S

RECEIVED
FEB 05 2002
EDMC

0056291

SEP 22 2000 (4) STA# 4

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 630682

2. To: (Receiving Organization)	3. From: (Originating Organization)	4. Related EDT No.:
Document Control	CHG	703452
5. Proj./Prog./Dept./Div.:	**6. ~~Design Authority/Design Agent~~/Cog. Engr.:**	**7. Purchase Order No.:**
RPP IHLW Interim Storage Project	~~M.G. Briggs~~/R.B. Calmus	N/A
8. Originator Remarks:		**9. Equip./Component No.:**
This document supercedes HNF-1751, Rev 2 per ECN 165864		N/A
		10. System/Bldg./Facility:
		N/A
11. Receiver Remarks:	**11A. Design Baseline Document?** ☐ Yes ☒ No	**12. Major Assm. Dwg. No.:**
		N/A
		13. Permit/Permit Application No.:
		N/A
		14. Required Response Date:
		Immediate

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Approval Designator	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	RPP-6969	-	0	IHLW Interim Storage Plan	N/A	2	1	

16. KEY

Approval Designator (F)	Reason for Transmittal (G)	Disposition (H) & (I)
E, S, Q, D OR N/A (See WHC-CM-3-5, Sec. 12.7)	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION
(See Approval Designator for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN
		Design Authority N/A									
2	1	Design Agent N/A									
2	1	Cog. Eng. R.B. Calmus	RB Calmus	9/21/00	S4-45						
2	1	Cog. Mgr. T.J. Kelley	TJ Kelley	9/21/00	R2-88						
		QA N/A									
		Safety N/A									
		Env. N/A									

18.	19.	20.	21. DOE APPROVAL (if required)
M.G. Briggs Signature of EDT Originator — Date: 9/20/00	Authorized Representative for Receiving Organization — Date	T.J. Kelley Design Authority/ Cognizant Manager — Date: 9/21/00	Ctrl No. N/A ☐ Approved ☐ Approved w/comments ☐ Disapproved w/comments

DISTRIBUTION

Onsite

1	U.S. Department of Energy Richland Operations Office	
	DOE Public Reading Room	H2-53
1	Pacific Northwest National Laboratory	
	Hanford Technical Library	P8-55
3	Lockheed Martin Services, Inc.	
	Central Files	B1-07
	Document Processing Center	A3-94
	S. R. Nelson	G3-36

RIVER PROTECTION PROJECT IMMOBILIZED HIGH-LEVEL WASTE INTERIM STORAGE PLAN

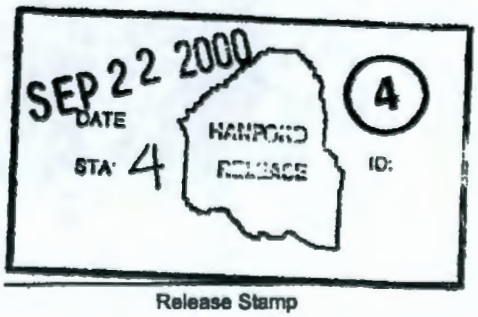
M. G. Briggs
Fluor Federal Services

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

EDT/ECN: 630682 UC: 721
Cost Center: CD510000 Charge Code: 105859B000
B&R Code: EW3130010 Total Pages: 118 120
PF 9-22-00

Key Words: Immobilized High-Level Waste Interim Storage, IHLW, HLW, IHLW Program Plan

Abstract: This document replaces HNF-1751, Revision 1. It incorporates updates to reflect changes in programmatic direction associated with the vitrification plant contract and associated DOE-ORP guidance. In addition it includes planning associated with failed/used melter and sample handling and disposition work scope. The document also includes format modifications and section numbering update consistent with CHG procedures.



Release Approval 9/22/00 Date

Release Stamp

Approved For Public Release

RPP-6969
Revision 0
(Formerly HNF-1751)

River Protection Project Immobilized High-Level Waste Interim Storage 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

RPP-6969
Revision 0
(Formerly HNF-1751)

River Protection Project Immobilized High-Level Waste Interim Storage Plan

R. B. Calmus
CH2M HILL Hanford Group, Inc.

M. G. Briggs
Fluor Federal Services

Date Published
September 2000

CH2MHILL
Hanford Group, Inc.

P. O. Box 1500
Richland, Washington

Contractor for the U.S. Department of Energy
Office of River Protection under Contract DE-AC06-99RL14047

CONTENTS

APPENDICES

FIGURES

TABLES

TERMS

A-E	architect-engineer
AB	authorization basis
ACD	advanced conceptual design
AGA	Alternative Generation and Analysis
BNFL	BNFL Inc.
Bq	Becquerel
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
DRD	design requirements document
DST	double-shell tank
DWPF	Defense Waste Processing Facility (Savannah River)
Ecology	Washington State Department of Ecology
EIS/ROD	Environmental Impact Statement/Record of Decision
EM	Office of Environmental Management (U.S. Department of Energy)
EM-WAPS	*Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms*
F&R	functions and requirements
FMEF	Fuels and Materials Examination Facility
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
IPT	Interface Process Team
ISMS	Integrated Environmental, Safety, and Health Management System
IWSP	Immobilized Waste Storage Project
LAW	low-activity waste
MCO	multi-canister overpack
MHM	MCO handling machine
MOA	Memorandum of Agreement
MRM	management review meeting
MYWP	multi-year work plan
NEPA	*National Environmental Policy Act of 1969*
NS&L	Nuclear Safety and Licensing

ORP	Office of River Protection (U.S. Department of Energy)
ORR	Operational Readiness Review
PEP	Project Execution Plan
PO	purchase order
PRD	Project Requirements Division (U.S. Department of Energy, Office of River Protection)
PSAR	preliminary safety analysis report
PSE	preliminary safety evaluation
QAPP	quality assurance program plan
RCRA	*Resource Conservation and Recovery Act of 1976*
RL	U.S. Department of Energy, Richland Operations Office
RPP	River Protection Project
RPP-WTP	River Protection Project – Waste Treatment Plant
RTP	Readiness-to-Proceed
RW	Office of Civilian Radioactive Waste Management (U.S. Department of Energy)
SA	Safety Analysis
SAR	safety analysis report
SARP	safety analysis report for packaging
SEMP	systems engineering management plan
SNF	Spent Nuclear Fuel
SOW	statement of work
SSC	structures, systems, and components
SST	single-shell tank
TBR	technical baseline requirement
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TPC	total project cost
TRS	technical requirements specification
TSD	treatment, storage, and disposal
USQ	unreviewed safety question
TWRS	Tank Waste Remediation System
WASRD	Waste Acceptance System Requirements Document
WBS	work breakdown structure
WESF	Waste Encapsulation and Storage Facility
WMH	Waste Management Federal Services of Hanford, Inc.

1.0 INTRODUCTION

This document originally was issued in 1997 (HNF-1751, Revision 0) and subsequently updated in 1999 (HNF-1751, Revision 1). The Revision 1 update was prepared to reflect several important programmatic events that occurred. Specific events necessitating the Revision 1 update were as follows:

- The evolution of the BNFL Inc. (BNFL) Privatization Phase 1A contract (DE-AC06-96RL13308) to 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 of 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 of the document to reflect the structure contained in HNF-1883, *Tank Waste Remediation System Program Plan.*

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

- Work scope realignment associated with the cancellation of the BNFL Privatization Contract and the subsequent reassignment of work
- Evaluation of the Fuels and Materials Examination Facility (FMEF) as a second-generation interim storage facility
- Disposal of the failed/used high-level waste (HLW) melters
- Transportation and disposition of immobilized high-level waste (IHLW) samples.

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 were incorporated for accurate cross-reference of source requirements. Appendix A includes a cross-reference map from the old format location to the new format location to assist the reviewer in locating previous information.

The original planning associated with this document was structured around the vitrification need dates as described in the 90 percent confidence case in the *Report to Congress, Treatment and Immobilization of Hanford Radioactive Tank Waste.* Because of contractual changes within the

overall HLW immobilization program, this document baseline has been updated to reflect the planning identified in RPP-00-127, *RPP-FY 2001 Bridge Change Request*, which incorporates the guidance provided in ORP Letter 00-PGO-002, *River Protection Project Key Planning Assumptions*. This document is reviewed annually, and updated accordingly, to ensure that it is consistent with current multi-year activity planning and reflects the appropriate subproject technical baseline documents.

1.1 DOCUMENT PURPOSE

This document has a two-fold purpose. First, it provides ORP IHLW interim storage program planning that addresses topics of specific interest to the Washington State Department of Ecology (Ecology). This program status was originally prepared in accordance with the requirements of *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 current Tri-Party Agreement requirements, and is consistent with the guidelines found in the Tri-Party Agreement Action Plan, Section 11.5. Appendix A provides a cross-reference table that identifies this document's response to 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 design and 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 (GPG-FM-002, "Critical Decision Criteria;" GPG-FM-005, "Test and Evaluation;" GPG-FM-006, "Performance Analysis and Reporting;" GPG-FM-009, "Baseline Change Control;" and GPG-FM-010, "Project Execution and Engineering Management Planning").

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

- Immobilized Low-Activity Waste (ILAW) Disposal Facility Subproject (WBS 1.01.09.01)
- Canister Storage Building (CSB) Subproject (Phase 1 Storage) (WBS 1.01.09.02)
- IHLW Storage Modules Subproject (Phase 2 Storage) (WBS 1.01.09.03).

This document discusses the planning for the CSB Subproject and the IHLW Storage Modules Subproject (Phase 2 Storage) along with the interfacing requirements. Hereafter, these two subprojects and the associated interfaces are identified as the IHLW Interim Storage Subproject.

The ILAW Disposal Facility Subproject planning is presented in RPP-6968, *River Protection Project Immobilized Low-Activity Waste Disposal 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 provides for safe storage and management of legacy and new waste through retrieval, treatment, and disposal of the waste; decontamination and decommissioning of RPP facilities; and eventual closure of RPP sites.

To support the environmental remediation and restoration effort at the Hanford Site, RL, the predecessor to the ORP, established a two-phased approach 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 HLW will be held in interim storage for eventual shipment to a national geologic repository and the low-activity waste (LAW) will be disposed of onsite in disposal facilities approved by the standards established by the *Resource Conservation and Recovery Act of 1976* (RCRA) and DOE O 435.1, *Radioactive Waste Management*.

The implementation of this two-phased approach resulted in a contract being awarded to BNFL in 1996 to initiate the Privatization Phase 1 vitrification facility design, construction, and operations. Because of programmatic issues associated with this acquisition approach, this contract was cancelled in April 2000. The pretreatment and vitrification plant design and construction are being recompeted by ORP, which will result in the selection of a contractor to design and build the government-owned and contractor-operated River Protection Project - waste treatment plant (RPP-WTP). The request for proposal for this effort has been released and ORP anticipates award of a new contract in February 2001.

The planning identified herein reflects the DOE Project Integration Office guidance provided in Letter 00-PGO-002. This guidance identifies the 90 percent trend planning case with an initial start of IHLW hot vitrification services in September 2008 and a completion schedule for Phase 1 in January 2018.

Waste treatment in Phase 2 will be a full-scale production effort that depends on the results of the demonstration proof-of-concept and is programmed to treat and immobilize the balance of

the remaining tank waste, including the cesium and strontium capsules currently stored at the Waste Encapsulation and Storage Facility (WESF). The Site planning schedule included herein reflects an IHLW treatment completion in 2028.

Current DOE planning identifies that tank farm operations will have the responsibility to supply the waste feed to the Phase 1 production facility. For Phase 2 full-scale production, vitrification operations will perform retrieval and feed delivery, as well as waste treatment and immobilization. CHG currently is assigned the responsibility to manage receipt and interim storage of the IHLW.

Receipt and acceptance of IHLW canisters will be based on the RPP-WTP operations contractor activities to qualify, verify, document, and certify the products along with DOE 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 certified for eventual safe and environmentally compliant transport to the onsite interim storage facility and the eventual shipment to a national geologic repository for final disposal. This acceptance process also will result in the delivery of ILAW packages for onsite disposal. Figure 4-1 presents this functional flow.

The IHLW Interim Storage Subproject responsibility consists of those activities required to receive DOE-certified waste that meets the requirements of DOE/RW-0351, *Waste Acceptance System Requirements Document (WASRD)*, and is documented as compliant as outlined in the *Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms* (EM-WAPS). Upon receipt of these certified canisters, the IHLW Interim Storage Subproject will maintain the canisters in a condition that will allow eventual receipt by the national geologic repository. The IHLW Interim Storage Subproject will provide supplemental documentation that certifies the canisters were stored in such a manner as to maintain the original production certifications. The receipt, storage, and preparation for disposal will conform to the quality assurance requirements identified in DOE/RW-0333P, *Office of Civilian Radioactive Waste Management Quality Assurance Requirements and Description.*

2.2 RIVER PROTECTION PROJECT IMMOBILIZED WASTE STORAGE AND DISPOSAL MISSION

The ORP established the Immobilized Waste Storage and Disposal Project to perform those activities necessary for the safe storage and disposal of IHLW and ILAW products. The Immobilized Waste Storage Project (IWSP) was tasked to coordinate with the federal disposal facilities to identify eventual long-term disposal and packaging requirements. To accomplish this mission, the IWSP organization has divided the Immobilized Tank Waste Storage and Disposal Project into three subprojects: the ILAW Disposal Facility Subproject, the CSB Retrofit Subproject (Phase 1 Storage), and IHLW Storage Modules Subproject (Phase 2 Storage). This document addresses the CSB Retrofit Subproject and the IHLW Storage Modules Subproject planning development and activities necessary to identify, monitor, and comply with the requirements allocated to these projects, hereafter jointly referred to as the IHLW Interim Storage Subproject, as flow-down from WHC-SD-WM-FRD-027, *Functions and Requirements Document for Interim Storage Solidified High-Level and Transuranic Waste.*

2.3 IMMOBILIZED HIGH-LEVEL WASTE INTERIM STORAGE SUBPROJECT MISSION AND OBJECTIVES

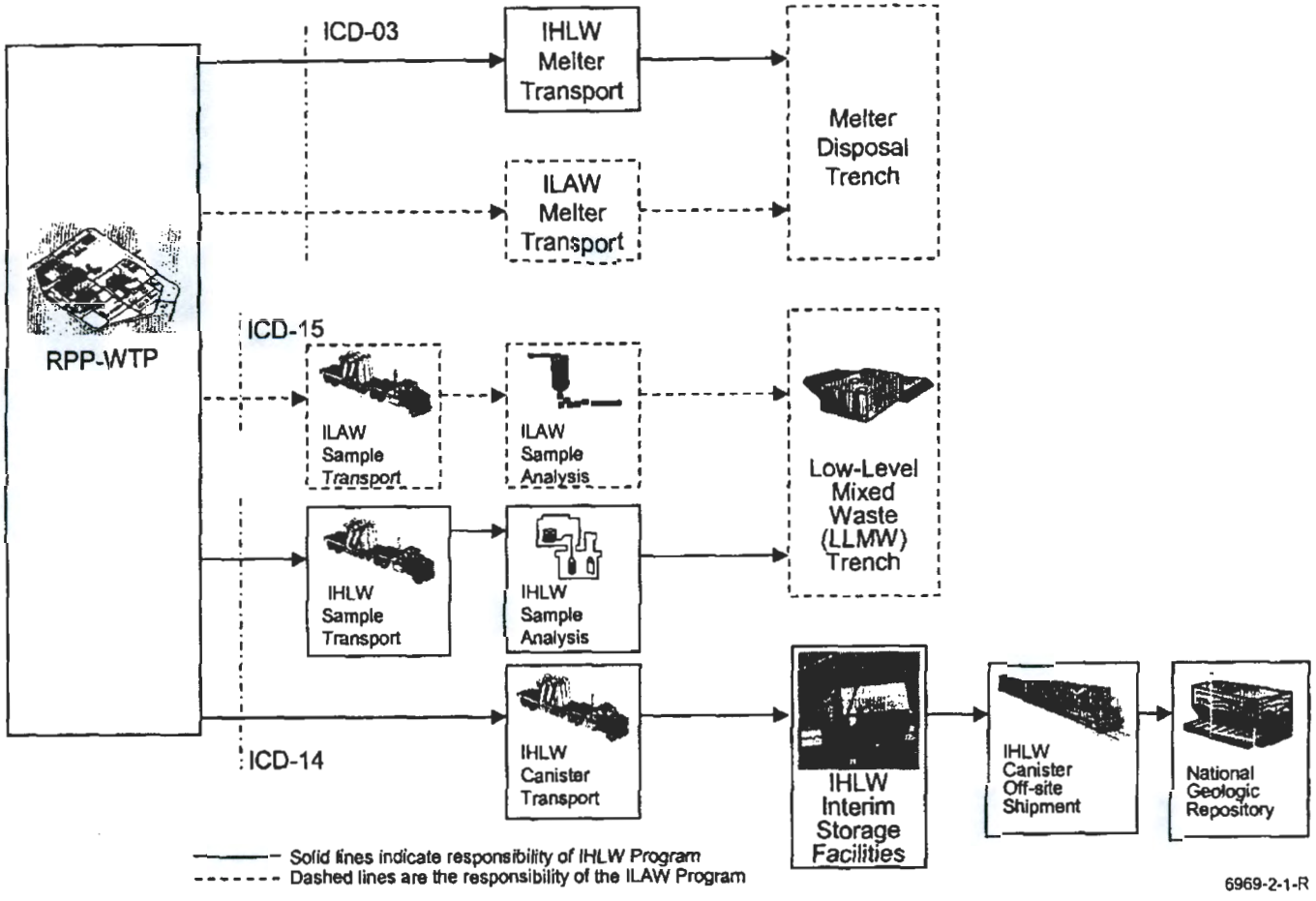
The primary missions of the IHLW Interim Storage Subproject, shown in Figure 2-1, are as follows:

- Interim storage and disposal of IHLW
  - Receive compliant IHLW canisters produced at the vitrification facility
  - Transport the IHLW canisters to Hanford Site interim storage facilities
  - Store the IHLW canisters safely and economically until they can be shipped to a permanent national geologic repository
  - Stage the IHLW canisters and prepare for shipment at an approved shipping facility
- Failed melter transportation and disposal
  - Transport failed/used IHLW melters created from the RPP-WTP to the disposal facility
  - Coordinate the disposal of failed/used IHLW melters at the ILAW disposal trench designed for this purpose
- IHLW sample transportation and disposal
  - Transport IHLW samples from the RPP-WTP to the sample testing facility
  - Dispose of tested samples as laboratory waste.

The primary objective of the IHLW Interim Storage Subproject is to provide onsite transportation systems and interim storage facilities for Phase 1 and Phase 2 IHLW canisters in accordance with the subproject mission. The planning for receipt and interim storage of the IHLW canisters shall be developed in compliance with the WASRD and the EM-WAPS to help ensure the eventual shipment to and acceptance by the national geologic repository.

Compliance with this mission shall be accomplished through the establishment of several line-item projects (WBS Level 4). The initial Phase 1 line-item project (WBS 1.01.09.02), Project W-464, IHLW Interim Storage Facility (Phase 1), will provide the onsite IHLW transportation system and the retrofit of the CSB to accept initial Phase 1 IHLW products for safe, environmentally secure storage.

Figure 2-1. Program Functional Relationships.



Phase 2 interim storage subproject planning has identified five line-item projects for Phase 2 storage and an additional line-item project for design and construction of a staging facility for offsite shipment preparation. The IHLW Storage Modules Subproject includes the design and construction of the Phase 2 storage facilities and the IHLW shipment staging facility. These projects are future activities that will be identified, as required, to support the IWSP objectives.

These modules will consist of newly constructed complexes (storage modules). If Phase 1 production proceeds into extended quantity levels, the CSB IHLW storage capacity of 880 could be exceeded. If this occurs, the first Phase 2 module or an approved alternative solution will be provided to accommodate the required additional storage. Section 4.4.4 discusses the feasibility of using the FMEF as an alternative solution to interim storage of additional Phase 1 canisters, along with initial Phase 2 capacity.

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

- Provide facility retrofit modifications or design and construction of IHLW interim storage facilities in accordance with the design requirement documents and the DOE budgeting process, including procurement of the necessary transportation systems. The system requirements document for each line-item project (Level 1 specification) will identify the federal, state, and local laws and regulations, along with the system technical requirements.

- Design and construct a shipment staging facility to support offsite shipment preparation of IHLW canisters to the national geologic repository.

- Obtain all necessary construction and operations permits and authorizations to accommodate construction and operation of the interim storage facilities. The operations dates for the interim storage capability shall be on a schedule consistent with ORP guidance.

- Develop and implement all necessary operational and equipment/facility decontamination and decommissioning plans for subproject interim facilities and supporting systems.

- Ensure compliance with environmental, safety, and health requirements identified in the *National Environmental Policy Act of 1969* (NEPA) and safety analyses.

- Integrate with applicable Site projects (e.g., Spent Nuclear Fuel [SNF] CSB canister storage project, FMEF) and other agencies (e.g., RPP-WTP design/build contractor, RPP-WTP operations contractor) to the extent necessary to maintain subproject goals and objectives.

2.4 IMMOBILIZED HIGH-LEVEL WASTE STORAGE AND 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 currently is 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. Part of this cleanup activity is the stabilization of the liquid HLW and LAW currently stored in the underground tanks. After several investigative studies by the U.S. Environmental Protection Agency, a vitrification process was deemed the best approach to stabilizing radioactive waste for long-term storage and disposal as documented in EIS/ROD 6450-01-P, *Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement, Richland, Washington*. The implementation of this process resulted in a privatization contract strategy using a private contractor for processing and vitrification. As part of this process, IHLW and ILAW will be produced that will require handling and storage.

The CHG IWSP is the lead organization to develop the interim storage and disposal techniques. The IHLW Interim Storage Subproject is part of this group, and is specifically responsible for ensuring that the IHLW is properly stored in approved interim facilities until prepared for shipment to an offsite national geologic repository. The approach for the development of the necessary technology is identified in DOE/EIS-0189, *Final Environmental Impact Statement for the Tank Waste Remediation System*, which was approved in 1996.

The current approach for the interim storage of initial Phase 1 IHLW canisters is to use the CSB vaults 2 and 3. Vault 1 of this facility is programmed for use by the SNF Project. The balance of Phase 1, beyond CSB capacity of 880 canisters, and the initial Phase 2 canisters will be stored in either the first of the Phase 2 modules or an approved alternative solution. Current planning includes the potential use of the FMEF as an alternate early Phase 2 interim storage facility as discussed in Section 4.4.4. A new shipping facility will be constructed to facilitate preparation of IHLW canisters for loading into repository shipping casks. The size of the additional interim storage facilities and shipment capacity depends on the IHLW Phase 2 production schedule and rate and the availability of the national geologic repository.

The IHLW Interim Storage Subproject also has the responsibility for providing the onsite transportation system(s) necessary to transport IHLW canisters from the vitrification facilities to the interim storage facilities along with the eventual relocation to the onsite shipment preparation facility. This initial transportation system will be provided as part of Project W-464.

Along with interim storage of IHLW canisters and the transportation system, the IHLW Interim Storage Subproject will provide for the transportation and disposition of failed/used vitrification

melters and the DOE IHLW samples. Planning is identified under the Phase 1 effort to identify the process and disposal requirements for the melters and samples. An alternatives generation and analysis and decision plan is planned for FY 2001 to evaluate the process to transport and dispose of the IHLW failed/used melters.

2.4.1 Cesium and Strontium Capsules

A primary objective of the TWRS before 1998 was to evaluate and select the path forward for disposal of the cesium and strontium capsules and, if appropriate, implement the selected option. The Project Management Hanford Contract team (now Fluor Project Hanford) submitted a recommended approach for the disposition of these capsules to the DOE in FY 1997 (HNF-SD-WM-RPT-294, *Decision Document for the Final Disposition of Cesium and Strontium Capsules*). The DOE subsequently concurred with the recommendation to blend the contents of the cesium and strontium capsules into the waste treatment Phase 2 IHLW vitrification feed. The decision to blend these capsules into the IHLW vitrification stream was deferred in EIS/ROD 6450-01-P pending a determination if there is a future use for this material.

This page intentionally left blank.

3.0 SCOPE OF THE IMMOBILIZED HIGH-LEVEL WASTE INTERIM STORAGE SUBPROJECT

This document presents the organizational and management approaches used to control and execute the IHLW Interim Storage Subproject. This document identifies the project management planning for the subproject and lower-tier line-item projects required for safe and economical interim storage and shipment, including identification and management of subproject milestones and schedules. The cost and schedule information presented in this document is consistent with RPP-00-127.

Specifically, this document covers the following key elements:

- Mission and objectives
- Definition and background
- Scope summary
- Budget summary and cost management
- Tri-Party Agreement milestones and schedule management
- Risk assessment and mitigation approach
- Organizational and technical interface management and identification
- Acquisition strategy development and implementation
- Approach to quality, safety, environmental protection, systems engineering, and test and evaluation
- Subproject and line-item project management and control.

3.1 IMMOBILIZED HIGH-LEVEL WASTE INTERIM STORAGE SUBPROJECT REQUIREMENTS

The IHLW Interim Storage Subproject has established design basis functions and requirements necessary to provide interim storage of the Phase 1 and Phase 2 IHLW canisters as identified in WHC-SD-WM-FRD-027. Design requirements have been established and are contained in WHC-SD-WM-DRD-012, *Design Requirements Document for the Interim Store Phase I Solidified High-Level Waste, Function 4.2.4.1.2* (DRD), which provides the Phase 1 initial storage capability. The requirements from WHC-SD-WM-DRD-012 will be transitioned to a Level 1 system specification after completion of conceptual and advanced conceptual design activities. For Phase 2 projects, Level 1 system specifications will be developed for each line-item project to document the project requirements, including regulatory compliance references. It is expected that the Phase 2 Level 1 specifications will be similar to the Phase 1 Level 1

specification in terms of performance and regulatory requirements. The IHLW Interim Storage Subproject design basis documents include system definition, characteristics, interfaces, performance requirements, and applicable system constraints.

The Level 1 system specification design constraints include federal government regulations, Washington State regulations, and DOE Orders applicable to the design, construction, and operation of the IHLW interim storage 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 IHLW inventories, and storage planning overview.

4.1 GENERAL CHARACTERISTICS OF HIGH-LEVEL WASTE

Hanford Site radioactive tank waste was primarily produced from reprocessed irradiated fuel from plutonium production reactors. The Hanford Site tank waste is stored in 149 single-shell tanks (SST) and 28 double-shell tanks (DST). The SSTs contain approximately 127,200 m^3 of salt cake, sludge, and residual liquid and the DSTs contain approximately 77,200 m^3 of liquid, salt, and sludge (HNF-EP-0182-144, *Waste Tank Summary Report for Month Ending March 31, 2000*). The tanks have a combined activity level of approximately 2.28 x 10^8 Curies (845 x 10^{16} Becquerel [Bq]), decayed to January 1, 1994 (HNF-SD-WM-SP-012, *Tank Farm Contractor Operation and Utilization Plan*). Detailed tank waste characteristic information can be found 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 173-303, "Dangerous Waste Regulations," Part 070.

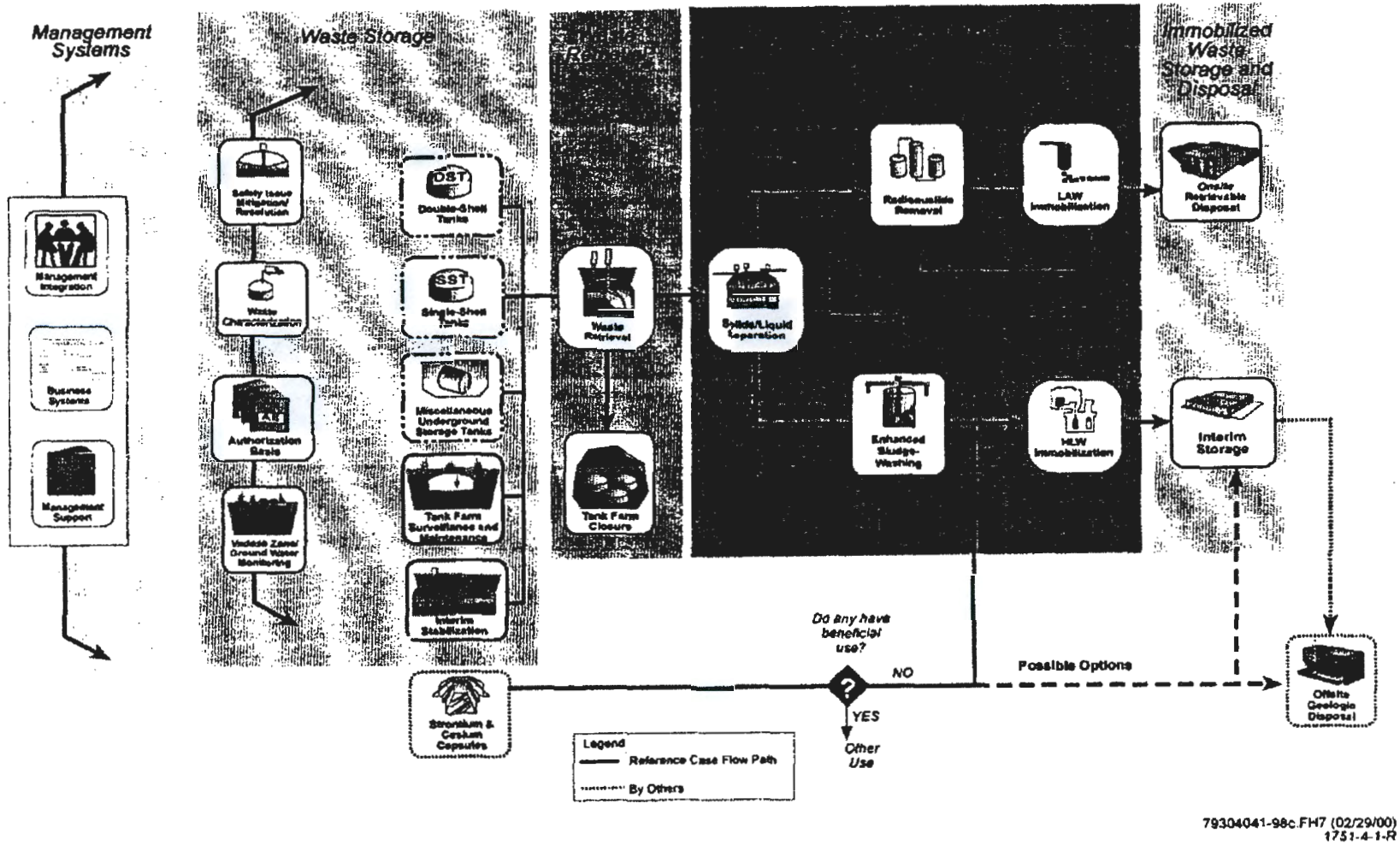
In addition to the waste stored in the underground tanks, 1,936 capsules (6.7 cm diameter by 52 cm high) consisting of 1,335 cesium capsules and 601 strontium capsules, with a total radioactivity of approximately 1.33 x 10^8 Curies (490 x 10^{16} Bq) decayed to January 1, 2000. These capsules, created by a waste stabilization process that removed the cesium and strontium radionuclides from the underground storage tanks, are stored at the WESF. This process removed a large quantity of the cesium and strontium in the tanks, thus reducing the tank activity levels.

4.2 WASTE PROCESSING LOGIC

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

- The solids and liquids are separated for processing. The soluble salts and supernate solutions (liquids) are staged for pretreatment as LAW vitrification feed after treatment to remove soluble cesium, technetium, strontium, and transuranics. The sludge (solids) is pretreated after transfer from the DST.

Figure 4-1. Vitrification Waste Processing Flow.



- The separated radionuclides, removed during the LAW feed separation process, are blended with pretreated sludge and staged for HLW vitrification feed.

The candidate Envelope D (HLW) feed source tanks for Phase 1 include 241-AZ-101, 241-AZ-102, 241-AY-101, and 241-AY-102, which are early delivery because of their high radionuclide concentrations; tank 241-C-104, which contains large amounts of sludge; and 241-SY-102, which has strategic operation consideration as a result of waste compatibility issues (HNF-SD-WM-SP-012).

