



**Department of Energy**  
 Richland Operations Office  
 P.O. Box 550  
 Richland, Washington 99352

JUL 29 2009

09-AMRC-0163

Mr. D. A. Faulk, Program Manager  
 Office of Environmental Cleanup  
 Hanford Project Office  
 U.S. Environmental Protection Agency  
 309 Bradley Blvd., Suite 115  
 Richland, Washington 99352

Dear Mr. Faulk:

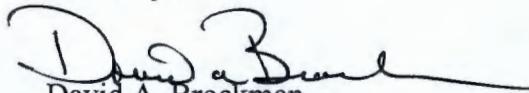
**ENVIRONMENTAL RESTORATION DISPOSAL FACILITY (ERDF) RECORD OF  
 DECISION (ROD) AMENDMENT FOR SUPERCELLS 9 & 10**

The enclosed ROD amendment is being forwarded for approval by the U. S. Environmental Protection Agency (EPA) and State of Washington Department of Ecology (Ecology). I have signed the amendment and I understand that EPA will be responsible for obtaining Ecology's signature.

The ROD amendment changes the design for ERDF disposal cells from two disposal cells and two leachate collection sumps to a single super cell and leachate collection sump. The amendment authorizes the construction of two super cells that are equivalent in capacity to four conventional ERDF cells. This amendment also modifies the current ROD amendment process to allow the issuance of an EPA approved fact sheet to notify the public of future ERDF expansions.

If you have questions, you may contact me, or your staff may contact Joe R. Franco, Assistant Manager for the River Corridor, on (509) 376-6628.

Sincerely,

  
 David A. Brockman  
 Manager

AMRC:OCR

Enclosure

cc w/encl:  
 B. C. Covert, WCH  
 D. R. Einan, EPA  
 S. L. Feaster, WCH  
 J. A. Hedges, Ecology

W. F. Johnson, WCH  
 R. J. Landon, WCH  
 D. D. Opalski, EPA  
 M. G. Peloquin, WCH

**Administrative Record, H6-08 (ERDF)**

**RECEIVED**  
 AUG 03 2009  
**EDMC**

## DECLARATION

### SITE NAME AND LOCATION

U.S. Department of Energy  
Environmental Restoration Disposal Facility  
Hanford Site – 200 Area  
Benton County, Washington

### STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) Amendment and Explanation of Significant Differences (ESD) has been developed in accordance with the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), as amended by the *Superfund Amendments and Reauthorization Act of 1986* (SARA), 42 U.S.C. Section 9601; and to the extent practicable, the "National Oil and Hazardous Substances Pollution Contingency Plan" (NCP), 40 *Code of Federal Regulations* (CFR) Part 300. This ROD Amendment and ESD is based on the Administrative Record for the Environmental Restoration Disposal Facility (ERDF).

The State of Washington concurs with the ROD Amendment and ESD.

### ASSESSMENT OF THE SITE

The response action selected in the ROD, as modified herein, is necessary to protect the public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment. Such a release, or threat of release, may present an imminent and substantial endangerment to public health, welfare, or the environment.

### BACKGROUND AND DESCRIPTION OF THE ROD AMENDMENT AND ESD

The ERDF ROD was signed by the U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and U.S. Department of Energy (DOE) in January 1995. An Explanation of Significant Differences (ESD) was issued in August 1996. Four amendments to the ERDF ROD have been issued in September 1997, March 1999, January 2002, and May 2007. This fifth ROD Amendment and ESD documents fundamental and significant changes to the remedy set forth in the 1995 ERDF ROD, as amended.

Public participation and documentation procedures for this ROD Amendment and ESD have been followed, as specified in CERCLA Section 117 and 40 CFR § 300.435(c) (2)(ii).

The new changes to the ROD, as amended, are summarized below:

### **ROD Amendment**

**ERDF Expansion.** Under this ROD amendment, an area equal to four additional ERDF cells or two "super" cells will be constructed and operated for disposal of Hanford Site remediation waste (Phase IV). This cell construction would be located entirely within the 4.1-km<sup>2</sup> (1,024-acre) area selected for ERDF, as defined in the ERDF ROD. The cells will be designed, constructed, and operated to meet ROD requirements, including the *Resource Conservation and Recovery Act of 1976* (RCRA) minimum technical requirements in 40 CFR 264, Subpart N, and requirements to provide sufficient leachate storage capacity to ensure uninterrupted operations.

### **Significant Differences**

**Updated ERDF Cell Design.** The ERDF ROD states that the ERDF will be a single 21.3-m (70-ft)-deep trench consisting of a series of two side-by-side cells, each measuring 152 by 152 m (500 by 500 ft) at the base. This ESD will allow a single "super cell" in place of the side-by-side configuration described in the ROD. A "super cell" is equivalent in size to what has been called two cells in the past. The term "cell" refers to the disposal area, leachate collection sump, and associated piping and crest pad building. By incorporating the advancements in landfill design that have occurred since ERDF's inception, ERDF "super cells" will now be able to accomplish the leachate collection with one sump and one crest pad building that heretofore required two. The result is a change in the previous design by combining the area of two cells into a single "super cell." The cells will continue to be equipped with a double liner and a leachate collection and recovery system that meets the requirements for hazardous waste landfills under RCRA (40 CFR 264, Subpart N), as required by the ERDF ROD.

**Authorization of Additional ERDF Cells.** This ESD also authorizes the addition of future ERDF cells upon EPA approval through the issuance of a fact sheet by DOE that would be placed in the Administrative Record and Information Repositories, rather than the current ROD amendment process required by the original ERDF ROD. This change will allow additional ERDF cells to be constructed as needed without delay to support the disposal of Hanford Site remediation waste. The additional cells will be located entirely within the 4.1-km<sup>2</sup> (1,024-acre) area selected for ERDF, as defined in the ERDF ROD. The DOE and EPA will authorize the construction of additional disposal cells as required to support disposal of Hanford Site remediation waste.

### **DECLARATION**

The ROD, as modified herein, continues to be protective of human health and the environment, complies with federal and state requirements (identified in the ROD, as amended) that are legally applicable or relevant and appropriate, is cost effective, and utilizes permanent solutions to the maximum extent practicable.

The statutory preference for treatment as a principal element will be satisfied when wastes that require treatment at ERDF to meet the ERDF waste acceptance criteria are treated. Because hazardous substances will remain onsite above health-based levels in the ERDF disposal cells, a review will be conducted at least once every 5 years after the commencement of remedial actions to ensure that the remedy continues to provide adequate protection of human health and the environment.

Signature Sheet for the Amendment to the Record of Decision for the USDOE Hanford Environmental Restoration Disposal Facility between the U.S. Department of Energy and the U.S. Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.



David A. Brockman  
Manager, Richland Operations  
U.S. Department of Energy

7/29/09  
Date

Signature sheet for the Amendment to the Record of Decision for the USDOE Hanford Environmental Restoration Disposal Facility between the U.S. Department of Energy and the U.S. Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.

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Daniel D. Opalski, Director  
Office of Environmental Cleanup  
U.S. Environmental Protection Agency

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Date

Signature sheet for the Amendment to the Record of Decision for the USDOE Hanford Environmental Restoration Disposal Facility between the U.S. Department of Energy and the U.S. Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.

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Jane Hedges  
Program Manager, Nuclear Waste Program  
Washington State Department of Ecology

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Date

## DECISION SUMMARY

### USDOE Environmental Restoration Disposal Facility Record of Decision Amendment and Explanation of Significant Differences

#### **I. INTRODUCTION**

This document presents an amendment to the Record of Decision (ROD) and Explanation of Significant Differences (ESD) for the Environmental Restoration Disposal Facility (ERDF) at the Hanford Site.

