DOE/RW-0351P

Office of Civilian Radioactive Waste Management

Waste Acceptance System Requirements Document (WASRD)

Revision 0

January 1993

U.S. Department of Energy
Office of Civilian Radioactive Waste Management

DOE/RW-0351P

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The Program Change Control Procedure, DOE/RW-0223P, specifies responsibilities of the controlled document holder and instructions for supplemental distribution. The Program-Level Controlled Document Register (updated monthly) identifies the current revision of this document. The Revision/Change Record in the front of this document identifies the pages affected by each revision.

DOE/RW-0351P

Office of Civilian Radioactive Waste Management

Waste Acceptance System Requirements Document (WASRD)

Revision 0

January 1993

U.S. Department of Energy
Office of Civilian Radioactive Waste Management
Washington, DC 20585

OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
PROGRAM CHANGE CONTROL BOARD
DIRECTIVE

(1) DCP NUMBER: 67 (2) DCP TITLE: Initial Issuance of "Waste Acceptance System Requirements Document" PAGE 1 OF 1

(3) DOCUMENT NUMBER: N/A (4) COGNIZANT ORGANIZATION: RW-30
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(5) DCP DISPOSITION:

- [X] APPROVE
- [ ] APPROVE WITH CONDITIONS
- [ ] DISAPPROVE
- [ ] ACTION DEFERRED
- [ ] CANCELLED/WITHDRAWN

(6) CONDITIONS/RATIONALE:

The nature of the changes to the document do not significantly affect the primary purpose of the WA-SRD, Revision 0, namely, to support production testing activities at EM facilities. In light of the importance of final approval of this document in order to meet an established schedule, it is proposed that the document be accepted for final approval, contingent on an RW-30 commitment to incorporate the accepted responses to all comments.

(7) IMPLEMENTATION DIRECTION:

This document shall replace the Physical System Requirements-Accept Waste (DOE/RW-0369) in its entirety.

The effective date for the WA-SRD shall be two weeks following the date of final approval, in order to allow for incorporation of necessary changes resulting from the review of this document and from the approved CRWMS Requirements Document, Revision 0.

Following issuance of the WA-SRD, if any PCCB member determines that the agreed-to resolution to his comment is inconsistent with the actual text of the WA-SRD, specific changes to the document will be held for incorporation into Revision 1 of the WA-SRD.

(8) CONCURRENCE: N/A (IF REQUIRED) DIRECTOR, OQA
DATE: _____

(9) SIGNATURE: _____ PCCB CHAIRMAN
DATE: 12/23/96

(10) SIGNATURE: _____ PCCB EXECUTIVE SECRETARY
DATE: _____

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1. SCOPE

1.1 IDENTIFICATION

This Waste Acceptance System Requirements document (WA-SRD) describes the functions to be performed and the technical requirements for a Waste Acceptance System for accepting spent nuclear fuel (SNF) and high-level radioactive waste (HLW) into the Civilian Radioactive Waste Management System (CRWMS). This revision of the WA-SRD addresses the requirements for the acceptance of HLW. This revision has been developed as a top priority document to permit DOE's Office of Environmental Restoration and Waste Management (EM) to commence waste qualification runs at the Savannah River Site's (SRS) Defense Waste Processing Facility (DWPF) in a timely manner. Additionally, this revision of the WA-SRD includes the requirements from the Physical System Requirements - Accept Waste document for the acceptance of SNF. A subsequent revision will fully address requirements relative to the acceptance of SNF.

The development and control of the WA-SRD is quality-affecting work and is subject to the requirements of the OCRWM Quality Assurance Requirements Document (QARD). As part of the technical requirements baseline, it is also subject to OCRWM Baseline Management Plan controls. The WA-SRD and the other system-level requirements documents have been prepared and managed in accordance with the *Technical Document Preparation Plan (TDPP) for the Preparation of System Requirements Documents.*

1.2 PURPOSE OF CRWMS REQUIREMENTS DOCUMENTS

1.2.1 CRWMS Requirements Hierarchy

The CRWMS System Engineering Management Plan establishes the technical document hierarchy (hierarchy of technical requirements and configuration baseline documents) for the CRWMS program. Figure 1-1 illustrates the program-level system requirements documents in this hierarchy. The CRWMS Requirements document (CRD) is the top-level system requirements document. This set of documents establishes the system requirements to be addressed in the design of the system elements, one of which is Waste Acceptance.

Many of the technical requirements for the CRWMS are documented in the Nuclear Waste Policy Act of 1982 (NWPA) and in a variety of Federal regulations, Department of Energy (DOE) directives and orders, and other Government documents. The CRD establishes the technical requirements for the entire program by summarizing source documentation that must be addressed and by deriving requirements not covered in the regulations, but necessary to accomplish the CRWMS mission. The CRD also defines the CRWMS by identifying top-level functions for each element, defining the top-level system architecture of the CRWMS, and by allocating the functions and requirements to the architectural elements of the system, including Waste Acceptance. In doing so, the CRD establishes the basis for the requirements to be addressed and expanded in the WA-SRD, the system requirements documents for the other elements, and the interface specification (IFS).

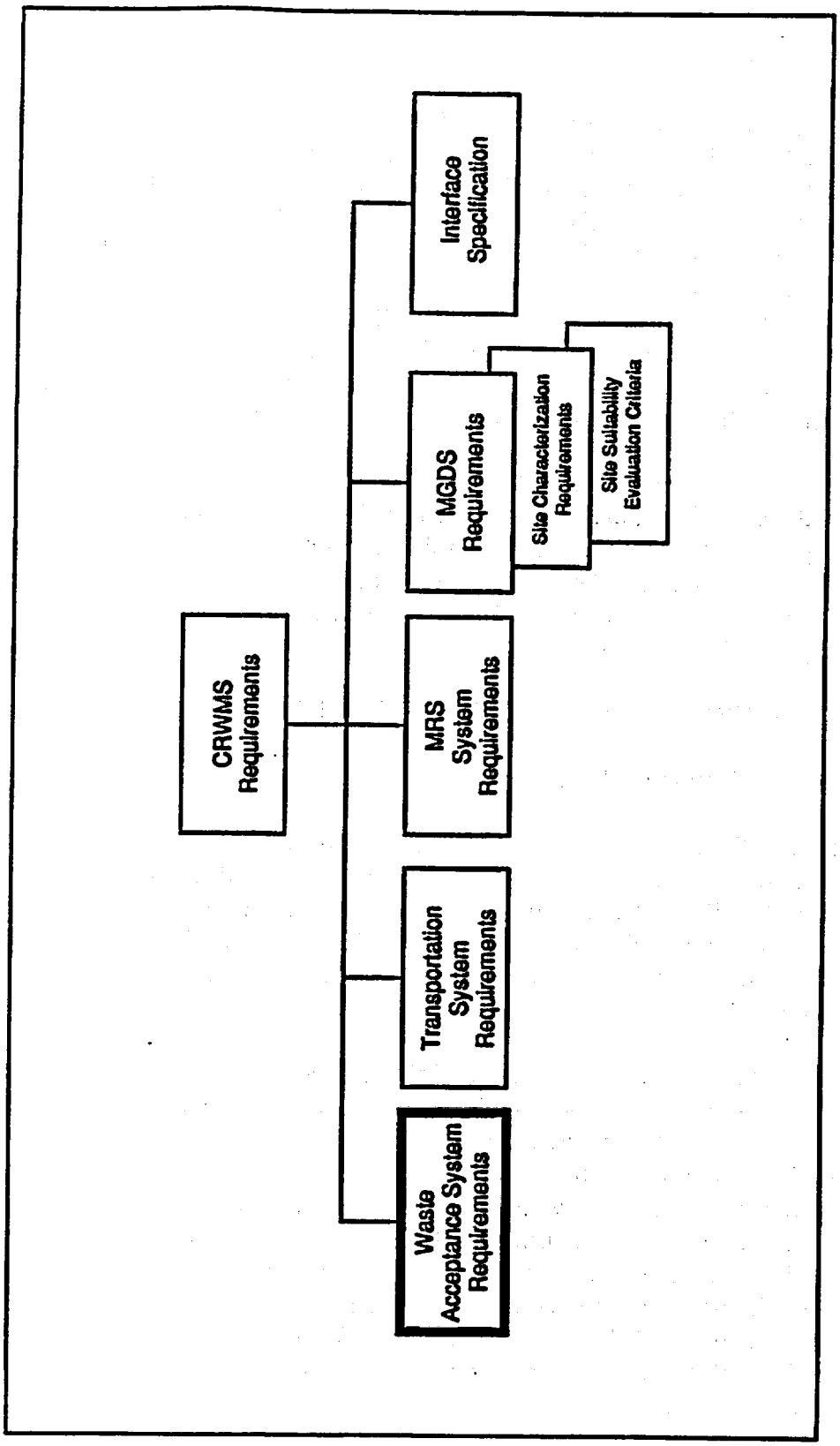

Figure 1-1. Program-level System Requirements Documents

1.2.2 Purpose of WA-SRD

The purpose of this document is to define the system-level requirements for Waste Acceptance (WA) consistent with the CRD. The document presents an overall description of WA, its functions, its segments, and the requirements allocated to the segments. The system-level interfaces with WA are also identified. The interface requirements will be published in a separate system-level interface specification.

1.3 CRWMS/WA OVERVIEW

The CRWMS is composed of four system elements. These elements, as identified in the CRD, are Waste Acceptance, Transportation, Monitored Retrievable Storage (MRS), and the Mined Geologic Disposal System (MGDS). Separate system-level requirements documents are written for each system element.

While WA is defined as a system element within the CRWMS technical baseline, it is not required to physically handle nuclear waste for transport, storage, or disposal. WA administers the transfer of waste title from the Purchasers/Producers into the CRWMS.

1.3.1 WA Mission

The mission of WA is to manage the acceptance of SNF and HLW into the CRWMS from the Purchasers/Producers of such waste.

1.3.2 WA Background

The NWPA assigned DOE the responsibility for managing the disposal of SNF and HLW of domestic origin. The process and the schedule for this program were specified initially in the NWPA. Additionally, a Presidential Memorandum dated April 30, 1985, stated that there was no compelling reason to build a separate repository for defense HLW; therefore, the waste will be emplaced in a civilian geologic repository. In the Nuclear Waste Policy Amendments Act (1987) (NWPAA), Yucca Mountain, Nevada, was designated for characterization as the candidate site for a geologic repository.

The NWPA defines SNF as the fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not been separated by reprocessing. As used in this document, SNF is defined to include the nonfuel components and hardware as identified in 10CFR961. HLW is defined as the highly radioactive material resulting from the reprocessing of SNF. This includes liquid waste produced directly in reprocessing, any solid material derived from such liquid waste that contains fission products in sufficient concentrations, and other highly radioactive material that has been determined by the Nuclear Regulatory Commission, consistent with the law, to require permanent isolation. As used in this document, HLW is defined to include commercial and defense HLW. The CRWMS will accept both SNF and solidified HLW. Note that the 10CFR60 definition of HLW includes SNF.

In the NWPA, Congress identified that long-term storage of SNF in MRS facilities is a safe and reliable option for management of SNF. In the NWPAA, Congress authorized the Secretary of Energy to site, construct, and operate one MRS, and as stated in 10CFR72, the MRS will have an initial 40-year license term with the option for renewal by the NRC. The MRS is to provide temporary storage of SNF until the SNF is shipped to the geologic repository for permanent disposal. HLW will be shipped from the Producer sites directly to the geologic repository.

1.3.3 WA Functions

The following list represents the decomposition of the primary function of WA which is to Accept Waste. These functions are further decomposed in Section 3.1 and described in Appendix A. The Physical System Requirements-Accept Waste document served as a reference for establishing these functions:

A. **Define Waste Acceptance Criteria.** Determine the conditions necessary to be met by the SNF/HLW, in order for DOE to be able to accept it for disposal including defining standard and nonstandard waste forms.

B. **Establish Contracts/Agreements.** Develop and execute written agreements between DOE and Purchasers/Producers that include terms, conditions, and criteria for waste acceptance and related services, and responsibilities of each party.

C. **Plan for Waste Acceptance.** Establish and provide the data on SNF and HLW characteristics and the Purchasers'/Producers' site capabilities and requirements, as well as the CRWMS capabilities and requirements. Sub-functions include: Allocate Waste System Capacity; Identify Waste Location/Characteristics; and Define Site Interface Capabilities.

D. **Accept Waste Custody.** Observe preparatory operations for waste delivery and transfer title of accepted waste to CRWMS from the Purchaser/Producer. Sub-functions include: Observe Waste Preparations; and Accept Title/Documentation, which includes resolution of improperly described waste prior to acceptance into the CRWMS.

E. **Resolve Improperly Described Waste.** When a discrepancy is found with the waste after DOE/OCRWM has taken title to it, make arrangements with the Purchaser/Producer to correct the waste description.

F. **Provide Fee Collection.** Collect, verify, and assess the adequacy of fees paid into the Nuclear Waste Fund (NWF) and recommend adjustment of the fee, if necessary, in order to ensure full cost recovery. Fees for waste disposal services will be paid by the Purchasers/Producers. DOE will regularly review and verify the accuracy of all fees paid into the NWF.

1.3.4 Waste Acceptance System Concept

The top-level CRWMS function, "Manage Waste Disposal", means to direct or control any physical activity, operation, or process conducted to accept, and after acceptance, transport, store, or dispose of SNF or HLW. For planning, systems analysis, and conceptual design purposes, Manage Waste Disposal is broken down into four subfunctions that the CRWMS must perform. These are Accept Waste, Transport Waste, Store Waste, and Dispose of Waste. The four corresponding system elements of the CRWMS that have been identified to implement these functions are Waste Acceptance, Transportation, MRS, and MGDS.

Figure 1-2 is a pictorial description of the CRWMS, which is described in the following paragraphs.

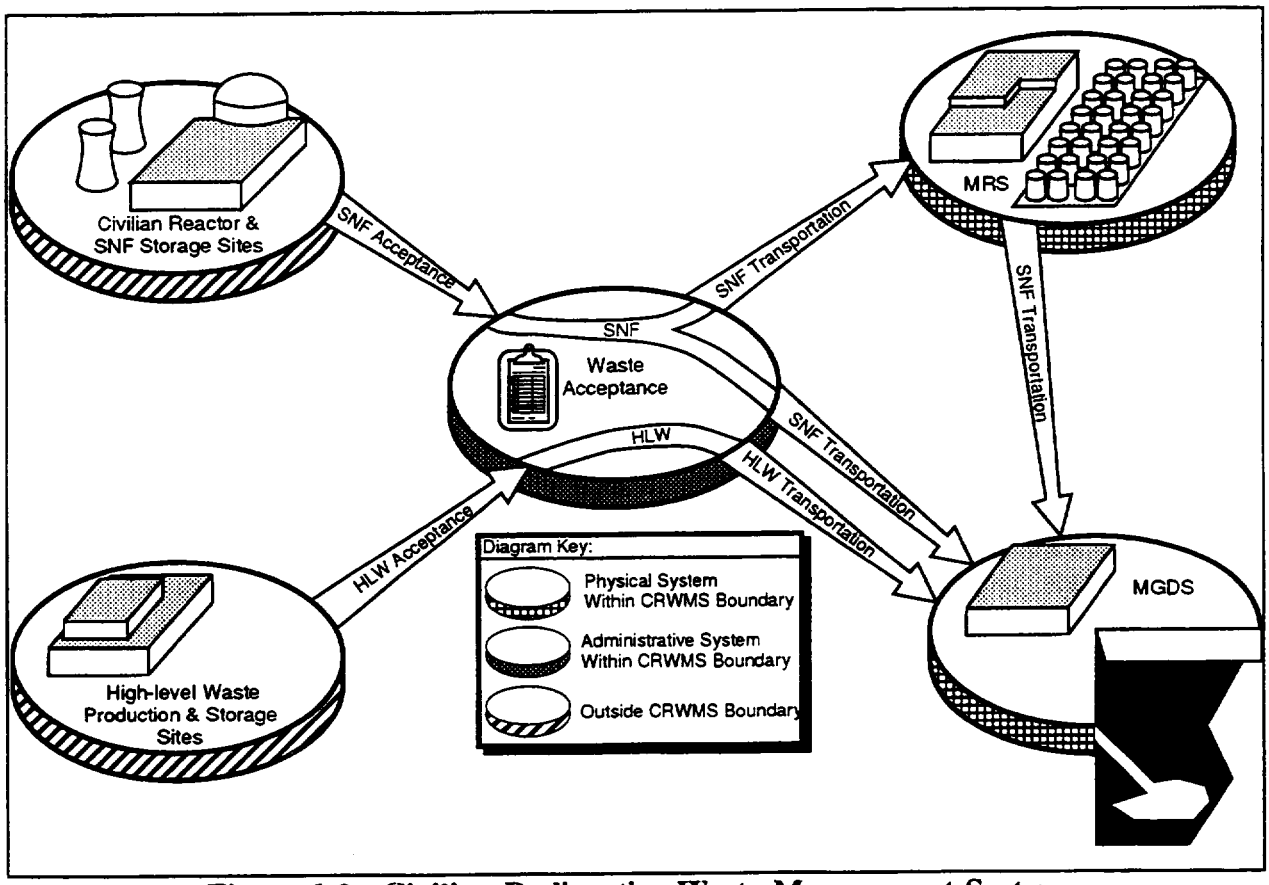

Figure 1-2. Civilian Radioactive Waste Management System

Waste Acceptance has the responsibility of interfacing the CRWMS with the "Purchasers" (owners and generators of SNF from civilian reactors) and "Producers" (owners and generators of HLW). Purchaser is defined in 10CFR961.3 as any person, other than a Federal agency, who is licensed by the Nuclear Regulatory Commission to use a utilization or production facility under the authority of sections 103 or 104 of the Atomic Energy Act of 1954 (42USC2133, 2134) or who has title to SNF or HLW and who has executed a contract or other contractual agreement with DOE. Purchaser's SNF includes Government-owned SNF from commercial industry and civilian development programs. Producer is defined in the CRD as any owner or generator of HLW resulting from commercial or defense atomic energy activities.

The Waste Acceptance System will maintain records for the waste acceptance capacity, maintain records of the waste locations and characteristics, verify that the waste has been properly described, manage the contract/agreement process with the Purchasers/Producers, develop schedules for waste acceptance, verify that the waste is in the proper form for acceptance into the CRWMS, and, finally, accept title to the waste from the Purchasers/Producers. After the waste has been accepted into the CRWMS, it will be delivered by the Transportation system to the MRS or MGDS.

1.4 DOCUMENT ORGANIZATION AND DESCRIPTION

1.4.1 Document Organization

The WA-SRD is organized as follows:

A. **Section 1: Scope.** This section presents the system overview including the WA mission and system concept.

B. **Section 2: Applicable Documents.** This section identifies documents that are specifically related to various requirements of WA. The documents are included to provide requirement traceability to the source documents and are not to be incorporated as requirements themselves.

C. **Section 3: Requirements.** This section begins with a system definition and contains all requirements of WA at the system-level except for the preparation for operation requirements in section 5, and the requirements in the Appendices. Performance characteristics and interface requirements are presented. Documentation and training requirements are addressed. A breakout of requirements for each segment follows these requirements. Qualification requirements, including requirements for quality assurance, are also provided.

D. **Section 4: Conformance Verification.** This section addresses conformance verification and includes a cross-reference matrix to define how conformance with each requirement of sections 3 and 5, and appendices is to be verified.

E. **Section 5: Preparation for Operations.** This section contains requirements for preparation of the system for waste acceptance and operations.

F. **Section 6: Notes.** This section contains material that is explanatory in nature and that is nonbinding on WA development.

G. **Appendices:** Data included in the appendices are binding with regard to WA requirements and may be changed only through the formal document change procedures. The requirements presented in the Appendices are referenced in either section 3 or 5. This document includes two appendices:

Appendix A: WA Function Descriptions
Appendix B: Allocation of Functions to Architecture

1.4.2 Document Description

The central purpose of the WA-SRD is to establish the system-level requirements baseline for WA. As indicated in the outline in section 1.4.1, section 3 of the document is the primary location of the requirements, although some appear in section 5 and the appendices. The requirements and source documents allocated to WA by the CRD are addressed in expanded form. Requirements are included that have been derived to meet the system mission. Derived requirements have also been included that are regulatory requirements for another system element (e.g., MRS) that have been determined to be applicable to WA. Section 3.1 establishes the description of the system in terms of functions and segments and the relationship between the two. Sections 3.2 to 3.6 address interface and specialty engineering requirements applicable to WA. Specialty engineering disciplines include safety, human factors, and security. Section 3.7 contains requirements associated with specific WA segments.

The statement of a requirement is followed by the identification, in square brackets, of the original source document from which the requirement is derived. When no source document is identified, the WA-SRD is the authority for the requirement, and the identification and determination of the requirement is documented on Issue Clarification and Derived Requirements Forms in the Quality Assurance (QA) record for the WA-SRD. In these instances, the requirement is labeled [Derived]. Additionally, the legal or regulatory basis for requirements is documented on Requirements Allocation Sheets and Design Constraint Sheets in the QA record for the WA-SRD; these records are not included within the WA-SRD. These sheets provide a statement of the requirement as it appears in the WA-SRD and, where applicable, provide a rationale for any interpretation of the basic requirement.

A fundamental approach of the WA-SRD is to provide statements of the requirements that give clear engineering direction that are verifiable and do not depend upon the context in which they were originally presented. Inasmuch as the WA System is evolving, some of this can only be done on an iterative basis. As a result, some requirements in early versions of requirements documents contain specifics that are still to be determined and are labeled **<TBD>**. In other instances, engineering judgment may permit a tentative statement as to values to be used for initial design work. In these instances, the requirement is labeled **<TBR>** (to be resolved).

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2. APPLICABLE DOCUMENTS

The documents identified in sections 2.1 - 2.4 are specifically referred to or have provided the basis for requirements contained in the WA-SRD. These documents are not to be incorporated as requirements themselves.

For each document, the issue in effect on the date of the approval of this Requirements document forms a part of the requirements to the degree specified herein. Each lower level design requirements document is to use revisions and issues of source documents that reflect the date of approval of that design requirements document.

Section 2.5 identifies reference materials that have not been used as sources of requirements, but have contributed to the development of the WA-SRD in other ways.

2.1 FEDERAL LAWS AND DOCUMENTS

The following are used as sources of requirements in the WA-SRD.

2.1.1 Laws, Statutes, U. S. Codes, and Treaties

A.	29USC651 et.seq.	Occupational Safety and Health Act
B.	42USC10101 et.seq.	Nuclear Waste Policy Act of 1982 and Nuclear Waste Policy Amendments Act of 1987

2.1.2 Code of Federal Regulations and Executive Orders

A.	10CFR50	Domestic Licensing of Production and Utilization Facilities
B.	10CFR60	Disposal of High-Level Radioactive Wastes in Geologic Repositories
C.	10CFR71	Packaging and Transportation of Radioactive Material
D.	10CFR72	Licensing Requirements for the Independent Storage of Spent Nuclear Fuel and High-Level Radioactive Waste
E.	10CFR961	Standard Contract for Disposal of Spent Nuclear Fuel and/or High-Level Radioactive Waste

F.	40CFR261	Identification and Listing of Hazardous Waste
G.	40CFR262	Standards Applicable to Generators of Hazardous Waste
H.	49CFR172	Hazardous Materials Table, Special Provisions, Communications Requirements, and Emergency Response Requirements
I.	49CFR173	Shippers--General Requirements for Shipments and Packagings

2.1.3 Other Documents, Orders, and Directives

A.	DOE Order 1324.2	Records Disposition
B.	DOE Order 3790.1A	Federal Employee Occupational Safety and Health Program
C.	DOE Order 4700.1	Program Management System
D.	DOE/RW-0005	Mission Plan for the Civilian Radioactive Waste Management Program
E.	DOE/RW-0194P	Records Management Policies and Requirements
F.	DOE/RW-0214	Quality Assurance Requirements Document
G.	DOE/RW-0316P	Draft Mission Plan Amendment September 1991
H.	DOE/RW-0328P	Acceptance Priority Ranking December 1991
I.	DOE/RW-0331P	Annual Capacity Report December 1991
J.	DOE/RW-XXXX	CRWMS Requirements
K.	MOA RW/DP	Memorandum of 7/14/86 of Policy for Shipping Defense High-Level Waste (DHLW) to a Civilian Radioactive Waste Repository

L.	MOA NS/RW	Memorandum of 4/16/92 on Nuclear Safety Requirements
M.	Presidential Memo	Memorandum of 4/30/85 on Disposal of Defense Waste in a Commercial Repository

2.2 [Reserved]

2.3 [Reserved]

2.4 NON-GOVERNMENT DOCUMENTS

The following are used as sources of requirements in the WA-SRD.

2.4.1 [Reserved]

2.4.2 Other Publications

A. CRWMS M&O Document Number TSO.920427.0346 - Inputs for MRS Design Based on CRWMS Throughput Rate Analyses, Draft, May 8, 1992.

B. MTR 10090 (ESD-TR-86-278) - Guidelines for Designing User Interface Software, S.L. Smith and J.N. Mosier, 1986

2.5 OTHER REFERENCES

In addition to the above source documents, the following program documents were used as reference material for the initial development of this document. These documents have not been used as sources of requirements.

