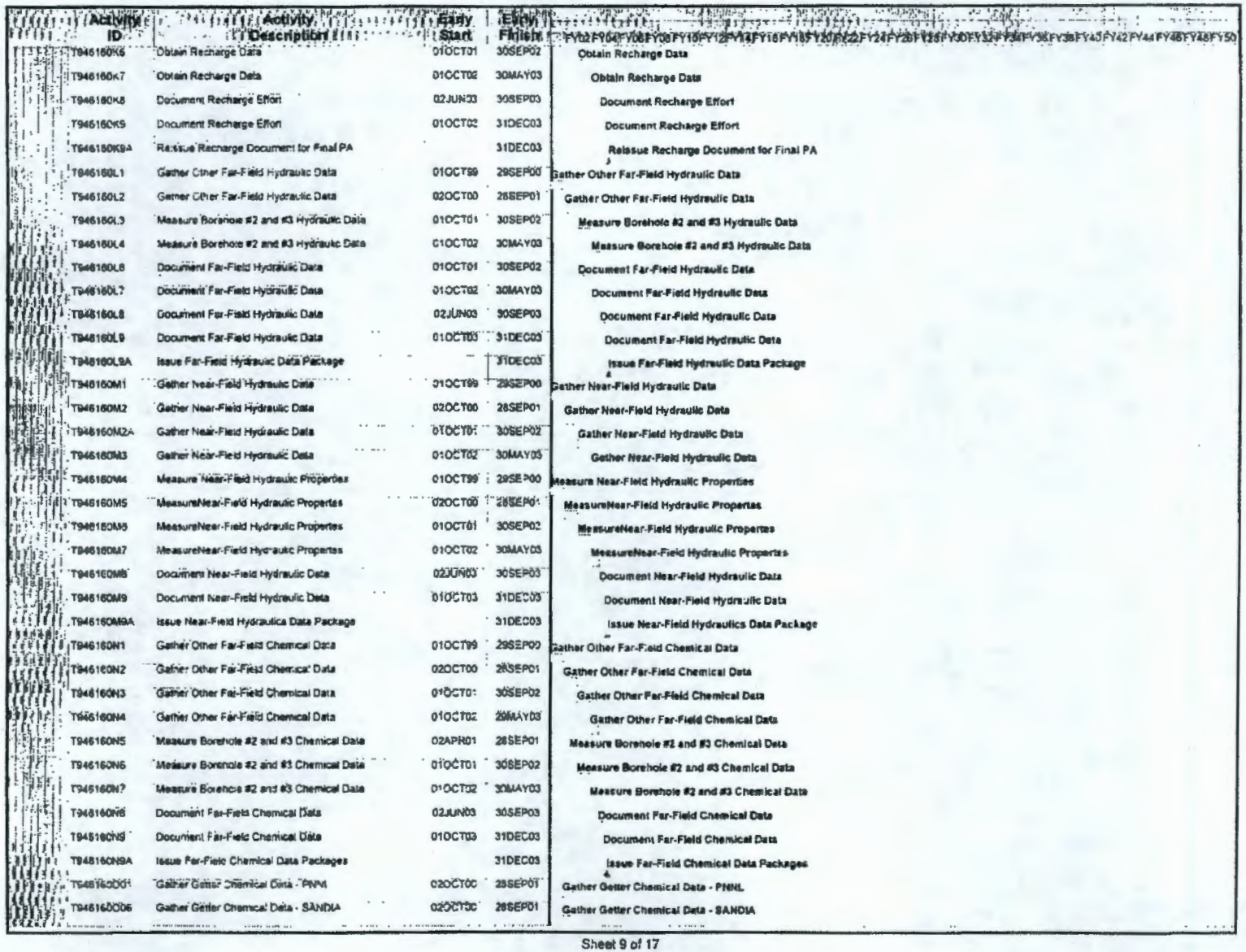
Activity ID	Activity Description	Early Start	Early Finish
T946160K6	Obtain Recharge Data	01OCT01	30SEP02
T946160K7	Obtain Recharge Data	01OCT02	30MAY03
T946160K8	Document Recharge Effort	02JUN03	30SEP03
T946160K9	Document Recharge Effort	01OCT03	31DEC03
T946160K9A	Reissue Recharge Document for Final PA		31DEC03
T946160L1	Gather Other Far-Field Hydraulic Data	01OCT99	29SEP00
T946160L2	Gather Other Far-Field Hydraulic Data	02OCT00	28SEP01
T946160L3	Measure Borehole #2 and #3 Hydraulic Data	01OCT01	30SEP02
T946160L4	Measure Borehole #2 and #3 Hydraulic Data	01OCT02	30MAY03
T946160L6	Document Far-Field Hydraulic Data	01OCT01	30SEP02
T946160L7	Document Far-Field Hydraulic Data	01OCT02	30MAY03
T946160L8	Document Far-Field Hydraulic Data	02JUN03	30SEP03
T946160L9	Document Far-Field Hydraulic Data	01OCT03	31DEC03
T946160L9A	Issue Far-Field Hydraulic Data Package		31DEC03
T946160M1	Gather Near-Field Hydraulic Data	01OCT99	29SEP00
T946160M2	Gather Near-Field Hydraulic Data	02OCT00	28SEP01
T946160M2A	Gather Near-Field Hydraulic Data	01OCT01	30SEP02
T946160M3	Gather Near-Field Hydraulic Data	01OCT02	30MAY03
T946160M4	Measure Near-Field Hydraulic Properties	01OCT99	29SEP00
T946160M5	MeasureNear-Field Hydraulic Properties	02OCT00	28SEP01
T946160M6	MeasureNear-Field Hydraulic Properties	01OCT01	30SEP02
T946160M7	MeasureNear-Field Hydraulic Properties	01OCT02	30MAY03
T946160M8	Document Near-Field Hydraulic Data	02JUN03	30SEP03
T946160M9	Document Near-Field Hydraulic Data	01OCT03	31DEC03
T946160M9A	Issue Near-Field Hydraulics Data Package		31DEC03
T946160N1	Gather Other Far-Field Chemical Data	01OCT99	29SEP00
T946160N2	Gather Other Far-Field Chemical Data	02OCT00	28SEP01
T946160N3	Gather Other Far-Field Chemical Data	01OCT01	30SEP02
T946160N4	Gather Other Far-Field Chemical Data	01OCT02	30MAY03
T946160N5	Measure Borehole #2 and #3 Chemical Data	02APR01	28SEP01
T946160N6	Measure Borehole #2 and #3 Chemical Data	01OCT01	30SEP02
T946160N7	Measure Borehole #2 and #3 Chemical Data	01OCT02	30MAY03
T946160N8	Document Far-Field Chemical Data	02JUN03	30SEP03
T946160N9	Document Far-Field Chemical Data	01OCT03	31DEC03
T946160N9A	Issue Far-Field Chemical Data Packages		31DEC03
T946160O01	Gather Getter Chemical Data - PNNL	02OCT00	28SEP01
T946160O06	Gather Getter Chemical Data - SANDIA	02OCT00	28SEP01