##### Site Name and Location

U.S. DOE Hanford Environmental Restoration Disposal Facility  
Hanford Site – 200 Area  
Benton County, Washington

##### Lead and Support Agencies

The lead agency for this action is the U.S. Department of Energy (DOE). The lead regulatory agency is the U.S. Environmental Protection Agency (EPA). The Washington State Department of Ecology (Ecology) concurs with the ROD Amendment and ESD. The three agencies participated jointly in the decision and preparation of this document.

##### ERDF ROD Background

The fundamental objective of ERDF is to support the timely removal and disposal of contaminants from various locations within the Hanford Site. Hanford Site remedial action RODs and action memoranda identify ERDF as the location for disposal of resulting waste. The ERDF ROD was signed by the EPA, Ecology, and DOE (the Tri-Parties) in January 1995. An ESD was issued in August 1996. Four amendments to the ERDF ROD have also been issued. The first amendment was signed on September 30, 1997; the second was signed on March 23, 1999; the third was signed on January 31, 2002; and the fourth was signed on May 24, 2007. Public participation and documentation procedures have been followed as specified in *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)* Section 117 and 40 CFR § 300.435(c) (2)(ii).

##### Basis for the ROD Amendment

The ROD Amendment to add two “super” cells at ERDF for disposal of Hanford Site remediation waste is necessary to support ongoing remediation at the Hanford Site. Remediation volume estimates in final and planned cleanup decision documents support the need for additional disposal capacity. The new cells will provide needed additional waste disposal capacity. The time frame for design and construction of the two new super cells is

approximately 36 months. The additional cells will bring the total capacity of ERDF to 15 million tons.

#### Basis for Significant Differences

**Updated ERDF Cell Design:** The ERDF ROD states that the ERDF is a single 21.3-m (70-ft)-deep trench consisting of a series of two side-by-side cells. A change to the ROD is needed to allow use of a single cell in place of the side-by-side configuration described in the ROD. A single "super cell" is equivalent in size to the two-cell configuration. By incorporating the advancements in landfill design that have occurred since ERDF's inception, ERDF "super cells" are able to accomplish the leachate collection with one sump and one crest pad building that heretofore required two. This will result in substantial cost savings in the construction and the operations of the cells. For the cells utilizing the updated design, operation and short- and long-range maintenance costs will be less per year due to elimination of supporting infrastructure (reduction in the number of leachate collection pumps and crest pad buildings).

**Authorization of Additional ERDF Cells:** An additional significant change concerns how additional ERDF cells will be authorized. The ERDF ROD specified that expansion of the facility will be authorized by ROD amendments. Change is needed to allow additional ERDF cells to be constructed without delay to support the disposal of Hanford Site remediation waste. Authorization of future additional ERDF cells will be accomplished by issuance of a fact sheet by DOE upon EPA approval that would be placed in the Administrative Record and Information Repositories, rather than the current ROD amendment process identified in the original ERDF ROD. The additional cells will be located entirely within the 4.1-km<sup>2</sup> (1,024-acre) area selected for ERDF, as defined in the ERDF ROD.

The Tri-Party Agencies support the use of fact sheets to authorize additional expansions within the designated ERDF area as well as utilization of the updated "super cell" design.

#### Public Involvement

A public notice was placed in the *Tri-City Herald* on May 4, 2009, announcing the availability of the proposed plan (which included the ESD proposal) and the start of the public comment period. Approximately 3,000 copies of a fact sheet describing the proposed amendment and ESD proposal were sent by mail. A public comment period was held from May 4, 2009 through June 3, 2009. No requests were received for a public meeting; therefore, no public meeting was held. The decision to amend the ROD and issue the ESD is based on the Administrative Record for the ERDF. The locations of the Administrative Record and Public Information Repositories are listed below.

#### Administrative Record

The ROD Amendment and ESD are based on, and will become part of, the Administrative Record for the ERDF, as required by 40 CFR § 300.825(a) (2), and are available to the public at the following locations:

## ADMINISTRATIVE RECORD

U.S. Department of Energy, Richland Operations Office  
Administrative Record Center  
2440 Stevens Center  
Richland, Washington 99354

**INFORMATION REPOSITORIES** (contains ROD Amendment and ESD and other limited documentation)

University of Washington  
Suzzallo Library  
Government Publications Room  
Seattle, Washington 98195

Gonzaga University, Foley Center  
E. 502 Boone  
Spokane, Washington 99258

Portland State University  
Branford Price Millar Library  
1875 SW Park Avenue  
Portland, Oregon 97207-1151

DOE Public Reading Room  
Washington State University, Tri-Cities  
2770 University Drive, Room 101L  
Richland, Washington 99354

## II. SITE HISTORY

In 1988, the Hanford Site was scored using the EPA's hazard ranking system. Based on the scoring, the Hanford Site was added to the National Priorities List (NPL) in July 1989 as four sites: 1100 Area, 100 Area, 200 Area, and 300 Area. Each of these areas was further divided into operable units (i.e., a grouping of individual waste units based primarily on geographic area and common waste sources). These operable units contain contamination in the form of hazardous waste, radioactive/hazardous mixed waste, and other CERCLA hazardous substances.

In anticipation of the NPL listing, DOE, EPA, and Ecology entered into the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) in May 1989. This agreement established a procedural framework and schedule for developing, implementing, and monitoring remedial response actions at the Hanford Site. The Tri-Party Agreement also addresses *Resource Conservation and Recovery Act of 1976* (RCRA) compliance and permitting.

In October 1994, DOE published the remedial investigation/feasibility study (RI/FS) for the ERDF (DOE/RL-93-99, Rev. 1). The RI/FS analyzed DOE's overall plan for construction of a disposal facility for remediation waste originating only from the Hanford Site. The ROD issued in 1995 chose one of the alternatives analyzed in the RI/FS and authorized the creation and operation of ERDF accordingly. It also authorized the construction of the first two ERDF cells and required ROD amendments to authorize future expansions (additional cells). The RI/FS and the ROD evaluated the anticipated impacts on the entire ERDF area. Subsequent ROD amendments (as described below) have provided expanded capabilities, but expansion remained within the authorized ERDF area analyzed in the RI/FS and selected in the ROD.

As part of the original ERDF evaluation, a *National Environmental Policy Act of 1969* (NEPA) roadmap (DOE/RL-94-41) was provided to identify where the requisite NEPA elements were addressed. This roadmap provides a "cross-walk" between the normal NEPA elements of an environmental impact statement and the associated CERCLA elements contained in the RI/FS and other CERCLA documents.

The NEPA values evaluated in the original RI/FS and acknowledged in the ROD are applicable to the current proposal to add "super" cells 9 and 10 as well as any future expansion within the area designated for expansion in the ROD. The potential impacts associated with the construction and operation of additional cells remain within the analyses and projections presented in the RI/FS for ERDF.

As previously documented, ecological impacts will occur at the ERDF site as well as the borrow sites used to provide soil and gravel for the liner and cover. These impacts will include destruction of habitat, displacement of wildlife, and disturbance of wildlife along transportation routes from borrow sites to ERDF. Habitat impacts from construction of the new disposal cells will be minimized by locating the additional cells and staging area entirely within the previously selected ERDF site area. Using the lined, deep, single-trench configuration, the disturbed area needed for additional construction of ERDF (including the trench, container handling, material stockpile, and support facilities) will not exceed the maximum of 4.1 km<sup>2</sup> (1,024 acres) identified in the ERDF ROD. Clearing the expansion areas will be scheduled to prevent impacts during the bird nesting season. Mitigation measures for all additional ERDF cells will be implemented in accordance with the ERDF mitigation action plan. The DOE, in coordination with the Natural Resource Trustees, may review and revise the ERDF mitigation action plan for additional mitigation measures, as appropriate.