A.	10CFR962	Byproduct Material
B.	40CFR191	Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level Radioactive Waste and Transuranic Wastes
C.	42USC2001 et.seq.	Atomic Energy Act
D.	42USC6901 et.seq.	Resource Conservation and Recovery Act
E.	ANSI N14.5-1987	American National Standard for Leakage Tests on Packages for Shipment of Radioactive Materials

F.	DOE/EA-0179	Environmental Assessment Waste Form Selection for Savannah River HLW, 1982
G.	DOE/RW-0184	Characteristics of Potential Repository Wastes, Revision 1, July 1992
H.	DOE/RW-0187	Draft Mission Plan Amendment June 1988
I.	DOE/RW-0199	Site Characterization Plan
J.	DOE/RW-0247	Report to Congress on Reassessment of the Civilian Radioactive Waste Management Program
K.	DOE/RW-0253	Program Cost and Schedule Baseline, Revision 3, September 1992
L.	DOE/RW-0260	Waste Acceptance Preliminary Specifications for the Defense Waste Processing Facility High-Level Waste Form, Revision 1, July 1989
M.	DOE/RW-0261	Waste Acceptance Preliminary Specifications for the West Valley Demonstration Project High-Level Waste Form, Revision 1, January 1990
N.	DOE/RW-0270P	Waste Management System Description Document (WMSD), March 1990
O.	DOE/RW-0369	Physical System Requirements - Accept Waste, Revision 0, August 31, 1992
P.	DOE/RW-XXXX	Baseline Management Plan
Q.	DOE/RW-0051P	System Engineering Management Plan
R.	DOE Order 6430.1A	General Design Criteria
S.	Federal Register	Volume 52 Number 161 (August 20, 1987) Civilian Radioactive Waste Management; Calculating Nuclear Waste Fund Disposal Fees for Department of Energy Defense Program Waste

T.	TDPP	Technical Document Preparation Plan (TDPP) for the Preparation of System Requirements Documents, Revision 0, July 14, 1992
U.	WSRC-TR-90-539	Nuclear Waste Product Consistency Test Method Version 3.0, Savannah River Laboratory, November 1990 [C.M. Jantzen]
V.	Compendium Paper	High-Level Nuclear Waste Borosilicate Glass: A Compendium of Characteristics, Draft, September 15, 1992 [Compiled and Edited by: J.C. Cunnane]

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3. REQUIREMENTS

3.1 SYSTEM DEFINITION

Sections 302(a)(1) and 302(a)(5) of the NWPA authorize the Secretary to enter into contracts with Purchasers and Producers and take title to their SNF and HLW as expeditiously as practicable upon request, in return for payment of fees.

The functions, function flow diagrams, N-Square diagrams, system description, cross-reference of the allocation of functions to segments, and assumptions to accomplish this task are contained in the following sections.

3.1.1 Waste Acceptance System Functions - Accept Waste

With the mission of WA identified as managing the acceptance of SNF and HLW into the CRWMS from the Purchasers/Producers of such waste, a functional analysis activity was performed to identify the essential functions that the system must perform. Physical System Requirements - Accept Waste documented the first iteration of that functional analysis and was used as the primary reference source of the functions for Waste Acceptance (WA) identified in this document.

The overall function of WA is to Accept Waste. This function includes the activities necessary to meet the requirements for establishing the criteria for waste acceptance and all the preparation (including contractual) and operation activities to take title of the waste in a manner that protects the health and safety of the public and maintains the quality of the environment.

Functions flowing from the Accept Waste function are listed in Table 3-1. The reference numbers following the function title are the function numbers used with the function descriptions contained in Appendix A, Waste Acceptance Function Descriptions. The reference numbers are provided for identification of level of indenture and are not intended to prescribe a sequencing of the identified functions.

3.1.2 Waste Acceptance Functional Relationships

Functional identification is accomplished in this document by the use of function flow diagrams to depict functional relationships, and by the use of N-Square diagrams to identify inputs and outputs of a function. Throughout the iterative system engineering process, each design phase involves a more progressively detailed functional analysis. The functions identified in this document are the system-level functions that are required to meet the mission.

Table 3-1. Waste Acceptance Function List

Function Title	Reference Number
Accept Waste	1.1
Define Waste Acceptance Criteria	1.1.1
Establish Contracts/Agreements	1.1.2
Plan for Waste Acceptance	1.1.3
Allocate Waste System Capacity	1.1.3.1
Collect Waste Data	1.1.3.1.1
Rank/Order Waste	1.1.3.1.2
Allocate Annual Capacity to Purchasers/Producers	1.1.3.1.3
Identify Waste Location/Characteristics	1.1.3.2
Evaluate DCS	1.1.3.2.1
Evaluate Exchange Requests	1.1.3.2.2
Evaluate Request for Nonstandard Waste Delivery	1.1.3.2.3
Evaluate FDS	1.1.3.2.4
Define Site Interface Capabilities	1.1.3.3
Accept Waste Custody	1.1.4
Observe Waste Preparations	1.1.4.1
Observe Preliminary Waste Preparations	1.1.4.1.1
Verify Waste Description	1.1.4.1.2
Notify Purchaser/Producer of Improperly Described Waste	1.1.4.1.3
Accept Title/Documentation	1.1.4.2
Resolve Improperly Described Waste	1.1.5
Provide Fee Collection	1.1.6

Figure 3-1 shows the function flow diagram for the primary functions of the CRWMS. Figure 3-2 shows the function flow diagram for the third level indenture, which identifies the top-level Waste Acceptance functions. Figures 3-3 and 3-4 show the N-Square diagrams for these same functions. Numbers in each function block correspond to appropriate function numbers as identified in Table 3-1. Additional function flow diagrams and N-Square diagrams are contained in Appendix A.

The function flow diagrams identify the primary interactions between the functions in accepting SNF and HLW. Additional function interactions are identified on the N-Square diagrams. On the N-Square diagrams, the Waste Acceptance functions appear in the bold outlined boxes on the diagonal. The double-lined boxes on the diagonal identify an interface with a function external to Waste Acceptance. Inputs to a function appear in the column above and below the function. Outputs from a function appear in the row to the left and right of a function.

The function flow diagrams are used in allocating functions to appropriate segments described in section 3.1.3. Section 3.1.4 summarizes this allocation process.

3.1.3 System Description

Waste Acceptance is an integral part of the total CRWMS in which all system elements, segments, and subsystems and facilities are optimized as parts of a single system. WA will interface the CRWMS with the Purchasers and Producers by establishing contracts or agreements to accept waste, define the waste criteria, develop schedules for waste acceptance, observe preparatory operations during the waste acceptance process, and perform other functions if determined necessary or desirable by future federal mandates, studies, analyses, operational requirements, etc. Figure 3-5 shows the relationship of WA to the CRWMS. The top-level architecture is depicted in Figure 3-6. Waste Acceptance is composed of the following segments:

A. Contract/Agreement Management
B. Waste Fund Management
C. Waste Acceptance Management
D. Support.

The segments are described in section 3.7 of this document. These segments are integrated during operation to ensure compliance with all requirements.

3.1.4 Function to Architecture Cross-Reference

The function flow diagrams are used in defining the segments identified in section 3.1.3. The segments are items that can accomplish similar functions. The requirements for the functions are reviewed and the segments are defined. Section 3.7 and Appendix B identify the functions that are to be performed by each of the segments of Waste Acceptance.

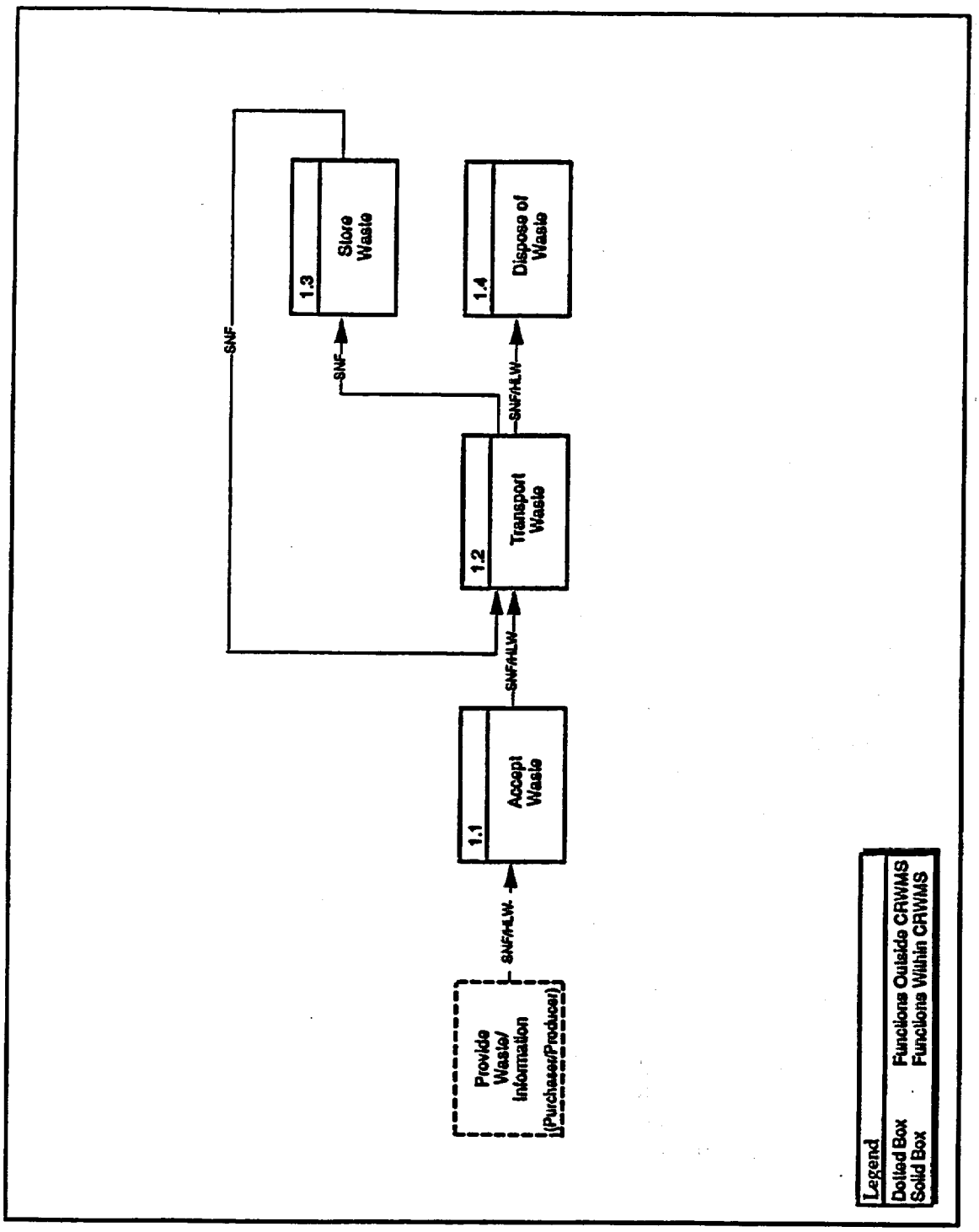

Figure 3-1. 1. Manage Waste Disposal Function Flow Diagram

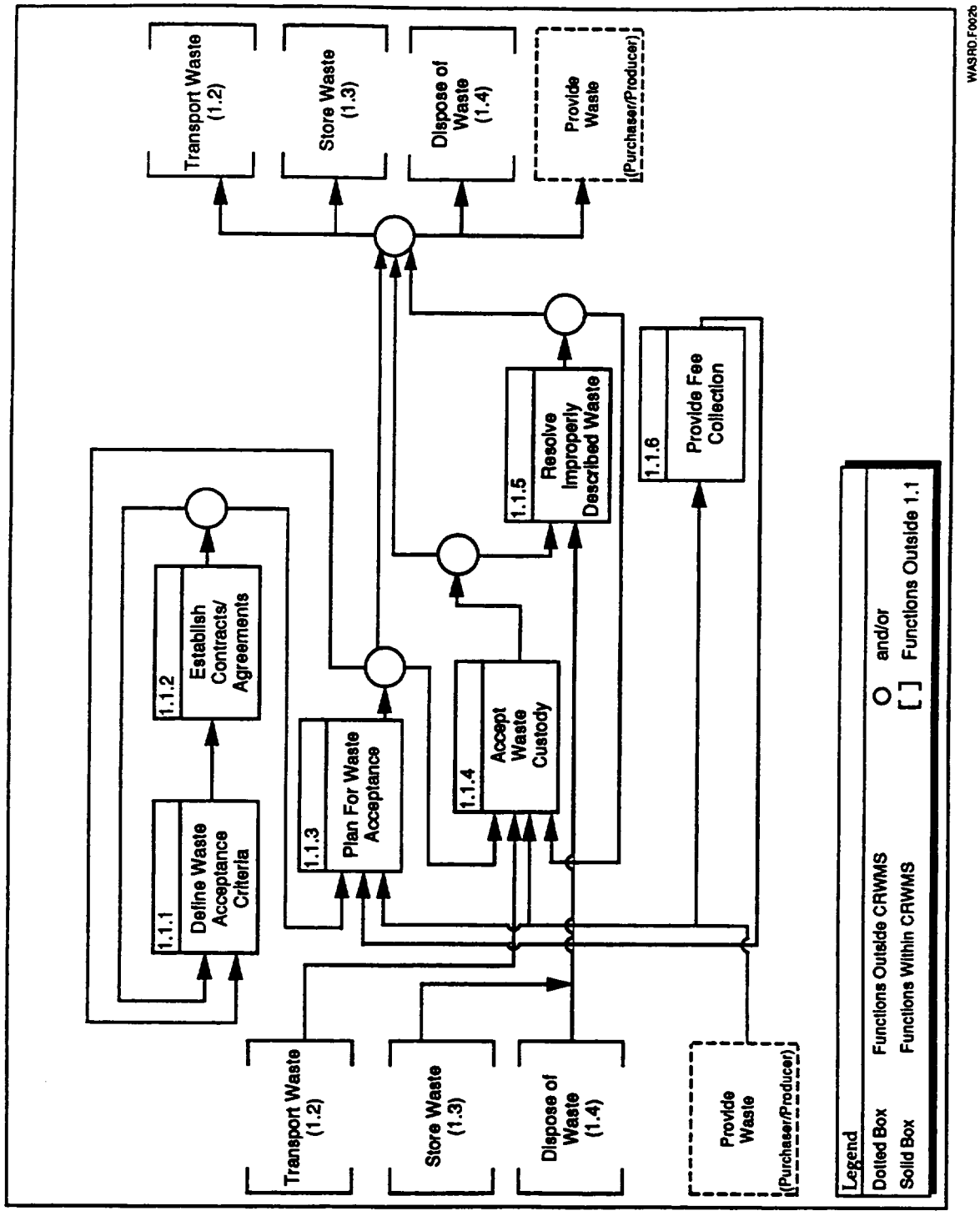

Figure 3-2. 1.1 Accept Waste Function Flow Diagram

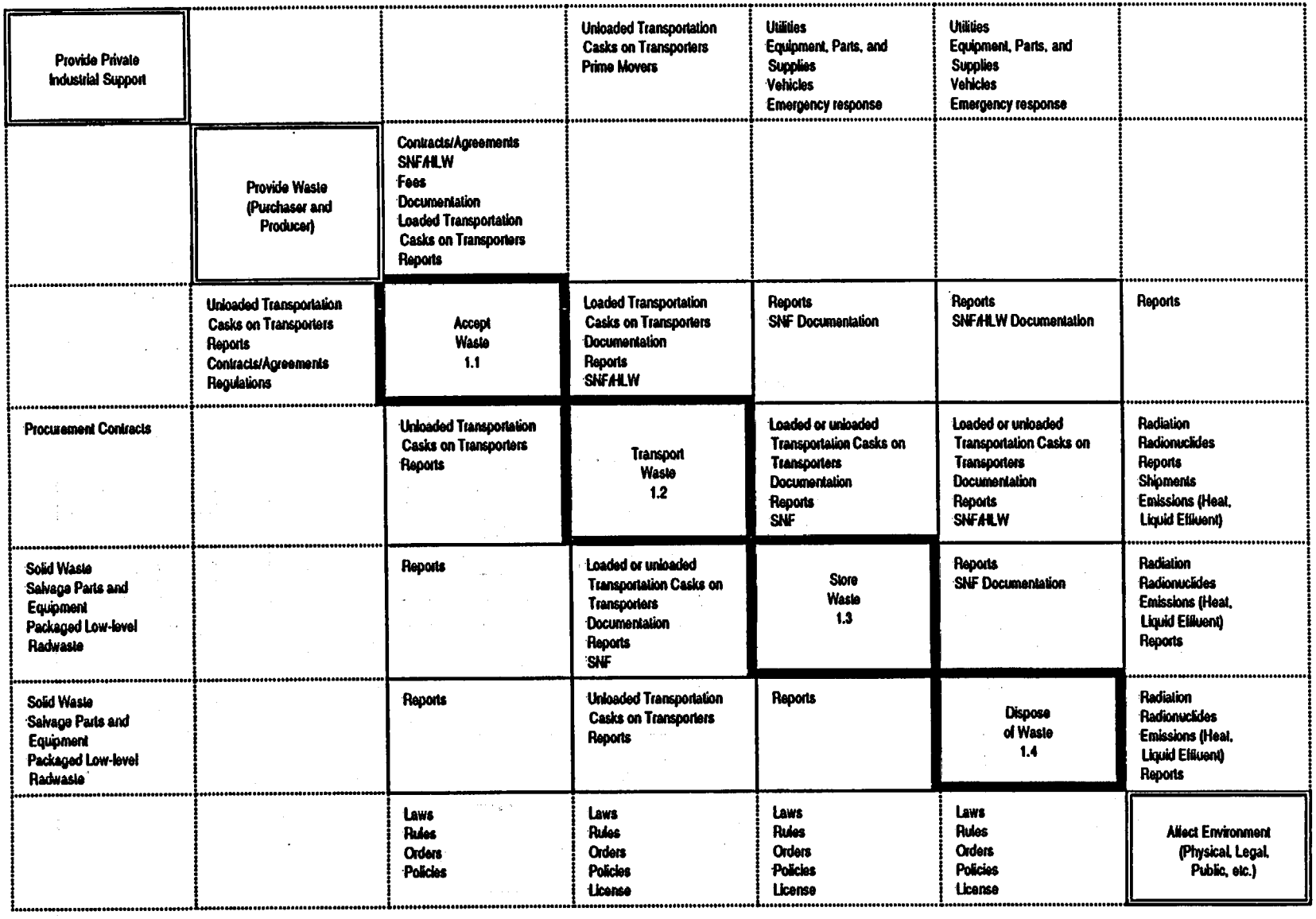

Figure 3-3. N-Square Chart for 1. Manage Waste Disposal

Figure 3-4. N-Square for Chart 1.1 Accept Waste

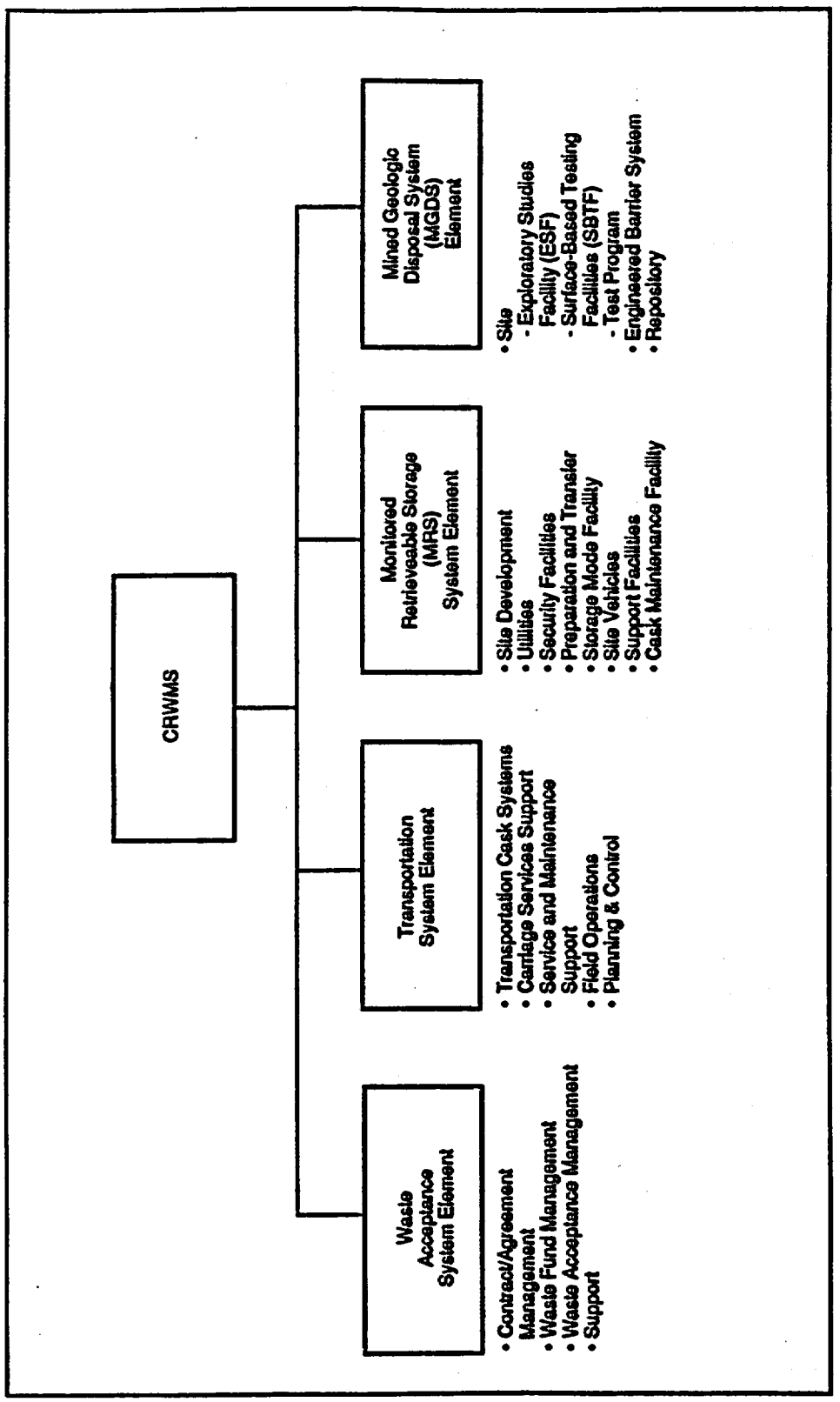

Figure 3-5. CRWMS Architecture

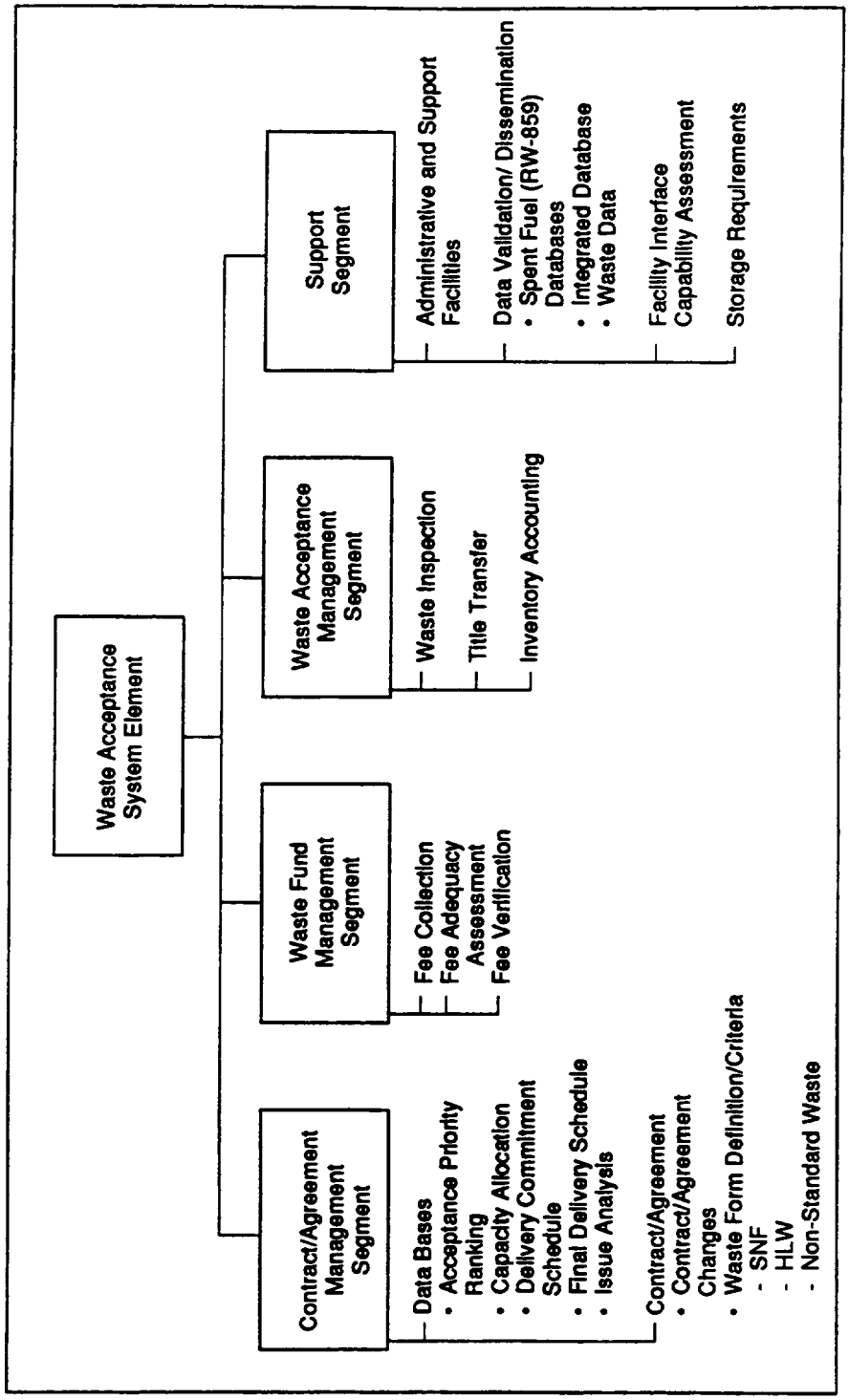

Figure 3-6. WA Architecture

3.1.5 Major Considerations and Assumptions

Generally, the following assumptions are intended to provide guidance to proceed with waste acceptance activities, and are based on informed technical opinion, preliminary study results, and accumulated institutional experience.

