

United States Government

Department of Energy
Richland Operations Office**memorandum**

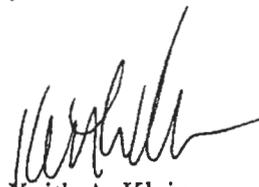
DATE: JUL 17 2000
REPLY TO
ATTN OF: ERD:OCR 00-ERD-135
SUBJECT: ENVIRONMENTAL RESTORATION DISPOSAL FACILITY (ERDF) CROSSWALK
TO DOE ORDER 435.1 REQUIREMENTS

TO: J. J. Fiore, Deputy Assistant Secretary
for Site Closure
EM-30, HQ

M. W. Frei, Deputy Assistant Secretary
for Project Completion
EM-40, HQ

This is in reference to your memorandum to K. A. Klein, RL, and R. T. French, ORP, "Disposal Authorization for the Hanford Site Low-Level Waste Disposal Facilities," dated October 25, 1999. It requires the development of a crosswalk between the ERDF Comprehensive Environmental Response Compensation and Liability Act Record of Decision and the requirements of DOE Order 435.1, Radioactive Waste Management. As a result of this crosswalk, the U.S. Department of Energy, Richland Operations Office (RL) has confirmed that ERDF Operations meet the substantive requirements of DOE Order 435.1. Enclosed is a table of the results of the crosswalk and associated references. An advanced copy of this crosswalk has been provided electronically to M. Le Tourneau of your staff.

If you have questions, please contact me, or your staff may contact Owen C. Robertson, Environmental Restoration Division, on (509) 373-6295.



Keith A. Klein
Manager

Enclosures:

1. ERDF Crosswalk to DOE Order 435.1
2. References

cc w/o encls:
L. M. Dittmer, BHI

DOE ORDER 435.1 AND ENVIRONMENTAL RESTORATION DISPOSAL FACILITY CROSSWALK MATRIX

Citation	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance
INTRO INTRODUCTION			
Intro. Para. 1.	<p>1. PURPOSE. This Manual further describes the requirements and establishes specific responsibilities for implementing DOE O 435.1, <i>Radioactive Waste Management</i>, for the management of DOE high-level waste, transuranic waste, low-level waste, and the radioactive component of mixed waste. The purpose of the Manual is to catalog those procedural requirements and existing practices that ensure that all DOE elements and contractors continue to manage DOE's radioactive waste in a manner that is protective of worker and public health and safety, and the environment.</p>	Statement of Purpose.	
Intro. Para. 2.	<p>2. APPLICABILITY. The requirements set forth in this Manual apply to DOE elements and contractors as set forth in DOE O 435.1, <i>Radioactive Waste Management</i>.</p>	<p>DOE O 435.1 is not in the BHI Contract. Under the <i>Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)</i>, DOE O 435.1 is nonpromulgated and therefore, in the absence of regulation, to-be-considered (TBC). Because the directly applicable substantive portions of DOE Order 5820.2A were considered in the ERDF Record of Decision (ROD), it follows that DOE O 435.1 would have been a TBC also.</p>	
Intro. Para. 3.	<p>3. SUMMARY. This Manual is organized into four (4) chapters. Chapter I, General Requirements and Responsibilities, contains requirements and responsibilities which are applicable to all radioactive waste types and delineates responsibilities for radioactive waste management decision-making at the complex-wide and Field Element levels. Chapters II through IV contain those requirements that are applicable to high-level waste, transuranic waste, and low-level waste including the radioactive component of mixed low-level waste, respectively.</p>	Statement of summary of the Manual.	

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Citation	ERDF Manual Requirement	Compliance Status	How to Achieve Compliance
Intro. Para. 4	<p>4. IMPLEMENTATION. The requirements of this Manual apply to all new and existing DOE radioactive waste management facilities, operations, and activities. Implementation of the requirements shall begin at the earliest possible date, and all DOE entities shall be in compliance with this directive within one year of its issuance. Compliance with this directive includes implementing the requirements or an approved implementation or corrective action plan. If compliance with this Order cannot be achieved within one year of its issuance, the Field Element Manager must request approval to extend the compliance date to no later than October 1, 2001, from the cognizant Program Secretarial Officer (PSO). Failure to implement the requirements of this directive shall, through the appropriate lines of management, result in corrective actions including, if necessary, shutdown of radioactive waste management facilities, operations, or activities until the appropriate requirements are implemented. Any of the requirements in this Manual may be waived or modified through application of a DOE-approved requirements tailoring process, such as the "Necessary and Sufficient Closure Process" in DOE P 450.3 and DOE M 450.3-1 and DOE P 450.4, <i>Safety Management System Policy</i>, the applicable or relevant and appropriate requirements identification process for actions taken pursuant to the Department's CERCLA authorities, or by an exemption processed in accordance with the requirements of DOE M 251.1-1A, <i>Directives System Manual</i>.</p>	<p>It is the intention of this crosswalk to demonstrate that the ERDF meets the applicable substantive requirements of this Manual or has a plan to achieve compliance for operation of a low-level waste disposal facility.</p>	

Section	Text/Manual Requirements	Statement of Basis	Other Information
Intro. Para. 5	<p>5. REVISIONS. Systematic planning, execution, and evaluation of radioactive waste management facilities, operations, and activities will provide the basis for evaluating the adequacy of and, if necessary, revising the requirements of DOE O 435.1, <i>Radioactive Waste Management</i>, and this Manual. The revision process will be based on DOE P 450.4, <i>Safety Management System Policy</i>, and will implement continuous improvement for management of radioactive waste. The process includes: identifying the functions necessary to execute radioactive waste management responsibilities; conducting an analysis of the hazards associated with performing those functions; developing and implementing the proper controls to mitigate any associated hazards; developing and implementing a periodic assessment of work performance; and providing feedback to revise the work processes and incorporate lessons learned, as appropriate. Administrative requirements of the Order and Manual will be revised as needed to support safe and efficient waste management.</p>	Statement of basis for revision to the requirements of DOE O 435.1, <i>Radioactive Waste Management</i> , and the implementation Manual.	
Intro. Para. 6	<p>6. DEFINITIONS. Definitions for DOE M 435.1-1, <i>Radioactive Waste Management Manual</i>, are provided in Attachment 2.</p>	Statement of definitions location.	
Intro. Para. 7	<p>7. REFERENCE. DOE O 435.1, <i>Radioactive Waste Management</i>, dated 7-09-99.</p>	Statement of Order reference.	
Intro. Para. 8	<p>8. CONTACT. Call the Office of Waste Management at (202) 586-0370.</p>	Statement of contact information.	
CHAPTER I GENERAL REQUIREMENTS AND RESPONSIBILITIES			
CH.I.1 1. REQUIREMENTS			
CH.I.1.A.	<p>A. Delegation of Authority. Managers charged with responsibilities within this Manual may delegate authority for these tasks to another manager. All delegations of authority shall be documented.</p>	Statement of Delegation of Authority.	

Citation	BHI Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.I.1.B.	<p>B. Use of Guidance. Additional information supporting the requirements in this Manual is contained in the Implementation Guide for use with DOE M 435.1-1, <i>Radioactive Waste Management Manual</i>. This Guide, DOE G 435.1-1, <i>Implementation Guide for DOE M 435.1-1</i>, shall be reviewed when implementing the requirements of this Manual. The Guide provides additional information and acceptable methods for meeting the requirements. Other methods may be used but must ensure an adequate level of safety commensurate with the hazards associated with the work and be consistent with the radioactive waste management basis.</p>	Statement of Use of Guidance.	
CH.I.1.C.	<p>C. Radioactive Waste Management. All radioactive waste subject to DOE O 435.1, <i>Radioactive Waste Management</i>, and the requirements of this Manual shall be managed as high-level waste, transuranic waste, low-level waste, or mixed low-level waste.</p>	ERDF manages low-level radioactive and mixed low-level waste. (and hazardous substances)	
CH.I.1.D.	<p>D. Analysis of Environmental Impacts. Existing and proposed radioactive waste management facilities, operations, and activities shall meet the requirements of 10 CFR 1021, <i>National Environmental Policy Act</i> Implementing Procedures; and DOE O 451.1A, <i>National Environmental Policy Act Compliance Program</i>. All reasonable alternatives shall be considered, as appropriate. Nothing in this Order is meant to restrict consideration of alternatives to proposed actions.</p>	<p>DOE O 451.1A is not in the BHI Contract.</p> <p>The ERDF Project followed DOE's policy to incorporate NEPA values into the CERCLA documentation (DOE/RL-93-99, Rev. 1). The CERCLA process used for ERDF siting and construction complied with NEPA requirements.</p>	
CH.I.1.E.	<p>E. Requirements of Other Regulations and DOE Directives. The following requirements and DOE directives are required for all DOE radioactive waste management facilities, operations, and activities as applicable. Any of the requirements for the following Departmental directives may be waived or modified through application of a DOE-approved requirements tailoring process, such as the "Necessary and Sufficient Closure Process" in DOE P 450.3, DOE M 450.3-1, and DOE P 450.4, <i>Safety Management System Policy</i>, or by an exemption processed in accordance with the requirements of that directive or DOE M 251.1-1A, <i>Directives System Manual</i>.</p>	Statement of requirements of other regulations and DOE Directives.	