Disposal of contaminated material at the ERDF has been chosen as the preferred remedy for much of the waste excavated from numerous Hanford waste sites. The current estimate is that approximately 12.6 million tons of waste from 100 and 300 Area remediation will be disposed at the ERDF. The ERDF has disposed of approximately 8.0 million tons of Hanford Site cleanup waste since the facility started operations in 1996 (an average of 700,000 tons per year). Volume estimates for waste that may originate from the 200 Areas and from CERCLA decontamination and decommissioning (D&D) projects remain unknown at this time.

### III. REMEDY SELECTED IN THE ROD

The major components of the selected remedy (as described in the 1995 ERDF ROD) included the following:

- Construction and operation of the first two disposal cells. These cells provided an approximate waste disposal capacity of 1 million yd<sup>3</sup>. The cells were required to be designed and constructed in accordance with RCRA minimum technology requirements (40 CFR 264, Subpart N). Decisions to expand the landfill in the future are required to be documented by amending the ERDF ROD or as part of the RODs for the Hanford Site operable units.
- The ERDF site will cover a maximum of 4.1 km<sup>2</sup> (1,024 acres) on the Central Plateau, which is located southeast of the 200 West Area and southwest of the 200 East Area. The initial construction of the facility required 0.65 km<sup>2</sup> (165 acres) of this area.
- The ERDF is a single 21.3-m (70-ft)-deep trench consisting of a series of two side-by-side cells.
- The ERDF will provide sufficient leachate storage capacity to ensure uninterrupted operations and will comply with the requirements of 40 CFR 264, Subpart N. Leachate collected at the landfill will be managed at the 200 Area Effluent Treatment Facility (located in the 200 East Area) or other approved facility.
- Surface water run-on/run-off will be controlled at the landfill and other areas of the facility that are potentially contaminated. Best management practices to control runoff shall be employed.
- During excavation, suitable soils will be stockpiled at the ERDF site to provide materials for liner systems and for daily interim and closure covers for the landfill. Materials not suitable for construction on the liner and covers will be used for other construction purposes at the Hanford Site to the extent practicable.
- Air monitoring will be accomplished at ERDF by the placement of real-time air monitors for radioactive contaminants and the placement of air samplers for hazardous and radioactive constituent to detect any offsite migration of contaminants.
- Groundwater monitoring will be performed in accordance with 40 CFR 264, Subpart F.
- Appropriate measures to protect facility workers and the public will continue to be employed during ERDF operations, including contamination control, dust mitigation, and protection of personnel from industrial hazards presented by ERDF operations. Protective measures shall comply with applicable requirements found in the *Occupational Safety and Health Act*, *Washington Industrial Safety and Health Act*, and other safety regulations or ERDF-specific safety requirements. The DOE shall also comply with the requirements of 40 CFR § 300.150.

- Existing or planned site road systems will be used for waste transport.
- Waste acceptance criteria will be developed by DOE and approved by EPA in accordance with applicable or relevant and appropriate requirements (ARARs), risk/performance assessments, ERDF-specific safety documentation, and worker protection requirements. Operable unit-specific waste disposal and treatment decisions will be made as part of the remedy selection and cleanup decision process for each operable unit.
- The ERDF landfill will be closed by placing a modified RCRA-compliant closure cover over the waste. Prior to cover construction, closure cover designs will be evaluated and the most appropriate closure cover design will be selected for construction. Construction of the cover will occur on an incremental basis as the trench is expanded. The design will, at a minimum, comply with applicable RCRA requirements found in 40 CFR 264, Subpart N.
- Institutional controls shall be imposed to restrict public access to the landfill.
- Equipment will be available to transport wastes and to operate the ERDF safely.
- Hanford Site infrastructure will be expanded as necessary to support the ERDF. Infrastructure improvements or extensions may include water, sewer, electric power, roads, operations, facilities, and a chemical and fuel storage area.
- A decontamination facility will be constructed consisting of, at a minimum, an impervious pad with a sump, wash water storage, and secondary containment. Wash water used to decontaminate site equipment shall be managed in compliance with appropriate requirements.
- The detailed design will be submitted to EPA for approval (with concurrence from Ecology) prior to construction at the ERDF. At a minimum, the design will be submitted as two packages to allow for construction in phases.
- An operations plan will be submitted to EPA for approval (with concurrence from Ecology) prior to operation of the ERDF.
- Mitigation measures to reduce ecological impacts have been incorporated to satisfy the remedial action objectives identified in Sections 7(4)(i) through 7(4)(v) of the 1995 ERDF ROD. In addition, DOE commits to the development and implementation of a mitigation action plan in coordination with the Natural Resource Trustees for additional mitigation measures.

The ESD to the ERDF ROD, issued in July 1996, made the following changes:

- **Waste Origin Clarification.** Any Hanford Site environmental cleanup waste generated as a result of CERCLA or RCRA cleanup actions (e.g., investigation-derived waste [IDW], D&D waste, and RCRA past-practice waste) is eligible for disposal, provided that the waste meets ERDF waste acceptance criteria and provided that the appropriate CERCLA decision

documents are in place. Additionally, non-process waste (e.g., contaminated soil and debris) generated from closure of inactive RCRA treatment, storage, and disposal units may be placed in ERDF, provided that (1) the units are within the boundaries of a CERCLA or RCRA past-practice operable unit, (2) the closure wastes are sufficiently similar to CERCLA or RCRA past-practice wastes placed in ERDF, (3) ERDF waste acceptance criteria are satisfied, and (4) appropriate CERCLA decision documents are in place. Revision of the RCRA Permit and closure plans may be required.

- **Use of Leachate.** The ERDF leachate may be collected and stored at the ERDF for use within the trench, as appropriate. Appropriate uses of the leachate are limited to dust suppression and waste compaction. The leachate must be sampled prior to use to ensure compliance with land disposal restrictions, ERDF waste acceptance criteria, and other health-based limits (whichever is more restrictive). Leachate in excess of the ERDF's recycling capacity or acceptable contaminant levels will be sent to the Effluent Treatment Facility or another approved facility for management.

A ROD Amendment issued in September 1997 amended the ROD as follows:

- **ERDF Expansion.** The ERDF ROD specifies that expansion of the facility would be authorized on an as-needed basis through the ROD amendment process. Based on the estimated remediation waste volumes presented in the ERDF ROD, additional disposal cells were anticipated. Two additional ERDF cells (cells 3 and 4) were to be constructed for disposal of Hanford Site remediation waste. This first expansion of ERDF is also known as Phase II. Remediation volume estimates in final and planned cleanup decision documents, prepared since the issuance of the ERDF ROD, supported the need for additional disposal capacity. The Phase II construction would be located entirely within the 4.1-km<sup>2</sup> (1.6-mi<sup>2</sup>) area selected for ERDF, as defined in the ERDF ROD. The same RCRA design selected for the original ERDF disposal cells would be used for the Phase II cells.
- **Treatment at ERDF.** The selected remedial alternative in existing 100 and 300 Area waste site remediation RODs is removal, treatment (if required), and disposal at ERDF. Treatment is required if the concentration of contaminants in the waste is above land disposal restriction standards found in the federal and state hazardous waste regulations or above the ERDF waste acceptance criteria. This ROD Amendment provides the option of conducting remediation waste treatment at ERDF rather than at the operable unit prior to disposal. This option does not preclude treatment at the operable units. Treatment at ERDF is limited to stabilization and encapsulation in containers. In addition all substantive federal and state requirements governing hazardous waste treatment in containers, such as secondary containment, must be met as part of treatment at ERDF. The decision whether to perform remediation waste treatment and a determination of the specific treatment needed must be documented as part of the remedy selection and remedial design process for the operable unit of the waste site.