A. The standard HLW form accepted into the CRWMS will be vitrified borosilicate glass produced at Savannah River, Hanford, and West Valley. <TBR>

B. WA will accept SNF for storage at the MRS and SNF and HLW for disposal at the MGDS.

C. Acceptance of SNF at the MGDS will commence in 2010.

3.2 CHARACTERISTICS

3.2.1 Performance Characteristics

The following are requirements on the general waste form characteristics and acceptance schedules. More specific requirements on the waste form characteristics are provided in section 3.7.1.2.

3.2.1.1 SNF and HLW Acceptance

A. (WA) WA shall accept all SNF and HLW defined in section 3.7.1.2. [NWPA Section 111(a)(4)][1]

B. (WA) WA shall not accept in excess of 70,000 MTU in the first repository prior to operation of a second repository. [NWPA Section 114(d)]

C. (WA) WA shall not accept SNF or HLW in a manner inconsistent with 10CFR72.44(g). [10CFR72.44(g)]

D. (DOE/RW) In return for established fees, the services to be provided by the CRWMS shall begin, after commencement of facility operations, not later than January 31, 1998, and shall continue until such time as all SNF and/or HLW from the civilian nuclear power reactors specified in Appendix A of 10CFR961 has been disposed of. [NWPA 302(a)(5)] [10CFR961.11 Article II]

[1] Indicates the source document for the basis of the requirement.

3.2.1.2 SNF Receipt

(Purchaser, Producer) Until the SNF is accepted by WA, the Purchaser/Producer shall provide and pay the costs of interim storage. [NWPA Section 111(a)(5)]

3.2.1.3 HLW Receipt

(WA) WA shall begin accepting HLW for disposal at the MGDS beginning in 2015. [Derived] **<TBR>**

3.2.1.4 Receipt Rate

(WA) WA shall be capable of accepting waste as described in Table 3-2. [HLW: DOE/RW-0316P] [SNF 1998-2008: DOE/RW-0331P] [SNF 1998-2034: CRWMS M&O TSO.920427.0346] **<TBR>**

Table 3-2. Waste Acceptance Schedule
(In Metric Tons of Initial Uranium or Equivalent)

Year	MRS		MGDS				
	SNF Rec'd	Total SNF	SNF From MRS[1]	Total SNF	HLW Rec'd	Total HLW	Total SNF & HLW
1998	400	400	0	0	0	0	0
1999	600	1,000	0	0	0	0	0
2000	900	1,900	0	0	0	0	0
2001	900	2,800	0	0	0	0	0
2002	900	3,700	0	0	0	0	0
2003	900	4,600	0	0	0	0	0
2004	900	5,500	0	0	0	0	0
2005	900	6,400	0	0	0	0	0
2006	900	7,300	0	0	0	0	0
2007	900	8,200	0	0	0	0	0
2008	900	9,100	0	0	0	0	0
2009	800	9,900	0	0	0	0	0
2010	1,400	11,000	300	300	0	0	300
2011	2,000	12,400	600	900	0	0	900
2012	2,600	13,800	1,200	2,100	0	0	2,100

Table 3-2. Waste Acceptance Schedule (Continued) (In Metric Tons of Initial Uranium or Equivalent)

Year	MRS		MGDS				
	SNF Rec'd	Total SNF	SNF From MRS[1]	Total SNF	HLW Rec'd	Total HLW	Total SNF & HLW
2013	3,000	14,800	2,000	4,100	0	0	4,100
2014	3,000	14,800	3,000	7,100	0	0	7,100
2015	3,000	14,800	3,000	10,100	400	400	10,500
2016	3,000	14,800	3,000	13,100	400	800	13,900
2017	3,000	14,800	3,000	16,100	400	1,200	17,300
2018	3,000	14,800	3,000	19,100	400	1,600	20,700
2019	3,000	14,800	3,000	22,100	400	2,000	24,100
2020	3,000	14,800	3,000	25,100	400	2,400	27,500
2021	3,000	14,800	3,000	28,100	400	2,800	30,900
2022	3,000	14,800	3,000	31,100	400	3,200	34,300
2023	3,000	14,800	3,000	34,100	400	3,600	37,700
2024	3,000	14,800	3,000	37,100	400	4,000	41,100
2025	3,000	14,800	3,000	40,100	400	4,400	44,500
2026	3,000	14,800	3,000	43,100	400	4,800	47,900
2027	3,000	14,800	3,000	46,100	400	5,200	51,300
2028	2,100	13,900	3,000	49,100	400	5,600	54,700
2029	0	10,900	3,000	52,100	400	6,000	58,100
2030	0	7,900	3,000	55,100	400	6,400	61,500
2031	0	4,900	3,000	58,100	400	6,800	64,900
2032	0	1,900	3,000	61,100	200	7,000	68,100
2033	0	0	1,900	63,000	0	7,000	70,000
2034	0	0	0	63,000	0	7,000	70,000

[1] In the years when SNF is shipped directly from the Purchasers to the MGDS, the sum of the waste shipped directly and waste shipped from the MRS will be stated in this column.

3.2.2 [Reserved]

3.2.3 Interface Requirements

This section addresses interface requirements between the WA system element and other CRWMS system elements, including Transportation, MRS, and MGDS.

3.2.3.1 [Reserved]

3.2.3.2 Interfaces with Other CRWMS Elements

Interface requirements between WA and the other element of the CRWMS (MRS, MGDS, and Transportation) are included in this section.

3.2.3.2.1 WA-MRS Interface Requirements

The types of interfaces between these two elements reflect transfer of SNF documentation, reports and communications.

A. (WA) WA shall provide information on the SNF to the MRS to ensure the facility has the capability of receiving, handling, and storing SNF prior to acceptance. [Derived]

B. (WA) WA shall accept SNF for storage at the MRS at the receipt rate shown in Table 3-2. [SNF 1998-2008: DOE/RW-0331P][SNF 1998-2034: CRWMS M&O TSO.920427.0346] **<TBR>**

C. (WA) WA shall have the capability of notifying the MRS of the types of SNF being shipped from the Purchaser, and the estimated date of arrival to the MRS, on the shipment date. [Derived]

D. (WA) When notified by the MRS of improperly described SNF, WA shall resolve the waste description with the Purchaser. [10CFR961.11 Article VI.B.3(b)]

3.2.3.2.2 WA-MGDS Interface Requirements

The types of interfaces between these two elements reflect transfer of SNF/HLW documentation, reports and communications.

A. (WA) WA shall ensure that MGDS has the capability of receiving, handling, and disposing of SNF and HLW prior to acceptance. [Derived]

B. (WA) WA shall accept SNF and HLW for disposal at MGDS at the receipt rate shown in Table 3-2. [HLW: DOE/RW-0316P] [SNF 1998-2008: DOE/RW-0331P] [SNF 1998-2034: CRWMS M&O TSO.920427.0346] **<TBR>**

C. (WA) WA shall not accept in excess of 300 canisters of commercial HLW and 13,200 canisters of defense HLW for disposal at the first repository. [Derived] <TBR>

D. (WA) WA shall have the capability of notifying the MGDS of the types of SNF and/or HLW being shipped from the Purchaser/Producer, and the estimated date of arrival to the repository, on the shipment date. [Derived]

E. (WA) When notified by the MGDS of improperly described SNF and/or HLW, WA shall resolve the waste description with the Purchaser/Producer. [10CFR961.11 Article VI.B.3(b)]

3.2.3.2.3 WA-Transportation Interface Requirements

The types of interfaces between these two elements reflect transfer of both loaded and unloaded transportation cask systems and the documentation, reports and communications regarding loaded and unloaded transportation cask systems.

A. (WA) In support of the following requirements, WA shall arrange for transportation cask system(s) and necessary Transportation System services to move the SNF and/or HLW from the Purchaser's/Producer's site to the CRWMS facility. [10CFR961.11 Article IV.B.2]

(1) Purchasers shall be provided with a truck or rail cask for delivery of SNF (from-reactor) to the MRS or MGDS. [DOE/RW-0005]

(2) Producers shall be provided with a rail cask for delivery of defense HLW (from-Savannah River Site and from-Hanford) to the MGDS. [Derived]

(3) Producers shall be provided with a rail cask for delivery of commercial HLW (from-West Valley Demonstration Project) to the MGDS. [Derived] <TBR>

B. (WA) WA shall accept SNF and HLW for transport to the MRS or MGDS at the receipt rate shown in Table 3-2. [HLW: DOE/RW-0316P] [SNF 1998-2008: DOE/RW-0331P] [SNF 1998-2034: CRWMS M&O TSO.920427.0346] <TBR>

C. (WA) WA shall work with Transportation to establish cleanliness requirements for the interior of the transportation cask for the beginning of each shipping campaign with each Purchaser/Producer. [Derived]

D. (WA) WA shall identify and document the site interface capabilities for each Purchaser/Producer. [Derived]

E. (WA) WA shall verify that cask systems are provided with an appropriate feature, which is not readily breakable, and which, while intact, would be evidence that the cask has not been opened by unauthorized persons. [10CFR71.43(b)]

F. (WA) WA shall ensure that pertinent information on transportation cask systems have been provided to the Purchaser/Producer prior to each shipping campaign including, but not limited to, the following:

(1) Written procedures for cask handling and loading, including specifications on Purchaser/Producer-furnished canisters for containment of failed fuel.

(2) Training for Purchaser's/Producer's personnel in cask handling and loading, as may be necessary.

(3) Technical information and sufficient documentation on the equipment supplied by CRWMS.

[10CFR961.11 Article IV.B.2]

3.2.4 [Reserved]

3.2.5 [Reserved]

3.2.6 [Reserved]

3.2.7 [Reserved]

3.2.8 [Reserved]

3.2.9 [Reserved]

3.3 DESIGN AND CONSTRUCTION

Requirements regarding design and construction of physical facilities are not applicable to WA since no facility has been allocated to it. If a facility is allocated to WA, the appropriate requirements in the CRWMS Requirements document are applicable.

3.3.1 [Reserved]

3.3.2 [Reserved]

3.3.3 [Reserved]

3.3.4 [Reserved]

3.3.5 [Reserved]

3.3.6 Safety

(WA) WA work places shall be free from recognized hazards that are causing or likely to cause death or serious physical harm to employees and comply with occupational safety and health standards promulgated under 29USC651 et. seq., (654(a) - (b)). [29USC651 et seq., (654 (a) - (b))]

3.3.7 Human Factors Engineering

(WA) Design of computer software and firmware that provides an interface between users and computers should comply with or be comparable to the guidelines and requirements identified in Guidelines for Designing User Interface Software MTR 10090 for data entry and user inputs, data display, sequence control, user guidance and prompts, data transmission, and data protection. [CRD]

3.3.8 Methods and Controls

3.3.8.1 Material Management

(WA) Measures shall be established to ensure that purchased material, equipment, and services conform to procurement documents. [CRD]

3.3.8.2 Inventory Control

3.3.8.2.1 Radioactive Material Inventory

A. (WA) WA shall establish, maintain, and follow written material control and accounting procedures that enable the CRWMS to account for material in transit, storage, and disposal. [CRD]

B. (WA) WA shall retain copies of current inventory records and current material control and accounting procedures until the NRC terminates the last license held by the CRWMS. [CRD]

3.3.9 Government Furnished Property

A. (WA) WA Design Requirements documents shall identify, as appropriate, any property to be furnished by the U.S. Government. [CRD]

B. (WA) Requirements pertaining to the receipt, maintenance, operation and disposal of Government furnished property shall be specified in WA Design Requirement documents, as appropriate. [CRD]

3.3.10 Computer Resources

A. (WA) Computer resources are to be addressed in WA Design Requirements documents, as appropriate. [CRD]

B. (WA) The design of WA computer systems shall provide the intercompatability of CRWMS computer resources, including hardware and software. The design goal shall be to allow for common use databases and information by all CRWMS elements. [CRD]

3.3.11 Environmental Protection Requirements

See section 3.7.1.2.1.2.12 and 3.7.3.2.1E for requirement on hazardous waste determination.

3.4 DOCUMENTATION

3.4.1 [Reserved]

3.4.2 [Reserved]

3.4.3 [Reserved]

3.4.4 Test Plans and Procedures

(WA, Purchaser, Producer) Through test and evaluation, conformance of the system element's requirements shall be demonstrated as required in the verification matrix in Table 4-1. [CRD]

3.4.5 Quality Assurance Documentation

(WA) Quality Assurance documents shall be prepared, maintained, and stored in accordance with the requirements specified in OCRWM QARD or equivalent OCRWM approved QA program. [CRD]

3.4.6 [Reserved]

3.4.7 Computer Documentation

(WA) Quality affecting analytical and computational models and software user documentation developed for WA shall be prepared in accordance with the OCRWM QARD. [DOE/RW-0214]

3.4.8 Records Management

A. (WA) WA shall maintain sufficient records to furnish evidence of activities affecting quality. [DOE/RW-0214][DOE/RW-0194P Sections 6.1 and 6.4b]

B. (WA) Records shall be identifiable, traceable to associated items and activities, and retrievable. [DOE/RW-0214]

3.5 [Reserved]

3.6 PERSONNEL AND TRAINING

3.6.1 [Reserved]

3.6.2 Training

Training may be accomplished through a combination of formal structured programs and on-the-job training. Training requirements include both the training of personnel initially assigned to WA and the training of replacement personnel throughout the system life cycle as required. Training will address both operator and maintenance tasks.

3.6.2.1 General Requirements

(WA) A training requirements document for WA shall be provided to identify requirements of operator and maintenance training for facilities, hardware, and software procured or constructed for the CRWMS. The document shall address the following subjects:

(1) The contractor and government responsibility for training shall be defined. This will include the concept of how training will be accomplished (e.g., school, contractor training).

(2) Equipment required for training purposes shall be identified.

(3) Training devices to be developed, characteristics of the training devices, and training and skills to be developed through the use of training devices shall be identified.

(4) Training time and locations available for training shall be identified.

(5) Source material and training aids to support the specified training shall be identified.

[CRD]

3.7 SEGMENT REQUIREMENTS

3.7.1 Contract/Agreement Management Segment

3.7.1.1 Contract/Agreement Management Segment Description

This segment provides the contract/agreement between DOE and each Purchaser/Producer who generates or holds title to HLW or SNF, and the databases to track the planning and scheduling process for acceptance of the waste into the CRWMS.

This segment includes the following:

A. **Contract/Agreement.** WA supports DOE entering into contract/agreement with Purchasers/Producers. This includes establishing terms and conditions for waste acceptance and related services, identifying responsibilities of each party, defining the waste form (SNF, HLW, and nonstandard waste) and any changes or maintenance to the contracts/agreements. Purchasers/Producers must execute a contract or a suitable intra-agency agreement with DOE reflecting the intent of the contract as specified in 10CFR961.

B. **Databases.** WA tracks the information gathered to support the planning and scheduling process. The information that must be maintained includes (but is not limited to) waste inventory characteristics, Acceptance Priority Ranking (APR), Annual Capacity Report (ACR), Delivery Commitment Schedules (DCS), Final Delivery Schedules (FDS), and issue analysis.

3.7.1.1.1 Contract/Agreement Management Segment Functions

This segment shall be capable of performing all functions assigned to it in Table B-1 in Appendix B. These functions are:

A. Accept Waste (1.1)
B. Define Waste Acceptance Criteria (1.1.1)
C. Establish Contracts/Agreements (1.1.2)
D. Plan for Waste Acceptance (1.1.3)
E. Allocate Waste System Capacity (1.1.3.1)
F. Collect Waste Data (1.1.3.1.1)
G. Rank/Order Waste (1.1.3.1.2)
H. Allocate Annual Capacity to Purchasers/Producers (1.1.3.1.3)
I. Identify Waste Location/Characteristics (1.1.3.2)
J. Evaluate Delivery Commitment Schedule (DCS) (1.1.3.2.1)
K. Evaluate Exchange Requests (1.1.3.2.2)
L. Evaluate Request for Nonstandard Waste Delivery (1.1.3.2.3)
M. Evaluate Final Delivery Schedule (FDS) (1.1.3.2.4)
N. Define Site Interface Capabilities (1.1.3.3)

O. Provide Fee Collection (1.1.6)

Descriptions for these functions are included in Appendix A.

3.7.1.1.2 Contract/Agreement Management Segment Interfaces

The lower level Design Requirements documents identify, describe, and specify requirements for interfaces between segments.

3.7.1.2 Contract/Agreement Management Segment Requirements

3.7.1.2.1 Waste Form Criteria

A. (WA, Purchaser, Producer) All radioactive waste (both SNF and HLW) accepted into the CRWMS for disposal at the MGDS shall be designed to meet the following criteria. Consistent with established agreements, DOE may be responsible for ensuring that certain waste types meet this requirement.

(1) (Purchaser, Producer) Radioactive waste shall be in solid form.

(2) (Purchaser, Producer) Particulate waste forms shall be consolidated (for example, by incorporation into an encapsulating matrix) to limit the availability and generation of particulates.

(3) (Purchaser, Producer) Combustible radioactive wastes shall be reduced to noncombustible form unless it can be demonstrated that a fire involving the waste packages containing combustibles will not adversely affect other waste packages, any structures, systems, and components important to safety, or the repository's ability for waste isolation.

[10CFR60.135(c)]

B. (WA, Purchaser, Producer) The waste form shall not contribute to free liquids in the waste packages to an amount that could compromise the ability of the waste package to achieve the performance objectives related to containment of the waste form or result in spillage and spread of contamination in the event of waste package perforation during the period through permanent closure. [10CFR60.135(b)(2)]

C. (WA, Purchaser, Producer) The waste form shall not contain explosive, pyrophoric, or chemically reactive materials in an amount that could compromise the repository's ability for waste isolation or the repository's ability to satisfy the performance objectives. [10CFR60.135(b)(1)]

D. (WA, Purchaser, Producer) If the waste form does not meet the criteria specified in parts A, B, and C, then the waste form shall not be accepted into the CRWMS. [Derived]

3.7.1.2.1.1 SNF Specifications

(WA) WA shall accept standard, failed, and nonstandard SNF of domestic origin described in sections 3.7.1.2.1.1.1, 3.7.1.2.1.1.2, and 3.7.1.2.1.1.3, respectively. [10CFR961.11 Article IV.B.1]

3.7.1.2.1.1.1 SNF Standard Form

(Purchaser) Standard SNF shall meet the criteria specified in 10CFR961.11 Appendix E.B.1 through E.B.5.[1] [10CFR961.11 Appendix E.B.1 through E.B.5]

3.7.1.2.1.1.2 SNF Failed Form

(Purchaser) Failed SNF shall meet the criteria specified in 10CFR961.11 Appendix E.B.6. [10CFR961.11 Appendix E.B.6]

3.7.1.2.1.1.3 SNF Nonstandard Form

(Purchaser) The nonstandard SNF shall be any SNF that does not fall within the standard or failed SNF description in sections 3.7.1.2.1.1.1 and 3.7.1.2.1.1.2, respectively. [10CFR961.11 Appendix E.A.1(b)]

The procedures for acceptance of nonstandard SNF are described in section 3.7.1.2.8A.

3.7.1.2.1.1.4 SNF Data

A. (Purchaser) Beginning October 1, 1983, the Purchasers shall provide to DOE, on an annual basis, one of the following:

(1) Information on actual discharges, and projected discharges for the next 10 years in the form and content set forth in 10CFR961 Appendix B [10CFR961.11 Article IV.A.1(a)] or

(2) Information on the Nuclear Fuel Data Form RW-859 for the next 5 cycles. [Derived]

The information to be provided should include estimates and projections and are not firm commitments with respect to discharges or deliveries. [10CFR961.11 Article IV.A.1(a)]

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[1] SNF will be quantified in a subsequent revision of the WA-SRD.

B. (Purchaser) Purchasers shall provide to DOE a detailed description of the SNF to be delivered, as specified in 10CFR961.11 Appendix F and shall promptly advise DOE of any changes in said SNF as soon as they become known. [10CFR961.11 Article VI.A.2(a)]

3.7.1.2.1.2 HLW Specifications

(WA) WA shall accept standard and nonstandard HLW described in sections 3.7.1.2.1.2.1 and 3.7.1.2.1.2.3, respectively. [Derived]

Detailed design requirements are to be addressed in the WA Design Requirements document.

3.7.1.2.1.2.1 HLW Standard Form

A. (Producer) The standard canistered HLW form[1] shall be borosilicate glass sealed inside an austenitic stainless steel canister(s) with a concentric neck and lifting flange. [Derived]

B. (Producer) The standard canistered HLW form shall meet the following criteria:

(1) (Producer) Total length shall be 3.000 meters (+0.005, -0.020 m).[2] [Derived]

(2) (Producer) Diameter shall be 61.0 centimeters (+1.5, -1.0 cm).[2] [Derived]

(3) (Producer) Weight shall not exceed 2500 kilograms. [Derived]

(4) (Producer) Fill height shall be equivalent to at least 80% of the volume of the empty canister. [Derived]

(5) (Producer) Total heat generation rate shall not exceed 1500 watts per canister at the year of shipment. [Derived]

(6) (Producer) Temperature shall not have exceeded 400°C during storage to ensure the glass transition temperature has not been exceeded. [Derived]

(7) (Producer) Inert cover gas leak rate of the outermost closure shall be less than $(10)^{-4}$ atm-cc/sec. [Derived]

(8) (Producer) Canister shall be labelled with unique alphanumeric identifier as described in section 3.7.1.2.1.2.15. [10CFR60.135(b)(4)]

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[1]Other standard HLW forms will be defined in subsequent revisions of the WA-SRD.

[2]The minimum dimension may be measured prior to filling.

3.7.1.2.1.2.2 HLW Nonconforming Form

(Producer) The nonconforming canistered HLW form shall be any HLW that does not conform with the HLW characteristics in sections 3.7.1.2.1.2.1 and 3.7.1.2.1.2.4 through 3.7.1.2.1.2.18. [Derived]

The procedures for acceptance of nonconforming canistered HLW are described in sections 3.7.1.2.8 and 3.9.

3.7.1.2.1.2.3 HLW Nonstandard Form

(Producer) The nonstandard canistered HLW form shall be any HLW with nonconforming conditions that have been reviewed and deemed acceptable into the CRWMS. Nonstandard canistered HLW may also be in a condition which requires special handling. [Derived]

The procedure for acceptance of nonstandard HLW is described in section 3.7.1.2.8A.

3.7.1.2.1.2.4 Criticality Safety for HLW

(Producer) The Producer shall design a waste form to ensure that a nuclear criticality accident is not possible unless at least two unlikely, independent, and concurrent or sequential changes have occurred in the conditions essential to nuclear criticality safety. The waste form shall be designed for criticality safety under normal and accident conditions. The calculated effective multiplication factor (k_{eff}) shall be sufficiently below unity to show at least a 5% margin, after allowance for the bias in the method of calculation, the uncertainty in the experiments used to validate the method of calculation. [10CFR60.131(b)(7)][10CFR71.55]

3.7.1.2.1.2.5 Waste Form - Material Compatibility

(Producer) The contents of the canistered waste form shall not lead to internal corrosion of the canister such that there will be an adverse effect on normal handling, during storage, and on abnormal occurrence such as a canister drop accident after exposure to temperatures up to the glass transition temperature. [Derived]

3.7.1.2.1.2.6 Chemical Composition

A. (Producer) The Producer shall report to DOE/OCRWM the chemical composition and crystalline phase projections for the waste form. [Derived]

B. (Producer) The Producer shall report to DOE/OCRWM the oxide composition of the waste form for the oxides of elements present in concentrations greater than 0.5% by weight and the estimate of the error of the composition. [Derived]

3.7.1.2.1.2.7 Canister Material and Fabrication Reporting

(Producer) The Producer shall report to DOE/OCRWM the ASTM alloy specification and composition of the fill canister material, secondary canister material, canister label material, and any filler material used for welding, and the method of fabrication of the fill canister and any secondary canister. [Derived]

3.7.1.2.1.2.8 Radionuclide Inventory

(Producer) The Producer shall report to DOE/OCRWM the estimated total and individual canister inventory of radionuclides (in Curies) that have half-lives longer than 10 years and that are or will be present in concentrations greater than 0.05% of the total radioactive inventory. The estimates shall be indexed to the year 2015. [Derived]

3.7.1.2.1.2.9 Canister After Closure

(Producer) After closure, the canistered waste form shall not contain:

A. Free gas other than air, cover, and radiogenic gases with an immediate internal gas pressure not to exceed 150 kPa (22 psia) at 25°C. Cover gases shall be helium, argon, or other inert gases. [Derived]

B. Detectable amounts of organic materials. [Derived]

3.7.1.2.1.2.10 Removable Radioactive Contamination on Canister

A. (Producer) The levels of removable radioactive contamination of all external surfaces of each canistered waste form shall not exceed 220 dpm/100 cm^2 for alpha radiation and 2200 dpm/100 cm^2 for beta and gamma radiation. [Derived]

B. (Producer) The Producer shall inspect the canistered waste form and remove visible waste glass from the exterior surface of the canister prior to shipment. [Derived]

C. (Producer) The Producer shall report to DOE/OCRWM an estimate of the amount of canister material (particularly wall thickness) removed during decontamination of the canister surface. [Derived]

3.7.1.2.1.2.11 HLW Phase Stability and Integrity

A. (Producer) The Producer shall ensure the phase structure and composition of the canistered waste form are not degraded after initial cooldown by maintaining it below 400°C to ensure the glass transition temperature is not exceeded. [Derived]

B. (Producer) The Producer shall provide the Time Temperature Transformation diagrams and data for the canistered waste form. [Derived]

3.7.1.2.1.2.12 Hazardous Waste Determination

(WA, Producer) WA shall require the Producer to determine if the HLW is hazardous as follows:

A. (Producer) The Producer shall determine, quantify, and report to DOE/OCRWM the presence of any hazardous waste listed in 40CFR261.31 through 40CFR261.33, in the waste or in any feed stream proposed for storage or disposal. The listed waste must be quantified in the WQR, or their absence must be certified in the WQR. [Derived]

B. (Producer) If no "listed hazardous wastes" are present in the waste or in any feed stream, the Producer shall perform the "Toxicity Characteristic Leaching Procedure" (TCLP) as described in 55 *Federal Register* 26986, 6/29/90, and other RCRA characteristic test(s) described in 40CFR261.20 through 261.24 as appropriate, using samples from production runs or prototypical specimens. Any modifications must have prior DOE/OCRWM approval. The method to be used must be described in the WCP and results documented in the WQR. [Derived]

C. (Producer) Based on the results of A and B above, the Producer shall certify in the WQR whether or not the waste is hazardous. [Derived]

D. (Producer) For hazardous wastes, the Producer shall prepare "Hazardous Waste Manifest" logs as required by 40CFR262. These logs must be included in the Production Records and must accompany waste during shipment. [Derived]

3.7.1.2.1.2.13 Consistency Test

A. (Producer) The Producer shall demonstrate control of waste form production by comparing (either directly or indirectly) melter batch production samples to the Environmental Assessment (EA) benchmark glass using the Product Consistency Test (PCT) or equivalent. [Derived] **<TBR>**

B. (Producer) For acceptance, the concentrations of lithium, sodium, and boron in the leachate, after normalization for the concentrations in the glass, shall be less than those of the benchmark glass. [Derived] **<TBR>**

3.7.1.2.1.2.14 Canister Impact Characteristics

(Producer) The canistered HLW shall be capable of withstanding a drop of 7 meters onto a flat, essentially unyielding surface without breaching or dispersing radionuclides. The test results shall include information on the measured canister leak rates and canister deformation after the drop test. [Derived] **<TBR>**

3.7.1.2.1.2.15 Canister Label Requirements

(Producer) Each canistered waste form label shall meet the following criteria:

A. The label must have a unique alphanumeric identifier and this identifier must appear on all documentation pertinent to that particular canistered waste form.