Citation	55101 Manual Requirements	Contractor Status	Plan to Achieve Compliance
CH.I.1.E. (1)	(1) Analysis of Operations Information. Data that measure the environment, safety, and health performance of radioactive waste management facilities, operations, and activities shall be identified, collected, and analyzed as required by DOE O 210.1, <i>Performance Indicators and Analysis of Operations Information</i> .	DOE O 210.1 is not in the BHI Contract. Analysis and feedback mechanisms for review of data that measure the environment, safety, and health performance identified in numerous Contractor and Operations Subcontractor plans and procedures.	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.1.E. (2)	(2) Classified Waste. Radioactive waste to which access has been limited for national security reasons and cannot be declassified shall be managed in accordance with the requirements of DOE Order 5632.1C, <i>Protection and Control of Safeguards and Security Interests</i> , and DOE Order 5633.3B, <i>Control and Accountability of Nuclear Materials</i> .	ERDF does not handle classified waste.	
CH.I.1.E. (3)	(3) Conduct of Operations. Radioactive waste management facilities, operations, and activities shall be conducted in a manner based on consideration of the associated hazards. Waste management facilities, operations, and activities shall meet the requirements of DOE Order 5480.19, <i>Conduct of Operations Requirements for DOE Facilities</i> .	The ERDF operates under the Remedial Action & Waste Disposal (RAW) Conduct of Operations (CONOPS) Matrix, BHI-01266, Rev. 0, as implemented by the RAW Project Manager's Implementing Instructions, 0000X-PMII-G0004, Rev. 0.	
CH.I.1.E. (4)	(4) Criticality Safety. Radioactive waste management facilities, operations, and activities shall be covered by a criticality safety program in accordance with DOE O 420.1, <i>Facility Safety</i> .	The BHI Criticality Safety Program is contained in BHI-01364. This program meets the requirements of both DOE Order 5480.24 and DOE O 420.1. The criticality evaluation for ERDF is summarized and referenced in the ERDF safety analysis, BHI-00370, Rev. 4.	
CH.I.1.E. (5)	(5) Emergency Management Program. Radioactive waste management facilities, operations, and activities shall maintain an emergency management program in accordance with DOE O 151.1, <i>Comprehensive Emergency Management System</i> .	The ERC Emergency Management Program is implemented through BHI-SH-03, Vol. 1, <i>Emergency Management Program</i> . The ERDF Emergency Action Plan is found in the disposal operations Subcontractor's Health and Safety Plan, RFS-ERDF-002.1, Rev. 3, Section 12.0.	

Criterion	BHI Contract Compliance	Compliance Plan	Plan to Achieve Compliance
CH.I.1.E. (6)	(6) Environmental and Occurrence Reporting. Radioactive waste management facilities, operations, and activities shall meet the reporting requirements of DOE O 231.1, <i>Environment, Safety and Health Reporting</i> , and DOE O 232.1A, <i>Occurrence Reporting and Processing of Operations Information</i> .	DOE O 231.1 is not in the BHI contract. The Contractor works to DOE O 232.1A; DOE Order 5484.1, <i>Environmental Protection, Safety & Health Protection Information Recording Requirements</i> , C-1 to C-7; RLIP 5484.1A, <i>Environmental Protection, Safety & Health Protection Information Reporting Requirements</i> . Requirements are implemented through BHI-SH-02, Vol. 4, Procedure 9.3, "Occurrence Investigations;" and BHI-MA-02, Procedure 2.6, "Occurrence Investigation and Reporting;" and Operations Subcontractor Administrative Procedure, Section 10, Occurrence Reporting (RFS-ERDF-005).	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.1.E. (7)	(7) Environmental Monitoring. Radioactive waste management facilities, operations, and activities shall meet the environmental monitoring requirements of DOE Order 5400.1, <i>General Environmental Protection Program</i> , and DOE Order 5400.5, <i>Radiation Protection of the Public and the Environment</i> .	ERDF meets the substantive requirements of DOE Orders 5400.1 and 5400.5 through the implementation of an established environmental and safety monitoring program. The programs are implemented through BHI-MA-02, Section 9, "Environmental Management;" BHI-EE-02, <i>Environmental Requirements Manual</i> ; BHI-SH-01, Procedure 10.2 "Radiological Controls;" <i>Hanford Site Radiological Control Manual (HSRCM)</i> (DOE/RL-96-109, Rev. 0); implementing procedures of BHI-SH-02, <i>Safety and Health Procedures</i> ; and the Operations Subcontractor's plans and procedures contained in their Operations Plans and Procedures Manual.	

Claim	BHI Vendor Requirements	Compliance System	BHI's Ability to Comply
CH.I.I.E. (8)	(8) Hazard Analysis Documentation and Authorization Basis. Radioactive waste management facilities, operations, and activities shall implement DOE Standards, DOE-STD-1027-92, <i>Hazard Categorization and Accident Analysis Techniques for Compliance with DOE 5480.23, Nuclear Safety Analysis Reports</i> , and/or DOE-EM-STD-5502-94, <i>DOE Limited Standard: Hazard Baseline Documentation</i> , and shall, as applicable, prepare and maintain hazard analysis documentation and an authorization basis as required by DOE O 425.1A, <i>Startup and Restart of Nuclear Facilities</i> , DOE Order 5480.21, <i>Unreviewed Safety Questions</i> , DOE Order 5480.22, <i>Technical Safety Requirements</i> , and DOE Order 5480.23, <i>Nuclear Safety Analysis Reports</i> .	BHI is required to prepare safety analyses for facilities such as the ERDF. The DOE-approved authorization basis for ERDF is documented in BHI-00370, Rev 4. DOE O 425.1A is not in the BHI contract. DOE Order 5480.31, <i>Startup and Restart of Nuclear Facilities</i> , is in the BHI contract. Since ERDF is not a "nuclear" facility, DOE Orders 5480.31, 5480.22 (TSRs), 5480.21 (USQ), and 5480.23 do not strictly apply. However, BHI has readiness assessment program requirements for radiological facilities. The ERDF safety analysis (BHI-00370, Rev. 4) does contain similar operational controls (called Special Controls) that govern its operation, and BHI has a similar program for evaluating change at radiological facilities and is used to evaluate proposed changes and discovered conditions at ERDF.	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.I.E. (9)	(9) Life-Cycle Asset Management. Planning, acquisition, operation, maintenance, and disposition of radioactive waste management facilities shall be in accordance with DOE O 430.1A, <i>Life-Cycle Asset Management</i> , and DOE 4330.4B, <i>Maintenance Management Program</i> , including a configuration management process to ensure the integrity of physical assets and systems. Corporate physical asset databases shall be maintained as complete, current inventories of physical assets and systems to allow reliable analysis of existing and potential hazards to the public and workers.	DOE Order 430.1A is not in the BHI contract. Assets are managed according to the numerous DOE directives that have been incorporated into DOE O 430.1A and are identified in BHI's contract. Maintenance management is established in the BHI Maintenance Implementation Plan (BHI-01044). Implementing requirements are also contained in BHI-FS-01, Vol. 2, Procedure 2.1, "Work Control," and the Operations Subcontractor Equipment Maintenance Plan (RFS-ERDF-002.7).	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.I.E. (10)	(10) Mixed Waste. Radioactive waste that contains both source, special nuclear, or by-product material subject to the Atomic Energy Act of 1954, as amended, and a hazardous component is also subject to the <i>Resource Conservation and Recovery Act (RCRA)</i> , as amended.	Definition of mixed waste. The ERDF is authorized under a CERCLA ROD to receive mixed waste and is subject to the applicable substantive requirements of the RCRA.	

Criterion	Requirement	Compliance Status	Plan to Achieve Compliance
CH.I.1.E. (11)	(11) Packaging and Transportation. Radioactive waste shall be packaged and transported in accordance with DOE O 460.1A, <i>Packaging and Transportation Safety</i> , and DOE O 460.2, <i>Departmental Materials Transportation and Packaging Management</i> .	The Contractor manages packaging and transportation of radioactive waste according to DOE Orders 1540.2 (C-1), 1540.1A, and 5480.3. ERDF itself does not package and transport waste.	
CH.I.1.E. (12)	(12) Quality Assurance Program. Radioactive waste management facilities, operations, and activities shall develop and maintain a quality assurance program that meets the requirements of 10 CFR 830.120, <i>Quality Assurance Requirements</i> , and DOE O 414.1, <i>Quality Assurance</i> , as applicable.	DOE O 414.1, <i>Quality Assurance</i> , is not in the BHI contract. The Contractor works to DOE Order 5700.6C C-1, <i>Quality Assurance</i> . The program to meet the requirements of the Order and 10 CFR 830.120 is implemented through BHI-QA-01, Parts 1 & II, <i>ERC Quality System Requirements</i> , and the Operations Subcontractor Quality Assurance Project Plan and procedures (RFS-ERDF-003).	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.1.E. (13)	(13) Radiation Protection. Radioactive waste management facilities, operations, and activities shall meet the requirements of 10 CFR 835, "Occupational Radiation Protection," and DOE Order 5400.5, <i>Radiation Protection of the Public and the Environment</i> .	Radiation protection to meet the requirements of 10 CFR 835 and DOE Order 5400.5 is conducted under the Radiation Protection Plan contained in the <i>Bechtel Hanford, Inc. Implementation Plan for 10 CFR 835</i> , BHI-00091, as well as implementing procedures in BHI-SH-01, Section 10.2, "Radiological Controls," BHI-SH-02, Vol. 1, <i>Health and Safety Manual</i> , and the Operations Subcontractor Health and Safety Plan (RFS-ERDF-002.1).	
CH.I.1.E. (14)	(14) Records Management. Radioactive waste management facilities, operations, and activities shall develop and maintain a record-keeping system, as required by DOE O 200.1, <i>Information Management Program</i> , and DOE O 414.1, <i>Quality Assurance</i> . Records shall be established and maintained for radioactive waste generated, treated, stored, transported, or disposed. To the extent possible, records prepared in response to other requirements may be used to satisfy the documentation requirements of this Manual. Additional records may be required to satisfy the regulations applicable to the hazardous waste components of mixed waste.	DOE O 200.1 and DOE O 414.1 are not in the BHI contract. The Contractor implements the requirements of DOE Order 1324.5B, <i>Records Management Program</i> , and DOE Order 5700.6C C-1, <i>Quality Assurance Records</i> , through BHI-MA-02, Procedure 1.7, "Records Management," and ERDF Operations Subcontractor Administrative Procedure, Section 8, "Records Management" (RFS-ERDF-005).	DOE Directives not currently in the contract will be evaluated for implementation when directed.