A second ROD Amendment issued in March 1999 authorized the delisting of ERDF leachate as follows:

- **CERCLA Leachate Delisting at ERDF.** In order to “delist” the ERDF leachate such that it may be managed at ERDF under CERCLA as nonhazardous waste, it must be demonstrated that the concentrations of hazardous contaminants found in the leachate satisfy the requirement for an exclusion under 40 CFR § 260.22 and do not exceed the criteria for characteristic wastes as defined under 40 CFR 261, Subpart C, and *Washington Administrative Code* (WAC) 173-303-090. In order to confirm that the concentration of hazardous constituents in the leachate continue to be below delisting levels, a sampling and analysis plan supporting the delisting was written and attached to the ROD Amendment. The plan provided detailed information regarding sampling frequency and methodology and also specified analytical methods to be used. The sampling and analysis includes a comparison of leachate sample results with delisting levels. Delisting levels, in general, are based on the original docket values and health-based limits. Ongoing exclusion from management as a hazardous waste is conditioned based on compliance with specified management requirements and based on the leachate meeting the limits established in the ROD Amendment, as demonstrated through the verification sampling program.

A third ROD Amendment was issued in January 2002 that authorized the expansion of the ERDF cells and construction of a waste staging area at ERDF as follows:

- **ERDF Phase III Construction.** The ERDF ROD specifies that expansion of the facility would be authorized as needed through the ROD amendment process. Based on estimated remediation waste volumes presented in the ERDF ROD, additional disposal cells were anticipated. This amendment authorized four additional ERDF cells to be constructed and operated for disposal of Hanford Site remediation waste. The second expansion of ERDF is also known as Phase III. The Phase III construction shall be located entirely within the 4.1-km<sup>2</sup> (1.6-mi<sup>2</sup>) area selected for ERDF. The current design of ERDF is a single 21-m (70-ft)-deep trench consisting of pairs of side-by-side cells with final dimensions of 433 m (1,420 ft) long by 219 m (720 ft) wide at the top of the trench. The facility is equipped with RCRA double-liner and leachate collection and recovery system. The same RCRA design selected for the existing ERDF disposal cells shall be used for the Phase III cells. The detailed design shall be submitted to the EPA for approval prior to construction of the ERDF expansion. The Phase III cells will be closed in the same manner as the existing ERDF cells.
- **Remediation Waste Staging at ERDF.** The selected remedial alternative in existing 100 and 300 Area RODs is typically removal, treatment (if required), and disposal at ERDF. Treatment is required if the waste does not meet the ERDF waste acceptance criteria, including land disposal restriction standards found in federal and state hazardous waste regulations. This ROD amendment authorized the option of conducting remediation waste staging at the ERDF rather than at the operable unit prior to treatment and disposal. This ROD amendment allowed the staging of remediation waste at ERDF while awaiting treatment. Treatment would be performed to satisfy the ERDF waste acceptance criteria and comply with land disposal restrictions. The decision whether to perform remediation waste treatment and the specific treatment needed will be documented as part of the remedy

selection and remedial design process for the waste site operable unit. The staging area at ERDF will be designed, constructed, operated, and closed in accordance with RCRA regulations for storage at corrective action management units, as amended by the final rule published in the *Federal Register* on January 22, 2002. The ERDF staging area will be used to hold waste with low-level radionuclide, dangerous waste, and polychlorinated biphenyl (PCB) contaminants. Staging of these wastes will require compliance with the substantive requirements of PCB storage requirements of 40 CFR § 761.65 and Corrective Action Management Unit standards for hazardous waste storage. Low-level radioactive waste management standards, including DOE O 435.1, will be addressed as to-be-considered (TBC) provisions for staging of radioactive waste.

A fourth ROD Amendment issued in May 2007 authorized the disposal of certain Hanford Site waste in storage at ERDF as follows:

- **Acceptance of Other Hanford Waste.** The ROD Amendment authorized the disposal at ERDF of Hanford generated waste in storage listed in Table 1. The use of a plug-in approach for the disposal of other similar Hanford only-generated waste in storage at the ERDF was also authorized in the document. This “plug-in” process allows such other wastes in storage to be authorized for ERDF disposal without an ESD or ROD amendment, upon written EPA approval. DOE is required to issue annual fact sheets on such wastes approved for disposal at ERDF. The primary eligibility requirements for disposal at the ERDF under the “plug-in” approach are that the waste be in storage and similar to a waste identified in Table 1, meet ERDF waste acceptance criteria, comply with land disposal restriction requirements, be generated on the Hanford Site or directly derived from a Hanford generated waste in support of RCRA and CERCLA cleanup actions, be compatible for disposal at ERDF, and not already addressed by a CERCLA decision document. EPA approval must be granted for each individual waste.

#### IV. DESCRIPTION OF THE SIGNIFICANT DIFFERENCES

The two significant differences are (1) allowing an updated landfill cell design, and (2) authorization of future ERDF cells by the agencies using a fact sheet. DOE shall implement the remedy as modified below.

- **Updated ERDF Cell Design.** The ERDF ROD states that the ERDF is designed as a single 21.3-m (70-ft)-deep trench consisting of a series of two side-by-side cells, each measuring 152 by 152 m (500 by 500 ft) at the base. The current design is two side-by-side cells with final dimensions of 432.8 m (1,420 ft) long by 152.4 m (500 ft) wide at the top of the trench. This ROD design requirement is modified to allow a single “super cell” to be used in place of the double cell side-by-side configuration described in the ROD. A “super cell” is equivalent in size to what has been called two cells in the past. The term “cell” refers to the disposal area, leachate collection sump, and associated piping and crest pad building. By incorporating the advancements in landfill design that have occurred since ERDF’s inception, ERDF “super cells” will now be able to accomplish the leachate collection with one sump and one crest pad building that heretofore required two. The “super cells” will be equipped

with a double liner and a leachate collection and recovery system that meets the requirements for hazardous waste landfills under RCRA (40 CFR 264, Subpart N), as required in the ERDF ROD. The detailed design for such "super cells" is required to be submitted to the EPA for approval prior to construction.

- **Authorization of Additional ERDF Cells.** An additional significant change concerns how additional ERDF cells will be authorized. The ERDF ROD specified that expansion of the facility would be authorized by ROD amendments. This requirement is being changed to allow ERDF cells to be authorized for construction and operation upon EPA approval through the issuance of a fact sheet by DOE. The fact sheet will be placed in the Administrative Record and Information Repositories. This change will allow additional ERDF cells to be constructed as needed to support the disposal of Hanford Site remediation waste. The additional cells will be located entirely within the 4.1-km<sup>2</sup> (1,024-acre) area selected for ERDF, as defined in the ERDF ROD, and must comply with all ROD requirements for design, construction, and operation. The detailed design for additional ERDF cells shall be submitted to the EPA for approval prior to construction.

The remedial action objectives (RAOs) established for ERDF in the original ROD are limited to the siting and configuration of the waste disposal facility and do not address the remediation of specific contaminated sites. This document authorizes changes to the configuration of the facility; however, the changes allowed under this amendment will meet the ARARs and the RAOs specified in the ROD, as amended.

## V. DESCRIPTION OF THE ROD AMENDMENT

DOE shall implement the amended remedy as described below.

This ROD Amendment authorizes the Phase IV expansion of the ERDF. This ROD Amendment does not change any existing ARARs nor add any new ones. Under this amendment, an area equal to four additional ERDF cells or two "super" cells will be constructed and operated for disposal of Hanford Site remediation waste. This cell construction will be located entirely within the 4.1-km<sup>2</sup> (1,024-acre) area selected for ERDF, as defined in the ERDF ROD.

The cells will be equipped with a double liner and a leachate collection and recovery system that meets the requirements for hazardous waste landfills under RCRA. The detailed design shall be submitted to the EPA for approval prior to construction of the ERDF expansion. The cells will be closed as required by the ROD using the same process as the existing ERDF cells.

