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DEC 10 2007

08-AMCP-0044

Mr. N. Ceto, Program Manager
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Hanford Project Office
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Dear Mr. Ceto:

WORK PLAN FOR DISPOSITION OF LOW-LEVEL AND MIXED LOW-LEVEL WASTE FROM BURIAL GROUNDS EXCEPT DRUMS IN 218-W-4C, DOE/RL-2006-40, REVISION 0, DRAFT A, AND WORK PLAN FOR DISPOSAL OF HANFORD WASTE AT THE ENVIRONMENTAL RESTORATION DISPOSAL FACILITY, DOE/RL-2007-06, REVISION 0, DRAFT A

The purpose of this letter is to transmit the Work Plan for Disposition of Low-Level and Mixed Low-Level Waste from Burial Grounds Except Drums in 218-W-4C, DOE/RL-2006-40, Revision 0, Draft A (Attachment 1), and the Work Plan for Disposal of Hanford Waste at the Environmental Restoration Disposal Facility, DOE/RL-2007-06, Revision 0, Draft A (Attachment 2) to the U.S. Environmental Protection Agency for review and approval.

The Work Plan for Disposition of Low-Level and Mixed Low-Level Waste from Burial Grounds Except Drums in 218-W-4C, DOE/RL-2006-40, Revision 0, Draft A implements the Environmental Restoration Disposal Facility (ERDF) Record of Decision (ROD) amendment for the Waste Retrieval Project. The Work Plan for Disposal of Hanford Waste at the Environmental Restoration Disposal Facility, DOE/RL-2007-06, Revision 0, Draft A implements the ERDF ROD amendment for other applicable Hanford waste. These are primary documents under the Tri-Party Agreement therefore approval is requested within 45 days of receipt of this letter.

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DEC 13 2007

EDMC

Mr. N. Ceto
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If you have any questions, please contact me, or your staff may contact Matt McCormick, Assistant Manager for the Central Plateau, on (509) 373-9971.

Sincerely,


David A. Brockman
Manager

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Work Plan for Disposition of Low-Level and Mixed Low-Level Waste From Burial Grounds Except Drums in 218-W-4C

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



**United States
Department of Energy**
P.O. Box 550
Richland, Washington 99352

**Approved for Public Release;
Further Dissemination Unlimited**

Work Plan for Disposition of Low-Level and Mixed Low-Level Waste From Burial Grounds Except Drums in 218-W-4C

J. L. Westcott
Fluor Hanford, Inc.

Date Published
August 2007

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



**United States
Department of Energy**
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Release Approval 08/01/2007
Date

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TERMS

AEA	<i>Atomic Energy Act of 1954</i>
AJHA	automated job hazard analysis
ARAR	applicable or relevant and appropriate requirements
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
HFFACO	<i>Hanford Federal Facility Agreement and Consent Order</i>
LDR	land disposal restriction
LLW	low-level waste
MLLW	mixed low-level waste
PCB	polychlorinated biphenyls
QA	quality assurance
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
ROD	Record of Decision
RSW	retrievably stored waste
SAP	sampling and analysis plan
SWOC	Solid Waste Operations Complex
TCRA	time critical removal action
TRU	transuranic
TSCA	<i>Toxic Substances Control Act of 1976</i>
WMP	Waste Management Plan

DEFINITIONS

Acceptable Knowledge – The information requirements necessary to meet the radioactive and hazardous waste regulations that are appropriate for the waste that may include WAC 173-303, “Dangerous Waste Regulations”; 40 CFR 761, “Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions”; and 10 CFR 61, “Licensing Requirements for Land Disposal of Radioactive Waste.”

Waste Isolation Pilot Plant Acceptable Knowledge – The information requirements necessary to meet the radioactive and hazardous waste requirements in accordance with the Hanford Site Transuranic Waste Certification Program.

Retrievably Stored Waste – Waste that has been placed in earthen-covered storage (Burial Grounds) after 1970 that may be transuranic waste.

Offsite – A facility or location determined per 40 CFR 300.440, “Procedures for Planning and Implementing Off-Site Response Actions,” as necessary to implement an action.

Onsite – A facility or location determined for the purposes of this *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* action to be within the areal extent of contamination and suitable areas in close proximity to the contamination necessary to implement an action.

1.0 INTRODUCTION

An action regarding the treatment and disposal of waste on the Hanford site under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)* per 40 CFR 300, "National Oil and Hazardous substance Pollution Contingency Plan," has been initiated. The action is established in the *Amended Record of Decision for the Environmental Restoration Disposal Facility (EPA 2007)*, hereafter called the ERDF ROD Amendment, consisting of treatment, as needed, and disposal of Hanford low-level waste (LLW) and mixed low-level waste (MLLW) at the Environmental Restoration Disposal Facility (ERDF).

This document is the action work plan for the disposition of containers of LLW and MLLW retrieved from Burial Grounds located at the 200 West and 200 East Areas at the U.S. Department of Energy (DOE) Hanford Site. Waste is being retrieved from the following Burial Grounds:

- Burial Ground 218-W-4C (trenches 1, 4, 7, 20, and 29)
- Burial Ground 218-W-4B (trenches 7, V-7, and 11)
- Burial Ground 218-E-12B (parts of trenches 17 and 27)
- Burial Ground 218-W-3A (parts of trenches 1, 4, 5, 6, 8, 10, 15, 17, 23, 30, 32, 34, S6, and S9).

The Figures 1-1 and 1-2 show maps of the 200 West and 200 East Areas Low-Level Burial Grounds, respectively.

The Washington State Department of Ecology, the U.S. Environmental Protection Agency (EPA), and DOE, hereinafter referred to as the Tri-Parties, approved and signed *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Time Critical Removal Action Memorandum for Disposal at the Environmental Restoration Facility (ERDF) of Non-Transuranic (TRU) Waste Generated During the M-91 Retrieval Operations at Burial Ground 218-W-4C (EPA 2004)*, to accelerate the disposition of wastes stored in drums located in Burial Ground 218-W-4C. The drums of waste from Burial Ground 218-W-4C and drums retrieved before approval of the time critical removal action (TCRA) (EPA 2004) are excluded from the scope of this document because the waste is covered by an existing time-critical action memorandum and supporting implementing documentation.

In this document, the term retrievably stored waste (RSW) refers to all containers located at Burial Grounds 218-W-4C (trenches 1, 4, 7, 20, and 29); Burial Ground 218-W-4B (trenches 7, V-7, and 11); Burial Ground 218-E-12B (parts of trenches 17 and 27); and Burial Ground 218-W-3A (parts of trenches 1, 4, 5, 6, 8, 10, 15, 17, 23, 30, 32, 34, S6, and S9) except containers that are drums located in Burial Ground 218-W-4C and waste retrieved before approval of the TCRA. The ERDF ROD Amendment has been approved authorizing the treatment and disposal to ERDF of many wastes including RSW that is the subject of this work plan. The ERDF ROD Amendment does not mandate that the waste be disposed at ERDF; rather, it provides a method for disposal at ERDF that may be selected. If the RSW cannot be treated for disposal at ERDF,

then it may be stored until treatment or disposal becomes available in another appropriate facility.

LLW and MLLW retrieved from Hanford burial grounds are eligible for disposal at ERDF under this action because they meet the following action criteria:

- Meets the existing ERDF waste acceptance criteria (or is capable of meeting waste acceptance criteria with treatment)
- Complies with land disposal restrictions (LDR) requirements (or complies with LDR with treatment performed at ERDF), as applicable
- Is generated at the Hanford Site or directly derived from a Hanford-generated waste in support of *Resource Conservation and Recovery Act of 1976 (RCRA)*, *Toxic Substances Control Act of 1976 (TSCA)*, *Atomic Energy Act of 1954 (AEA)*, and CERCLA cleanup actions
- Is not addressed by a different CERCLA decision document
- Is listed on Table 1 of the ERDF ROD Amendment or approved by the EPA via the plug-in approach described in the ERDF ROD Amendment.

Waste that is generated or derived from Hanford-generated waste in support of RCRA, TSCA, AEA, and CERCLA cleanup meets one of the following criteria:

- LLW and MLLW that are products of activities performed on the Hanford Site,
- LLW and MLLW that were placed in storage prior to May 24, 2007, the approval date of the ERDF ROD Amendment (EPA 2007), or
- LLW and MLLW that meet the requirements of one of the bullets listed above that have been treated as treatment is defined in WAC 173-303-040, "Definitions."

Approval by the U.S. Environmental Protection Agency (EPA) for each individual waste stream will be granted by approving a sampling and analysis plan (SAP).

Figure 1-1. Map of the 200 West Area Low-Level Burial Grounds.