B. The label must not impair the integrity of the canister.

C. The label must be a material compatible with the canister material.

D. The label must be visible from the top and side of the canister.

E. The label must not cause the dimensional limits to be exceeded.

F. The label must be an integral part of the canister to assist in remaining legible at least to the end of the period of retrievability at the MGDS.

[Derived]

3.7.1.2.1.2.16 Canister Handling Features

(Producer) The following requirements pertain to the grapple used in the handling of the standard HLW canister that includes a concentric neck and lifting flange. (see section 3.7.1.2.1.2.1 for dimensions)

A. (Producer) The Producer shall provide a grapple design suitable for use in loading or unloading a transportation cask with a standard HLW canister. [Derived]

B. (Producer) The grapple, when attached to the hoist and engaged with the flange, shall be capable of moving the canistered waste form in the vertical direction. [Derived]

C. (Producer) The grapple shall be capable of being remotely engaged with and remotely disengaged from the HLW canister flange. [Derived]

D. (Producer) The grapple shall be capable of being engaged or disengaged while remaining within the projected diameter of the waste form canister. [Derived]

E. (Producer) The grapple shall include features that prevent inadvertent release of a suspended canistered waste form. [Derived]

3.7.1.2.1.2.17 Dose Rate at Shipment

(Producer) The canistered waste form shall not exceed a maximum surface gamma dose rate of 10^5 rem/hr and a maximum neutron dose rate of 10 rem/hr, at the year of shipment to the MGDS. [Derived]

3.7.1.2.1.2.18 HLW Condition at Delivery

(Producer) At time of delivery, the HLW shall stand upright without support on a flat horizontal surface and properly fit into a right-circular, cylindrical cavity (64 cm diameter and 3.01 m length). [Derived]

3.7.1.2.1.2.19 Records

(WA, Producer) WA shall require the Producer to submit documentation to DOE/OCRWM to demonstrate compliance of the HLW form with this WA-SRD in accordance with the requirements of OCRWM QARD section 17. DOE-EM, as the cognizant organization within DOE for HLW form production, shall produce waste form production specifications, which describe the form and content of this document. As a minimum, this documentation will include a Waste Form Compliance Plan, a Waste Form Qualification Record, Production Records, and Storage and Shipping Records. [DOE/RW-0214]

3.7.1.2.1.2.19.1 Waste Form Compliance Plan (WCP)

(Producer) The WCP shall describe the Producer's plan for demonstrating compliance with each requirement in the WA-SRD, including tests, analyses, and process controls to be performed by the Producer. The WCP will also identify records that will be provided as evidence of compliance. [DOE/RW-0214]

3.7.1.2.1.2.19.2 Waste Form Qualification Report (WQR)

(Producer) The WQR shall compile the results from waste form testing and analysis to demonstrate the ability of the Producer to comply with the WA-SRD. [DOE/RW-0214]

3.7.1.2.1.2.19.3 Production Record

(Producer) The Production Records shall describe the actual canistered waste form. [DOE/RW-0214]

3.7.1.2.1.2.19.4 Storage and Shipping Record

(Producer) The Storage and Shipping Record shall describe the physical attributes of each canistered waste form and identify any unexpected events, such as thermal excursions, which have occurred during storage. [DOE/RW-0214]

3.7.1.2.1.2.20 HLW Annual Report

(Producer) Producer shall provide annual reports of waste generation and projections of quantities of vitrified HLW requiring disposal. [Derived]

3.7.1.2.2 Contract/Agreement

Note: For the purposes of this section (3.7.1.2.2), NYSERDA is considered a "Purchaser" for contract/agreement requirements.

A. (DOE/RW) The DOE shall enter into contracts/agreements with any person who generates or holds title to high-level radioactive waste, or spent nuclear fuel, of domestic origin for the acceptance of title. [NWPA Section 302 (a)(1)]

B. (DOE/RW, WA) The DOE (WA) shall accept title to all SNF and/or HLW, of domestic origin for which fees have been paid, generated by the civilian nuclear power reactor(s) specified in Appendix A of 10CFR961. [10CFR961.11 Article IV.B.1] [DOE/RW-0328P]

C. (WA) Except as provided in the contracts/agreements, WA shall accept only SNF and/or HLW that meets the General Specification and classifications requirements for waste as set forth in Appendix E of 10CFR961. [10CFR961.11 Article V.A] [10CFR961.11 Article VI.A.1]

D. (DOE/RW, Purchaser) After June 30, 1983, the contract with DOE/OCRWM shall be signed by the date on which the Purchaser commences generation of, or takes title to, such SNF or HLW. [10CFR961.2]

E. (DOE/RW, Purchaser, Producer) Federal agencies or departments requiring disposal service in CRWMS shall execute a suitable interagency agreement reflecting the terms and conditions specified in 10CRF961.11. Fees to be paid by Federal agencies will be equivalent to the fees that would be paid under the 10CFR961 contract. [10CFR961.5]

F. (DOE/RW, WA, Purchaser) The terms of the contract shall begin at the date of execution until such time DOE has accepted title to all SNF and HLW. [10CFR961.11 Article III]

G. (WA, Purchaser) No SNF shall be disposed of in the CRWMS repository unless the Purchaser has entered into a contract with DOE/OCRWM as specified in the NWPA Sec. 302(b)(2). [NWPA Section 302(b)(2)]

H. (DOE/RW, WA, Producer) The DOE/RW shall accept title to defense HLW. [Presidential Memo 1985]

3.7.1.2.3 Acceptance Priority Ranking

(DOE/RW) DOE shall issue the acceptance priority ranking for SNF and/or HLW as specified in 10CFR961.11 Articles IV.B.5 and VI.B.1. [10CFR961.11 Article IV.B.5][10CFR961.11 Article VI.B.1]

3.7.1.2.4 Annual Capacity Report

(DOE/RW) DOE shall issue an annual capacity report for planning purposes for SNF as specified in 10CFR961.11 Article IV.B.5. [10CFR961.11 Article IV.B.5]

3.7.1.2.5 Emergency Deliveries

(DOE/RW) Emergency deliveries of SNF and/or HLW may be accepted by DOE before the date provided in the delivery commitment schedule upon prior written approval by DOE. [10CFR961.11 Article V.D]

3.7.1.2.6 Delivery Commitment Schedules

A. (Purchaser) Beginning January 1, 1992, the Purchasers shall submit to DOE the delivery commitment schedules (DCS) for all SNF the Purchasers wish to deliver to DOE beginning 63 months thereafter. The DCS should be in the format set forth in Appendix C of 10CFR961 as provided in OMB approved form number 1901-0260. [10CFR961.11 Article V.B.1]

B. (DOE/RW) DOE shall approve or disapprove of the Purchaser's DCS within 3 months after receipt, and must notify the Purchaser in writing of the reasons for disapproval. DOE must request the Purchaser to submit a revised DCS within 30 days after receipt of DOE's disapproval. [10CFR961.11 Article V.B.1]

C. (DOE/RW) DOE shall approve or disapprove the Purchaser's revised DCS within 60 days after receipt. In the event of disapproval, DOE must advise the Purchaser in writing of the reasons and proposed schedules, and if the reasons and proposed schedules are not acceptable to the Purchaser, the parties must promptly try to negotiate mutually acceptable schedule(s). [10CFR961.11 Article V.B.2]

D. (DOE/RW, Purchaser) The Purchaser shall have the right to adjust the quantities of SNF and/or HLW plus or minus 20%, and the delivery schedule up to 2 months, until the submission of the final delivery schedule. [10CFR961.11 Article V.B.2]

E. (DOE/RW) If the Purchaser fails to provide the annual forecast discussed in section 3.7.1.2.1.1.4A, DOE may, at its sole discretion, require a rescheduling of any DCS then in effect. [10CFR961.11 Article IV.A.1(c)]

3.7.1.2.7 Exchange Requests

A. (Purchaser) Not less than 6 months prior to the delivery date specified in the Purchaser's approved DCS, the Purchaser shall be allowed to submit to DOE an exchange request as specified in 10CFR961.11 Article V.E. [10CFR961.11 Article V.E]

B. (DOE/RW) DOE shall approve or disapprove the proposed exchange request within 30 days after receipt. In the event of disapproval, DOE must advise the Purchaser in writing of the reasons. [10CFR961.11 Article V.E]

3.7.1.2.8 Request for Nonstandard or Nonconforming Waste Delivery

A. (DOE/RW, Purchaser, Producer) Purchaser/Producer shall obtain delivery and procedure confirmation from DOE prior to delivery of other-than-standard waste (failed SNF and nonstandard SNF/HLW). DOE shall advise Purchaser/Producer within 60 days after receipt of confirmation request as to the technical feasibility of accepting of the other-than-standard waste on the currently agreed to schedule, and any schedule adjustment for such services. [10CFR961.11 Article VI.A.2(b)]

B. (Producer) Producer shall submit action plan for correction or disposition of nonconforming waste for verification and documented approval. The action plan must adequately identify and describe the nonconformance and any action to change or correct the existing nonconformance. The action plan must be signed by authorized personnel/organization. [DOE/RW-0214, p. 15-1 (Section 15.0 - 15.2)]

3.7.1.2.9 Final Delivery Schedules

A. (Purchaser) The Purchaser shall submit to DOE, not less than 12 months prior to delivery, final delivery schedule(s) (FDS) as specified in 10CFR961.11 Appendix D. [10CFR961.11 Article V.C]

B. (DOE/RW, Purchaser) DOE shall approve or disapprove a FDS within 45 days after receipt. In the event of disapproval, DOE must advise the Purchaser in writing of the reasons, and request a revised schedule. The Purchaser shall submit the revised schedule within 30 days after receipt of DOE's notice of disapproval. [10CFR961.11 Article V.C]

C. (DOE/RW) DOE shall approve or disapprove the revised FDS submitted by the Purchaser within 60 days after receipt. If DOE disapproves the revised schedule, the reasons for disapproval must be provided in writing to the Purchaser, along with DOE's proposed schedule. If these are not acceptable to the Purchaser, the parties must promptly seek to negotiate mutually acceptable schedules. [10CFR961.11 Article V.C]

3.7.1.2.10 Final Description of Waste

(Purchaser, Producer) Except as otherwise agreed to by DOE, the Purchaser/Producer shall describe in writing the material in each shipping lot 60 days prior to the scheduled DOE transportation of that shipping lot. [10CFR961.11 Article IV.A.2(b)]

3.7.2 Waste Fund Management Segment

3.7.2.1 Waste Fund Management Segment Description

This segment consists of the analysis and management of the Nuclear Waste Fund for CRWMS. It includes the databases for tracking collection of fees, determining the adequacy of the fee paid by Purchasers and Producers and any needed financial risk assessment.

3.7.2.1.1 Waste Fund Management Segment Functions

This segment shall be capable of performing all functions assigned to it in Table B-1 in Appendix B. These functions are:

A. Accept Waste (1.1)
B. Provide Fee Collection (1.1.6)

Descriptions for these functions are included in Appendix A.

3.7.2.1.2 Waste Fund Management Segment Interfaces

The lower level Design Requirements documents identify, describe, and specify requirements for interfaces between segments.

3.7.2.2 Waste Fund Management Segment Requirements

A. (DOE/RW) Procedures for the collection and payment of fees shall be established by the Secretary of Energy as specified in the NWPA Section 302. [NWPA Section 302(a)(4)]

B. (DOE/RW) The Secretary of Energy shall annually review the amount of the fees established to evaluate whether the amount will be sufficient to offset the costs. [NWPA Section 302(a)(4)]

C. (DOE/RW) DOE shall annually review the adequacy of the fee and propose an adjustment, if necessary, in order to ensure full cost recovery by the Government. Any proposed adjustment to the said fee will be transmitted to Congress and shall be effective after a period of 90 days of continuous session has elapsed following receipt of such transmittal unless either House of Congress adopts a resolution disapproving the proposed adjustment. [NWPA Section 302(a)(4)] [10CFR961.11 Article VIII.A.4]

D. (Purchaser) Effective April 7, 1983, Purchaser shall be charged a fee in the amount of 1.0 mill per kilowatt hour (1M/kWh) electricity generated and sold. [10CFR961.11 Article VIII.A.1]

E. (Purchaser) Payment shall be made as specified in 10CFR961.11 Article VIII.B. [10CFR961.11 Article VIII.B]

F. (DOE/RW) All receipts, proceeds, and revenues realized by DOE under the contract shall be deposited in the Nuclear Waste Fund, as established in the U.S. Treasury. [10CFR961.1]

3.7.3 Waste Acceptance Management Segment

3.7.3.1 Waste Acceptance Management Segment Description

This segment provides the procedures and personnel required to accept the custody of the waste in accordance with established contracts/agreements. It includes inspecting the waste at the Purchaser/Producer site while it is being prepared and loaded into the transportation cask, ensuring the proper type of transportation cask system is delivered to the Purchaser/Producer site, and accepting the waste into the CRWMS with all required documentation.

3.7.3.1.1 Waste Acceptance Management Segment Functions

This segment shall be capable of performing all functions assigned to it in Table B-1 in Appendix B. These functions are:

A. Accept Waste (1.1)
B. Accept Waste Custody (1.1.4)
C. Observe Waste Preparations (1.1.4.1)
D. Observe Preliminary Waste Preparations (1.1.4.1.1)
E. Verify Waste Description (1.1.4.1.2)
F. Notify Purchaser/Producer of Improperly Described Waste (1.1.4.1.3)
G. Accept Title/Documentation (1.1.4.2)
H. Resolve Improperly Described Waste (1.1.5)

Descriptions for these functions are included in Appendix A.

3.7.3.1.2 Waste Acceptance Management Segment Interfaces

The lower level Design Requirements documents identify, describe, and specify requirements for interfaces between segments.

3.7.3.2 Waste Acceptance Management Segment Requirements

3.7.3.2.1 Shipping Records

(Purchaser, Producer) The Purchaser/Producer shall provide written documentation and certification:

A. (Purchaser, Producer) Of cask conditions and contents prior to transfer to the receiving party in accordance with 10CFR961.11 Article VI.B.2. [10CFR71.5a][10CFR961.11 Article VI.B.2]

B. (Purchaser, Producer) That the transportation cask system has been packaged to meet DOE, DOT, and NRC requirements, and to transfer care, custody and control of the shipment. [10CFR71.5a][10CFR961.11 Article VI.B.2][10CFR961.11 Appendix E.B.6(c)] [49CFR172.204(a)]

C. (Purchaser, Producer) Of the name of each radionuclide that is listed in 49CFR173.435, in order of decreasing radiotoxicity, whose activity comprises 1% or greater of the total activity at the time of shipment. [Derived]

D. (Producer only) That the standard HLW form did not exceed 400°C to ensure the glass transition temperature was not exceeded. [Derived]

E. (Producer only) Of the hazardous waste classification for land disposal. [40CFR262]

3.7.3.2.2 Fee Receipt Determination

(DOE/RW) No HLW or SNF generated or owned by any Department of the United States shall be disposed of in the CRWMS unless fees have been deposited in the Nuclear Waste Fund equivalent to the fees that would be paid if the waste were generated by civilian nuclear power reactors. [NWPA Section 302(b)(4)]

3.7.3.2.3 Routine Determinations

(Purchaser, Producer) Prior to each shipment of licensed material, the Purchaser/Producer shall ensure the transportation cask with its contents satisfies the applicable requirements of 10CFR71.87. [10CFR71.87]

3.7.3.2.4 Title Transfer

A. (DOE/RW) Delivery and acceptance in writing by DOE of any SNF and/or HLW at a DOE facility shall constitute a transfer of title to DOE of the SNF and/or HLW. [NWPA Section 123] [10CFR961.11 Article I.10] [10CFR961.11 Article II]

B. (DOE/RW, Producer) DOE/OCRWM shall accept HLW at a designated loading facility adjacent to the Producer's HLW facility. [DHLW: MOA between DP and RW, 1986] [CHLW: Derived] <TBR>

C. (DOE/RW, Purchaser, Producer) Title to SNF and/or HLW shall transfer to DOE at the Purchaser's/Producer's site. DOE shall be solely responsible for control of all material upon transfer of title. DOE has the right to dispose, as it sees fit, of any SNF and/or HLW to which it has taken title. Purchasers/Producers shall have no claim against DOE or the Government for such SNF or HLW, nor shall the Government be obligated to compensate the Purchaser/Producer for such material. [Purchaser: 10CFR961.11 Article VII] [Producer: Derived]

3.7.3.2.5 Observation by DOE

A. (DOE/RW, Purchaser, Producer) DOE/OCRWM may designate a representative(s) to observe the preparatory activities conducted at the Purchaser's/Producer's site. The Purchaser/Producer shall allow the designated representative(s) access to the site. [Purchaser: 10CFR961.11 Article IV.A.2(a)] [Producer: Derived]

B. (DOE/RW, Purchaser, Producer) DOE/OCRWM shall verify the description of the SNF and/or HLW during transportation cask loading and prior to acceptance, in accordance with 10CFR961.11 Appendices E and F. [Purchaser: 10CFR961.11 Article VI.B.2] [Producer: Derived]

3.7.3.2.6 Notification of Improperly Described Waste Prior to Acceptance into CRWMS

(WA, Purchaser, Producer) If SNF and/or HLW is determined by WA to be improperly described prior to acceptance by DOE/OCRWM at the Purchaser's/Producer's site, WA shall promptly notify the Purchaser/Producer in writing. DOE/OCRWM reserves the right to refuse to accept improperly described waste. The Purchaser/Producer must not transfer title of improperly described SNF and/or HLW unless DOE/OCRWM agrees to accept title under other arrangements agreed to in writing by the parties. [Purchaser: 10CFR961.11 Article VI.B.3(a)][Producer: DOE/RW-0214]

3.7.4 Support Segment

3.7.4.1 Support Segment Description

This segment provides the facilities, equipment and personnel required to support WA planning and operation. It includes administrative and support facilities (a complex for all of the administrative and personnel services necessary for operation of WA; it may be co-located with another CRWMS facility), support equipment, ADP support, and records/data management (Facility Interface Capability Assessment studies, storage requirements).

3.7.4.1.1 Support Segment Functions

This segment shall be capable of performing all functions assigned to it in Table B-1 in Appendix B. These functions are:

A. Accept Waste (1.1)
B. Define Waste Acceptance Criteria (1.1.1)
C. Establish Contracts/Agreements (1.1.2)
D. Plan for Waste Acceptance (1.1.3)
E. Allocate Waste System Capacity (1.1.3.1)
F. Collect Waste Data (1.1.3.1.1)
G. Rank/Order Waste (1.1.3.1.2)
H. Allocate Annual Capacity to Purchasers/Producers (1.1.3.1.3)
I. Identify Waste Location/Characteristics (1.1.3.2)
J. Evaluate DCS (1.1.3.2.1)
K. Evaluate Exchange Requests (1.1.3.2.2)
L. Evaluate Request for Nonstandard Waste Delivery (1.1.3.2.3)
M. Evaluate FDS (1.1.3.2.4)
N. Define Site Interface Capabilities (1.1.3.3)
O. Accept Waste Custody (1.1.4)
P. Observe Waste Preparations (1.1.4.1)
Q. Observe Preliminary Waste Preparations (1.1.4.1.1)
R. Verify Waste Description (1.1.4.1.2)
S. Notify Purchaser/Producer of Improperly Described Waste (1.1.4.1.3)
T. Accept Title/Documentation (1.1.4.2)
U. Resolve Improperly Described Waste (1.1.5)
V. Provide Fee Collection (1.1.6)

Descriptions for these functions are included in Appendix A.

3.7.4.1.2 Support Segment Interfaces

The lower level Design Requirements documents identify, describe, and specify requirements for interfaces between segments.

3.7.4.2 Support Segment Requirements

3.7.4.2.1 Resolution of Improperly Described Waste After Acceptance into CRWMS

(WA, Purchaser, Producer) If subsequent to its acceptance, WA finds SNF and/or HLW is improperly described, WA shall promptly notify the Purchaser/Producer in writing of such a finding. In this event, the Purchaser/Producer must provide WA with a proper description within 30 days. In the event that the Purchaser/Producer fails to provide the proper description, DOE may hold in abeyance any and all further deliveries scheduled. [10CFR961.11 Article VI.B.3(b)][DOE/RW-0214]

3.7.4.2.2 Annual Report to Purchaser/Producer

(DOE/RW) DOE shall annually provide to the Purchaser pertinent information on the waste disposal program including information on cost projections, project plans and progress reports. This information shall be available to the Producer upon request. [10CFR961.11 Article IV.B.4]

3.7.4.2.3 Waste Process Records

(WA) WA shall provide storage area to keep records showing the receipt and inventory (including location) of all SNF and HLW in the CRWMS. The records must include as a minimum the name of shipper of the material for each shipment, the estimated quantity of radioactive material per item, item identification, and storage location. [Derived]

3.7.4.2.4 Duplicate Records Storage

(WA) WA shall provide storage facilities to keep duplicate records of waste. The duplicate set of records must be kept at a separate location sufficiently remote from the original records that a single event would not destroy both sets of records. [Derived]

3.7.4.2.5 Record Disposition

(WA) WA shall disposition records in accordance with DOE Order 1324.2. [DOE Order 3790.1A (5)(b)(2)(g)(3)]

3.8 PRECEDENCE

A. (WA) The general order of precedence for requirements is:

(1) Federal Law
  (a) Statutes and Treaties
  (b) Regulations and Executive Orders
  (c) Other (e.g., DOE Orders)
(2) State Law and Tribal Law
(3) Local Ordinances
(4) National and International Standards

[CRD]

B. (WA) In resolving questions of precedence involving DOE Orders or CFRs that address items covered by the CFRs issued by the NRC, the NRC requirements shall take precedence. [MOA NS/RW, 4/16/92]

3.9 QUALIFICATION/QUALITY ASSURANCE

(WA, Purchaser, Producer) WA shall require the following of the Purchaser/Producer:

A. (Producer) The Producer shall establish, maintain, and execute a quality assurance program satisfying each of the applicable criteria of the DOE OCRWM *Quality Assurance Requirements and Description for the CRWMP* (QARD), and satisfying any specific provisions which are applicable to WA activities. [DOE/RW-0214]

B. (Producer) The Producer's quality assurance program shall cover the activities from the time of waste form production through waste acceptance. [DOE/RW-0214]

C. (Producer) The Producer shall prepare and maintain documentation sufficient to demonstrate canistered waste form compliance with the WA-SRD, WCP, and WQR as lifetime QA records. Copies of these records must be made available to the Federal Repository Operator at the time the repository is ready to begin accepting canistered waste forms from the producer. Other documentation generated during preparation and implementation of the WCP and WQR must be collected and maintained as nonpermanent records. [DOE/RW-0214]

D. (Purchaser, Producer) The Purchaser/Producer shall handle notification and disposition of other-than-standard SNF and canisters of HLW in accordance with section 3.7.1.2.8. [10CFR961.11 Article VI.A.2(b)][DOE/RW-0214]

E. (Purchaser) The Purchaser shall have a quality assurance program approved by the Nuclear Regulatory Commission that satisfies the criteria in 10CFR50 Appendix B or other appropriate regulation. [10CFR50 Appendix B]

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4. CONFORMANCE VERIFICATION

4.1 RESPONSIBILITIES

This section relates the requirements of this document to the compliance methods of section 4.2 that shall be used to verify the requirements. As specified in the OCRWM Test and Evaluation Master Plan (to be produced), the CRWMS projects shall establish a test and evaluation program to demonstrate their conformance of the design to the system requirements as required in the verification cross-reference table of section 4.3. The test and evaluation program and the conformance verification activities are not intended to replace activities associated with NRC-license application or the satisfaction of that license.