Design, construction, and operation of the new ERDF cells must comply with all ROD requirements. The cells will be designed and constructed to the RCRA minimum technical requirements in 40 CFR 264, Subpart N, and will provide sufficient leachate storage capacity to ensure uninterrupted operations. Clearing the expansion areas will be scheduled to prevent impacts during the bird nesting season. To minimize the amount of soil from undisturbed land needed for construction of additional cells, soil excavated during new cell construction will be

used or stockpiled in previously disturbed areas for later use. Mitigation measures for all additional ERDF cells will be implemented in accordance with the ERDF mitigation action plan.

This document authorizes changes to the configuration of the facility; however, the changes allowed under this amendment will meet the ARARs and the RAOs specified in the ROD, as amended. This amendment will not affect the RAOs or the expected outcomes identified in the ROD.

## **VI. EVALUATION OF ALTERNATIVES FOR ROD AMENDMENT**

The NCP establishes nine criteria for evaluating remedial action alternatives in selecting or amending remedies in a ROD or ROD amendment. The nine criteria analysis is not required for significant differences.

The nine criteria are divided into three categories of weighted importance, which include threshold, balancing, and modifying criteria. All remedies must meet the threshold criteria to be considered. The seven balancing and modifying criteria help describe relative differences between the alternatives.

### Summary of Alternatives for ROD Amendment

The key elements of each alternative are described and briefly discussed below.

#### **Expansion Alternatives**

- **Alternative 1E – No Action.** The no-action alternative consists of not approving the Phase IV expansion of the ERDF trench to accommodate additional waste from remediation and/or from the staging area.
- **Alternative 2E – ERDF Phase IV Construction.** Two additional “super” cells would be constructed and operated in the ERDF area designated for expansion in accordance with ROD requirements to provide additional capacity for ongoing remediation of the Hanford Site.

The previous evaluation of the threshold and balancing criteria in the 1995 ERDF ROD remains applicable to ERDF Phase IV, as supplemented by the discussion below, because the 1995 ROD addressed both the construction of the initial ERDF cells as well as future expansion with area designated for expansion.

### Evaluation of Alternatives

#### 1) Overall protection of human health and the environment

Construction of additional ERDF cells will provide needed onsite disposal capacity and would satisfy overall protection of human health and the environment given ERDF's

protective design and operational requirements, the location away from the Columbia River, and ERDF's distance to groundwater. The no-action alternative would lead to ERDF filling the existing disposal capacity on site, which would result in the need to identify alternative disposal and storage sites for Hanford Site generated waste.

2) Compliance with ARARs

ARARs are unchanged from those specified in the 1995 ROD. The most significant ARARs for Phase IV construction and operation are federal and state hazardous waste landfill requirements. The Phase IV expansion would comply with the ARARs specified in the ERDF ROD, as amended. The no-action alternative would not involve construction and operation of any additional disposal cells. ARARs would be achieved for existing cells.

3) Long-term effectiveness and permanence

Phase IV expansion of the ERDF would provide long-term isolation of waste resulting from remedial actions at the Hanford Site in a RCRA-compliant landfill. The no-action alternative would not provide any additional capacity for waste and therefore no additional long-term effectiveness or permanence at ERDF beyond that already provided.

4) Reduction of toxicity, mobility, or volume through treatment

Wastes to be disposed of in Phase IV expansion of ERDF would be required to be treated as necessary to meet the ERDF waste acceptance criteria. Such treatment of waste prior to disposal at ERDF reduces the toxicity, mobility, or volume. Waste treatment will generally be addressed in the feasibility studies, proposed plans, RODs, and design documents for the individual operable units. The no-action alternative would not provide any additional capacity for waste, and therefore no additional reduction of toxicity, mobility, or volume through treatment would be required under the ERDF ROD.

5) Short-term effectiveness

Environmental risk would be lower than the no-action alternative at ERDF because of its design and operational requirements, the location away from the Columbia River, and the distance to groundwater. Expansion would require additional construction activity and, therefore, would increase short-term risk to workers. The no-action alternative would not involve construction and operation of additional cells and therefore would not increase short-term risk to workers at ERDF.

6) Implementability

Similar to Phases I, II, and III, the Phase IV expansion will be performed using known materials and construction techniques well established by industry and is readily implementable.

7) Cost

The construction costs of the additional ERDF cells have been estimated to be approximately \$22 million for each expansion, \$44 million total (from design through the start of operation).

8) State acceptance

Ecology supports the ERDF Phase IV construction.

9) Community acceptance

Public acceptability was evaluated after the close of the public comment period for the Proposed Plan. Comments were received from one citizen, one state agency, a confederated tribe, and a citizen board as a result of the public comment period. The written comments submitted during the comment period and from presentations to public committees were generally supportive. The comments and responses are detailed in the attached responsiveness summary.

There were two major concerns expressed during the comment period. The first focused on the preparation of a performance assessment (PA) and that the results of the PA should be used to plan for potential impacts to the environment, public health and to the ERDF design.

The second concern recommended the continued use of the ROD Amendment process for future expansions of the ERDF until an updated PA has been completed or for any changes to the ROD requirements, including any fundamental changes to the landfill design.

## VII. STATUTORY DETERMINATIONS

The ROD, as amended and modified herein, satisfies CERCLA Section 121. As indicated in the ROD and in this and prior ROD amendments, the selected remedy is protective of human health and the environment, will comply with federal and state requirements (identified in the ROD and subsequent ROD amendments) that are legally applicable or relevant and appropriate, is cost effective, and will use permanent solutions to the maximum extent practicable. Because hazardous substances will remain on site above health-based levels in the ERDF disposal cells, a review will be conducted at least every 5 years after the commencement of remedial actions to ensure that the remedy continues to provide adequate protection of human health and the environment.

Treatment of remediation wastes will continue to be addressed as part of the operable unit decisions. The statutory preference for treatment as a principal element will be satisfied when wastes that require treatment to meet ERDF waste acceptance criteria are treated before being disposed of in ERDF.

## VIII. PUBLIC PARTICIPATION COMPLIANCE

Public participation requirements for this ROD Amendment and ESD specified in CERCLA Section 117 and 40 CFR § 300.435(c)(2)(ii) have been met as described in Section I above. DOE and EPA reviewed all written and verbal comments submitted during the public comment period and prepared a Responsiveness Summary, included below as Section IX.

The major concerns expressed during the public involvement process focused on the preparation of a performance assessment (PA) and that the results of the PA are used to plan for potential impacts to the environment, public health and to the ERDF design.

The agencies responded to these concerns by agreeing to prepare the PA with performance objectives consistent with both DOE O 435.1 and environmental regulations (CERCLA/RCRA technical requirements), including the points of compliance and maximum contaminant levels (MCLs) prior to additional expansion of the ERDF beyond cells 9 and 10. DOE will submit a schedule for the PA and begin collecting data in fiscal year 2010.

The Agencies also plan to use the ROD Amendment process for future expansions of the ERDF until an updated PA has been completed. Once the PA is completed, a fact sheet will issued for future expansions. However, if there are changes to the ROD requirements or fundamental changes to the landfill design then the ROD Amendment process would be utilized.

## IX. RESPONSIVENESS SUMMARY

**U.S. Department of Energy  
Environmental Restoration Disposal Facility  
Hanford Site  
Benton County, Washington  
Amended Record of Decision**

### Introduction

This responsiveness summary was prepared in accordance with the requirements of Section 117 of CERCLA, as amended. The purpose of this responsiveness summary is to summarize and respond to significant public comments on the Proposed Plan for an Amendment to the January 1995 ERDF ROD. The Proposed Plan for an Amendment, issued on May 4, 2009, identified proposed changes to components of the remedy set forth in the January 1995 ERDF ROD.