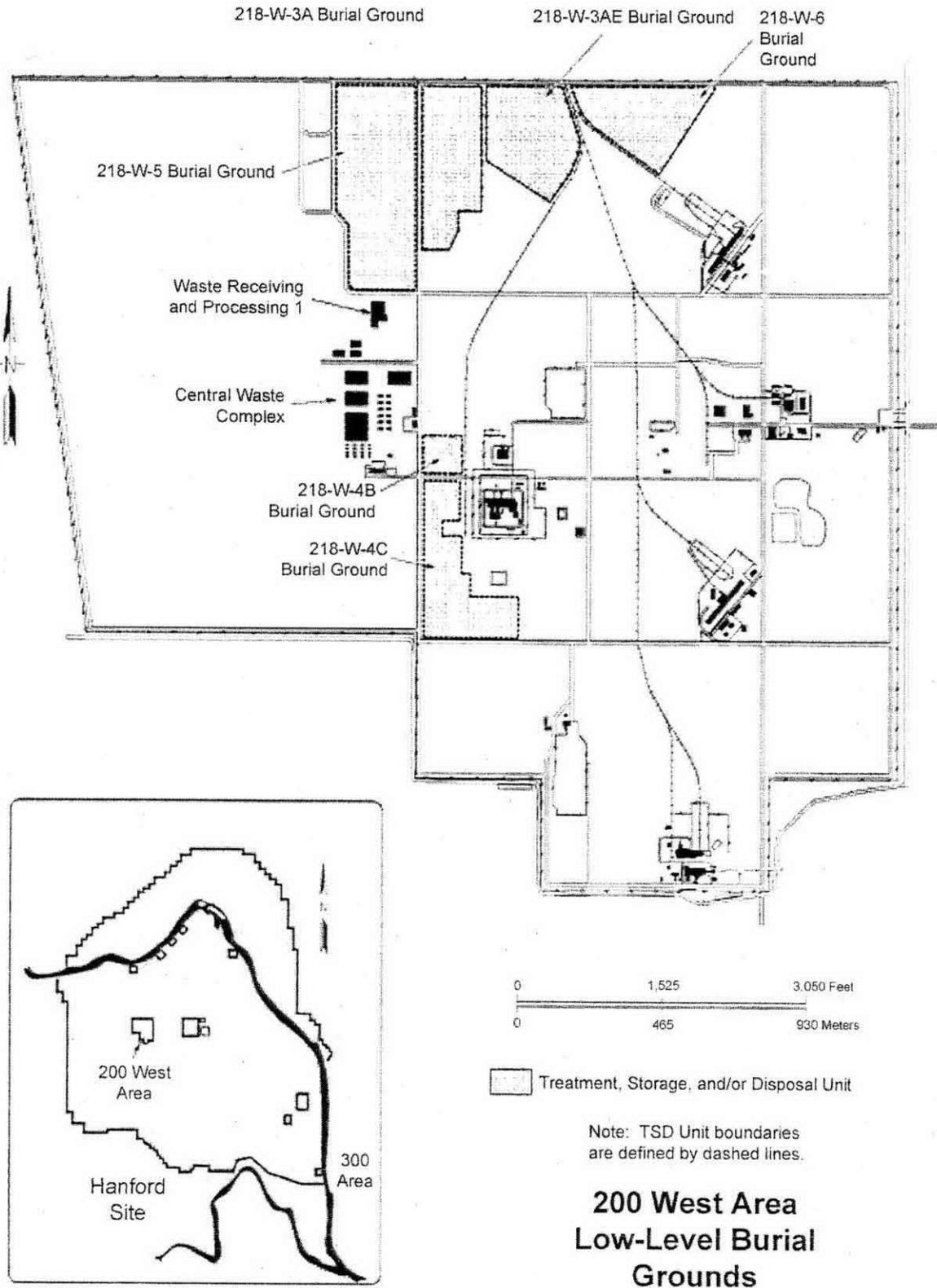
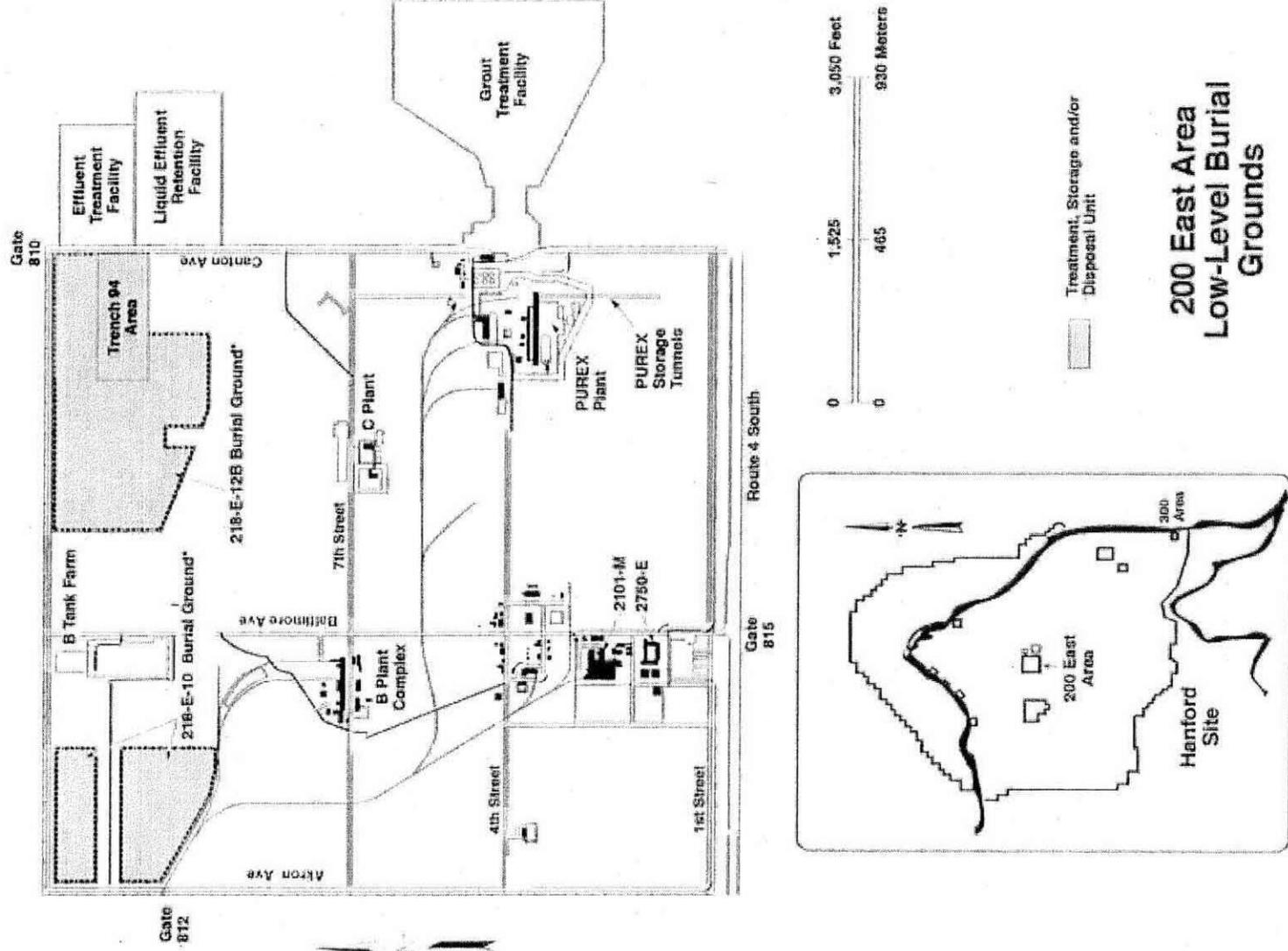


Figure 1-2. Map of the 200 East Area Low-Level Burial Grounds.



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1.1 BACKGROUND

Since 1970, approximately 37,400 suspect-TRU waste containers were placed in retrievable storage at the Hanford Site. The majority of these waste containers (approximately 26,200 drums) are stacked vertically on asphalt pads in earth-covered trenches in the low-level Burial Grounds. Approximately 18,000 of the suspect-TRU containers are drums (e.g., 208 L [55 gal]) stored in Burial Ground 218-W-4C. The Hanford Site Waste Retrieval Project is currently retrieving RSW from Burial Ground 218-W-4C. The specific burial grounds and trenches where retrieval operations are occurring and/or are expected to occur include Burial Grounds 218-W-4C (trenches 1, 4, 7, 20, and 29); Burial Ground 218-W-4B (trenches 7, V-7, and 11); Burial Ground 218-E-12B (parts of trenches 17 and 27); and Burial Ground 218-W-3A (parts of trenches 1, 4, 5, 6, 8, 10, 15, 17, 23, 30, 32, 34, S6, and S9).

DOE is required to (1) retrieve; (2) designate pursuant to WAC 173-303, "Dangerous Waste Regulations," Sections -070 through -100; and (3) if needed, treat the suspect-TRU RSW in accordance with *Modification of Hanford Federal Facility Agreement and Consent Order (HFFACO) M-91 Series Provisions* (EPA et al. 2004). The suspect-TRU RSW will be segregated into three categories: TRU (including mixed TRU) waste, LLW, and MLLW.

Suspect-TRU RSW is suspected to be mixed dangerous and radioactive waste and will be managed as mixed waste unless and until it is designated as not being dangerous waste. A simplified process flow diagram for the disposition of RSW from the Burial Grounds is provided in Figure 1-3. The TRU portion of the RSW from the Burial Grounds will be processed as part of the Hanford TRU Program certification activities to determine if a waste meets the definition of TRU waste to enable DOE to comply with provisions of the *Waste Isolation Pilot Plant Land Withdrawal Act of 1992*.

The ERDF ROD Amendment (EPA 2007) authorizes the treatment of the LLW and MLLW fractions of RSW, as required, and their disposal at ERDF. The waste must comply with or be treated to comply with the ERDF waste acceptance criteria, which embodies the ERDF applicable or relevant and appropriate requirements (ARARs). The treatment and disposal of LLW and MLLW RSW under the TCRA (EPA 2004) are excluded from the scope of this document. The LLW and MLLW fractions account for about half of the RSW from Burial Grounds (i.e., approximately 10,000 containers not including drums from Burial Ground 218-W-4C). It is anticipated that greater than 90% of the MLLW will meet the definition of debris waste under WAC 173-303-140, "Land Disposal Restrictions," or are radioactive lead solids.

The following waste types from waste retrieval operations at the Burial Grounds are included in the scope of this action work plan:

- LLW fraction of the RSW
- MLLW fraction of the RSW
- Secondary wastes generated by waste retrieval, storage in preparation for shipment to ERDF, treatment at ERDF, and disposal operations at ERDF (e.g., potentially

The LLW that meets ERDF waste acceptance criteria will be prepared and shipped to ERDF for disposal. MLLW retrieved under this action may require treatment to satisfy the land disposal restrictions (LDR) before disposal at ERDF. If required, treatment may be performed at ERDF. MLLW that has been treated to meet the LDR and meets the requirements of the ERDF waste acceptance criteria will be disposed at ERDF under the authority of the ERDF ROD Amendment (EPA 2007) in accordance with CERCLA.

1.2 PURPOSE AND SCOPE

The purpose of this action work plan is to document the methodology and requirements for RSW retrieved from the Burial Grounds that is determined to be LLW or MLLW to be treated, as needed, then disposed at ERDF. If the waste is not compliant for disposal at ERDF, or cannot be treated at ERDF to be compliant for disposal, then the waste is not within the scope of the ERDF ROD Amendment (EPA 2007) authorization and instead will be disposed in accordance with the requirements applicable to the waste. The scope of this action includes secondary waste generated by RSW retrieval, waste storage, waste treatment at ERDF, and disposal at ERDF. LLW and MLLW produced from activities on the Hanford site other than retrieval of waste from the Hanford low-level burial grounds are the subject of a separate work plan and action implementing documents. RSW and secondary waste that meets the eligibility requirements described in Section 1.0 may be disposed at ERDF under the authority of this action plan. The RSW covered by the TCRA (EPA 2004) and all RSW determined to be TRU waste are not within the scope this action.

The waste becomes subject to this CERCLA action when it is determined that the waste is compliant or can be treated at ERDF to be compliant for disposal at ERDF and it is decided by the project to send the waste to ERDF for disposal from storage. The ERDF ROD amendment does not mandate that the waste be disposed at ERDF; rather, it provides a method for disposal at ERDF that may be selected. Activities to accumulate, store, test, treat, collect and evaluate process knowledge, and transport waste may occur before this action and its requirements become effective. Those activities performed prior to the action becoming effective are not governed by this work plan. Some waste activities performed prior to the time the action becomes effective are necessary to demonstrate compliance with the ERDF waste acceptance criteria and shall be addressed in a sampling and analysis plan (SAP) written to implement this action. Activities that may take place before the action becomes effective include waste characterization, designation, and radioactive waste classification.

Retrieval of RSW operations at the Burial Grounds are proceeding in accordance with Ecology et al. (2004), *Hanford Federal Facility Agreement and Consent Order* (HFFACO), Milestone M-91-40, "Retrieval and Designation of Contact-Handled Retrievably Stored Waste." The scope of this action work plan comprises disposition of LLW and MLLW fractions of the RSW and newly generated secondary waste (e.g., personal protective equipment, wood, plastic, contaminated soil) that meet or will be treated to meet the requirements of the ERDF waste acceptance criteria. The LLW and MLLW will be managed in accordance with this CERCLA action in designated storage areas at the Solid Waste Operations Complex (SWOC) that includes the Waste Receiving and Processing facility, T Plant, Burial Grounds, and Hanford Central

Waste Complex. The storage, transportation, and treatment and disposal of RSW at ERDF is described in Section 2.0 of this work plan.

The following are the steps included in this action work plan:

- Evaluate the waste to ensure it meets the ERDF waste acceptance criteria
- Store waste in preparation for shipment to ERDF
- Prepare and transport LLW and MLLW RSW to ERDF
- Dispose of waste, treating if necessary, at ERDF
- Characterize, store, treat, and dispose at ERDF newly generated secondary waste from RSW retrieval and storage and ERDF treatment and disposal operations performed under this action.

A waste treater can be used to provide an LDR compliant waste form for disposal. Such treatment, unless performed at ERDF, is not under the scope of this work plan.

2.0 ACTION ELEMENTS

The action consists of those activities required to disposition the LLW and MLLW containers retrieved from Burial Grounds and secondary waste generated from operations. All the LLW and MLLW containers to be disposed at ERDF will be evaluated for compliance with the ERDF waste acceptance criteria before transportation to ERDF. At the SWOC facilities, containers will be stored and prepared for shipment to ERDF. Waste may be treated at ERDF. All waste will be disposed at ERDF.

2.1 ACTION WORK ACTIVITIES

The removal activities addressed in the following Sections will be performed in accordance with Hanford work documents. Common industrial equipment (e.g., forklifts) will be used to move containers, place drums on pallets, place containers on/in trucks or trailers, treat waste at ERDF, and dispose waste at ERDF.