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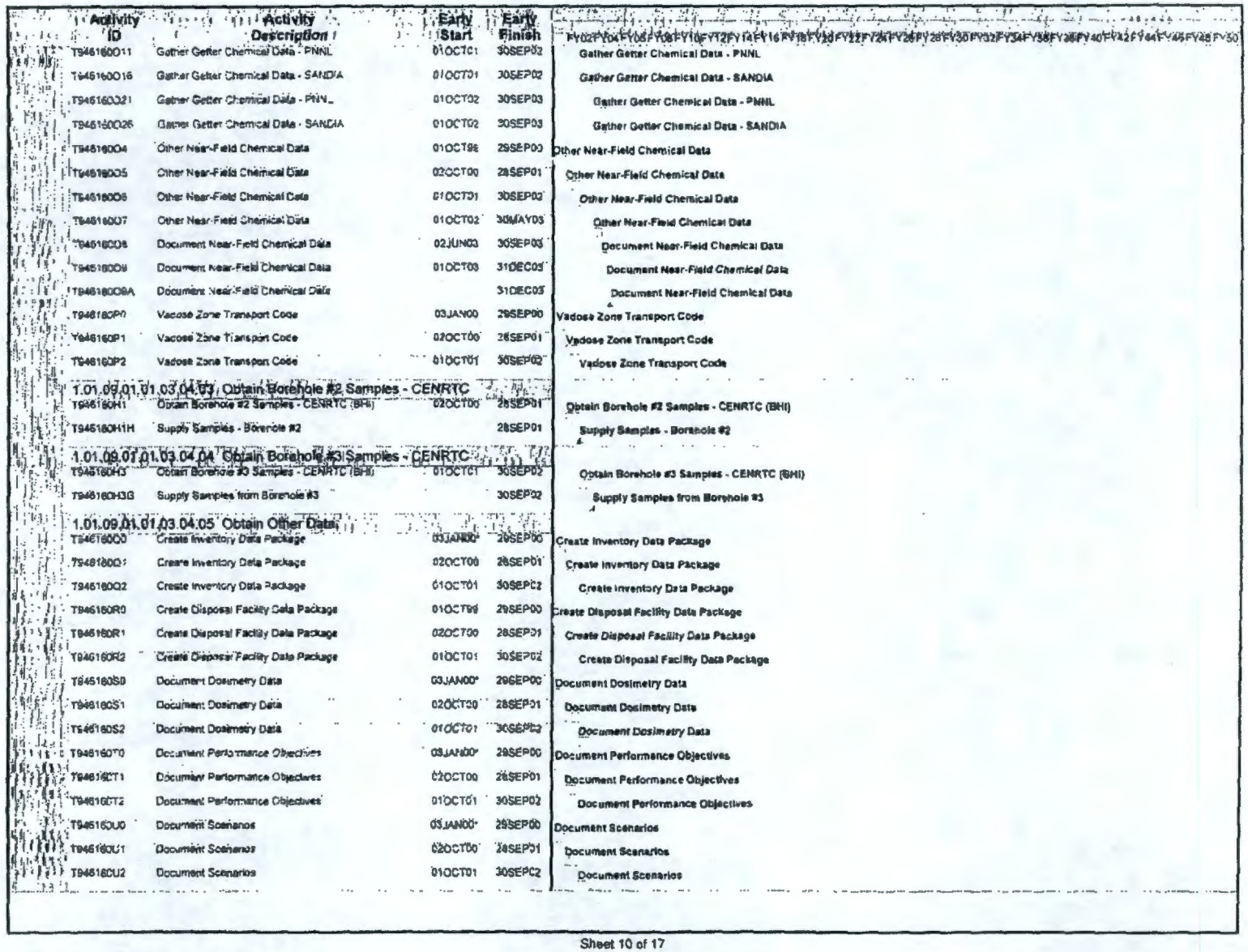
Activity ID	Activity Description	Early Start	Early Finish
T946160O11	Gather Getter Chemical Data - PNNL	01OCT01	30SEP02
T946160O16	Gather Getter Chemical Data - SANDIA	01OCT01	30SEP02
T946160O21	Gather Getter Chemical Data - PNNL	01OCT02	30SEP03
T946160O26	Gather Getter Chemical Data - SANDIA	01OCT02	30SEP03
T946160O4	Other Near-Field Chemical Data	01OCT99	29SEP00
T946160O5	Other Near-Field Chemical Data	02OCT00	28SEP01
T946160O6	Other Near-Field Chemical Data	01OCT01	30SEP02
T946160O7	Other Near-Field Chemical Data	01OCT02	30MAY03
T946160O8	Document Near-Field Chemical Data	02JUN03	30SEP03
T946160O9	Document Near-Field Chemical Data	01OCT03	31DEC03
T946160O9A	Document Near-Field Chemical Data		31DEC03
T946160P0	Vadose Zone Transport Code	03JAN00	29SEP00
T946160P1	Vadose Zone Transport Code	02OCT00	28SEP01
T946160P2	Vadose Zone Transport Code	01OCT01	30SEP02
1.01.09.01.01.03.04.03 Obtain Borehole #2 Samples - CENRTC			
T946160H1	Obtain Borehole #2 Samples - CENRTC (BHI)	02OCT00	28SEP01
T946160H1H	Supply Samples - Borehole #2		28SEP01
1.01.09.01.01.03.04.04 Obtain Borehole #3 Samples - CENRTC			
T946160H3	Obtain Borehole #3 Samples - CENRTC (BHI)	01OCT01	30SEP02
T946160H3G	Supply Samples from Borehole #3		30SEP02
1.01.09.01.01.03.04.05 Obtain Other Data			
T946160Q0	Create Inventory Data Package	03JAN00*	29SEP00
T946160Q1	Create Inventory Data Package	02OCT00	28SEP01
T946160Q2	Create Inventory Data Package	01OCT01	30SEP02
T946160R0	Create Disposal Facility Data Package	01OCT99	29SEP00
T946160R1	Create Disposal Facility Data Package	02OCT00	28SEP01
T946160R2	Create Disposal Facility Data Package	01OCT01	30SEP02
T946160S0	Document Dosimetry Data	03JAN00*	29SEP00
T946160S1	Document Dosimetry Data	02OCT00	28SEP01
T946160S2	Document Dosimetry Data	01OCT01	30SEP02
T946160T0	Document Performance Objectives	03JAN00*	29SEP00
T946160T1	Document Performance Objectives	02OCT00	28SEP01
T946160T2	Document Performance Objectives	01OCT01	30SEP02
T946160U0	Document Scenarios	03JAN00*	29SEP00
T946160U1	Document Scenarios	02OCT00	28SEP01
T946160U2	Document Scenarios	01OCT01	30SEP02