The Tri-Parties announced the issuance of the proposed plan in the community newspaper, the *Tri-City Herald*. A 30-day comment period was provided for the public to read the Proposed Plan, review the documents in the Administrative Record, and submit written comments. No requests were made for a public meeting; therefore, no meeting was held. The Proposed Plan summarized alternatives and proposals for ERDF expansion and changes to the design, as well as a proposal for a new method for approving future ERDF expansions.

### Community Involvement

A newspaper notice placed in the *Tri-City Herald* on May 3, 2009, provided a brief analysis of the Proposed Plan and announced the availability of the Proposed Plan and the start of the public comment period. Approximately 3,000 copies of the fact sheet describing the Proposed Plan were sent by mail. A public comment period was held from May 4, 2009 to June 3, 2009. No requests were received for a public meeting; therefore, no public meeting was held.

### Comments and Responses

The DOE received written comments from one citizen and one state agency during the public comment period. The comments, along with responses, are summarized below.

A.1. I was on the site of the cells mentioned in the Fact Sheet I just received. Looking at the aerial photograph, it appears that there is no separation between each of the 8 original cells. Nor do I remember any separation walls. Am I correct? If so, wouldn't the Super cells just be an extension of the current cells?

Response: There are no walls or physical separations between the existing cells; however, what may not be visible from the aerial photograph is the slope of the cell floor. The super cell design extends the facility using similar methods as past expansions.

B.1 Oregon recognizes the critical role of ERDF in Hanford's clean-up efforts and waste management and supports expansion of ERDF so long as it can be done in a manner protective of human health and the environment now and in the future. Therefore, Oregon supports the *Proposed Amendment to the Environmental Restoration Disposal Facility Record of Decision* (ROD) by the Tri-Parties to allow the planned expansion of ERDF into the next two "super cells" (cells 9 and 10).

Response: Comment noted.

B.2. However, we disagree with the proposed change to the ROD to provide authorization for construction of the remainder of the cells as more capacity is needed within the 1,024 acre design with no further ROD amendments. We believe that the performance assessment (PA) for ERDF must be completed and the Tri-Parties need to thoroughly review the status of waste inventories at ERDF – relative to existing waste limits for the facility – before proposing additional expansion of ERDF beyond cells 9 and 10.

Response: DOE will perform an update to the PA prior to additional expansion of the ERDF beyond cells 9 and 10.

B.3. Additionally we recommend that the Tri-Parties use the formal ROD amendment and comment process for any substantive future changes to the facility design, such as changes in cell design, alignment, or modification of the waste acceptance criteria (WAC).

Response: The DOE will continue to use the ROD amendment process for any fundamental changes to the ROD requirements. Modifications to the WAC that do not constitute changes to ROD requirements will be subject to approval by the EPA (and consultation by the Washington State Department of Ecology), and compliant with the process established in the original ERDF ROD.

B.4. The concentrations of some key contaminants in ERDF's leachate are increasing. The leachate concentration of uranium has been recorded at 2,100 pCi/L (about 70 times the maximum contaminant levels); is on the increase; and raises concerns about the potential for leachate eventually reaching groundwater. These high concentrations suggest that uranium in the waste is substantially more soluble and more mobile in Hanford's soils and wastes than was previously believed. Because the concentration of uranium in the leachate is higher than was expected, Oregon strongly urges that the Tri-Parties, before considering a final authorization for expansion beyond cells 9 and 10:

- (1) reexamine the CERCLA / PA limits for uranium, technetium 99, carbon 14 and iodine 129,
- (2) reevaluate the waste inventory placed in ERDF to date, and
- (3) reconsider pre-treatment of material to be put in ERDF to remove or more effectively immobilize the elements that pose a potential of exceeding the limits in the future.

Response: The RI/FS evaluated the potential impacts from uranium in leachate using the partition coefficient  $K_d = 0$  which represents the highest mobility of the radionuclide in soil and the current levels are consistent with the results of the evaluations performed. The leachate is collected in the leachate collection system within the ERDF cell and transported to the Effluent Treatment Facility for treatment.

The radionuclides listed are not contained in all wastes received at the ERDF; therefore, the volume of the waste accepted does not translate directly into an inventory for a specific radionuclide. The PA will evaluate these three elements as part of the process. The re-evaluation of the existing inventory will be part of the PA. Pre-treatment of waste streams is routinely evaluated on a case-by-case basis when significant inventories of key radionuclides are identified.

B.5. The Tri-Parties should create a tracking and planning tool for key contaminants (a cumulative record for each key contaminant, such as uranium, technetium-99, carbon-14 and iodine-129). This tool would be employed to demonstrate how much of ERDF's capacity for certain contaminants in the wastes have been consumed and how much remains. To date, ERDF has filled a small fraction of the total volume originally sited. It appears likely that ERDF's ultimate capacity may be limited more by the inventories of key radionuclides, rather than the volume of wastes disposed. The current inventory of these key radionuclides already in ERDF exceeds 60- 70 percent of the ultimate capacity of the landfill based on the current PA risk assessment limits.

Response: Key contaminants are currently tracked and a recent evaluation of the original PA indicates that the inventory limits for these key radionuclides would increase. The ROD did not require the PA nor did it specify inventory limits. The requirement for a PA is found in DOE O 435.1; however, CERCLA exceptions in the order did not require the PA as part of the approval of the ERDF facility which was authorized under CERCLA. Separate from the original ROD requirements, the PA was performed to assist the ERDF in planning for incoming wastes. The ERDF WAC provides radionuclide concentration limits for incoming wastes to ensure wastes with higher concentrations of the listed radionuclides are evaluated on a case by case basis prior to disposal. The current plan is to prepare the PA utilizing the processes and performance objectives consistent with both DOE O 435.1 and CERCLA/RCRA technical requirements. DOE plans for waste disposal needs, including an evaluation of radionuclide inventories provided by the generators, as far in advance as possible.

B.6. ERDF is now operated such that leachate is sampled from a common collection tank before the leachate is piped to disposal. Samples should be collected from individual cells so that unanticipated peaks in contaminants could be tracked to individual problem areas within the ERDF cells.

Response: The ERDF Leachate Sampling and Analysis Plan requires the collection of representative samples of the leachate as part of the routine monitoring program. These samples may be taken from the leachate collection tanks, or from the leachate sump crest pads (individual cells). Currently the representative leachate samples are taken from the leachate collection tanks;

however, if operating conditions change or the detection monitoring system indicates there are individual problems areas then more focused sampling would be performed.

B.7. Landfill liners and caps will eventually fail and there is no reason to believe ERDF will be an exception. We encourage the Tri-Parties to begin now to plan for response to any detected failure of ERDF's containment. As one facet of this effort we recommend installation of under-cell, below-membrane leak detection monitors in future cells to provide early warning of leachate leaks into the vadose zone beneath the facility.

Response: Evaluations of the leachate collection system and volumes of leachate collected are performed on a routine basis to proactively look for indications of a problem, consistent with substantive requirements of RCRA regulations for hazardous waste landfills. ERDF has incorporated an under-cell, below-membrane leak detection system into the design of the past four cells, 5 through 8, and will include this element into the design of cells 9 and 10. The post-closure plan will address monitoring, maintenance, and repair of the ERDF containment system.

B.8. DOE should complete the ERDF performance assessment in consultation with the U.S. Environmental Protection Agency and the Washington Department of Ecology, by incorporating more of the recently acquired understanding of preferential transport through the vadose zone and groundwater, and of the higher solubility and mobility of uranium in Hanford soils. The Tri-Parties should together consider the timing, modes of occurrence and consequences of the release of wastes to the vadose zone through ERDF's liner and barrier systems. Based on this release, the Tri-Parties should reconsider needed reactions to leaks, possible changes in the design of the facility, and possible treatment of wastes entering the facility to assure that the facility continues to be protective of human health and the environment.