4.2 METHODS

The methods of compliance to be used are:

A. **Analysis.** Analysis is the process needed to verify a requirement by rational thinking, tradeoff studies, modeling, and processing test data and accumulated results to reach a conclusion. Analysis involves the processing of accumulated results and conclusions, intended to provide proof that verification of a requirement has been accomplished. The analytical results may be comprised of a compilation or interpretation of existing information or derived from lower level examinations, tests, demonstrations, or analyses.

B. **Examination.** Examination is the process of investigating a product to verify that required features are incorporated. Examination consists of investigation, without the use of special laboratory appliances, procedures, supplies, or services, to determine conformance to those specified requirements which can be determined by such investigations. Examination is generally nondestructive and includes, but is not limited to, visual, auditory, olfactory, tactile, and other investigations; simple physical manipulation; gauging; and measurement.

C. **Test.** Test is the quantitative process whereby data is collected over a specified time period, under controlled conditions, in order to document the as-built performance of a product. A test denotes the determination of the properties or elements of items (or components thereof) by technical means, including functional operation, the application of established principles and procedures and the collection of quantitative data. The analysis of data derived from testing is an integral part of the method.

D. **Demonstration.** Demonstration is the qualitative process of exercising a product to verify its operability, where data may or may not be collected. Demonstration differs from test by directness of approach in the verification of a requirement and is accomplished without the use of instrumentation or special equipment. Thus, operation of a representative item in or near its use environment would be defined as

a Demonstration rather than a Test. Demonstration attempts to verify, qualitatively, the performance of a function, where as Test involves verifying performance within a specific range of measurement.

4.3 CROSS-REFERENCE

Table 4-1 correlates the requirements of sections 3 and 5 with the method to be used to comply with the requirements. Documentation of compliance will be accomplished through the use of detailed procedures to be developed and performed on all procured, constructed, and developed equipment, structures, and software.

In the following table, items marked "N/A" (not applicable) have no verification required. These items are titles or explanatory materials. The other columns "A" (analysis), "E" (examination), "T" (test), and "D" (demonstration) refer to the verification methods identified in section 4.2.

When more than one method of compliance is marked in Table 4-1, compliance must be verified by one or more of the methods marked.

Table 4-1. Verification Matrix

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.1	SYSTEM DEFINITION	X				
3.1.1	Waste Acceptance System Functions - Accept Waste	X				
3.1.2	Waste Acceptance Functional Relationships	X				
3.1.3	System Descriptions	X				
3.1.4	Function to Architecture Cross-Reference	X				
3.1.5	Major Considerations	X				
3.1.5A		X				
3.1.5B		X				
3.1.5C		X				
3.2	CHARACTERISTICS	X				
3.2.1	Performance Characteristics	X				
3.2.1.1	SNF and HLW Acceptance	X				
3.2.1.1A			X	X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.2.1.1B			X			X
3.2.1.1C			X			
3.2.1.1D				X		
3.2.1.2	SNF Receipt			X		
3.2.1.3	HLW Receipt		X			X
3.2.1.4	Receipt Rate		X			X
3.2.2	[Reserved]	X				
3.2.3	Interface Requirements	X				
3.2.3.1	[Reserved]	X				
3.2.3.2	Interfaces with Other CRWMS Elements	X				
3.2.3.2.1	WA-MRS Interface Requirements	X				
3.2.3.2.1A			X	X		X
3.2.3.2.1B			X			X
3.2.3.2.1C			X			X
3.2.3.2.1D			X			X
3.2.3.2.2	WA-MGDS Interface Requirements	X				
3.2.3.2.2A			X	X		X
3.2.3.2.2B			X			X
3.2.3.2.2C			X	X		X
3.2.3.2.2D			X			X
3.2.3.2.2E			X			X
3.2.3.2.3	WA-Transportation Interface Requirements	X				
3.2.3.2.3A			X	X		X
3.2.3.2.3A(1)				X		X
3.2.3.2.3A(2)				X		X

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.2.3.2.3A(3)				X		X
3.2.3.2.3B			X			X
3.2.3.2.3C			X			X
3.2.3.2.3D			X			X
3.2.3.2.3E				X		X
3.2.3.2.3F			X	X		
3.2.4	[Reserved]	X				
3.2.5	[Reserved]	X				
3.2.6	[Reserved]	X				
3.2.7	[Reserved]	X				
3.2.8	[Reserved]	X				
3.2.9	[Reserved]	X				
3.3	DESIGN AND CONSTRUCTION	X				
3.3.1	[Reserved]	X				
3.3.2	[Reserved]	X				
3.3.3	[Reserved]	X				
3.3.4	[Reserved]	X				
3.3.5	[Reserved]	X				
3.3.6	Safety		X	X		
3.3.7	Human Factors Engineering			X		X
3.3.8	Methods and Controls	X				
3.3.8.1	Material Management			X		
3.3.8.2	Inventory Control	X				
3.3.8.2.1	Radioactive Material Inventory	X				
3.3.8.2.1A			X	X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.3.8.2.1B				X		
3.3.9	Government Furnished Property	X				
3.3.9A				X		
3.3.9B				X		
3.3.10	Computer Resources	X				
3.3.10A				X		
3.3.10B				X		
3.3.11	Environmental Protection Requirements	X				
3.4	DOCUMENTATION	X				
3.4.1	[Reserved]	X				
3.4.2	[Reserved]	X				
3.4.3	[Reserved]	X				
3.4.4	Test Plans and Procedures			X		
3.4.5	Quality Assurance Documentation			X		
3.4.6	[Reserved]	X				
3.4.7	Computer Documentation			X		
3.4.8	Records Management	X				
3.4.8A				X		
3.4.8B				X		
3.5	[Reserved]	X				
3.6	PERSONNEL AND TRAINING	X				
3.6.1	[Reserved]	X				
3.6.2	Training	X				
3.6.2.1	General Requirements			X		
3.7	SEGMENT REQUIREMENTS	X				

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.7.1	Contract/Agreement Management Segment	X				
3.7.1.1	Contract/Agreement Management Segment Description	X				
3.7.1.1.1	Contract/Agreement Management Segment Functions		X			
3.7.1.1.2	Contract/Agreement Management Segment Interfaces	X				
3.7.1.2	Contract/Agreement Management Segment Requirements	X				
3.7.1.2.1	Waste Form Criteria	X				
3.7.1.2.1A			X			X
3.7.1.2.1A(1)						X
3.7.1.2.1A(2)						X
3.7.1.2.1A(3)						X
3.7.1.2.1B			X			X
3.7.1.2.1C			X			X
3.7.1.2.1D						X
3.7.1.2.1.1	SNF Specifications		X	X		
3.7.1.2.1.1.1	SNF Standard Form			X		
3.7.1.2.1.1.2	SNF Failed Form			X		
3.7.1.2.1.1.3	SNF Nonstandard Form			X		
3.7.1.2.1.1.4	SNF Data	X				
3.7.1.2.1.1.4A				X		
3.7.1.2.1.1.4B				X		
3.7.1.2.1.2	HLW Specifications		X	X		
3.7.1.2.1.2.1	HLW Standard Form	X				
3.7.1.2.1.2.1A				X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.7.1.2.1.2.1B			X	X	X	X
3.7.1.2.1.2.1B(1)				X		X
3.7.1.2.1.2.1B(2)				X		X
3.7.1.2.1.2.1B(3)				X		
3.7.1.2.1.2.1B(4)				X		
3.7.1.2.1.2.1B(5)			X		X	
3.7.1.2.1.2.1B(6)			X	X		
3.7.1.2.1.2.1B(7)			X		X	X
3.7.1.2.1.2.1B(8)				X		
3.7.1.2.1.2.2	HLW Nonconforming Form			X		
3.7.1.2.1.2.3	HLW Nonstandard Form			X		
3.7.1.2.1.2.4	Criticality Safety for HLW		X			
3.7.1.2.1.2.5	Waste Form - Material Compatibility		X		X	X
3.7.1.2.1.2.6	Chemical Composition	X				
3.7.1.2.1.2.6A						X
3.7.1.2.1.2.6B						X
3.7.1.2.1.2.7	Canister Material and Fabrication Reporting					X
3.7.1.2.1.2.8	Radionuclide Inventory		X	X		
3.7.1.2.1.2.9	Canister After Closure	X				
3.7.1.2.1.2.9A				X		X
3.7.1.2.1.2.9B				X		X
3.7.1.2.1.2.10	Removable Radioactive Contamination on Canister	X				
3.7.1.2.1.2.10A				X		
3.7.1.2.1.2.10B				X		X
3.7.1.2.1.2.10C						X

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.7.1.2.1.2.11	HLW Phase Stability and Integrity	X				
3.7.1.2.1.2.11A			X	X		
3.7.1.2.1.2.11B						X
3.7.1.2.1.2.12	Hazardous Waste Determination	X				
3.7.1.2.1.2.12A			X	X		
3.7.1.2.1.2.12B				X	X	
3.7.1.2.1.2.12C			X	X		
3.7.1.2.1.2.12D				X		
3.7.1.2.1.2.13	Consistency Test	X				
3.7.1.2.1.2.13A			X		X	
3.7.1.2.1.2.13B			X		X	
3.7.1.2.1.2.14	Canister Impact Characteristics		X		X	X
3.7.1.2.1.2.15	Canister Label Requirements			X		X
3.7.1.2.1.2.16	Canister Handling Features	X				
3.7.1.2.1.2.16A			X	X		
3.7.1.2.1.2.16B			X	X	X	
3.7.1.2.1.2.16C			X	X	X	
3.7.1.2.1.2.16D			X	X	X	
3.7.1.2.1.2.16E			X	X	X	
3.7.1.2.1.2.17	Dose Rate at Shipment		X	X		
3.7.1.2.1.2.18	HLW Condition at Delivery			X		X
3.7.1.2.1.2.19	Records			X		
3.7.1.2.1.2.19.1	Waste Form Compliance Plan (WCP)			X		
3.7.1.2.1.2.19.2	Waste Form Qualification Report (WQR)			X		
3.7.1.2.1.2.19.3	Production Record			X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.7.1.2.1.2.19.4	Storage and Shipping Record			X		
3.7.1.2.1.2.20	HLW Annual Report			X		
3.7.1.2.2	Contract/Agreement	X				
3.7.1.2.2A				X		
3.7.1.2.2B				X		
3.7.1.2.2C				X		
3.7.1.2.2D				X		
3.7.1.2.2E				X		
3.7.1.2.2F				X		
3.7.1.2.2G				X		
3.7.1.2.2H				X		
3.7.1.2.3	Acceptance Priority Ranking			X		
3.7.1.2.4	Annual Capacity Report			X		
3.7.1.2.5	Emergency Deliveries			X		
3.7.1.2.6	Delivery Commitment Schedules	X				
3.7.1.2.6A			X	X		
3.7.1.2.6B			X	X		
3.7.1.2.6C			X	X		
3.7.1.2.6D				X		
3.7.1.2.6E				X		
3.7.1.2.7	Exchange Requests	X				
3.7.1.2.7A				X		
3.7.1.2.7B			X	X		
3.7.1.2.8	Request for Nonstandard or Nonconforming Waste Delivery	X				
3.7.1.2.8A				X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.7.1.2.8B				X		
3.7.1.2.9	Final Delivery Schedules	X				
3.7.1.2.9A				X		
3.7.1.2.9B			X	X		
3.7.1.2.9C			X	X		
3.7.1.2.10	Final Description of Waste			X		
3.7.2	Waste Fund Management Segment	X				
3.7.2.1	Waste Fund Management Segment Description	X				
3.7.2.1.1	Waste Fund Management Segment Functions		X			
3.7.2.1.2	Waste Fund Management Segment Interfaces	X				
3.7.2.2	Waste Fund Management Segment Requirements	X				
3.7.2.2A			X	X		
3.7.2.2B			X	X		
3.7.2.2C				X		
3.7.2.2D				X		
3.7.2.2E				X		
3.7.2.2F				X		
3.7.3	Waste Acceptance Management Segment	X				
3.7.3.1	Waste Acceptance Management Segment Description	X				
3.7.3.1.1	Waste Acceptance Management Segment Functions		X			
3.7.3.1.2	Waste Acceptance Management Segment Interfaces	X				
3.7.3.2	Waste Acceptance Segment Requirements	X				
3.7.3.2.1	Shipping Records			X		
3.7.3.2.2	Fee Receipt Determination		X	X		
3.7.3.2.3	Routine Determination			X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.7.3.2.4	Title Transfer	X				
3.7.3.2.4A				X		
3.7.3.2.4B				X		
3.7.3.2.4C				X		
3.7.3.2.5	Observation by DOE	X				
3.7.3.2.5A				X		
3.7.3.2.5B				X		
3.7.3.2.6	Notification of Improperly Described Waste Prior to Acceptance into CRWMS			X		
3.7.4	Support Segment	X				
3.7.4.1	Support Segment Description	X				
3.7.4.1.1	Support Segment Functions		X			
3.7.4.1.2	Support Segment Interfaces	X				
3.7.4.2	Support Segment Requirements	X				
3.7.4.2.1	Resolution of Improperly Described Waste After Acceptance into CRWMS			X		
3.7.4.2.2	Annual Report to Purchaser/Producer			X		
3.7.4.2.3	Waste Process Records		X	X		
3.7.4.2.4	Duplicate Records Storage		X	X		
3.7.4.2.5	Record Disposition			X		
3.8	PRECEDENCE	X				
3.8A		X				
3.8B		X				
3.9	QUALIFICATION/QUALITY ASSURANCE	X				
3.9A			X	X		
3.9B			X	X		

Table 4-1. Verification Matrix (Continued)

SECTION 3 & 5 PARA.	TITLE	N / A	A	E	T	D
3.9C			X	X		
3.9D				X		
3.9E				X		
5.1	KEY DECISIONS			X		
5.2	REQUIREMENTS			X		

5. PREPARATION FOR OPERATIONS

5.1 KEY DECISIONS

The development of the CRWMS is currently being pursued by OCRWM under two active major system acquisitions (MSAs): the Yucca Mountain Site Characterization Project, and the MRS Project, which includes the MRS facility, the Transportation System and Waste Acceptance. Preparation for operations is governed by a series of Key Decision (KD) points in the MSA process. The Energy System Acquisition Advisory Board (ESAAB) supports the DOE Acquisition Executive by providing advice and assistance at those points. A KD for approval to commence operation, is scheduled prior to transition from acquisition and construction to operation for applicable CRWMS elements. Preparation of applications for the licenses, certificates, and permits (e.g., required by the NRC, EPA and other government agencies) that must be issued prior to commencement of operations shall be undertaken in a timely manner to ensure their review, approval and issuance prior to this KD. Transition to the operations phase is not formally made until demonstrated capability to meet technical performance goals specified in CRWMS requirements documents and specifications are achieved, and required licenses, certificates, and permits have been issued. These conditions are confirmed by the ESAAB. Formal operation (acceptance of waste from Purchaser/Producer) of the WA system will begin upon commencement of MRS facility operations currently planned to begin in January 1998.

In accordance with DOE Order 4700.1, a presentation package shall be developed to support ESAAB determination of the readiness of each element of CRWMS to proceed with operations. As a minimum, the presentation packages to support the ESAAB shall contain: a description of the project; background data; major technical and performance requirements; licenses, certificates and permits; readiness to proceed with operations; and problems, issues, or items of concern.

5.2 REQUIREMENTS

In addition to satisfying the requirements of the specifications, all elements of the CRWMS shall establish programs to ensure, at the commencement of operations, the availability of sufficient trained personnel to operate the elements and validated documentation to support the operations.

The elements shall additionally establish logistics support systems, to include ensuring the availability of sufficient spares to support the element maintenance concept and the design availability factors used in the design.

Specific plans and procedures for acceptance, operational, and integrated testing, as well as preparation of test documentation, will be governed by the Test and Evaluation Master Plan (TEMP), to be published separately.

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6. NOTES

6.1 GLOSSARY

Architecture is that part of the physical system actually built, found, or selected to perform a function subject to its stated requirements.

Atomic Energy Defense Activity is any activity of the Secretary performed in whole or in part in carrying out any of the following functions:

(A) naval reactors development;
(B) weapons activities including defense inertial confinement fusion;
(C) verification and control technology;
(D) defense nuclear materials production;
(E) defense nuclear waste and materials by-products management;
(F) defense nuclear materials security and safeguards and security investigations; and
(G) defense research and development.

Borosilicate waste glass is glass typically containing approximately 20 to 40 wt.% waste oxides, 40 to 65 wt.% silica, 5 to 10 wt.% boron oxide, and 10 to 20 wt.% alkali oxides, plus other oxide constituents.

Canister is the structure surrounding the waste form that facilitates handling, storage, transportation, and/or disposal. A metal receptacle with the following purpose: (1) for solidified HLW, its purpose is a pour mold and (2) for spent fuel, it may provide structural support for loose rods, nonfuel components, or containment of radionuclides during preclosure operations.

Cask is a container for shipping or storing spent nuclear fuel and/or canistered high-level waste which meets all applicable regulatory requirements.

Cask System as a minimum, shall include the complete cask, truck trailer or rail car (defined as the transporter), a tiedown system, special tools and ancillary equipment.

Civilian Radioactive Waste Management System (CRWMS) is the composite of the sites, and all facilities, systems, equipment, materials, information, activities, and the personnel required to perform those activities necessary to manage spent nuclear fuel and high-level radioactive waste disposal.

Commercial High-Level Radioactive Waste (CHLW) is the high-level radioactive waste, as defined by NWPA Sec. 2(12), resulting from reprocessing spent nuclear fuel in a commercial facility.

Consolidation is the operation performed on spent fuel assemblies during which the upper and lower fuel-assembly tie plates are removed, the assembly spacer grids and any other assembly structural members are removed, and the fuel rods are collected and formed into a closely packed array in a canister or container. The nonfuel structural members of the fuel assemblies are reduced in volume and placed in canisters or containers for shipment and disposal. [DOE/RW-0199, Vol. VIII, Part B, page G-18]

Contract is the agreement set forth in 10CFR961.11 and any duly executed amendment or modification thereto.

Defense High-Level Radioactive Waste (DHLW) is the high-level radioactive waste, as defined by NWPA Sec. 2(12), resulting from reprocessing spent nuclear fuel in a defense facility.

Disposal is the isolation of radioactive wastes from the accessible environment. [10CFR60.2]. Disposal means the emplacement in a repository of high-level radioactive waste, spent nuclear fuel, or other highly radioactive material with no foreseeable intent of recovery, whether or not such emplacement permits the recovery of such waste. [10CFR961.11] [NWPA Section 2(9)]

Function is a primary statement of purpose; definition of what a system or subsystem must accomplish to meet the system mission.

Function Flow Diagram is a diagram that graphically illustrates the relationships among functions.

Functional interface is the interaction between functions, as in the flow of material or information between a sequence of activities.

Glass transition temperature is the temperature at which the slope of the thermal expansion versus temperature curve of the glass shows a sharp increase. Below this temperature, the viscous flow or molecular rearrangement in glass is negligible.

High-level Radioactive Waste (HLW) means (1) the highly radioactive material resulting from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid material derived from such liquid waste that contains fission products in sufficient concentrations; and (2) other highly radioactive material that the Commission, consistent with existing law, determines by rule requires permanent isolation. [NWPA Section 2(12)] [10CFR72.3] [10CFR960.2] [10CFR961.11] The CRWMS will accept solidified HLW. For the purposes of this document, standard form HLW is vitrified borosilicate glass.

Multiple Element Sealed Canister is an engineered structure containing multiple fuel elements and comprised of guide sleeves, spacer discs, siphon tubes, and top and bottom shield plugs formed into a corrosion resistant stainless steel canister that is backfilled with an inert gas and hermetically sealed by a welded closure lid.

Nonconforming Waste Form is an individual HLW form that has been produced, handled, or stored such that its compliance with the WA-SRD requirements on waste forms cannot be demonstrated.

Nonstandard Waste Form is a nonconforming waste form and its nonconforming condition has been reviewed and deemed acceptable into the CRWMS. Nonstandard canistered HLW may also be in a condition which requires special handling.

N-Square Diagram is a type of function flow diagram. The N-Square diagram has been used extensively to develop data interfaces. The system functions are placed on the diagonal of an N-by-N matrix. The remainder of the squares of the matrix represent interface inputs and outputs. Inputs to a function appear in the column above and below the function, and outputs from a function appear in the row to the left and right of a function. Where blank square exists there is no interface between the respective functions. N-Square diagrams are used to develop and document system and system element interfaces. The N-Square diagram may also be used to document hardware-to-hardware interfaces where hardware items are placed on the diagonal and their interfaces shown in the remaining squares of the matrix.

Prime mover is the vehicle providing motive power to the transporter.

Producer is any generator of high-level radioactive waste resulting from atomic energy defense activities or any producer of vitrified commercial HLW.

Product Consistency Test is a test developed to determine the composition and homogeneity of complex and varied radioactive waste glasses. [Ref. US-DOE Report WSRC-TR-90-539, Rev. 2 (1992) Nuclear Waste Glass Product Consistency Test - Version 5.0]

Production Record is the documentation, provided by the Producer, that describes the actual canistered waste form.

Purchaser is any person, other than a Federal agency, who is licensed by the Nuclear Regulatory Commission to use a utilization or production facility under the authority of sections 103 or 104 of the Atomic Energy Act of 1954 (42USC2133, 2134) or who has title to SNF or HLW and who has executed a contract or other contractual agreement with DOE. Purchaser's SNF includes Government-owned SNF from commercial industry and civilian development programs. For the purposes of this document, WVDP is considered a "Purchaser" only for the contract/agreement requirements.

RW-859 Data is data from Nuclear Fuel Data Form RW-859, submitted either annually or 90 days after startup of a new cycle by Purchaser which lists the site-specific total SNF inventory and projected discharges.

Segment is a distinct, top-level component of the overall architecture of each system element to which functions and requirements are allocated. WA consists of 4 segments: 1) Contract/Agreements Management segment; 2) Waste Fund Management segment; 3) Waste Acceptance Management segment; 3) Support segment.

Specialty Engineering encompasses those disciplines that support the design process by applying knowledge from a specific area to ensure system operability in its operational environment. They include reliability, availability, maintainability, human factors engineering, transportability, safety, electromagnetic compatibility, parts/materials/processes and other specialist areas involved in development of a general class of system. These specialties are integrated into the development effort through the System Engineering Process [based on the Defense Systems Management College Systems Engineering Management Guide].

Spent Nuclear Fuel (SNF) is fuel that has been withdrawn from a nuclear reactor following irradiation, the constituent elements of which have not separated by reprocessing [NWPA Section 2(23)] [10CFR961.11]. {Specifically in this document, SNF includes (1) intact, nondefective fuel assemblies; (2) failed fuel assemblies in canisters; (3) fuel assemblies in canisters; (4) consolidated fuel rods in canisters; (5) nonfuel components inserted in PWR fuel assemblies, including, but not limited to, control rod assemblies, burnable poison assemblies, thimble plug assemblies, neutron source assemblies, instrumentation assemblies; (6) fuel channels attached to BWR fuel assemblies; and (7) nonfuel components and structural parts of assemblies resulting from consolidation in canisters.}

Standard Waste Form is a waste form that meets the physical characteristics specified in the WA-SRD as standard. Other standard HLW forms will be defined in subsequent revisions of the WA-SRD.

Storage and Shipping Records are the documents that describe the physical attributes of the canistered waste forms. The records also identify any unexpected events, such as thermal excursions, which have occurred during storage.

System Element is one of the elements of the CRWMS (e.g., WA, Trans, MRS, MGDS). This differs from the "project" that may be initiated by DOE to manage and control development of one or more system element (e.g., the Yucca Mountain Project or the MRS Project). [TDPP for the Preparation of Systems Requirements Documents]

System Engineering Process is an iterative process encompassing changes at any point in the process. Possible impacts of change to the system should be analyzed during the conduct of the project. These impacts should be examined for validity, consistency, desirability, and attainability with respect to current technology, physical resources, human performance capabilities, life-cycle costs, and other constraints. The output of this analysis should either verify the existing requirements or lead to the development of new requirements that are more appropriate for the mission.

Time-temperature-transformation diagrams identify the duration of exposure at any temperature that causes significant changes in either the phase structure, the phase compositions, or the PCT response of the borosilicate glass waste type.

Transporter is a cargo-carrying vehicle such as a semi-trailer or rail car used for transportation of cargo by any mode.

Waste Acceptance is the system element or organization that manages the Accept Waste function which includes acceptance of SNF and HLW into the CRWMS from the Purchaser/ Producer of such waste.

Waste Form Compliance Plan (WCP) is a document prepared by a waste producer describing planned analyses, tests, and engineering development work to be undertaken and information to be included in individual waste form production records to demonstrate compliance of a proposed waste form with Waste Acceptance Specifications.

Waste Form Qualification Report (WQR) is documentation prepared by a waste producer which describes results of analyses, tests, and engineering development work actually performed to demonstrate waste form compliance with waste acceptance specifications.