Planning by the IHLW Interim Storage Subproject assumes 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 IHLW 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 the Phase 1 quantities, by 2028.

4.3 PROJECTED INVENTORIES FOR HIGH-LEVEL WASTE PRODUCTS

The Phase 1 minimum order quantity of IHLW is 600 stainless steel canisters (see Table 4-1). The Phase 1 maximum order quantity is derived from 99-AMPD-006, *Planning Guidance Revisions for Development of Contract Deliverables Required for Performance Agreement TWR 1.3.5*), and is based on production of 120 canisters per year beyond the minimum order quantity. This extended order quantity is based on an extended Phase 1 production schedule, beyond the minimum order quantity duration, from February 2012 to February 2018. The maximum extended order quantity creates a total Phase 1 count of 1,100 IHLW canisters.

It is anticipated the balance of the canister production will result in an additional 11,600 canisters in Phase 2 that will be immobilized by 2028. This quantity is based on a Phase 1 minimum order quantity of 600. If Phase 1 continues into extended order quantity production, the Phase 2 canister will be adjusted downward accordingly. The overall canister count is based on RL guidance provided in 98-WDD-103, *Waste Disposal Division: Multi-Year Work Plan (MYWP) Update Guidance for Fiscal Year 1999 (FY99)*.

Each of these canisters, 4.5 m high by 0.61 m diameter, has a fill capacity of 1.15 m^3 of IHLW as directed by RL (97-WDD-146, *Tank Waste Remediation System [TWRS] High-Level Waste [HLW] Canister*).

Table 4-1. Phase 1 and Phase 2 Immobilized High-Level Waste Production Inventories.

Canister size and characteristics	Estimated number of canisters
Phase 1 – Proof-of-concept and demonstration	
Glass volume: 1.15 m^3[a]	Minimum order:[b] 600
Stainless steel seal-welded canister, 4.5 m high by 0.61 m diameter (outside diameter)[a]	Maximum order:[b] 1,100[c]
Phase 2 – Full production process	
Glass volume: 1.15 m^3[a]	
Stainless steel seal-welded canister, 4.5 m high by 0.61 m diameter (outside diameter)[a]	11,600[d]

[a]The River Protection Project Immobilized Tank Waste Project was directed in September 1997 (97-WDD-146, *Tank Waste Remediation System [TWRS] High-Level Waste [HLW] Canister*) to rebaseline using the 4.5 m high by 0.61 m diameter IHLW canister with an average fill-capacity of 1.15 m^3.

[b]The minimum order quantity is identified in 00-PGO-002, *River Protection Project Key Planning Assumptions*. The Phase 1 maximum order quantity is derived from the production rates identified in the same reference.

[c]CSB vault 2 and 3 capacity is 880 canisters; therefore, the initial Phase 2 interim storage module will be used to store the balance of Phase 1 maximum production inventory beyond the CSB capacity.

[d]The Phase 2 canister estimate is based on a total canister count of 12,200 canisters with Phase 1 minimum order quantity as identified in an RL memorandum (Taylor, W. J., 1997, *Repository Environmental Impact Statement [EIS] Data Call for High-Level Waste [HLW]*, Memorandum [to K. G. Picha, U.S. Department of Energy, Office of Waste Management], August 8, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

BNFL = BNFL Inc.
CSB = Canister Storage Building.
IHLW = immobilized high-level waste.
RL = U.S. Department of Energy, Richland Operations Office.

4.4 IMMOBILIZED HIGH-LEVEL WASTE STORAGE DEVELOPMENT AND IMPLEMENTATION PLANNING

4.4.1 Storage Selection Assessments

In FY 1996 during the pre-conceptual design phase of the project identified to retrofit the CSB for IHLW, Project W-464, a task was established to define the system, functions, and requirements for the IHLW Interim Storage Subproject, specific to the HLW vitrification mission. This task assessed existing and new Hanford Site facilities along with other government-owned and commercially available systems to determine their suitability for providing interim storage of IHLW products. In addition, the task identified and evaluated alternative concepts (proposed system architectures) to determine whether they meet system functions and requirements. Three general categories of potential architectures for IHLW interim storage were evaluated: buildings, pads, and boreholes.

Building storage concepts included using existing Hanford Site facilities and the construction of new facilities. Existing facilities evaluated included surplus shielded structures in the Hanford Site 200 Area (B Plant, T Plant, and the Plutonium-Uranium Extraction Plant), 400 Area

(FMEF), and an Energy Northwest site (modifying the Washington Nuclear Plant-1 spray ponds). In addition, the SNF CSB was considered.

The SNF CSB is representative of IHLW storage vault facilities worldwide. This method (storage tube containment) is used to store HLW in the United States at the DOE Savannah River Site in Aiken, South Carolina, and internationally in France and Great Britain. New facilities assessed included construction of new CSB-type facilities for Phase 1 and Phase 2 capacities. New construction was limited to a building concept based on passive cooling by natural convection.

Many existing commercial pad storage systems were evaluated. The pad storage system selected for detailed evaluation was the NUHOMS[1] system. The NUHOMS facility consists of a concrete pad, a fenced perimeter, and several modular, pre-fabricated bunkers (vaults). Natural convection cools the vaults.

Boreholes (or dry well) are essentially storage tubes, similar to those used in the CSB-type alternative, that are imbedded in the ground in non-shrink concrete.

A decision process was developed and implemented to select IHLW storage architectures for Phase 1 and Phase 2 capabilities. The process determined that sufficient information was available to select the Phase 1 architecture, but additional identification and evaluation of Phase 2 architecture options will remain open for further assessment. At the conclusion of this process, the Phase 1 CSB interim storage architecture was recommended (WHC-SD-WM-TA-183, *HLW Interim Storage Architecture Selection - Decision Report*) and approved by RL (96-WDD-165, *Concurrence, High-Level Waste [HLW] Interim Storage Architecture Selection Decision Report*).

The approved architecture entails retrofitting the SNF CSB to make this facility suitable for interim storage of Phase 1 IHLW. After this architecture was selected, the SNF Project and the ORP established a Memorandum of Agreement (MOA) (96-SFD-104, *Memorandum of Agreement [MOA] – Utilization of Canister Storage Building [CSB] Vaults 2 and 3 for Immobilized High-Level Waste*) that assigned CSB vaults 2 and 3 to the RPP IWSP.

In 1999, the Project Hanford Management Contract team completed HNF-3899, *Immobilized High-Level Waste Interim Storage Alternatives Generation and Analysis and Decision Report* to evaluate if programmatic developments impacted the original decision to retrofit the CSB to accommodate the Phase 1 IHLW canisters. This resulting decision review confirmed the original decision to use the CSB. This report also recommended further evaluation of the Hanford Site FMEF as a follow-up interim storage facility to supplement the CSB. Section 4.4.4 provides a discussion regarding the FMEF alternatives generation and analysis evaluation and decision process.

Storage for Phase 2 IHLW will be provided as part of the IHLW Interim Storage Subproject, Phase 2 Subproject. The specific approach in providing this storage capability will be assessed

---

[1]NUHOMS is a registered trademark of Vectra Technologies, Inc.

and determined within a timeframe to support the Phase 2 vitrification schedule. Included with this subproject will be the necessary support for operations, maintenance, and eventual disposition at the national geologic repository.

4.4.2 Initial Phase 1 Facility

Upon approval of an MOA between the SNF Project and the TWRS Project, the interim storage functions and requirements were established (WHC-SD-WM-FRD-027) and served as the basis for the CSB project requirements definition. This document identified the requirements for the CSB Conceptual Design Report (CDR) (HNF-2298, *Conceptual Design Report for Immobilized High-Level Waste Interim Storage Facility [Phase 1]*), along with the quality assurance provisions and transportation system requirements. The Level 1 specification will be finalized before initiating detailed design to ensure that all vitrification facility interface requirements (as documented in an interface control document [ICD] and other appropriate sources) are incorporated into the design baseline. ICDs are used to establish and control the functional interface organizational activities and systematic interface requirements, necessary to baseline acceptance criteria, between RPP IWSP and the vitrification process.

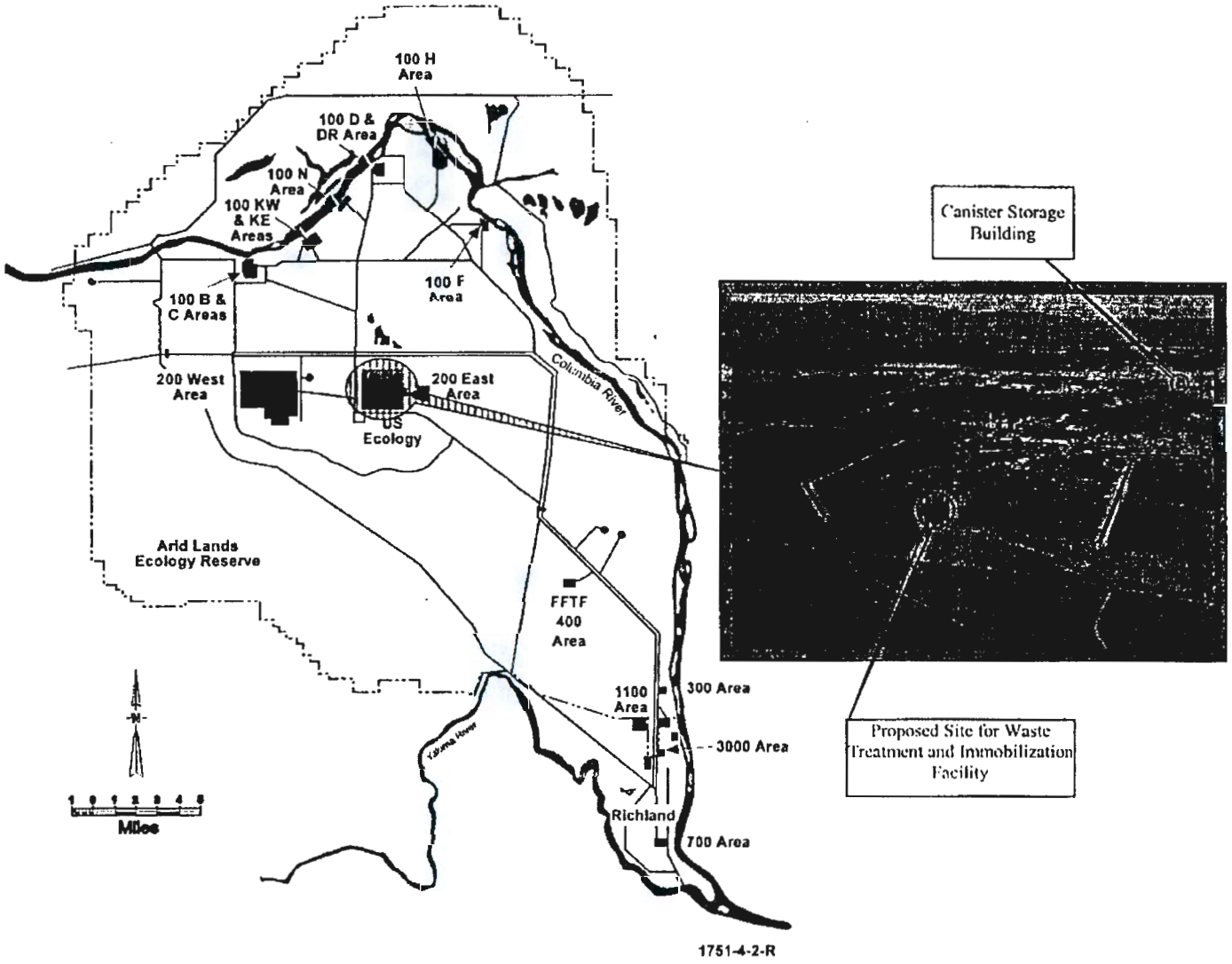
Design, construction, and pre-operational activities for the CSB IHLW interim storage capability will be performed to meet the June 2008 startup date as identified in the schedule contained in Appendix B. This baseline schedule is consistent with the guidance contained in Letter 00-PGO-002 and will serve as the basis for future planning activities.

4.4.2.1 Existing Storage Facility Description. This section provides a general description of the existing CSB design (SNF Project W-379). Section 4.4.2.2 provides a discussion on required modifications to the CSB necessary to provide interim storage of the Phase 1 IHLW.

The CSB (Building 212H) is located in the 200 East Area of the Hanford Site, approximately 48 km northwest of Richland, Washington. Figure 4-2 shows the location of the CSB within the Hanford Site and identifies the location for the proposed vitrification facilities. Figure 4-3 depicts the configuration of the Project W-379 CSB. Vault 1 will provide the storage for the SNF materials, and vaults 2 and 3 will be used for the IHLW canisters.

The CSB structure consists of a steel shelter 41 m wide, 62 m long, and 17 m high. The shelter, along with the identified storage capability, provides the operations area for load-in/load-out activities. The load-in/load-out area contains two service pits. One is designed specifically for transferring a multi-canister overpack (MCO) containing SNF from the onsite transport cask to the MCO handling machine (MHM). The second pit is much larger and is designed to accommodate service/transfer of larger SNF packages (i.e., Test Reactor and Isotope Production General Atomics and Fast Flux Test Facility fuels). A separate metal building, 15 m wide, 37 m long, and 9 m high, constructed as part of the main facility, provides the mechanical, electrical, and support services.

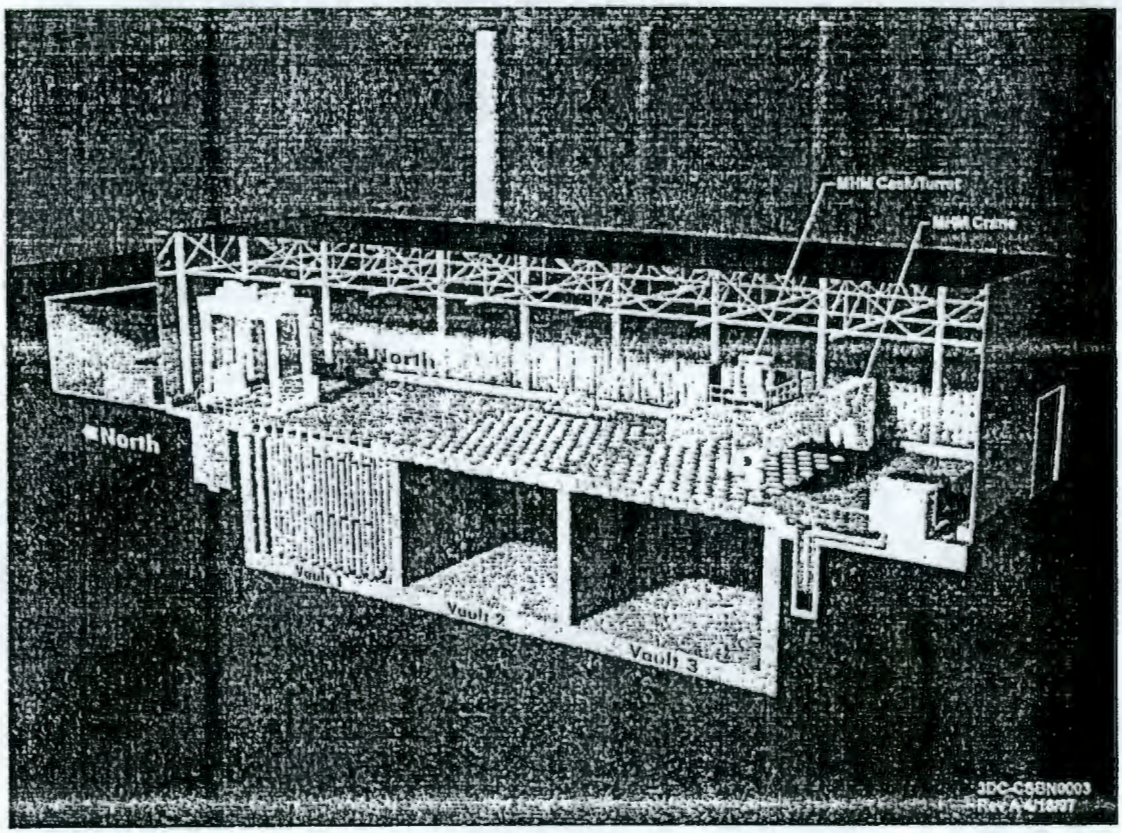
Figure 4-2. Canister Storage Building Location within the Hanford Site.



The CSB storage area consists of three below-grade vaults approximately 50 m wide, 55 m long, and 14 m deep. A concrete deck covers the vaults and each vault has concrete air plenums on opposite sides. The below-deck concrete partition walls allow independent vault cooling. Each vault provides a storage tube matrix of 22 rows by 10 columns for a total array of 220 "standard" storage tubes. Each vault also can accommodate six larger-diameter tubes for canister overpack. (NOTE: During Project W-464 upgrades, one overpack tube in each vault will be sacrificed to provide construction access. The five remaining tubes should be sufficient to accommodate IHLW program requirements.) The standard and overpack tubes are constructed of carbon steel. Each standard tube can accommodate two, 4.5 m high by 0.61 m diameter, IHLW canisters and associated impact limiters at the bottom of the tube and between the canisters. This standard tube provides approximately 11 m of vertical space, with a 0.68 m inside diameter. These storage tubes have a designed shielded plug for closing and sealing the tubes at deck level and a

2.54 cm receiving plate seal-welded to the bottom of the tube. The plug is removable to accommodate installation and removal of waste canisters.

Figure 4-3. Canister Storage Building Configuration.



Natural convection removes decay heat from each vault. Cooling air is drawn down through an inlet duct into a plenum that feeds each vault. The air flows across the outer surface of the storage tubes and exits through an elevated exhaust stack. Air is directed around the tubes by the installation of air deflectors installed along the outer vault walls.

Project W-379, SNF CSB Project, included an annex to the southern-most vault, vault 3. This annex is called the sample/weld station (formerly called the hot conditioning annex) and provides features to sample and seal-weld an MCO for interim storage. The sample/weld station is a reinforced-concrete structure that houses mounting plates for the process modules and provides seven process pits for sampling and welding equipment. The sample/weld station operating deck is 10.7 m wide, 42.3 m long, and 1.5 m thick with a reinforced-concrete slab supported at grade level.

Project W-379 has carbon steel tubes installed in vault 1 along with the intake/exhaust stacks and the associated closure plugs. No steel tubes or system provisions are included for vaults 2 and 3. Project W-464 will provide the modifications identified for vaults 2 and 3 to accommodate IHLW interim storage.

4.4.2.2 Upgrades to Canister Storage Building to Support Immobilized High-Level Waste Interim Storage. After completion of the SNF CSB construction and start of active facility operations (emplacement of MCOs for long-term passive storage), Project W-464 intends to outfit the CSB by installing new features (structures, systems, and components [SSC]) to enable receipt and storage of Phase 1 IHLW canisters. The SNF Project will use vault 1 for interim storage of SNF MCOs; Project W-464 will retrofit vaults 2 and 3 for interim storage of IHLW canisters. Conceptual design for the CSB retrofit (HNF-2298) was completed in FY 1998.

Using the CSB for initial Phase 1 interim IHLW storage requires procurement of a new onsite transportation system, including trailer with shielded transport cask, and installation of CSB equipment and subsystems that are not required for storage of SNF in vault 1. The required CSB modifications are identified in detail in HNF-2298. In summary, the following transportation systems and CSB features will be required to support Project W-464 objectives:

- A trailer and shielded cask system will be procured that is capable of transporting the Phase 1 IHLW from the vitrification facility to the CSB. The cask design will meet onsite transportation requirements and provide adequate cooling and shielding of the IHLW. The casks containing IHLW canisters will be transported in a vertical orientation to facilitate the interface to the vitrification facility loading grapple and IHLW offloading grapple.

- A new IHLW receiving annex will be added to the southeast corner of the CSB. This annex will be used to accept the IHLW transportation system, accommodate unloading of the onsite transfer cask, support remote handling of the IHLW during unloading from the cask, provide transfer of the IHLW from the cask to the CSB IHLW handling system, and support maintenance of the CSB IHLW handling system.

- A new handling system will be procured to handle IHLW within the CSB. The CSB IHLW handling system will be similar to the handling system used to transfer IHLW canisters at the Savannah River Site Defense Waste Processing Facility (DWPF). The DWPF system uses a shielded canister transporter mounted on rubber tires with hydraulic systems for propulsion, raising and lowering the shielded casks, steering, and braking. Diesel and electrical motors power the DWPF unit. Two key differences between their system and Hanford Site requirements are the CSB/vitrification requirement to handle 4.5 m high canisters as opposed to the DWPF 3 m high canisters and the operating environment, which impacts the propulsion systems. The CSB system will operate entirely within the facility as opposed to internal/external facility-to-facility use of the DWPF, thus the CSB system will operate completely with electrical power instead of the diesel/electrical power of the Savannah River system.

- An integrated storage tube system will be added to the vault 2 and 3 standard and overpack storage tube operating deck penetrations. The integrated storage tube system includes the storage tube assemblies (bellows and carbon steel storage tubes), tube plugs, tube impact absorbers, and tube base assemblies.

- Appropriate-sized inlet and exhaust stacks will be designed and constructed to allow natural convection cooling air to be drawn through each of the two vaults.

- Shielding will be added as necessary to meet operating deck and environmental requirements.

- Overpack capability will be provided to safely store contaminated or damaged canisters.

Preliminary design for Project W-464 currently is planned to start in July 2001 and scheduled for completion in September 2002. This preliminary design information will incorporate the issues identified in the Project W-464 advanced conceptual design. Specific issues are the thermal loading and stress analyses, use of insulation concrete, cooling airflows, and storage tube installation.

4.4.3 Phase 2 Facilities

The current baseline planning includes the establishment of several Phase 2 storage facilities (modules) with a storage capacity of 2,640 canisters each. These facilities will provide the capacity to store the balance of the IHLW canisters (approximately 12,000 packages). This phased approach avoids significant capital expense at the beginning of the Phase 2 operation and allows for the implementation of potential change to the overall estimate of Phase 2 IHLW canister quantity. This approach also provides for flexibility in accommodating differences in Phase 2 IHLW product characteristics (e.g., heat load and source term) associated with tank waste processed in the later stages of Phase 2 that could impact facility storage requirements.

Preliminary planning contains the requirements and implementation planning for the Phase 2 IHLW interim storage capability. The schedule identifies engineering studies and alternative generation and analyses starting in FY 2005 necessary to identify the advanced planning of the design, construction, and operation of the Phase 2 storage modules and the shipping facility. Future project planning has been identified to develop the design and implementation approach for interim storage of the Phase 2 canisters. These Phase 2 storage modules will be developed within the timeframe to support the vitrification schedule.

The final Phase 1 Level 1 specifications will be used as the basis for establishing the Phase 2 design requirements. The current baseline reflects construction of the first Phase 2 facility to handle the balance (past 880 canisters) of Phase 1 production beyond the CSB vault 2 and 3 capacity.

Current planning identified the approach of using a CSB-type facility for these Phase 2 storage modules. As part of the planning for additional storage capacity, the FMEF was evaluated as a potential candidate facility (see Section 4.4.4).

4.4.4 Fuels and Materials Examination Facility Evaluation and Recommendation

One result of HNF-3899 was a recommendation that a more detailed engineering evaluation of the FMEF be undertaken to determine whether the FMEF is the most viable candidate for IHLW interim storage once the CSB is filled to capacity. Based on this recommendation, an engineering study (CO-00-RPP-363, *Feasibility Study, Fuels and Materials Examination*

Facility, Immobilized High-Level Waste Interim Storage) was completed as part of a planned FY 2000 activity.

The study evaluated the existing FMEF to identify the required structure and equipment modifications (e.g., facility heating, ventilation, and air conditioning systems; decontamination systems; various mechanical handling systems; and operational considerations) necessary to support IHLW interim storage and shipping capabilities. Based on the IHLW canister's physical size, the study determined that the FMEF can accommodate approximately 990 canisters. Although a conceptual design will be required to formally address heat load constraints, floor loading limitations, and other operational considerations, the anticipated result is that the FMEF storage capacity can support the balance of Phase 1 canisters beyond the CSB capacity (880 canisters) plus some initial Phase 2 canisters.

While the FMEF is considered a viable interim storage alternative, the CHG Decision Board recommended deferring a decision on the use of FMEF. The rationale for this recommendation is that programmatic uncertainties associated with IHLW production rates and shipping schedules preclude a definitive decision on the practicality of the FMEF storage capacity. Furthermore, the Decision Board concluded that delaying this decision by two years would not impact any implementation strategies. Therefore, the CHG Decision Board did not consider a decision on FMEF use to be prudent at this time. The CHG recommendation on FMEF use as a second-generation interim storage facility was forwarded to the ORP through Letter CHG-00004616, *Contract Number DE-AC06-99RL14047; Partial Completion of Fiscal Year 2000 Performance Incentive ORP9.1.1, Standard 4, and Section 4, Expectation 4, "Recommendation on use of Fuels and Materials Examination Facility (FMEF) for the Second Generation Immobilized High-Level Waste (IHLW) Interim Storage Facility*) for its concurrence. The ORP subsequently agreed with this recommendation through Letter 00-PRD-060, *Contract No. DE-AC06-99RL14047 - Partial Completion of Fiscal Year (FY) 2000 Performance Incentive ORP9.1.1, Standard 4M and Section 4, Expectation 4 - Recommendation on use of Fuels and Materials Examination Facility (FMEF) for the Second Generation Immobilized High-Level Waste (IHLW) Interim Storage Facility.*

4.4.5 Immobilized High-Level Waste Sample Disposition

Part of the IHLW Interim Storage Subproject is the identification and development of the process and facilities to transport and dispose of Phase 1 and Phase 2 IHLW certification samples. These samples will be taken from various vitrified products during processing and will be used to certify the IHLW canisters' compliance with the process specifications and national geologic repository disposal waste acceptance requirements. Upon completion of the analysis of these samples, they will be transported to an onsite facility for disposal. The current planning associated with this function is contained in RPP-6227, *Storage and Disposal Program Product Sampling Support.*

Current planning for the disposition of these samples is that the 222-S Laboratory would dispose of all samples in an existing low-level mixed waste trench. Because of the quantity, volume, and nature of these samples, the laboratory should be able to dispose of this material as laboratory

waste; therefore, no additional assessment of sample disposal is identified in the current baseline planning.

4.4.6 Failed/Used Melter Disposition

Part of the IHLW Interim Storage Subproject is the identification and development of the process and facilities to transport and dispose of Phase 1 and Phase 2 IHLW failed and spent melters. It is anticipated that the failure mode will be such that the failed or spent melters can be disposed of as low-level waste.

The current planning for melter disposition is to place the melters in disposal packages and place the loaded packages into a dedicated onsite disposal trench. Specific planning for melter disposal is addressed in detail in RPP-6968.

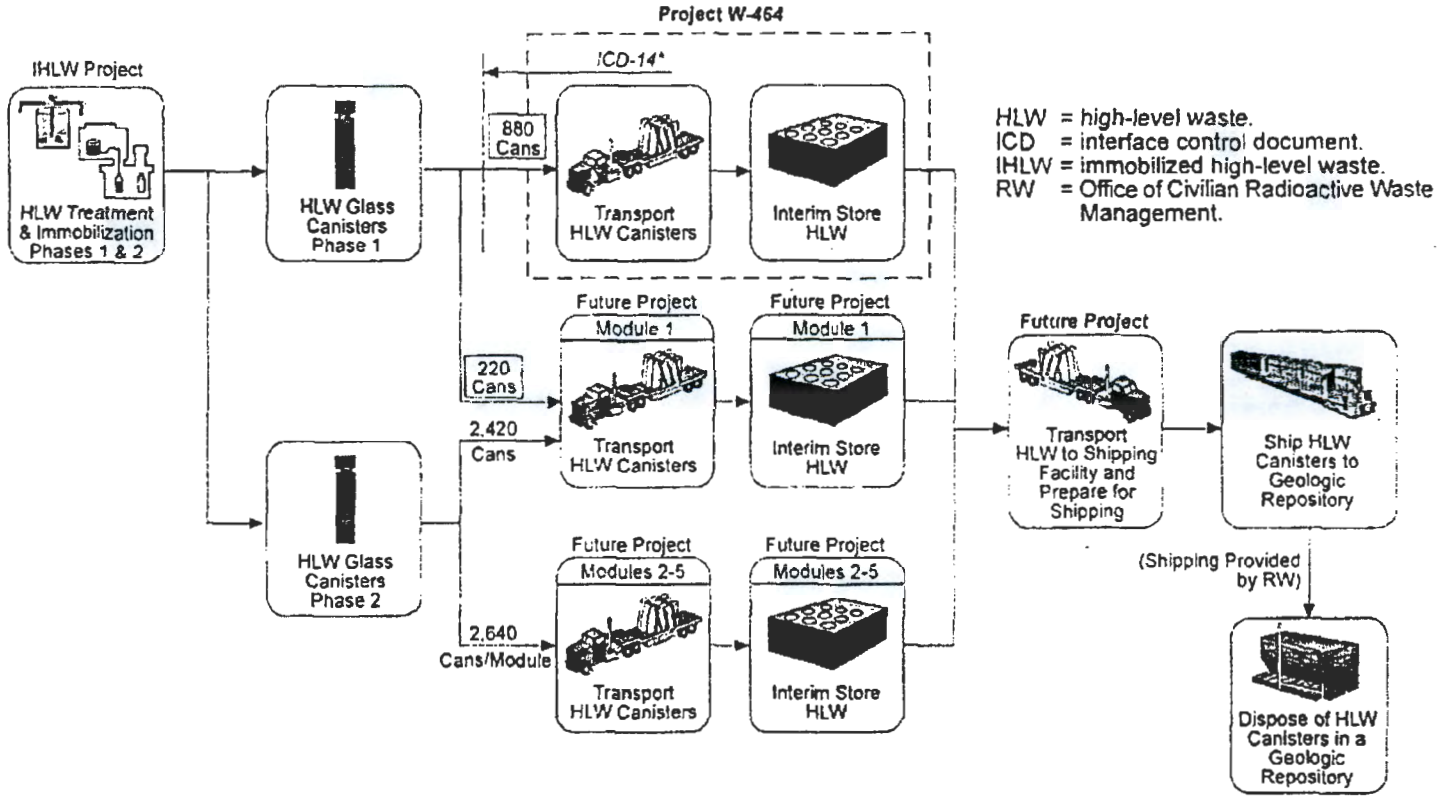
The IHLW Interim Storage Subproject will provide transportation of the IHLW melters. An alternative generation and analysis will be performed during FY 2001 to identify the melter transportation requirements and a decision report will be provided to the ORP for concurrence.

5.0 RIVER PROTECTION PROJECT IMMOBILIZED HIGH-LEVEL WASTE INTERIM STORAGE LOGIC

Figure 4-1 presents the overall functional logic for the IHLW treatment, vitrification, storage, and disposal of Hanford Site tank waste and Figure 5-1 presents the functional logic for the IHLW IWSP. This logic reflects the waste treatment Phase 1 functions including initial canister delivery to the CSB under Project W-464 and the additional interim storage capacity required to support maximum Phase 1 production and Phase 2 production. The logic also identifies the principal interfaces with the RPP-WTP operations contractor and the HLW national geologic repository program.

The RPP-00-127 baseline and its supporting documentation provide more detailed logic diagrams with appropriate logic ties to other programs and projects, interface activities, and detailed activity descriptions. Section 6.0 provides the top-level WBS for the IHLW Interim Storage Subproject, and Section 7.0 provides the schedule information.

Figure 5-1. Functional Logic for Immobilized High-Level Waste Storage Subproject.



* BNFL-5193-ID-14, 1999, *River Protection Project Waste Treatment Plant Interface Control Document*, ICD-14, Rev. 4H-R1, BNFL Inc., Richland, Washington.