2.1.1 Evaluate Waste for ERDF Compliance

RSW and secondary waste characteristics will be compared to ERDF waste acceptance criteria to determine if it is compliant for treatment, if necessary, and disposal at ERDF. RSW and secondary waste will be characterized for radioactive and chemical constituents. The collection of characterization data activities frequently will be performed prior to the action being effective to the waste (e.g., before storage). The waste characterization and determinations to evaluate the waste for treatment and disposal at ERDF shall be addressed in a SAP. The SAP shall address data collection requirements for radioactive and chemical characterization, radioactive waste classification, designation, and physical characteristics necessary to demonstrate compliance with ERDF waste acceptance criteria. The characterization of RSW is generally not within the scope of this action but is included in the SAP as these activities are necessary to the process of evaluating waste for compliance with ERDF waste acceptance criteria. The waste treatment activities, unless performed at ERDF, are not within the scope of this action.

2.1.2 Retrievably Stored Waste and Secondary Waste Storage

When it is determined that a waste will be disposed at ERDF under this CERCLA action, then it may be placed in a storage location in preparation for shipment at the SWOC facilities under the substantive requirements of WAC 173-303 and/or 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," until it is transported for disposal or treatment. Containers of waste thus stored will be managed in accordance with a Waste Management Plan (WMP) as described in Section 5.3 of this work plan.

2.1.3 Transportation of Waste

Hazardous materials and wastes, including radioactive and other nuclear materials, will be safely packaged and transported in a manner protective of workers, the public, and the environment. Shipments using roads that are accessible by the public shall meet the requirements of 49 CFR Subchapter C, "Hazardous Materials Regulations." Shipments using roads that are not accessible by the public will meet the requirements of DOE/RL-2001-36, *Hanford Sitewide Transportation Safety Document*. Document DOE/RL-2001-36 defines the requirements for the Hanford Transportation and Packaging Program, which complies with the DOE transportation safety requirements specified in DOE O 460.1B, *Packaging and Transportation Safety*.

The waste containers may be prepared for shipment at a storage location established at a SWOC facility. Smears will be collected to confirm compliance with surface contamination limits as necessary. As appropriate, the containers will be relabeled and marked for transport. RSW will be transported in approved shipping containers that meet the applicable transportation requirements. Examples of approved containers could include the retrieved container itself, an overpack, or a cargo container. An alternative container could also be selected, provided the applicable transportation requirements are met. Shipping paperwork and any paperwork necessary for the receiving facility will be completed as part of shipment preparations.

2.1.4 Waste Treatment at the Environmental Restoration Disposal Facility

RSW and secondary waste requiring treatment will be received and off-loaded at ERDF using common industrial equipment (e.g., forklifts). Waste treatment will be performed in accordance with a waste treatment plan as described in Section 5.2 of this work plan.

2.1.5 Newly Generated Secondary Waste

LLW or MLLW may be generated during RSW retrieval and waste storage operations and/or during preparation for shipment of waste to ERDF, and treatment and disposal at ERDF. The generation of radioactive and mixed waste will be minimized to the extent practical. Secondary waste streams generated during storage and shipment preparation operations generally consist of debris and/or soil. The debris waste stream consists of such materials as wood (generally pallets and plywood) used in supporting or protecting the waste packages, tarps, and personnel protective equipment or consumables such as adhesive tape, plastic, paper, and cloth generated during operations. Waste associated with the wood dunnage (e.g., plastic strapping, tape, staples, nails) could also be generated. Secondary waste generated from retrieval or storage operations will be managed in accordance with the action work activities described in the other Sections of Section 2.1.

Secondary waste generated by ERDF operations shall be treated, if necessary, and disposed at ERDF.

2.1.6 Waste Disposal

ERDF is authorized to operate through *Record of Decision, U.S. Department of Energy Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington* (EPA et al. 1995). ERDF is a CERCLA disposal facility accepting waste generated from remediation and removal activities performed at the Hanford Site under CERCLA authority (e.g., bulk soil, demolition debris, miscellaneous contaminated material). ERDF is designed according to the technology requirements for RCRA Subtitle C landfills and TSCA specifications for chemical landfills.

Waste entering ERDF is controlled on the basis of source, physical form, and contaminant concentration and activity levels. Before disposal, the waste must be certified that it meets the requirements of ERDF waste acceptance criteria. An LDR compliance determination must be made for waste containing dangerous/hazardous constituents in accordance with WAC 173-303-140 and 40 CFR 268, "Land Disposal Restrictions." Waste containing PCBs that are regulated under TSCA shall be compliant with the substantive disposal requirements of 40 CFR 761.

Waste will be placed in lined disposal trenches using common industrial equipment (e.g., backhoe). Disposal at ERDF of the LLW and MLLW will be conducted under CERCLA authority provided in the ERDF ROD Amendment (EPA 2007). MLLW or LLW that does not meet or cannot be treated to meet the ERDF waste acceptance criteria may be stored at a SWOC facility until treatment becomes available, or managed in another appropriate facility. Such storage, treatment, or disposal at another facility is outside the scope of this work plan.

2.2 WASTE HAZARDS

The action consists of moving containers that contain mixed dangerous and radioactive waste from the Hanford Burial Grounds. Possible hazards are physical, chemical, and radiological in nature. The primary hazard is the physical hazard associated with moving containers using industrial equipment and tools. Personnel may be exposed to situations where slips, trips, falls, crushing, or pinching could occur. Under normal operating conditions, chemical and radiological hazards are contained within the waste container.

The waste may be treated or require repackaging (e.g., a container breach) that may expose personnel to chemical and radiological hazards. The primary radiological constituents present in the waste are mixed fission products, activated metals, and TRU radionuclides in concentrations less than 100 nCi/g. The MLLW containers have varying amounts of hazardous chemicals including corrosive and toxic chemicals. For these activities, engineered barriers (e.g., ventilation systems) will be used where possible and when needed and personnel protective equipment will be used to mitigate hazards to personnel.

3.0 SAFETY AND HEALTH MANAGEMENT CONTROLS

The SWOC facilities are classified as Category II nuclear facilities as described in DOE-approved nuclear safety documents. Nuclear safety requirements for these facilities are implemented via DOE-approved documents.

The ERDF is a below Category III nuclear facility, as described in DOE-approved nuclear safety documents.

3.1 EMERGENCY MANAGEMENT

All emergency planning and preparedness activities for the SWOC facilities are conducted in accordance with contractor work documents and the requirements of DOE/RL-94-02, *Hanford Emergency Management Plan*; applicable DOE orders; and state and federal regulations (i.e., 29 CFR 1910.38, "Occupational Safety and Health Standards, Emergency action plans," and WAC 173-303-340, -350, and -360). The ERDF implements these emergency planning and preparedness requirements through contractor work documents.

The Hanford Site Emergency Management Program provides work documents so that, in the event of an emergency, actions are taken to prevent or minimize impact to workers, the public, the Hanford Site, facilities, and the environment; that emergencies are promptly recognized and classified; that emergencies are reported and notifications are made; and that reentry activities are properly and safely accomplished.

3.2 HEALTH AND SAFETY PROGRAM

The SWOC facilities occupational safety and health program is based primarily on requirements contained in 29 CFR 1910, "Occupational Safety and Health Standards," and 29 CFR 1926, "Safety and Health Regulations for Construction." The ERDF occupation safety and health program is conducted in accordance with a contractor program. These requirements focus on workplace hazards and the controls necessary to mitigate risks to workers. Common hazards associated with action activities include, but are not limited to, walking/working surfaces, material-handling equipment, pinch points, and ergonomics.

3.2.1 Worker Safety Program

The SWOC facilities safety and health program was established for employees involved in treatment, storage, and disposal facility operations and activities. The program ensures the safety and health of workers during routine operations and activities at the SWOC facilities and complies with the requirements of 29 CFR 1910.120(p), "Hazardous Waste Operations and Emergency Response."

The Integrated Environment, Safety, and Health Management System provides the framework for all work activities conducted at the SWOC facilities. Elements within the framework include the following:

- An organizational structure and associated documentation that reflect the formal chain of command and the overall responsibilities of facility personnel (i.e., management to first-line worker)
- The Project Hanford Management System work documents and other documents used to implement safety and health requirements identified by the Occupational Safety and Health Administration, DOE, and national standards organizations
- Operations and activities conducted in accordance with facility work documents and process documentation
- A formalized process for identifying hazards and tailoring controls to meet the specific needs of diverse work activities
- A baseline assessment that addresses SWOC facilities, operational hazards, and associated controls
- Worker training commensurate with individual job duties and work assignments
- A medical surveillance program administered to comply with Occupational Safety and Health Administration requirements including 29 CFR 1910.120.

3.2.2 Activity Hazards Analysis

The following safety items were completed for retrieval of the suspect TRU waste under HFFACO Milestone M-91-40 and some of the items are applicable to activities being conducted under this action.

A baseline hazard assessment was prepared for the SWOC facilities that identifies chemical, physical, biological, and ergonomic hazards and specifies the controls and requirements necessary for safe conduct of work. Activities to be performed are controlled by approved work documents. As part of the work document development process, an automated job hazard analysis (AJHA) was developed by the work team and approved by involved subject matter experts. The AJHA addresses hazards specific to the work activity including any identified subtasks. Elements of the AJHA include the following:

- Identifying operational work activity hazards
- Tailoring controls to the work activity
- Specifying personal protective clothing and equipment
- Establishing work site control measures

- Identifying emergency response
- Involving workers and subject matter experts in the AJHA development, review, and approval process.

In addition to the baseline hazard assessment and AJHAs developed for operational work activities, radiological work permits have been prepared for work involving potential radiological hazards. The permits extend the radiological protection program (discussed in Section 3.2.3) to the specific operation. All personnel assigned to the project and all work site visitors must strictly adhere to requirements identified in the work documents, AJHAs, and radiological work permits.

Before work begins at the SWOC facilities, a pre-shift briefing is held with affected workers. This briefing includes information on the status of the facility and the activities approved for performance during the work shift. Hazards that may be encountered and the associated requirements are also addressed. At the conclusion of the work shift, a post-shift briefing is held to obtain feedback from workers and to status project efforts. Special briefings may be held, as needed, throughout the duration of the project.

A similar process exists for activities conducted at ERDF. A comprehensive health and safety plan is maintained and administered by the Disposal Operations subcontractor. In addition, a job-specific activity hazard analysis and a radiological work permit will be prepared to address the activities associated with receiving, treating, and disposing of the waste in ERDF disposal cells. ERDF workers will be trained to these documents, and they will be reviewed regularly at plan-of-the-day meetings. Continual feedback from workers will be used to make adjustments and refine these documents as the work evolves.

3.2.3 Radiological Controls and Protection

10 CFR 835, "Occupational Radiation Protection," establishes the radiation protection standards, limits, and program requirements to protect workers from ionizing radiation that may result from the conduct of DOE activities. Radiation protection for the action activities occurring at the SWOC facilities is implemented by a contractor program. Radiation protection for the action activities occurring at ERDF is implemented by different contractor's programs. Radiation protection also requires that measures be taken to maintain radiation exposures as low as reasonably achievable (ALARA). A combination of personal protective equipment; personnel training; physical design features (e.g., confinement and remote handling); and administrative controls (e.g., limiting time in radiation areas) would be used to ensure that the requirements for worker and visitor protection are met.

3.3 MAINTENANCE MANAGEMENT

All facility maintenance activities for the Burial Grounds and Central Waste Complex are conducted in accordance with the requirements of a contractor program and satisfy the requirements of DOE O 433.1, *Maintenance Management Program for DOE Nuclear Facilities*.

Fluor Hanford, Inc.'s, maintenance program has been developed to ensure cost-effective maintenance and repair of DOE property, which includes the SWOC facilities. All of the requirements for facility system and component maintenance have been established based on safety classification and risk assessments of systems and components as well as technical specifications, process requirements, and standards and code requirements. A graded approach was used to determine the level and frequency of maintenance necessary to ensure safe facility operation in an efficient and cost-effective manner.