Waste Package is the waste form (SNF or canistered HLW) and any containers, shielding, packing and other absorbent materials immediately surrounding an individual waste container. [10CFR60.2]

6.2 ACRONYMS AND ABBREVIATIONS

ACR	Annual Capacity Report
ADP	Automated data processing
ANSI	American National Standards Institute
APR	Acceptance Priority Ranking
ASME	American Society of Mechanical Engineers
BWR	Boiling water reactor
CFR	Code of Federal Regulations
CHLW	Commercial High-level Radioactive Waste
CRD	CRWMS Requirements document
CRWMP	Civilian Radioactive Waste Management Program
CRWMS	Civilian Radioactive Waste Management System
DCS	Delivery Commitment Schedule
DHLW	Defense High-level Radioactive Waste
DOE	Department of Energy
DOT	Department of Transportation
DP	Office of Defense Programs (DOE)
EA	Environmental Assessment
EM	Office of Environmental Restoration and Waste Management (DOE)
EPA	Environmental Protection Agency

ESAAB	Energy System Acquisition Advisory Board
FDS	Final Delivery Schedule
FICA	Facility Interface Capability Assessment
HLW	High-level radioactive waste
IFS	Interface Specification
KD	Key Decision
M&O	Management and Operating Contractor
MGDS	Mined Geologic Disposal System
MOA	Memorandum of Agreement
MRS	Monitored Retrievable Storage Installation
MTU	Metric ton(s) of initial uranium
NRC	Nuclear Regulatory Commission
NS	Nuclear Safety
NWF	Nuclear Waste Fund
NWPA	Nuclear Waste Policy Act of 1982
NWPAA	Nuclear Waste Policy Amendments Act of 1987
NYSERDA	New York State Energy Research and Development Administration
OCRWM	Office of Civilian Radioactive Waste Management (DOE)
OMB	Office of Management and Budget (DOE)
PCT	Product Consistency Test
Pro	Producer
Pur	Purchaser
PWR	Pressurized water reactor
QA	Quality Assurance
QARD	Quality Assurance Requirements Document
RCRA	Resource Conservation and Recovery Act
RW	Office of Civilian Radioactive Waste Management (DOE)
SNF	Spent Nuclear Fuel
SPD	Services Planning Document
SRD	System Requirements document
SRS	Savannah River Site
SSSP	Site-Specific Servicing Plan
TBD	To be determined
TBR	To be resolved
TBP	To be published
TCLP	Toxicity Characteristic Leaching Procedure
TDPP	Technical Document Preparation Plan
TEMP	Test and Evaluation Master Plan
USC	United States Code
WA	Waste Acceptance
WCP	Waste Form Compliance Plan
WQR	Waste Form Qualification Report
WVDP	West Valley Demonstration Project

6.3 REQUIREMENTS CROSS-REFERENCE

The following tables identify how the WA-SRD responds to the requirements of the CRD. In these tables, the heading "WA-SRD Paragraph" identifies the requirement number in this document. The heading "CRD Paragraph" identifies the CRD requirement that is addressed by the identified WA-SRD requirement. In all cases, the "source document" is the document containing the source of the requirement in the WA-SRD. When a source document is enclosed in parentheses, the document identified is referenced by the requirement or used in the derivation of the requirement, but is not the literal source of the requirement. A source document entry of "Derived" identifies a derived requirement.

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph

WA-SRD Paragraph	Source Document	CRD Paragraph
3.2.1.1A	NWPA Sec. 111(a)(4)	3.2.1A
3.2.1.1B	NWPA Sec. 114(d)	Appendix A - NWPA
3.2.1.1C	10CFR72.44(g)	Appendix A - 10CFR72
3.2.1.1D	NWPA Sec. 302(a)(5), 10CFR961.11 Article II	3.2.1.1E, 3.7.1.2B, 3.7.1.2C
3.2.1.2	NWPA Sec. 111(a)(5)	Appendix A - NWPA
3.2.1.3	Derived (NWPA Sec. 111(a)(4), DOE/RW-0316P)	3.2.1A
3.2.1.4	DOE/RW-0316P, DOE/RW-0331P, CRWMS M&O TSO.920427.0346	3.2.1, 3.7.1.2H, 3.7.1.2I
3.2.3.2.1A	Derived (10CFR961.11 Article IV.B.1)	3.7.1.2D
3.2.3.2.1B	DOE/RW-0331P, CRWMS M&O TSO.920427.0346	3.2.1, 3.7.1.2H
3.2.3.2.1C	Derived (NWPA Sec. 302(a)(5))	3.7.1.2B
3.2.3.2.1D	10CFR961.11 Article VI.B.3(b)	3.7.1.2G
3.2.3.2.2A	Derived (NWPA Sec. 111(a)(4), 10CFR961.11 Article IV.B.1)	3.2.1A, 3.2.1B, 3.7.1.2D

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.2.3.2.2B	DOE/RW-0316P, DOE/RW-0331P, CRWMS M&O TSO.920427.0346	3.2.1, 3.7.1.2H, 3.7.1.2I
3.2.3.2.2C	Derived (DOE/RW-0316P)	3.2.1A
3.2.3.2.2D	Derived (NWPA Sec. 302(a)(5))	3.7.1.2B
3.2.3.2.2E	10CFR961.11 Article VI.B.3(b)	3.7.1.2G
3.2.3.2.3A	10CFR961.11 Article IV.B.2	3.2.1.1F, 3.7.1.2J
3.2.3.2.3A(1)	DOE/RW-0005	Appendix A - DOE/RW-0005
3.2.3.2.3A(2)	Derived (DOE/RW-0187, DOE/RW-0270P)	Appendix A - (DOE/RW-0187), (DOE/RW-0270P)
3.2.3.2.3A(3)	Derived (DOE/RW-0187, DOE/RW-0270P)	Appendix A - (DOE/RW-0187), (DOE/RW-0270P)
3.2.3.2.3B	DOE/RW-0316P, DOE/RW-0331P, CRWMS M&O TSO.920427.0346	3.2.1, 3.7.1.2H, 3.7.1.2I
3.2.3.2.3C	Derived (10CFR961.11 Article IV.B.2)	3.2.1.1F, 3.7.1.2J
3.2.3.2.3D	Derived (10CFR961.11 Article IV.B.2)	3.2.1.1F, 3.7.1.2J
3.2.3.2.3E	10CFR71.43(b)	Appendix A - 10CFR71
3.2.3.2.3F	10CFR961.11 Article IV.B.2	3.2.1.1F, 3.7.1.2J
3.3.6	29USC651 et seq., (654 (a) - (b))	3.3.6.1A, 3.3.6.1B
3.3.7	CRD (MTR 10090)	3.3.7.14
3.3.8.1	CRD	3.3.8.1C
3.3.8.2.1A	CRD	3.3.8.2A, 3.4.8
3.3.8.2.1B	CRD	3.3.8.2A, 3.4.8
3.3.9A	CRD	3.3.9B

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.3.9B	CRD	3.3.9C
3.3.10A	CRD	3.3.10A
3.3.10B	CRD	3.3.10B
3.4.4	CRD	3.4.4
3.4.5	CRD	3.4.5
3.4.7	DOE/RW-0214	3.4.7
3.4.8A	DOE/RW-0214, DOE/RW-0194P Sections 6.1 & 6.4b	Appendix A - DOE/RW-0214, DOE/RW-0194P
3.4.8B	DOE/RW-0214	3.4.5
3.6.2.1	CRD	3.6.2.1D
3.7.1.2.1A	10CFR60.135(c)	3.7.1.2L
3.7.1.2.1B	10CFR60.135(b)(2)	3.7.1.2K(2)
3.7.1.2.1C	10CFR60.135(b)(1)	3.7.1.2K(1)
3.7.1.2.1D	Derived (10CFR60.135(b), 10CFR60.135(c))	3.7.1.2K, 3.7.1.2L
3.7.1.2.1.1	10CFR961.11 Article IV.B.1	3.2.1B, 3.7.1.2D
3.7.1.2.1.1.1	10CFR961.11 Appendix E.B.1 - E.B.5	Appendix A - 10CFR961
3.7.1.2.1.1.2	10CFR961.11 Appendix E.B.6	Appendix A - 10CFR961
3.7.1.2.1.1.3	10CFR961.11 Appendix E.A.1(b)	Appendix A - 10CFR961
3.7.1.2.1.1.4A	10CFR961.11 Article IV.A.1(a)	Appendix A - 10CFR961
3.7.1.2.1.1.4B	10CFR961.11 Article VI.A.2(a)	Appendix A - 10CFR961
3.7.1.2.1.2	Derived (10CFR961.11 Appendix E.D)	Appendix A - (10CFR961)
3.7.1.2.1.2.1A	Derived (10CFR60.135(c))	3.7.1.2L
3.7.1.2.1.2.1B(1)	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.7.1.2.1.2.1B(2)	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)
3.7.1.2.1.2.1B(3)	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)
3.7.1.2.1.2.1B(4)	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)
3.7.1.2.1.2.1B(5)	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)
3.7.1.2.1.2.1B(6)	Derived (10CFR60.135(a))	Appendix A - (10CFR60)
3.7.1.2.1.2.1B(7)	Derived (10CFR60.135(b)(3), 10CFR60.135(c)(1))	Appendix A - (10CFR60)
3.7.1.2.1.2.1B(8)	10CFR60.135(b)(4)	Appendix A - 10CFR60
3.7.1.2.1.2.2	Derived (DOE/RW-0214)	Appendix A - (DOE/RW-0214)
3.7.1.2.1.2.3	Derived (10CFR961.11 Appendix E.D)	Appendix A - (10CFR961)
3.7.1.2.1.2.4	10CFR60.131(b)(7), 10CFR71.55	Appendix A - 10CFR60, 10CFR71
3.7.1.2.1.2.5	Derived (10CFR60.135(a)(1))	Appendix A - (10CFR60)
3.7.1.2.1.2.6A	Derived (10CFR60.135(a))	Appendix A - (10CFR60)
3.7.1.2.1.2.6B	Derived (10CFR60.135(a)(2))	Appendix A - (10CFR60)
3.7.1.2.1.2.7	Derived (10CFR60.135(a)(1))	Appendix A - (10CFR60)
3.7.1.2.1.2.8	Derived (10CFR60.113)	Appendix A - (10CFR60)
3.7.1.2.1.2.9A	Derived (10CFR60.135(a)(2))	Appendix A - (10CFR60)
3.7.1.2.1.2.9B	Derived (10CFR60.135(a)(2))	Appendix A - (10CFR60)
3.7.1.2.1.2.10A	Derived (10CFR71.87)	Appendix A - (10CFR71)
3.7.1.2.1.2.10B	Derived (10CFR71)	Appendix A - (10CFR71)
3.7.1.2.1.2.10C	Derived (10CFR60.135(a))	Appendix A - (10CFR60)

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.7.1.2.1.2.11A	Derived (10CFR60.135(a))	Appendix A - (10CFR60)
3.7.1.2.1.2.11B	Derived (10CFR60.135(a))	Appendix A - (10CFR60)
3.7.1.2.1.2.12	Derived (40CFR261.20 - 261.24, 40CFR261.31 - 261.33, 40CFR262)	3.3.11G
3.7.1.2.1.2.13A	Derived (10CFR60.135(a), DOE/EA-0179)	Appendix A - (10CFR60), (DOE/EA-0179)
3.7.1.2.1.2.13B	Derived (10CFR60.135(a), DOE/EA-0179)	Appendix A - (10CFR60), (DOE/EA-0179)
3.7.1.2.1.2.14	Derived (10CFR60.131(d)(2), 10CFR60.135(b)(3))	Appendix A - (10CFR60)
3.7.1.2.1.2.15	Derived (10CFR60.21(b)(3), 10CFR60.135(b)(4), DOE Order 6430.1A 1300-12.4.11)	Appendix A - (10CFR60), (DOE Order 6430.1A)
3.7.1.2.1.2.16	Derived (10CFR60.135(a)(1), 10CFR60.135(b)(3))	Appendix A - (10CFR60)
3.7.1.2.1.2.17	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)
3.7.1.2.1.2.18	Derived (DOE/RW-0184)	Appendix A - (DOE/RW-0184)
3.7.1.2.1.2.19	DOE/RW-0214	3.9A
3.7.1.2.1.2.19.1	DOE/RW-0214	3.9A
3.7.1.2.1.2.19.2	DOE/RW-0214	3.9A
3.7.1.2.1.2.19.3	DOE/RW-0214	3.9A
3.7.1.2.1.2.19.4	DOE/RW-0214	3.9A
3.7.1.2.1.20	Derived (10CFR961.11 Article IV.A.1 (a))	Appendix A - 10CFR961
3.7.1.2.2A	NWPA Sec. 302(a)(1)	3.2.1.1B, 3.7.1.2A
3.7.1.2.2B	10CFR961.11 Article IV.B.1, DOE/RW-0328P	3.2.1B, 3.7.1.2D

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.7.1.2.2C	10CFR961.11 Article V.A, 10CFR961.11 Article VI.A.1	3.7.1.2F, 3.7.1.2E
3.7.1.2.2D	10CFR961.2	Appendix A - 10CFR961
3.7.1.2.2E	10CFR961.5	Appendix A - 10CFR961
3.7.1.2.2F	10CFR961.11 Article III	Appendix A - 10CFR961
3.7.1.2.2G	NWPA Sec. 302(b)(2)	Appendix A - NWPA
3.7.1.2.2H	Presidential Memo, 1985	3.2.1.1D
3.7.1.2.3	10CFR961.11 Article IV.B.5, 10CFR961.11 Article VI.B.1	Appendix A - 10CFR961
3.7.1.2.4	10CFR961.11 Article IV.B.5	Appendix A - 10CFR961
3.7.1.2.5	10CFR961.11 Article V.D	Appendix A - 10CFR961
3.7.1.2.6A	10CFR961.11 Article V.B.1	Appendix A - 10CFR961
3.7.1.2.6B	10CFR961.11 Article V.B.1	Appendix A - 10CFR961
3.7.1.2.6C	10CFR961.11 Article V.B.2	Appendix A - 10CFR961
3.7.1.2.6D	10CFR961.11 Article V.B.2	Appendix A - 10CFR961
3.7.1.2.6E	10CFR961.11 Article IV.A.1(c)	Appendix A - 10CFR961
3.7.1.2.7A	10CFR961.11 Article V.E	Appendix A - 10CFR961
3.7.1.2.7B	10CFR961.11 Article V.E	Appendix A - 10CFR961
3.7.1.2.8A	10CFR961.11 Article VI.A.2(b)	Appendix A - 10CFR961
3.7.1.2.8B	DOE/RW-0214	3.9A
3.7.1.2.9A	10CFR961.11 Article V.C	Appendix A - 10CFR961
3.7.1.2.9B	10CFR961.11 Article V.C	Appendix A - 10CFR961
3.7.1.2.9C	10CFR961.11 Article V.C	Appendix A - 10CFR961
3.7.1.2.10	10CFR961.11 Article IV.A.2(b)	Appendix A - 10CFR961
3.7.2.2A	NWPA Sec. 302(a)(4)	Appendix A - NWPA
3.7.2.2B	NWPA Sec. 302(a)(4)	Appendix A - NWPA

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.7.2.2C	10CFR961.11 Article VIII.A.4	Appendix A - 10CFR961
3.7.2.2D	10CFR961.11 Article VIII.A.1	Appendix A - 10CFR961
3.7.2.2E	10CFR961.11 Article VIII.B	Appendix A - 10CFR961
3.7.2.2F	10CFR961.1	Appendix A - 10CFR961
3.7.3.2.1A	10CFR71.5a, 10CFR961.11 Article VI.B.2	3.2.2.7
3.7.3.2.1B	10CFR71.5a, 10CFR961.11 Article VI.B.2, 10CFR961.11 Appendix E.B.6(c), 49CFR172.204(a)	3.2.2.7
3.7.3.2.1C	Derived (49CFR172.203(d)(i))	Appendix A - (49CFR172)
3.7.3.2.1D	Derived (10CFR60.135(a))	Appendix A - (10CFR60)
3.7.3.2.1E	40CFR262	3.3.11G
3.7.3.2.2	NWPA Sec. 302(b)(4)	Appendix A - NWPA
3.7.3.2.3	10CFR71.87	3.2.2.7
3.7.3.2.4A	NWPA Sec. 123	Appendix A - NWPA
3.7.3.2.4B	MOA DP/RW 1986	Appendix A - MOA DP/RW 1986
3.7.3.2.4C	10CFR961.11 Article VII	Appendix A - 10CFR961
3.7.3.2.5A	10CFR961.11 Article IV.A.2(a)	Appendix A - 10CFR961
3.7.3.2.5B	10CFR961.11 Article VI.B.2	Appendix A - 10CFR961
3.7.3.2.6	10CFR961.11 Article VI.B.3(a), DOE/RW-0214	Appendix A - 10CFR961, DOE/RW-0214
3.7.4.2.1	10CFR961.11 Article VI.B.3(b), DOE/RW-0214	3.7.1.2G
3.7.4.2.2	10CFR961.11 Article IV.B.4	Appendix A - 10CFR961
3.7.4.2.3	Derived (10CFR72.72(a), DOE/RW-0214)	3.9A

Table 6-1. Requirements Cross-Reference by WA-SRD Paragraph (continued)

WA-SRD Paragraph	Source Document	CRD Paragraph
3.7.4.2.4	Derived (10CFR72.72(d))	Appendix A - (10CFR72)
3.7.4.2.5	DOE Order 3790.1A (5)(b)(2)(g)(3), (DOE Order 1324.2)	Appendix A - DOE Order 3790.1A, (DOE Order 1324.2)
3.8A	CRD	3.8A
3.8B	MOA NS/RW 04/16/92	3.8B
3.9A	DOE/RW-0214	3.9A
3.9B	DOE/RW-0214	3.9A
3.9C	DOE/RW-0214	3.9A
3.9D	10CFR961.11 Article VI.A.2(b), DOE/RW-0214	3.9A
3.9E	10CFR50 Appendix B	Appendix A - 10CFR50
5.1	CRD (DOE Order 4700.1)	5.1
5.2	CRD	5.2

Table 6-2. Requirements Cross-Reference to CRD Paragraph

CRD Paragraph	WA-SRD Paragraph
3.2.1	3.2.1.4, 3.2.3.2.1B, 3.2.3.2.2B, 3.2.3.2.3B
3.2.1A	3.2.1.1A, 3.2.1.3, 3.2.3.2.2A, 3.2.3.2.2C
3.2.1B	3.2.3.2.1A, 3.2.3.2.2A, 3.2.3.2.3D, 3.7.1.2.1.1, 3.7.1.2.2B
3.2.1.1B	3.7.1.2.2A
3.2.1.1D	3.2.3.2.2C, 3.7.1.2.2H
3.2.1.1E	3.2.1.1D, 3.2.1.2A
3.2.1.1F	3.2.3.2.3A, 3.2.3.2.3C, 3.2.3.2.3D, 3.2.3.2.3F
3.2.2.7	3.7.3.2.1A, 3.7.3.2.1B, 3.7.3.2.3
3.2.3.2A	3.2.3.2
3.2.3.2B	3.2.3.2, 3.7.1.1.2, 3.7.2.1.2, 3.7.3.1.2, 3.7.4.1.2
3.3.6.1A	3.3.6
3.3.6.1B	3.3.6
3.3.7.14	3.3.7
3.3.8.1C	3.3.8.1
3.3.8.2A	3.3.8.2.1A, 3.3.8.2.1B
3.3.9B	3.3.9A
3.3.9C	3.3.9B
3.3.10A	3.3.10A
3.3.10B	3.3.10B
3.3.11G	3.7.3.2.1E, 3.7.1.2.1.2.12
3.4.4	3.4.4
3.4.5	3.4.5, 3.4.8B
3.4.7	3.4.7
3.4.8	3.3.8.2.1A, 3.3.8.2.1B

Table 6-2. Requirements Cross-Reference to CRD Paragraph (continued)

CRD Paragraph	WA-SRD Paragraph
3.6.2.1D	3.6.2.1
3.7.1.2A	3.7.1.2.2A
3.7.1.2B	3.2.1.1D, 3.2.3.2.1C, 3.2.3.2.2D
3.7.1.2C	3.2.1.1D
3.7.1.2D	3.2.3.2.1A, 3.2.3.2.2A, 3.7.1.2.1.1, 3.7.1.2.2B
3.7.1.2E	3.7.1.2.2C
3.7.1.2F	3.2.3.2.3A, 3.2.3.2.3F, 3.7.1.2.2C
3.7.1.2G	3.2.3.2.1D, 3.2.3.2.2E, 3.7.4.2.1
3.7.1.2H	3.2.1.4, 3.2.3.2.1B, 3.2.3.2.2B, 3.2.3.2.3B
3.7.1.2I	3.2.1.4, 3.2.3.2.2B, 3.2.3.2.3B
3.7.1.2J	3.2.3.2.3A, 3.2.3.2.3C, 3.2.3.2.3D, 3.2.3.2.3F
3.7.1.2K	3.7.1.2.1D
3.7.1.2K(1)	3.7.1.2.1C
3.7.1.2K(2)	3.7.1.2.1B
3.7.1.2L	3.7.1.2.1A, 3.7.1.2.1D, 3.7.1.2.1.2.1A
3.8A	3.8A
3.8B	3.8B
3.9A	3.7.1.2.1.2.19, 3.7.1.2.1.2.19.1, 3.7.1.2.1.2.19.2, 3.7.1.2.1.2.19.3, 3.7.1.2.1.2.19.4, 3.7.1.2.8B, 3.7.4.2.3, 3.9A, 3.9B, 3.9C, 3.9D
5.1	5.1
5.2	5.2
Appendix A - 29USC651	3.3.6
Appendix A - 10CFR50	3.9E

Table 6-2. Requirements Cross-Reference to CRD Paragraph (continued)

CRD Paragraph	WA-SRD Paragraph
Appendix A - 10CFR60	3.7.1.2.1.2.1B(6), 3.7.1.2.1.2.1B(7), 3.7.1.2.1.2.1B(8), 3.7.1.2.1.2.4, 3.7.1.2.1.2.5, 3.7.1.2.1.2.6A, 3.7.1.2.1.2.6B, 3.7.1.2.1.2.7, 3.7.1.2.1.2.8, 3.7.1.2.1.2.9A, 3.7.1.2.1.2.9B, 3.7.1.2.1.2.10C, 3.7.1.2.1.2.11A, 3.7.1.2.1.2.11B, 3.7.1.2.1.2.13A, 3.7.1.2.1.2.13B, 3.7.1.2.1.2.14, 3.7.1.2.1.2.15, 3.7.1.2.1.2.16, 3.7.3.2.1D
Appendix A - 10CFR71	3.2.3.2.3E, 3.7.1.2.1.2.4, 3.7.1.2.1.2.10A, 3.7.1.2.1.2.10B
Appendix A - 10CFR72	3.2.1.1C, 3.7.4.2.4
Appendix A - 10CFR961	3.2.3.2.1A, 3.7.1.2.1.1.1, 3.7.1.2.1.1.2, 3.7.1.2.1.1.3, 3.7.1.2.1.1.4A, 3.7.1.2.1.1.4B, 3.7.1.2.1.2, 3.7.1.2.1.2.3, 3.7.1.2.1.20, 3.7.1.2.2D, 3.7.1.2.2E, 3.7.1.2.2F, 3.7.1.2.3, 3.7.1.2.4, 3.7.1.2.5, 3.7.1.2.6A, 3.7.1.2.6B, 3.7.1.2.6C, 3.7.1.2.6D, 3.7.1.2.6E, 3.7.1.2.7A, 3.7.1.2.7B, 3.7.1.2.8A, 3.7.1.2.9A, 3.7.1.2.9B, 3.7.1.2.9C, 3.7.1.2.10, 3.7.2.2C, 3.7.2.2D, 3.7.2.2E, 3.7.2.2F, 3.7.3.2.4C, 3.7.3.2.5A, 3.7.3.2.5B, 3.7.3.2.6, 3.7.4.2.2
Appendix A - (40CFR261)	3.7.1.2.1.2.12
Appendix A - (40CFR262)	3.7.1.2.1.2.12
Appendix A - (49CFR172)	3.7.3.2.1C
Appendix A - (DOE Order 1324.2)	3.7.4.2.5
Appendix A - DOE Order 3790.1A	3.7.4.2.5
Appendix A - (DOE Order 4700.1)	5.1
Appendix A - (DOE Order 6430.1A)	3.7.1.2.1.2.15
Appendix A - (DOE/EA-0179)	3.7.1.2.1.2.13A, 3.7.1.2.1.2.13B
Appendix A - DOE/RW-0005	3.2.3.2.3A(1)
Appendix A - (DOE/RW-0184)	3.7.1.2.1.2.1B(1), 3.7.1.2.1.2.1B(2), 3.7.1.2.1.2.1B(3), 3.7.1.2.1.2.1B(4), 3.7.1.2.1.2.1B(5), 3.7.1.2.1.2.17, 3.7.1.2.1.2.18

Table 6-2. Requirements Cross-Reference to CRD Paragraph (continued)

CRD Paragraph	WA-SRD Paragraph
Appendix A - (DOE/RW-0187)	3.2.3.2.3A(2), 3.2.3.2.3A(3)
Appendix A - DOE/RW-0194P	3.4.8A
Appendix A - DOE/RW-0214	3.4.8A, 3.7.1.2.1.2.2, 3.7.3.2.6
Appendix A - (DOE/RW-0270P)	3.2.3.2.3A(2), 3.2.3.2.3A(3)
Appendix A - DOE/RW-0316P	3.2.1.4, 3.2.3.2.2B, 3.2.3.2.3B
Appendix A - DOE/RW-0328P	3.7.1.2.2B
Appendix A - DOE/RW-0331P	3.2.1.4, 3.2.3.2.1B, 3.2.3.2.2B, 3.2.3.2.3B
Appendix A - MOA DP/RW 1986	3.7.3.2.4B
Appendix A - MOA NS/RW 04/16/92	3.8B
Appendix A - NWPA	3.2.1.1B, 3.2.1.2, 3.7.1.2.2G, 3.7.2.2A, 3.7.2.2B, 3.7.3.2.2, 3.7.3.2.4A
Appendix A - Presidential Memo, 1985	3.7.1.2.2H
Appendix A - (WSRC-TR-90-539)	3.7.1.2.1.2.13
Appendix A - CRWMS M&O TSO.920427.0346	3.2.1.4, 3.2.3.2.1B, 3.2.3.2.2B, 3.2.3.2.3B