6.0 TOP-LEVEL WORK BREAKDOWN STRUCTURE

A WBS initially was established in the FY 1999 multi-year work plan (MYWP) for planning, execution, and control of the IHLW Interim Storage Subproject work. This WBS represents the approach in which work is estimated, scheduled, budgeted, performed, managed, and updated to reflect programmatic changes. The WBS defines all authorized and anticipated subproject work regardless of funding source by relating elements of work to each other and to the associated SSC 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 regularly monitors the status of each active element to ensure that 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. The major work activities for the IHLW Interim Storage Subproject have been defined as shown in the WBS summary (Table 6-1) and are detailed in activity data sheets, which are held as backup to the current baseline. These data sheets consist of technical baseline requirements (TBR) reflecting WBS Level 7 and WBS dictionary sheets reflecting Level 5. The WBS dictionary sheets for the IHLW Interim Storage Subproject are contained in Appendix C; the TBRs are available from the RPP IWSP files. Note that the use of "Part" in the WBS titles is synonymous with the use of the "Phase" structure used throughout this document. The WBS provided in Table 6-1 is the same structure that is reflected in the project schedule (Appendix B).

Table 6-1. Subproject Work Breakdown Structure. (3 sheets)

Identification number	Title
1.01.09.02, Canister Storage Building (W-464)	
1.01.09.02.01*	Receive/Store IHLW, Part 1
1.01.09.02.01.01	IHLW Project Management
1.01.09.02.01.01.01	IHLW Project Management
1.01.09.02.01.02	IHLW Systems Definition
1.01.09.02.01.02.01	Maintain ICDs/IPT Process/SNF Interface
1.01.09.02.01.02.02	Maintain Technical Requirements for IHLW
1.01.09.02.01.02.03	Define Requirements for IHLW Sample Transport
1.01.09.02.01.02.04	Define Requirements for IHLW Melter Disposition
1.01.09.02.01.02.05	Design/Procure IHLW Sample Transport System
1.01.09.02.01.02.06	Design/Procure/Fab. IHLW Failed Melter Transport Sys.
1.01.09.02.01.03	Project W-464, IHLW Interim Storage Facility
1.01.09.02.01.03.02	W-464 Advanced Conceptual Design/Revalidation
1.01.09.02.01.03.03	Design W-464 IHLW Storage Facility
1.01.09.02.01.03.04	Procure Equipment W-464 IHLW Storage Facility

Table 6-1. Subproject Work Breakdown Structure. (3 sheets)

Identification number	Title
1.01.09.02.01.03.05	Construct W-464 IHLW Storage Facility
1.01.09.02.01.03.06	Startup and Test IHLW System
1.01.09.02.01.03.07	Perform Management Self-Assessment on IHLW System
1.01.09.02.01.03.08	Perform Contractor Independent ORR on IHLW System
1.01.09.02.01.03.09	Perform DOE ORP ORR/Obtain CD-4 IHLW System
1.01.09.02.01.03.10	Obtain W-464 Environmental Permits
1.01.09.02.01.03.11	W-464 Authorization Basis Development/Approval
1.01.09.02.01.04	IHLW Operations
1.01.09.02.01.04.01	Transport/Receive Interim Store IHLW in CSB
1.01.09.03, IHLW Storage Modules, Part 2	
1.01.09.03.01	Receive and Store IHLW, Part 2
1.01.09.03.01.01	IHLW Future Projects Project Management
1.01.09.03.01.01.01	IHLW Project Management
1.01.09.03.01.02	IHLW Future Projects Systems Definition
1.01.09.03.01.02.01	Define Project Description Criteria for IHLW Module 1
1.01.09.03.01.02.02	IHLW Maintain Technical Baseline
1.01.09.03.01.03	IHLW Future Projects
1.01.09.03.01.03.01	IHLW Module 1 Conceptual Design
1.01.09.03.01.03.02	IHLW Modules 2-5 CDR, ACDR Validation/Revalidation
1.01.09.03.01.03.03	IHLW Module 1 Design
1.01.09.03.01.03.04	IHLW Modules 2-5 Design
1.01.09.03.01.03.05	IHLW Module 1 Construction
1.01.09.03.01.03.06	IHLW Modules 2-5 Construction
1.01.09.03.01.03.07	Obtain Permits for IHLW Module 1, W-XXX
1.01.09.03.01.03.08	Permits (IHLW)
1.01.09.03.01.03.09	IHLW Module 1 W-XXX Authorization Basis
1.01.09.03.01.03.10	Authorization Basis (IHLW)
1.01.09.03.01.04	IHLW Future Projects Operations
1.01.09.03.01.04.01	Start-up & Test Module 1 IHLW System
1.01.09.03.01.04.02	Perform Mgt. Self-Assessment, Module 1 IHLW System
1.01.09.03.01.04.03	Perform Contractor Independent ORR on Module 1 IHLW
1.01.09.03.01.04.04	Perform DOE ORP ORR/Obtain CD-4 Module 1 IHLW
1.01.09.03.01.04.05	IHLW Modules 2-5 Operations
1.01.09.03.02	Disposition IHLW Part 2
1.01.09.03.02.01	IHLW Repository Interface Project Management
1.01.09.03.02.01.01	Project Management (IHLW to RW)
1.01.09.03.02.02	IHLW Repository Interface Systems Definition

Table 6-1. Subproject Work Breakdown Structure. (3 sheets)

Identification number	Title
1.01.09.03.02.02.01	RW Interface Update Technical Baseline
1.01.09.03.02.02.02	Maintain Technical Baseline (IHLW to RW)
1.01.09.03.02.03	IHLW Repository Interface Future Projects
1.01.09.03.02.03.01	Design (IHLW to RW)
1.01.09.03.02.03.02	Construction (IHLW to RW)
1.01.09.03.02.03.03	Permits (IHLW to RW)
1.01.09.03.02.03.04	Authorization Basis (IHLW to RW)
1.01.09.03.02.04	IHLW Repository Interface Operations
1.01.09.03.02.04.01	Operations (IHLW to RW)
1.01.09.03.05	D&D IHLW Storage Modules Part 2
1.01.09.03.05.01	IHLW D&D
1.01.09.03.05.01.01	IHLW Facility D&D
1.01.09.03.05.01.02	IHLW Shipping/Facility D&D

*This work breakdown structure represents the format reflected in RPP-00-127, *RPP-FY 2001 Bridge Change Request.* This structure, as it pertains to Project W-464, is in the process of being changed as reflected in RPP-6359, *Project Execution Plan of Project W-464, Immobilized High-Level Waste Interim Storage,* Draft, CH2M HILL Hanford Group, Inc., Richland, Washington.

CD = Critical Decision.
CDR = Conceptual Design Report.
CSB = Canister Storage Building.
D&D = decontamination and decommissioning.
ICD = interface control document.
IHLW = immobilized high-level waste.
IPT = Interface Process Team.
ORR = Operational Readiness Review.
PO = purchase order.
RW = Office of Civilian Radioactive Waste Management.
SNF = Spent Nuclear Fuel.
WBS = work breakdown structure.

6.2 WORK BREAKDOWN STRUCTURE DESCRIPTIONS

The following paragraphs give a brief description of the intentions of the WBS functions (Level 5) and cost accounts (Level 6) associated with the IHLW Interim Storage Subproject identified in Table 6-1.

WBS 1.01.09.02.01, Receive/Store IHLW, Part 1

The scope of work for this function is to provide the planning, development, and execution of the requirements necessary to support interim storage of initial IHLW canisters generated during Phase 1 production. Current plans for this function use the CSB vaults 2 and 3 for this initial capability. This function is divided into the following four cost accounts.

WBS 1.01.09.02.01.01, IHLW Project Management

The scope of work for this cost account is the overall baseline development and control necessary to ensure that overall programmatic requirements are identified and satisfied consistent

with program objectives. This includes, but is not limited to, MYWP planning; identification of studies required to establish the technical, cost, and schedule baselines; support of program audits and engineering; and providing the key interface with management and external clients (e.g., ORP, EM). This cost account has the overall responsibility to ensure compliance with Tri-Party Agreement milestones and action items that are related to assigned activities.

WBS 1.01.09.02.01.02, IHLW Systems Definition

This cost account has the responsibility for development of the system requirements and programmatic documentation development, consistent with program goals and objectives. The work packages contained within this cost account identify the requirements to provide the interim storage capability for the Phase 1 IHLW canisters to ensure compliance with all technical, environmental, and operational constraints. This cost account maintains the interfaces among the various project-related activities, such as the CSB interface with SNF and the technical interface with the vitrification contractor(s). This includes engineering studies and technical issues associated with CSB operations and Project W-464 planning.

Also included under this cost account are the work packages necessary to define and develop the requirements and activities related to the procurement of the IHLW melters transportation/disposal system and sample transport system. This includes alternatives generation and analyses and decision reports related to the FMEF storage assessment, sample transport strategy, and IHLW melter disposition.

WBS 1.01.09.02.01.03, Project W-464, IHLW Interim Storage Facility

This cost account has the execution responsibility for modifications required to the CSB to provide initial interim storage and handling requirements. Work packages within this cost account develop the project planning, design activities, construction responsibility, and environmental permitting necessary to provide a facility that meets the operational needs within the established baseline parameters. This includes the planning and execution responsibility for program configuration and data management, test and evaluation planning, requirements definition and operational considerations, environmental planning, and critical decision (CD) activities.

WBS 1.01.09.02.01.04, IHLW Operations

This cost account has overall responsibility to operate the CSB IHLW interim storage facility (vaults 2 and 3), including onsite transportation, storage receipt and handling, and monitoring compliance. This includes the interface and coordination with the vitrification operations contractor and the DOE for canister receipt and placement within the CSB for interim storage.

WBS 1.01.09.03.01, Receive and Store IHLW, Part 2

The scope of work for this function has the responsibility for the planning, baseline development, and execution of the interim storage capabilities to receive and store IHLW produced during Phase 2 operations and Phase 1 storage capacity beyond the CSB. This function has the following cost accounts.

WBS 1.01.09.03.01.01, IHLW Future Projects Project Management

This cost account has the project management responsibility for the Phase 2 IHLW Interim Storage Subproject planning, baseline development, and execution compliance to ensure that the associated technical requirements are satisfied within the identified cost and schedule baselines. This cost account provides general program support.

WBS 1.01.09.03.01.02, IHLW Future Projects Systems Definition

This cost account has the responsibility to identify the system requirements consistent with operational needs and mission objectives. It establishes the technical baseline necessary to provide the interim storage capabilities for receipt and storage of IHLW canisters produced in Phase 1 beyond CSB capacity and during Phase 2 operations. This includes defining the design criteria for the projects related to Phase 2 (including Phase 1 extended) and maintaining the overall technical baseline consistent with program goals and objectives.

WBS 1.01.09.03.01.03, IHLW Phase 2 Future Projects

This cost account provides for the development and construction of the additional facilities required to provide interim storage resources for Phase 2 IHLW canister storage. The interim storage capacities and requirements will be identified as needed. These modules may be divided into separate projects for management and control and will be time-phased to minimize excessive front-end capital costs. This cost account has the responsibility for conceptual design activities, validation support, module design, module construction, environmental permitting, and authorization basis development for the projects associated with interim storage of IHLW canisters beyond the CSB capacity.

WBS 1.01.09.03.01.04, IHLW Future Projects Operations

This cost account provides for the support of the operation of the future Phase 2 facilities. Activities associated with this cost account include receipt, handling, interim storage, and monitoring of IHLW canisters. This activity goes from initial receipt of canisters from the vitrification facility until shipment to the national geologic repository. This cost account includes the work packages necessary to support testing, performance assessments, Operational Readiness Review (ORR)/CD-4, and actual operational activities associated with the Phase 2 modules.

WBS 1.01.09.03.02, Disposition IHLW Part 2

This function has the responsibility for providing the facility to prepare IHLW canisters for shipment and loading/packing the canisters onto the transportation system that will transport the IHLW to the national geologic repository. The cost accounts associated with this function manage the shipping facility planning, design, and construction; coordinate shipment to the repository; and develop the operational processes for canister loading and shipment.

WBS 1.01.09.03.02.01, IHLW Repository Interface Project Management

This cost account has the responsibility for the planning, baseline development, and management of the IHLW disposition to ensure that all requirements are identified and satisfied, consistent with operational and regulatory considerations. Key to the success of this function is the coordination with the national geologic repository to identify all technical and functional interface requirements.

WBS 1.01.09.03.02.02, IHLW Repository Interface System Definition

This cost account has the responsibility for identifying and complying with all the requirements necessary to support shipment and receipt of IHLW canisters at the national geologic repository. These interfaces included canister overpack loading and transportation considerations. Responsibility includes project planning, requirements definition, and schedule planning associated with the shipment planning.

WBS 1.01.09.03.02.03, IHLW Repository Interface Future Projects

This cost account is reserved for the interface requirement definition and compliance for IHLW shipment coordination to the national geologic repository. This cost account will provide the funding and control of conceptual development, design, construction, environmental permitting, and authorization basis development for the IHLW shipping facility.

WBS 1.01.09.03.02 04, IHLW Repository Interface Operations

This cost account provides for the operational support of IHLW shipment preparation and loading. It includes the planning for all onsite handling necessary to prepare, load, and ship IHLW canisters to the national geologic repository.

WBS 1.01.09.03.05, Decontamination and Decommissioning IHLW Storage Modules Part 2

This function has the responsibility for the decommissioning and decontamination of all Phase 1 and Phase 2 interim storage facilities and the shipping facility and final disposition of the IHLW canisters.

6.3 WORK BREAKDOWN STRUCTURE OBJECTIVES

The objective of the WBS is to provide a structure that identifies the cost control baseline and the management system to track cost accountability. The WBS is integrated into the schedule to ensure project traceability. This structure is centered on the IHLW technical program requirements to help identify the key components of the IHLW Interim Storage Subproject.

As Phase 1 and Phase 2 line-item projects are validated, contract participants will be responsible for developing contractor work breakdown structure (CWBS) dictionaries at the cost account level for the ORP in support of the 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

Tables 6-2 and 6-3 provide the total projected cost for the IHLW Subprojects (Phase 1 and Phase 2). The cost figures are provided for the life of the subproject and are presented according to the established IHLW Interim Storage Subproject WBS, Level 6.

The total project cost (TPC) estimates for the RPP IWSP 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 the DOE-HQ, validated, and provided by the project team.

The current Phase 1 TPC estimate for Project W-464 was established based on information contained in HNF-2298. A more definitive TPC will be developed for the Phase 2 IHLW storage line-item projects as part of the respective project's conceptual design activities.

The costs associated with the actual shipment of the IHLW to the national geologic repository are not included with this project; these costs and the associated disposal costs (fees) are carried under the national repository program.

Table 6-2. Phase 1 Immobilized High-Level Waste Storage Subproject Estimated Life-Cycle Costs.

Type of cost by WBS	Fiscal year																			
	Prev. year costs	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
1.01.09.02.01.01 IHLW Project Management																				
Exp	1048	654	654	614	661	659	656	658	511	509	509	509	505	466	514	514	516	512	502	11171
1.01.09.02.01.02 IHLW Systems Definition																				
Exp	1617	726	663	915	1469	1172	847	153	117	6422	14966	14966	14907	7381	7381	7381	7410	7351	7234	103077
1.01.09.02.01.03 Project W-464 IHLW Interim Storage Facility																				
Cap	--	1275	3323	7740	18195	32502	15486	310	--	--	--	--	--	--	--	--	--	--	--	78830
Exp	4161	1190	1347	1022	1457	1937	2233	2741	678	--	--	--	--	--	--	--	--	--	--	16766
1.01.09.02.01.04 IHLW Operations																				
Exp	--	--	--	--	--	--	--	--	286	2483	4641	4641	4623	1891	1891	1891	1899	1884	1884	28015
Total Phase 1 cost: $237,859																				

Notes: All costs are rounded to the nearest thousand dollars.
No capital equipment/expense not related to construction funds identified for Phase 1.
Forecast figures are in fiscal year 2000 constant dollars (no escalation).
Previous cost figures include the fiscal year 2000 costs that are forecast figures contained in the spend forecast.

IHLW = immobilized high-level waste.
WBS = work breakdown structure.

Table 6-3. Phase 2 Immobilized High-Level Waste Storage Subproject Estimated Life-Cycle Costs.

Type of cost by WBS	Fiscal year																		
	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 to 2048	Total
1.01.09.03.01.01 IHLW Future Projects Project Management																			
Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	142	3258	3400
1.01.09.03.01.02 IHLW Future Projects Systems Definition																			
Exp	--	--	323	96	71	72	71	71	71	71	71	71	71	72	71	70	102	819	2193
1.01.09.03.01.03 IHLW Future Projects																			
Cap	--	--	--	--	--	--	20821	24558	55767	86895	85933	90809	49733	112925	219663	249420	231485	473647	1701655
Exp	--	--	--	3581	4681	4862	720	82	6918	18911	861	18174	499	18175	221	19298	--	--	96981
1.01.09.03.01.04 IHLW Future Projects Operations																			
Exp	--	--	--	--	--	--	--	--	--	--	--	696	2626	--	--	2311	38339	177124	221096
1.01.09.03.02.01 IHLW Repository Interface Project Management																			
Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10304	10304
1.01.09.03.02.02 IHLW Repository Interface System Definition																			
Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	5145	5145
1.01.09.03.02.03 IHLW Repository Interface Future Projects																			
Cap	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	60750	60750
Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	2540	2540
1.01.09.03.02.04 IHLW Repository Interface Operations																			
Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	55953	55953
1.01.09.03.05.01 IHLW Decontamination and Decommissioning																			
Exp	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	91137	91137
Total Phase 2 cost: $2,251,154																			

Notes: All costs are rounded to the nearest thousand dollars.
Forecast figures are in fiscal year 2000 constant dollars (no escalation).
Total project cost estimate for Module 1, which is projected to hold 2,640 canisters, is approximately $365 million.

IHLW = immobilized high-level waste.
WBS = work breakdown structure.

This page intentionally left blank.

7.0 IMMOBILIZED HIGH-LEVEL WASTE INTERIM STORAGE SUBPROJECT SCHEDULE

7.1 TRI-PARTY AGREEMENT CONTROLLING MILESTONES

A complete list of the Tri-Party Agreement milestones and the associated due dates is contained in the *Final Determination Pursuant to the Hanford Federal Facility Agreement and Consent Order*. Table 7-1 lists the Tri-Party Agreement milestones that apply to the IHLW Interim Storage Subproject. The subproject schedule presented in Appendix B supports the 90 percent trend case identified in Letter 00-PGO-002.

7.2 OTHER REQUIREMENTS

Other compliance requirements and guidelines identified for the subproject 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*, the *Washington Administrative Codes*, and DOE Orders. The planning identified in this document is consistent with current DOE guidance and has some inconsistencies with the Tri-Party Agreement. These discrepancies will be addressed in future planning as identified through revised guidance.

7.3 SCHEDULE REQUIREMENTS AND BASIS

The subproject baseline schedule is contained in Appendix B. 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 as forecast in RPP-00-127. The dates reflected in this table are consistent with program planning contained in the WBS found in Section 6.0 of this document.

ORP planning guidance (00-BMA-073, *Contract No. AC06-99RL14047 – Process to Arrive at a Multi-Year Work Plan [MYWP] Submittal*) was used as the basis in developing the planning relative to the IHLW Interim Storage Subproject. In summary, the subproject will support a Phase 1 product transfer schedule to start in FY 2009 and ending in FY 2018 and a Phase 2 IHLW delivery schedule planned for completion in FY 2028.

Table 7-1. Tri-Party Agreement Milestones.

Milestone	Description	Due date[a]
Milestones that are the responsibility of the IHLW Interim Storage Subproject		
M-90-00	Complete acquisition of new facilities, modification of existing facilities, and/or modification 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-90-11[b]	Complete canister storage facility construction. Completion of this milestone requires the completion of all construction, internal/external facility(s) modifications, and startup activities necessary for canister storage facility receipt of all Phase 1 Hanford Site high-level waste canisters from TWRS processing. For purposes of this interim milestone, Phase 1 IHLW canister storage is defined as the capability for storage of at least 600 IHLW canisters. Interim milestones and associated target dates establishing work schedules for Phase 2 IHLW canister storage will be established pursuant to the Phase 2 request for proposal for TWRS privatization.	February 1, 2007
M-20-56[b]	Submit canister storage facility Part B dangerous waste permit application to Ecology.	June 30, 2002
Other critical milestones that impact the IHLW Interim Storage Subproject		
M-62-00	Complete pretreatment processing and vitrification of Hanford High-Level (HLW) and Low-Activity (LAW) tank wastes.	December 31, 2028
M-62-00A	Complete pretreatment processing and vitrification of Hanford High-Level (HLW) and Low-Activity (LAW) Phase 1 tank wastes.	February 28, 2018
M-62-03	Submit DOE petition for RCRA[c] de-listing of vitrified HLW.	December 31, 2006
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

[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]Specifically related to Project W-464.

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

DOE = U.S. Department of Energy.
Ecology = Washington State Department of Ecology.
IHLW = immobilized high-level waste.
TWRS = Tank Waste Remediation System.

Table 7-2. Major Immobilized High-Level Waste Interim Storage Subproject Activities and Schedule Dates. (2 sheets)

Major subproject activities	Start	Finish
Phase 1		
1.01.09.02 Canister Storage Building		
Conceptual Design (HNF-2298)*	--	Apr. 30, 1998 (Completed)
Advanced Conceptual Design	Oct. 1, 1999	Sept. 1, 2000
Design Activities (Title I and II)	July 2, 2001	July 30, 2004
Construction Activities	Aug. 2, 2004	Mar. 30, 2007
Startup (Critical Decision 4)	Apr. 2, 2007	June 5, 2008
Hot Operations	Apr. 30, 2009	Sept. 28, 2018
Post-Production Operations	Oct. 1, 2018	Sept. 24, 2041
Phase 2		
1.01.09.03 Storage Modules, Phase 2		
1.01.09.03.01 Receive and Store IHLW Phase 2 Production		
Conceptual Design (Module 1)	Jan. 3, 2006	Apr. 30, 2007
Advanced Conceptual Design (Module 1)	May 1, 2007	Oct. 31, 2008
Design (Title I and II) Module 1	Nov. 3, 2008	Feb. 28, 2011
Construction (Module 1)	Mar. 1, 2011	July 31, 2014
Startup (Module 1)	Aug. 1, 2014	Aug. 11, 2015
Hot Operations (Module 1)	Aug. 11, 2015	Sept. 25, 2018
Conceptual Design (Modules 2 through 5)	Mar. 1, 2011	Dec. 30, 2011
Advanced Conceptual Design (Modules 2 through 5)	Jan. 3, 2012	July 3, 2018
Design (Title I and II) (Modules 2 through 5)	July 2, 2012	Dec. 30, 2002
Construction (Modules 2 through 5)	Feb. 2, 2016	Aug. 3, 2023
Startup (Modules 2 through 5)	Sept. 5, 2018	Aug. 2, 2024
Hot Operations (Modules 2 through 5)	Sept. 25, 2018	Sept. 25, 2028
Post-Production Operations	Sept. 26, 2028	Sept. 24, 2041
1.01.09.03.02 IHLW Repository Interface Future Project (Transfer)		
Conceptual Design	Oct. 1, 2024	May 30, 2025
Preliminary/Detailed Design	Oct. 1, 2026	Sept. 30, 2027
Construction	Oct. 1, 2027	Mar. 29, 2030
Startup	Apr. 1, 2030	Mar. 31, 2032
Hot Operations	Apr. 1, 2032	Sept. 24, 2046

Table 7-2. Major Immobilized High-Level Waste Interim Storage Subproject Activities and Schedule Dates. (2 sheets)

Major subproject activities	Start	Finish
Facility Decontamination and Decommissioning		
Decontamination and Decommissioning of Phase 1 & Phase 2 Facilities	Sept. 25, 2041	Sept. 24, 2046
Decontamination and Decommissioning of Transfer Facility	Oct. 3, 2044	Sept. 28, 2046

*HNF-2298, 1998, *Conceptual Design Report for Immobilized High-Level Waste Interim Storage Facility (Phase I)*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

IHLW = immobilized high-level waste.

The CSB modifications, Project W-464, support the FY 2009 Phase 1 IHLW initial transfer start date. The CSB will be operational approximately 1 year before IHLW initial product transfer. The CSB storage capacity of 880 canisters allows for storage of Phase 1 IHLW canisters through FY 2014. Additional storage for Phase 1 canisters (greater than 880) produced between FY 2014 and the end of Phase 1 (FY 2018) will be available in either the initial Phase 2 module storage facility or, if directed, the FMEF or other suitable facility. This initial Phase 2 module will have sufficient capacity to store the additional Phase 1 canisters and is scheduled to be operational at the end of FY 2015. Detailed schedule information is included in Appendix B.

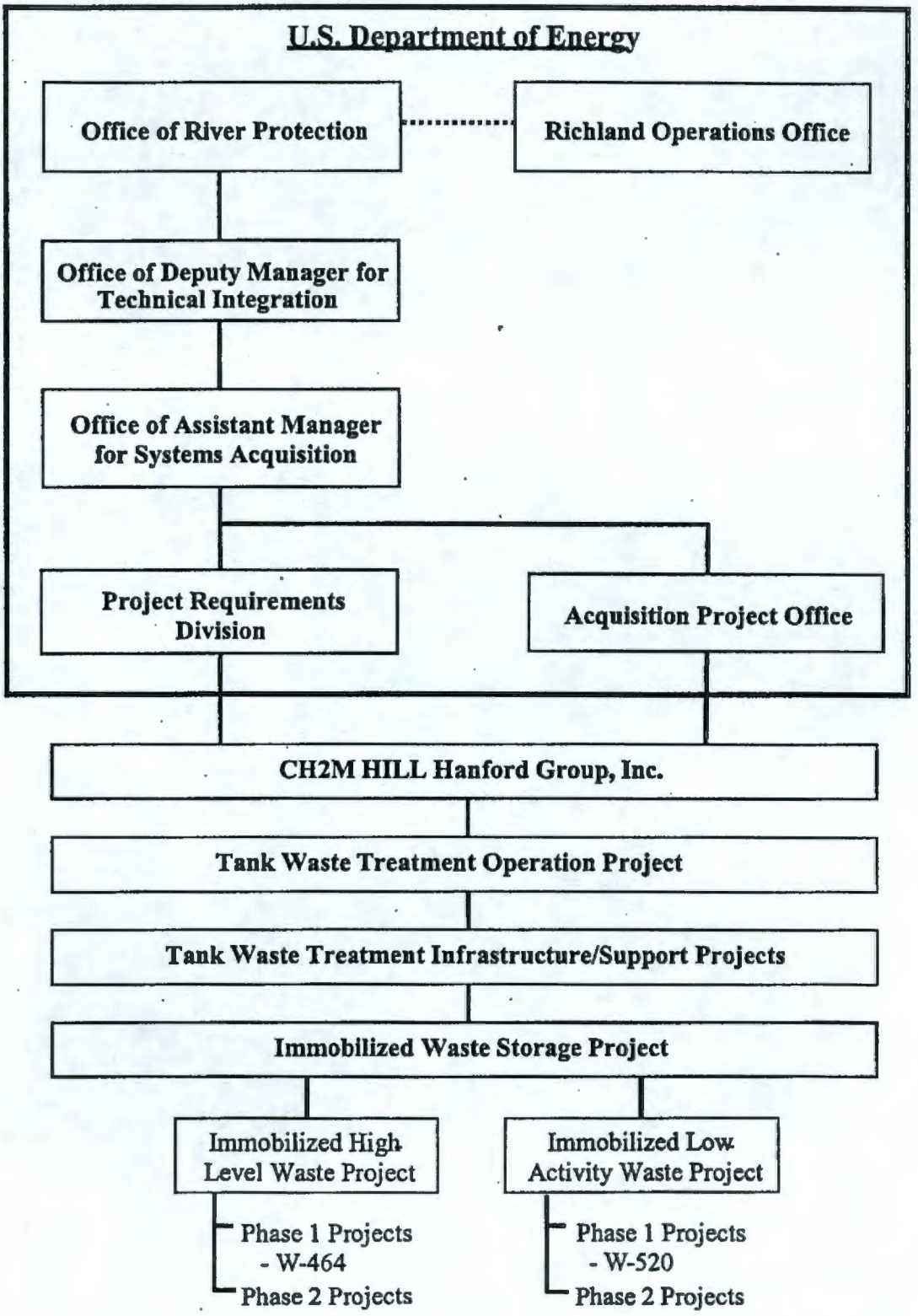
Current planning assumes the national geologic repository will not be available for disposal of the Hanford Site IHLW product until 2035. Therefore, interim storage planning for Phase 1 and Phase 2 IHLW consists of the full aggregate of 12,200 canisters. The shipment of IHLW canisters is currently scheduled to begin in 2035 and be completed in 2046. If the repository is available before the 2035 date, eight to nine years of lead-time is necessary to provide the shipment preparation facility. For example, if the repository is anticipated to be ready to receive waste in 2010, the project for the shipment preparation facility (design/construction/startup) would have to be initiated n the FY 2001 or FY 2002 timeframe.

8.0 PROJECT ORGANIZATION, ROLES, AND RESPONSIBILITIES

The IHLW Interim Storage Subproject is based on a team concept. Active participants include the ORP; CHG and the assigned project organizations; and as appropriate, subcontracted architect-engineering (A-E) and construction contractors. CHG provides program and project management along with technical assistance to 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 IHLW Interim Storage Subproject. The overall project responsibility matrix is included in Appendix D. DOE O 430.1A provides 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 herein.

Figure 8-1. Immobilized High-Level Waste Organization Functional Chart.



1751-8-1-R

9.0 MANAGEMENT APPROACH

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

The IHLW Interim Storage Subproject will provide for interim storage of all IHLW canisters generated by Phase 1 and Phase 2 production and will provide for the shipment preparation for eventual disposition at the national geologic repository. The planning identified in this document assumes that this process will remain valid with the new RPP-WTP contracting approach.

The IHLW Interim Storage Subproject includes multiple design/construction projects to support the subproject goals. Project W-464 currently is identified to provide the initial Phase 1 IHLW interim storage capability by retrofitting the SNF CSB. A second line-item project will be identified to provide additional Phase 1 storage capability, beyond the CSB limitations, for the balance of Phase 1 processing as deemed necessary. Additional line-item projects will provide canister storage for Phase 2 production. This plan is generic to the overall management of all IHLW Interim Storage Subproject activities; detailed planning will be provided at the line-item level when the projects are identified and authorized.

The line-item project management approach will be identified in a project-specific 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: PEPs, acquisition strategy, schedule baseline control, cost baseline management, performance measurement and reporting, work authorization, funds management, contingency management, meetings and reviews, project validations, and CDs.

9.1.1 Project Execution Plans

A PEP will be developed for each Phase 1 and Phase 2 line-item project in accordance with established procedures and DOE Orders to detail the project execution planning. These orders include DOE O 430.1A and the associated Good Practice Guides. 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 management.

PEPs will be developed for each project in conjunction with the conceptual design activities to ensure management planning is consistent with the line-item project baseline. The project management system and project execution planning identified in the PEP will provide guidance on the subproject management and system development activities. The PEP will identify the actions and responsibilities necessary to provide design, construction, procurement, testing, and startup of the subproject facilities that meet the requirements identified in the project baselines (cost, schedule, and technical criteria).

The assigned project manager will monitor activities during the execution of the project to ensure the PEP is used and updated consistent with the project requirements 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 submitted to the DOE for approval to maintain the validity of the management approach and to ensure project 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 various pricing models. Value engineering will be an integral part of this process of identifying the optimized strategy for construction and procurement, including operational considerations.

The acquisition strategy identified for each line-item project will be included in the PEP for implementation planning. This planning will be continuously evaluated during execution of the project to ensure the strategy remains consistent with project development and any programmatic changes.

The acquisition strategy identified for Project W-464 is identified in RPP-6359, *Project Execution Plan for Project W-464 "Immobilized High-Level Waste Interim Storage."* It defines the use of a Hanford Site A/E pool member(s) for preliminary design with some portions of the project awarded to non-pool members based on unique qualifications. It is anticipated that detailed design and construction will be accomplished by use of a single fixed-price, competitive-bid design/build contract. Long-lead materials, including items and components, will be procured by the CHG procurement organization. The construction management organization will perform contract management and oversight of construction-related activities.

The acquisition strategies for subsequent line-item projects for Phase 1 additional storage and Phase 2 storage activities will be identified at project inception.