Facility maintenance at ERDF is performed in accordance with subcontract provisions in the facility operations subcontract with Washington Closure Hanford, LLC.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

4.1 ENVIRONMENTAL REQUIREMENTS

The action must implement the requirements of ERDF waste acceptance criteria and other applicable federal and state environmental statutes. Waste storage other than for the purpose of preparation for disposal at ERDF is not within the scope of this action work plan. Preparation for disposal of waste at ERDF does include routing waste to a treatment/storage facility other than ERDF. Onsite actions are exempted from obtaining federal, state, and local permits (CERCLA, Section 121[e][1]). For the purposes of this action, storage located at the Hanford SWOC facilities established to prepare the waste for shipment to ERDF or treatment prior to sending it to ERDF is onsite. Non-promulgated standards (e.g., proposed regulations and regulatory guidance) are also to be considered to the extent necessary for the action to be adequately protective. The ERDF ROD Amendment (EPA 2007) itself does not embody ARARs or to-be-considered requirements. The ARARs and to-be-considered requirements embodied in the original ERDF ROD are applicable to this action. The original ERDF ROD ARARs or to-be-considered requirements are embodied in ERDF waste acceptance criteria; therefore, compliance with ERDF waste acceptance criteria will result in compliance with ERDF ARARs and to-be-considered requirements.

The activities necessary to demonstrate compliance with ERDF waste acceptance criteria includes waste characterization, designation, packaging, treatment, and radioactive classification. Most of these requirements are accomplished by activities performed to the waste prior to the action becoming effective. However, even though these activities are generally not performed under the CERCLA authority of this action, these activities are evaluated to demonstrate compliance with ERDF waste acceptance criteria and so requirements applicable to these activities are included in this document. The inclusion of these activities should not be construed as extending CERCLA authority to these activities. The following are ERDF requirements that are appropriate for discussion.

- WAC 173-303 pursuant to RCRA as implemented through Revised Code of Washington 70.105, "Hazardous Waste Management," is applicable to the identification, generation, storage, transportation, treatment, and disposal of the mixed wastes generated during the action.
- 40 CFR 260-268, "Hazardous Waste Management System," regulations as implemented by the state via the dangerous waste regulations.
- 40 CFR 761 pursuant to TSCA is applicable to waste containing PCBs (polychlorinated biphenyls).
- 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," is applicable to disposal of radioactive waste.
- DOE O 435.1, *Radioactive Waste Management*, is applicable to the management of radioactive waste.

The requirements listed above are implemented for treatment and disposal of waste at ERDF in BHI-00139, *Environmental Restoration Disposal Facility Solid Waste Acceptance Criteria*. Prior to receipt of waste at ERDF, each waste will be demonstrated to be compliant with the ERDF waste acceptance criteria (BHI-00139). The following Sections discuss how the action will comply with ERDF and waste storage requirements.

4.1.1 WAC 173-303, Dangerous Waste Regulations

The dangerous waste regulations are applicable to any dangerous or mixed waste generated during this action consistent with HFFACO Milestone M-91-40. The following requirements are applicable to waste generated during this action.

- Designate waste in accordance with WAC 173-303-070 through -100.
- Comply with LDR in accordance with WAC 173-303-140. The waste will be treated to meet the substantive requirements of LDR at ERDF.
- Store waste in accordance with WAC 173-303-280 through -395. A waste being stored in preparation for shipment to ERDF located at the SWOC will meet the substantive requirements.
- ERDF will meet the substantive requirements for a dangerous waste treatment and disposal facility WAC 173-303-280 to -815.

The applicable requirements from WAC 173-303 will be met by performing the following actions.

- Waste will be designated using WAC 173-303-070 through -100. The methodology used to designate the waste is addressed a SAP. Waste designations will be conducted in accordance with contractor work documents.
- Waste stored in preparation for disposal at ERDF will be managed in accordance with the substantive requirements of WAC 173-303-280 through -395. Waste storage activities shall be performed in accordance with a WMP.
- MLLW will be treated to meet LDR before disposal per WAC-173-303-140 and 40 CFR 268, which the Washington State Department of Ecology incorporates by reference. The applicable federal treatment standards include those for hazardous waste (40 CFR 268.40), hazardous debris (40 CFR 268.45), underlying hazardous constituents (40 CFR 268.48), and contaminated soil (40 CFR 268.49). Waste will be treated as necessary to comply with LDR at ERDF. MLLW that cannot be treated at this time to meet ERDF waste acceptance criteria may be stored until treatment becomes available.
- The waste is disposed at ERDF. ERDF is a Hanford CERCLA waste disposal facility designed to meet the substantive requirements applicable to a dangerous waste landfill of WAC 173-303-280 through 815 including secondary containment, leachate detection, and final cover.

4.1.2 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution, in Commerce, and Use Prohibitions

The PCB waste management regulations are applicable to any waste generated during this action determined to contain PCBs that are regulated under 40 CFR 761. The following requirements and corresponding actions are applicable to waste generated during this action.

- The waste status for management of PCB will be determined in accordance with the substantive requirements of 40 CFR 761. The methodology used to determine the PCB status of waste is as described for designation in a SAP. The waste determinations will be conducted in accordance with contractor work documents.
- The waste will be stored for disposal in accordance with 40 CFR 761.65. Waste stored in preparation for shipment to ERDF located at a SWOC facility will meet the substantive storage requirements.
- The waste is disposed at ERDF. ERDF is a Hanford waste disposal facility authorized under CERCLA that is designed to meet the substantive requirements for a chemical waste landfill including secondary containment, leachate detection, and final cover.

4.1.3 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste

The radioactive waste disposal regulations are applicable to any waste generated during this action in accordance with 10 CFR 61. The following requirements and corresponding actions are applicable to waste being disposed at ERDF during this action.

- The radioactive waste classification will be determined in accordance with the substantive requirements of 10 CFR 61.55. The waste will be characterized and classified as described in a SAP. Waste that is determined to be greater than Category C shall not be disposed at ERDF.
- The waste will be packaged and treated, if necessary, to meet the substantive waste form requirements of 10 CFR 61.56. Waste that meets ERDF waste acceptance criteria may be disposed at ERDF per the ERDF ROD Amendment (EPA 2007). The waste may be treated at ERDF in order to comply with the substantive waste form requirements of 10 CFR 61.56.

4.1.4 DOE O 435.1, Radioactive Waste Management

DOE Order 435.1 requirements are to-be-considered for any waste generated during this action. The waste is managed in full compliance with this DOE Order until the point that the waste comes under the authority of this action. The following requirements are applicable to waste being disposed at ERDF under the authority of this action.

- The waste will be determined to be LLW in accordance with the substantive requirements of DOE Order 435.1. The waste will be characterized as described in a SAP. The waste must be determined to be LLW for it to be disposed at ERDF.
- The waste, when stored in preparation for shipment to ERDF, shall be managed in accordance with the substantive requirements of DOE Order 435.1. The substantive requirements of waste storage incorporating the substantive elements of DOE Order 435.1 are presented in a WMP. A LLW storage clock shall not be applied at CERCLA storage areas.
- ERDF treats and disposes of waste in accordance with the substantive requirements of DOE Order 435.1. The substantive requirements of waste treatment and disposal are implemented in the waste acceptance criteria and contractor work documents.

4.2 WASTE MANAGEMENT

Waste management activities performed in this action shall be in accordance with HFFACO Milestone M-91-40, requirements identified in this work plan. A SAP will be prepared as described in Section 5.1. The SAP scope shall encompass the activities that are performed to demonstrate compliance with ERDF waste acceptance criteria such as waste characterization, treatment, designation, and radioactive classification.

Activities at ERDF will be performed in accordance with the ERDF ROD (EPA et al. 1995) as amended. In the event waste is treated at ERDF, a waste treatment plan shall be prepared to govern the activity. The waste treatment plan is described in Section 5.2.

The storage of waste at Hanford SWOC facilities in preparation of waste transport to ERDF shall be performed in accordance with the requirements for waste storage described in Section 4.1. In the event that waste storage areas are established under this action, a WMP shall be prepared as described in Section 5.3

5.0 PLANNING AND DOCUMENTATION

RSW will consist of diverse waste types, characteristics, and forms as the placement of waste in the burial grounds for storage extended to the whole of the Hanford Site that contains different processes, activities, and facilities. Further, the placement of waste in the burial grounds for storage extended over many years of Hanford Site operation and cleanup activities. Therefore, the SAP and supporting data quality objectives (DQO) report must be flexible to evolve as the RSW being sent to ERDF changes. In order to provide flexibility, the SAP and supporting DQO report will develop the decisions, data requirements, and data collection requirements that are applicable to all waste in the body of each document. The specific data and data collection that is applicable to each waste stream will be placed in Appendices to the SAP. Changes to the Appendices of the SAP that are necessary to add new or change existing waste streams will be accomplished by processing a minor change to the SAP as described in Section 5.4.

5.1 SAMPLING AND ANALYSIS PLAN

A SAP will be prepared and reviewed and approved by EPA. The SAP will describe the sampling and analysis activities required to characterize RSW and secondary waste for disposal at ERDF. Characterization of waste is necessary to properly designate, treat (if necessary), package, and dispose of the waste at ERDF in accordance with the *Environmental Restoration Disposal Facility Solid Waste Acceptance Criteria* (BHI-00139). In many cases, waste characterization will be accomplished by reviewing and validating process knowledge (PK) that exists regarding the waste before it came under the authority of this action. The evaluation of PK and the collection of additional data, if any, will be described for each waste stream in an Appendix to the SAP. The SAP will describe a process where PK is reviewed and validated as sufficient for decision-making.

Some Hanford waste may be waived from the requirement for characterization in accordance with a SAP. A waiver from a SAP for a waste stream may be obtained if it meets the following criteria:

- waste contains radioactivity at levels that are difficult to detect or that do not approach regulatory decision thresholds (e.g., transuranic waste),
- waste is a simple characterization process or characterization has already been completed, and
- waste characteristics do not vary such that the waste management would be affected.

A waiver from characterization under a SAP must be approved by the ERDF contractor with notification provided to EPA (Email is acceptable). An exemption will be documented by describing the waste, the waste characterization process, the waste characteristics, and showing that the waste complies with the above criteria.

5.2 TREATMENT PLAN

When waste is treated at ERDF, a waste treatment plan shall be prepared and the plan approved by EPA. ERDF is capable of performing stabilization, macroencapsulation, and mercury

amalgamation treatments. The treatment plan shall contain a description of the waste, description of the treatment requirements, description of the treatment process, description of the test work to be performed, and establish the treatment process requirements. Treatment of waste at other locations shall not require a treatment plan but shall be performed in full compliance with applicable laws and regulations.

5.3 WASTE MANAGEMENT PLAN

When waste is stored in preparation for shipment to ERDF or treatment prior to sending it to ERDF under the authority of this action, a WMP shall be prepared and the plan approved by EPA. The WMP shall contain a description of the waste, description of the management of the waste, and establish the location of storage areas. Waste stored in full compliance with applicable laws and regulations do not require the preparation of a WMP.

5.4 DOCUMENT CHANGE MANAGEMENT

Changes to this work plan and documents specified by this work plan requiring lead regulatory agency approval (e.g., SAP) work scope, instructions, requirements, etc. may be required, because of unexpected field conditions, new information, health and safety concerns, or other situations. Changes to these documents may be one of three levels:

- Minor field changes that have no adverse effect on job technical adequacy (i.e., attainment of data quality objectives) or schedule can be made in the field by the person in charge with the change recorded in field log books or equivalent record material.
- Minor changes that are additions, deletions, or modifications to its scope and/or requirements, which do not affect the overall intent of the plan, may be documented as change notices with the lead regulatory agency.
- Changes requiring a full revision of the document will employ the same review and approval process as applied to the original final document.