Table 6-3. Requirements Cross-Reference by Source Document

Source Document	WA-SRD Paragraph
10CFR50 Appendix B	3.9E
10CFR60.131(b)(7)	3.7.1.2.1.2.4
10CFR60.135(b)(1)	3.7.1.2.1C
10CFR60.135(b)(2)	3.7.1.2.1B
10CFR60.135(b)(4)	3.7.1.2.1.2.1B(8)
10CFR60.135(c)	3.7.1.2.1A
10CFR71.43(b)	3.2.3.2.3E
10CFR71.5a	3.7.3.2.1A, 3.7.3.2.1B
10CFR71.55	3.7.1.2.1.2.4
10CFR71.87	3.7.3.2.3
10CFR72.44(g)	3.2.1.1C
10CFR961.1	3.7.2.2F
10CFR961.2	3.7.1.2.2D
10CFR961.5	3.7.1.2.2E
10CFR961.11 Article II	3.2.1.1D
10CFR961.11 Article III	3.7.1.2.2F
10CFR961.11 Article IV.A.1(a)	3.7.1.2.1.1.4A
10CFR961.11 Article IV.A.1(c)	3.7.1.2.6E
10CFR961.11 Article IV.A.2(a)	3.7.3.2.5A
10CFR961.11 Article IV.A.2(b)	3.7.1.2.10
10CFR961.11 Article IV.B.1	3.7.1.2.1.1, 3.7.1.2.2B
10CFR961.11 Article IV.B.2	3.2.3.2.3A, 3.2.3.2.3F
10CFR961.11 Article IV.B.4	3.7.4.2.2
10CFR961.11 Article IV.B.5	3.7.1.2.4, 3.7.1.2.3
10CFR961.11 Article V.A	3.7.1.2.2C

Table 6-3. Requirements Cross-Reference by Source Document (continued)

Source Document	WA-SRD Paragraph
10CFR961.11 Article V.B.1	3.7.1.2.6A, 3.7.1.2.6B
10CFR961.11 Article V.B.2	3.7.1.2.6C, 3.7.1.2.6D
10CFR961.11 Article V.C	3.7.1.2.9A, 3.7.1.2.9B, 3.7.1.2.9C
10CFR961.11 Article V.D	3.7.1.2.5
10CFR961.11 Article V.E	3.7.1.2.7A, 3.7.1.2.7B
10CFR961.11 Article VI.A.1	3.7.1.2.2C
10CFR961.11 Article VI.A.2(a)	3.7.1.2.1.1.4B
10CFR961.11 Article VI.A.2(b)	3.7.1.2.8A, 3.9D
10CFR961.11 Article VI.B.1	3.7.1.2.3
10CFR961.11 Article VI.B.2	3.7.3.2.1A, 3.7.3.2.1B, 3.7.3.2.5B
10CFR961.11 Article VI.B.3(a)	3.7.3.2.6
10CFR961.11 Article VI.B.3(b)	3.2.3.2.1D, 3.2.3.2.2E, 3.7.4.2.1
10CFR961.11 Article VII	3.7.3.2.4C
10CFR961.11 Article VIII.A.1	3.7.2.2D
10CFR961.11 Article VIII.A.4	3.7.2.2C
10CFR961.11 Article VIII.B	3.7.2.2E
10CFR961.11 Appendix E.A.1(b)	3.7.1.2.1.1.3
10CFR961.11 Appendix E.B.1 - E.B.5	3.7.1.2.1.1.1
10CFR961.11 Appendix E.B.6	3.7.1.2.1.1.2
10CFR961.11 Appendix E.B.6(c)	3.7.3.2.1B
29USC651 et seq., (654 (a) - (b))	3.3.6
(40CFR261.20 - 261.24, 40CFR261.31 - 261.33, 40CFR262)	3.7.1.2.1.2.12
40CFR262	3.7.3.2.1E
49CFR172.204(a)	3.7.3.2.1B
CRD	3.3.7, 3.3.8.1, 3.3.8.2.1A, 3.3.8.2.1B, 3.3.9A, 3.3.9B, 3.3.10A, 3.3.10B, 3.4.4, 3.4.5, 3.6.2.1, 3.8A, 5.1, 5.2

Table 6-3. Requirements Cross-Reference by Source Document (continued)

Source Document	WA-SRD Paragraph
CRWMS M&O TSO.920427.0346	3.2.1.4, 3.2.3.2.1B, 3.2.3.2.2B, 3.2.3.2.3B
(DOE Order 1324.2)	3.7.4.2.5
DOE Order 3790.1A (5)(b)(2)(g)(3)	3.7.4.2.5
(DOE Order 4700.1)	5.1
DOE/RW-0005	3.2.3.2.3A(1)
DOE/RW-0194P Sections 6.1 & 6.4b	3.4.8A
DOE/RW-0214	3.4.7, 3.4.8A, 3.4.8B, 3.7.1.2.8B, 3.7.1.2.1.2.19, 3.7.1.2.1.2.19.1, 3.7.1.2.1.2.19.2, 3.7.1.2.1.2.19.3, 3.7.1.2.1.2.19.4, 3.7.3.2.6, 3.7.4.2.1, 3.9A, 3.9B, 3.9C, 3.9D
DOE/RW-0316P	3.2.1.4, 3.2.3.2.2B, 3.2.3.2.3B
DOE/RW-0328P	3.7.1.2.2B
DOE/RW-0331P	3.2.1.4, 3.2.3.2.1B, 3.2.3.2.2B, 3.2.3.2.3B
MOA DP/RW 1986	3.7.3.2.4B
MOA NS/RW 04/16/92	3.8B
(MTR 10090)	3.3.7
NWPA Sec. 111(a)(4)	3.2.1.1A
NWPA Sec. 111(a)(5)	3.2.1.2
NWPA Sec. 114(d)	3.2.1.1B
NWPA Sec. 123	3.7.3.2.4A
NWPA Sec. 302(a)(1)	3.7.1.2.2A
NWPA Sec. 302(a)(4)	3.7.2.2A, 3.7.2.2B
NWPA Sec. 302(a)(5)	3.2.1.1D
NWPA Sec. 302(b)(2)	3.7.1.2.2G
NWPA Sec. 302(b)(4)	3.7.3.2.2
Presidential Memo, 1985	3.7.1.2.2H

Table 6-3. Requirements Cross-Reference by Source Document (continued)

Source Document	WA-SRD Paragraph
Derived (10CFR60.21(b)(3))	3.7.1.2.1.2.15
Derived (10CFR60.113)	3.7.1.2.1.2.8
Derived (10CFR60.131(d)(2))	3.7.1.2.1.2.14
Derived (10CFR60.135(a))	3.7.1.2.1.2.1B(6), 3.7.1.2.1.2.6A, 3.7.1.2.1.2.10C, 3.7.1.2.1.2.11A, 3.7.1.2.1.2.11B, 3.7.1.2.1.2.13A, 3.7.1.2.1.2.13B, 3.7.3.2.1D
Derived (10CFR60.135(a)(1))	3.7.1.2.1.2.5, 3.7.1.2.1.2.7, 3.7.1.2.1.2.16
Derived (10CFR60.135(a)(2))	3.7.1.2.1.2.6B, 3.7.1.2.1.2.9A, 3.7.1.2.1.2.9B
Derived (10CFR60.135(b))	3.7.1.2.1D
Derived (10CFR60.135(b)(3))	3.7.1.2.1.2.1B(7), 3.7.1.2.1.2.14, 3.7.1.2.1.2.16
Derived (10CFR60.135(b)(4))	3.7.1.2.1.2.15
Derived (10CFR60.135(c))	3.7.1.2.1D, 3.7.1.2.1.2.1A
Derived (10CFR60.135(c)(1))	3.7.1.2.1.2.1B(7)
Derived (10CFR71)	3.7.1.2.1.2.10B
Derived (10CFR71.87)	3.7.1.2.1.2.10A
Derived (10CFR72.72(a))	3.7.4.2.3
Derived (10CFR72.72(d))	3.7.4.2.4
Derived (10CFR961.11 Article IV.A.1(a))	3.7.1.2.1.20
Derived (10CFR961.11 Article IV.B.1)	3.2.3.2.1A, 3.2.3.2.2A
Derived (10CFR961.11 Article IV.B.2)	3.2.3.2.3C, 3.2.3.2.3D
Derived (10CFR961.11 Appendix E.D)	3.7.1.2.1.2, 3.7.1.2.1.2.3
Derived (40CFR261.20 - 261.24, 40CFR261.31 - 261.33, 40CFR262)	3.7.1.2.1.2.12
Derived (49CFR172.203(d)(i))	3.7.3.2.1C
Derived (DOE Order 6430.1A)	3.7.1.2.1.2.15
Derived (DOE/EA-0179)	3.7.1.2.1.2.13A, 3.7.1.2.1.2.13B

Table 6-3. Requirements Cross-Reference by Source Document (continued)

Source Document	WA-SRD Paragraph
Derived (DOE/RW-0184)	3.7.1.2.1.2.1B(1), 3.7.1.2.1.2.1B(2), 3.7.1.2.1.2.1B(3), 3.7.1.2.1.2.1B(4), 3.7.1.2.1.2.1B(5), 3.7.1.2.1.2.17, 3.7.1.2.1.2.18
Derived (DOE/RW-0187)	3.2.3.2.3A(2), 3.2.3.2.3A(3)
Derived (DOE/RW-0214)	3.7.1.2.1.2.2, 3.7.4.2.3
Derived (DOE/RW-0270P)	3.2.3.2.3A(2), 3.2.3.2.3A(3)
Derived (DOE/RW-0316P)	3.2.1.3, 3.2.3.2.2C
Derived (NWPA Sec. 111(a)(4))	3.2.1.3, 3.2.3.2.2A
Derived (NWPA Sec. 302(a)(5))	3.2.3.2.1C, 3.2.3.2.2D

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APPENDIX A WA Function Descriptions

1.1 Accept Waste

The Accept Waste function establishes the criteria for acceptable waste, establishes contracts/agreements with Purchasers/Producers, collects fees, develops the plan for waste pickup, transfers the custody of the waste, and resolves discrepancies in the waste description.

The transfer of custody (including title), f.o.b. carrier, of spent nuclear fuel (SNF) or high-level radioactive waste (HLW)[1] from all Purchasers/Producers (who have executed a contract or an agreement with OCRWM) to OCRWM occurs at the Purchaser's/Producer's civilian nuclear power reactor or other domestic sites as may be designated by the Purchaser/Producer and approved by OCRWM. [10CFR961.11 Article I, Definitions - Expanded]

Inputs:	**From:**
• Plans, Data, Contract/Agreement	Purchaser/Producer
• SNF Documentation	Purchaser
• HLW Documentation	Producer
• Loaded Transportation Casks on Transporters	Purchaser/Producer
• Unloaded Transportation Casks on Transporters	1.2
• Shipping Documents	1.2
• Ancillary Equipment	1.2

Outputs:	**To:**
• Loaded Transportation Casks on Transporters	1.2
• SNF Documentation	1.2, 1.3, 1.4
• HLW Documentation	1.2, 1.3, 1.4
• Documentation	1.2
• Information	1.2
• Unloaded Transportation Casks on Transporters	Purchaser/Producer
• Reports	Purchaser/Producer
• Contracts/Agreements	Purchaser/Producer

1.1.1 Define Waste Acceptance Criteria

Determine the conditions necessary to be met by the SNF/HLW, in order for DOE to be able to accept it for disposal including defining standard and nonstandard waste forms.

[1]Note that the 10CFR60 definition of HLW includes SNF.

Inputs:	From:
• Waste Characteristics	1.1.2
• RW-859 Data	1.1.3
• 10CFR961	1.1.2
• Waste Form Compliance Plan	1.1.3
• Waste Form Qualification Report	1.1.3

Outputs:	To:
• Waste Acceptance Criteria	1.1.2

1.1.2 Establish Contracts/Agreements

Develop and execute written agreements between DOE and Purchasers/Producers that include terms, conditions, and criteria for waste acceptance and related services, and responsibilities of each party.

Inputs:	From:
• Waste Characteristics	Purchaser/Producer
• Waste Acceptance Criteria	1.1.1

Outputs:	To:
• Waste Characteristics	1.1.1
• Contract/Agreement	1.1.3 Purchaser/Producer/DOE/OCRWM
• 10CFR961	1.1.1 / 1.1.3

1.1.3 Plan for Waste Acceptance

Establish and provide the data on spent nuclear fuel and high-level waste characteristics and the Purchasers'/Producers' site capabilities and requirements, as well as the CRWMS capabilities and requirements. Sub-functions include: Allocate Waste System Capacity; Identify Waste Locations/Characteristics; and Define Site Interface Capabilities.

Inputs:	From:
• RW-859 Data	Purchaser
• Waste Form Compliance Plan	Producer
• Waste Form Qualification Report	Producer
• Production Records	Producer
• 10CFR961 Appendix A, B, C, D, E, F, G	Purchaser
• Schedules, Plans	1.2
• DCS	Purchaser

• FDS	Purchaser
• Exchange Requests	Purchaser/Producer
• Requests for Nonstandard Waste Delivery	Purchaser/Producer
• Services Planning Documents	Purchaser/Producer / 1.2
• Site-Specific Servicing Plans	Purchaser/Producer / 1.2
• FICA	1.2

Outputs:	**To:**
• Approved DCS	Purchaser / 1.1.4 / 1.2 / 1.3 / 1.4
• Approved FDS	1.1.4 / 1.2 / 1.3 / 1.4
• RW-859 Data	1.1.1
• Production Records	1.1.4 / 1.2 /1.4
• Waste Form Compliance Plan	1.1.1
• Waste Form Qualification Report	1.1.1
• Services Planning Documents	Purchaser/Producer / 1.2
• Site-Specific Servicing Plans	Purchaser/Producer / 1.2

1.1.3.1 Allocate Waste System Capacity

Using the priority ranking of Purchasers/Producers, distribute projected throughput capability (based on total CRWMS capacity) among each Purchaser/Producer for ten years of operation.

Inputs:	**From:**
• RW-859 Data	Purchaser
• Waste Form Compliance Plan	Producer
• Waste Form Qualification Report	Producer
• Waste Acceptance Rate	1.2 / 1.3 / 1.4
• APR	1.2 / 1.3 / 1.4
• 10CFR961 Appendix B, C, D, F, G	1.1.3.2

Outputs:	**To:**
• RW-859 Data	1.1.1
• ACR	1.1.3.2
• Waste Form Compliance Plan	1.1.3.2
• Waste Form Qualification Report	1.1.3.2

1.1.3.1.1 Collect Waste Data

Establish and provide the information on the Purchaser's/Producer's SNF/HLW that is necessary for CRWMS planning and design.

Inputs:	From:
• RW-859 Data	Purchaser
• Waste Form Compliance Plan	Producer
• Waste Form Qualification Report	Producer
• Other SNF Data	Purchaser
• 10CFR961 Appendix B, C, D, F, G	1.1.3.2

Outputs:	To:
• Waste Data	1.1.3.1.2
• RW-859 Data	1.1.1

1.1.3.1.2 Rank/Order Waste

Establish a priority ranking for acceptance of waste into the CRWMS. The priority ranking is based on the date the SNF was permanently discharged, with the Purchasers with the oldest SNF, on an industry-wide basis, given the highest priority. The acceptance priority accrues to the Purchaser. Producer priority ranking will be established by a method yet to be determined.

Inputs:	From:
• Waste Data	1.1.3.1.1
• RW-859 Data	1.1.3.1.1

Outputs:	To:
• APR	1.1.3.1.3

1.1.3.1.3 Allocate Annual Capacity to Purchasers/Producers

Allocate acceptance capacity among Purchasers/Producers according to CRWMS annual waste acceptance rate and APR.

Inputs:	From:
• APR	1.1.3.1.2
• Waste Acceptance Rate	1.2 / 1.3 / 1.4

Outputs:	To:
• ACR	Purchaser / 1.1.3.2

1.1.3.2 Identify Waste Locations/Characteristics

Evaluate Purchasers'/Producers' proposed waste locations and characteristics.

Inputs:	**From:**
• ACR	1.1.3.1
• Waste Form Compliance Plan	1.1.3.1
• Waste Form Qualification Report	1.1.3.1
• Submitted DCS	Purchaser
• Submitted FDS	Purchaser
• 10CFR961 Appendix A, B, C, D, E, F, G	Purchaser
• Submitted Exchange Requests	Purchaser
• Request for Nonstandard Waste Delivery	Purchaser/Producer
• Production Records	Producer

Outputs:	**To:**
• Approved DCS	1.1.3.3 / Purchaser / 1.2 / 1.3 / 1.4
• Approved FDS	Purchaser / 1.1.4 / 1.2 / 1.3 / 1.4
• Production Records	1.1.4 / 1.2 / 1.4
• 10CFR961 Appendix B	1.1.3.1 / 1.1.4
• 10CFR961 Appendix C, D, F, G	1.1.3.1

1.1.3.2.1 Evaluate Delivery Commitment Schedule

Determine the feasibility of waste acceptance as proposed by the Purchaser/Producer on the submitted forms as it corresponds to their allocation, site capabilities, and minimum acceptance requirements.

Inputs:	**From:**
• Submitted DCS	Purchaser
• Evaluation Support	1.2

Outputs:	**To:**
• Approved DCS	Purchaser / 1.2 / 1.3 / 1.4 / 1.1.3.2.2
• Disapproved DCS	Purchaser
• Evaluation Request	1.2

1.1.3.2.2 Evaluate Exchange Requests

Determine the feasibility of exchanging approved DCSs.

Inputs:	From:
• Submitted Exchange Request	Purchaser
• Evaluation Support	1.2

Outputs:	To:
• Approved Exchange Request	Purchaser/ 1.2 / 1.3 / 1.4
• Disapproved Exchange Request	Purchaser
• Evaluation Request	1.2

1.1.3.2.3 Evaluate Request for Nonstandard Waste Delivery

Determine the feasibility of accommodating suggested acceptance procedures for SNF/HLW that is other than standard waste.

Inputs:	From:
• Request for Nonstandard Waste Delivery	Purchaser/Producer
• Evaluation Support	1.2

Outputs:	To:
• Approved Request for Nonstandard Waste Delivery	Purchaser/Producer 1.2 / 1.3 / 1.4
• Disapproved Request for Nonstandard Waste Delivery	Purchaser/Producer
• Evaluation Request	1.2

1.1.3.2.4 Evaluate Final Delivery Schedule

Determine the feasibility of accepting described waste on the proposed schedule.

Inputs:	From:
• Submitted FDS	Purchaser
• Evaluation Support	1.2

Outputs:	**To:**
• Approved FDS	Purchaser / 1.2 / 1.3 / 1.4
• Disapproved FDS	Purchaser
• Evaluation Request	1.2

1.1.3.3 Define Site Interface Capabilities

Determine the interface capabilities at each Purchaser's/Producer's site to ensure that they can be accommodated by the CRWMS equipment and facilities.

Inputs:	**From:**
• FICA	1.2
• Approved DCS	1.1.3.2
• Draft Services Planning Documents	1.2
• Services Planning Documents Approval/Comments	Purchaser/Producer
• Draft Site-Specific Servicing Plans	1.2
• Site-Specific Servicing Plans Approval/Comments	Purchaser/Producer

Outputs:	**To:**
• Draft Services Planning Documents for Review/Approval	Purchaser/Producer
• Services Planning Documents Approval/Comments	1.2
• Draft Site-Specific Servicing Plans for Review/Approval	Purchaser/Producer
• Site-Specific Servicing Plans Approval/Comments	1.2

1.1.4 Accept Waste Custody

Observe preparatory operations for waste delivery and transfer title of accepted waste to CRWMS from the Purchaser/Producer. Sub-functions include: Observe Waste Preparations; and Accept Title/Documentation, which includes resolution of improperly described waste prior to acceptance into the CRWMS.

Inputs:	**From:**
• SNF	Purchaser
• HLW	Producer
• Title/Documentation	Purchaser/Producer
• Unloaded Transportation Casks on Transporters	1.2

• Resolved Waste Description	1.1.5

Outputs:	To:
• SNF Documentation	1.3 / 1.4
• HLW Documentation	1.4
• Loaded Transportation Casks on Transporters	1.2
• Title	DOE/OCRWM
• Documentation	1.1.5 / 1.2 / DOE/OCRWM
• Information	1.2

1.1.4.1 Observe Waste Preparations

Verify the identified waste to be delivered is in agreement with its corresponding documentation. Verification may be accomplished by certification by the Purchaser/Producer.

Inputs:	From:
• SNF	Purchaser
• HLW	Producer
• FDS	1.1.3
• 10CFR961 Appendix F	1.1.3
• Production Records	1.1.1
• Unloaded Transportation Casks on Transporters	1.2

Outputs:	To:
• Documentation, Findings	1.1.4.2
• Notification of Discrepancy	Purchaser/Producer
• Proposed Resolution	Purchaser/Producer
• SNF/HLW Documentation	1.1.4.2
• Loaded Transportation Casks on Transporters	1.1.4.2

1.1.4.1.1 Observe Preliminary Waste Preparations

Observe the activities of getting the SNF/HLW ready for acceptance (including review of techniques used to classify the waste) to ensure that it is appropriate to the transportation cask system, storage facility and repository provided by the CRWMS.

Inputs:	From:
• Information	Purchaser/Producer

Outputs:	To:
• Verified Documentation, Findings	1.1.4.1.2

1.1.4.1.2 Verify Waste Description

Verify that the contents being placed into the transportation cask correspond to those described in the submitted documentation.

Inputs:	**From:**
• FDS	1.1.3
• Verified Documentation, Findings	1.1.4.1.1
• Information	Purchaser/Producer

Outputs:	**To:**
• Verified Documentation, Findings	1.1.4.1.3 / 1.1.4.2

1.1.4.1.3 Notify Purchaser/Producer of Improperly Described Waste

Prior to DOE/OCRWM taking title to the waste, resolve any identified discrepancy between the description of the waste provided in documentation and the actual contents of the transportation cask with the Purchaser/Producer.

Inputs:	**From:**
• Verified Documentation, Findings	1.1.4.1.2

Outputs:	**To:**
• Notification of Discrepancy	Purchaser/Producer
• Proposed Resolution	Purchaser/Producer

1.1.4.2 Accept Title/Documentation

Transfer the documents authorizing DOE acceptance of the waste from the Purchaser/Producer to the DOE at the time of such acceptance.

Inputs:	**From:**
• Documentation, Findings	1.1.4.1
• Title	Purchaser/Producer
• Documentation	Purchaser/Producer
• SNF/HLW Documentation	1.1.4.1
• Loaded Transportation Casks on Transporters	1.1.4.1

Outputs:	To:
• Title	DOE/OCRWM
• Documentation	DOE/OCRWM / 1.2
• SNF Documentation	1.3 / 1.4
• HLW Documentation	1.4
• Loaded Transportation Casks on Transporters	1.2

1.1.5 Resolve Improperly Described Waste

When a discrepancy is found with the waste after DOE/OCRWM has taken title to it, make arrangements with the Purchaser/Producer to correct the waste description.

Inputs:	From:
• Waste Description	1.3 / 1.4
• Resolved Waste Description	Purchaser/Producer

Outputs:	To:
• Notification of Proposed Resolution	Purchaser/Producer
• Resolved Waste Description	1.1.4 / 1.3 / 1.4

1.1.6 Support Fee Collection

Collect, verify, and assess the adequacy of fees paid into the Nuclear Waste Fund (NWF) and recommend adjustment of the fee, if necessary, in order to ensure full cost recovery. Fees for waste disposal services will be paid by the Purchasers/Producers. DOE will regularly review and verify the accuracy of all fees paid into the NWF.