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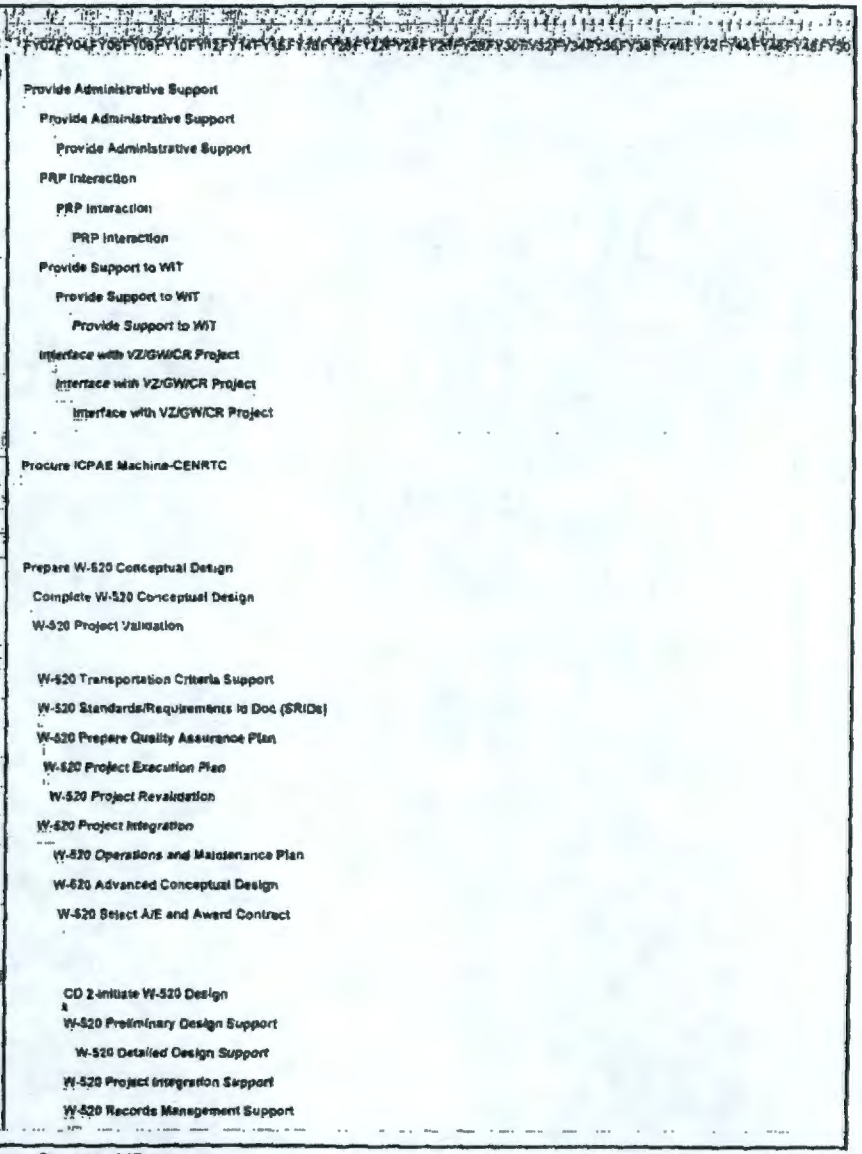
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.03.04.06 Coordination and Support			
T946180V1	Provide Administrative Support	02OCT00	28SEP01
T946180V2	Provide Administrative Support	01OCT01	30SEP02
T946180V3	Provide Administrative Support	01OCT02	30SEP03
T946180X1	PRP Interaction	01OCT01	30SEP02
T946180X2	PRP Interaction	01OCT02	30SEP03
T946180X3	PRP Interaction	01OCT03	30SEP04
T946180Y1	Provide Support to WIT	01OCT01	30SEP02
T946180Y2	Provide Support to WIT	01OCT02	30SEP03
T946180Y3	Provide Support to WIT	01OCT03	30SEP04
T946180Z1	Interface with VZ/GW/CR Project	01OCT01	30SEP02
T946180Z2	Interface with VZ/GW/CR Project	01OCT02	30SEP03
T946180Z3	Interface with VZ/GW/CR Project	01OCT03	30SEP04
1.01.09.01.01.03.04.07 Procure ICPAE Machine-CENRTC			
T946180F1	Procure ICPAE Machine-CENRTC	01SEP00	29SEP00
1.01.09.01.01.04 Project W-520, ILAW Disposal Facility			
1.01.09.01.01.04.01 ILAW Disp Fac Conceptual Design (460.200)			
1.01.09.01.01.04.01.05 ILAW Disposal Facility Conceptual Design			
T946200A1	Prepare W-520 Conceptual Design	02OCT00	31MAY01
T946200A1A	Complete W-520 Conceptual Design		31MAY01
T946200A2	W-520 Project Validation	01JUN01	28SEP01
1.01.09.01.01.04.02 ILAW Disposal Fac ACD/Validation (460.210)			
T946210A1	W-520 Transportation Criteria Support	01OCT01	28FEB02
T946210A2	W-520 Standards/Requirements Id Doc (SRIDs)	01OCT01	29MAR02
T946210A3	W-520 Prepare Quality Assurance Plan	01OCT01	28FEB02
T946210A4	W-520 Project Execution Plan	01MAR02	28JUN02
T946210A5	W-520 Project Revalidation	01JUL02	30SEP02
T946210A6	W-520 Project Integration	01OCT01	30SEP02
T946210A7	W-520 Operations and Maintenance Plan	01OCT02	30JUN03
T946210A8	W-520 Advanced Conceptual Design	01OCT02	30JUN03
T946210A9	W-520 Select A/E and Award Contract	02JAN03	30JUN03
1.01.09.01.01.04.03 ILAW Disposal Facility Design (460.220)			
1.01.09.01.01.04.03.01 ILAW Disposal Facility Design-Expense			
T946220A1A	CD 2-Initiate W-520 Design	01JUL03	
T946220A2	W-520 Preliminary Design Support	01JUL03	31MAR04
T946220A3	W-520 Detailed Design Support	01APR04	28FEB05
T946220A4	W-520 Project Integration Support	01JUL03	28FEB05
T946220A5	W-520 Records Management Support	01JUL03	28FEB05



Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.04.03.02 ILAW Disposal Facility Design-Capital			
T946220A6	W-520 Preliminary Design-Capital	01JUL03	31MAR04
T946220A7	W-520 Detailed Design-Capital	01APR04	31MAR05
T946220A7A	M-90-09-T01 Complete W-520 Detailed Design		31MAR05
T946220A8	W-520 Title III Engineering	01APR05	30MAR07
1.01.09.01.01.04.04 ILAW Disp Fac Equipment Procurement (460.230)			
1.01.09.01.01.04.04.01 ILAW Disp Facility Equipment Procurement-Expense			
T946230A1	W-520 Procurement Support-Expense	01APR04	30DEC05
1.01.09.01.01.04.04.02 ILAW Disp Facility Equipment Procurement-Capital			
T946230A3	W-520 Procure Design/Fab/Deliver-Capital	01APR04	30DEC05
T9IC1502P	W-520 Procure Design/Fab/Deliver (Interface)		30DEC05
1.01.09.01.01.04.05 ILAW Disposal Facility Construction (460.240)			
1.01.09.01.01.04.05.01 ILAW Disposal Construction-Expense			
T946240A1	W-520 Project Integration Support	01APR05	30MAR07
T946240A2	W-520 Privatization Interface	01APR05	30MAR07
T946240A3	W-520 Records Management Support	01APR05	30MAR07
T946240A4	W-520 Quality Assurance Support	01APR05	30MAR07
T946240A5	W-520 Construction Safety Support	01APR05	30MAR07
T946240A6	W-520 Independent Safety Review	01APR05	30MAR07
T946240A7	W-520 Witness ATPs	01NOV06	31JAN07
1.01.09.01.01.04.05.02 ILAW Disposal Construction-CENRTC			
T946240A8	W-520 Spares and Equipment-CENRTC	01APR05	31MAR06
1.01.09.01.01.04.05.03 ILAW Disposal Construction-Capital			
T946240A9A	M-90-08 CD 3-Initiate W-520 Construction	01APR05	
T946240AA	W-520 Project Integration-Capital	01APR05	30SEP05
T946240AB	W-520 Project Integration-Capital	03OCT05	29SEP06
T946240AC	W-520 Project Integration-Capital	02OCT06	30MAR07
T946240ACM	W-520 Procure/Title III		30MAR07
T946240AD	W-520 Construction-Capital	01APR05	30SEP05
T946240AE	W-520 Construction-Capital	03OCT05	29SEP06
T946240AF	W-520 Construction-Capital	02OCT06	30MAR07
T946240AH	Complete W-520 Construction		30MAR07
1.01.09.01.01.04.06 Startup and Test for ILAW Disp Fac (470.100)			
T947100A1A	Initiate Startup and Test for ILAW Disposal Fac	02APR07	
T947100A2	Develop Procedures/Training for ILAW Disp Fac	03APR06	31JUL07
T947100A3	OTPs/Tests for ILAW Disposal Fac	02APR07	31JUL07
T947100A3M	OTPs/Tests for ILAW Disposal Fac		31JUL07

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Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.01.04.07 Perf Mgmt Self Assmnt/ILAW Disp (470.110)			
T947110A1	Dev Startup Notification Report for ILAW Disp	02JAN07	06MAR07
T947110A2	Develop Plan of Action (POA) for ILAW Disp Fac	07MAR07	01MAY07
T947110A3	Dev Facility Plant Readiness Plan for ILAW Disp	02MAY07	13JUN07
T947110A4	Conduct Plant Ready Mgmt Self Assmt for ILAW Dis	07MAY07	24OCT07
1.01.09.01.01.04.08 Perf Cont Ind ORR for ILAW Disp Fac (470.120)			
T947120A1	Perform Contractor ORR for ILAW Disposal Fac	25OCT07	14NOV07
T947120A2	Provide Tech/Admin ORR Support for ILAW Disp	25OCT07	07NOV07
T947120A3	Closeout ORR Comments for ILAW Disposal Facility	08NOV07	14NOV07
1.01.09.01.01.04.09 Perf DOE-ORP ORR/Obtn CD-4 for ILAW (470.130)			
T947130A1	Perform DOE-ORP ORR for ILAW Disposal Facility	15NOV07	21DEC07
T947130A2	Prov Tech/Admin DOE-ORP ORR Support for ILAW Dis	15NOV07	07DEC07
T947130A3	Closeout DOE-ORP ORR Comments for ILAW Disp Fac	10DEC07	21DEC07
T947130A4	Obtain DOE CD 4 Approval for ILAW Disposal Fac	26DEC07	08FEB08
T947130A4M	Obtain DOE CD 4 Approval for ILAW Disposal Fac		08FEB08
TSIC1503P	ICD 15B Accept ILAW Product		08FEB08
1.01.09.01.01.04.10 Obtain ILAW Disp Fac Environmntl Doc (460.250)			
T946250A1	W-520 Notice of Intent	02OCT00	31JAN01
T946250A2	W-520 NOI Public Review	01FEB01	29JUN01
T946250A3	W-520 Supplemental EIS NEPA Doc	02OCT00	28SEP01
T946250B1	W-520 Part A Form 3 Application	15MAR01	29JUN01
T946250C1	W-520 Part B Permit Application, Rev 0	02OCT00	28SEP01
T946250C2	W-520 Part B Ecology Review, Rev 0	01OCT01	14JUN02
T946250C2A	M-20-67: Sub ILAW Disp Part B Permit App to Ecol		30AUG02
T946250C3	W-520 Part B Permit Application, Rev 0 Workshops	17JUN02	21MAR03
T946250D1	W-520 Part B Permit Application, Rev 1	24MAR03	07APR04
T946250D1M	WA State tax Permit Project W-520 RCRA (Part B)		07APR04
T946250E1	W-520 Prepare Environmental Checklist	04APR00	31MAY00
T946250E2	W-520 Prepare Permitting Plan	01JUN00	29SEP00
T946250E3	W-520 Air Permitting and Approval	01OCT01	30AUG02
T946250E4	W-520 Mitigation Action Plan	01OCT01	31DEC01
T946250E5	W-520 Environmental Planning/Support	02OCT00	28SEP01
T946250E6	W-520 Environmental Planning/Support	01OCT01	30SEP02
T946250E7	W-520 Environmental Planning/Support	01OCT02	30SEP03
T946250F1	W-520 Environmental Monitoring	01APR03	31MAR04
T946250F2	W-520 Environmental Monitoring	01APR04	31MAR05
T946250F3	W-520 Environmental Monitoring	01APR05	31MAR06