9.1.3 Schedule Baseline Control

The current IHLW Interim Storage Subproject baseline schedule is reflected in RPP-00-127 and included in Appendix B.

For each project identified in the subproject summary WBS, a separate detailed schedule identifies the activities needed to successfully complete the subproject work scope. These

detailed schedules identify the logic ties and interfaces necessary to coordinate the completion of each element of the work scope and its relationship with other elements of the subproject summary schedule. These schedules contain sufficient detail to allow integration of all detail schedules into the subproject summary schedule. These schedules also identify the initial path and control path activities.

Schedules are resource-loaded with the staff hours associated for each activity, identifying the particular skill mix requirements, and 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 analyze schedule variances and evaluate trends on schedule performance using ORP-approved methodologies. Performance reporting and variance analyses are reported through the subproject manager. When variance analyses reveal potential problems, CHG ensures 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, *RPP Administration*, Volume VIII, Section 1.1 identifies the change control process used for schedule management. Appendix E of this document contains the change request threshold levels.

9.1.4 Cost Baseline Management

The cost baseline for the subproject cost estimate is identified in RPP-00-127. 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 task level (WBS Level 8). The subproject cost estimate includes contingency as identified in each validated line-item project cost estimate. The budget authorization process considers the requirements of contract commitments and phase funding allowances. Carryover of funds to support the budget authorization/budget outlay profile is required.

CHG implements cost baseline management through corrective action in response to cost variances reflected in routine earned value analyses of established cost performance baselines. Forecasts and trend analyses will be prepared for the subproject and each line-item project, taking into account the cost-performance index. CHG prepares and seeks appropriate approval of corrective actions of cost estimate changes that exceed the identified threshold levels contained in HNF-IP-0842, Volume VIII, Section 1.1; other CHG procedures; and DOE Orders.

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

9.1.5 Performance Measurement and Reporting

The subproject uses the earned value methodology to measure performance. CHG uses and maintains internal cost and schedule performance measurement information that provides the project managers with timely, accurate, and objective performance data. The cost and schedule baselines, along with technical compliance, are used to measure progress and determine project performance. The forecast values for project activities are reviewed and approved as part of the project baseline.

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. The line-item projects support the overall subproject weekly and monthly planning and other reporting systems. Status reports are 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, and associated work packages, within the ORP guidance.

Capital work is controlled within the subproject by cost account plans following project authorizations from ORP. CHG writes 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 includes specific instructions with these letters to provide the mechanism to identify and process changes in order to maintain the baseline integrity.

9.1.7 Funds Management

Allocation and authorization of funds comes from ORP to CHG and then to the appropriate subproject level. Control of fiscal year cost is accomplished in accordance with financial plan 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 cost, schedule, and technical baselines. Uncosted commitments are carried over as budget outlay.

CHG, as requested by the ORP, provides cost summary, commitment data, and funding authorization information at the monthly status review meetings consistent with the CHG contractual agreements. This information is used in a monthly project report to keep the ORP and management advised of current cost and commitment levels and helps identify potential funding impacts. Controls are established through the DOE-approved financial management system to ensure that costs and commitments do not exceed available funding limits.

9.1.8 Contingency Management

Formal contingency is included in the subproject activities approved as part of the validated line-item projects. The IHLW Interim Storage Subproject includes contingency as a part of the TPC and schedule float. Contingency covers cost and schedule impacts 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 and schedule analyses to determine contingency requirements. Contingency is managed to the lowest possible project activity levels and controlled as part of the project baselines.

9.1.9 Meetings and Reviews

The subproject conducts a monthly management review meeting (MRM) with the PRD as part of regular status reporting. Each line-item project may have a dedicated MRM separate from the subproject MRM. The subproject team leader is responsible for recording action items, agreements, and commitments resulting from MRMs. Monthly reviews focus on immediate decisions, critical issues, cost and schedule variance 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 is used as much as possible. The review is exception-oriented and focuses on major issues that require management involvement.

9.1.10 Project Validations

Line-item projects are validated in accordance with ORP-OPD-PP-03, *ORP Project Budget Validation Procedure*. An independent review of the design and construction cost estimates is conducted as part of this process. The validation is based on the technical information and cost/schedule estimates developed during conceptual design activities.

A complete validation review was conducted in FY 1998 for Project W-464. Validation for the initial Phase 2 line-item project is scheduled for April 2007.

9.1.11 Critical Decisions

CD-1, "Authorization to Initiate Conceptual Design for Project W-464," was delegated by A. L. Alm, DOE Assistant Secretary for Environmental Management (EM), to J. D. Wagoner, Manager, RL, who granted the authorization. The designated DOE manager will grant CD-2, "Authorization to Begin Detailed Design, W-464." CD-2 is identified within the schedule to occur in February 2003. CD-3 is "Authorization to Begin Construction Activities, W-464," and is scheduled for August 2004. CD-4 is "Authorization to Begin Operations, W-464," and is scheduled for approval by June 2008.

All future Phase 1 and Phase 2 line-item projects also will receive CDs before the initiation of key activities.

9.2 ENGINEERING

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

9.2.1 Systems Engineering Management

The IHLW Interim Storage 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 provides 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 management at any point in the program life cycle
- Control of system technical performance and requirement verification
- Assurance the system being built will satisfy the mission need.

The SEMP provides guidance to migrate projects to the approved systems engineering process for Hanford Site projects that were established before the release of the SEMP. Project W-464 was defined before the development of the SEMP; therefore, in response, HNF-2579, *Systems Engineering Management and Implementation Plan for Project W-464 Immobilized High-Level Waste Storage*, was developed.

Figures 9-1 and 9-2 summarize major IHLW systems engineering products and their status.

9.2.2 Technical Baseline Control

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, system requirements, and data generation products 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

Figure 9-1. Project W-464 Systems Engineering Activities and Documentation.

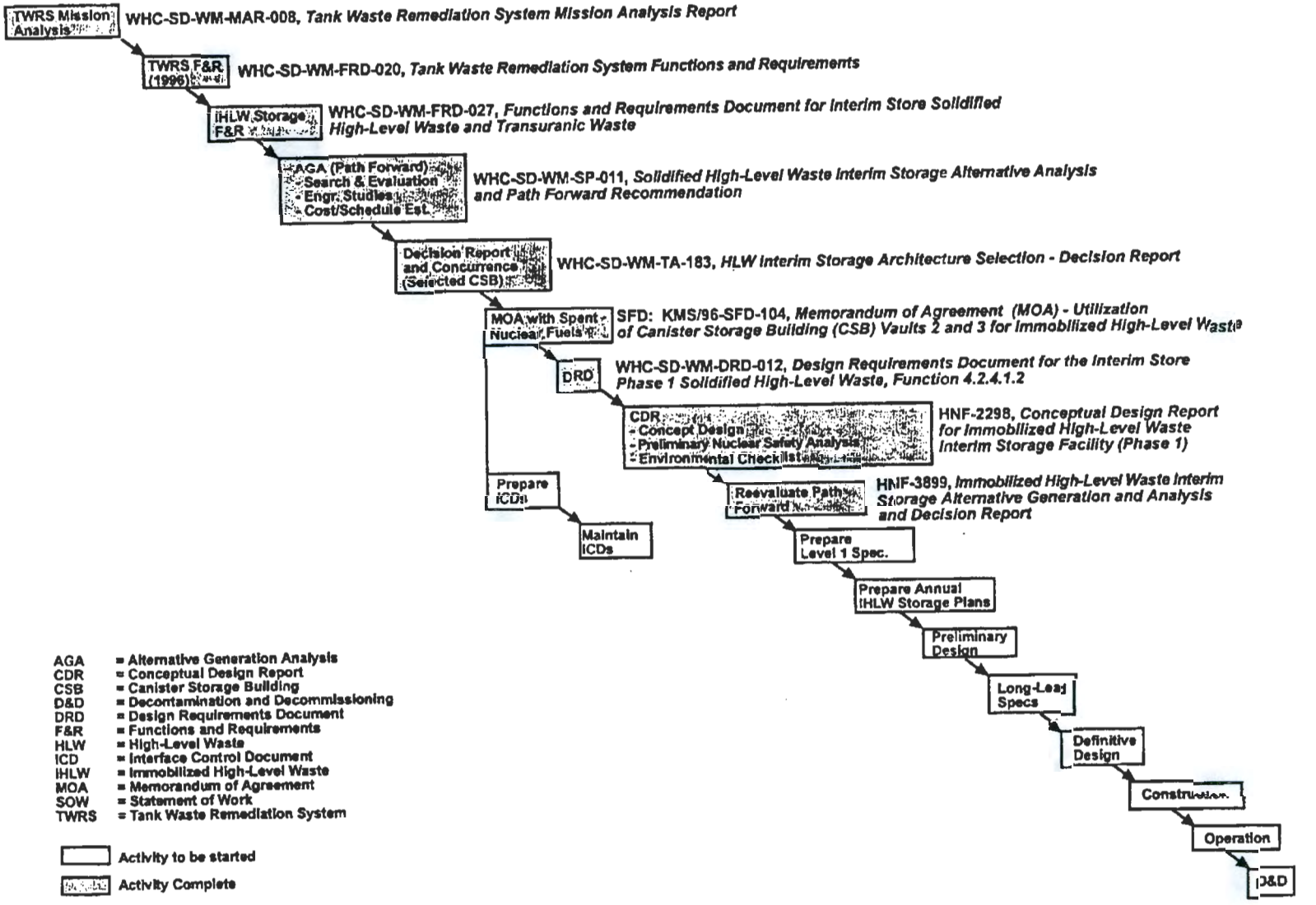
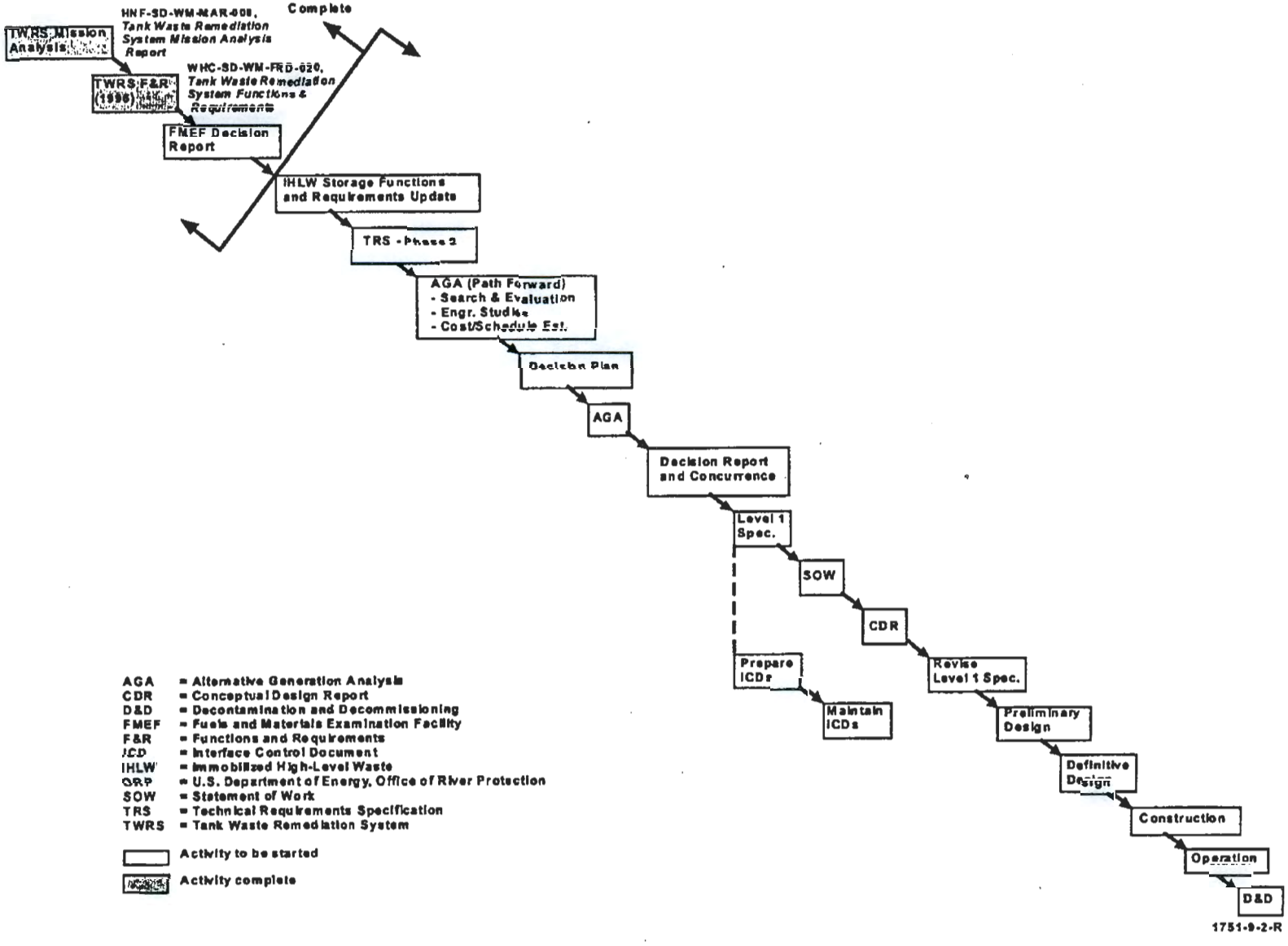


Figure 9-2. Phase 2 Systems Engineering Activities and Documentation.



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/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 requirement compliance and ensure delivery of all products that satisfy the integrated technical baseline and overall subproject objectives. At all times during the life of the line-item projects, the system configuration is maintained in an orderly manner and available in project files, subject to audit. These project files include, but are not limited to, system descriptions, system specifications, conceptual and definitive system designs, system and material inspection reports, test reports, operating and surveillance findings, and vendor documentation.

Technical baseline change control is implemented through HNF-IP-0842 (Volume VIII, Section 1.1) and other CHG procedures, consistent with DOE O 430.1A and GPG-FM-016, "Baseline Development." Appendix E identifies the approval authorities for changes to the defined technical baseline.

9.2.3 Test and Evaluation Planning

The IHLW Interim Storage Subproject implements a test and evaluation program based on systems engineering principles to ensure that completed facilities and installed systems meet the performance specifications. The subproject prepares, approves, controls, and maintains detailed test plans, specifications, and procedures in accordance with HNF-2029, *River Protection Project Testing and Evaluation Management Plan.* These test plans and procedures address testing requirements for plant systems, subsystems, and individual pieces of equipment, consistent with the guidance provided in DOE O 430.1A and GPG-FM-005. The test planning and schedule activity coordinates development testing with design activities to ensure that the appropriate requirement testing parameters are identified. Plant testing is coordinated with construction activities, turnover approvals, and startup evaluations to avoid interference with ongoing operations. Subproject testing activities include acceptance testing and operational verification.

The Phase 1 subproject startup program is a sequence of activities culminating in successful startup and acceptance of initial operation of the CSB retrofit to accommodate IHLW interim storage. Startup activities physically begin during construction acceptance testing, continue with operational testing, and are completed with final operational verification.

Phase 2 line-item projects will identify similar testing and acceptance activities to ensure the delivered SSCs satisfy the design requirements and meet the operational needs. These activities will be coordinated among the various organizations to ensure full coordination of acceptance criteria necessary to initiate system "hot operations."

9.2.3.1 Acceptance Testing. Construction 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 detailed design A-E prepares the 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 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) performs factory acceptance testing and construction acceptance testing. CHG and the A-E, if requested, will witness the tests, along with the DOE Assistant Manager for Systems Acquisition, if desired, to ensure that all test objectives are met. The project turnover package includes final test reports and all supporting test data. The construction contractor is responsible for controlling the vendor and construction test data until final turnover.

The construction acceptance tests culminate with turnover of individual SSC segments to CSB operations for operational testing. The operations contractor will determine the scope of each individual segment and the turnover sequence. Copies of all requested test reports and test data will be provided to the operations contractor to assist in the development of operations and maintenance plans and procedures. Informational copies of all vendor data will be provided to operations as requested to support operational testing.

9.2.3.2 Operational Testing. Operational testing is performed to demonstrate successful integration of the entire facility, consistent with functional qualification test goals. Systems are brought on-line and operated under anticipated standard operating conditions and off-normal conditions using simulated, nonradioactive IHLW canisters. Operational testing is performed using the actual plant equipment, operational test 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, consistent with anticipated operational conditions. These test procedures are prepared by the Startup organization and approved by the line-item Test Review Board.

As part of the operational test preparation, operations manuals are developed and verified to ensure correct operation instructions for the equipment/facility. These manuals include emergency shutdown procedures and off-normal response actions. Maintenance considerations are 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 will be performed following successful completion of operational testing to demonstrate that operator training, operational procedures, and CSB equipment are in a final satisfactory state of readiness to safely and efficiently receive, process, and store hot IHLW canisters. This operational dry run will be performed as part of the ORR. It will culminate with receipt of CD-4 from the ORP to document approval of the facility to accept IHLW material. An ORP representative will be invited to witness this dry run to verify system compliance.

9.3 INTEGRATED ENVIRONMENTAL, SAFETY, AND HEALTH MANAGEMENT SYSTEM

The IHLW Interim Storage 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; interim storage of the IHLW canisters to include design, construction, and facility operations; and coordination with the national geologic repository to ensure compliance with its shipping and disposal requirements.

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 IHLW Interim Storage Subproject.

9.3.1 Environmental Management

The IHLW Interim Storage Subproject follows 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 keeps regulating agencies informed of all associated plans and major activities.

The subproject and subordinate line-item projects cooperate with 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 are 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.

9.3.1.1 Project W-464 Environmental Management. An environmental requirements checklist is included with HNF-SD-ENV-EE-002, *Environmental Permits and Approvals Plan for High-Level Waste Interim Storage, Project W-464*. This permitting plan and checklist describes the required permits, approvals, and other documentation necessary for the project and identifies the contact agency for each requirement.

A *Notice of Intent for Expansion under Interim Status, Hanford Facility Immobilization High-Level Waste Storage Unit, Richland, Washington* provides the regulatory notification of the intent to store IHLW on the Hanford Site within the CSB. The CHG team has certified a Part A, Form-3 permit application that was submitted to Ecology and the U.S. Environmental Protection Agency on June 28, 1999, in accordance with Tri-Party Agreement Milestone M-90-12 (*Completion of Hanford Federal Facility Agreement and Consent Order*). Ecology's acceptance and approval of this Part A permit granted Project W-464 interim status to begin modifications at the CSB (*Acceptance of Part A Permit/Application, Form 3*). Upon the approval of this application, a Part B will be submitted to ORP for certification.

The current planning for the IHLW interim storage capability is that the IHLW will be delisted, in which case the RCRA Part A and Part B approvals would not be required. Because of the critical timing of these approvals, the Part A and Part B permits will be processed to ensure compliance with RCRA requirements. If delisting is delayed into facility operations, the RCRA permits would have to resubmitted for approval every ten years.

The schedule in Appendix B includes the anticipated environmental permitting dates for the IHLW Interim Storage Subproject.

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. The applicable environmental regulations identified for the Project W-464 permitting plan are as follows:

- DOE O 231.1, *Environment, Safety, and Health Reporting*
- DOE Order 5400.1, *General Environmental Protection Program*
- DOE Order 5400.5, *Radiation Protection of the Public and the Environment*
- *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
- NEPA, which was enacted to ensure 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.

A similar process will be used for each of the additional line-item projects identified for Phase 2. All line-item projects will have the responsibility to ensure they meet the environmental compliance requirements in effect at the time of their individual approval requests.

9.3.1.2 Carry-Over Compliance Responsibilities. One of the proposed DOE product acceptance requirements for the Phase 1 IHLW is that CHG will provide supplemental compliance basis information for each IHLW canister during Phase 1 onsite transportation and onsite interim storage. This requirement is based on the ORP and EM intent to comply with the DOE Office of Civilian Radioactive Waste Management (RW) acceptance criteria.

CHG will produce the necessary documentation to support the DOE in the implementation of Phase 1 tasks and to support follow-on DOE disposal actions (i.e., ORP and EM negotiations with RW) for Phase 1 IHLW. Current assumptions identify that the supplemental compliance documentation will include the following types of documentations, as indicated by the requirements identified in DOE/RW-0351:

- Documentation that contains the compliance approach that CHG proposes to use for each applicable Phase 1 product acceptance criteria
- Documentation that contains evidence (i.e., analyses, test results) that confirms the proposed compliance approach meets the identified acceptance requirements.

The same process will be used during Phase 2 processing to ensure that all subproject IHLW products meet the regulatory requirements for acceptance by the Office of Civilian Radioactive Waste Management and the national geologic repository.

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 to protect the health of the public and employees and preserve the environment.

The following discussion provides the approach the subproject uses to implement the Project Safety/Hazard Identification Program in accordance with applicable DOE Orders, standards, policies, Hanford Site guidance, and CHG procedures as identified in the Level 1 specifications associated with the various projects.

9.3.2.1 Authorization Basis Documentation. The IHLW Interim Storage Subproject uses a safety process consistent with CHG requirements to develop the appropriate safety analysis documentation. This documentation supports the development of the final safety analysis report (FSAR) for each of the facilities constructed and/or modified to provide subproject operations. Detailed task descriptions, listings of responsibilities, estimated staffing loads, and the schedule for completion of the activities required to provide an adequate authorization basis are included in the baseline planning.

9.3.2.2 Line-Item Authorization Basis. A line-item authorization basis does not currently exist for Project W-464 or future Phase 2 IHLW interim storage facility line-item projects. An integrated authorization basis will be developed to address the authorization basis for the Phase 2 line-item projects. Project W-464 will be addressed separately under a modification to HNF-3553, *Spent Nuclear Fuel Project SAR – Annex A Canister Storage Building Final SAR &*

Technical Safety Requirements. Future project interfaces with other Site projects and private contractors will be identified as appropriate.

The baseline for the IHLW Interim Storage Subproject will be an integrated authorization basis developed around the goal of a DOE-approved FSAR. Each of the Phase 2 facilities will be identified under a modification to this FSAR that 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 CSB and/or RPP authorization bases
- Overall vitrified waste management strategy on the Hanford Site (transportation, interim storage, and disposal)
- IHLW description (i.e., radioactive material inventory, conditioning process, general characteristics, certifications)
- Interim IWSP facility general description and purpose
- Overall hazard identification and control strategy (i.e., bounding potential scenarios including criticality, external exposure, heat removal, canister drop)
- 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 the vitrification facilities
- Site transportation basis (i.e., requirements, procedures, shipping, cask maintenance)
- Operational safety basis and organization.

The CSB authorization basis will include the actions required to modify HNF-3553. The existing SNF CSB FSAR will be evaluated to determine any impacts related to IHLW operations. Changes will be identified and coordinated with the SNF Project Office to ensure the FSAR remains valid for all facility operations. The DOE will approve the revisions to the CSB FSAR before initiating storage operations.

9.3.2.3 Transportation of Immobilized High-Level Waste. A safety analysis report for packaging will be prepared to address the transportation of IHLW during the various phases of project canister relocation requirements (i.e., RPP-WTP to interim storage, interim storage to shipping facility). This information will be integrated into the modified SNF CSB FSAR, as deemed necessary, and the Phase 2 integrated FSAR. Transportation considerations include the movement 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. CHG procedures and safety evaluations will authorize and control transportation and packaging operations. These procedures, although not subject to U.S. Department of Transportation regulations, comply with their requirements.

The strategy for IHLW packaging and transportation operations is addressed in HNF-SD-ENV-EE-002. 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.

9.3.2.4 Safety Activity Schedule. Table 9-1 provides the Project W-464 safety-related tasks and responsible organizations. The tasks and associated information will be identified in more detail in the specific engineering task plans once the results of the preliminary safety evaluation (PSE) are known. A similar process will be used for the other facilities developed as part of the IHLW Interim Storage Subproject.

Table 9-1. Project W-464 Safety-Related Activities. (2 sheets)

Tasks	Responsible and performing organizations	Observations/ project stages	DOE approval required	Tier review	
				1 (CHG)	2 (DOE)
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
Preliminary SNF CSB FSAR modification development	RPP NS&L and SA	Basis for low- and high-activity PSAR/FSAR development - detailed design and construction	Yes	--	--
Final SNF CSB FSAR modification	RPP NS&L and SA	Facility operation; amendments for separate Phase 2 facilities	Yes	X	X
Development and DOE approval of a PSAR	RPP NS&L, SA, and Licensing	Detailed design and before start of procurement and construction for Phase 2 IHLW	Authorization to start procurement and construction	X	X
Development of transportation criteria related to safety	RPP NS&L, Licensing, and WMH	Procurement specifications for trucks and casks	No	--	--
Safety analysis report for packaging	RPP NS&L, Licensing, and WMH	Detailed design, construction, and cold testing	Yes	X	X
Unreviewed safety question screening	RPP NS&L and Licensing	Check that construction activities are covered by AB	No	--	--
Development and approval of an FSAR	RPP NS&L, SA, and Licensing	Active testing and operation	Yes	X	X

Table 9-1. Project W-464 Safety-Related Activities. (2 sheets)

Tasks	Responsible and performing organizations	Observations/ project stages	DOE approval required	Tier review	
				1 (CHG)	2 (DOE)

AB = authorization basis.
CHG = CH2M HILL Hanford Group, Inc.
CSB = Canister Storage Building.
DOE = U.S. Department of Energy.
FSAR = final safety analysis report.
IHLW = immobilized high-level waste.
NS&L = Nuclear Safety and Licensing.
PSAR = preliminary safety analysis report.
RPP = River Protection Project.
SA = Safety Analysis.
SNF = Spent Nuclear Fuel.
WMH = Waste Management Federal Services of Hanford, Inc.

9.3.2.5 Nuclear Safety Activities. The IHLW Interim Storage Subproject is developing a comprehensive, graded approach to safety. This approach integrates the appropriate level of safety analysis and review process to provide the project with a continuous flow of safety inputs and requirements. This information will be used to maintain the project cost, schedule, and technical baselines throughout the project life cycle. Establishment of the basis for and performance of the following activities will implement the approach:

- PSE studies (i.e., facility hazard categorization, preliminary hazard analysis, bounding accident scenario analysis, and unmitigated consequences evaluations) will be conducted during the conceptual design stage. These studies are expected to establish a set of safety functions to be further analyzed and tracked during the preliminary and design phases. A PSE will document the PSE study results as part of the conceptual design budget validation package. The primary objective of the PSE is to identify significant safety functions to support critical design report budget validation and to establish the safety basis for follow-on project phases. The PSE will not be submitted to the DOE as an authorization basis document.

- 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 phases. These studies will be used to establish the basis of the preliminary safety analysis report (PSAR) to be submitted to the ORP for approval before the start of procurement and construction.

- The project design package will address the safety requirements using safety equipment lists, specific procurement requirements, and specific testing criteria during system testing.

Engineering task plans will be prepared to identify specific activities before work begins.

9.4 QUALITY ASSURANCE

The IHLW Interim Storage Subproject quality assurance activities are covered by HNF-IP-0842 (Volume XI, Section 1.1) and the associated implementing procedures. 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 the vitrification Phase 1 line-item project is defined as transportation, interim storage, and loadout of qualified, immobilized high-activity waste products provided during the proof-of-concept demonstration production. Interim storage at the Hanford Site is to be provided until the IHLW canisters are shipped to the national geologic repository. The ability of this project to influence scope is limited to the storage and retrieval operations of qualified canisters. The project can only influence the quality of the immobilized product by confirming, documenting, and enforcing the continued quality of the product. Project W-464 will implement the quality requirements to ensure identified SSC design features and delivered systems/subsystems provide the necessary performance capabilities; and are delivered, consistent with the required planning schedules, to support the operations phase of the facility through the planned life cycle.

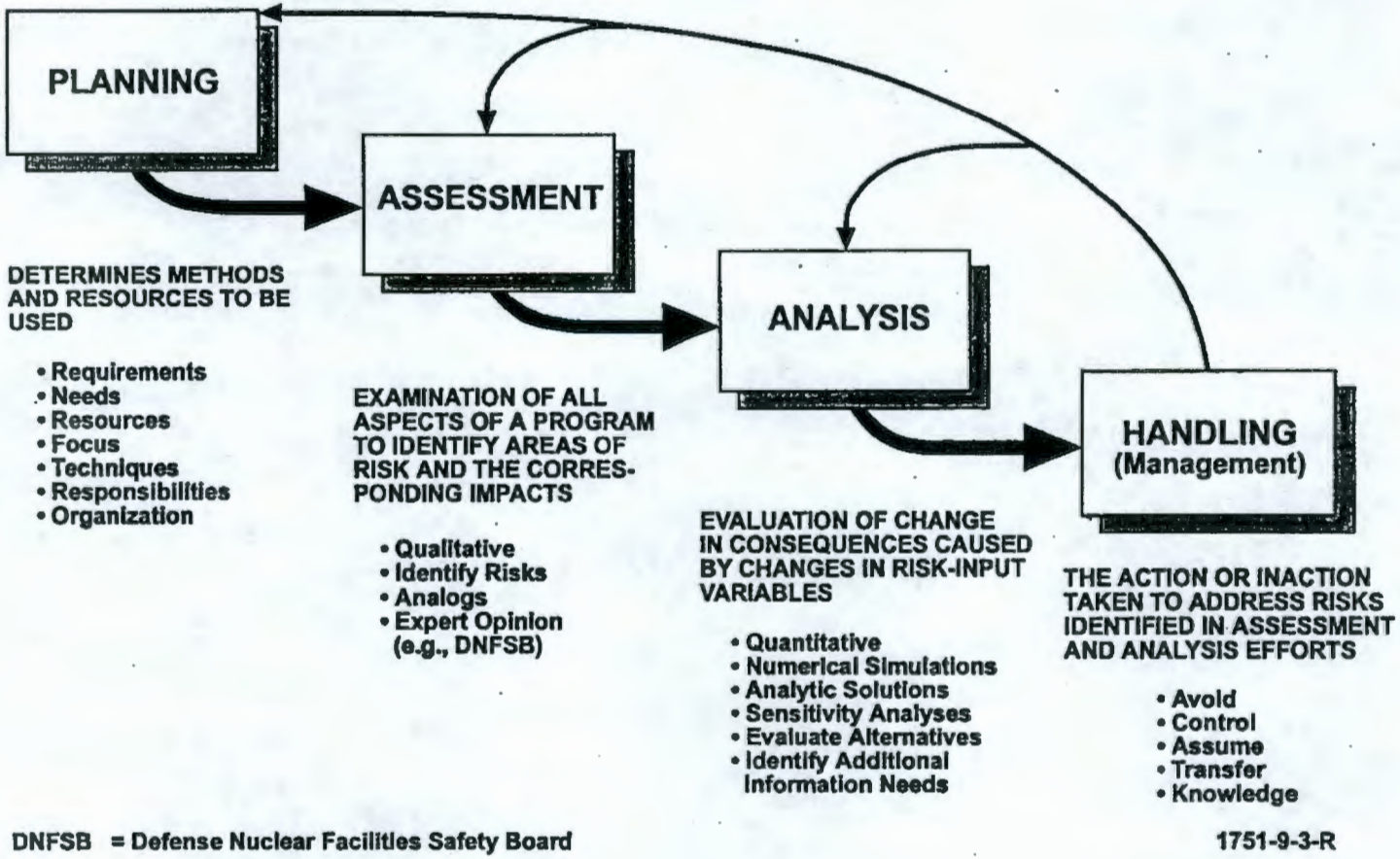
A project-specific quality assurance program plan (QAPP) will contain the project quality assurance requirements. Existing quality assurance plans will provide the operational quality assurance requirements.

The subproject will use the requirements from RPP-MP-600 and the applicable implementing procedures as the baseline to produce the line-item project-specific QAPP. The project-specific plan will address requirements from DOE/RW-0333P that impact the Project W-464 scope. The requirements from DOE/RW-0333P help the contractors comply with the requirements for the ultimate transportation and final disposition in the federal repository. Before CSB operations, CSB facility operations will modify its QAPP to include the constraints identified to interface with DOE/RW-0333P.