Criterion	Associated Contract Requirements	Compliance Status	Plan to Achieve Compliance
CH.I.1.E. (15)	(15) Release of Waste Containing Residual Radioactive Material. Processes for determining and documenting that waste is suitable to be released and managed without regard to its radioactive content shall be in accordance with the criteria and requirements in DOE Order 5400.5, <i>Radiation Protection of the Public and the Environment</i> .	The only waste released from the ERDF is leachate that is transferred via underground pipeline to the 200 Area Effluent Treatment Facility. The ERDF leachate is not radioactive, and analyses indicate it meets drinking water standards.	
CH.I.1.E. (16)	(16) Safeguards and Security. Appropriate features shall be incorporated into the design and operation of radioactive waste management facilities, operations, and activities to prevent unauthorized access and operations, and for purposes of nuclear materials control and accountability, where applicable; and shall be consistent with DOE O 470.1, <i>Safeguards and Security Program</i> .	The ERDF employs numerous physical barriers. The ERDF is located within the Hanford Site boundaries, where access is controlled through Hanford Site security operations. ERDF Operations Subcontractor site security is implemented through their Security Plan (RFS-ERDF-002.9).	
CH.I.1.E. (17)	(17) Safety Management System. Radioactive waste management facilities, operations, and activities shall incorporate the principles of integrated safety management as described in DOE P 450.4, <i>Safety Management System Policy</i> , and DOE P 450.5, <i>Line Environment, Safety and Health Oversight</i> , and meet the requirements of the safety management systems sections of 48 CFR Chapter 9, "Department of Energy Acquisition Regulations," and DOE M 411.1-1, <i>Manual of Safety Management Functions, Responsibilities, and Authorities</i> .	DOE P 450.4, DOE P 450.5, and DOE M 411.1-1 are not in the BHI contract. RLPD 450.1, <i>Hanford Environment, Safety and Health Policy</i> , is contained in BHI-01199, <i>Integrated Environmental Safety and Health Management System Description</i> and implemented by BHI-MA-02, Procedure 8.7, "Integrated Environment, Safety and Health Management System."	The principles of an integrated safety management system are being incorporated into the BHI procedures based on the requirements of Provision I-15, DEAR 970.5204-2, <i>Integration of Environment, Safety, and Health into Work Planning and Execution</i> (June 1997). DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.1.E. (18)	(18) Site Evaluation and Facility Design. New radioactive waste management facilities, operations, and activities shall be sited and designed in accordance with DOE O 420.1, <i>Facility Safety</i> , and DOE O 430.1A, <i>Life-Cycle Asset Management</i> .	DOE O 420.1 and DOE O 430.1A are not in the BHI contract. However, all of its four-digit predecessors that are in the contract are implemented through various programs and procedures. The ERDF was sited and designed using DOE Order 6430.1A, <i>General Design Criteria</i> , DOE Order 5820.2A, <i>Radioactive Waste Management</i> , and RL Order 4320.2C, <i>Site Selection</i> .	DOE Directives not currently in the contract will be evaluated for implementation when directed.

Criterion	BHI Environmental Requirements	Compliance Status	Plan to Achieve Compliance
CH.I.1.E. (19)	(19) Training and Qualification. A training and qualification program shall be implemented for radioactive waste management program personnel, and shall meet the requirements of DOE O 360.1, <i>Training</i> , and DOE Order 5480.20A, <i>Personnel Selection, Qualification, and Training Requirements for DOE Nuclear Facilities</i> .	<p>Federal employees are trained according to DOE O 360.1.</p> <p>Contractor training is conducted under BHI-HR-02, Procedure 1.4, "ERC Training Requirements." Specific waste training is addressed in BHI-01243, <i>Field Support Dangerous Waste Training Program Description</i>. Radioactive waste handling is addressed in BHI-EE-10, Procedure 3.0, "Waste Handling and Storage."</p> <p>Training of Radiological Control Technicians is described in BHI-SH-02, Vol. 2, Procedure 2.10.1, "Radiological Control Technician Training," Procedure 2.10.8, "Radiological Control Training Program," and Procedure 2.10.9, "Radiological Control Supervisor Training."</p> <p>ERDF Operations Subcontractor training requirements are met through their Training Plan (RFS-ERDF-004).</p> <p>Because ERDF is not a nuclear facility, DOE Order 5480.20a does not directly apply.</p>	
CH.I.1.E. (20)	(20) Waste Minimization and Pollution Prevention. Waste minimization and pollution prevention shall be implemented for radioactive waste management facilities, operations, and activities to meet the requirements of Executive Order 12856, <i>Federal Compliance with Right-to-Know Laws and Pollution Prevention Requirements, and Executive Order 13101, Greening the Government through Waste Prevention, Recycling, and Federal Acquisition</i> , and DOE Order 5400.1, <i>General Environmental Protection Program</i> .	The Contractor has developed an <i>Environmental Restoration Contractor Waste Minimization and Pollution Prevention Plan</i> , BHI-00099. Recycling is currently incorporated in the Draft revision to Contractor procedure W-005, "Nonhazardous Solid Waste Disposal," in BHI-FS-03, <i>Field Support and Waste Management Instructions</i> . The Affirmative Procurement guidelines are found in the draft <i>Hanford Site Waste Minimization and Pollution Prevention Awareness Program Plan</i> , DOE/RL-91-31, Rev. 5. ERDF Operations Subcontractor requirements are implemented through their Waste Minimization Plan (RFS-ERDF-002.8).	Subsequent to the issuance of DOE/RL-91-31, Rev. 5, any additional requirements will be incorporated into BHI-00099.

Citation	Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.I.1.E. (21)	(21) Worker Protection. Radioactive waste management facilities, operations, and activities shall meet the requirements of DOE O 440.1A, <i>Worker Protection Management for DOE Federal and Contractor Employees</i> .	DOE O 440.1A is not in the BHI contract. The Contractor works to DOE Orders 5480.8A C-1, <i>Contractor Occupational Medical Program</i> ; 5480.9A, <i>Construction Safety and Health Program</i> , and 5480.10, <i>Contractor Industrial Hygiene Program</i> . The Contractor worker protection program is implemented through BHI-SH-01, <i>ERC Safety and Health Program</i> , BHI-SH-02, <i>Safety and Health Procedures</i> , and the ERDF Operations Subcontractor Health and Safety Plan (RFS-ERDF-002.1).	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.I.2. 2. RESPONSIBILITIES			
CH.I.2.A through F list responsibilities for DOE Management and do not apply directly to ERDF compliance with the requirements of DOE O 435.1.			
CH.I.2.G.	G. All Personnel. All personnel are responsible for:		
CH.I.2.G. (1)	(1) Problem Identification. Identifying and reporting radioactive waste management facilities, operations, or activities that do not meet the requirements of DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual, or that pose a threat to the safety of the public, workers, or the environment.	Contractor employees are obligated by contract to report situations that pose a threat to the safety of the public, workers, or the environment.	
CH.I.2.G. (2)	(2) Shutdown or Curtailment of Activities. Stopping or curtailing work, through the appropriate level of management, to prohibit continuation of conditions or activities which pose an imminent danger or other serious hazard to workers or the public, or are not protective of the environment.	All ERDF employees have stop work authority that is implemented through the Contractor Health and Safety Program, BHI-SH-01, <i>ERC Safety and Health Program</i> , Section 5.0, "Employee Participation."	
CHAPTER II HIGH-LEVEL WASTE REQUIREMENTS			
ERDF is not authorized to accept high-level waste			
CHAPTER III TRANSURANIC WASTE REQUIREMENTS			
ERDF is not authorized to accept transuranic waste			