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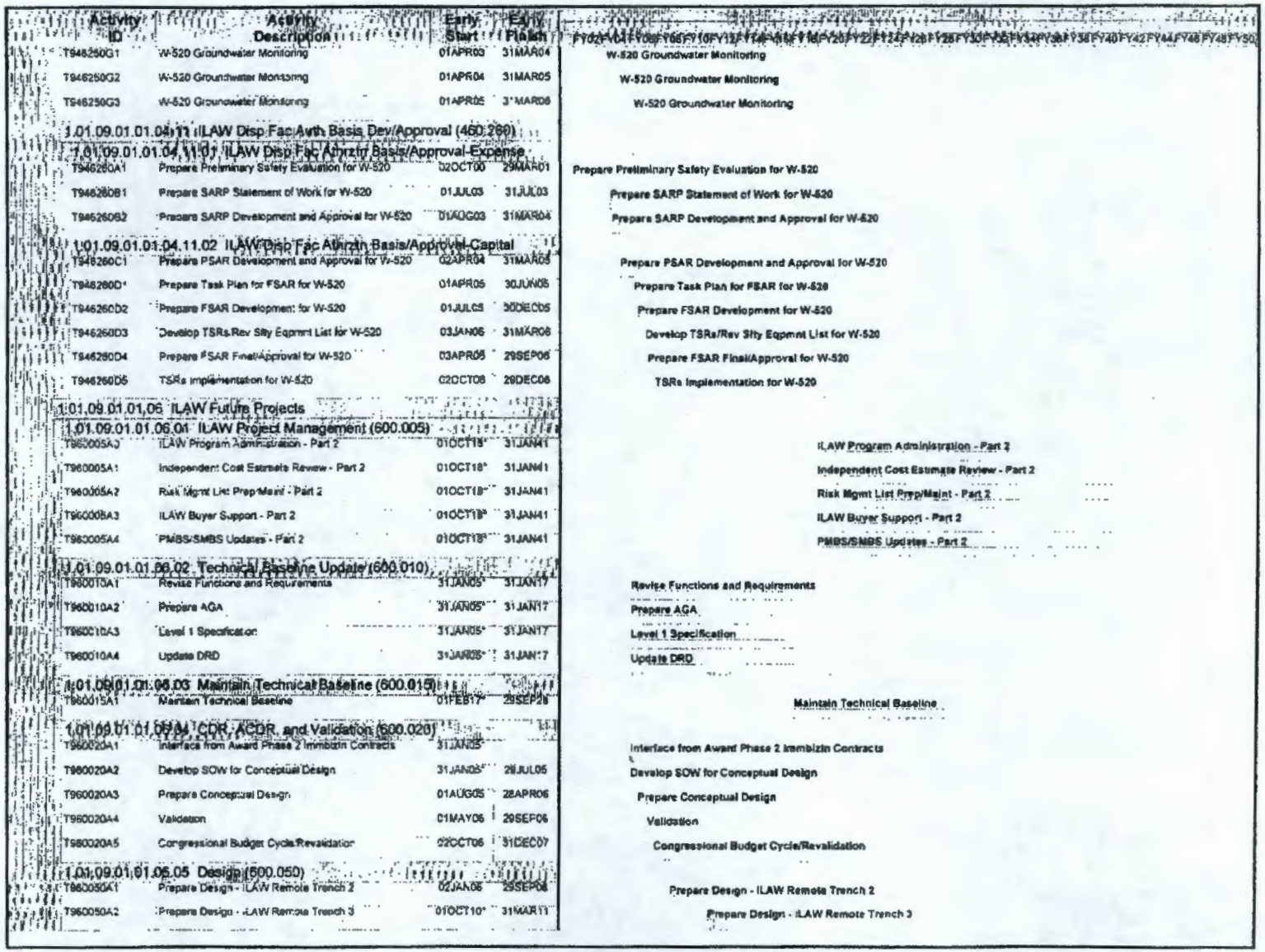
Activity ID	Activity Description	Early Start	Early Finish
T946250G1	W-520 Groundwater Monitoring	01APR03	31MAR04
T946250G2	W-520 Groundwater Monitoring	01APR04	31MAR05
T946250G3	W-520 Groundwater Monitoring	01APR05	31MAR06
1.01.09.01.01.04.11	ILAW Disp Fac Auth Basis Dev/Approval (460.260)		
1.01.09.01.01.04.11.01	ILAW Disp Fac Ahrztn Basis/Approval-Expense		
T946260A1	Prepare Preliminary Safety Evaluation for W-520	02OCT00	29MAR01
T946260B1	Prepare SARP Statement of Work for W-520	01JUL03	31JUL03
T946260B2	Prepare SARP Development and Approval for W-520	01AUG03	31MAR04
1.01.09.01.01.04.11.02	ILAW Disp Fac Ahrztn Basis/Approval-Capital		
T946260C1	Prepare PSAR Development and Approval for W-520	02APR04	31MAR05
T946260C1	Prepare Task Plan for FSAR for W-520	01APR05	30JUN05
T946260D2	Prepare FSAR Development for W-520	01JUL05	30DEC05
T946260D3	Develop TSRs/Rev Sity Eqpmnt List for W-520	03JAN06	31MAR06
T946260D4	Prepare FSAR Final/Approval for W-520	03APR06	29SEP06
T946260D5	TSRs Implementation for W-520	02OCT06	29DEC06
1.01.09.01.01.06	ILAW Future Projects		
1.01.09.01.01.06.01	ILAW Project Management (600.005)		
T960005A0	ILAW Program Administration - Part 2	01OCT18*	31JAN41
T960005A1	Independent Cost Estimate Review - Part 2	01OCT18*	31JAN41
T960005A2	Risk Mgmt List Prep/Maint - Part 2	01OCT18*	31JAN41
T960005A3	ILAW Buyer Support - Part 2	01OCT18*	31JAN41
T960005A4	PMBS/SMBS Updates - Part 2	01OCT18*	31JAN41
1.01.09.01.01.06.02	Technical Baseline Update (600.010)		
T960010A1	Revise Functions and Requirements	31JAN05*	31JAN17
T960010A2	Prepare AGA	31JAN05*	31JAN17
T960010A3	Level 1 Specification	31JAN05*	31JAN17
T960010A4	Update DRD	31JAN05*	31JAN17
1.01.09.01.01.06.03	Maintain Technical Baseline (600.015)		
T960015A1	Maintain Technical Baseline	01FEB17*	29SEP28
1.01.09.01.01.06.04	CDR, ACDR, and Validation (600.020)		
T960020A1	Interface from Award Phase 2 Immbizin Contracts	31JAN05*	
T960020A2	Develop SOW for Conceptual Design	31JAN05*	28JUL05
T960020A3	Prepare Conceptual Design	01AUG05	28APR06
T960020A4	Validation	01MAY06	29SEP06
T960020A5	Congressional Budget Cycle/Revalidation	02OCT06	31DEC07
1.01.09.01.01.06.05	Design (600.050)		
T960050A1	Prepare Design - ILAW Remote Trench 2	02JAN06	29SEP06
T960050A2	Prepare Design - ILAW Remote Trench 3	01OCT10*	31MAR11



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Activity ID	Activity Description	Early Start	Early Finish
T960055A3	Prepare Design - ILAW Remote Trench 4	01APR13*	30SEP13
T960055A4	Prepare Design - ILAW Remote Trench 5	02OCT15*	31MAR16
T960055A5	Prepare Design - ILAW Remote Trench 6	02APR18*	28SEP18
1.01.09.01.01.06.06 Construction (600.060)			
T960060A1	Construct/Startup - ILAW Remote Trench 2-Capital	30SEP08	28SEP10
T960060A2	Construct/Startup - ILAW Remote Trench 3-Capital	01APR11*	29MAR13
T960060A3	Construct/Startup - ILAW Remote Trench 4-Capital	01OCT13*	01OCT15
T960060A4	Construct/Startup - ILAW Remote Trench 5-Capital	01APR16*	29MAR18
T960060A5	Construct/Startup - ILAW Remote Trench 6-Capital	02OCT23*	30SEP25
1.01.09.01.01.06.07 Permits (600.030)			
T960030A1	ILAW Permitting Module 2 - Module 8	02JAN06*	30SEP25
1.01.09.01.01.06.08 Authorization Basis (600.035)			
T960035A1	ILAW Safety Module 2 - Module 8	02JAN06*	30SEP25
1.01.09.01.01.07 ILAW Operations			
1.01.09.01.01.07.01 Dispose of Failed Melters (470.035)			
T947035A1	Melter Disposal Facility Readiness	20FEB07	28AUG08
T947035B1	Emplace Melter Pkg in Disposal Fac and Backfill	29AUG08	28SEP12
T947035B2	Emplace Melter Pkg in Disposal Fac and Backfill	01OCT12	24SEP18
T947035C1	Surveillance and Maintenance	29AUG08	28SEP12
T947035C2	Surveillance and Maintenance	01OCT12	24SEP18
T91C0302S	Start Melter Disposal Facility Readiness	20FEB07	
1.01.09.01.01.07.02 ILAW Disposal Facility Operations (470.075)			
T947075A1A	M-90-10 CD 4-Initiate Hot Operations W-320	07FEB08	
T947075A1M	Phase 1 ILAW Disposal Capability Available	07FEB08	
T947075A2	Perform Preparation for Operations	07FEB08	28AUG08
T947075A2A	Interface from TBR 350.015 Vitrify 1st LAW Feed		28AUG08
T947075A3	Initial Hot Operations	29AUG08	28SEP12
T947075A4	Balance Hot Operations	01OCT12	25SEP18
T947075A5	Monitor Waste and Facility for Phase 1	29AUG08	28SEP12
T947075A6	Monitor Waste and Facility for Phase 1B	01OCT12	28SEP18
T947075M	Receive Last Phase 1 ILAW for Disposal		01JUN20
1.01.09.01.01.07.03 Operations and Monitoring (ILAW) (640.040)			
T964040A1	Init Hot Operations - ILAW Remote Trench 2-6	29SEP10	
T964040A2	ILAW Hot Operations ILAW Remote Trench 2-6	01OCT10	29SEP28
T964040A2A	HSP.ET.6.B ILA Fraction Will Be Disposed On-Site		29SEP28
T964040A2M	ILAW Hot Operations ILAW Remote Trench 2-6		29SEP28
T964040B1	Write Maintenance PA #2	01OCT14	30SEP15
T964040B2	Create Database for Maintenance PA #3	01OCT14	30SEP19