9.5 RISK MANAGEMENT

The IHLW Interim Storage Subproject uses a risk planning, assessment, and management process as depicted in Figure 9-3 to identify significant risk factors and to formulate mitigation plans. Risk management is conducted in accordance with HNF-IP-0842 (Volume IV, Section 2.6). Identified risks are incorporated into an RPP risk management list for assessment and analysis. Risk assessment is an ongoing, iterative, integrated process. The process provides information used to manage programmatic (cost and schedule) and technical risks. Initial risk screening has been performed as part of the initial decision process to select the Phase 1 and Phase 2 interim storage architectures and as part of the ongoing interaction with Project W-379.

Figure 9-3. Programmatic Risk Management Process.



DNFSB = Defense Nuclear Facilities Safety Board

9.5.1 Perceived Sources of High Risk

The following high-risk items are identified for Project W-464 as related to the integration with Project W-379:

- Schedule and cost impacts resulting from delays in the completion of Project W-379
- Schedule and cost impacts caused by uncertainties associated with concurrent CSB SNF/IWSP operations. The potential exists that certain SNF operational activities, as described in Section 9.5.2, could occur that may impact IWSP IHLW load-in/load-out activities.

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:

- Use of the CSB depends on outfitting two of the three vaults to accommodate the Phase 1 IHLW. Project W-464 activities were developed assuming MCO welding and loading would be completed by December 2004. Delay of the Project W-379 fuel transfer and storage completion schedule could affect the start of Project W-464 retrofit activities. Project W-464 design, procurement, and construction will be coordinated with SNF CSB operations to monitor progress and mitigate impact.
- CSB IHLW operation includes accommodating unit operations required for the SNF MCOs. The Project W-379 operating parameters are still evolving and could influence the Project W-464 baseline operational requirements. For example, the type and extent of monitoring for the SNF MCOs in storage has yet to be determined. If the MHM is being used to handle an SNF MCO, the IHLW handling system (shielded canister transporter) will not be allowed on the operating deck to retain CSB structural integrity. SNF MCO handling operations could occur during seal welding or during annual selected monitoring of pre-selected SNF MCOs. As part of the risk identification/mitigation, IHLW Interim Storage Subproject operations planning will coordinate with SNF CSB operations to develop a joint operations plan.

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 life cycle of the product, and when a change occurs to any of the relationships, the others are evaluated to determine impacts.

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 IHLW Interim Storage Subproject integrated baseline.

The Hanford Site Records Management Information System maintains the project technical files and ensures that information is available to support the subproject and line-item projects. This system also ensures that information contained therein is complete and accurate, thereby ensuring the requirements for the IHLW Interim Storage Subproject meet the goals for tank waste treatment 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 IHLW Interim Storage Subproject 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, is used to ensure that the storage and disposition of IHLW canisters are accomplished, consistent with subproject requirements.

9.7.1 Organization Interfaces

The interface with federal and state agencies is controlled in accordance with applicable federal and state regulations. The interface coordination with the various federal, state, and local agencies helps ensure that all regulatory and programmatic requirements for the IHLW Interim Storage 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 is accomplished to ensure that services and operational constraints/requirements are clearly delineated. This includes construction-related interfaces for utility services, operational interface with SNF (CSB operations), and use of onsite resources (e.g., roads, facilities, security).

Interface with the vitrification design team, vitrification operations, ORP, and the Office of Civilian Radioactive Waste Management is critical in defining the technical requirements for packaging, storage, and shipping. These technical requirements are documented through ICDs.

9.7.2 Major Technical Interface Control

9.7.2.1 Vitrification Interface. The technical interfaces with the RPP-WTP design and construction contractor and the operations contractor is identified and controlled through ICDs that define the functional and physical elements of the various interface components. The two primary ICDs related to the IHLW program are as follows:

- The interface requirements necessary for receipt of IHLW canisters from the production facility to the transportation system for delivery to the interim storage facility are currently identified in BNFL-5193-ID-14, *Interface Control Document for Immobilized High-Level Waste*. This document defines the handling and transportation requirements necessary to control receipt and disposition of the IHLW canisters.

- The interface requirements for failed/used melter transportation and disposition is contained in BNFL-5193-ID-03, *Interface Control Document for Radioactive Solid Waste*. This ICD also contains the information regarding the disposition of other solid wastes. This interface document includes the packaging requirements and waste characterization descriptions.

9.7.2.2 National Geologic Repository Interface. The technical interface with the national geologic repository, RW, identifies the requirements and delivery processes for shipment of IHLW canisters from the interim storage facility to the national geologic repository. This interface ensures compliance with the EM-WAPS, DOE/RW-0351, and other identified acceptance requirements. This interface is used to define the quality assurance, audit, receipt, and shipping requirements necessary to transport the IHLW from the interim storage facilities to the national geologic repository and is coordinated with RW.

9.7.2.3 Spent Nuclear Fuel Interface. Use of the CSB depends on the eventual use of the Project W-379-designed facility. An MOA (96-SFD-104) between the DOE Spent Fuels Division and the DOE Office of Waste Management reserves CSB vaults 2 and 3 for storage of vitrified Phase 1 IHLW. Continual interface with the SNF Program Office will be necessary to ensure that IHLW interim storage requirements do not impact SNF operations and that all technical requirements for facility modifications are identified. An ICD will be developed to document and coordinate technical and operational requirements and constraints.

9.8 QUALIFICATIONS AND TRAINING

The IHLW Interim Storage Subproject conducts staff qualification and training in accordance with appropriate CHG procedures and DOE Order 5480.20A, *Personnel Selection, Qualification, and Training Requirements 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 Operations 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 Operations manager for review and approval.
- Provide written requests for certification extensions to the ORP Operations manager for approval.
- Prepare and submit an assessment of the need for a simulator to the ORP Operations manager for review and approval (Category A test and research reactors only).
- Perform periodic systematic evaluations of training and qualifications.

The line-item project baseline requirement documents (i.e., Level 1 specifications) will specify DOE Order 5480.20A and each line-item PEP will provide the implementation details.

10.0 REFERENCES

00-PGO-002, 2000, *River Protection Project Key Planning Assumptions*, Letter (M. K. Barrett to M. P. DeLozier, CH2M HILL Hanford Group, Inc.), April 10, U.S. Department of Energy, Office of River Protection, Richland, Washington.

00-PRD-060, 2000, *Contract No. DE-AC06-99RL14047 - Partial Completion of Fiscal Year (FY) 2000 Performance Incentive ORP9.1.1, Standard 4M and Section 4, Expectation 4 - Recommendation on use of Fuels and Materials Examination Facility (FMEF) for the Second Generation Immobilized High-Level Waste (IHLW) Interim Storage Facility,* Letter (J. J. Short to M. P. DeLozier, CH2M HILL Hanford Group, Inc.), September 12, U.S. Department of Energy, Office of River Protection, Richland, Washington.

00-BMA-073, 2000, *Contract No. AC06-99RL14047 – Process to Arrive at a Multi-Year Work Plan (MYWP) Submittal*, Correspondence No. 0003355 (J. J. Short to M. P. DeLozier, CH2M HILL Hanford Group, Inc.), June 26, U.S. Department of Energy, Office of River Protection, Richland, Washington.

10 CFR 830.120, "Quality Assurance Requirements," *Code of Federal Regulations*, as amended.

96-SFD-104, 1996, *Memorandum of Agreement (MOA) – Utilization of Canister Storage Building (CSB) Vaults 2 and 3 for Immobilized High-Level Waste*, J. E. Kinzer, Assistant Manager, Office of Tank Waste Remediation System, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

96-WDD-165, 1996, *Concurrence, High-Level Waste (HLW) Interim Storage Architecture Selection Decision Report*, Correspondence No. 9602830 (W. J. Taylor to H. J. Hatch, Fluor Daniel Hanford, Inc.), U.S. Department of Energy, Richland Operations Office, Richland, Washington.

97-WDD-146, 1997, *Tank Waste Remediation System (TWRS) High-Level Waste (HLW) Canister*, Correspondence No. 9758282 A (W. J. Taylor to H. J. Hatch, Fluor Daniel Hanford, Inc.), September 10, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

98-WDD-103, 1998, *Waste Disposal Division: Multi-Year Work Plan (MYWP) Update Guidance for Fiscal Year 1999 (FY99)*, Correspondence No. 9857975 A (W. J. Taylor to R. D. Hanson, Fluor Daniel Hanford, Inc.), September 21, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

99-AMPD-006, 1999, *Planning Guidance Revisions for Development of Contract Deliverables Required for Performance Agreement TWR 1.3.5*, Correspondence No. 9952261 (W. J. Taylor to R. D. Hanson, Fluor Daniel Hanford, Inc.), April 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Acceptance of Part A Permit/Application, Form 3, 1999, Letter (S. Dahl to J. E. Rasmussen, U.S. Department of Energy), July 28, Washington State Department of Ecology, Kennewick, Washington.

BNFL-5193-ID-03, 2000, *Interface Control Document for Radioactive Solid Waste*, Rev. 6, BNFL Inc., Richland, Washington.

BNFL-5193-ID-14, 1999, *Interface Control Document for Immobilized High-Level Waste*, Rev. 4H-R1, BNFL Inc., Richland, Washington.

CHG-00004616, 2000, *Contract Number DE-AC06-99RL14047; Partial Completion of Fiscal Year 2000 Performance Incentive ORP9.1.1, Standard 4, and Section 4, Expectation 4, "Recommendation on use of Fuels and Materials Examination Facility (FMEF) for the Second Generation Immobilized High-Level Waste (IHLW) Interim Storage Facility,"* Letter (R. F. Wood to J. J. Short, U.S. Department of Energy, Office of River Protection), August 31, CH2M HILL Hanford Group, Inc., Richland, Washington.

Clean Air Act of 1970, as amended, 42 USC 7401, et seq.

Completion of Hanford Federal Facility Agreement and Consent Order, 1999, Letter (J. E. Rasmussen to M. A. Wilson, Washington State Department of Ecology and D. R. Sherwood, U.S. Department of Environmental Protection Agency), June 28, U.S. Department of Energy, Richland, Washington.

CO-00-RPP-363, 2000, *Feasibility Study, Fuels and Materials Examination Facility, Immobilized High-Level Waste Interim Storage*, CH2M HILL Hanford Group, Inc., Richland, Washington.

DE-AC06-96RL13308, 1996, *British Nuclear Fuels Laboratory Privatization Contract*, as amended or modified, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE/EIS-0189, 1996, *Final Environmental Impact Statement for the Tank Waste Remediation System*, U.S. Department of Energy, Washington, D.C., and Washington State Department of Ecology, Olympia, Washington.

DOE O 231.1, 1995, *Environment, Safety, and Health Reporting*, U.S. Department of Energy, Washington, D.C.

DOE O 414.1A, 1999, *Quality Assurance*, U.S. Department of Energy, Washington, D.C.

DOE O 430.1A, 1998, *Life Cycle Asset Management*, U.S. Department of Energy, Washington, D.C.

Good Practice Guides

- GPG-FM-002, "Critical Decision Criteria"
- GPG-FM-005, "Test and Evaluation"
- GPG-FM-006, "Performance Analysis and Reporting"

- GPG-FM-009, "Baseline Change Control"
- GPG-FM-010, "Project Execution and Engineering Management Planning"
- GPG-FM-016, "Baseline Development."

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

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

DOE Order 5400.5, 1990, *Radiation Protection of the Public and the Environment*, U.S. Department of Energy, Washington, D.C.

DOE Order 5480.20A, 1994, *Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities*, U.S. Department of Energy, Washington, D.C.

DOE/RW-0333P, 2000, *Office of Civilian Radioactive Waste Management Quality Assurance Requirements and Description*, Rev. 10, U.S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

DOE/RW-0351, 1999, *Waste Acceptance System Requirements Document (WASRD)*, Rev. 3, U. S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

EIS/ROD 6450-01-P, 1999, *Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement, Richland, Washington*, U.S. Department of Energy, Washington, D.C.

Final Determination Pursuant to the Hanford Federal Facility Agreement and Consent Order, March 29, 2000, Washington State Department of Ecology, Olympia, 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.

HNF-1751, 1997, *TWRS Retrieval and Disposal Mission Immobilized High-Level Waste Storage Plan*, Rev. 0, SGN Eurisys Services Corporation, Richland, Washington.

HNF-1751, 1999, *River Protection Project Immobilized High-Level Waste Interim Storage Plan*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-1773, 2000, *Environmental Program Description for the Tank Farm Contractor*, Rev. 3, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-1883, 1998, *Tank Waste Remediation System Program Plan*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-1900, 2000, *Configuration Management Plan for the Tank Farm Contractor*, Rev. 1, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-2029, 1999, *River Protection Project Testing and Evaluation Management Plan*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-2298, 1998, *Conceptual Design Report for Immobilized High-Level Waste Interim Storage Facility (Phase 1)*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-2579, 1998, *Systems Engineering Management and Implementation Plan for Project W-464 Immobilized High-Level Waste Storage*, Parsons Infrastructure and Technology Group, Inc., Richland, Washington.

HNF-3553, 2000, *Spent Nuclear Fuel Project SAR – Annex A Canister Storage Building Final SAR & Technical Safety Requirements*, Fluor Hanford, Richland, Washington.

HNF-3899, 1999, *Immobilized High-Level Waste Interim Storage Alternatives Generation and Analysis and Decision Report,* Rev. 0, COGEMA Engineering Corporation and Lucas Inc., Richland, Washington.

HNF-EP-0182-144, 2000, *Waste Tank Summary Report for Month Ending March 31, 2000*, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-IP-0842, 1992, *RPP Administration*, CH2M HILL Hanford Group, Inc., Richland, Washington.

- Vol. IV, Section 2.6, "Risk Management"
- Vol. IV, Section 2.8, "Interface Control"
- Vol. VIII, Section 1.1, "Baseline Change Control"
- Vol. VIII, Section 3.1, "Configuration Management Implementation"
- Vol. XI, Section 1.1, "Quality Assurance Program Plan."

HNF-SD-ENV-EE-002, 1998, *Environmental Permits and Approvals Plan for High-Level Waste Interim Storage, Project W-464*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-SD-WM-MAR-008, 1999, *River Protection Project Mission Analysis Report*, Rev. 2, Lockheed Martin Hanford Corporation, Richland, Washington.

HNF-SD-WM-RPT-294, 1997, *Decision Document for the Final Disposition of Cesium and Strontium Capsules*, Numatec Hanford Corporation, Richland, Washington.

HNF-SD-WM-SEMP-002, 2000, *Systems Engineering Management Plan for the Tank Farm Contractor*, Rev. 2, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-SD-WM-SP-012, 2000, *Tank Farm Contractor Operation and Utilization Plan*, Rev. 2, CH2M HILL Hanford Group, Inc., Richland, Washington.

HNF-SD-WM-TI-740, 1999, *Standard Inventories of Chemicals and Radionuclides in Hanford Site Tank Wastes*, Rev. 0C, Lockheed Martin Hanford Corporation, Richland, Washington.

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

Notice of Intent for Expansion under Interim Status, Hanford Facility Immobilization High-Level Waste Storage Unit, Richland, Washington, 1998, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

ORP-OPD-PP-03, 1999, *ORP Project Budget Validation Procedure*, U.S. Department of Energy, Office of River Protection, Richland, Washington.

Public Law 105-261, *Strom Thurmund National Defense Authorization Act for Fiscal Year 1999*, Section 3139.

RCW 43.216, "State Environmental Policy Act of 1971," *Revised Code of Washington*.

Report to Congress, Treatment and Immobilization of Hanford Radioactive Tank Waste, 1988, U.S. Department of Energy, Washington, D.C.

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

RPP-00-127, 2000, *River Protection Project FY2001 Bridge Change Request*, June 30, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6227, 2000, *Storage and Disposal Program Product Sampling Support*, Draft, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6359, 2000, *Project Execution Plan for Project W-464 "Immobilized High-Level Waste Interim Storage,"* Draft, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-6968, 2000, *River Protection Project Immobilized Low-Activity Waste Disposal Plan*, Rev. 0, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-MP-003, 2000, *Integrated Environmental, Safety and Health Management Information System Plan*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-MP-600, 2000, *Quality Assurance Program Description for the Tank Farm Contractor*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-154, 2000, *Responsibilities and Procedures for all Hazardous Material Shipments*, CH2M HILL Hanford Group, Inc., Richland, Washington.

RPP-PRO-705, 2000, *Safety Basis Planning, Documentation, Review, and Approval*, CH2M HILL Hanford Group, Inc., Richland, Washington.

SFD: KMS/96-SFD-104, 1996, *Memorandum of Agreement (MOA) - Utilization of Canister Storage Building (CSB) Vaults 2 and 3 for Immobilized High-Level Waste*, Memorandum (C. A. Hansen to J. E. Kinzer, Assistant Manager, Office of Tank Waste Remediation System), April 18, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Taylor, W. J., 1997, *Repository Environmental Impact Statement (EIS) Data Call for High-Level Waste (HLW)*, Memorandum (to K. G. Picha, U.S. Department of Energy, Office of Waste Management), August 8, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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

Waste Acceptance Product Specifications for Vitrified High-Level Waste Forms, 1999, Rev. 3, U.S. Department of Energy, Office of Environmental Management, Washington, D.C.

WHC-SD-WM-DRD-012, 1996, *Design Requirements Document for the Interim Store Phase I Solidified High-Level Waste, Function 4.2.4.1.2*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-FRD-020, 1996, *Tank Waste Remediation System Functions and Requirements*, Rev. 1, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-FRD-027, 1996, *Functional Requirements Document for Interim Storage Solidified High-Level and Transuranic Waste*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC-SD-WM-SP-011, 1996, *Solidified High-Level Waste Interim Storage Alternative Analysis and Path Forward Recommendation*, Rev. 0, Westinghouse Hanford Company and Los Alamos Technical Associates, Richland, Washington.

WHC-SD-WM-TA-183, 1996, *HLW Interim Storage Architecture Selection - Decision Report*, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

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 revision versus where it was located in the previous revision of this document.

This page intentionally left blank.

APPENDIX A

TRI-PARTY AGREEMENT REQUIREMENTS MATRIX

Tri-Party Agreement Action Plan, Section 11.5 requirement[a]	RPP-6969 location	Location, HNF-1751, Rev 1[b]	Comments
Project goals statement	Section 2.3	Section 2.1	Contained within mission statements.
Project objectives statement	Section 2.3	Section 2.3	Provides a flow-down 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	History information is provided for Site history and IHLW program development.
Physical information	Sections 4.1 and 4.2	Section 4.1	Provided as discussion of tank waste characterization and waste stream process flow
Current commercial disposition activities	Section 4.4.1	Section 4.3	Provides a brief discussion of commercial comparison as it related to the IHLW decision process.
Waste stream information	Sections 4.1 and 4.2	Section 4.1	Provided as discussion of tank waste characterization and waste stream process flow.
Waste stream stability/suspected migration	Section 4.1	Section 4.1	A general description of the waste status is provided. Actual waste stream stability/migration is not relevant to this program.
Summary of management evaluations and options	Section 4.0	Section 4.0	Provides a summary of the "key" decisions related to current program planning.
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	Section 4.4	Provides a discussion of the CSB and the proposed modifications along with FMEF evaluation status.

Tri-Party Agreement Action Plan, Section 11.5 requirement[a]	RPP-6969 location	Location, HNF-1751, Rev 1[b]	Comments
Description of approach	Section 4.4	--	Provides a simplified discussion of approach for IHLW storage/handling beyond CSB.
Top-level WBS with appended dictionary	Section 6.0	Section 6.0	Provides a breakdown of the currently approved top-level WBS.
	Appendix C	Appendix B	Provides WBS dictionary sheets for IHLW activities (Level 5)
Project TSD capability including performance and specification requirements	--	--	No TSD currently is associated with the IHLW Disposal Complex and Operations although it supports the various tank farm operations.
Project schedule constraints including Tri-Party Agreement milestones	Section 7.0, Table 7-2	Section 8.0, Table 3	IHLW subproject major activities and schedule summary.
	Section 7.0, Table 7-1	Section 8.3, Table 4	Summary of IHLW Tri-Party Agreement milestones.
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 D	Overall Storage & Disposal Subproject WBS summary schedule.
Key deliverables/products 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. Section 9.1.5 contains a specific performance discussion.

Tri-Party Agreement Action Plan, Section 11.5 requirement[a]	RPP-6969 location	Location, HNF-1751, Rev 1[b]	Comments
Project controls	Sections 9.1.3 and 9.1.4	Sections 11.1.3 and 11.1.4	These sections address the various functions performed by the CHG Project Controls Group and includes costs control/management and schedule-related activities.
Interface control	Section 9.7	Section 14.0	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).

[a] *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.

[b] HNF-1751, 1999, *River Protection Project Immobilized High-Level Waste Interim Storage Plan*, Rev. 1, Lockheed Martin Hanford Corporation, Richland, Washington.

CHG = CH2M HILL Hanford Group, Inc.
CSB = Canister Storage Building.
FMEF = Fuels and Materials Examination Facility.
IHLW = immobilized high-level waste.
TSD = treatment, storage, and disposal.
WBS = work breakdown structure.

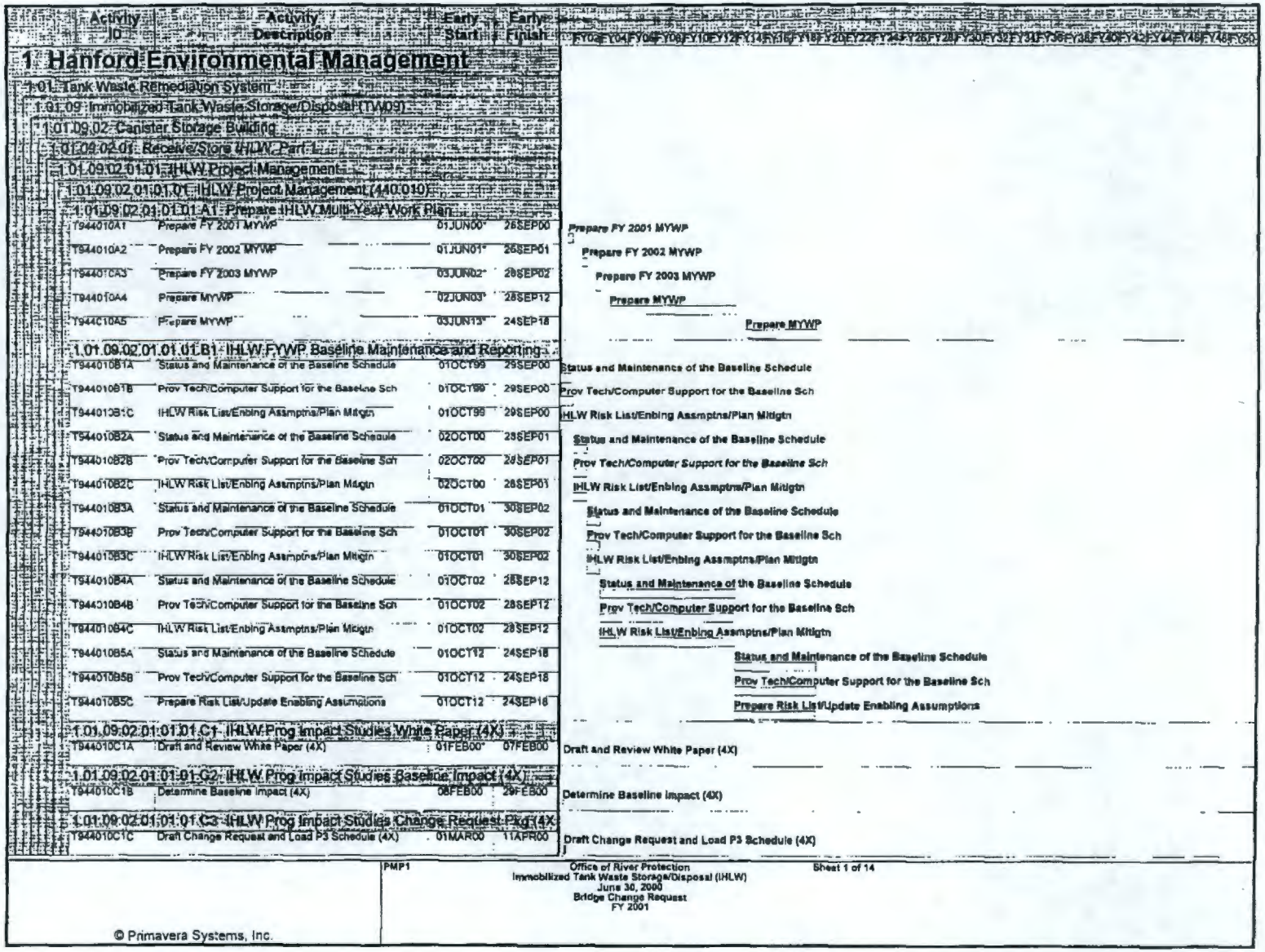
This page intentionally left blank.

APPENDIX B

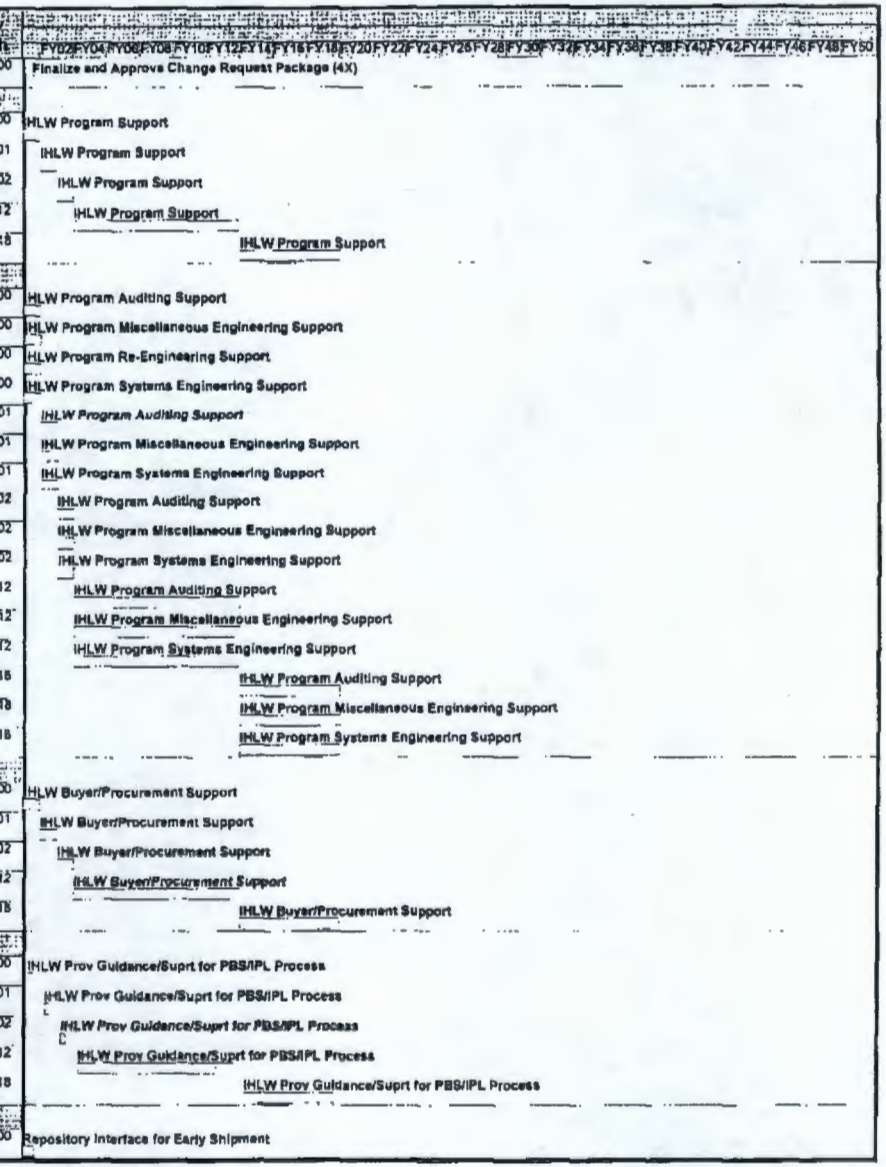
IMMOBILIZED HIGH-LEVEL WASTE PROGRAM SCHEDULE

This schedule consists of the Immobilized High-Level Waste Program 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.

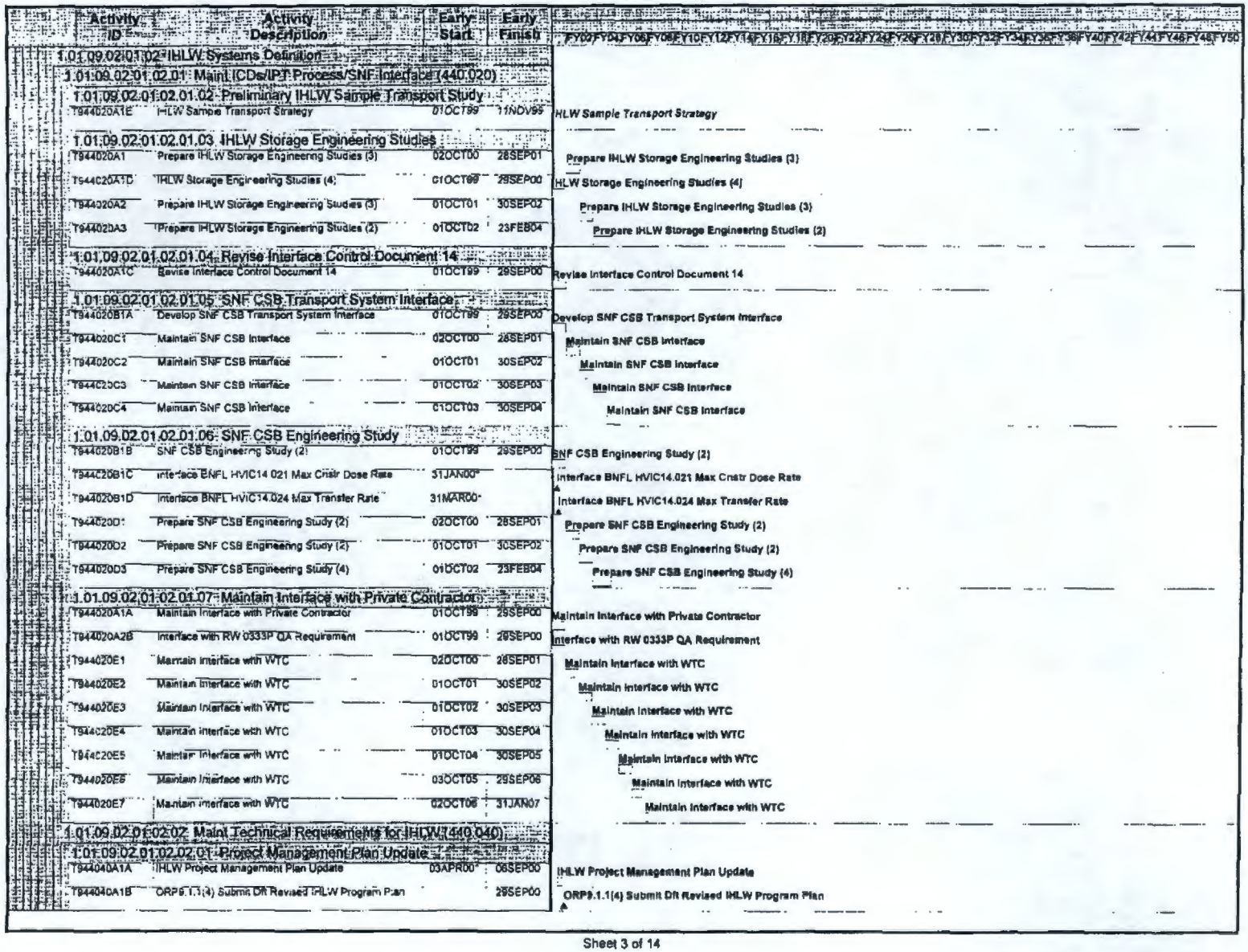
This page intentionally left blank.


