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Section 3.1: Changing 6 mm to 6 mil minimum thickness for the black polyethylene liners.
Section 3.4: Adding waste cannot be placed/stacked over mid-span reinforcing beam within the RO/RO container.
Section 4.2: Adding waste cannot be placed/stacked over mid-span reinforcing beam within the RO/RO container.

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- ☐ Full Paper
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APPROVED
By Dorcas Kosgei at 12:48 pm, Jul 30, 2025

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ERDF-00003
Revision 8

Supplemental Waste Acceptance Criteria for the Environmental Restoration Disposal Facility

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

Contractor for the U.S. Department of Energy
under Contract 89303320DEM000030

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Central Plateau
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ERDF-00003
Revision 8

Supplemental Waste Acceptance Criteria for the Environmental Restoration Disposal Facility

Document Type: WAC Program/Project: ERDF

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Central Plateau Cleanup Company LLC (CPCCo)

Date Published
July 2025

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

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under Contract 89303320DEM000030

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APPROVED
By Dorcas Kosgei at 12:50 pm, Jul 30, 2025

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Supplemental Waste Acceptance Criteria for the Environmental Restoration Disposal Facility

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3. Revision	4. Description of Change - Replace, Add, and Delete Pages	Authorized for Release	
		5. DA/TA	6. Date
2	Section 3.2: Added new requirement (paragraph 3) that requires notification of ERDF prior to shipping RO/ROs with radiation readings >5mR/hr. Added new section 3.2.1 requiring notification of ERDF Engineering prior to shipping non-bulk waste having DOT Type B Quantities of direct dose radionuclides. Revised section 4.9, packaged Waste with Voids, specifically wastes that exceed the radiological criteria of section 3.2 now require a WSRP and the packaging must be equipped with HEPA filtration at grout and vent ports, or the ports must have valves attached.	M. A. Casbon	06/28/2017
3	Section 3.2.3: Clarified shipment radiation level communication requirements with the ERDF Waste Management Officer. Section 4.9: Added additional methods for waste packages (e.g., containers, vaults, boxes, drums, and wrapped or otherwise enclosed objects) that are not adequately filled to maintain a structurally stable condition after disposal.	D. B. Teachout	09/09/2020
4	CPCC-CR-2023-2634, updated procedure references and CPCCo Contracts.	A. R. Wilkinson	03/12/2024
5	Section 4.2: Added new requirement that waste generators must not fill steel RO/RO liners with hazardous debris beyond 50% full.	A. R. Wilkinson	03/12/2024
6	Section 5: Included clarifying language for the acceptance of packages that must be opened to perfom void filling.	A. R. Wilkinson	11/22/2024
7	Section 4.2: Added clarifying language on waste being placed in steel liners and will be returned to the waste generator for repackaging if not in compliance with that requirement. Section 4.5: Added new requirement that generators are responsible for soaking up excess liquids prior to shipment. Section 4.7: Added new requirement about notifying ERDF WMO on piping or vessels that cannot or plan to be size reduced. Section 4.9: Added new requirements for void filling that include waste generators shall be required to fill all voids, if waste generator cannot void fill, the next steps, waste generators must supply a calculation on the void volume and furnishing all necessary hardware to facilitate the void fill.	A. R. Wilkinson	01/23/2025
8	Section 3.1: Changing 6 mm to 6 mil minimum thickness for the black polyethylene liners. Section 3.4: Adding waste cannot be placed/stacked over mid-span reinforcing beam within the RO/RO container. Section 4.2: Adding waste cannot be placed/stacked over mid-span reinforcing beam within the RO/RO container.	A. R. Wilkinson	07/28/2025

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Terms

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
HC	Hazard Category
OWTF	onsite waste tracking form
RadCon	Radiological Control organization
RO/RO	roll-on/roll-off
SBW	standard bulk waste
SHW	special handling waste
WMO	waste management officer
WSRP	waste shipping and receiving plan

1 Purpose

Supplemental waste acceptance criteria are established to communicate more specific requirements to ensure safe and compliant handling and disposal of waste at the Environmental Restoration Disposal Facility (ERDF). This supplemental waste acceptance criteria do not affect nor relieve regulatory (e.g., U.S. Department of Transportation [DOT] and *Resource Conservation and Recovery Act of 1976*) requirements.