Chapter	435.1 Manual Requirements	Compliance Status	Plan to Achieve Compliance
CHAPTER IV LOW-LEVEL WASTE REQUIREMENTS			
CH.IV.A.	A. Definition of Low-Level Waste. Low-level radioactive waste is radioactive waste that is not high-level radioactive waste, spent nuclear fuel, transuranic waste, byproduct material (as defined in section 11e. (2) of the <i>Atomic Energy Act of 1954</i> , as amended), or naturally occurring radioactive material.	Per the ERDF ROD and Waste Acceptance Criteria (WAC), ERDF may only accept radioactive waste that is low-level as defined.	
CH.IV.B.	B. Management of Specific Wastes. The following provide for management of specific wastes as low-level waste in accordance with the requirements in this Chapter:	See below.	
CH.IV.B. (1)	(1) Mixed Low-Level Waste. Low-level waste determined to contain both source, special nuclear, or byproduct material subject to the <i>Atomic Energy Act of 1954</i> , as amended, and a hazardous component subject to the <i>Resource Conservation and Recovery Act</i> (RCRA), as amended, shall be managed in accordance with the requirements of RCRA and DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual.	The ERDF is authorized under a ROD to receive CERCLA low-level, hazardous, and mixed waste. RCRA is an applicable or relevant and appropriate requirement (ARAR) and DOE O 435.1 would likely be considered TBC; therefore, waste is subject to the applicable substantive requirements of the RCRA and, in the absence of an ARAR, DOE O 435.1.	
CH.IV.B. (2)	(2) TSCA-Regulated Waste. Low-level waste containing polychlorinated biphenyls, asbestos, or other such regulated toxic components shall be managed in accordance with requirements derived from the <i>Toxic Substances Control Act</i> , as amended, DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual.	Mixed low-level toxic waste is managed under the ERDF WAC and is subject to the applicable requirements of TSCA.	
CH.IV.B. (3)	(3) Accelerator-Produced Waste. Radioactive waste produced as a result of operations of DOE accelerators is low-level waste and shall be managed in accordance with DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual, and all applicable Federal or State requirements.	Not applicable. ERDF cannot accept off-site or non-CERCLA waste.	
CH.IV.B. (4)	(4) 11e. (2) and Naturally Occurring Radioactive Material. Small quantities of 11e. (2) byproduct material and naturally occurring radioactive material may be managed as low-level waste provided they can be managed to meet the requirements for low-level waste disposal in Section IV.P of this Manual.	Not applicable to ERDF.	

Citation	DOE O 435.1 Manual Requirements	Compliance Status	Plans to Achieve Compliance
CH.IV.C.	C. Complex-Wide Low-Level Waste Management Program. A complex-wide program and plan shall be developed as described under Responsibilities, 2.B and 2.D, in Chapter I of this Manual.	ERDF is authorized to accept only Hanford Site waste resulting from remediation of CERCLA and RCRA past-practice waste sites and structures.	
CH.IV.D.	D. Radioactive Waste Management Basis. Low-level waste facilities, operations, and activities shall have a radioactive waste management basis consisting of physical and administrative controls to ensure the protection of workers, the public, and the environment. The following specific waste management controls shall be part of the radioactive waste management basis:	The intent of this crosswalk is to provide the information necessary to support a radioactive waste management basis disposal authorization.	
CH.IV.D. (1)	(1) Generators. The waste certification program.	Not applicable to ERDF as it does not generate low-level waste.	
CH.IV.D. (2)	(2) Treatment Facilities. The waste acceptance requirements and the waste certification program.	ERDF is not considered a treatment facility. Encapsulation/stabilization of waste is authorized at ERDF as a treatment method on a case-by-case basis per an Explanation of Significant Difference to the ROD (EPA 1997).	
CH.IV.D. (3)	(3) Storage Facilities. The waste acceptance requirements and the waste certification program.	ERDF is not considered a storage facility.	
CH.IV.D. (4)	(4) Disposal Facilities. The performance assessment, composite analysis, disposal authorization statement, closure plan, waste acceptance requirements, and monitoring plan.	See below for specific responses to the subjects identified.	
CH.IV.E.	E. Contingency Actions. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.E. (1)	(1) Contingency Storage. For off-normal or emergency situations involving high activity or high hazard liquid low-level waste storage or treatment, spare capacity with adequate capabilities shall be maintained to receive the largest volume of liquid contained in any one storage tank or treatment facility. Tanks or other facilities that are designated low-level waste contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual.	No high-activity or high-hazard liquid low-level waste is accepted at ERDF for storage or disposal.	

Citation	ERDF Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.E. (2)	(2) Transfer Equipment. Pipelines and auxiliary facilities necessary for the transfer of high activity or high hazard liquid low-level waste to contingency storage shall be maintained in an operational condition when waste is present and shall meet the requirements of DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual.	The ERDF does not handle high-activity or high-hazard liquids.	
CH.IV.F.	F. Corrective Actions. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.F. (1)	(1) Order Compliance. Corrective actions shall be implemented whenever necessary to ensure the requirements of DOE O 435.1, <i>Radioactive Waste Management</i> , and this Manual are met.	DOE O 435.1 is not in the BHI Contract. Periodic reviews of ERDF waste management requirements are performed and appropriate corrective action taken as necessary.	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.IV.F. (2)	(2) Operations Curtailment. Operations shall be curtailed or facilities shut down for failure to establish, maintain, or operate consistent with an approved radioactive waste management basis.	An operations authorization basis has not yet been established for the ERDF.	
CH.IV.G.	G. Waste Acceptance. The following requirements are in addition to those in Chapter I of this Manual:	See below.	
CH.IV.G. (1)	(1) Technical and Administrative. Waste acceptance requirements for all low-level waste storage, treatment, or disposal facilities, operations, and activities shall specify, at a minimum, the following:	See below.	
CH.IV.G. (1)(a)	(a) Allowable activities and/or concentrations of specific radionuclides.	Allowable activities and/or concentrations of specific radionuclides are identified in the ERDF WAC, BHI-00139, Rev. 3, and in the ERDF Safety Analysis, BHI-00370, Rev. 4.	
CH.IV.G. (1)(b)	(b) Acceptable waste form and/or container requirements that ensure the chemical and physical stability of waste under conditions that might be encountered during transportation, storage, treatment, or disposal.	Acceptable waste form and/or container requirements are defined in the ERDF WAC and Supplemental Waste Acceptance Criteria (SWAC), 0000X-DC-W0001, Rev. 1.	
CH.IV.G. (1)(c)	(c) Restrictions or prohibitions on waste, materials, or containers that may adversely affect waste handlers or compromise facility or waste container performance.	Restrictions or prohibitions on waste, materials, or containers are defined in the ERDF WAC and SWAC.	

Citation	ERDF Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.G. (1)(d)	<p>(e) The following are additional waste acceptance requirements that shall be specified in low-level waste disposal facility waste acceptance requirements:</p> <p>Low-level waste must contribute to and not detract from achieving long-term stability of the facility, minimizing the need for long-term active maintenance, minimizing subsidence, and minimizing contact of water with waste. Void spaces within the waste and, if containers are used, between the waste and its container shall be reduced to the extent practical.</p> <p>Liquid low-level waste or low-level waste containing free liquid must be converted into a form that contains as little freestanding liquid as is reasonably achievable, but in no case shall the liquid exceed 1 percent of the waste volume when the low-level waste is in a disposal container, or 0.5 percent of the waste volume after it is processed to a stable form.</p> <p>Low-level waste must not be readily capable of detonation or of explosive decomposition or reaction at anticipated pressures and temperatures, or of explosive reaction with water. Pyrophoric materials contained in waste shall be treated, prepared, and packaged to be nonflammable.</p> <p>Low-level waste must not contain, or be capable of generating by radiolysis or biodegradation, quantities of toxic gases, vapors, or fumes harmful to the public or workers or disposal facility personnel, or harmful to the long-term structural stability of the disposal site.</p> <p>Low-level waste in a gaseous form must be packaged such that the pressure does not exceed 1.5 atmospheres absolute at 20°C.</p>	<p>The majority of waste placed in the ERDF (over 90%) is contaminated soil. Long-term stability of the ERDF to minimize the need for long-term active maintenance and minimize subsidence and void spaces within the waste is achieved by compacting the waste soil to 90% of modified proctor (ASTM D1557) as specified in the performance specification (0600X-SP-G0005, Rev. 3) to the Waste Disposal Subcontract (0600X-SC-G0006). Non-soil waste is placed according to the provisions of the SWAC. Wastes that cannot meet the criteria specified in the SWAC are managed to remove or mitigate voids on a case-by-case basis following the process outlined in the SWAC.</p> <p>Contact of waste with water is minimized by covering horizontal surfaces of the landfill with 0.6 m (2 ft) of compacted clean soil. In addition, the surface of the top of the landfill is sloped to provide drainage away from the waste. Beginning in fiscal year 2000 an interim cover, which incorporates a flexible membrane liner, will be installed over completed portions of the trench.</p> <p>Per the ERDF WAC, all waste must meet the requirements as described for free liquids stabilization; contained gases; treatment of waste capable of detonation or explosive decomposition or reaction; pyrophorics; or waste capable of generating toxic gases, vapors, or fumes.</p>	
CH.IV.G. (1)(e)	<p>(e) The basis, procedures, and levels of authority required for granting exceptions to the waste acceptance requirements, which shall be contained in each facility's waste acceptance documentation. Each exception request shall be documented, including its disposition as approved or not approved.</p>	<p>The ERDF WAC establishes a method for exception to certain limits by the use of a Radiological Inventory Assessment Data Sheet, established through regulatory agreement (CCN 037114), and which must be signed by the project engineer. The ERDF WAC also provides for exemption, by the EPA, from debris treatment standards on a case-by-case basis.</p>	