Activity ID
Activity Description
Early Start
Early Finish
FY02 FY04 FY06 FY08 FY10 FY12 FY14 FY16 FY18 FY20 FY22 FY24 FY26 FY28 FY30 FY32 FY34 FY36 FY38 FY40 FY42 FY44 FY46 FY48 FY50
1 Hanford Environmental Management
1.01 Tank Waste Remediation System
1.01.09 Immobilized Tank Waste Storage/Disposal (TWD9)
1.01.09.02 Canister Storage Building
1.01.09.02.01 Receive/Store IHLW Part 1
1.01.09.02.01.01 IHLW Project Management
1.01.09.02.01.01.01 IHLW Project Management (440,010)
1.01.09.02.01.01.01.A1 Prepare IHLW Multi-Year Work Plan
T944010A1 Prepare FY 2001 MYWP 01JUN00* 28SEP00
T944010A2 Prepare FY 2002 MYWP 01JUN01* 28SEP01
T944010A3 Prepare FY 2003 MYWP 03JUN02* 28SEP02
T944010A4 Prepare MYWP 02JUN03* 28SEP12
T944010A5 Prepare MYWP 03JUN13* 24SEP18
1.01.09.02.01.01.01.B1 IHLW FYWP Baseline Maintenance and Reporting
T944010B1A Status and Maintenance of the Baseline Schedule 01OCT99 29SEP00
T944010B1B Prov Tech/Computer Support for the Baseline Sch 01OCT99 29SEP00
T944010B1C IHLW Risk List/Enbing Assmptns/Plan Mitigtn 01OCT99 29SEP00
T944010B2A Status and Maintenance of the Baseline Schedule 02OCT00 28SEP01
T944010B2B Prov Tech/Computer Support for the Baseline Sch 02OCT00 28SEP01
T944010B2C IHLW Risk List/Enbing Assmptns/Plan Mitigtn 02OCT00 28SEP01
T944010B3A Status and Maintenance of the Baseline Schedule 01OCT01 30SEP02
T944010B3B Prov Tech/Computer Support for the Baseline Sch 01OCT01 30SEP02
T944010B3C IHLW Risk List/Enbing Assmptns/Plan Mitigtn 01OCT01 30SEP02
T944010B4A Status and Maintenance of the Baseline Schedule 01OCT02 28SEP12
T944010B4B Prov Tech/Computer Support for the Baseline Sch 01OCT02 28SEP12
T944010B4C IHLW Risk List/Enbing Assmptns/Plan Mitigtn 01OCT02 28SEP12
T944010B5A Status and Maintenance of the Baseline Schedule 01OCT12 24SEP18
T944010B5B Prov Tech/Computer Support for the Baseline Sch 01OCT12 24SEP18
T944010B5C Prepare Risk List/Update Enabling Assumptions 01OCT12 24SEP18
1.01.09.02.01.01.01.C1 IHLW Prog Impact Studies White Paper (4X)
T944010C1A Draft and Review White Paper (4X) 01FEB00* 07FEB00
1.01.09.02.01.01.01.C2 IHLW Prog Impact Studies Baseline Impact (4X)
T944010C1B Determine Baseline Impact (4X) 08FEB00 29FEB00
1.01.09.02.01.01.01.C3 IHLW Prog Impact Studies Change Request Pkg (4X)
T944010C1C Draft Change Request and Load P3 Schedule (4X) 01MAR00 11APR00
Prepare FY 2001 MYWP
Prepare FY 2002 MYWP
Prepare FY 2003 MYWP
Prepare MYWP
Prepare MYWP
Status and Maintenance of the Baseline Schedule
Prov Tech/Computer Support for the Baseline Sch
IHLW Risk List/Enbing Assmptns/Plan Mitigtn
Status and Maintenance of the Baseline Schedule
Prov Tech/Computer Support for the Baseline Sch
IHLW Risk List/Enbing Assmptns/Plan Mitigtn
Status and Maintenance of the Baseline Schedule
Prov Tech/Computer Support for the Baseline Sch
IHLW Risk List/Enbing Assmptns/Plan Mitigtn
Status and Maintenance of the Baseline Schedule
Prov Tech/Computer Support for the Baseline Sch
IHLW Risk List/Enbing Assmptns/Plan Mitigtn
Status and Maintenance of the Baseline Schedule
Prov Tech/Computer Support for the Baseline Sch
Prepare Risk List/Update Enabling Assumptions
Draft and Review White Paper (4X)
Determine Baseline Impact (4X)
Draft Change Request and Load P3 Schedule (4X)
PMP1
Office of River Protection
Immobilized Tank Waste Storage/Disposal (IHLW)
June 30, 2000
Bridge Change Request
FY 2001
Sheet 1 of 14
© Primavera Systems, Inc.

Activity ID	Activity Description	Early Start	Early Finish
T944010C1C	Finalize and Approve Change Request Package (4X)	12APR00	31MAY00
1.01.09.02.01.01.01.D1 IHLW Program Support			
T944010D1A	IHLW Program Support	01OCT99	29SEP00
T944010D2A	IHLW Program Support	02OCT00	28SEP01
T944010D3A	IHLW Program Support	01OCT01	30SEP02
T944010D4A	IHLW Program Support	01OCT02	28SEP12
T944010D5A	IHLW Program Support	01OCT12	24SEP18
1.01.09.02.01.01.01.D2 IHLW Program Auditing and Engineering			
T944010D1B	IHLW Program Auditing Support	01OCT99	29SEP00
T944010D1C	IHLW Program Miscellaneous Engineering Support	01OCT99	29SEP00
T944010D1E	IHLW Program Re-Engineering Support	01OCT99	29SEP00
T944010D1F	IHLW Program Systems Engineering Support	01OCT99	29SEP00
T944010D2B	IHLW Program Auditing Support	02OCT00	28SEP01
T944010D2C	IHLW Program Miscellaneous Engineering Support	02OCT00	28SEP01
T944010D2F	IHLW Program Systems Engineering Support	02OCT00	28SEP01
T944010D3B	IHLW Program Auditing Support	01OCT01	30SEP02
T944010D3C	IHLW Program Miscellaneous Engineering Support	01OCT01	30SEP02
T944010D3F	IHLW Program Systems Engineering Support	01OCT01	30SEP02
T944010D4B	IHLW Program Auditing Support	01OCT02	28SEP12
T944010D4C	IHLW Program Miscellaneous Engineering Support	01OCT02	28SEP12
T944010D4F	IHLW Program Systems Engineering Support	01OCT02	28SEP12
T944010D5B	IHLW Program Auditing Support	01OCT12	24SEP18
T944010D5C	IHLW Program Miscellaneous Engineering Support	01OCT12	24SEP18
T944010D5F	IHLW Program Systems Engineering Support	01OCT12	24SEP18
1.01.09.02.01.01.01.D3 IHLW Buyer/Procurement Support			
T944010D1G	IHLW Buyer/Procurement Support	01OCT99	29SEP00
T944010D2G	IHLW Buyer/Procurement Support	02OCT00	28SEP01
T944010D3G	IHLW Buyer/Procurement Support	01OCT01	30SEP02
T944010D4G	IHLW Buyer/Procurement Support	01OCT02	28SEP12
T944010D5G	IHLW Buyer/Procurement Support	01OCT12	24SEP18
1.01.09.02.01.01.01.D4 IHLW Prov Guidance/Suprt for PBS/IPL Process			
T944010D1H	IHLW Prov Guidance/Suprt for PBS/IPL Process	04JAN00	28APR00
T944010D2H	IHLW Prov Guidance/Suprt for PBS/IPL Process	02JAN01	30APR01
T944010D3H	IHLW Prov Guidance/Suprt for PBS/IPL Process	02JAN02	30APR02
T944010D4H	IHLW Prov Guidance/Suprt for PBS/IPL Process	02JAN03	30APR12
T944010D5H	IHLW Prov Guidance/Suprt for PBS/IPL Process	02JAN13	30APR18
1.01.09.02.01.01.01.D5 Repository Interface for Early Shipment			
T944010D1J	Repository Interface for Early Shipment	01OCT99	31MAY00



Sheet 2 of 14

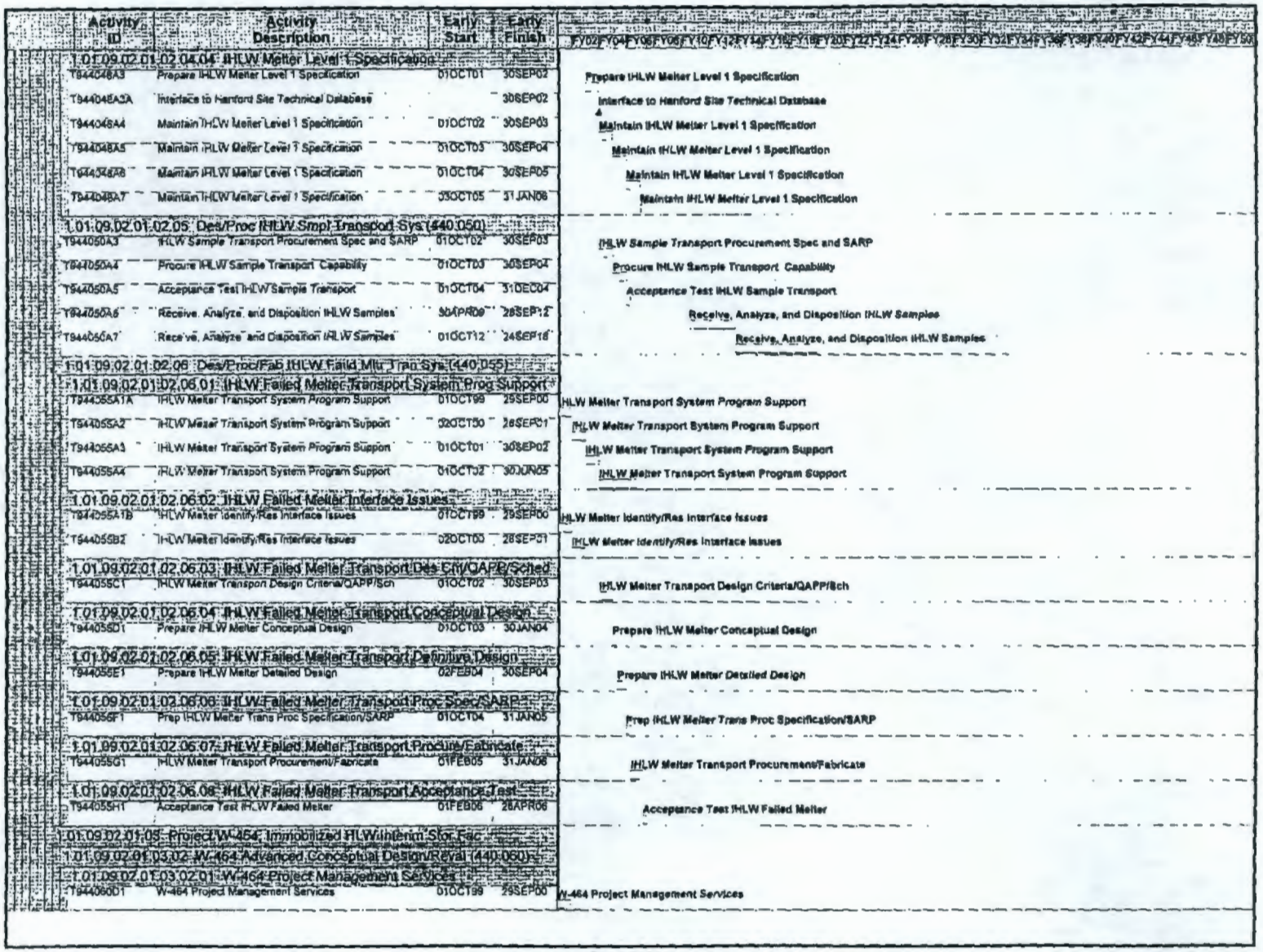


Activity ID	Activity Description	Early Start	Early Finish
1.01.09.02.01.02	IHLW Systems Definition		
1.01.09.02.01.02.01	Maint ICDs/IPT Process/SNF Interface (440.020)		
1.01.09.02.01.02.01.02	Preliminary IHLW Sample Transport Study		
T944020A1E	IHLW Sample Transport Strategy	01OCT99	11NOV99
1.01.09.02.01.02.01.03	IHLW Storage Engineering Studies		
T944020A1	Prepare IHLW Storage Engineering Studies (3)	02OCT00	28SEP01
T944020A1D	IHLW Storage Engineering Studies (4)	01OCT99	29SEP00
T944020A2	Prepare IHLW Storage Engineering Studies (3)	01OCT01	30SEP02
T944020A3	Prepare IHLW Storage Engineering Studies (2)	01OCT02	23FEB04
1.01.09.02.01.02.01.04	Revise Interface Control Document 14		
T944020A1C	Revise Interface Control Document 14	01OCT99	29SEP00
1.01.09.02.01.02.01.05	SNF CSB Transport System Interface		
T944020B1A	Develop SNF CSB Transport System Interface	01OCT99	29SEP00
T944020C1	Maintain SNF CSB Interface	02OCT00	28SEP01
T944020C2	Maintain SNF CSB Interface	01OCT01	30SEP02
T944020C3	Maintain SNF CSB Interface	01OCT02	30SEP03
T944020C4	Maintain SNF CSB Interface	01OCT03	30SEP04
1.01.09.02.01.02.01.06	SNF CSB Engineering Study		
T944020B1B	SNF CSB Engineering Study (2)	01OCT99	29SEP00
T944020B1C	Interface BNFL HVIC14.021 Max Cnstr Dose Rate	31JAN00*	
T944020B1D	Interface BNFL HVIC14.024 Max Transfer Rate	31MAR00*	
T944020D1	Prepare SNF CSB Engineering Study (2)	02OCT00	28SEP01
T944020D2	Prepare SNF CSB Engineering Study (2)	01OCT01	30SEP02
T944020D3	Prepare SNF CSB Engineering Study (4)	01OCT02	23FEB04
1.01.09.02.01.02.01.07	Maintain Interface with Private Contractor		
T944020A1A	Maintain Interface with Private Contractor	01OCT99	29SEP00
T944020A2B	Interface with RW 0333P QA Requirement	01OCT99	29SEP00
T944020E1	Maintain Interface with WTC	02OCT00	28SEP01
T944020E2	Maintain Interface with WTC	01OCT01	30SEP02
T944020E3	Maintain Interface with WTC	01OCT02	30SEP03
T944020E4	Maintain Interface with WTC	01OCT03	30SEP04
T944020E5	Maintain Interface with WTC	01OCT04	30SEP05
T944020E6	Maintain Interface with WTC	03OCT05	29SEP06
T944020E7	Maintain Interface with WTC	02OCT06	31JAN07
1.01.09.02.01.02.02	Maint Technical Requirements for IHLW (440.040)		
1.01.09.02.01.02.02.01	Project Management Plan Update		
T944040A1A	IHLW Project Management Plan Update	03APR00*	06SEP00
T944040A1B	ORP5.1.1(4) Submit Dft Revised IHLW Program Plan		29SEP00

Sheet 3 of 14

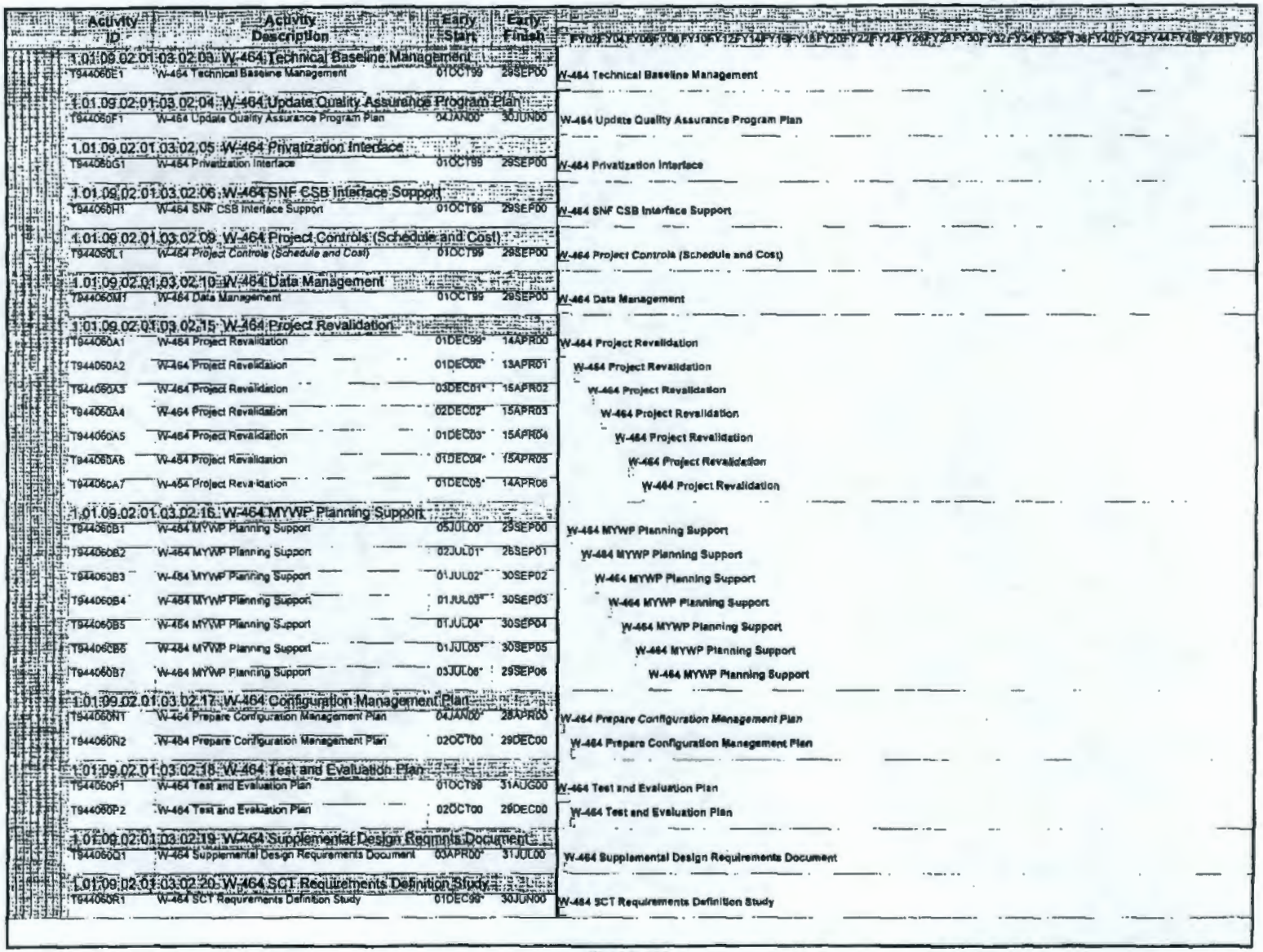
Activity ID	Activity Description	Early Start	Early Finish	FY02 FY04 FY06 FY08 FY10 FY12 FY14 FY16 FY18 FY20 FY22 FY24 FY26 FY28 FY30 FY32 FY34 FY36 FY38 FY40 FY42 FY44 FY46 FY48 FY50
T944040A2	Update IHLW Program Plan	02APR01*	06SEP01	Update IHLW Program Plan
T944040A3	Update IHLW Program Plan	01APR02*	05SEP02	Update IHLW Program Plan
T944040A4	Update IHLW Program Plan	01APR04*	07SEP04	Update IHLW Program Plan
1.01.09.02.01.02.02.02 Prepare/Maintain Level 1 Specification				
T944040B1	Prepare IHLW Level 1 Specification	01OCT99	29SEP00	Prepare IHLW Level 1 Specification
T944040B1M	Issue W-464 IHLW Level 1 Specification		29SEP00	Issue W-464 IHLW Level 1 Specification
T944040B1N	Interface to Hanford Site Technical Database		29SEP00	Interface to Hanford Site Technical Database
T944040B2	Maintain IHLW Technical Requirements	02OCT00	28SEP01	Maintain IHLW Technical Requirements
T944040B3	Maintain IHLW Technical Requirements	01OCT01	30SEP02	Maintain IHLW Technical Requirements
T944040B4	Maintain IHLW Technical Requirements	01OCT02	30SEP03	Maintain IHLW Technical Requirements
T944040B5	Maintain IHLW Technical Requirements	01OCT03	28SEP12	Maintain IHLW Technical Requirements
T944040B6	Maintain IHLW Technical Requirements	01OCT12	24SEP15	Maintain IHLW Technical Requirements
1.01.09.02.01.02.02.03 Future IHLW Storage AGA				
T944040C	Evaluate FMEF for Future IHLW Storage (AGA)	01OCT99	29SEP00	Evaluate FMEF for Future IHLW Storage (AGA)
T944040CM	Issue AGA and Decision Plan		29SEP00	Issue AGA and Decision Plan
1.01.09.02.01.02.02.05 Revise IHLW Engineering Document				
T944040D1	W-464 Revise IHLW Documents	01OCT99	29SEP00	W-464 Revise IHLW Documents
T944040D2	Revise IHLW Engineering Documents	02OCT00	28SEP01	Revise IHLW Engineering Documents
T944040D3	Revise IHLW Engineering Documents	01OCT01	30SEP02	Revise IHLW Engineering Documents
T944040D4	Revise IHLW Engineering Documents	01OCT02	23FEB04	Revise IHLW Engineering Documents
1.01.09.02.01.02.02.06 Maintain IPT Requirements				
T944040E1	Incorp/Issue IPT Evaluation Results into DRD	01OCT99	29SEP00	Incorp/Issue IPT Evaluation Results into DRD
1.01.09.02.01.02.03 Def Reqmnts for IHLW Sample Transport (440.045)				
1.01.09.02.01.02.03.01 IHLW Sample Transport Functional Requirements				
T944045A1A	IHLW Sample Transport Functional Requirements	03JAN00	31MAR00	IHLW Sample Transport Functional Requirements
T944045AAA	Interface BNFL HVIC14.019 Dev Sample Protocol	04JAN00*		Interface BNFL HVIC14.019 Dev Sample Protocol
1.01.09.02.01.02.03.02 IHLW Sample Transport AGA/Decision Plan				
T944045A1B	Prep IHLW Sample Transport AGA and Decision Plan	03APR00	29SEP00	Prep IHLW Sample Transport AGA and Decision Plan
T944045ABB	ORP9.1.1(3) Strat/Plns-Trans/Disp of Mltrs/Smpls		29SEP00	ORP9.1.1(3) Strat/Plns-Trans/Disp of Mltrs/Smpls
1.01.09.02.01.02.03.05 IHLW Sample Transport Strategy/Planning				
T944045A1E	IHLW Sample Transport Strategy/Planning	01OCT99	30DEC99	IHLW Sample Transport Strategy/Planning
1.01.09.02.01.02.04 Def Reqmnts for IHLW Melter Dispositn (440.048)				
1.01.09.02.01.02.04.01 IHLW Melter Strategy/Planning				
T944048AA1	IHLW Melter Disposition Strategy/Planning	01OCT99	31MAR00	IHLW Melter Disposition Strategy/Planning
T944048AA2	Interface BNFL HVIC03.40 Dismantling IHLW MltrS	03APR00*		Interface BNFL HVIC03.40 Dismantling IHLW MltrS
1.01.09.02.01.02.04.02 IHLW Melter Functions and Requirements				
T944048A1	Prepare IHLW Melter Functions and Requirements	02OCT00	30MAR01	Prepare IHLW Melter Functions and Requirements
1.01.09.02.01.02.04.03 IHLW Melter AGA and Decision Plan				
T944048A2	Prepare IHLW Melter AGA and Decision Plan	02APR01	28SEP01	Prepare IHLW Melter AGA and Decision Plan

Sheet 4 of 14



Activity ID	Activity Description	Early Start	Early Finish
1.01.09.02.01.02.04.04 IHLW Melter Level 1 Specification			
T944048A3	Prepare IHLW Melter Level 1 Specification	01OCT01	30SEP02
T944048A3A	Interface to Hanford Site Technical Database		30SEP02
T944048A4	Maintain IHLW Melter Level 1 Specification	01OCT02	30SEP03
T944048A5	Maintain IHLW Melter Level 1 Specification	01OCT03	30SEP04
T944048A6	Maintain IHLW Melter Level 1 Specification	01OCT04	30SEP05
T944048A7	Maintain IHLW Melter Level 1 Specification	03OCT05	31JAN06
1.01.09.02.01.02.05 Des/Proc IHLW Smpl Transpod Sys (440.050)			
T944050A3	IHLW Sample Transport Procurement Spec and SARP	01OCT02	30SEP03
T944050A4	Procure IHLW Sample Transport Capability	01OCT03	30SEP04
T944050A5	Acceptance Test IHLW Sample Transport	01OCT04	31DEC04
T944050A6	Receive, Analyze, and Disposition IHLW Samples	30APR09	28SEP12
T944050A7	Receive, Analyze, and Disposition IHLW Samples	01OCT12	24SEP16
1.01.09.02.01.02.06 Des/Proc/Fab IHLW Faild Mlt Trn Sys (440.055)			
1.01.09.02.01.02.06.01 IHLW Failed Melter Transport System Prog Support			
T944055A1A	IHLW Melter Transport System Program Support	01OCT99	29SEP00
T944055A2	IHLW Melter Transport System Program Support	02OCT00	28SEP01
T944055A3	IHLW Melter Transport System Program Support	01OCT01	30SEP02
T944055A4	IHLW Melter Transport System Program Support	01OCT02	30JUN05
1.01.09.02.01.02.06.02 IHLW Failed Melter Interface Issues			
T944055A1B	IHLW Melter Identify/Res Interface Issues	01OCT99	29SEP00
T944055B2	IHLW Melter Identify/Res Interface Issues	02OCT00	28SEP01
1.01.09.02.01.02.06.03 IHLW Failed Melter Transport Des Crit/QAPP/Sched			
T944055C1	IHLW Melter Transport Design Criteria/QAPP/Sch	01OCT02	30SEP03
1.01.09.02.01.02.06.04 IHLW Failed Melter Transport Conceptual Design			
T944055D1	Prepare IHLW Melter Conceptual Design	01OCT03	30JAN04
1.01.09.02.01.02.06.05 IHLW Failed Melter Transport Definitive Design			
T944055E1	Prepare IHLW Melter Detailed Design	02FEB04	30SEP04
1.01.09.02.01.02.06.06 IHLW Failed Melter Transport Proc Spec/SARP			
T944055F1	Prep IHLW Melter Trans Proc Specification/SARP	01OCT04	31JAN05
1.01.09.02.01.02.06.07 IHLW Failed Melter Transport Procure/Fabricate			
T944055G1	IHLW Melter Transport Procurement/Fabricate	01FEB05	31JAN06
1.01.09.02.01.02.06.08 IHLW Failed Melter Transport Acceptance Test			
T944055H1	Acceptance Test IHLW Failed Melter	01FEB06	28APR06
1.01.09.02.01.05 Project W-464 Immobilized HLW Interim Stor Fac			
1.01.09.02.01.03.02 W-464 Advanced Conceptual Design/Reval (440.060)			
1.01.09.02.01.03.02.01 W-464 Project Management Services			
T944060D1	W-464 Project Management Services	01OCT99	29SEP00

Sheet 5 of 14



Activity ID	Activity Description	Early Start	Early Finish
1.01.09.02.01.03.02.03 W-464 Technical Baseline Management			
T944060E1	W-464 Technical Baseline Management	01OCT99	29SEP00
1.01.09.02.01.03.02.04 W-464 Update Quality Assurance Program Plan			
T944060F1	W-464 Update Quality Assurance Program Plan	04JAN00*	30JUN00
1.01.09.02.01.03.02.05 W-464 Privatization Interface			
T944060G1	W-464 Privatization Interface	01OCT99	29SEP00
1.01.09.02.01.03.02.06 W-464 SNF CSB Interface Support			
T944060H1	W-464 SNF CSB Interface Support	01OCT99	29SEP00
1.01.09.02.01.03.02.09 W-464 Project Controls (Schedule and Cost)			
T944060L1	W-464 Project Controls (Schedule and Cost)	01OCT99	29SEP00
1.01.09.02.01.03.02.10 W-464 Data Management			
T944060M1	W-464 Data Management	01OCT99	29SEP00
1.01.09.02.01.03.02.15 W-464 Project Revalidation			
T944060A1	W-464 Project Revalidation	01DEC99*	14APR00
T944060A2	W-464 Project Revalidation	01DEC00*	13APR01
T944060A3	W-464 Project Revalidation	03DEC01*	15APR02
T944060A4	W-464 Project Revalidation	02DEC02*	15APR03
T944060A5	W-464 Project Revalidation	01DEC03*	15APR04
T944060A6	W-464 Project Revalidation	01DEC04*	15APR05
T944060A7	W-464 Project Revalidation	01DEC05*	14APR06
1.01.09.02.01.03.02.16 W-464 MYWP Planning Support			
T944060B1	W-464 MYWP Planning Support	05JUL00*	29SEP00
T944060B2	W-464 MYWP Planning Support	02JUL01*	28SEP01
T944060B3	W-464 MYWP Planning Support	01JUL02*	30SEP02
T944060B4	W-464 MYWP Planning Support	01JUL03*	30SEP03
T944060B5	W-464 MYWP Planning Support	01JUL04*	30SEP04
T944060B6	W-464 MYWP Planning Support	01JUL05*	30SEP05
T944060B7	W-464 MYWP Planning Support	03JUL06*	29SEP06
1.01.09.02.01.03.02.17 W-464 Configuration Management Plan			
T944060N1	W-464 Prepare Configuration Management Plan	04JAN00*	28APR00
T944060N2	W-464 Prepare Configuration Management Plan	02OCT00	29DEC00
1.01.09.02.01.03.02.18 W-464 Test and Evaluation Plan			
T944060P1	W-464 Test and Evaluation Plan	01OCT99	31AUG00
T944060P2	W-464 Test and Evaluation Plan	02OCT00	29DEC00
1.01.09.02.01.03.02.19 W-464 Supplemental Design Reqmnts Document			
T944060Q1	W-464 Supplemental Design Requirements Document	03APR00*	31JUL00
1.01.09.02.01.03.02.20 W-464 SCT Requirements Definition Study			
T944060R1	W-464 SCT Requirements Definition Study	01DEC99*	30JUN00

FY00 FY01 FY02 FY03 FY04 FY05 FY06 FY07 FY08 FY09 FY10 FY11 FY12 FY13 FY14 FY15 FY16 FY17 FY18 FY19 FY20 FY21 FY22 FY23 FY24 FY25 FY26 FY27 FY28 FY29 FY30 FY31 FY32 FY33 FY34 FY35 FY36 FY37 FY38 FY39 FY40 FY41 FY42 FY43 FY44 FY45 FY46 FY47 FY48 FY49 FY50

W-464 Technical Baseline Management

W-464 Update Quality Assurance Program Plan

W-464 Privatization Interface

W-464 SNF CSB Interface Support

W-464 Project Controls (Schedule and Cost)