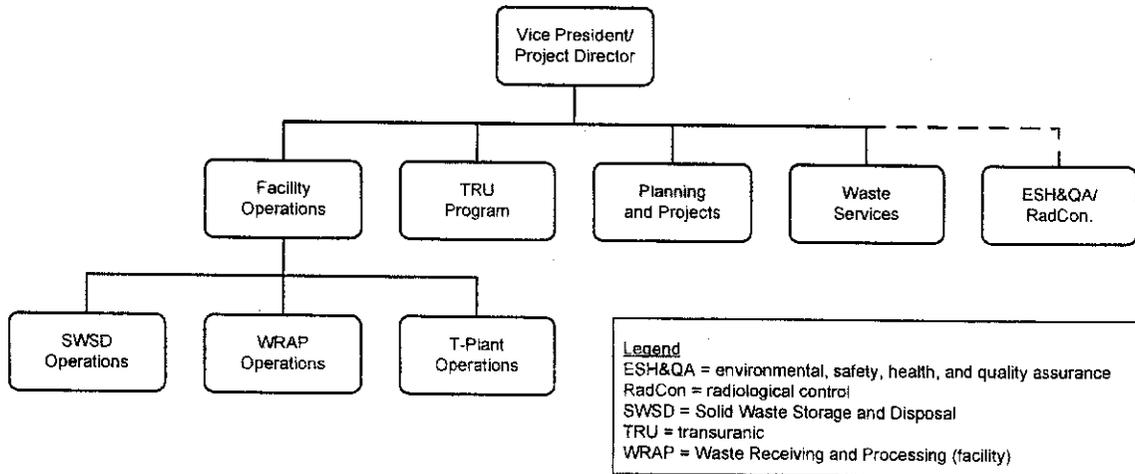
The lead regulatory agency will determine if a document change will be accomplished using a change notice or via a full revision of the document. A change notice shall not be used to modify the schedule.

A change notice shall be approved by DOE and lead regulatory agency project managers. The change notice shall contain the elements listed in Section 9.3 of the HFFACO Action Plan (Ecology et al. 2004). The change notice must become part of the administrative record which can be accomplished by issuing the meeting minutes of the applicable project manager.

6.0 PROJECT MANAGEMENT AND ORGANIZATION

Figure 6-1 provides a simplified version of the Solid Waste Stabilization and Disposition organization chart. The organization chart depicts only those project organizations involved in conducting activities under this action.

Figure 6-1. Simplified Solid Waste Stabilization and Disposition Organization Chart.



6.1 QUALITY ASSURANCE REQUIREMENTS

Quality assurance (QA) for the action is performed in accordance with a QA program developed to incorporate the criteria of 10 CFR 830.122, "Quality Assurance Criteria." The QA activity is graded on the potential impacts to the environment, safety, health, reliability, and continuity of operations. Specific activities include QA implementation, responsibilities and authorities, document control, QA records, audit/assessments, and self-assessments. The action activities, including treatment and disposal at ERDF, are performed in accordance with the contractor QA program.

6.1.1 Quality Assurance Implementation

The QA activities for the action are implemented in accordance with the contractor QA program. Conditions adverse to quality will be identified, and corrective action will be completed in accordance with contractor-approved work documents.

6.1.2 Responsibilities and Authority

Project responsibilities and authorities are described in contractor work documents.

6.1.3 Document Control

Project work documents are managed in accordance with contractor work documents that describe the processes for document identification, creation, review, and approval.

6.1.4 Quality Assurance Records

QA records are controlled in accordance with contractor work documents that describe the processes for record identification, storage, transfer, and retention.

6.1.5 Audits/Assessments

External audits are performed by the DOE Office of Independent Assessment and Quality Assurance and other organizations to ensure project compliance with the contractor QA program requirements. The contractor Regulatory Compliance group may conduct random surveillance and assessments to verify compliance with the requirements outlined in the contractor QA program, work documents, and regulatory requirements.

Deficiencies identified by these assessments will be reported in accordance with existing programmatic requirements for corrective actions/deficiencies in accordance with the contractor QA program.

6.1.6 Self-Assessments

Self-assessments are conducted by project personnel in accordance with contractor work documents.

6.2 ACTION ENDPOINT CRITERIA

The endpoint criteria define the conditions that must exist before management under the ERDF ROD Amendment (EPA 2007) that is specific to this project is considered complete. The action will be complete when all of the following criteria are demonstrated as being met for the LLW fraction of the RSW and secondary wastes generated by waste retrieval operations:

- Retrieval of the LLW and MLLW fractions of RSW from Burial Grounds
- Treatment and disposal at ERDF of this waste that is or can be treated to be compliant with the ERDF waste acceptance criteria .

6.3 ACTION CLOSURE DOCUMENTATION

When the action endpoint criteria are met, a closeout report shall be prepared and submitted to the EPA. The report shall identify RSW and secondary waste that was sent to ERDF for treatment and disposal. The report shall include a summary of the waste volume or weight from

each burial ground that was sent to the ERDF. The summary shall include the date the waste was sent to ERDF.

When ERDF is removed from service and closure activities are initiated then records of waste received at ERDF under the authority of this action shall be maintained. The records will describe the waste disposal location, type, and quantity.

7.0 REFERENCES

- 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations*, as amended.
- 10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.
- 10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.
- 29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations*, as amended.
- 29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations*, as amended.
- 40 CFR 260, "Hazardous Waste Management System: General," *Code of Federal Regulations*, as amended.
- 40 CFR 261, "Identification and Listing of Hazardous Waste," *Code of Federal Regulations*, as amended.
- 40 CFR 262, "Standards Applicable to Generators of Hazardous Waste," *Code of Federal Regulations*, as amended.
- 40 CFR 263, "Standards Applicable to Transporters of Hazardous Waste," *Code of Federal Regulations*, as amended.
- 40 CFR 264, "Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.
- 40 CFR 265, "Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities," *Code of Federal Regulations*, as amended.
- 40 CFR 266, "Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities," *Code of Federal Regulations*, as amended.
- 40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations*, as amended.
- 40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," *Code of Federal Regulations*, as amended.
- 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," *Code of Federal Regulations*, as amended.
- 49 CFR Subchapter C, "Hazardous Materials Regulations," *Code of Federal Regulations*, as amended.
- Atomic Energy Act of 1954*, 42 USC 2011 et seq.

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- EPA, 2004, *Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Time Critical Removal Action Memorandum for Disposal at the Environmental Restoration Facility (ERDF) of Non-Transuranic (TRU) Waste Generated During the M-91 Retrieval Operations at Burial Ground 218-W-4C*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.
- EPA, Ecology, and DOE, 1995, *Record of Decision, U.S. Department of Energy Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Richland, Washington.
- EPA, Ecology, and DOE, 1997, *Amended Record of Decision for the Environmental Restoration Disposal Facility*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington.
- EPA, Ecology, and DOE, 2004, *Modification of Hanford Federal Facility Agreement and Consent Order (HFFACO) M-91 Series Provisions*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Richland, Washington.
- EPA, Ecology, and DOE, 2007, *Amended Record of Decision for the Environmental Restoration Disposal Facility*, U.S. Environmental Protection Agency, Washington State Department of Ecology, and U.S. Department of Energy, Olympia, Washington.

RCW 70.105, "Hazardous Waste Management," *Revised Code of Washington*, as amended.

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

Toxic Substances Control Act of 1976, 15 USC 2601 et seq.

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

Waste Isolation Pilot Plant Land Withdrawal Act of 1992, Public Law No. 102-579, as amended.



Work Plan for Disposal of Hanford Waste at the Environmental Restoration Disposal Facility

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



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Approved for Public Release;
Further Dissemination Unlimited

Work Plan for Disposal of Hanford Waste at the Environmental Restoration Disposal Facility

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TERMS

AJHA	automated job hazard analysis
ALARA	as low as reasonably achievable
ARAR	applicable or relevant and appropriate requirements
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
FH	Fluor Hanford, Inc.
HFFACO	<i>Hanford Federal Facility Agreement and Consent Order</i>
LDR	land disposal restriction
LLW	low-level waste
MLLW	mixed low-level waste
PCB	polychlorinated biphenyls
PK	process knowledge
QA	quality assurance
RCRA	<i>Resource Conservation and Recovery Act of 1976</i>
ROD	Record of Decision
SAP	sampling and analysis plan
TRU	transuranic
TSCA	<i>Toxic Substances Control Act of 1976</i>
TSD	treatment/storage/disposal

1.0 INTRODUCTION

An action has been initiated regarding the treatment and disposal of waste on the Hanford Site under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) per 40 CFR 300, "National Oil and Hazardous substance Pollution Contingency Plan." The action is established in the *Amended Record of Decision for the Environmental Restoration Disposal Facility* (EPA 2007), hereafter called the ERDF ROD Amendment, consisting of treatment as needed, and disposal of Hanford low-level waste (LLW) and mixed low-level waste (MLLW) at the Environmental Restoration Disposal Facility (ERDF). This document is the action work plan implementing the ERDF ROD Amendment for Fluor Hanford, Inc. (FH) operations except for activities involving waste that is produced by retrieving waste from the Hanford low-level burial grounds.

LLW and MLLW that is eligible for disposal at ERDF under this action shall meet the following action criteria:

- Meets the existing ERDF waste acceptance criteria (or will be capable of meeting waste acceptance criteria with treatment)
- Complies with land disposal restrictions (LDR) requirements (or complies with LDR with treatment performed at ERDF), as applicable
- Is generated at the Hanford Site or directly derived from a Hanford-generated waste in support of *Resource Conservation and Recovery Act of 1976* (RCRA), *Toxic Substances Control Act of 1976* (TSCA), *Atomic Energy Act of 1954* (AEA), and CERCLA cleanup actions
- Is not addressed by a different CERCLA decision document
- Is listed on Table 1 of the ERDF ROD Amendment or approved by the EPA via the plug-in approach described in the ERDF ROD Amendment.

Waste that is generated or derived from Hanford-generated waste in support of RCRA, TSCA, AEA, and CERCLA cleanup meets one of the following criteria:

- LLW and MLLW that is a product of activities performed on the Hanford Site
- LLW and MLLW that was placed in storage prior to May 24, 2007, the approval date of the ERDF ROD Amendment (EPA 2007), or
- LLW and MLLW that meets the requirements of one of the bullets listed above that has been treated as treatment is defined in WAC 173-303-040, "Definitions."

The U.S. Environmental Protection Agency (EPA) approval for each individual waste stream will be granted by approving a sampling and analysis plan (SAP).

Hereafter in this document, waste that complies with the eligibility criteria listed immediately above is called Hanford waste.