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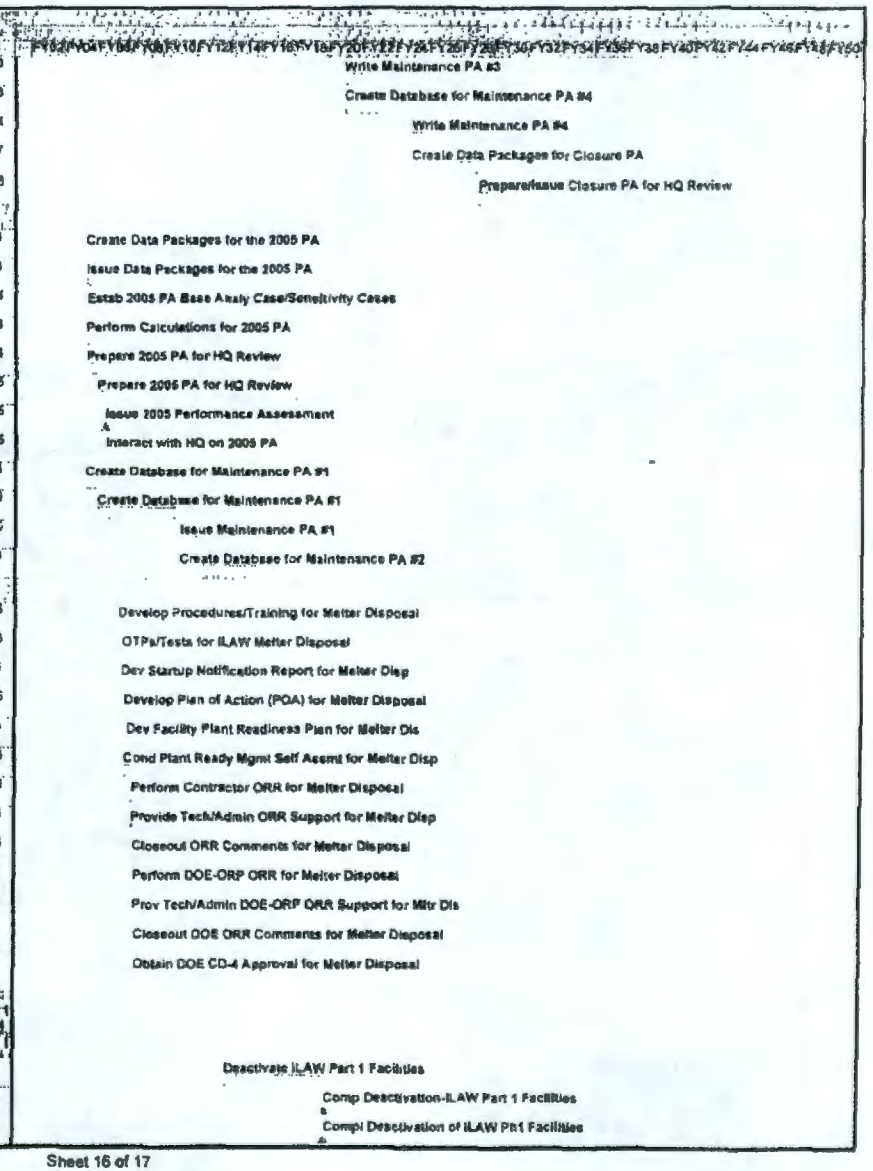
Activity ID	Activity Description	Early Start	Early Finish
T964040B3	Write Maintenance PA #3	01OCT19	28SEP20
T964040B4	Create Database for Maintenance PA #4	01OCT19	29SEP23
T964040B5	Write Maintenance PA #4	02OCT23	30SEP24
T964040B6	Create Data Packages for Closure PA	02OCT23	30SEP27
T964040B7	Prepare/Issue Closure PA for HQ Review	01OCT27	31MAY28
1.01.09.01.01.07.04 Main ILAW Part 1 Perf Assessment (460.170)			
T946170A0	Create Data Packages for the 2005 PA	02JAN04	30JAN04
T946170A0A	Issue Data Packages for the 2005 PA		30JAN04
T946170A1	Estab 2005 PA Base Analy Case/Sensitivity Cases	02FEB04	30APR04
T946170B1	Perform Calculations for 2005 PA	02JAN04	30SEP04
T946170C1	Prepare 2005 PA for HQ Review	02JAN04	30SEP04
T946170C2	Prepare 2005 PA for HQ Review	01OCT04	31MAR05
T946170C2A	Issue 2005 Performance Assessment		31MAR05
T946170D1	Interact with HQ on 2005 PA	01APR05	31MAR05
T946170J1	Create Database for Maintenance PA #1	02JAN04	30SEP04
T946170J2	Create Database for Maintenance PA #1	01OCT04	30SEP05
T946170K1	Issue Maintenance PA #1	01OCT09	30SEP10
T946170L1	Create Database for Maintenance PA #2	01OCT05	30SEP14
1.01.09.01.01.07.05 Startup/ORR for Failed Melter Disposal (470.140)			
T947140A1	Develop Procedures/Training for Melter Disposal	03JAN06	29APR06
T947140A2	OTPs/Tests for ILAW Melter Disposal	01MAY06	31AUG06
T947140B1	Dev Startup Notification Report for Melter Disp	03APR06	05JUN06
T947140B2	Develop Plan of Action (POA) for Melter Disposal	06JUN06	01AUG06
T947140B3	Dev Facility Plant Readiness Plan for Melter Dis	02AUG06	13SEP06
T947140B4	Cond Plant Ready Mgmt Self Assmt for Melter Disp	06JUN06	28NOV06
T947140C1	Perform Contractor ORR for Melter Disposal	29NOV06	19DEC06
T947140C2	Provide Tech/Admin ORR Support for Melter Disp	29NOV06	12DEC06
T947140C3	Closeout ORR Comments for Melter Disposal	13DEC06	19DEC06
T947140D1	Perform DOE-ORP ORR for Melter Disposal	20DEC06	28JAN07
T947140D2	Prov Tech/Admin DOE-ORP ORR Support for Mltr Dis	20DEC06	12JAN07
T947140D3	Closeout DOE ORR Comments for Melter Disposal	15JAN07	26JAN07
T947140D4	Obtain DOE CD-4 Approval for Melter Disposal	29JAN07	16FEB07
1.01.09.01.04 Close ILAW Disposal Facility			
1.01.09.01.04.01 ILAW D&D			
1.01.09.01.04.01.01 Close ILAW Disposal Facilities (470.080)			
T947080A	Deactivate ILAW Part 1 Facilities	01OCT12	26SEP18
T947080A1	Comp Deactivation-ILAW Part 1 Facilities		26SEP18
T947080A1M	Compl Deactivation of ILAW Pt1 Facilities		26SEP18