W-464 Data Management

W-464 Project Revalidation

W-464 Project Revalidation

W-464 Project Revalidation

W-464 Project Revalidation

W-464 Project Revalidation

W-464 Project Revalidation

W-464 Project Revalidation

W-464 MYWP Planning Support

W-464 MYWP Planning Support

W-464 MYWP Planning Support

W-464 MYWP Planning Support

W-464 MYWP Planning Support

W-464 MYWP Planning Support

W-464 MYWP Planning Support

W-464 Prepare Configuration Management Plan

W-464 Prepare Configuration Management Plan

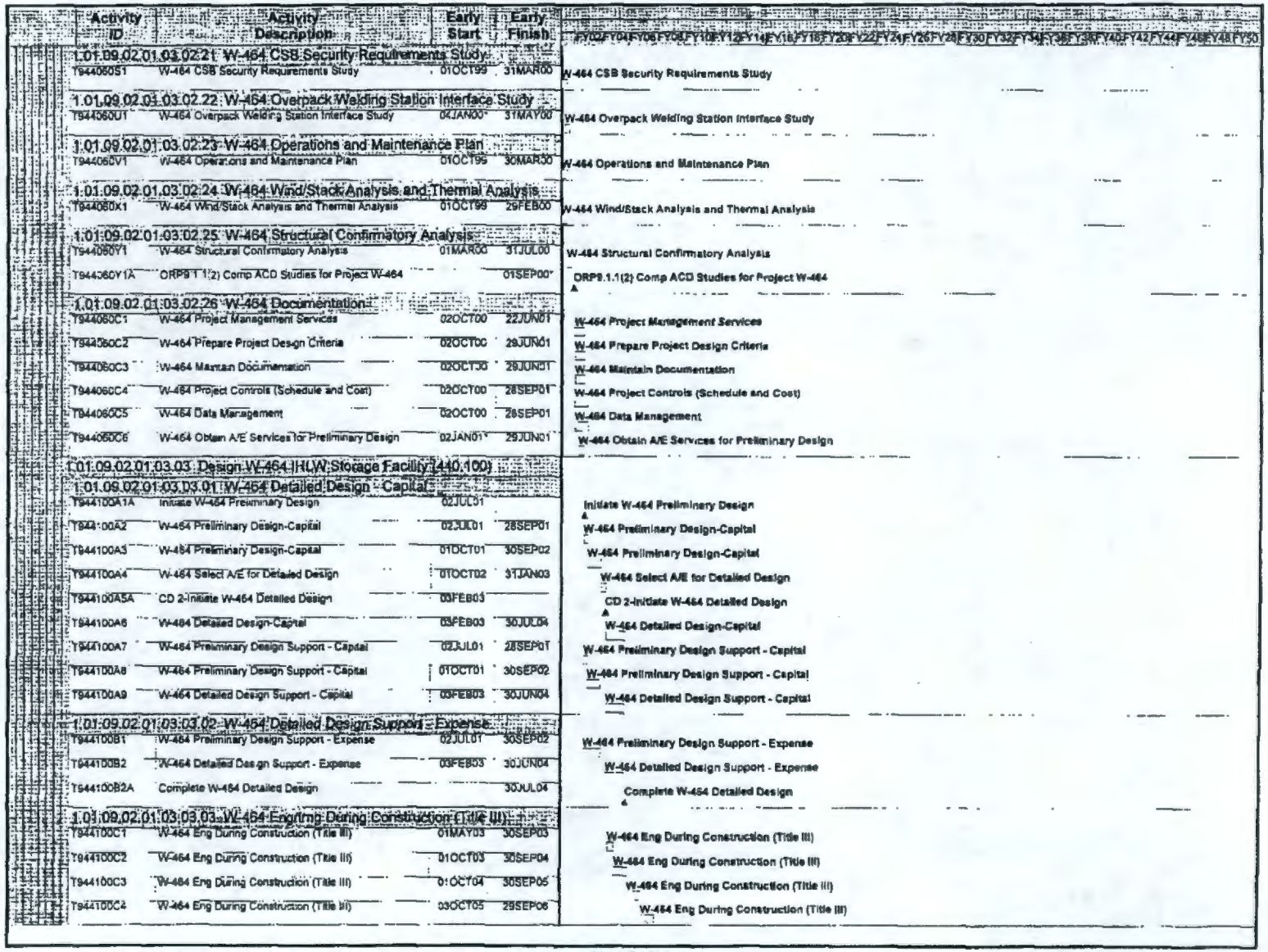
W-464 Test and Evaluation Plan

W-464 Test and Evaluation Plan

W-464 Supplemental Design Requirements Document

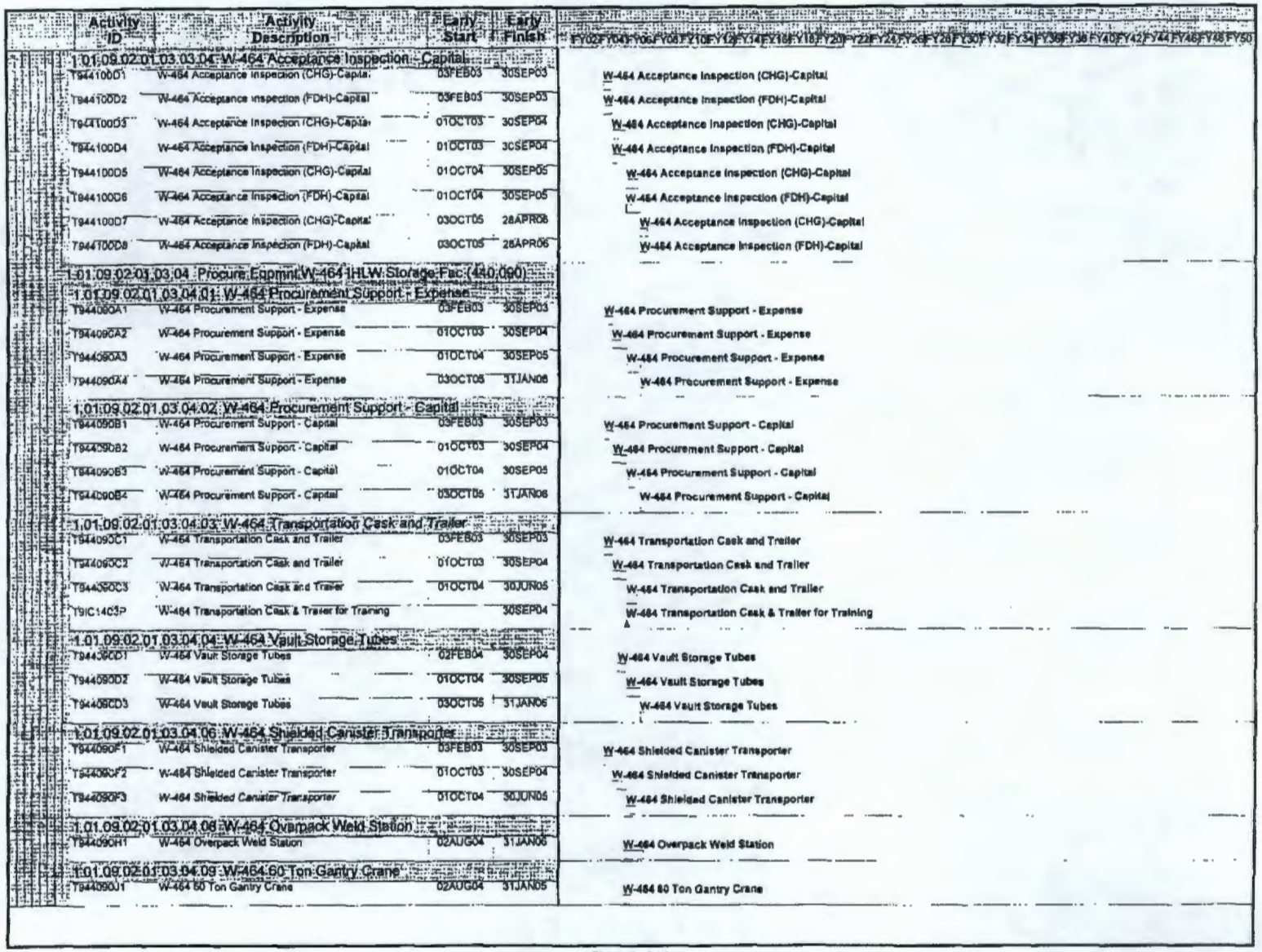
W-464 SCT Requirements Definition Study

Sheet 6 of 14



Activity ID	Activity Description	Early Start	Early Finish
1.01.09.02.01.03.02.21 W-464 CSB Security Requirements Study			
T944060S1	W-464 CSB Security Requirements Study	01OCT99	31MAR00
1.01.09.02.01.03.02.22 W-464 Overpack Welding Station Interface Study			
T944060U1	W-464 Overpack Welding Station Interface Study	04JAN00	31MAY00
1.01.09.02.01.03.02.23 W-464 Operations and Maintenance Plan			
T944060V1	W-464 Operations and Maintenance Plan	01OCT99	30MAR00
1.01.09.02.01.03.02.24 W-464 Wind/Stack Analysis and Thermal Analysis			
T944060X1	W-464 Wind/Stack Analysis and Thermal Analysis	01OCT99	29FEB00
1.01.09.02.01.03.02.25 W-464 Structural Confirmatory Analysis			
T944060Y1	W-464 Structural Confirmatory Analysis	01MAR00	31JUL00
T944060Y1A	ORP9.1.1(2) Comp ACD Studies for Project W-464		01SEP00*
1.01.09.02.01.03.02.26 W-464 Documentation			
T944060C1	W-464 Project Management Services	02OCT00	22JUN01
T944060C2	W-464 Prepare Project Design Criteria	02OCT00	29JUN01
T944060C3	W-464 Maintain Documentation	02OCT00	29JUN01
T944060C4	W-464 Project Controls (Schedule and Cost)	02OCT00	28SEP01
T944060C5	W-464 Data Management	02OCT00	28SEP01
T944060C6	W-464 Obtain A/E Services for Preliminary Design	02JAN01	29JUN01
1.01.09.02.01.03.03 Design W-464 HLW Storage Facility (440,100)			
1.01.09.02.01.03.03.01 W-464 Detailed Design - Capital			
T944100A1A	Initiate W-464 Preliminary Design	02JUL01	
T944100A2	W-464 Preliminary Design-Capital	02JUL01	28SEP01
T944100A3	W-464 Preliminary Design-Capital	01OCT01	30SEP02
T944100A4	W-464 Select A/E for Detailed Design	01OCT02	31JAN03
T944100A5A	CD 2-Initiate W-464 Detailed Design	03FEB03	
T944100A6	W-464 Detailed Design-Capital	03FEB03	30JUL04
T944100A7	W-464 Preliminary Design Support - Capital	02JUL01	28SEP01
T944100A8	W-464 Preliminary Design Support - Capital	01OCT01	30SEP02
T944100A9	W-464 Detailed Design Support - Capital	03FEB03	30JUN04
1.01.09.02.01.03.03.02 W-464 Detailed Design Support - Expense			
T944100B1	W-464 Preliminary Design Support - Expense	02JUL01	30SEP02
T944100B2	W-464 Detailed Design Support - Expense	03FEB03	30JUN04
T944100B2A	Complete W-464 Detailed Design		30JUL04
1.01.09.02.01.03.03.03 W-464 Engrtng During Construction (Title III)			
T944100C1	W-464 Eng During Construction (Title III)	01MAY03	30SEP03
T944100C2	W-464 Eng During Construction (Title III)	01OCT03	30SEP04
T944100C3	W-464 Eng During Construction (Title III)	01OCT04	30SEP05
T944100C4	W-464 Eng During Construction (Title III)	03OCT05	29SEP06

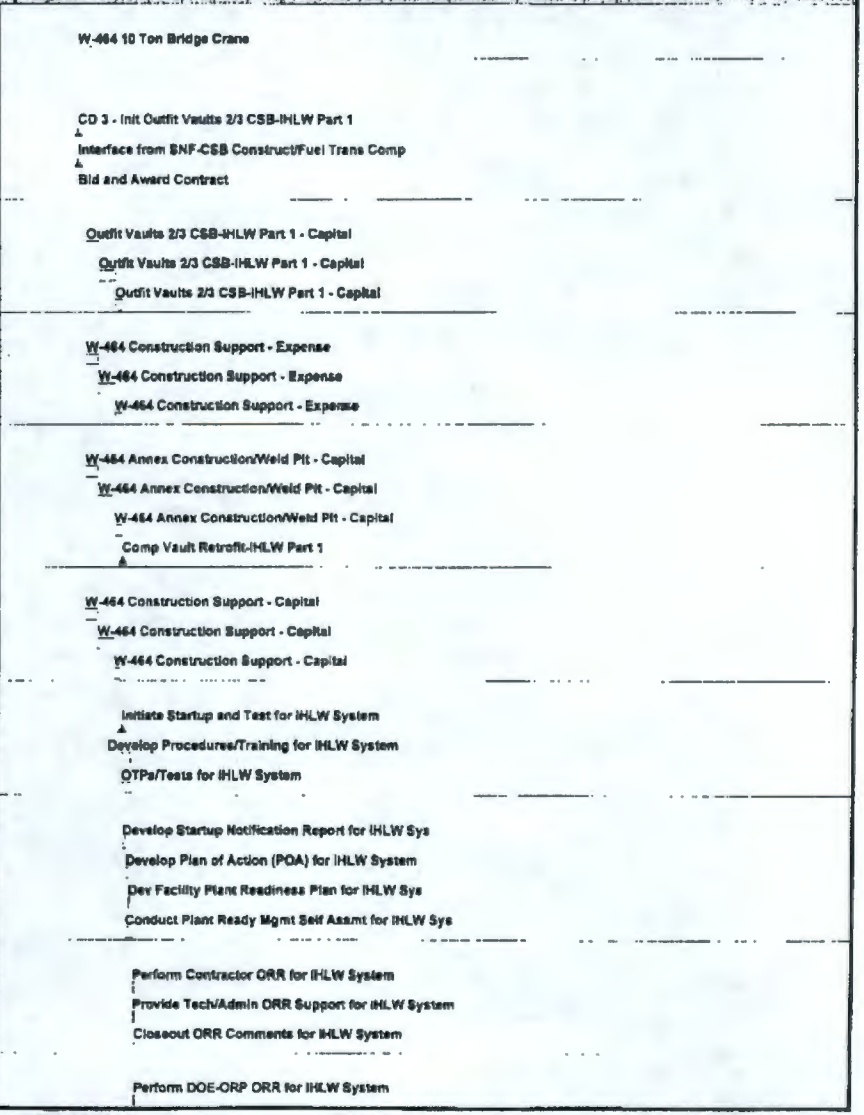
Sheet 7 of 14



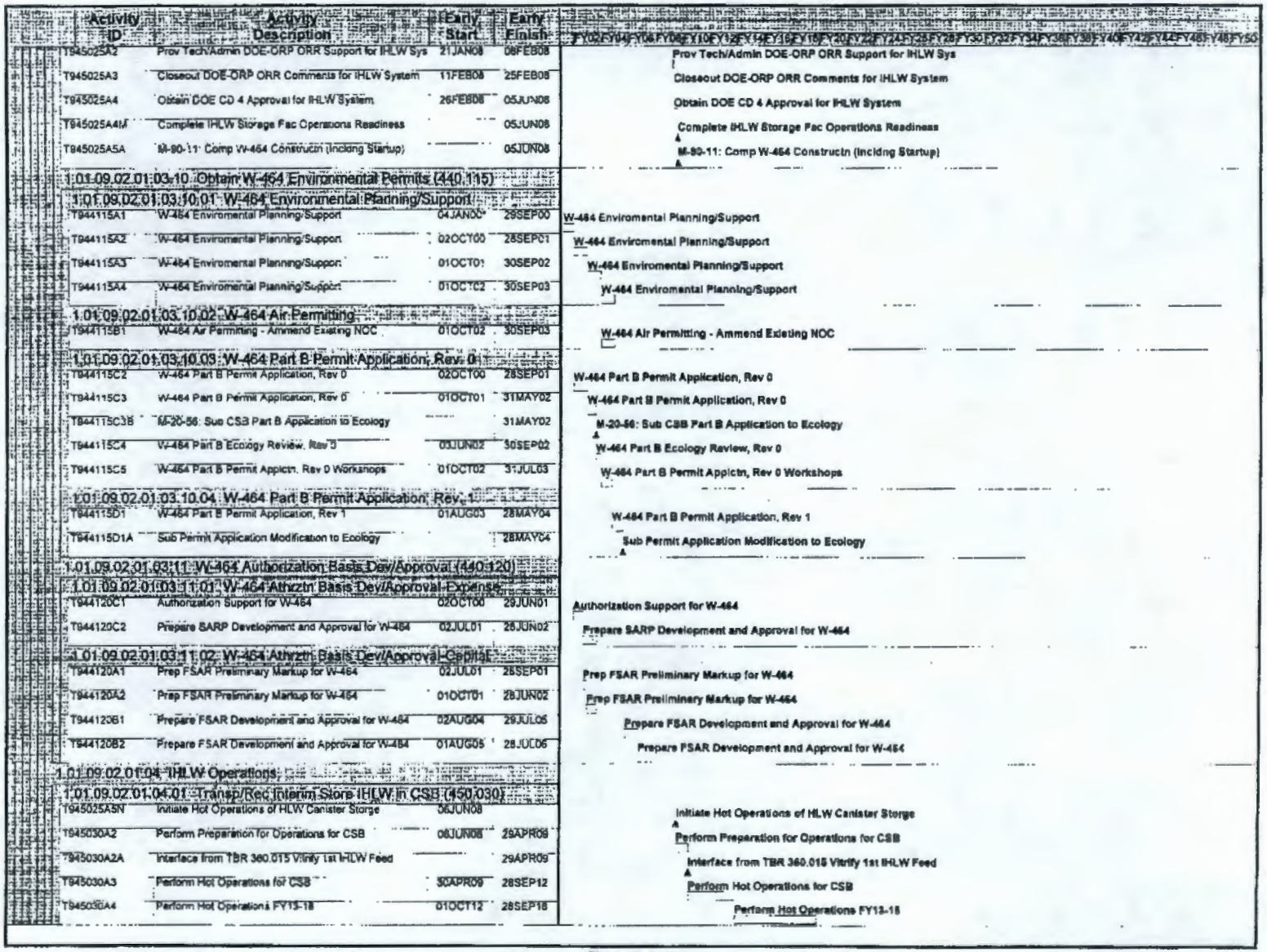
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.02.01.03.04 W-464 Acceptance Inspection - Capital			
T944100D1	W-464 Acceptance Inspection (CHG)-Capital	03FEB03	30SEP03
T944100D2	W-464 Acceptance Inspection (FDH)-Capital	03FEB03	30SEP03
T944100D3	W-464 Acceptance Inspection (CHG)-Capital	01OCT03	30SEP04
T944100D4	W-464 Acceptance Inspection (FDH)-Capital	01OCT03	30SEP04
T944100D5	W-464 Acceptance Inspection (CHG)-Capital	01OCT04	30SEP05
T944100D6	W-464 Acceptance Inspection (FDH)-Capital	01OCT04	30SEP05
T944100D7	W-464 Acceptance Inspection (CHG)-Capital	03OCT05	28APR06
T944100D8	W-464 Acceptance Inspection (FDH)-Capital	03OCT05	28APR06
1.01.09.02.01.03.04 Procure Eqpmnt W-464 HLW Storage Fac (440,090)			
1.01.09.02.01.03.04.01 W-464 Procurement Support - Expense			
T944090A1	W-464 Procurement Support - Expense	03FEB03	30SEP03
T944090A2	W-464 Procurement Support - Expense	01OCT03	30SEP04
T944090A3	W-464 Procurement Support - Expense	01OCT04	30SEP05
T944090A4	W-464 Procurement Support - Expense	03OCT05	31JAN06
1.01.09.02.01.03.04.02 W-464 Procurement Support - Capital			
T944090B1	W-464 Procurement Support - Capital	03FEB03	30SEP03
T944090B2	W-464 Procurement Support - Capital	01OCT03	30SEP04
T944090B3	W-464 Procurement Support - Capital	01OCT04	30SEP05
T944090B4	W-464 Procurement Support - Capital	03OCT05	31JAN06
1.01.09.02.01.03.04.03 W-464 Transportation Cask and Trailer			
T944090C1	W-464 Transportation Cask and Trailer	03FEB03	30SEP03
T944090C2	W-464 Transportation Cask and Trailer	01OCT03	30SEP04
T944090C3	W-464 Transportation Cask and Trailer	01OCT04	30JUN05
T9IC14C3P	W-464 Transportation Cask & Trailer for Training		30SEP04
1.01.09.02.01.03.04.04 W-464 Vault Storage Tubes			
T944090D1	W-464 Vault Storage Tubes	02FEB04	30SEP04
T944090D2	W-464 Vault Storage Tubes	01OCT04	30SEP05
T944090D3	W-464 Vault Storage Tubes	03OCT05	31JAN06
1.01.09.02.01.03.04.06 W-464 Shielded Canister Transporter			
T944090F1	W-464 Shielded Canister Transporter	03FEB03	30SEP03
T944090F2	W-464 Shielded Canister Transporter	01OCT03	30SEP04
T944090F3	W-464 Shielded Canister Transporter	01OCT04	30JUN05
1.01.09.02.01.03.04.08 W-464 Overpack Weld Station			
T944090H1	W-464 Overpack Weld Station	02AUG04	31JAN06
1.01.09.02.01.03.04.09 W-464 60 Ton Gantry Crane			
T944090J1	W-464 60 Ton Gantry Crane	02AUG04	31JAN05

Sheet 8 of 14

Activity ID	Activity Description	Early Start	Early Finish
1.01.09.02.01.03.04.10 W-464 10 Ton Bridge Crane			
T944050R1	W-464 10 Ton Bridge Crane	02AUG04	28APR05
1.01.09.02.01.03.05 Construct W-464 IHLW Storage Facility (440.140)			
1.01.09.02.01.03.05.01 Access to CSB / Obtain Critical Decision 3			
T944140A1A	CD 3 - Init Outfit Vaults 2/3 CSB-IHLW Part 1	02AUG04	
T944140A1B	Interface from SNF-CSB Construct/Fuel Trans Comp	02AUG04	
T944140A2	Bid and Award Contract	02AUG04	31DEC04
1.01.09.02.01.03.05.02 Outfit Vaults 2/3 CSB-Capital			
T944140B1	Outfit Vaults 2/3 CSB-IHLW Part 1 - Capital	04JAN05	30SEP05
T944140B2	Outfit Vaults 2/3 CSB-IHLW Part 1 - Capital	03OCT05	29SEP06
T944140B3	Outfit Vaults 2/3 CSB-IHLW Part 1 - Capital	02OCT06	30MAR07
1.01.09.02.01.03.05.03 W-464 Construction Support-Expense			
T944140C1	W-464 Construction Support - Expense	04JAN05	30SEP05
T944140C2	W-464 Construction Support - Expense	03OCT05	29SEP06
T944140C3	W-464 Construction Support - Expense	02OCT06	28FEB07
1.01.09.02.01.03.05.04 W-464 Annex Construction/Weld Pit-Capital			
T944140D1	W-464 Annex Construction/Weld Pit - Capital	04JAN05	30SEP05
T944140D2	W-464 Annex Construction/Weld Pit - Capital	03OCT05	29SEP06
T944140D3	W-464 Annex Construction/Weld Pit - Capital	02OCT06	30MAR07
T944140D3A	Comp Vault Retrofit-IHLW Part 1		30MAR07
1.01.09.02.01.03.05.05 W-464 Construction Support-Capital			
T944140E1	W-464 Construction Support - Capital	04JAN05	30SEP05
T944140E2	W-464 Construction Support - Capital	03OCT05	29SEP06
T944140E3	W-464 Construction Support - Capital	02OCT06	28FEB07
1.01.09.02.01.03.06 Startup and Test IHLW System (450.010)			
T945010A1A	Initiate Startup and Test for IHLW System	02APR07	
T945010A2	Develop Procedures/Training for IHLW System	01JUN06	28SEP07
T945010A3	OTPs/Tests for IHLW System	02APR07	28SEP07
1.01.09.02.01.03.07 Perf Mgmt Self Assessmnt on IHLW Sys (450.015)			
T945015A1	Develop Startup Notification Report for IHLW Sys	01MAY07	03JUL07
T945015A2	Develop Plan of Action (POA) for IHLW System	05JUL07	29AUG07
T945015A3	Dev Facility Plant Readiness Plan for IHLW Sys	30AUG07	11OCT07
T945015A4	Conduct Plant Ready Mgmt Self Assmt for IHLW Sys	08JUL07	27DEC07
1.01.09.02.01.03.08 Perf Contr Independent ORR on IHLW Sys (450.020)			
T945020A1	Perform Contractor ORR for IHLW System	28DEC07	18JAN08
T945020A2	Provide Tech/Admin ORR Support for IHLW System	28DEC07	11JAN08
T945020A3	Closeout ORR Comments for IHLW System	14JAN08	18JAN08
1.01.09.02.01.03.09 Perf DOE-ORP ORR/Obtain CD-4 IHLW Sys (450.025)			
T945025A1	Perform DOE-ORP ORR for IHLW System	21JAN08	25FEB08

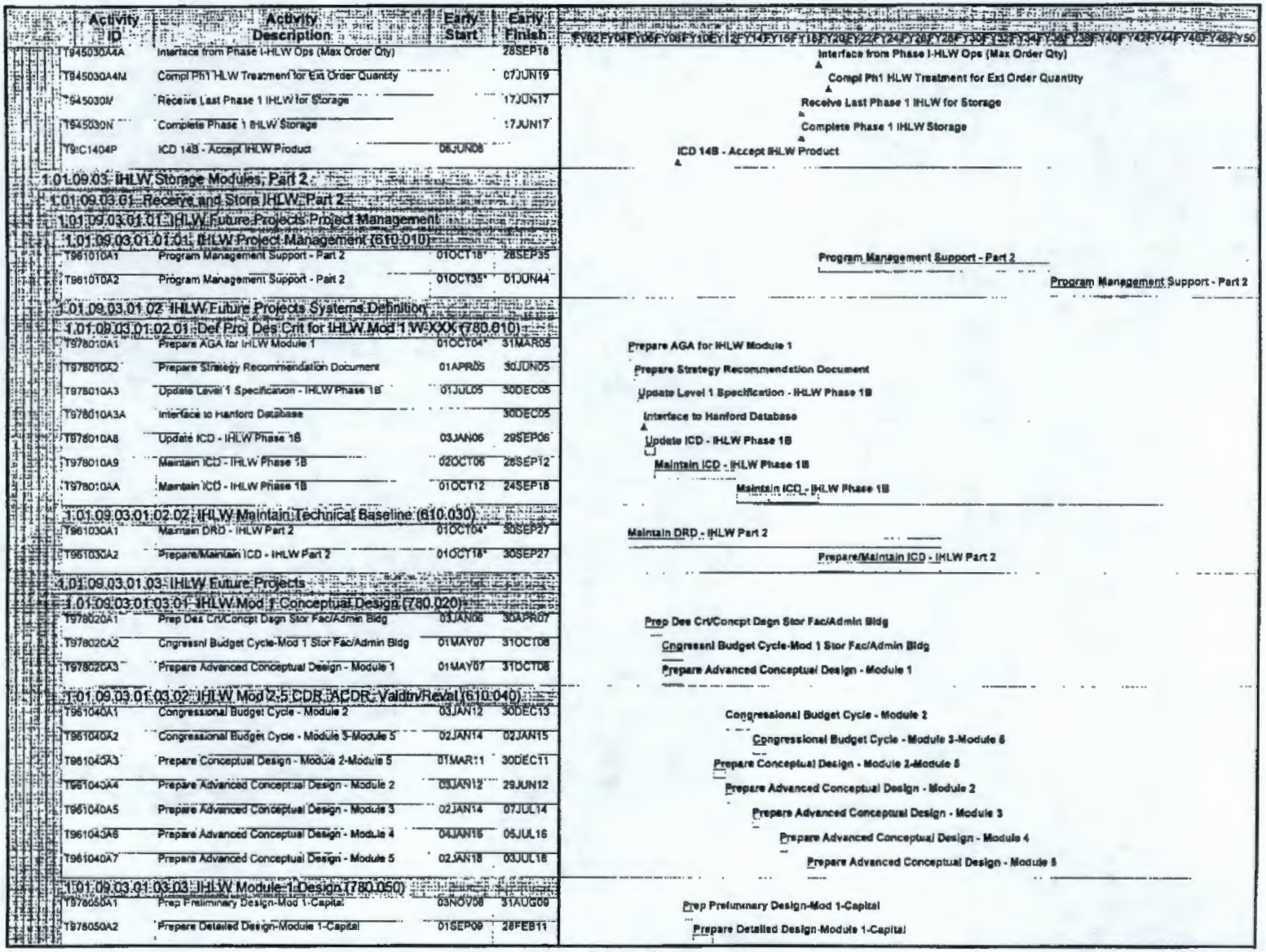


Sheet 9 of 14



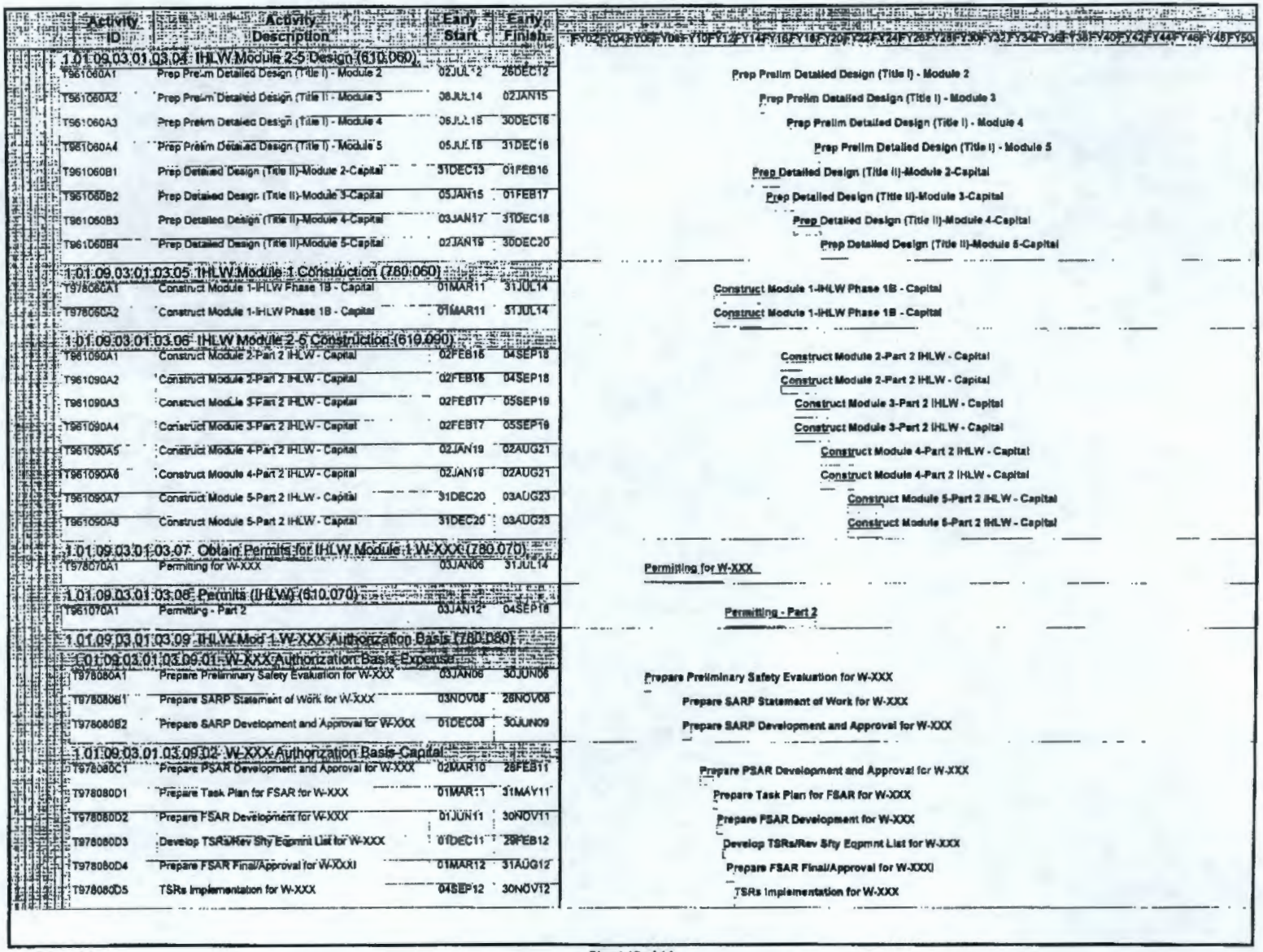
Activity ID	Activity Description	Early Start	Early Finish
T945025A2	Prov Tech/Admin DOE-ORP ORR Support for IHLW Sys	21JAN08	08FEB08
T945025A3	Closeout DOE-ORP ORR Comments for IHLW System	11FEB08	25FEB08
T945025A4	Obtain DOE CD 4 Approval for IHLW System	26FEB08	05JUN08
T945025A4M	Complete IHLW Storage Fac Operations Readiness		05JUN08
T945025A5A	M-90-11: Comp W-464 Constructn (Incldng Startup)		05JUN08
1.01.09.02.01.03.10	Obtain W-464 Environmental Permits (440,115)		
1.01.09.02.01.03.10.01	W-464 Environmental Planning/Support		
T944115A1	W-464 Enviromental Planning/Support	04JAN00	29SEP00
T944115A2	W-464 Enviromental Planning/Support	02OCT00	28SEP01
T944115A3	W-464 Enviromental Planning/Support	01OCT01	30SEP02
T944115A4	W-464 Enviromental Planning/Support	01OCT02	30SEP03
1.01.09.02.01.03.10.02	W-464 Air Permitting		
T944115B1	W-464 Air Permitting - Ammend Existing NOC	01OCT02	30SEP03
1.01.09.02.01.03.10.03	W-464 Part B Permit Application, Rev. 0		
T944115C2	W-464 Part B Permit Application, Rev 0	02OCT00	28SEP01
T944115C3	W-464 Part B Permit Application, Rev 0	01OCT01	31MAY02
T944115C3B	M-20-56: Sub CSB Part B Application to Ecology		31MAY02
T944115C4	W-464 Part B Ecology Review, Rev 0	03JUN02	30SEP02
T944115C5	W-464 Part B Permit Applctn, Rev 0 Workshops	01OCT02	31JUL03
1.01.09.02.01.03.10.04	W-464 Part B Permit Application, Rev. 1		
T944115D1	W-464 Part B Permit Application, Rev 1	01AUG03	28MAY04
T944115D1A	Sub Permit Application Modification to Ecology		28MAY04
1.01.09.02.01.03.11	W-464 Authorization Basis Dev/Approval (440,120)		
1.01.09.02.01.03.11.01	W-464 Athrztn Basis Dev/Approval-Expense		
T944120C1	Authorization Support for W-464	02OCT00	29JUN01
T944120C2	Prepare SARP Development and Approval for W-464	02JUL01	28JUN02
1.01.09.02.01.03.11.02	W-464 Athrztn Basis Dev/Approval-Capital		
T944120A1	Prep FSAR Preliminary Markup for W-464	02JUL01	28SEP01
T944120A2	Prep FSAR Preliminary Markup for W-464	01OCT01	28JUN02
T944120B1	Prepare FSAR Development and Approval for W-464	02AUG04	29JUL05
T944120B2	Prepare FSAR Development and Approval for W-464	01AUG05	28JUL06
1.01.09.02.01.04	IHLW Operations		
1.01.09.02.01.04.01	Transp/Rec Interim Store IHLW in CSB (450,030)		
T945025A5N	Initiate Hot Operations of HLW Canister Storge	06JUN08	
T945030A2	Perform Preparation for Operations for CSB	06JUN08	29APR09
T945030A2A	Interface from TBR 360.015 Vitrify 1st IHLW Feed		29APR09
T945030A3	Perform Hot Operations for CSB	30APR09	28SEP12
T945030A4	Perform Hot Operations FY13-18	01OCT12	28SEP18