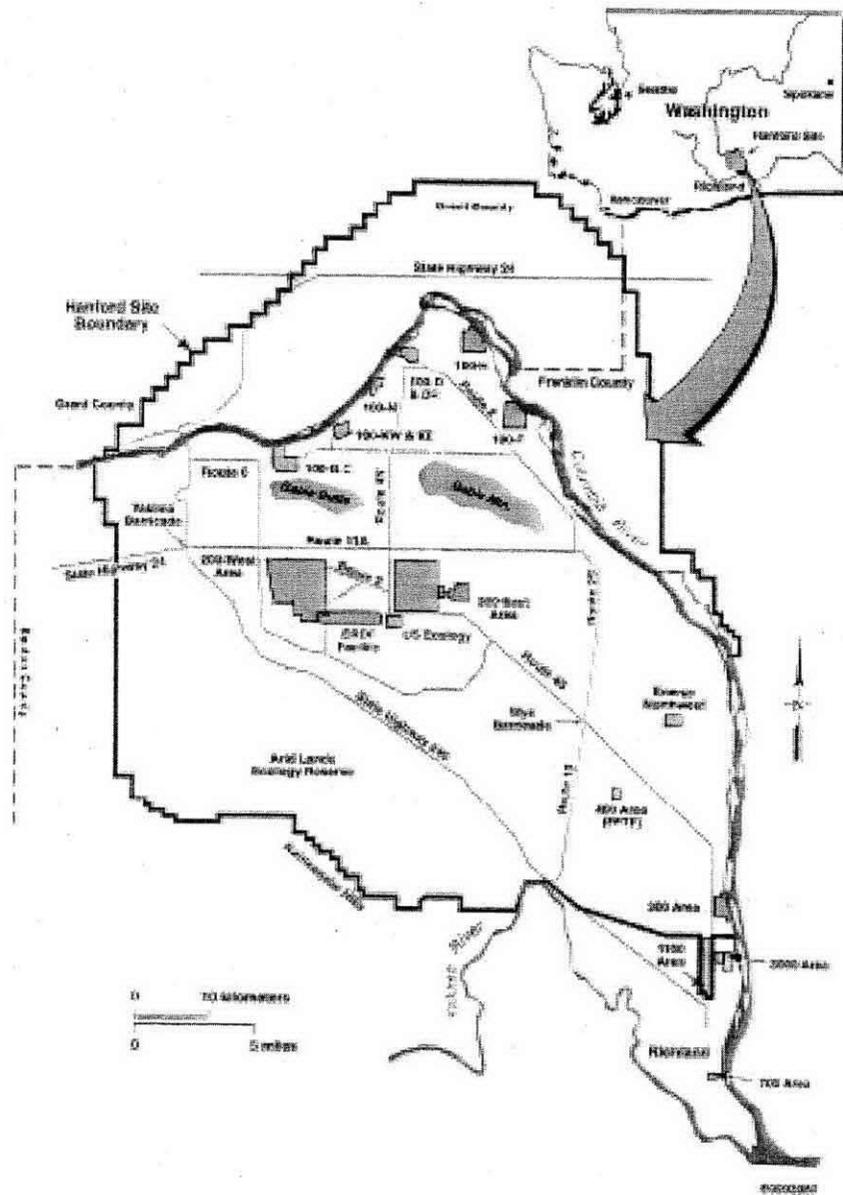
1.1 BACKGROUND

Historical operations for the production and operation of nuclear research and development processes at the Hanford Site have resulted in the release of hazardous and radioactive substances to the environment. A map showing the Hanford Site is provided in Figure 1-1. The Hanford Site has no future U.S. Department of Energy (DOE) production mission and ongoing work at the Hanford Site supports onsite cleanup conducted under RCRA, TSCA, and CERCLA. During the last ten years, cleanup of these contaminants has focused on the remediation and removal actions of specific waste disposal sites and former production facilities.

Other Hanford Site activities – such as surveillance and maintenance of Hanford Site facilities, environmental research and development activities, sample analyses, liquid effluent waste treatment, waste storage, facility operations, and existing waste inventory, infrastructure support, and environmental monitoring programs – which all support Hanford's cleanup mission also generate waste. These wastes have and will continue to be generated in support of Hanford Site cleanup operations. These wastes are often not addressed by a CERCLA decision document (e.g., ROD or action memorandum). Instead, these wastes may be placed in storage, left within the facility, or disposed to trenches on the Hanford Site. Because of the similarity of these contaminants and types of wastes being disposed of at ERDF as part of Hanford waste site cleanup actions, disposal of these wastes in storage to ERDF could provide a more economical and environmentally protective option to waste storage.

Waste on the Hanford Site that may be treated, if needed, and disposed at ERDF include radioactive LLW and MLLW. If required, treatment may be performed at ERDF. Alternately, waste may be treated prior to being sent to ERDF for disposal under this action. MLLW that is Hanford waste and is treated to meet the LDR and meets the requirements of the ERDF waste acceptance criteria may be disposed at ERDF under the authority of the ERDF ROD Amendment (EPA 2007) in accordance with CERCLA.

Figure 1-1. Hanford Site Map.



1.2 SCOPE

This work plan is scoped to address Hanford waste that is a product of operations performed under the scope of the Project Hanford Management Contract (PHMC) that FH holds with DOE, except waste that is produced by retrieving waste from the Hanford low-level burial grounds in accordance with *Modification of Hanford Federal Facility Agreement and Consent Order (HFFACO) M-91 Series Provisions* (Ecology et al. 2004). FH LLW included in the scope of this work plan is Hanford waste that meets the eligibility requirements listed in Section 1.0. LLW produced by retrieving waste from the Hanford low-level burial grounds is the subject of a separate work plan and implementing documents.

Hanford waste becomes subject to this CERCLA action when (1) it is determined that the waste is compliant or can be treated at ERDF to be compliant for disposal at ERDF, (2) it is decided by the project to send the waste to ERDF for disposal, and (3) it is stored. The ERDF ROD Amendment does not mandate that the waste be disposed at ERDF; rather, it provides a method for disposal at ERDF that may be selected. The activities of accumulating, storing, testing, treating, collecting and evaluating process knowledge, and transporting a type of waste may occur before this action and its requirements become effective. Those activities performed prior to the action becoming effective are not governed by this work plan. However, some activities performed prior to the time the action becomes effective that are necessary to demonstrate compliance with ERDF waste acceptance criteria shall be addressed in a SAP written to implement this action unless explicitly excluded. These activities performed prior to the waste being under the authority of the action frequently include waste characterization, designation, and radioactive waste classification.

The following are the steps included in this action work plan:

- Evaluate the waste to ensure it meets the ERDF waste acceptance criteria
- Store waste in preparation for shipment to ERDF
- Prepare and transport LLW and MLLW to ERDF
- Verify waste, if necessary
- Dispose of waste, treating if necessary, at ERDF.

A waste treater can be used to provide a LDR compliant waste form for disposal. Such treatment unless performed at ERDF is not under the scope of this work plan.

2.0 ACTION ELEMENTS

The action consists of those activities required to disposition the LLW and MLLW from Hanford Site operations. All the LLW and MLLW containers to be disposed at ERDF will be evaluated for compliance with the ERDF waste acceptance criteria before transportation to ERDF. At the Hanford Site facilities, containers will be stored and prepared for shipment to ERDF. Waste may be treated at ERDF in accordance with contractor work documents. All waste will be disposed at ERDF.

2.1 ACTION WORK ACTIVITIES

The removal activities addressed in the following sections will be performed in accordance with Hanford Site work documents. Common industrial equipment (e.g., forklifts) will be used to move containers, place drums on pallets, place containers on/in trucks or trailers, treat waste at ERDF, and dispose waste at ERDF.

2.1.1 Evaluate Waste for ERDF Compliance

Waste characteristics will be compared to the ERDF waste acceptance criteria to determine that it is compliant, treated if necessary, and disposed at ERDF. Waste will be characterized for radioactive and chemical constituents. The collection of characterization data activities frequently will be performed prior to the action being effective to the waste (e.g., before storage). The waste characterization and determinations to evaluate the waste for treatment and disposal at ERDF shall be addressed in a SAP. The SAP shall address data collection requirements for radioactive and chemical characterization, radioactive waste classification, designation, and physical characteristics necessary to demonstrate compliance with the ERDF waste acceptance criteria. The characterization and, unless performed at the ERDF, waste treatment activities for the waste are not within the scope of this action but are included in the SAP as these activities are necessary to the process of evaluating waste for compliance with the ERDF waste acceptance criteria.

2.1.2 Waste Verification

Waste at the Hanford Site placed in storage before January 3, 1996 was not subjected to a verification process (WHC-SD-WM-WP-313, *Verification Program Manual for Solid Waste Disposal Facilities*), which is an element of confirmation requirements for treatment/storage/disposal (TSD) facilities established by the RCRA regulations. Waste that was placed in storage on the Hanford Site prior to the verification process implementation date of January 3, 1996 shall be subjected to a verification process as described in a SAP before it can be disposed at ERDF. Verification will involve inspection and/or testing of the waste to ensure compliance with ERDF treatment and disposal requirements. Waste previously received at a TSD under the verification process may not be subject to the verification process as described in a SAP.

2.1.3 Shipment Preparation

When it is determined that a waste will be disposed at the ERDF under this CERCLA action, then it may be placed in a storage location in preparation for shipment at the Hanford Site facility under the substantive requirements of WAC 173-303 and 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," until it is transported for disposal or treatment. Containers of waste thus stored will be managed in accordance with a Waste Management Plan (WMP) as described in Section 5.3 of this work plan.

2.1.4 Transportation of Waste to the Environmental Restoration Disposal Facility

Hazardous materials and waste, including radioactive materials, will be safely packaged and transported in a manner protective of workers, the public, and the environment. Shipments using roads that are accessible by the public shall meet the requirements of 49 CFR Subchapter C, "Hazardous Materials Regulations." Shipments using roads that are not accessible by the public will meet the requirements of document DOE/RL-2001-36, *Hanford Sitewide Transportation Safety Document*. DOE/RL-2001-36 defines the requirements for the Hanford Transportation and Packaging Program, which complies with the DOE transportation safety requirements specified in DOE O 460.1B, *Packaging and Transportation Safety*.

The waste containers may be prepared for shipment at storage locations established at Hanford Site facilities. Smears will be collected to confirm compliance with surface contamination limits as necessary. As appropriate, the containers will be relabeled and marked for transport. Waste will be transported in approved shipping containers that meet the applicable transportation requirements. Examples of approved containers could include the container itself, an overpack, or a cargo container. An alternative container could also be selected provided the applicable transportation requirements are met. Shipping paperwork and any paperwork necessary for receiving waste at the ERDF will be completed as part of shipment preparations.

2.1.5 Waste Treatment at the Environmental Restoration Disposal Facility

Waste requiring treatment will be received and off-loaded at ERDF using common industrial equipment (e.g., forklifts) and contractor work documents. Waste treatment will be performed in accordance with a waste treatment plan prepared as described in Section 5.2 of this work plan.

The acceptance of waste at ERDF will be determined based on compliance with the ERDF waste acceptance criteria. The LDR status is determined based on both before treatment information and the treated waste characteristics.

2.1.6 Waste Disposal at the Environmental Restoration Disposal Facility

ERDF is authorized to operate through EPA et al. 1995, *Record of Decision, U.S. Department of Energy Environmental Restoration Disposal Facility, Hanford Site, Benton County, Washington* (original ERDF ROD). ERDF is a CERCLA disposal facility accepting waste generated from remediation and removal activities performed at the Hanford Site under CERCLA authority (e.g., bulk soil, demolition debris, miscellaneous contaminated material). ERDF is designed to the technology requirements for RCRA Subtitle C landfills and TSCA specifications for chemical landfills.

Waste entering ERDF is controlled on the basis of source, physical form, and contaminant concentration and activity levels. Before disposal, the waste must be certified that it meets the requirements of the ERDF waste acceptance criteria. An LDR compliance determination must be made for waste containing dangerous/hazardous constituents in accordance with WAC 173-303-140 and 40 CFR 268, "Land Disposal Restrictions." Waste containing PCBs that are regulated under TSCA shall be compliant with the substantive disposal requirements of 40 CFR 761.

Waste will be placed in lined disposal trenches using common industrial equipment (e.g., bulldozer) and contractor work documents. Disposal at ERDF of the LLW and MLLW will be conducted under CERCLA authority provided in the ERDF ROD Amendment (EPA 2007). MLLW or LLW that does not meet or cannot be treated to meet the ERDF waste acceptance criteria will not be managed under the authority of this action.

2.2 WASTE HAZARDS

The action consists of moving waste that contains mixed dangerous and radioactive constituents in and from various Hanford Site activities to ERDF. Possible hazards are physical, chemical, and radiological in nature. The primary hazard is the physical hazard associated with moving containers of waste or bulk waste using industrial equipment and tools. Personnel may be exposed to situations where slips, trips, falls, crushing, or pinching could occur. Under normal operating conditions, chemical and radiological contamination are contained within the waste container and/or transport.

The waste may be treated or require repackaging (e.g., a container breach) that may expose personnel to chemical and radiological hazards. The primary radiological constituents present in the waste are mixed fission products, activated metals, and TRU radionuclides in concentrations less than 100 nCi/g. The MLLW containers have varying amounts of hazardous chemicals including corrosive and toxic chemicals. For these activities, engineered barriers (e.g., ventilation systems) will be used where possible and when needed, and personnel protective equipment will be used to mitigate these hazards to personnel.