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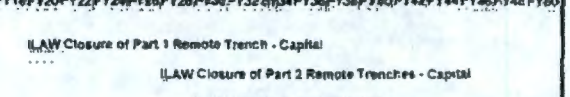
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.01.04.01.03	Closure D&D (640,050)		
T964050A1	ILAW Closure of Part 1 Remote Trench - Capital	01OCT18	31DEC20
T964050A2	ILAW Closure of Part 2 Remote Trenches - Capital	01OCT26*	29SEP28
T964050A3	ILAW Post Closure Monitoring	02OCT28	28SEP46*
1.01.09.01.04.01.04	Initiate Post-Closure Monitoring (550,020)		
T955020A1	Interact with HQ on Closure PA	01JUN28	29SEP28
T955020B1	Perf Long-Term Monitoring-ILAW Facilities	01OCT18*	28SEP46
T955020B1A	Comp Long-Term Monitoring-ILAW Facilities		28SEP46*
T955020B1B	END OF LLW DISPOSAL		28SEP46*



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APPENDIX C

IMMOBILIZED LOW-ACTIVITY WASTE WORK BREAKDOWN STRUCTURE DICTIONARY DESCRIPTION SHEETS

WORK BREAKDOWN STRUCTURE LEVEL 5 – FUNCTIONS

This appendix contains the work breakdown structure Level 5 dictionary sheets for the Immobilized Low-Activity Waste Disposal Subproject. This information is extracted from the RPP-00-127, *RPP FY2001 Bridge Change Request,* baseline submitted to the U.S. Department of Energy, Office of River Protection for approval and is consistent with the planning schedule information. These work breakdown structure Level 5 sheets contain the functions that are identified in the funding profiles and schedule; they do not contain functions that are not programmed.

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APPENDIX C

IMMOBILIZED LOW-ACTIVITY WASTE WORK BREAKDOWN STRUCTURE DICTIONARY DESCRIPTION SHEETS

1. Dictionary Title:	2. Date	3. PBS Number	4. Dict Rev
Dispose Immobilized LAW On-Site	August 31, 2000	RL-TW09	1
5. WBS No.	6. B&R No.	7. Baseline CR No.	
1.01.09.01.01	EW02J122		
8. Organization Name			
Immobilized Tank Waste Storage & Disposal			

9. Scope of Work

Provide onsite disposal of immobilized low-activity waste (ILAW). Transport, receive, unload, emplace, and cover sealed containers of ILAW from the Low-Activity Waste Treatment Facility. This includes monitoring during operational phases.

- The fiscal year 2001 work scope includes the following:
- Provide ILAW project management.
- Issue an updated ILAW project management plan.
- Finalize a Level 1 specification for disposal.
- Finalize writing and issuing of a 2001 performance assessment.
- Gather data for the 2005 performance assessment.
- Prepare waste acceptance criteria.
- Prepare melter disposal functional requirements.
- Prepare conceptual design and validation for Project W-520, ILAW Disposal Facility.

This activity supports achieving the following technical baseline functions:

- Provide onsite disposal of ILAW.

- Provide monitoring and control during the operational phase.

This work breakdown structure covers work necessary to support satisfying the following technical baseline requirements for the Hanford Site cleanup mission:

- The DOE has decided to implement the Phased Implementation alternative for the tank waste.
- The ILAW will be disposed of onsite in near-surface disposal facilities.
- Remediation levels and disposal standards that are consistent with long-term uses for the central plateau shall be established by the *Resource Conservation and Recovery Act of 1976;* the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980;* or the *National Environmental Policy Act of 1969.*
- The Central Plateau shall be used for the disposal of radioactive waste materials that remain onsite.
- Immobilized low-activity tank waste shall be disposed in the Central Plateau.
- The ILAW Disposal Facility Part B Dangerous Waste Permit Application will be submitted to the Washington State Department of Ecology (*Hanford Federal Facility Agreement and Consent Order [*Tri-Party Agreement] milestone: August 31, 2002).
- Construction of the ILAW Disposal Facility will be initiated (Tri-Party Agreement milestone: July 31, 2004).
- Hot operations of the ILAW Disposal Facility will be initiated (Tri-Party Agreement milestone: January 31, 2007).
- The ILAW Disposal Facility shall be capable of disposing of 80,000 ILAW packages.
- Project W-520 will provide capacity for approximately 13,500 ILAW packages for Phase 1.
- Phase 2 will construct additional trenches with a disposal capacity of 66,500 ILAW packages.

1. Dictionary Title:	2. Date	3. PBS Number	4.Dict Rev
Close Immobilized LAW Disposal Facility	August 21, 2000	RL-TW09	1
5. WBS No.	6. B & R No.	7. Baseline CR No.	
1.01.09.01.04	EW02J122		
8. Organization Name			
Immobilized Tank Waste Storage & Disposal			

9. Scope of Work

At the completion of monitoring of the Immobilized Low-Activity Waste (ILAW) Disposal Facility, the facility will be placed into a state to be the final disposal site for the ILAW. This could include decontamination of equipment and emplacement of a barrier.

This activity supports achieving the following technical baseline functions:

- Complete closure of the disposal facility as a final disposal action for ILAW generated at the waste treatment plant.

This work breakdown structure covers work necessary to support satisfying the following technical baseline requirements for the Hanford Site cleanup mission:

- The closure function shall include placement of a barrier/cover system over the disposal site to reduce infiltration of water and intrusion by humans, animals, and plants. The modified *Resource Conservation and Recovery Act of 1976* (RCRA) Subtitle C surface barrier shall be used for sites containing dangerous waste, Category 3 low-level waste (LLW) and/or Category 3 mixed LLW, and Category 1 mixed LLW, in accordance with DOE/RL-93-33, *Focused Feasibility Study of Engineered Barriers for Waste Management Units in the 200 Area*. This barrier is designed to provide long-term containment and hydrologic protection for 500 years. The 500-year performance period is based on radionuclide concentration and activity limits for Category 3 LLW. The modified RCRA Subtitle C barrier is composed of multiple layers of durable material with a combined minimum thickness of approximately 5 m. The design incorporates provisions to control bio-intrusion and human intrusion.