Chapter	ERDF Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.G. (2)	(2) Evaluation and Acceptance. The receiving facility shall evaluate waste for acceptance, including confirmation that the technical and administrative requirements have been met. A process for the disposition of non-conforming wastes shall be established.	The evaluation and acceptance process is identified in the ERDF WAC and implemented through BHI-FS-03, <i>Field Support Waste Management Instructions</i> , and the ERDF Operations Subcontractor's Waste Acceptance Plan (RFS-ERDF-002.3). Nonconforming waste is addressed in the ERDF WAC and BHI-FS-01, Vol. 1, <i>Field Support Administration</i> , Procedure 5.3, "Control of Nonconforming Items and Processes," and by BHI-MA-02, Procedure 2.8, "Non Conformance Control."	
CH.IV.H.	H. Waste Generation Planning. The following requirements are in addition to those in Chapter I of this Manual.	This section of the Order is directed toward waste generators. The ERDF, being a disposal facility, does not produce low-level waste. Therefore, this section does not apply to the ERDF. (Leachate production is addressed in the response to CH.I.I.E. (15).)	
CH.IV.H. (1)	(1) Life-Cycle Planning. Prior to waste generation, planning shall be performed to address the entire life cycle for all low-level waste streams.	Not applicable; ERDF does not generate low-level waste streams.	
CH.IV.H. (2)	(2) Waste With No Identified Path to Disposal. Low-level waste streams with no identified path to disposal shall be generated only in accordance with approved conditions which, at a minimum, shall address: (a) Programmatic need to generate the waste; (b) Characteristics and issues preventing the disposal of the waste; (c) Safe storage of the waste until disposal can be achieved; and (d) Activities and plans for achieving final disposal of the waste.	Not applicable to ERDF.	
CH.IV.I.	I. Waste Characterization. Low-level waste shall be characterized using direct or indirect methods, and the characterization documented in sufficient detail to ensure safe management and compliance with the waste acceptance requirements of the facility receiving the waste.	ERDF produces no low-level waste. Characterization of low-level waste disposed in ERDF is performed by both direct and indirect methods and documented in sufficient detail to ensure safe management and compliance to meet the ERDF WAC.	

Criterion	EIS Manual Requirement	Compliance Status	BPH or Other Compliance
CH.IV.I. (1)	(1) Data Quality Objectives. The data quality objectives process, or a comparable process, shall be used for identifying characterization parameters and acceptable uncertainty in characterization data.	The data quality objectives process is used to identify characterization parameters and acceptable uncertainty in waste characterization data.	
CH.IV.I. (2)	(2) Minimum Waste Characterization. Characterization data shall, at a minimum, include the following information relevant to the management of the waste: (a) Physical and chemical characteristics; (b) Volume, including the waste and any stabilization or absorbent media; (c) Weight of the container and contents; (d) Identities, activities, and concentrations of major radionuclides; (e) Characterization date; (f) Generating source; and (g) Any other information which may be needed to prepare and maintain the disposal facility performance assessment, or demonstrate compliance with applicable performance objectives.	ERDF leachate is characterized and conveyed to ETF through a direct pipeline. Leachate analysis indicates it is neither hazardous nor low-level waste. Waste to be disposed of in ERDF meets the requirements of this section as identified in the ERDF WAC, SWAC and implementing instructions, plans, and procedures.	
CH.IV.J.	J. Waste Certification. A waste certification program shall be developed, documented, and implemented to ensure that the waste acceptance requirements of facilities receiving low-level waste for storage, treatment, and disposal are met.	See below.	
CH.IV.J. (1)	(1) Certification Program. The waste certification program shall designate the officials who have the authority to certify and release waste for shipment; and specify what documentation is required for waste generation, characterization, shipment, and certification. The program shall provide requirements for auditability, retrievability, and storage of required documentation and specify the records retention period.	ERDF waste certification requirements are contained in the ERDF WAC, BHI-EE-10, <i>Waste Management Plan</i> , and implemented by BHI-FS-03, <i>Field Support Waste Management Instructions</i> , Section W-002, "Waste Certification," and the ERDF Operations Subcontractor's Waste Acceptance Plan (RFS-ERDF-002.3).	
CH.IV.J. (2)	(2) Certification Before Transfer. Low-level waste shall be certified as meeting waste acceptance requirements before it is transferred to the facility receiving the waste.	ERDF waste certification requirements must be met before transfer to ERDF per the WAC. See CH.IV.J.(1) above.	
CH.IV.J. (3)	(3) Maintaining Certification. Low-level waste that has been certified as meeting the waste acceptance requirements for transfer to a storage, treatment, or disposal facility shall be managed in a manner that maintains its certification status.	Waste is not accepted for disposal unless the certification remains valid.	

Criterion	Minimum Requirements	Compliance Status	How to Achieve Compliance
CH.IV.K.	K. Waste Transfer. A documented process shall be established and implemented for transferring responsibility for management of low-level waste and for ensuring availability of relevant data. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.K. (1)	(1) Authorization. Low-level waste shall not be transferred to a storage, treatment, or disposal facility until personnel responsible for the facility receiving the waste authorize the transfer.	Authorization for transfer of waste to ERDF is done by the Contractor and Subcontractor through the ERDF Waste Acceptance Plan (RFS-ERDF-002.3).	
CH.IV.K. (2)	(2) Data. Waste characterization data, container information, and generation, storage, treatment, and transportation information for low-level waste shall be transferred with or be traceable to the waste.	This requirement is implemented through BHI-FS-03, <i>Field Support Waste Management Instructions</i> , and the ERDF Waste Acceptance Plan (RFS-ERDF-002.3).	
CH.IV.L.	L. Packaging and Transportation. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.L. (1)	(1) Packaging. If containers are used: (a) Low-level waste shall be packaged in a manner that provides containment and protection for the duration of the anticipated storage period and until disposal is achieved or until the waste has been removed from the container. (b) When waste is packaged, vents or other measures shall be provided if the potential exists for pressurizing or generating flammable or explosive concentrations of gases within the waste container. (c) Containers of low-level waste shall be marked such that their contents can be identified.	Waste is not stored at ERDF. The waste is disposed as it is generated in a timely manner. Waste may be staged for a short period of time before disposal. The ERDF WAC requires the use of vents or catalytic packs for gas generating waste. Containers are shipped with the appropriate radiation decals and shipping documents.	
CH.IV.L. (2)	(2) Transportation. To the extent practical, the volume of waste and number of low-level waste shipments shall be minimized.	ERDF's function is to receive waste for disposal that has been determined to be above established cleanup criteria.	
CH.IV.M.	M. Site Evaluation and Facility Design. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.M. (1)	(1) Site Evaluation. Proposed locations for low-level waste facilities shall be evaluated to identify relevant features that should be avoided or must be considered in facility design and analyses.	The ERDF Siting Evaluation Report (SER), WHC-SD-EN-EV-009, identified relevant features that should be avoided or must be considered in facility design and analyses.	

Citation	ERDF Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.M. (1)(a)	(a) Each site proposed for a new low-level waste facility or expansion of an existing low-level waste facility shall be evaluated considering environmental characteristics, geotechnical characteristics, and human activities, including for a low-level waste disposal facility, the capability of the site to demonstrate, at a minimum, whether it is: 1. Located to accommodate the projected volume of waste to be received; 2. Located in a flood plain, a tectonically active area, or in the zone of water table fluctuation; and 3. Located where radionuclide migration pathways are predictable and erosion and surface runoff can be controlled.	The ERDF SER evaluated all the elements described for the proposed site.	
CH.IV.M. (1)(b)	(b) Proposed sites with environmental characteristics, geotechnical characteristics, and human activities for which adequate protection cannot be provided through facility design shall be deemed unsuitable for the location of the facility.	The SER concluded that the ERDF site was suitable for all siting criteria.	
CH.IV.M. (1)(c)	(c) Low-level waste disposal facilities shall be sited to achieve long-term stability and to minimize, to the extent practical, the need for active maintenance following final closure.	The ERDF was sited to achieve long-term stability and to minimize the need for active maintenance following final closure.	
CH.IV.M. (2)	(2) Low-Level Waste Treatment and Storage Facility Design. The following facility requirements and general design criteria, at a minimum, apply:	Requirements of CH.IV.M. (2) are not applicable. ERDF is not a low-level waste treatment or storage facility.	
CH.IV.M. (2)(a)	(a) Confinement. Low-level waste systems and components shall be designed to maintain waste confinement.	Not applicable to ERDF.	
CH.IV.M. (2)(b)	(b) Ventilation. 1. Design of low-level waste treatment and storage facilities shall include ventilation, if applicable, through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements. 2. When conditions exist for generating gases in flammable or explosive concentrations, ventilation systems or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation.	Not applicable to ERDF.	