3.0 SAFETY AND HEALTH MANAGEMENT CONTROLS

Hanford Site facilities are nuclear facilities and below Category III nuclear facilities as described in DOE-approved nuclear safety documents. Nuclear safety requirements for these facilities are implemented via DOE-approved documents.

ERDF is a below Category III nuclear facility, as described in DOE-approved nuclear safety documents.

3.1 EMERGENCY MANAGEMENT

All emergency planning and preparedness activities for Hanford Site facilities are conducted in accordance with contractor work documents and the requirements of DOE/RL-94-02, *Hanford Emergency Management Plan*; applicable DOE orders; and state and federal regulations (i.e., 29 CFR 1910.38, "Occupational Safety and Health Standards, Emergency action plans," and WAC 173-303-340, -350, and -360). ERDF implements these emergency planning and preparedness requirements through contractor work documents.

The Hanford Site Emergency Management Program provides work documents so that, in the event of an emergency, actions are taken to prevent or minimize impact to workers, the public, the Hanford Site, facilities, and the environment; that emergencies are promptly recognized and classified; that emergencies are reported and notifications are made; and that reentry activities are properly and safely accomplished.

3.2 HEALTH AND SAFETY PROGRAM

Each Hanford Site facility's occupational safety and health program is based primarily on requirements contained in 29 CFR 1910, "Occupational Safety and Health Standards," and 29 CFR 1926, "Safety and Health Regulations for Construction." The ERDF occupational safety and health program is conducted in accordance with a contractor program. These requirements focus on workplace hazards and the controls necessary to mitigate risks to workers. Common hazards associated with action activities include, but are not limited to, walking/working surfaces, material-handling equipment, pinch points, and ergonomics.

3.2.1 Worker Safety Program

Each Hanford Site facility's safety and health program was established for employees involved in treatment, storage, and disposal facility operations and activities. The program ensures the safety and health of workers during routine operations and activities at Hanford Site facilities and complies with the requirements of 29 CFR 1910.120(p), "Hazardous Waste Operations and Emergency Response."

The Integrated Environment, Safety, and Health Management System provides a framework for all work activities conducted at Hanford Site facilities. Elements within the framework include the following:

- An organizational structure and associated documentation that reflects the formal chain of command and the overall responsibilities of facility personnel (i.e., management to first-line worker)
- The Project Hanford Management System work documents and other documents used to implement safety and health requirements identified by the Occupational Safety and Health Administration, DOE, and national standards organizations
- Operations and activities conducted in accordance with facility work documents and process documentation
- A formalized process for hazard identification and tailoring of controls to meet the specific needs of diverse work activities
- A baseline assessment that addresses each Hanford Site facility, operational hazards, and associated controls
- Worker training commensurate with individual job duties and work assignments
- A medical surveillance program administered to comply with Occupational Safety and Health Administration requirements including 29 CFR 1910.120.

3.2.2 Activity Hazards Analysis

A hazard assessment is prepared for each Hanford Site facility that identifies chemical, physical, biological, and ergonomic hazards and specifies the controls and requirements necessary for safe conduct of work. Activities to be performed are controlled by approved work documents. As part of the PHMC work document development process, an automated job hazard analysis (AJHA) was developed by the work team and approved by involved subject matter experts. The AJHA addresses hazards specific to the work activity including any identified subtasks.

Elements of the AJHA include the following:

- Identification of operational work activity hazards
- Tailoring of controls to the work activity
- Specification of personal protective clothing and equipment
- Establishment of work site control measures
- Identification of emergency response
- Involvement of workers and subject matter experts in the AJHA development, review, and approval process.

In addition to a hazard assessment and AJHAs developed for operational work activities, radiological work permits have been prepared for work involving potential radiological hazards. The permits extend the radiological protection program (discussed in Section 3.2.3) to the specific operation. All personnel assigned to a Hanford Site facility and all work site visitors must strictly adhere to requirements identified in the work documents, AJHAs, and radiological work permits.

Before work begins at Hanford Site PHMC managed facilities, a pre-shift briefing is held with affected workers. This briefing includes information on the status of the facility and the activities approved for performance during the work shift. Hazards that may be encountered and the associated requirements are also addressed. At the conclusion of the work shift, a post-shift briefing is held to obtain feedback from workers and to status project efforts. Special briefings may be held, as needed, throughout the duration of a project.

A similar process exists for activities conducted at ERDF. A comprehensive health and safety plan is maintained and administered by the Disposal Operations subcontractor. In addition, a job-specific activity hazard analysis and a radiological work permit will be prepared to address the activities associated with receiving, treating, and disposing of the waste in ERDF disposal cells. ERDF workers will be trained to these documents, and they will be reviewed regularly at plan-of-the-day meetings. Continual feedback from workers will be used to make adjustments and refine these documents as the work evolves.

3.2.3 Radiological Controls and Protection

10 CFR 835, "Occupational Radiation Protection," establishes the radiation protection standards, limits, and program requirements to protect workers from ionizing radiation that may result from the conduct of DOE activities. Radiation protection for the action activities occurring at Hanford Site facilities is implemented by a contractor program. Radiation protection for the action activities occurring at the ERDF is implemented by different contractor's programs. Radiation protection also requires that measures be taken to maintain radiation exposures as low as reasonably achievable (ALARA). A combination of personal protective equipment; personnel training; physical design features (e.g., confinement and remote handling); and administrative controls (e.g., limiting time in radiation areas) would be used to ensure that the requirements for worker and visitor protection are met.

3.3 MAINTENANCE MANAGEMENT

All facility maintenance activities for Hanford Site facilities are conducted in accordance with the requirements of a contractor program and satisfy the requirements of DOE O 433.1, *Maintenance Management Program for DOE Nuclear Facilities*.

The FH maintenance program has been developed to ensure cost-effective maintenance and repair of DOE property. All of the requirements for facility system and component maintenance have been established based on safety classification and risk assessments of systems and components as well as technical specifications, process requirements, and standards and code

requirements. A graded approach was used to determine the level and frequency of maintenance necessary to ensure safe facility operation in an efficient and cost-effective manner.

Facility maintenance at ERDF is performed in accordance with subcontract provisions in the facility operations subcontract with Washington Closure Hanford, LLC.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

4.1 ENVIRONMENTAL REQUIREMENTS

The action must implement the requirements of the ERDF waste acceptance criteria and other applicable federal and state environmental statutes. Waste storage other than for the purpose of preparation for disposal at ERDF is not within the scope of this action work plan. Preparation for disposal of waste at ERDF does include routing waste to a treatment/storage facility other than ERDF. Onsite actions are exempted from obtaining federal, state, and local permits (CERCLA, Section 121[e][1]). For the purposes of this action, storage areas established to prepare waste for shipment to ERDF located on the Hanford Site are onsite. Non-promulgated standards (e.g., proposed regulations and regulatory guidance) are also to be considered to the extent necessary for the action to be adequately protective. The ERDF ROD Amendment (EPA 2007) itself does not embody applicable or relevant and appropriate requirements (ARARs) or to-be-considered requirements. The ARARs and to-be-considered requirements embodied in the original ERDF ROD (EPA et al. 1995) are applicable to this action. The original ERDF ROD ARARs or to-be-considered requirements are incorporated in the ERDF waste acceptance criteria; therefore, compliance with the ERDF waste acceptance criteria will result in compliance with ERDF ARARs and to-be-considered requirements.

The activities necessary to demonstrate compliance with the ERDF waste acceptance criteria include waste characterization, designation, packaging, treatment, and radioactive classification. Most of these requirements are accomplished by activities performed to the waste prior to the action becoming effective. However, even though these activities are generally not performed under the CERCLA authority of this action, these activities are evaluated to demonstrate compliance with the ERDF waste acceptance criteria and so requirements applicable to the activities are included in this document. The inclusion of these activities should not be construed as extending CERCLA authority to these activities. The following are the ERDF requirements that are appropriate for discussion.

- WAC 173-303 pursuant to RCRA as implemented through Revised Code of Washington 70.105, "Hazardous Waste Management," is applicable to the identification, generation, storage, transportation, treatment, and disposal of the mixed wastes generated during the action.
- 40 CFR 260 – 40 CFR 268, "Hazardous Waste Management System," regulations as implemented by the state via the dangerous waste regulations.
- 40 CFR 761 pursuant to TSCA is applicable to waste containing PCBs (polychlorinated biphenyls).
- 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," is applicable to disposal of radioactive waste.
- DOE O 435.1, *Radioactive Waste Management*, is applicable to the management of radioactive waste.

The requirements listed above are implemented for treatment and disposal of waste at the ERDF in BHI-00139, *Environmental Restoration Disposal Facility Solid Waste Acceptance Criteria*. Prior to receipt of waste at ERDF, each waste will be demonstrated to be compliant with the ERDF waste acceptance criteria (BHI-00139). The following Sections discuss how the action will comply with the ERDF and waste storage requirements.

4.1.1 WAC-173-303, Dangerous Waste Regulations

The dangerous waste regulations are applicable to any dangerous or mixed waste on the Hanford Site. The following requirements are applicable to waste under the authority of this action.

- Designate waste in accordance with WAC 173-303-070 through -100.
- Comply with LDR in accordance with WAC 173-303-140. The waste will be treated to meet the substantive requirements of LDR at ERDF.
- Store waste in accordance with WAC 173-303-200 and -280 through -395. A waste being stored in preparation for shipment to ERDF located at a Hanford Site facility will meet the substantive requirements.
- ERDF will meet the substantive requirements for a dangerous waste treatment and disposal facility WAC 173-303-280 to -815.

The applicable requirements from WAC 173-303 will be met by performing the following actions.

- Waste will be designated using WAC 173-303-070 through -100. The methodology used to designate the waste is addressed in a SAP or other documentation. Waste designations will be conducted in accordance with contractor work documents.
- Waste stored in preparation for ERDF disposal will be managed in accordance with the substantive requirements of WAC 173-303-280 through -395. Waste storage activities shall be performed in accordance with a WMP.
- MLLW will be treated to meet LDR before disposal per WAC-173-303-140 and 40 CFR 268, which the Washington State Department of Ecology incorporates by reference. The applicable federal treatment standards include requirements for hazardous waste (40 CFR 268.40), hazardous debris (40 CFR 268.45), underlying hazardous constituents (40 CFR 268.48), and contaminated soil (40 CFR 268.49). Waste will be treated as necessary to comply with LDR prior to shipment to ERDF or at ERDF.
- The waste is disposed at ERDF. ERDF is a Hanford CERCLA waste disposal facility designed to meet the substantive requirements applicable to a dangerous waste landfill of WAC 173-303-280 through 815 including secondary containment, leachate detection, and final cover.

4.1.2 40 CFR 761, Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution, in Commerce, and Use Prohibitions

The PCB waste management regulations are applicable to any Hanford waste determined to contain PCBs that are regulated under 40 CFR 761. The following requirements and corresponding actions are applicable to waste under the authority of this action.

- The waste status for management of PCB will be determined in accordance with the substantive requirements of 40 CFR 761. The methodology used to determine the PCB status of waste is as described for designation in a SAP or other document. The waste determinations will be conducted in accordance with contractor work documents.
- The waste will be stored for disposal in accordance with 40 CFR 761.65. Waste stored in preparation for shipment to ERDF located at a Hanford Site facility will meet the substantive storage requirements.
- The waste is disposed at ERDF. ERDF is a Hanford waste disposal facility authorized under CERCLA that is designed to meet the substantive requirements for a chemical waste landfill including secondary containment, leachate detection, and final cover.

4.1.3 10 CFR 61, Licensing Requirements for Land Disposal of Radioactive Waste

The radioactive waste disposal regulations are applicable to any waste disposed at ERDF under the authority of this action in accordance with 10 CFR 61. The following requirements and corresponding actions are applicable to waste being disposed at ERDF during this action.