Response: The PA will be prepared using the current understanding of site conditions, current modeling techniques and with performance objectives consistent with DOE O 435.1 and CERCLA/RCRA technical requirements. Based on the results of the PA, DOE will evaluate the needed reactions to leaks, possible changes in the design of the facility, and possible treatment of wastes entering the facility to assure that the facility continues to be protective of human health and the environment.

B.9. Modeling for ERDF should seek to minimize groundwater contamination, not "model up to the limit."

Response: Modeling performed as part of the PA will be consistent with both DOE O 435.1 and CERCLA/RCRA technical requirements. The modeling parameters and methods are based on technical and scientific methodology and do not model up or down to limits.

B.10. Results of habitat mitigation for the most recent expansion at ERDF have been discouraging. We recommend that DOE commit to a more robust mitigation design and that it adopt success criteria for mitigation to insure replanting in the event of future failures. Oregon supports continued coordination between the Tri-Parties and the Hanford Natural Resource Trustee Council to insure effective early (and likely less expensive) mitigation for habitat impacts caused by ERDF's continuing construction.

Response: DOE has performed mitigation consistent with the *Revised Mitigation Action Plan for the Environmental Restoration Disposal Facility*, DOE/RL-2005-27, Rev. 0 (MAP). The 1995 CERCLA ROD documents the U.S. Department of Energy's (DOE) commitment to develop and implement a MAP to reduce ecological impacts associated with ERDF. Consistent with the DOE *Secretarial Policy on the National Environmental Policy Act* and DOE O 451.1B, Change 1, "National Environmental Policy Act Compliance Program," To ensure the NEPA values were adequately addressed, this MAP was developed consistent with the provisions of DOE's "National Environmental Policy Act Implementing Procedures; Mitigation Action Plans."

Monitoring of the compensatory mitigation areas has been performed annually, and after the vegetated area stabilizes, typically 3 to 5 years, the area is evaluated to the performance standard. The performance standard for revegetation efforts will be a 50% survival of planted shrubs. The most recent mitigation was performed in 2007. Once the plant population has stabilized it will be evaluated against the performance standard in the MAP and deficiencies will be addressed.

To ensure robust mitigation designs, all ERDF mitigation projects have been brought forth and presented to the NRTC for comment, input, or alternatives. DOE will continue to work with the Tri-Parties and the Hanford Natural Resource Trustee Council on mitigation measures.

C.1. DOE should complete and update the ERDF performance assessment in consultation with EPA and the Washington State Department of Ecology (Ecology), in an open and transparent process, using the new understanding of transport through the vadose zone, and solubility and mobility of uranium.

Response: The RI/FS evaluated the potential impacts from uranium in leachate using the partition coefficient  $K_d = 0$  which represents the highest mobility of the radionuclide in soil.

The PA will evaluate uranium and other radionuclides as part of the process. The current plan is to prepare the PA utilizing the processes and performance objectives consistent with both DOE O 435.1 and CERCLA/RCRA technical requirements, addressing exposure pathways and compliance with regulatory criteria.

C.2. The PA should not be delayed while awaiting completion of the Tank Closure & Waste Management Environmental Impact Statement (TC&WM EIS), nor be dependent on the TC&WM EIS.

Response: DOE-RL has directed the contractor to update the ERDF PA. In fiscal year 2010, DOE will submit a schedule for the PA and begin collecting data. The PA should be consistent with other site wide modeling efforts and therefore can only be partly independent from other similar activities.

C.3. In preparing the PA, DOE should consult with EPA and Ecology to insure inclusion of, and consistency with, the technical requirements in the environmental regulations; for example, including the points of compliance and Maximum Contaminant Levels for constituents in groundwater

Response: The current plan is to prepare the PA with performance objectives consistent with both DOE O 435.1 and environmental regulations (CERCLA/RCRA technical requirements), including the points of compliance and maximum contaminant levels (MCLs).

C.4. The Tri-Party Agencies should work together to evaluate the modes and consequences when ERDF's liner and barrier systems ultimately release wastes to the vadose zone and to groundwater.

Response: The PA will be prepared using the current understanding of site conditions, current modeling techniques, and with performance objectives consistent with DOE O 435.1 and CERCLA/RCRA technical requirements. Based on the results of the PA, DOE will evaluate the needed reactions to leaks, possible changes in the design of the facility, and possible treatment of wastes entering the facility to assure that the facility continues to be protective of human health and the environment.

C.5. Based on these evaluations, the Tri-Party Agencies should implement actions and/or changes in the design of the facility needed to mitigate these future releases. These actions could include the treatment of wastes entering the facility to minimize future contaminant releases, thus ensuring long-term protection of human health and the environment.

Response: Treatment of wastes entering the facility will be evaluated against the outcome of the updated PA ensuring long-term protection of human health and the environment. At this time, the ERDF design and operation is in accordance with substantive provisions of RCRA and compliance with the ERDF waste acceptance criteria are believed to be sufficient to protect against unacceptable future releases. However, if the revised PA indicates any changes to the ERDF facility or operation are necessary to mitigate potential releases, the recommended actions will be discussed with EPA and appropriate measures pursued in future cell designs.

C.6. The Tri-Party Agencies should create an inventory tracking and planning tool for assessing all site wastes that are intended to be disposed in ERDF and those key contaminants (e.g., technetium-99, carbon-14, iodine-129 and uranium) which may limit the contaminant inventory allowable in ERDF. This tool should provide a running summary of how much of ERDF's capacity has been consumed and how much remains available for all waste and for each key contaminant. To ensure environmental protection, DOE should create a system model to predict when treatment or development of treatment of subsequent incoming key contaminants should be performed. For example, for technetium, additional treatment technologies may need to be developed.

Response: These key contaminants are currently tracked and a recent evaluation of the original PA indicates that the inventory limits for these key radionuclides would increase. The ROD did not require the PA nor did it specify inventory limits. The requirement for a PA are found in DOE O 435.1; however, CERCLA exceptions in the order did not require the PA as part of the approval of the ERDF facility, which was authorized under CERCLA. Separate from the ROD requirements, the PA was performed to assist the ERDF in planning for incoming wastes. The ERDF waste acceptance criteria provide radionuclide concentration limits for incoming wastes to ensure wastes with higher concentrations of the listed radionuclides are evaluated on a case-by-

case basis prior to disposal. The current plan is to prepare the PA utilizing the processes and performance objectives consistent with both DOE O 435.1 and CERCLA/RCRA technical requirements. DOE plans for waste disposal needs, including an evaluation of radionuclide inventories provided by the generators, as far in advance as possible.

C.7. The Board advises that the Tri-Party Agencies should use the formal ROD amendment and comment process for any expansion of ERDF that involves substantive changes to the facility design.

Response: The DOE will continue to use the ROD amendment process for any fundamental changes to the ROD requirements.

C.8. The Board supports the proposal by the TPA Agencies to allow planned expansion of ERDF within the design basis as capacity is needed, provided the issues noted above are addressed.

Response: Comment noted.

D.1. Since the PA was performed so long ago (in 1994), we believe that a simple ESD is not adequate for an open-ended expansion. Indeed, it is time for a full 5-year review. A new combined risk assessment/performance assessment is needed, using current knowledge about present and future inventories, barrier performance, transport, and tribal scenarios. This process needs full stakeholder and NRC participation, and should provide all the information needed under CERCLA, RCRA, MTCA, and DOE Orders. Because future ERDF inventories are unknown, the maximum future potential inventory must be included in the assessment.