Sheet 10 of 14



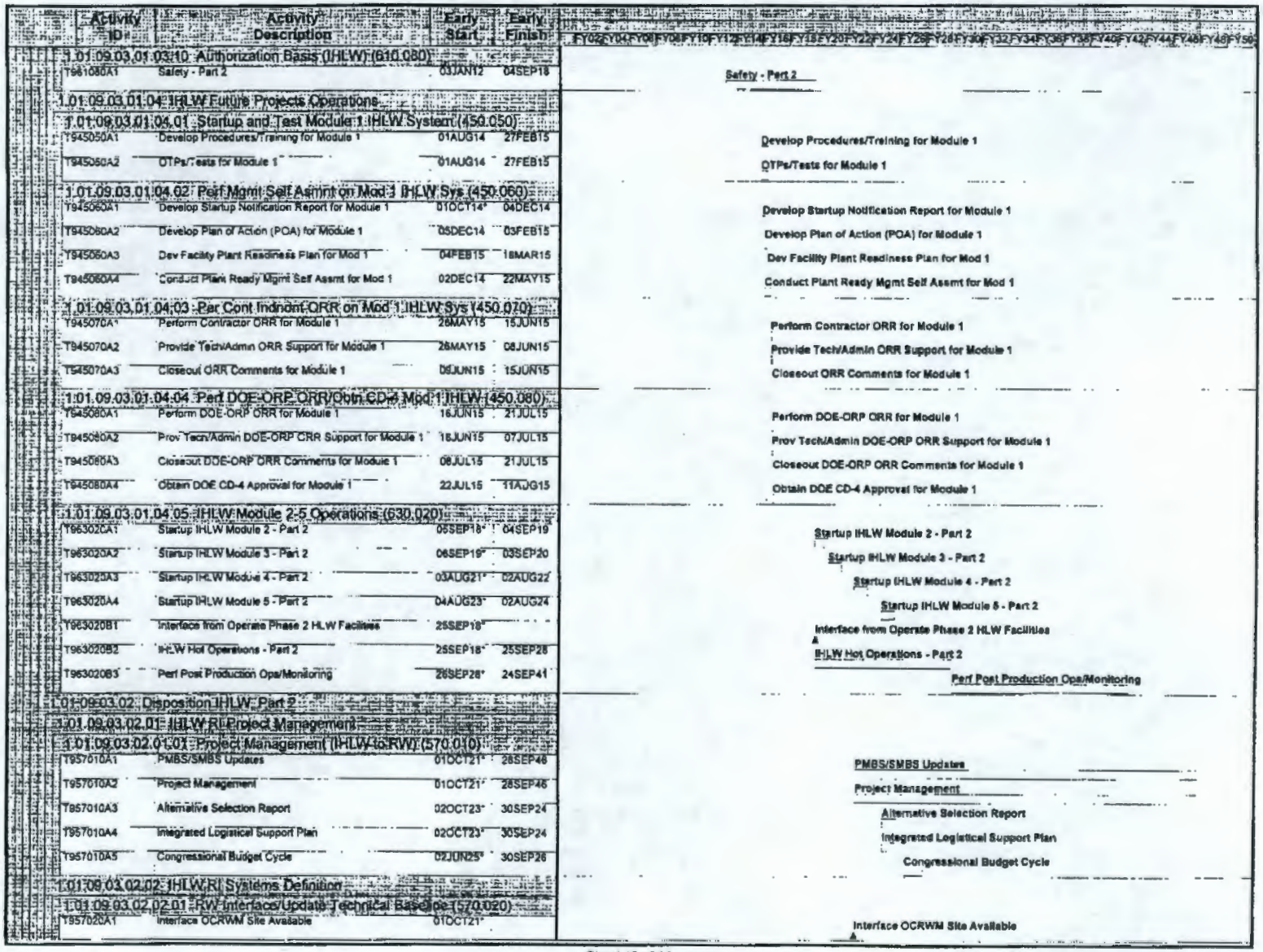
Activity ID	Activity Description	Early Start	Early Finish
T945030A4A	Interface from Phase I-HLW Ops (Max Order Qty)		28SEP18
T945030A4M	Compl Ph1 HLW Treatment for Ext Order Quantity		07JUN19
T945030M	Receive Last Phase 1 IHLW for Storage		17JUN17
T945030N	Complete Phase 1 IHLW Storage		17JUN17
T9IC1404P	ICD 14B - Accept IHLW Product	06JUN08	
1.01.09.03 IHLW Storage Modules, Part 2			
1.01.09.03.01 Receive and Store IHLW, Part 2			
1.01.09.03.01.01 IHLW Future Projects Project Management			
1.01.09.03.01.01.01 IHLW Project Management (610.010)			
T961010A1	Program Management Support - Part 2	01OCT18*	28SEP35
T961010A2	Program Management Support - Part 2	01OCT35*	01JUN44
1.01.09.03.01.02 IHLW Future Projects Systems Definition			
1.01.09.03.01.02.01 Def Proj Des Crit for IHLW Mod 1 W-XXX (780.010)			
T978010A1	Prepare AGA for IHLW Module 1	01OCT04*	31MAR05
T978010A2	Prepare Strategy Recommendation Document	01APR05	30JUN05
T978010A3	Update Level 1 Specification - IHLW Phase 1B	01JUL05	30DEC05
T978010A3A	Interface to Hanford Database		30DEC05
T978010A8	Update ICD - IHLW Phase 1B	03JAN06	29SEP06
T978010A9	Maintain ICD - IHLW Phase 1B	02OCT06	26SEP12
T978010AA	Maintain ICD - IHLW Phase 1B	01OCT12	24SEP18
1.01.09.03.01.02.02 IHLW Maintain Technical Baseline (610.030)			
T961030A1	Maintain DRD - IHLW Part 2	01OCT04*	30SEP27
T961030A2	Prepare/Maintain ICD - IHLW Part 2	01OCT18*	30SEP27
1.01.09.03.01.03 IHLW Future Projects			
1.01.09.03.01.03.01 IHLW Mod 1 Conceptual Design (780.020)			
T978020A1	Prep Des Crt/Concpt Dsgn Stor Fac/Admin Bldg	03JAN06	30APR07
T97802CA2	Cngressnl Budget Cycle-Mod 1 Stor Fac/Admin Bldg	01MAY07	31OCT08
T97802CA3	Prepare Advanced Conceptual Design - Module 1	01MAY07	31OCT08
1.01.09.03.01.03.02 IHLW Mod 2-5 CDR,ACDR, Valdtn/Reval (610.040)			
T961040A1	Congressional Budget Cycle - Module 2	03JAN12	30DEC13
T961040A2	Congressional Budget Cycle - Module 3-Module 5	02JAN14	02JAN15
T961040A3	Prepare Conceptual Design - Module 2-Module 5	01MAR11	30DEC11
T961040A4	Prepare Advanced Conceptual Design - Module 2	03JAN12	29JUN12
T961040A5	Prepare Advanced Conceptual Design - Module 3	02JAN14	07JUL14
T961040A6	Prepare Advanced Conceptual Design - Module 4	04JAN16	05JUL16
T961040A7	Prepare Advanced Conceptual Design - Module 5	02JAN18	03JUL18
1.01.09.03.01.03.03 IHLW Module 1 Design (780.050)			
T978050A1	Prep Preliminary Design-Mod 1-Capital	03NOV08	31AUG09
T978050A2	Prepare Detailed Design-Module 1-Capital	01SEP09	28FEB11

Sheet 11 of 14



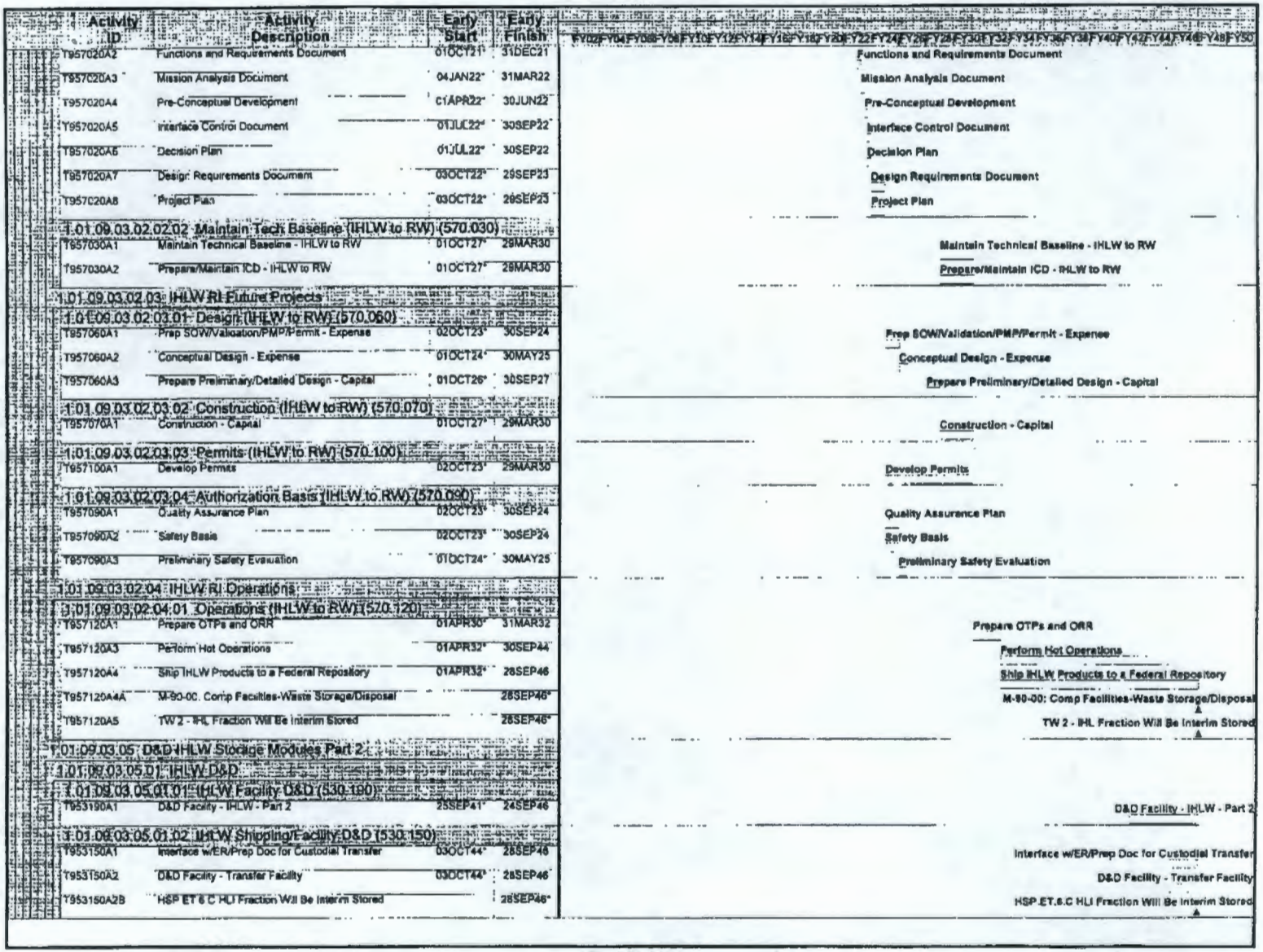
Activity ID	Activity Description	Early Start	Early Finish
1.01.09.03.01.03.04 IHLW Module 2-5 Design (610.060)			
T961060A1	Prep Prelim Detailed Design (Title I) - Module 2	02JUL12	26DEC12
T961060A2	Prep Prelim Detailed Design (Title I) - Module 3	06JUL14	02JAN15
T961060A3	Prep Prelim Detailed Design (Title I) - Module 4	06JUL16	30DEC16
T961060A4	Prep Prelim Detailed Design (Title I) - Module 5	05JUL18	31DEC18
T961060B1	Prep Detailed Design (Title II)-Module 2-Capital	31DEC13	01FEB16
T961060B2	Prep Detailed Design (Title II)-Module 3-Capital	05JAN15	01FEB17
T961060B3	Prep Detailed Design (Title II)-Module 4-Capital	03JAN17	31DEC18
T961060B4	Prep Detailed Design (Title II)-Module 5-Capital	02JAN19	30DEC20
1.01.09.03.01.03.05 IHLW Module 1 Construction (780.060)			
T978060A1	Construct Module 1-IHLW Phase 1B - Capital	01MAR11	31JUL14
T978060A2	Construct Module 1-IHLW Phase 1B - Capital	01MAR11	31JUL14
1.01.09.03.01.03.06 IHLW Module 2-5 Construction (610.090)			
T961090A1	Construct Module 2-Part 2 IHLW - Capital	02FEB15	04SEP18
T961090A2	Construct Module 2-Part 2 IHLW - Capital	02FEB15	04SEP18
T961090A3	Construct Module 3-Part 2 IHLW - Capital	02FEB17	05SEP19
T961090A4	Construct Module 3-Part 2 IHLW - Capital	02FEB17	05SEP19
T961090A5	Construct Module 4-Part 2 IHLW - Capital	02JAN19	02AUG21
T961090A6	Construct Module 4-Part 2 IHLW - Capital	02JAN19	02AUG21
T961090A7	Construct Module 5-Part 2 IHLW - Capital	31DEC20	03AUG23
T961090A8	Construct Module 5-Part 2 IHLW - Capital	31DEC20	03AUG23
1.01.09.03.01.03.07 Obtain Permits for IHLW Module 1 W-XXX (780.070)			
T978070A1	Permitting for W-XXX	03JAN06	31JUL14
1.01.09.03.01.03.08 Permits (IHLW) (610.070)			
T961070A1	Permitting - Part 2	03JAN12	04SEP18
1.01.09.03.01.03.09 IHLW Mod 1 W-XXX Authorization Basis (780.080)			
1.01.09.03.01.03.09.01 W-XXX Authorization Basis Expense			
T978080A1	Prepare Preliminary Safety Evaluation for W-XXX	03JAN06	30JUN06
T978080B1	Prepare SARP Statement of Work for W-XXX	03NOV08	28NOV08
T978080B2	Prepare SARP Development and Approval for W-XXX	01DEC08	30JUN09
1.01.09.03.01.03.09.02 W-XXX Authorization Basis Capital			
T978080C1	Prepare PSAR Development and Approval for W-XXX	02MAR10	28FEB11
T978080D1	Prepare Task Plan for FSAR for W-XXX	01MAR11	31MAY11
T978080D2	Prepare FSAR Development for W-XXX	01JUN11	30NOV11
T978080D3	Develop TSRs/Rev Shy Eqpmnt List for W-XXX	01DEC11	29FEB12
T978080D4	Prepare FSAR Final/Approval for W-XXX	01MAR12	31AUG12
T978080D5	TSRs Implementation for W-XXX	04SEP12	30NOV12

Sheet 12 of 14



Activity ID	Activity Description	Early Start	Early Finish
1.01.09.03.01.03.10 Authorization Basis (IHLW) (610.080)			
T961080A1	Safety - Part 2	03JAN12	04SEP18
1.01.09.03.01.04 IHLW Future Projects Operations			
1.01.09.03.01.04.01 Startup and Test Module 1 IHLW System (450.050)			
T945050A1	Develop Procedures/Training for Module 1	01AUG14	27FEB15
T945050A2	OTPs/Tests for Module 1	01AUG14	27FEB15
1.01.09.03.01.04.02 Perf Mgmt Self Asmnt on Mod 1 IHLW Sys (450.060)			
T945060A1	Develop Startup Notification Report for Module 1	01OCT14*	04DEC14
T945060A2	Develop Plan of Action (POA) for Module 1	05DEC14	03FEB15
T945060A3	Dev Facility Plant Readiness Plan for Mod 1	04FEB15	18MAR15
T945060A4	Conduct Plant Ready Mgmt Self Assmt for Mod 1	02DEC14	22MAY15
1.01.09.03.01.04.03 Per Cont Indpndnt ORR on Mod 1 IHLW Sys (450.070)			
T945070A1	Perform Contractor ORR for Module 1	26MAY15	15JUN15
T945070A2	Provide Tech/Admin ORR Support for Module 1	26MAY15	08JUN15
T945070A3	Closeout ORR Comments for Module 1	09JUN15	15JUN15
1.01.09.03.01.04.04 Perf DOE-ORP ORR/Obtn CD-4 Mod 1 IHLW (450.080)			
T945080A1	Perform DOE-ORP ORR for Module 1	16JUN15	21JUL15
T945080A2	Prov Tech/Admin DOE-ORP ORR Support for Module 1	16JUN15	07JUL15
T945080A3	Closeout DOE-ORP ORR Comments for Module 1	08JUL15	21JUL15
T945080A4	Obtain DOE CD-4 Approval for Module 1	22JUL15	11AUG15
1.01.09.03.01.04.05 IHLW Module 2-5 Operations (630.020)			
T963020A1	Startup IHLW Module 2 - Part 2	05SEP18*	04SEP19
T963020A2	Startup IHLW Module 3 - Part 2	06SEP19*	03SEP20
T963020A3	Startup IHLW Module 4 - Part 2	03AUG21*	02AUG22
T963020A4	Startup IHLW Module 5 - Part 2	04AUG23*	02AUG24
T963020B1	Interface from Operate Phase 2 HLW Facilities	25SEP18*	
T963020B2	IHLW Hot Operations - Part 2	25SEP18*	25SEP28
T963020B3	Perf Post Production Ops/Monitoring	26SEP28*	24SEP41
1.01.09.03.02 Disposition IHLW, Part 2			
1.01.09.03.02.01 IHLW RI Project Management			
1.01.09.03.02.01.01 Project Management (IHLW to RW) (570.010)			
T957010A1	PMBS/SMBS Updates	01OCT21*	28SEP46
T957010A2	Project Management	01OCT21*	28SEP46
T957010A3	Alternative Selection Report	02OCT23*	30SEP24
T957010A4	Integrated Logistical Support Plan	02OCT23*	30SEP24
T957010A5	Congressional Budget Cycle	02JUN25*	30SEP26
1.01.09.03.02.02 IHLW RI Systems Definition			
1.01.09.03.02.02.01 RW Interface/Update Technical Baseline (570.020)			
T957020A1	Interface OCRWM Site Available	01OCT21*	

Sheet 13 of 14



Activity ID	Activity Description	Early Start	Early Finish
T957020A2	Functions and Requirements Document	01OCT21	31DEC21
T957020A3	Mission Analysis Document	04JAN22	31MAR22
T957020A4	Pre-Conceptual Development	01APR22	30JUN22
T957020A5	Interface Control Document	01JUL22	30SEP22
T957020A6	Decision Plan	01JUL22	30SEP22
T957020A7	Design Requirements Document	03OCT22	29SEP23
T957020A8	Project Plan	03OCT22	29SEP23
1.01.09.03.02.02.02 Maintain Tech Baseline (IHLW to RW) (570.030)			
T957030A1	Maintain Technical Baseline - IHLW to RW	01OCT27	29MAR30
T957030A2	Prepare/Maintain ICD - IHLW to RW	01OCT27	29MAR30
1.01.09.03.02.03 IHLW RI Future Projects			
1.01.09.03.02.03.01 Design (IHLW to RW) (570.060)			
T957060A1	Prep SOW/Validation/PMP/Permit - Expense	02OCT23	30SEP24
T957060A2	Conceptual Design - Expense	01OCT24	30MAY25
T957060A3	Prepare Preliminary/Detailed Design - Capital	01OCT26	30SEP27
1.01.09.03.02.03.02 Construction (IHLW to RW) (570.070)			
T957070A1	Construction - Capital	01OCT27	29MAR30
1.01.09.03.02.03.03 Permits (IHLW to RW) (570.100)			
T957100A1	Develop Permits	02OCT23	29MAR30
1.01.09.03.02.03.04 Authorization Basis (IHLW to RW) (570.090)			
T957090A1	Quality Assurance Plan	02OCT23	30SEP24
T957090A2	Safety Basis	02OCT23	30SEP24
T957090A3	Preliminary Safety Evaluation	01OCT24	30MAY25
1.01.09.03.02.04 IHLW RI Operations			
1.01.09.03.02.04.01 Operations (IHLW to RW) (570.120)			
T957120A1	Prepare OTPs and ORR	01APR30	31MAR32
T957120A3	Perform Hot Operations	01APR32	30SEP44
T957120A4	Ship IHLW Products to a Federal Repository	01APR32	28SEP46
T957120A4A	M-90-00: Comp Facilities-Waste Storage/Disposal		28SEP46*
T957120A5	TW 2 - IHL Fraction Will Be Interim Stored		28SEP46*
1.01.09.03.05 D&D IHLW Storage Modules Part 2			
1.01.09.03.05.01 IHLW D&D			
1.01.09.03.05.01.01 IHLW Facility D&D (530.190)			
T953190A1	D&D Facility - IHLW - Part 2	25SEP41	24SEP46
1.01.09.03.05.01.02 IHLW Shipping Facility D&D (530.150)			
T953150A1	Interface w/ER/Prep Doc for Custodial Transfer	03OCT44	28SEP46
T953150A2	D&D Facility - Transfer Facility	03OCT44	28SEP46
T953150A2B	HSP ET & C HLI Fraction Will Be Interim Stored		28SEP46*

Sheet 14 of 14

APPENDIX C

IMMOBILIZED HIGH-LEVEL WASTE WORK BREAKDOWN STRUCTURE DICTIONARY DESCRIPTION SHEETS

Work Breakdown Structure Level 5 – Functions

This appendix contains the work breakdown structure Level 5 dictionary descriptions for the Immobilized High-Level Waste Interim Storage and Disposal Project. This dictionary information is extracted from the RPP-00-127, *RPP-FY 2001 Bridge Change Request*, baseline submitted to the U.S. Department of Energy, Office of River Protection for approval and is consistent with 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.

This page intentionally left blank.

APPENDIX C

IMMOBILIZED HIGH-LEVEL WASTE WORK BREAKDOWN STRUCTURE DICTIONARY DESCRIPTION SHEETS

1. Dictionary Title: Receive & Store IHLW, Part 1	2. Date August 31, 2000	3. PBS Number RL-TW09	4. Dict Rev 1
5. WBS No. 1.01.09.02.01	6. B & R No. EW02J122	7. Baseline CR No.	
8. Organization Name Immobilized Tank Waste Storage & Disposal			

9. Scope of Work

Receive sealed canisters of immobilized high-level waste (IHLW) from the high-level waste (HLW) Waste Treatment Plant, Phase 1. Transport and place the canisters in their designated storage locations until eventual retrieval and shipment to a geologic repository for disposal.

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

- The U.S. Department of Energy (DOE) has decided to implement the Phased Implementation alternative for the tank waste.
- The Phase 1 immobilized interim storage system shall accommodate 600 standard IHLW canisters (0.61 m diameter by 4.5 m high) based on the minimum order quantity or 1,100 canisters based on the expected maximum order quantity.
- The Phase 1 solidified HLW interim storage system shall be designed to ensure that the IHLW canister centerline temperature never exceeds 400 °C.
- The first 880 canisters containing vitrified HLW will be placed into interim storage at the Canister Storage Building pending future disposal at a national geologic repository.
- The balance of 220 IHLW canisters will be placed in additional storage capacity constructed as Module 1 under a future line-item project.
- The Immobilized Low-Activity Waste Program will transport and dispose of spent IHLW melters meeting the Hanford Site solid waste acceptance criteria.

- The project will provide for transport and analysis of IHLW samples at an onsite laboratory for independent verification.

1. Dictionary Title: Receive & Store IHLW, Part 2	2. Date August 31, 2000	3. PBS Number RL-TW09	4. Dict Rev 1
5. WBS No. 1.01.09.03.01	6. B & R No. EW02J122	7. Baseline CR No.	
8. Organization Name Immobilized Tank Waste Storage & Disposal			

9. Scope of Work

Receive and transport containers of IHLW from the HLW Treatment Facility, Phase 2. Prepare and place the containers in their designated storage locations and monitor the storage.

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

- DOE has decided to implement the Phased Implementation alternative for the tank waste.
- The HLW produced during Phase 2 will be temporarily stored onsite.
- IHLW shall be safely stored in the Central Plateau pending availability of the national HLW repository.
- The Phase 2 IHLW storage system shall be designed to ensure centerline temperature never exceeds 400 °C.
- The storage basis for the Phase 2 IHLW storage modules is approximately 11,000 large IHLW canisters from the HLW Treatment Facility, Phase 2.
- The design life (for nonreplaceable and replaceable components) shall be 40 years. Receive IHLW starting in fiscal year 2018 for Phase 2.

1. Dictionary Title: Disposition IHLW, Part 2	2. Date August 31, 2000	3. PBS Number RL-TW09	4. Dict Rev 1
5. WBS No. 1.01.09.03.02	6. B & R No. EW02J122	7. Baseline CR No.	
8. Organization Name Immobilized Tank Waste Storage & Disposal			

9. Scope of Work

This function includes systems and activities necessary to prepare and load out stored IHLW to the national geologic repository for final disposition. Under current assumptions, shipments will begin sometime after 2010 and be completed no later than 2041.

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

- IHLW shall be shipped to the national HLW repository.
- Acceptance of HLW into the Civilian Radioactive Waste Management System shall be in accordance with DOE/RW-0351, *Waste Acceptance System Requirements Document (WASRD).*
- The Phase 1/Phase 2 IHLW storage modules shall have the capability to prepare and transfer IHLW canisters for disposal at the geologic repository.
- The IHLW loadout facility shall have the capacity to prepare and load out IHLW for disposal at the national geologic repository as specified in the requirement "IHLW preparation and transport to geologic repository" for a timeframe (to be determined).

1. Dictionary Title: D&D IHLW Storage Modules, Part 2	2. Date August 31, 2000	3. PBS Number RL-TW09	4. Dict Rev 1
5. WBS No. 1.01.09.03.05	6. B & R No. EW02J122	7. Baseline CR No.	
8. Organization Name Immobilized Tank Waste Storage & Disposal			

9. Scope of Work

At the completion of the mission of the IHLW storage modules, decontaminate the facility by removing all remaining radioactive and/or hazardous contamination from the facilities, equipment, or soils by removal, washing, heating, chemical action, mechanical cleaning, or other techniques. Decommission the IHLW storage modules by demolishing the facility or transition to other use.

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

- Facilities other than processing facilities shall be dismantled.
- Transitioned facilities shall be decontaminated and decommissioned sufficiently to enable removal or closure through entombment.
- The facility shall be designed to facilitate decommissioning.

C1.0 REFERENCES

DOE/RW-0351, 1999, *Waste Acceptance System Requirements Document (WASRD)*, Rev. 3, U. S. Department of Energy, Office of Civilian Radioactive Waste Management, Washington, D.C.

APPENDIX D

DIVISION OF RESPONSIBILITY MATRIX

This page intentionally left blank.

APPENDIX D

DIVISION OF RESPONSIBILITY MATRIX

Organizational Activity	HLW Interim Storage Project Office (DOE ORP)	CHG Management (RPP)[a]	CHG HLW 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 program 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 CD-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

Organizational Activity	HLW Interim Storage Project Office (DOE ORP)	CHG Management (RPP)[a]	CHG HLW Interim Storage Project	Design Agent (Subcontracts to CHG)[b]
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	--
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]Required internal organizational approvals are identified in RPP-PRO-233, *Review and Approval of Documents*, CH2M HILL Hanford Group, Inc., Richland, Washington.

[b]Different subcontractors will be used as deemed appropriate for the various activities.

[c]The subproject will have responsibility for IHLW portions of the multi-year program plan, but CHG has overall responsibility for compiling the complete plan with inputs 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 Operational Readiness Review and CD-4.

A = Approval Authority.
C = Concurrence before submission to approval authority.
E = Principal responsibility for execution of function.
I = Information copy only.
P = Responsibility for preparation of 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.

CD = critical decision.
CHG = CH2M HILL Hanford Group, Inc.
DOE = U.S. Department of Energy.
HLW = high-level waste.
IHLW = immobilized high-level waste.
ORP = Office of River Protection.
PRD = Project Requirements Division.
RPP = River Protection Project.

APPENDIX E

CHANGE APPROVAL AUTHORITY MATRIX FOR THE IMMOBILIZED HIGH-LEVEL 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.

This page intentionally left blank.

APPENDIX E

CHANGE APPROVAL AUTHORITY MATRIX FOR THE IMMOBILIZED HIGH-LEVEL WASTE DISPOSAL SUBPROJECT

Change classifi-cation	Cost (BCWS) and scope	Milestones	RPP-WTP contractor	Other Site prime contract-ors	Perform-ance 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 deliver-ables	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, TPA,* and Consent Decree	Yes or ICD impact	Yes	Yes	≥90 days per PMBS	Yes	ORP manager
Class 2	<$3M	Contract-or	No	No	No	<90 days per PMBS	No	CHG president
Class 3	No	No	No	No	No	No	No	PBS manager

*_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 performed.
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 breakdown structure.
PMBS = performance measurement baseline log.
TEC = total estimated cost.
TPC = total project cost.
RPP-WTP = River Protection Project Waste Treatment Plant.

This page intentionally left blank.

DISTRIBUTION

Onsite

1	U.S. Department of Energy Richland Operations Office	
	DOE Public Reading Room	H2-53
1	Pacific Northwest National Laboratory	
	Hanford Technical Library	P8-55
3	Lockheed Martin Services, Inc.	
	Central Files	B1-07
	Document Processing Center	A3-94
	S. R. Nelson	G3-36

This page intentionally left blank.