- The radioactive waste classification will be determined in accordance with the substantive requirements of 10 CFR 61.55. The waste will be characterized and classified as described in a SAP or other document. Waste that is determined to be greater than Category C shall not be disposed at ERDF.
- The waste will be packaged and treated, if necessary, to meet the substantive waste form requirements of 10 CFR 61.56. Waste that meets ERDF waste acceptance criteria may be disposed at ERDF per the ERDF ROD Amendment (EPA 2007). The waste may be treated at ERDF in order to comply with the substantive waste form requirements of 10 CFR 61.56.

4.1.4 DOE O 435.1, Radioactive Waste Management

DOE Order 435.1 requirements are to-be-considered for any waste generated during this action. The waste is managed in full compliance with this DOE order until the waste comes under the authority of this action. The following requirements are applicable to waste being disposed at ERDF under the authority of this action.

- The waste will be characterized as described in a SAP or other document. The waste must be determined to be LLW or MLLW for it to be disposed at ERDF.
- The waste, when stored in preparation for shipment to ERDF, shall be managed in accordance with the substantive requirements of DOE Order 435.1. The substantive requirements of waste storage incorporating the substantive elements of DOE Order 435.1 are presented in a WMP. A LLW storage clock shall not be applied at CERCLA storage areas.
- ERDF treats and disposes of waste in accordance with the substantive requirements of DOE Order 435.1. The substantive requirements of waste treatment and disposal are implemented in the waste acceptance criteria and contractor work documents.

5.0 PLANNING AND DOCUMENTATION

Hanford waste will consist of diverse waste types, characteristics, and forms as the action extends to the whole of the Hanford Site that contains different processes, activities, and facilities. Further, the action will extend over many years of Hanford Site operation and cleanup activities. Therefore, the SAP and supporting Data Quality Objectives (DQO) report must be flexible to evolve as the Hanford waste being sent to ERDF changes. In order to provide flexibility, the SAP and supporting DQO report will develop the decisions, data requirements, and data collection requirements that are applicable to all waste in the body of each document. The specific data and data collection that are applicable to each waste stream will be placed in appendices to the SAP. Changes to the appendices of the SAP that are necessary to add new or change existing waste streams will be accomplished by processing a minor change to the SAP as described in Section 5.4.

5.1 SAMPLING AND ANALYSIS PLAN

A SAP will be prepared and then reviewed and approved by the EPA. The SAP will describe the sampling and analysis activities required to characterize Hanford waste for disposal at ERDF. Characterization of waste is necessary to properly designate, treat (if necessary), package, and dispose of the waste at ERDF in accordance with BHI-00139, *Environmental Restoration Disposal Facility Solid Waste Acceptance Criteria*. In many cases, waste characterization will be accomplished by reviewing and validating process knowledge (PK) that exists regarding the waste before it came under the authority of this action. The evaluation of PK and the collection of additional data, if any, will be described for each waste stream in an appendix to the SAP. The SAP will describe a process where PK is reviewed and validated as sufficient for decision-making.

Some Hanford waste may be waived from the requirement for characterization in accordance with a SAP. A waiver from a SAP for a waste stream may be obtained if it meets the following criteria:

- waste contains radioactivity at levels that are difficult to detect or that do not approach regulatory decision thresholds (e.g., transuranic waste),
- waste is a simple characterization process or characterization has already been completed, and
- waste characteristics do not vary such that the waste management would be affected.

A waiver from characterization under a SAP must be approved by the ERDF contractor with notification provided to EPA (Email is acceptable). An exemption will be documented by describing the waste, the waste characterization process, the waste characteristics, and showing that the waste complies with the above criteria.

5.2 WASTE TREATMENT PLANS

When waste is treated at ERDF a waste treatment plan shall be prepared and the plan approved by the EPA. ERDF is capable of performing stabilization, macroencapsulation,, and mercury

amalgamation treatments. The treatment plan shall contain a description of the waste, description of the treatment requirements, description of the treatment process, description of the test work to be performed, and establish the treatment process requirements. Treatment of waste at other locations shall not require a treatment plan but shall be performed in full compliance with applicable laws and regulations.

5.3 WASTE MANAGEMENT PLANS

When waste is stored in preparation for shipment to ERDF or treatment prior to sending it to ERDF under the authority of this action, a WMP shall be prepared and the plan approved by EPA. The WMP shall contain a description of the waste, description of the management of the waste, and establish the location of storage areas. Waste stored in full compliance with applicable laws and regulations does not require the preparation of a WMP.

5.4 DOCUMENT CHANGE MANAGEMENT

Changes to this work plan and documents specified by this work plan requiring lead regulatory agency approval (e.g., SAP) work scope, instructions, requirements, etc. may be required because of unexpected field conditions, new information, health and safety concerns, or other situations. Changes to these documents may be one of three levels:

- Minor field changes that have no adverse effect on job technical adequacy (i.e., attainment of DQO) or schedule can be made in the field by the person in charge with the change recorded in field log books or equivalent record material
- Minor changes that are additions, deletions, or modifications to its scope and/or requirements that do not affect the overall intent of the plan may be documented as a change notice with the lead regulatory agency
- Changes requiring a full revision of the document will employ the same review and approval process as applied to the original final document.

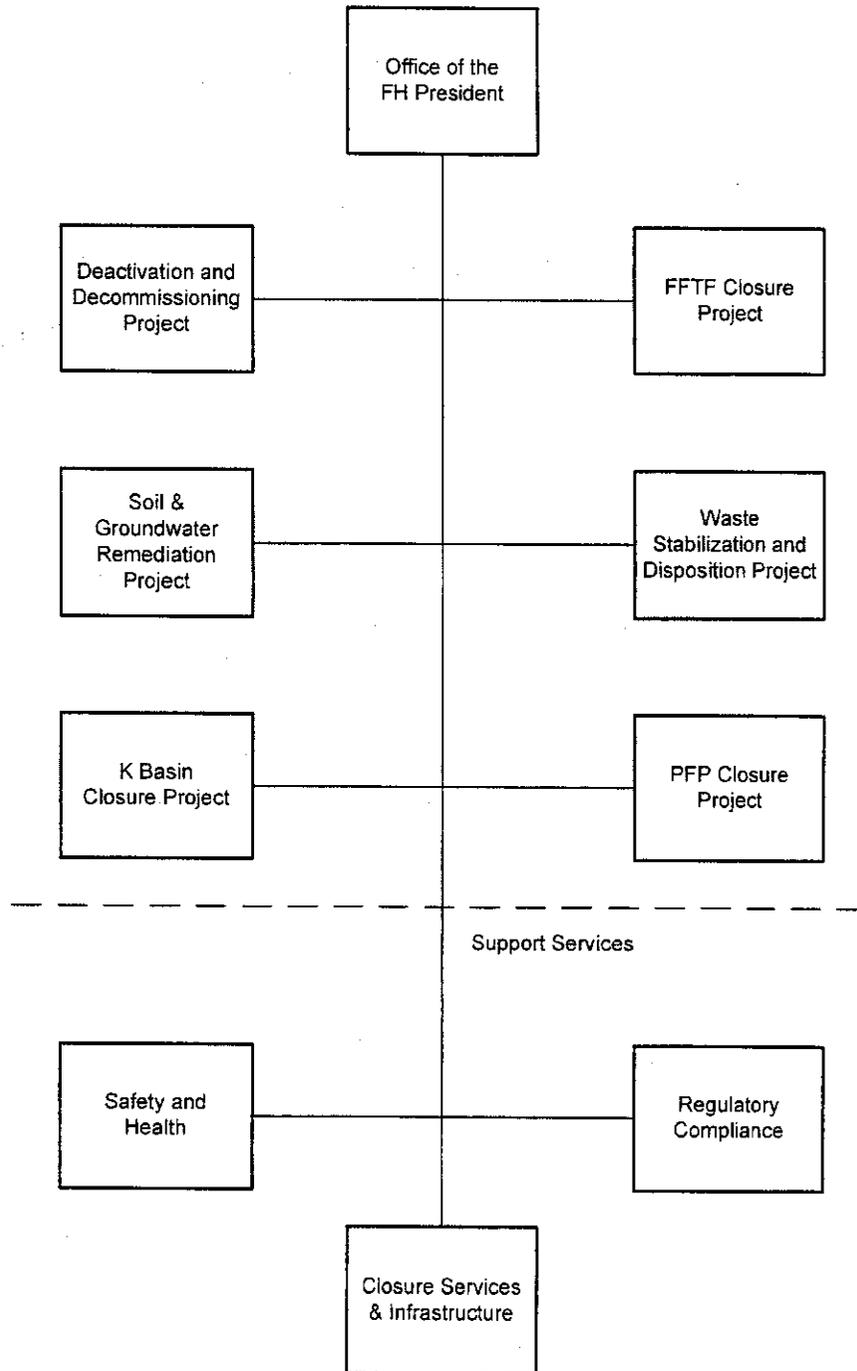
The lead regulatory agency will determine if a document change will be accomplished using a change notice or via a full revision of the document. A change notice shall not be used to modify the schedule.

A change notice shall be approved by DOE and lead regulatory agency project managers. The change notice shall contain the elements listed in Section 9.3 of the HFFACO Action Plan (Ecology et. al. 2004). The change notice must become part of the administrative record, which can be accomplished by issuance of the applicable project managers' meeting minutes.

6.0 PROJECT MANAGEMENT AND ORGANIZATION

Figure 6-1 provides a simplified version of the FH organization chart. The organization chart depicts only those project organizations involved in conducting activities under the authority of this action.

Figure 6-1. Fluor Hanford Organization Chart.



6.1 QUALITY ASSURANCE REQUIREMENTS

Quality assurance (QA) for the action is performed in accordance with a QA program developed incorporating the criteria of 10 CFR 830.122, "Quality Assurance Criteria." The QA activity is graded on the potential impacts to the environment, safety, health, reliability, and continuity of operations. Specific activities include QA implementation, responsibilities and authorities, document control, QA records, audit/assessments, and self-assessments. The action activities, including treatment and disposal at ERDF, are performed in accordance with the contractor QA program.

6.1.1 Quality Assurance Implementation

The QA activities for the action are implemented in accordance with the contractor QA program. Conditions adverse to quality will be identified, and corrective action will be completed in accordance with contractor-approved work documents.

6.1.2 Responsibilities and Authority

Project responsibilities and authorities are described in contractor work documents.

6.1.3 Document Control

Project work documents are managed in accordance with contractor work documents that describe the processes for document identification, creation, review, and approval.

6.1.4 Quality Assurance Records

QA records are controlled in accordance with contractor work documents that describe the processes for record identification storage, transfer, and retention.

6.1.5 Audits/Assessments

External audits are performed by the DOE Office of Independent Assessment and Quality Assurance and other organizations to ensure project compliance with the contractor QA program requirements. The contractor Regulatory Compliance group may conduct random surveillance and assessments to verify compliance with the requirements outlined in the contractor QA program, work documents, and regulatory requirements.

Deficiencies identified by these assessments will be reported in accordance with existing programmatic requirements for corrective actions/deficiencies in accordance with the contractor QA program.

7.0 PROJECT CLOSURE DOCUMENTATION

7.1 ACTION ENDPOINT CRITERIA

The endpoint criteria identify conditions that must be met before the action is considered complete. The action is planned to be in effect as long as ERDF is needed and operational to receive waste for disposal. The action is complete when ERDF is removed from service and closure activities are initiated.

7.2 PROJECT CLOSURE DOCUMENTATION

When the action endpoint criteria are met, a closeout report shall be prepared and submitted to the EPA. The report shall identify the waste that was sent to ERDF for treatment and disposal. The report shall include a summary of the waste volume or weight of waste sent to ERDF. The summary shall include the date the waste was received at ERDF.

When ERDF is removed from service and closure activities are initiated, then records of waste received at ERDF under the authority of this action shall be maintained. The records will describe the waste disposal location, type, and quantity.

8.0 REFERENCES

- 10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations*, as amended.
- 10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations*, as amended.
- 10 CFR 835, "Occupational Radiation Protection," *Code of Federal Regulations*, as amended.
- 29 CFR 1910, "Occupational Safety and Health Standards," *Code of Federal Regulations*, as amended.
- 29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations*, as amended.
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