Citation	RCRA Facility Requirements	Compliance Status	Remediation/Compliance
CH.IV.M. (2)(c)	(c) Consideration of Decontamination and Decommissioning. Areas in new and modifications to existing low-level waste management facilities that are subject to contamination with radioactive or other hazardous materials shall be designed to facilitate decontamination. For such facilities a proposed decommissioning method or a conversion method leading to reuse shall be described.	Not applicable to ERDF.	
CH.IV.M. (2)(d)	(d) Instrumentation and Control Systems. Engineering controls shall be incorporated in the design and engineering of low-level waste treatment and storage facilities to provide volume inventory data and to prevent spills, leaks, and overflows from tanks or confinement systems.	Not applicable to ERDF.	
CH.IV.M. (2)(e)	(e) Monitoring. Monitoring and/or leak detection capabilities shall be incorporated in the design and engineering of low-level waste treatment and storage facilities to provide rapid identification of failed confinement and/or other abnormal conditions.	Not applicable to ERDF.	
CH.IV.M. (3)	(3) Low-Level Waste Disposal Facility Design. The following facility requirements and general design criteria, at a minimum, apply:	See below.	
CH.IV.M. (3)(a)	(a) Confinement. Low-level waste systems and components shall be designed to maintain waste confinement.	Confinement of low-level waste is achieved through compliance with the ERDF WAC, SWAC, and operations procedures. Long-term confinement will be achieved through the applicable RCRA closure process.	

Citation	ERDF Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.M. (3)(b)	(b) Ventilation. 1. Design of low-level waste disposal facilities shall include ventilation, if applicable, through an appropriate filtration system to maintain the release of radioactive material in airborne effluents within the requirements and guidelines specified in applicable requirements. 2. When conditions exist for generating gases in flammable or explosive concentrations, ventilation systems or other measures shall be provided to keep the gases in a non-flammable and non-explosive condition. Where concentrations of explosive or flammable gases are expected to approach the lower flammability limit, measures shall be taken to prevent deflagration or detonation.	Not applicable to ERDF.	
CH.IV.M. (3)(c)	(c) Stability. Low-level waste disposal facilities shall be designed to achieve long-term stability and to minimize to the extent practical, the need for active maintenance following final closure.	The ERDF was designed to achieve long-term seismic stability (<i>Design Analysis for Construction of W-296 Environmental Restoration Disposal Facility</i> , BHI-00355, Rev. 0, Vol. 1). Waste stability to minimize the need for active maintenance following final closure is addressed in response to CH.IV.G.(1)(d).	
CH.IV.M. (3)(d)	(d) Control of Water. Low-level waste disposal facilities shall be designed to minimize to the extent practical, the contact of waste with water during and after disposal.	See response to CH.IV.G. (1)(d) controlling contact with water during operations. After closure, waste will be isolated from contact with water by use of an impermeable barrier. The design of the barrier will include systems designed to collect, transport, and discharge storm water away from the trench in a manner that prevents infiltration into the trench.	
CH.IV.N.	N. Storage and Staging. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.N. (1)	(1) Storage Prohibitions. Low-level waste in storage shall not be readily capable of detonation, explosive decomposition, reaction at anticipated pressures and temperatures, or explosive reaction with water. Prior to storage, pyrophoric materials shall be treated, prepared, and packaged to be nonflammable.	Not applicable to ERDF. ERDF is not a storage facility.	

Criterion	Minimum Requirements	Compliance Status	Date of Last Compliance
CH.IV.N. (2)	(2) Storage Limit. Low-level waste that has an identified path to disposal shall not be stored longer than one year prior to disposal, except for storage for decay, or as otherwise authorized by the Field Element Manager.	Not applicable to ERDF.	
CH.IV.N. (3)	(3) Storage Integrity. Low-level waste shall be stored in a location and manner that protects the integrity of waste for the expected time of storage and minimizes worker exposure.	Not applicable to ERDF.	
CH.IV.N. (4)	(4) Waste Characterization for Storage.	Not applicable to ERDF.	
CH.IV.N. (4)(a)	(a) Low-level waste that does not have an identified path to disposal shall be characterized as necessary to meet the data quality objectives and minimum characterization requirements of this Chapter, to ensure safe storage, and to facilitate disposal.	Not applicable to ERDF.	
CH.IV.N. (4)(b)	(b) Characterization information for all low-level waste in storage shall be maintained as a record in accordance with the requirements for Records Management in Chapter I of this Manual.	Not applicable to ERDF.	
CH.IV.N. (5)	(5) Container Inspection. A process shall be developed and implemented for inspecting and maintaining containers of low-level waste to ensure container integrity is not compromised.	Not applicable to ERDF.	
CH.IV.N. (6)	(6) Storage Management. Low-level waste storage shall be managed to identify and segregate low-level waste from mixed low-level waste.	Not applicable to ERDF.	
CH.IV.N. (7)	(7) Staging. Staging of low-level waste shall be for the purpose of the accumulation of such quantities of waste as necessary to facilitate transportation, treatment, and disposal. Staging longer than 90 days shall meet the requirements for storage above and in Chapter I of this Manual.	Not applicable to ERDF.	

Criterion	Performance Objective	Compliance Status	Plan to Achieve Compliance
CH.IV.O.	O. Treatment. Low-level waste treatment to provide more stable waste forms and to improve the long-term performance of a low-level waste disposal facility shall be implemented as necessary to meet the performance objectives of the disposal facility.	Waste entering ERDF must meet the SWAC to ensure that waste is disposed in a stable form to meet the performance objectives of the facility. Waste that does not meet the SWAC is handled on a case-by-case basis to achieve stability as described in the SWAC.	
CH.IV.P.	P. Disposal. Low-level waste disposal facilities shall meet the following requirements.	See below.	
CH.IV.P. (1)	(1) Performance Objectives. Low-level waste disposal facilities shall be sited, designed, operated, maintained, and closed so that a reasonable expectation exists that the following performance objectives will be met for waste disposed of after September 26, 1988:	See below.	
CH.IV.P. (1)(a)	(a) Dose to representative members of the public shall not exceed 25 mrem (0.25 mSv) in a year total effective dose equivalent from all exposure pathways, excluding the dose from radon and its progeny in air.	Per the Revised Air Monitoring Plan for the ERDF (CCN 076029), the calculated total potential unabated off-site dose from the ERDF air emissions is 1.39 E-01 mrem/yr. No other potential dose pathway is identified for the public during operation. Preliminary calculations contained in the ERDF Performance Assessment (PA) (BHI-00169, Rev. 0) comparing dose estimates to the 25 mrem performance objective concluded a potential estimated dose of 0.82 mrem/yr.	
CH.IV.P. (1)(b)	(b) Dose to representative members of the public via the air pathway shall not exceed 10 mrem (0.10 mSv) in a year total effective dose equivalent, excluding the dose from radon and its progeny.	Estimates of air contaminant doses calculated in the ERDF PA concluded the 10 mrem performance objective is easily satisfied. As stated above, the calculated total potential unabated off-site dose from the ERDF air emissions is 1.39 E-01 mrem/yr.	
CH.IV.P. (1)(c)	(c) Release of radon shall be less than an average flux of 20 pCi/m ² /s (0.74 Bq/m ² /s) at the surface of the disposal facility. Alternatively, a limit of 0.5 pCi/l (0.0185 Bq/l) of air may be applied at the boundary of the facility.	The ERDF PA concluded that ERDF will meet these performance objectives. The estimated dose from radon emissions at ERDF is 0.009 pCi/m ² s at 10,000 years.	

Criterion	ERDF Performance Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.P. (2)	(2) Performance Assessment. A site-specific radiological performance assessment shall be prepared and maintained for DOE low-level waste disposed of after September 26, 1988. The performance assessment shall include calculations for a 1,000 year period after closure of potential doses to representative future members of the public and potential releases from the facility to provide a reasonable expectation that the performance objectives identified in this Chapter are not exceeded as a result of operation and closure of the facility.	An ERDF PA completed one preliminary and one formal peer review and was issued as a BHI document. The ERDF PA is not maintained. The PA included calculations for a 1,000-year period and concluded ERDF will remain well within the identified performance objectives. A CERCLA risk assessment (RA) was completed in conjunction with the PA. A 5-year review of ERDF performance will be conducted by EPA as part of the CERCLA process.	
CH.IV.P. (2)(a)	(a) Analyses performed to demonstrate compliance with the performance objectives in this Chapter, and to establish limits on concentrations of radionuclides for disposal based on the performance measures for inadvertent intruders in this Chapter shall be based on reasonable activities in the critical group of exposed individuals. Unless otherwise specified, the assumption of average living habits and exposure conditions in representative critical groups of individuals projected to receive the highest doses is appropriate. The likelihood of inadvertent intruder scenarios may be considered in interpreting the results of the analyses and establishing radionuclide concentrations, if adequate justification is provided.	Both the ERDF PA and RA performed an analysis to demonstrate compliance with performance objectives and to establish limits on concentrations of radionuclides for disposal based on the performance measures for inadvertent intruders.	
CH.IV.P. (2)(b)	(b) The point of compliance shall correspond to the point of highest projected dose or concentration beyond a 100 meter buffer zone surrounding the disposed waste. A larger or smaller buffer zone may be used if adequate justification is provided.	The PA used a point of compliance of 100 m, and the RA used the edge of the ERDF with no buffer zone.	
CH.IV.P. (2)(c)	(c) Performance assessments shall address reasonably foreseeable natural processes that might disrupt barriers against release and transport of radioactive materials.	The PA addressed reasonably foreseeable natural processes that might disrupt barriers against release and transport of radioactive materials.	
CH.IV.P. (2)(d)	(d) Performance assessments shall use DOE-approved dose coefficients (dose conversion factors) for internal and external exposure of reference adults.	The PA used DOE-approved dose coefficients (dose conversion factors) for internal and external exposure of reference adults.	
CH.IV.P. (2)(e)	(e) The performance assessment shall include a sensitivity/uncertainty analysis.	The PA included a sensitivity/uncertainty analysis.	