- Closure activities shall be performed under RCRA (40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities;" 268, "Land Disposal Restrictions;" and 270, "EPA Administered Permit Programs: The Hazardous Waste Permit Program;" and WAC 173-303, "Dangerous Waste Regulations" and -304,

"Minimal Functional Standards for Solid Waste Handling") and DOE Orders (5400 series and 435.1, *Radioactive Waste Management*).

REFERENCES

40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations*, as amended.

40 CFR 270, "EPA Administered Permit Programs: The Hazardous Waste Permit Program," *Code of Federal Regulations*, as amended.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601, et seq.

DOE O 435.1, 1999, *Radioactive Waste Management*, U.S. Department of Energy, Washington, D.C.

DOE/RL-93-33, 1996, *Focused Feasibility Study of Engineered Barriers for Waste Management Units in the 200 Area*, Rev. 1, prepared by Bechtel Hanford, Inc., for the U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Hanford Federal Facility Agreement and Consent Order, 1996, as amended, Washington State Department of Ecology, U.S. Environmental Protection Agency, and U.S. Department of Energy, Richland Operations Office, Richland, Washington.

National Environmental Policy Act of 1969, as amended, 42 USC 4321, et. seq.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

WAC 173-304, "Minimal Functional Standards for Solid Waste Handling," *Washington Administrative Code*, as amended.

APPENDIX D

DIVISION OF RESPONSIBILITY MATRIX

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APPENDIX D

DIVISION OF RESPONSIBILITY MATRIX

Organizational activity	LAW Interim Storage Project Office (DOE ORP PRD)	CHG management (RPP)[a]	CHG LAW Interim Storage Project	Design agent (subcontracts to CHG)[b]
Preconceptual phase activities				
Program functions and requirements	A	C	P	--
Design authority during subproject definition	--	--	P	--
Engineering trade studies (subproject definition)	I	A	R	P
Integrated flowsheets	I	A	P	--
Subproject design requirements document	A	C	P, R	R
Justification of mission need	A	P, C	R	R
Multi-year work plan[c]	A	P, C	P, R	--
Conceptual phase activities				
Subproject-specific budget documentation	A	P, R, C	P	S
Status reporting	I	R, C	P	S
Define program and subproject changes[d]	A	C, A	P, C, A	S
Subproject budget validation	A	R	P	S
Subproject Level 1 schedule	I	R	P,A	S
Design authority during subproject (after Critical Decision-1)	--	--	P	--
Design statement of work and letter of instruction	I	A, R	P	--
Concept design	A	R	R, C	E, P
Technology development	C	A, R	P	S
Engineering development	I	R	P, A	S
Subproject supplemental design requirements, design specifications	I	R	P, A	S
Total project cost estimate details	I	--	R, A	S
Project management plan	A	R, C	P	--
Organizational activity	LAW Interim Storage Project Office (DOE ORP PRD)	CHG management (RPP)	CHG LAW Interim Storage Project	Design agent (subcontracts to CHG)

Organizational activity	LAW Interim Storage Project Office (DOE ORP PRD)	CHG management (RPP)[a]	CHG LAW Interim Storage Project	Design agent (subcontracts to CHG)[b]
Execution phase activities				
Definitive design	R	--	R, A	P, E
Design reviews	I	--	A	P, E
Construction[c]	--	--	A	P, E
Operation and maintenance procedures	I	P, A	R	S
Technical safety requirements	R	P, A	P, R	--
Acceptance phase activities				
System startup testing	R	E	P, A	S
Operational testing	R	E	P, A	S
Operational readiness review	A	E	S	S

A = Approval authority.
C = Concurrence before submission to approval authority.
E = Principal responsibility for execution of function.
I = Information copy only.
P = Responsibility for preparing documentation (or significant input to same).
R = In-progress reviews and comment responsibility.
S = Support to principal preparer of document. Level of support depends on tasking as related to specific function.

NOTES:
[a]Required internal organizational approvals are identified in RPP-PRO-233, *Review and Approval of Documents*.
[b]Different subcontractors will be used as deemed appropriate for the various activities.
[c]The subproject will have responsibility for ILAW portions of a multi-year work plan, but CHG has overall responsibility for compiling the complete plan with input from other projects.
[d]Approval and/or concurrence levels are determined by the change request authority.
[e]DOE has final acceptance authority of facility as part of the ORR and Critical Decision-4.

CHG = CH2M HILL Hanford Group, Inc.
DOE = U.S. Department of Energy.
ILAW = immobilized low-activity waste.
LAW = low-activity waste.
ORP = Office of River Protection.
PRD = Project Requirements Division.
RPP = River of Protection Project.

APPENDIX E

CHANGE APPROVAL AUTHORITY MATRIX FOR THE IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT

Detailed information regarding the description of the change control process, threshold levels, and Change Control Board structure is contained in HNF-IP-0842, *RPP Administration,* Volume VIII, Section 1.1, "Baseline Change Control," CH2M HILL Hanford Group, Inc., Richland, Washington.

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APPENDIX E

CHANGE APPROVAL AUTHORITY MATRIX FOR THE IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT

Detailed information regarding the description of the change control process, threshold levels, and Change Control Board structure is contained in HNF-IP-0842, *RPP Administration,* Volume VIII, Section 1.1, "Baseline Change Control," CH2M HILL Hanford Group, Inc., Richland, Washington.

APPENDIX E

CHANGE APPROVAL AUTHORITY MATRIX FOR THE IMMOBILIZED LOW-ACTIVITY WASTE DISPOSAL SUBPROJECT

Change classification	Cost (BCWS) and scope	Milestones	RPP-WTP contractor	Other Site prime contractors	Performance incentives	Schedule	TEC and TPC	Approval authority
Class 0	>10% of the total ORP life-cycle costs and >20% of the current year ORP plan	≥6-month slip in major project deliverables	N/A	N/A	N/A	>10% or >24-month slip in project life cycle, whichever is less	N/A	DOE-HQ
Class 1	≥$3M	<6-month slip in DOE-HQ, ORP, DNFSB, Tri-Party Agreement* and Consent Decree	Yes or ICD impact	Yes	Yes	≥90 days per PMBS	Yes	ORP manager
Class 2	<$3M	Contractor	No	No	No	<90 days per PMBS	No	CHG president
Class 3	No	No	No	No	No	No	No	PBS Manager

NOTE: Threshold levels are defined in HNF-IP-0842, *RPP Administration*, Volume VIII, Section 1.1, "Baseline Change Control," CH2M HILL Hanford Group, Inc., Richland, Washington.

**Hanford Federal Facility Agreement and Consent Order*, 1996, as amended, Washington State Department of Ecology, Olympia, Washington; U.S. Environmental Protection Agency, Washington, D.C.; and U.S. Department of Energy, Washington, D.C.

BCWS = budgeted cost of work scheduled.
CHG = CH2M HILL Hanford Group, Inc.
DNFSB = Defense Nuclear Facilities Safety Board.
DOE-HQ = U.S. Department of Energy–Headquarters.
ICD = interface control document.
N/A = not applicable.
ORP = Office of River Protection.
PBS = project baseline summary.
PMBS = project master baseline schedule.
RPP-WTP = River Protection Project - Waste Treatment Plant
TEC = total estimated cost.
TPC = total project cost.

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