Inputs:	From:
• Fees	Purchaser/Producer
• OCRWM Program Cost Estimates	DOE

Outputs:	To:
• Fees	Nuclear Waste Fund
• Fee Adequacy Assessment	DOE Secretary
• Payment Received Notification	1.1.3

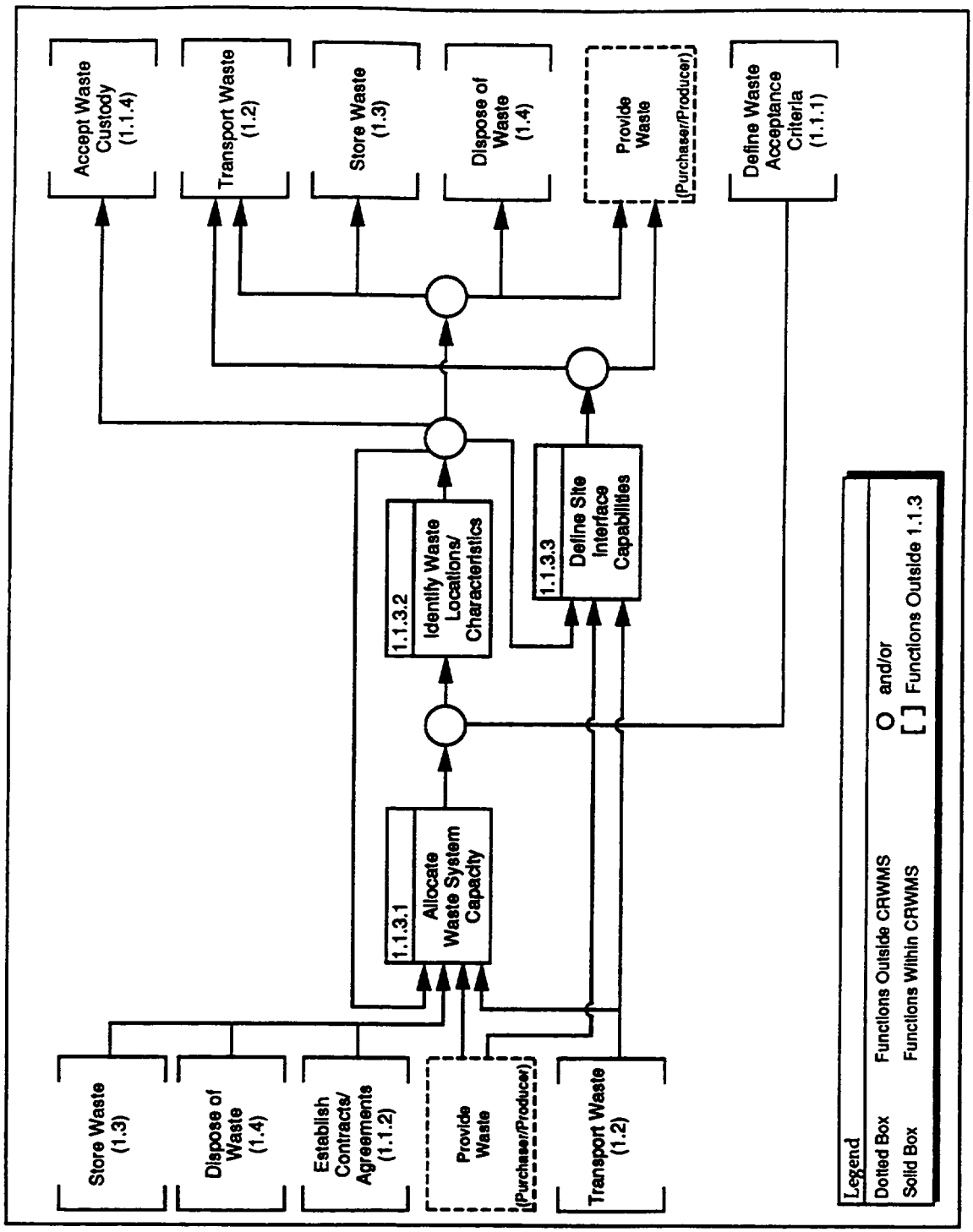

Figure A-1. 1.1.3 Plan for Waste Acceptance Function Flow Diagram

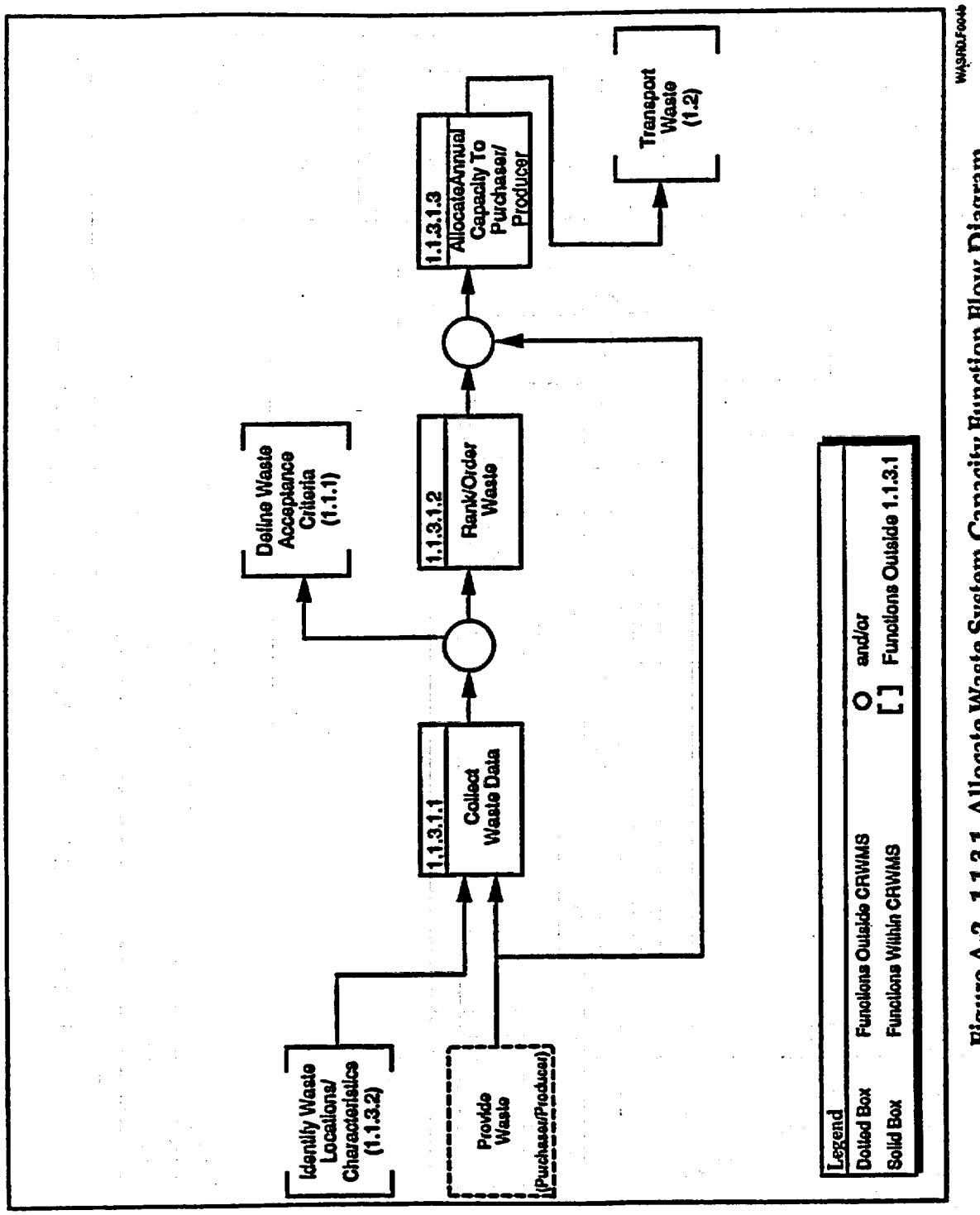

Figure A-2. 1.1.3.1 Allocate Waste System Capacity Function Flow Diagram

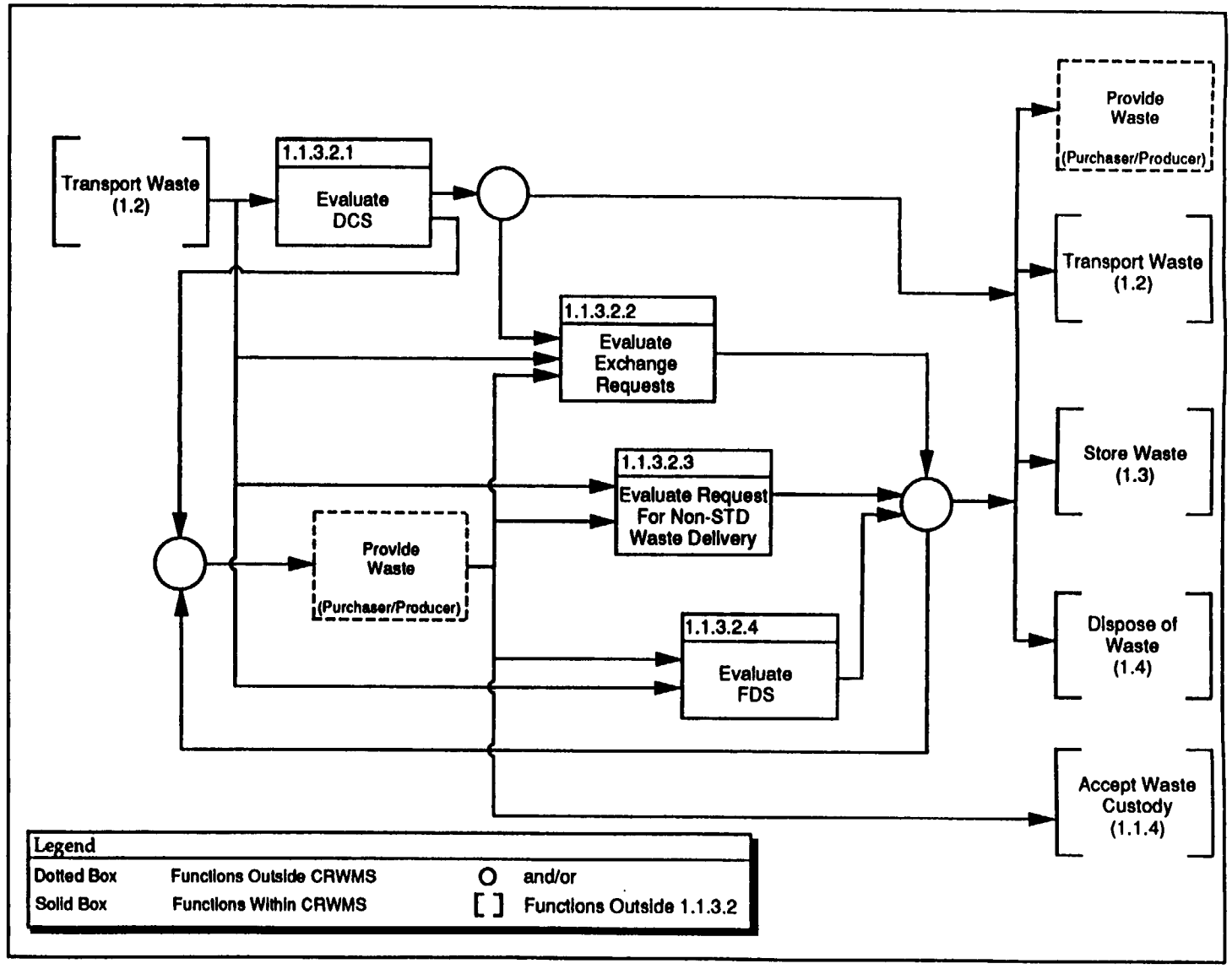

Figure A-3. 1.1.3.2 Identify Waste Locations/Characteristics Function Flow Diagram

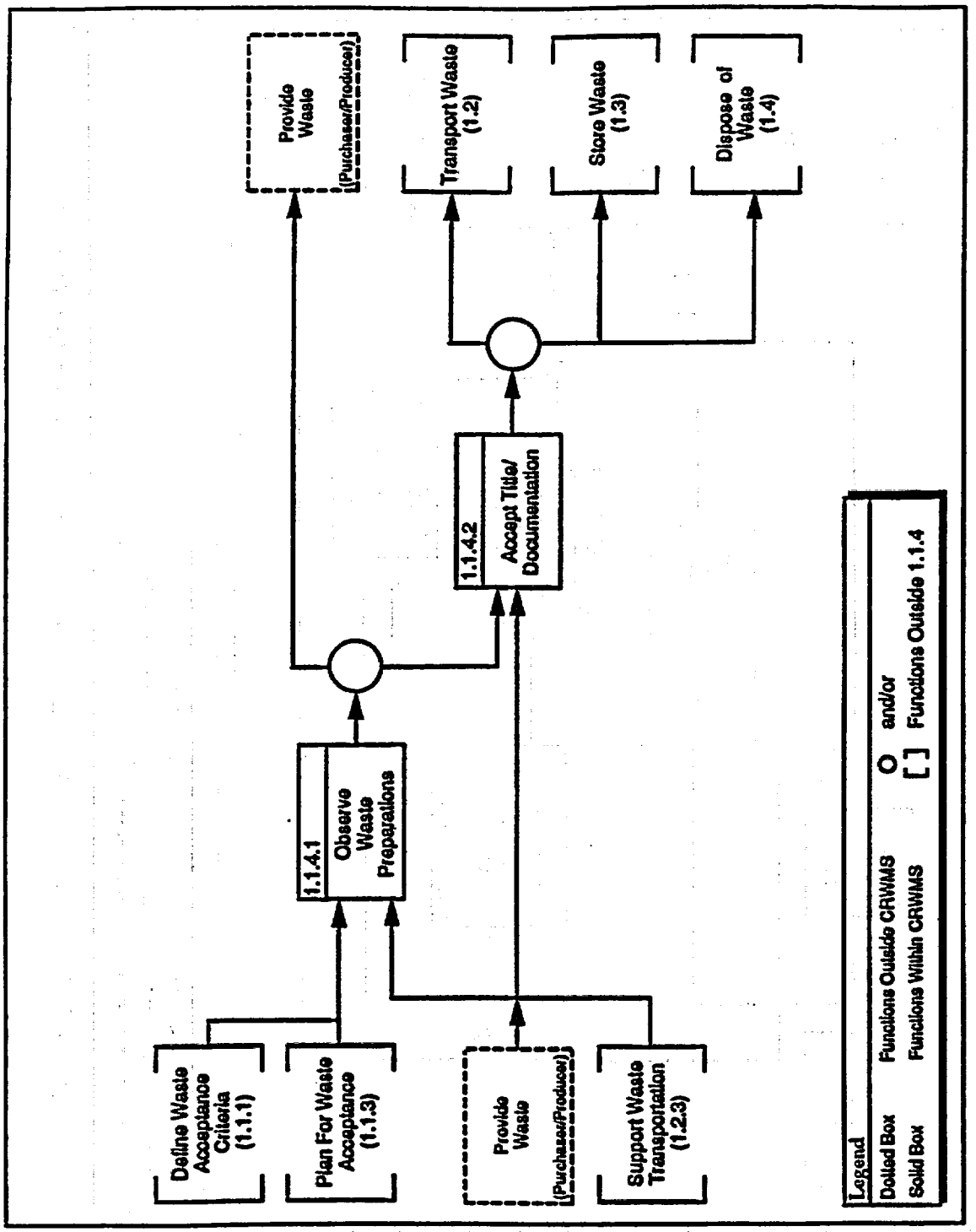

Figure A-4. 1.1.4 Accept Waste Custody Function Flow Diagram

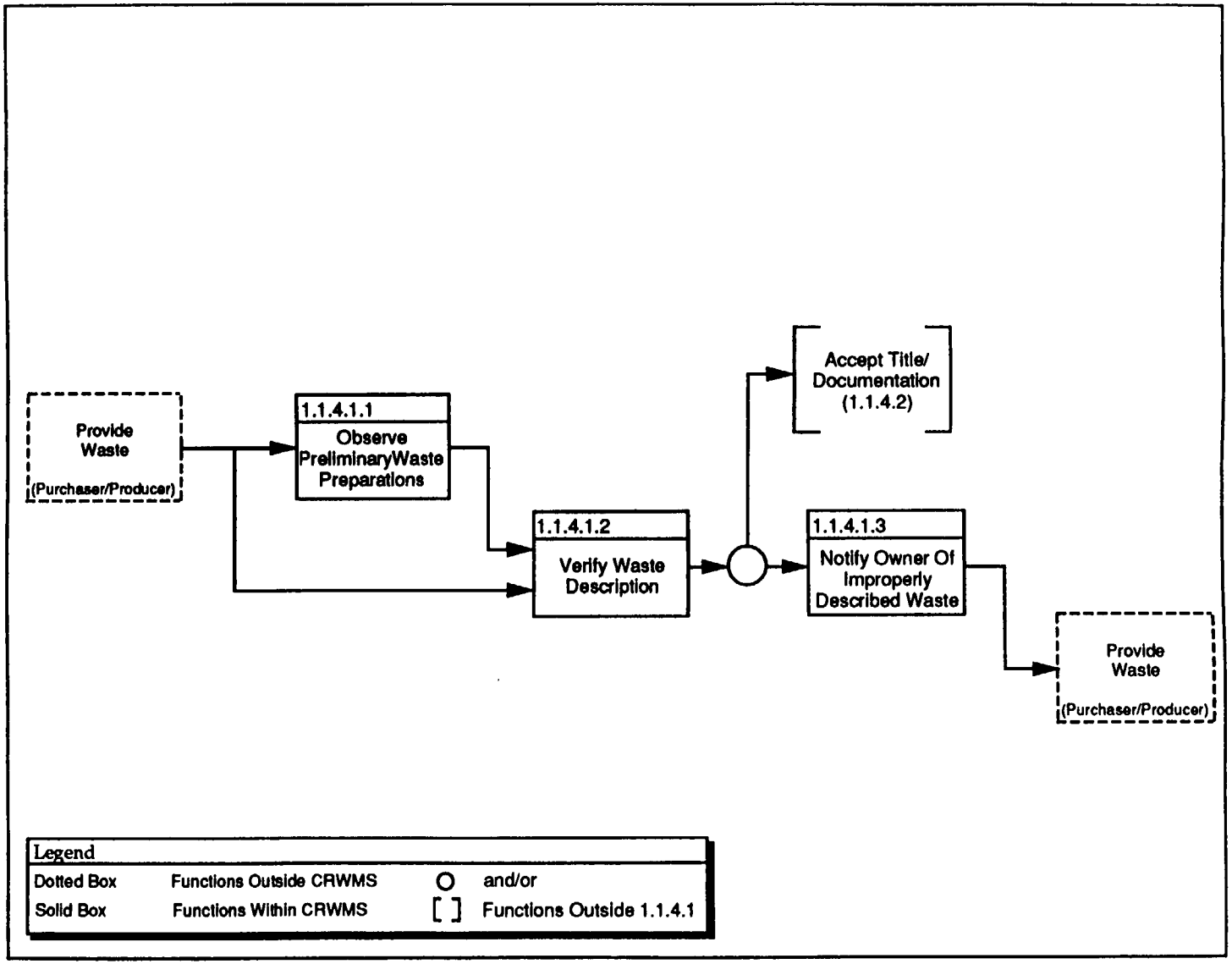

Figure A-5. 1.1.4.1 Observe Waste Preparations Functional Flow Diagram

Outside CRWMS		RW-859 Data (Pur) Waste Form Compliance Plan (Pro) Waste Form Qualification Report (Pro)	Submitted DCS (Pur) Submitted FDS (Pur) 10CFR961 Appendix A, B, C, D, E, F, G (Pur) Exchange Request (Pur) Request for Non-Standard Waste Delivery (Pur/Pro) Production Records (Pro)	Services Planning Documents Approval/ Comments (Pur/Pro) Site-Specific Servicing Plans Approval/ Comments (Pur/Pro)
	Outside Plan for Waste Acceptance 1.1.3	Waste Acceptance Rate (1.2, 1.3, 1.4) APR (1.2, 1.3, 1.4) 10CFR961 (1.1.2) Contract/Agreement (1.1.2)		Draft Services Planning Documents (1.2) Draft Site-Specific Servicing Plans (1.2) FICA (1.2)
	RW-859 Data (1.1.1)	Allocate Waste System Capacity 1.1.3.1	ACR Waste Form Compliance Plan Waste Form Qualification Report	
Approved DCS (Pur) Approved FDS (Pur)	Approved DCS (1.2, 1.3, 1.4) Approved FDS (1.1.4, 1.2, 1.3, 1.4) Production Records (1.1.4, 1.2, 1.4) 10CFR961 App B (1.1.4)	10CFR961 Appendix B, C, D, F, G	Identify Waste Locations/ Characteristics 1.1.3.2	Approved DCS
Draft Services Planning Documents (Pur/Pro) Draft Site-Specific Servicing Plans (Pur/Pro)	Services Planning Documents Approval/ Comments (1.2) Site-Specific Servicing Plans Approval/ Comments (1.2)			Define Site Interface Capabilities 1.1.3.3

Figure A-6. N-Square Chart for 1.1.3 Plan for Waste Acceptance

Outside CRWMS		RW-859 Data (Pur) Waste Form Compliance Plan, Waste Form Qualification Report (Pro) Other SNF Data (Pur)		
	Outside 1.1.3.1	10CFR961/Appendix B, C, D, F, G (1.1.3.2)		Waste Acceptance Rate (1.2, 1.3, 1.4)
	RW-859 Data (1.1.1)	**Collect Waste Data** **1.1.3.1.1**	Waste Data RW-859 Data	
			Rank/Order Waste **1.1.3.1.2**	APR
ACR (Pur)	ACR (1.1.3.2)			**Allocate Annual Capacity to Purchasers/Producers** **1.1.3.1.3**

Figure A-7. N-Square Chart for 1.1.3.1 Allocate Waste System Capacity

Outside CRWMS		Submitted DCS (Pur)	Submitted Exchange Request (Pur)	Request for Non-Standard Waste Delivery (Pur/Pro)	Submitted FDS (Pur)
	Outside 1.1.3.2	Evaluation Support (1.2)	Evaluation Support (1.2)	Evaluation Support (1.2)	Evaluation Support (1.2)
Approved DCS Disapproved DCS (Pur)	Approved DCS (1.2, 1.3, 1.4) Evaluation Request (1.2)	**Evaluate Delivery Commitment Schedule 1.1.3.2.1**	Approved DCS		
Approved Exchange Request, Disapproved Exchange Request (Pur)	Approved Exchange Request (1.2, 1.3, 1.4) Evaluation Request (1.2)		**Evaluate Exchange Requests 1.1.3.2.2**		
Approved Request for Non-Standard Waste Delivery, Disapproved Request for Non-Standard Waste Delivery (Pur/Pro)	Approved Request for Non-Standard Waste Delivery (1.2, 1.3, 1.4) Evaluation Request (1.2)			**Evaluate Request for Non-Standard Waste Delivery 1.1.3.2.3**	
Approved FDS Disapproved FDS (Pur)	Approved FDS (1.2, 1.3, 1.4) Evaluation Request (1.2)				**Evaluate Final Delivery Schedule 1.1.3.2.4**

Figure A-8. N-Square Chart for 1.1.3.2 Identify Waste Locations/Characteristics

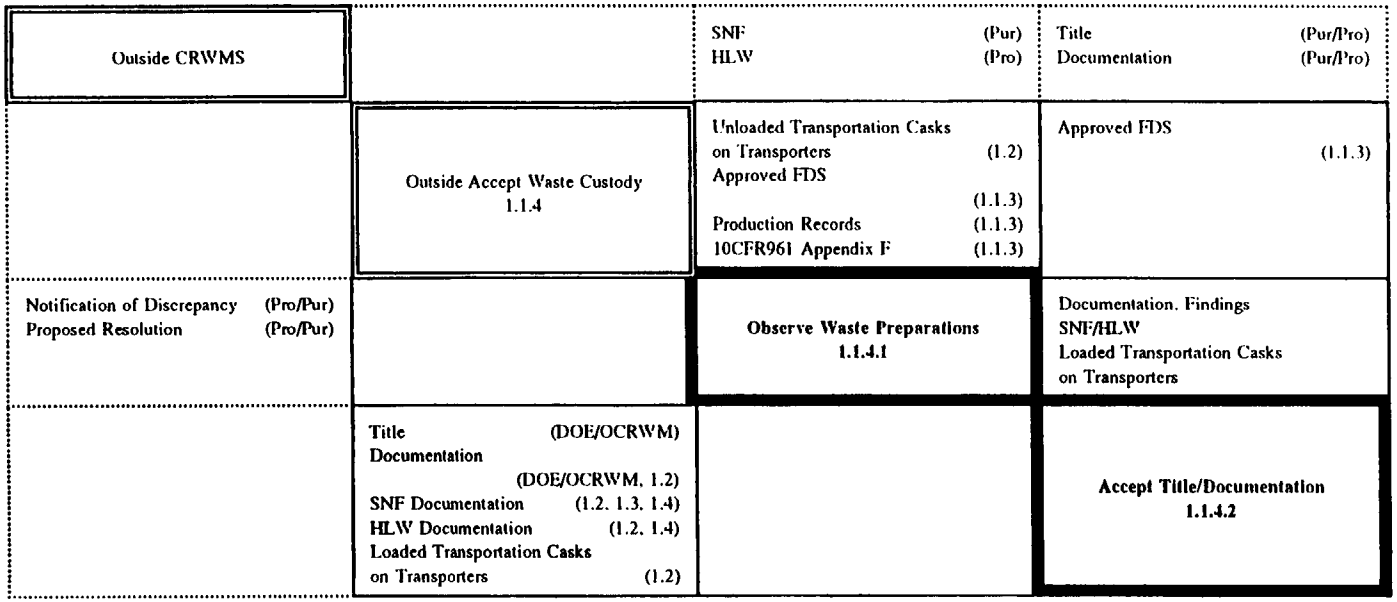

Figure A-9. N-Square Chart 1.1.4 Accept Waste Custody

Outside CRWMS		Information (Pur/Pro)	Information (Pur/Pro)	
	Outside 1.1.4.1			
		Observe Preliminary Waste Preparations 1.1.4.1.1	Verified Documentation, Findings	
	Verified Documentation, Findings (1.1.4.2)		Verify Waste Description 1.1.4.1.2	Verified Documentation, Findings
Notification of Discrepancy, Proposed Resolution (Pur/Pro)				Notify Purchaser/Producer of Improperly Described Waste 1.1.4.1.3

Figure A-10. N-Square Chart for 1.1.4.1 Observe Waste Preparations

APPENDIX B WA Function Allocation Table

Table B-1. Allocation of Functions to Architecture

Function Title	Waste Acceptance Segments			
	A	B	C	D
Accept Waste	X	X	X	X
Define Waste Acceptance Criteria	X			X
Establish Contracts/Agreements	X			X
Plan for Waste Acceptance	X			X
Allocate Waste System Capacity	X			X
Collect Waste Data	X			X
Rank/Order Waste	X			X
Allocate Annual Capacity to Purchasers/Producers	X			X
Identify Waste Location/Characteristics	X			X
Evaluate DCS	X			X
Evaluate Exchange Requests	X			X
Evaluate Request for Nonstandard Waste Delivery	X			X
Evaluate FDS	X			X
Define Site Interface Capabilities	X			X
Accept Waste Custody			X	X
Observe Waste Preparations			X	X
Observe Preliminary Waste Preparations			X	X
Verify Waste Description			X	X
Notify Purchaser/Producer of Improperly Described Waste			X	X
Accept Title/Documentation			X	X
Resolve Improperly Described Waste			X	X
Provide Fee Collection	X	X		X

Waste Acceptance Segments:
A - Contract/Agreement Management Segment
B - Waste Fund Management Segment
C - Waste Acceptance Management Segment
D - Support Segment

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