Response: The last CERCLA 5-year review was completed November 10, 2006 (DOE/RL-2006-20, under record ascension number DA04570094). The next 5-year review is scheduled to occur in 2011, in accordance with the CERCLA-specified time frame.

At this time, the ERDF design and operation is in accordance with substantive provisions of RCRA and compliance with the ERDF waste acceptance criteria are believed to be sufficient to protect against unacceptable future releases. However, if the updated PA indicates any changes to the ERDF facility or operation are necessary to mitigate the impacts of potential releases, the recommended actions will be discussed with the agencies and appropriate measures pursued. The current plan is to prepare the PA utilizing the processes and performance objectives consistent with both DOE O 435.1 and CERCLA/RCRA technical requirements, addressing exposure pathways and compliance with regulatory criteria.

D.2. Since future ERDF expansion will move toward US Ecology, which has already leaked and created groundwater plumes of solvents and radionuclides, an alternative that considers combining the two sites is needed. Since DOE will have to do this for a CP-Inner Area RI/FS within the next 2-3 years, it would save DOE money to start it now. In fact, a single Central Plateau human health risk assessment is urgently needed, and must include all waste sites, tanks, canyons, US Ecology, and all other sites where any residual waste remains at any depth.

When doing this analysis, the CTUIR must know what risks would be posed to traditional uses as described in our original exposure scenario, and also for hunting-gathering surface uses (up to 15 feet deep). We suggest a technical workshop to discuss scenarios, depth, pathways, spatial integration, cumulative impacts, inventories, data quality and quantity, closure criteria, institutional control assumptions, barrier design, future risks, and related issues that will affect long-term protection of human health and the environment.

Response: The Tri-Parties are currently negotiating the overall 200 Area completion strategy. Consistent with the final strategy many of these elements will be addressed through the processes utilized to develop the required documents. This includes the public involvement process, public meetings, and request for comments.

D.3. The Tri-Parties propose updating the landfill cell design. We concur with this, and request that an upgraded design for both the liner and the cap be discussed in more depth with our staff, the NRTC, and the broader Hanford community. We further request that the US Ecology cap and other caps be discussed at this workshop. This is particularly important since the early ERDF cells are already leaking, and the concentrations of some contaminants in ERDF's leachate are already 70 times the drinking water standard and increasing.

Response: The statement that "early ERDF cells are already leaking" is incorrect. There are no known liner failures in the cells, nor has the detection monitoring system identified any adverse impacts to the environment from the operation of the ERDF. The ERDF ROD requires ERDF design and operation to be in accordance with substantive RCRA requirements for landfills. These requirements in combination with ERDF waste acceptance criteria, which limit what can be placed in ERDF, are believed to be sufficient to protect against releases from ERDF that would pose an unacceptable risk to human health or the environment. Evaluations of the leachate collection system and volumes of leachate collected are performed on a routine basis to proactively look for indications of a problem with the integrity of the disposal cells. Observed leakage rates into the ERDF leachate collection system do not exceed the action leakage rate allowed for RCRA hazardous waste landfills. The leachate collection and removal system between the liners, and immediately above the bottom composite liner (high-density polyethylene liner and clay barrier) is also a leak detection system (LDS). The LDS is capable of detecting, collecting and removing liquids. Additionally, ERDF has an approved response action plan that would be implemented in the event that the approved action leakage rate was ever exceeded. The detection monitoring system includes groundwater monitoring, leachate monitoring, and air monitoring systems.

The ERDF ROD states that the ERDF is designed as a single deep trench consisting of a series of two side-by-side cells. The design change is limited to allow a single "super cell" to be used in place of the double cell side-by-side configuration described in the ROD. A "super cell" is equivalent in size to what has been called two cells in the past. The term "cell" refers to the disposal area, leachate collection sump, and associated piping and crest pad building. The "super cells" will be equipped with a double liner and a leachate collection and recovery system that meets the requirements for hazardous waste landfills under RCRA (40 CFR 264, Subpart N), as required in the ERDF ROD. The proposed design changes are available for review at the

Hanford Tri-Party Agreement Public Information Repositories and referenced in the proposed plan.

The RI/FS evaluated the potential impacts from uranium in leachate (70 times the drinking water standard) and the current levels are consistent with the evaluations performed. The leachate is collected in the leachate collection system within the ERDF cell and transported to the Effluent Treatment Facility for treatment.

US Ecology site and other caps are not subject of this action and need to be addressed separately under the regulatory documents of the specific facility.

Comment: How is DOE going to remediate the leaky cells?

Response: As noted in the previous response, the statement that "early ERDF cells are already leaking" is incorrect.

Comment: How is DOE going to ensure that a new cap design is better than the original design which has already failed?

Response: This comment is factually incorrect. The ERDF cap has not been installed at this time. There have been no changes proposed pertaining to the ROD requirements for a cap on the ERDF disposal cells. The interim cover over cells 1 and 2 is currently being constructed. The final cap design will be compliant with RCRA minimum technical requirements (40 CFR 264, Subpart N).

D.4. ERDF is composed of a series of cells and has been expanded several times in the past, with each past expansion requiring a separate amendment to the Record of Decision (ROD). The TPA Agencies now seek to issue another amendment for the ROD for two new super-cells (double-sized cells), and to approve all future expansions through a less formal process (merely using fact sheets). The Tri-parties also propose to use the currently-proposed ESD as a blanket authorization of all future expansions. We **do not concur** with this part of the proposal unless that maximum future inventory forms the basis for the new risk and performance assessment and unless we are involved in the actual risk & performance assessment.

Response: The current plan is to prepare the PA with performance objectives consistent with both DOE O 435.1 and CERCLA/RCRA technical requirements, addressing exposure pathways, and compliance with regulatory criteria. The PA will evaluate the maximum concentration of radionuclides in the waste and the waste acceptance criteria will be revised accordingly. Modifications to the waste acceptance criteria will be subject to approval by the EPA (and consultation by the Washington State Department of Ecology), consistent with the process established in the original ERDF ROD.

DOE O 435.1 specifies the requirement for the PA which does not include a public review and comment period.

D.5. Finally, we are unsatisfied with the natural resource protection process. The TPA Agencies are not coordinating effectively with the Hanford Natural Resource Trustee Council (HNRTC) on resource disturbances, mitigation planning and implementation, borrow areas, or reclamation-vegetation. Low mitigation ratios and poor success of the most recent mitigation have resulted in substantial net loss of habitat from construction of ERDF, and represent injury to natural resources under Natural Resource Damage Assessment (NRDA).

Response: DOE has performed mitigation consistent with the *Revised Mitigation Action Plan for the Environmental Restoration Disposal Facility*, DOE/RL-2005-27, Rev. 0 (MAP). The 1995 CERCLA ROD documents the U.S. Department of Energy's (DOE) commitment to develop and implement a MAP to reduce ecological impacts associated with ERDF. Consistent with the DOE *Secretarial Policy on the National Environmental Policy Act* and DOE O 451.1B, Change 1, "National Environmental Policy Act Compliance Program," To ensure the NEPA values were adequately addressed, this MAP was developed consistent with the provisions of DOE's "National Environmental Policy Act Implementing Procedures; Mitigation Action Plans."

Monitoring of the compensatory mitigation areas has been performed annually and after the vegetated area stabilizes, typically 3 to 5 years, the area is evaluated to the performance standard. The performance standard for revegetation efforts will be a 50% survival of planted shrubs. The most recent mitigation was performed in 2007. Once the plant population has stabilized it will be evaluated against the performance standard in the MAP and deficiencies will be addressed.

To ensure robust mitigation designs, all ERDF mitigation projects have been brought forth and presented to the NRTC for comment, input, or alternatives. DOE will continue to work with the Tri-Parties and the Hanford Natural Resource Trustee Council on mitigation measures.