Criterion	1951 PL Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.P. (2)(f)	(f) Performance assessments shall include a demonstration that projected releases of radionuclides to the environment shall be maintained as low as reasonably achievable (ALARA).	The PA included a demonstration that projected releases of radionuclides to the environment shall be maintained as low as reasonably achievable (ALARA).	
CH.IV.P. (2)(g)	(g) For purposes of establishing limits on radionuclides that may be disposed of near-surface, the performance assessment shall include an assessment of impacts to water resources.	The PA and RA included an evaluation of impacts to water resources.	
CH.IV.P. (2)(h)	(h) For purposes of establishing limits on the concentration of radionuclides that may be disposed of near-surface, the performance assessment shall include an assessment of impacts calculated for a hypothetical person assumed to inadvertently intrude for a temporary period into the low-level waste disposal facility. For intruder analyses, institutional controls shall be assumed to be effective in deterring intrusion for at least 100 years following closure. The intruder analyses shall use performance measures for chronic and acute exposure scenarios, respectively, of 100 mrem (1 mSv) in a year and 500 mrem (5 mSv) total effective dose equivalent excluding radon in air.	The PA and RA included an evaluation of impacts calculated for a hypothetical person assumed to inadvertently intrude for a temporary period into the low-level waste disposal facility.	
CH.IV.P. (3)	(3) Composite Analysis. For disposal facilities which received waste after September 26, 1988, a site-specific radiological composite analysis shall be prepared and maintained that accounts for all sources of radioactive material that may be left at the DOE site and may interact with the low-level waste disposal facility, contributing to the dose projected to a hypothetical member of the public from the existing or future disposal facilities. Performance measures shall be consistent with DOE requirements for protection of the public and environment and evaluated for a 1,000 year period following disposal facility closure. The composite analysis results shall be used for planning, radiation protection activities, and future use commitments to minimize the likelihood that current low-level waste disposal activities will result in the need for future corrective or remedial actions to adequately protect the public and the environment.	ERDF is a part of the Hanford site-wide composite analysis (CA) (PNNL-11800) and is completed per the designated requirements.	

Citation	ERDF Mandatory Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.P. (4)	(4) Performance Assessment and Composite Analysis Maintenance. The performance assessment and composite analysis shall be maintained to evaluate changes that could affect the performance, design, and operating bases for the facility. Performance assessment and composite analysis maintenance shall include the conduct of research, field studies, and monitoring needed to address uncertainties or gaps in existing data. The performance assessment shall be updated to support the final facility closure. Additional iterations of the performance assessment and composite analysis shall be conducted as necessary during the post-closure period.	A CERCLA risk assessment is used in conjunction with the PA and will be assessed as part of the CERCLA 5-year review. The ERDF CA is maintained as part of the site-wide CA.	
CH.IV.P. (4)(a)	(a) Performance assessments and composite analyses shall be reviewed and revised when changes in waste forms or containers, radionuclide inventories, facility design and operations, closure concepts, or the improved understanding of the performance of the waste disposal facility in combination with the features of the site on which it is located alter the conclusions or the conceptual model(s) of the existing performance assessment or composite analysis.	A review will be performed in the event there is a substantial change in the waste form, inventory, facility design and operations, closure concepts, or features of the site that would alter the conclusions or the conceptual model(s). The appropriate plans and procedures will be revised as necessary.	
CH.IV.P. (4)(b)	(b) A determination of the continued adequacy of the performance assessment and composite analysis shall be made on an annual basis, and shall consider the results of data collection and analysis from research, field studies, and monitoring.	The PA is not formally reviewed annually (see CH.IV.P.(4) above). The ERDF CA is maintained as part of the site-wide CA. The results of data collection and analysis from research, field studies, and monitoring are routinely assessed against various specific performance criteria.	DOE Directives not currently in the contract will be evaluated for implementation when directed.
CH.IV.P. (4)(c)	(c) Annual summaries of low-level waste disposal operations shall be prepared with respect to the conclusions and recommendations of the performance assessment and composite analysis and a determination of the need to revise the performance assessment or composite analysis.	Various summaries of waste disposal operations are prepared for the ERDF. The summaries are not prepared with respect to the conclusions and recommendations of the PA or CA. Revisions to the CA use updated operational information.	DOE Directives not currently in the contract will be evaluated for implementation when directed.

Citation	EIS Manual Requirement	Compliance Status	Plan to Achieve Compliance
CH.IV.P. (5)	(5) Disposal Authorization. A disposal authorization statement shall be obtained prior to construction of a new low-level waste disposal facility. Field Elements with existing low-level waste disposal facilities shall obtain a disposal authorization statement in accordance with the schedule in the Complex-Wide Low-Level Waste Management Program Plan. The disposal authorization statement shall be issued based on a review of the facility's performance assessment, composite analysis, performance assessment and composite analysis maintenance, preliminary closure plan, and preliminary monitoring plan. The disposal authorization statement shall specify the limits and conditions on construction, design, operations, and closure of the low-level waste facility based on these reviews. A disposal authorization statement is a part of the radioactive waste management basis for a disposal facility. Failure to obtain a disposal authorization statement by the implementation date of this Order shall result in shutdown of the disposal facility.	This crosswalk is intended to support a disposal authorization for ERDF.	
CH.IV.P. (6)	(6) Disposal Facility Operations. The disposal facility design and operation must be consistent with the disposal facility closure plan and lead to disposal facility closure that provides a reasonable expectation that performance objectives will be met. Low-level waste shall be disposed in such a manner that achieves the performance objectives stated in this Chapter, consistent with the disposal facility radiological performance assessment. Additional requirements include:	The Operations Plans and Procedures Manual for the ERDF was developed by the Operations Subcontractor and approved by the regulators to be consistent with the provisions of the ROD (and subsequent amendments) and include the requirement to meet operational, closure, and post-closure performance objectives.	
CH.IV.P. (6)(a)	(a) Operating procedures shall be developed and implemented for low-level waste disposal facilities that protect the public, workers, and the environment; ensure the security of the facility; minimize subsidence during and after waste emplacement; achieve long-term stability and minimize the need for long-term active maintenance; and meet the requirements of the closure/post-closure plan.	Operating procedures have been developed and implemented for ERDF by the Disposal Operations Subcontractor. Specific requirements include protecting the public, workers, and the environment; maintaining site security; waste compaction and stabilization to support the engineered final cover and achieve long-term stability; and meet the applicable substantive requirements for closure and post-closure.	

Citation	RCRA Manual Requirements	Compliance Status	Deficiencies/Compliance
CH.IV.P. (6)(b)	(b) Permanent identification markers for disposal excavations and monitoring wells shall be emplaced.	<p>The ERDF is topographically separated from surrounding terrain by embankments that make up part of the trench. The edges of the disposal cells are located with respect to the Washington State Plane Coordinate systems. Permanent identification markers for disposal excavations and monitoring wells shall be emplaced at closure.</p> <p>Monitoring wells are identified by the wellheads that are above grade and also located with respect to the Washington State Plane Coordinate system.</p>	
CH.IV.P. (6)(c)	(c) Low-level waste placement into disposal units shall minimize voids between waste containers. Voids within disposal units shall be filled to the extent practical. Uncontainerized bulk waste shall also be placed in a manner that minimizes voids and subsidence.	<p>Waste is placed into ERDF to minimize voids. The performance specification calls for careful placement of waste. Over 90% of waste placed in the ERDF is contaminated soil and rubble. Less than 10% is containerized. Per the ERDF WAC and SWAC all containerized waste is packaged to minimize voids.</p>	
CH.IV.P. (6)(d)	(d) Operations are to be conducted so that active waste disposal operations will not have an adverse effect on any other disposal units.	<p>The ERDF is an isolated, single expandable trench, separated hydrologically into individual cells. New cells are periodically added by excavating and lining them well ahead of disposal operations. As disposal operations advance into a new cell, continuity and structural integrity of the mass of waste is maintained.</p>	
CH.IV.P. (6)(e)	(e) Operations shall include a process for tracking and documenting low-level waste placement in the facility by generator source.	<p>The WAC describes the process for documenting and tracking waste designated for burial at the ERDF. The Waste Acceptance Plan (RFS-ERDF-002.3, Rev. 1, PCN1) written and maintained by the Disposal Operations Subcontractor specifies that the disposal location of all waste will be recorded in the waste acceptance database.</p>	

Citation	Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.P. (7)	(7) Alternate Requirements for Low-Level Waste Disposal Facility Design and Operation. Requirements other than those set forth in this Section for the design and operation of a low-level waste disposal facility may be approved on a specific basis if a reasonable expectation is demonstrated that the disposal performance objectives will be met.	Statement of Alternate Requirements for Low-Level Waste Disposal Facility Design and Operation. Per the ERDF ROD, ERDF is designed to RCRA minimum technological requirements contained in 40 CFR Part 264, Subpart N.	
CH.IV.Q.	Q. Closure. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.Q. (1)	(1) Disposal Facility Closure Plans. A preliminary closure plan shall be developed and submitted to Headquarters for review with the performance assessment and composite analysis. The closure plan shall be updated following issuance of the disposal authorization statement to incorporate conditions specified in the disposal authorization statement. Closure plans shall: (a) Be updated as required during the operational life of the facility. (b) Include a description of how the disposal facility will be closed to achieve long-term stability and minimize the need for active maintenance following closure and to ensure compliance with the requirements of DOE 5400.5, <i>Radiation Protection of the Public and the Environment</i> . (c) Include the total expected inventory of wastes to be disposed of at the facility over the operational life of the facility.	The Record of Decision (ROD) for ERDF calls for use of a modified RCRA-compliant closure cover that will comply with 40 CFR 264, Subpart N. The details of the closure plan will be negotiated with regulatory authorities under CERCLA. The closure plan shall conform to the applicable substantive RCRA and other ARARs.	

Citation	RFS Manual Requirements	Compliance Status	Plan to Achieve Compliance
CH.IV.Q. (2)	(2) Disposal Facility Closure. Closure of a disposal facility shall occur within a five-year period after it is filled to capacity, or after the facility is otherwise determined to be no longer needed. (a) Prior to facility closure, the final inventory of the low-level waste disposed in the facility shall be prepared and incorporated in the performance assessment and composite analysis which shall be updated to support the closure of the facility. (b) A final closure plan shall be prepared based on the final inventory of waste disposed in the facility, the plan implemented, and the updated performance assessment and composite analysis prepared in support of the facility closure. (c) Institutional control measures shall be integrated into land use and stewardship plans and programs, and shall continue until the facility can be released pursuant to DOE Order 5400.5, <i>Radiation Protection of the Public and the Environment</i> . (d) The location and use of the facility shall be filed with the local authorities responsible for land use and zoning.	<p>The ROD states that the cover will be constructed on an incremental basis, as the trench is expanded.</p> <p>The final inventory will be a part of the final closure plan and will likely be incorporated into an updated final risk assessment.</p> <p>The ROD calls for institutional controls to be implemented after closure.</p> <p>The ERDF is located on the central plateau of the Hanford Site, between the 200 East and 200 West Areas. It will be managed as part of the 200 Area waste management complex following its closure.</p>	
CH.IV.R.	R. Monitoring. The following requirements are in addition to those in Chapter I of this Manual.	See below.	
CH.IV.R. (1)	(1) All Waste Facilities. Parameters that shall be sampled or monitored, at a minimum, include: temperature, pressure (for closed systems), radioactivity in ventilation exhaust and liquid effluent streams, and flammable or explosive mixtures of gases. Facility monitoring programs shall include verification that passive and active control systems have not failed.	The ERDF does not have any closed systems or ventilation systems. Leachate is sampled for radioactivity per the Leachate and Washwater Management Plan (RFS-ERDF-002.6), and Leachate Delisting Sampling and Analysis Plan contained in the ERDF ROD Amendment (EPA 1999). The Operations Subcontractor Health and Safety Plan (RFS-ERDF-002.1) has provisions for flammable or explosive mixtures of gasses. Monitoring systems are inspected regularly.	
CH.IV.R. (2)	(2) Liquid Waste Storage Facilities. For facilities storing liquid low-level waste, the following shall also be monitored: liquid level and/or waste volume, and significant waste chemistry parameters.	The ERDF does not store liquid low-level waste.	

Citation	195 IET Manual Requirement	Compliance Status	Plan to Achieve Compliance
CH.IV.R. (3)	<p>(3) Disposal Facilities. A preliminary monitoring plan for a low-level waste disposal facility shall be prepared and submitted to Headquarters for review with the performance assessment and composite analysis. The monitoring plan shall be updated within one year following issuance of the disposal authorization statement to incorporate and implement conditions specified in the disposal authorization statement. (a) The site-specific performance assessment and composite analysis shall be used to determine the media, locations, radionuclides, and other substances to be monitored. (b) The environmental monitoring program shall be designed to include measuring and evaluating releases, migration of radionuclides, disposal unit subsidence, and changes in disposal facility and disposal site parameters which may affect long-term performance. (c) The environmental monitoring programs shall be capable of detecting changing trends in performance to allow application of any necessary corrective action prior to exceeding the performance objectives in this Chapter.</p>	<p>ERDF has prepared various monitoring plans that are updated as necessary. The monitoring plans have been approved by regulatory authorities under CERCLA. Substantive portions of the negotiated ARARs are incorporated into the requirements for media, locations, radionuclides, and other substances to be monitored. The environmental monitoring program is designed to include measurement and evaluation of releases, migration of radionuclides, disposal unit subsidence, and changes in facility and site parameters that may affect long-term performance. The environmental monitoring program is capable of detecting changing trends in performance to allow application of any necessary corrective action prior to exceeding established performance objectives.</p>	<p>An Environmental Control Plan is currently being written to incorporate all monitoring requirements into a single document.</p>

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DOE O 210.1, *Performance Indicators and Analysis of Operations Information*, as amended, U.S. Department of Energy, Washington, D.C.

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Subject Code: 8500, 8560, 6370, 6420, 8200
 Written Response Required: No
 Due Date: N/A
 By Whom: N/A
 Closes Action: D8345921
 OU: N/A
 TSD: N/A
 ERA: N/A
 Project: Yes

JUL 17 2000

DATE:
 REPLY TO
 ATTN OF: ERD:OCR 00-ERD-135

SUBJECT: ENVIRONMENTAL RESTORATION DISPOSAL FACILITY (ERDF) CROSSWALK TO DOE ORDER 435.1 REQUIREMENTS

TO: J. J. Fiore, Deputy Assistant Secretary
 for Site Closure
 EM-30, HQ

M. W. Frei, Deputy Assistant Secretary
 for Project Completion
 EM-40, HQ

This is in reference to your memorandum to K. A. Klein, RL, and R. T. French, ORP, "Disposal Authorization for the Hanford Site Low-Level Waste Disposal Facilities," dated October 25, 1999. It requires the development of a crosswalk between the ERDF Comprehensive Environmental Response Compensation and Liability Act Record of Decision and the requirements of DOE Order 435.1, Radioactive Waste Management. As a result of this crosswalk, the U.S. Department of Energy, Richland Operations Office (RL) has confirmed that ERDF Operations meet the substantive requirements of DOE Order 435.1. Enclosed is a table of the results of the crosswalk and associated references. An advanced copy of this crosswalk has been provided electronically to M. Le Tourneau of your staff.

If you have questions, please contact me, or your staff may contact Owen C. Robertson, Environmental Restoration Division, on (509) 373-6295.

ORIGINAL SIGNED BY

Keith A. Klein
 Manager

Enclosures:

1. ERDF Crosswalk to DOE Order 435.1
2. References

cc w/o encls:

L. M. Dittmer, BHI

bcc w/encls:

ERD Off File
 O. C. Robertson, ERD
 H. L. Boston, DMST

bcc w/o encls:

ERDF Rdg File

Record Note: Completes D8348921.

File: OWENERDF 4351.135

Prev. Conc.

RECEIVED

JUL 17 2000

DOE-RL/RLCC

Office >	ERD	ERD	AMEW	DMST	MGR	
Surname >	ROBERTSON	GERTON	BILSON	BOSTON	KLEIN	
Date >				3/11/00	7/17/00	

Subject Code: 8500, 8560, 6370, 6420, 8200
 Written Response Required: No
 Due Date: N/A
 By Whom: N/A
 Closes Action: D8345921
 OU: N/A
 TSD: N/A
 ERA: N/A
 Project: Yes

DATE:
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An advanced copy of this crosswalk has been provided electronically to Mr. M. Le Tourneau of your staff. Should you have any question regarding the evaluation of this crosswalk, please contact Owen C. Robertson, Environmental Restoration Division, on (509) 373-6295.

Keith A. Klein
 Manager

- Enclosures:
 1. ERDF Crosswalk to DOE Order 435.1
 2. References

cc w/o encls:
 L. M. Dittmer, BHI

bcc w/encls:
 ERD Off File
 ERD Rdg File
 O. C. Robertson, ERD

*bcc w/o encls:
 ERDF Rdg File*

Record Note: Completes D8348921.

File: OWENERDF 4351.135

Office >	ERD <i>OCR</i>	ERD <i>Off</i>	AMEW <i>✓</i>	DMST	WGR
Surname >	ROBERTSON	GERTON	BILSON	BOSTON	KLEIN
Date >	<i>6/21/02</i>	<i>6/20/02</i>	<i>6/21/02</i>		

(Please return to Carole Angulo 6-6628 HO-12/3350/2C54 FAX 840726)

Document No. 20918