2 Introduction

Waste streams may be divided into three categories based on packaging, handling, and disposal methods: standard bulk waste (SBW), special handling waste (SHW), and materials addressed in a waste shipping and receiving plan (WSRP). Chapters 3 and 4 describe the characteristics of SBW and SHW. Waste that does not meet these characteristics requires a WSRP (Chapter 5) in order to be received and disposed at ERDF.

3 Standard Bulk Waste

SBW refers to waste streams that meet the criteria provided in this chapter and can be accepted for routine disposal at ERDF dump ramps.

3.1 Packaging

All SBW destined for disposal at ERDF must be loaded according to the following requirements:

1. Shipping conveyances are required to have a covering (e.g., tarp) to prevent the waste from escaping the conveyance. The covering is not required to be airtight, and small gaps may be present. However, the covering must be adequate to keep the waste, regardless of its physical characteristics, from escaping the conveyance during transport to ERDF.
2. Black polyethylene or equivalent (6 mil minimum thickness) liners will be used in roll-on/roll-off (RO/RO) bulk shipping containers before adding waste. ERDF may require clear or colored liners for some waste streams that have a higher potential to spread contamination. After waste is added, each liner must be closed in a manner to prevent opening during transportation and container-handling operations. The following items do not require liners:
   - Liners are not required for non-DOT radioactive waste material (white onsite waste tracking forms [OWTFs] only) composed of pure debris with very little soil or fine material. If dumping conditions warrant, ERDF reserves the prerogative to require liners for specific types of debris waste streams. This will be communicated to waste generators via email.
   - Dump trucks, truck and pup combinations, and super dumps are not required to use liners. However, ERDF may determine that conditions warrant the use of liners. This will be communicated to waste generators via email.
   - Green ERDF RO/RO containers and nonradioactive Hazard Class 9 (i.e., blue DOT) ERDF RO/RO containers are not required to use polyethylene liners. However, ERDF may determine that conditions warrant the use of these liners. This will be communicated to waste generators via email.

3.2 Radiological Contamination and Radiation Limits

The limits listed in this section are provided by the Radiological Control organization (RadCon) for the protection of personnel involved with disposing, spreading, and compacting waste at ERDF.

> **Note:** Waste with values less than the limits listed herein may be shipped without further evaluation for radiological concerns with respect to disposal.

1. Bulk dumped waste with loose (smearable) surface contamination of 300,000 dpm/100 cm^2 beta-gamma or 10,000 dpm/100 cm^2 alpha.
2. Bulk dumped waste with fixed contamination of 300 mR/hr beta-gamma or 30,000 dpm/100 cm^2 alpha.
3. All waste shipments with radiation level readings ≥5 mR/hr gamma when measured 0.3 m (1 ft) from the surface of the waste container (or surface of the waste if not containerized) require communicating the radiation level(s) to the ERDF waste management officer (WMO) before the waste shipment is placed on the ERDF 3-week rolling schedule. This will ensure that proper dosimetry is worn by personnel supporting the waste shipment.
4. All waste packages with radiation level readings ≥80 mR/hr gamma when measured at 0.3 m (1 ft) from the surface of the container (prior to application of additional shielding or distance barriers to the container) require a minimum 24-hour notification. Containers reading ≥800 mR/hr at 30 cm (11.8 in.) will not be offered into the transportation system until direction is provided by the ERDF WMO. This requires close coordination with the ERDF WMO and normally involves notification several days prior to actual shipment. Results of radiological surveys shall be provided via email to the ERDF WMO and the RadCon supervisor or RadCon engineer at the time of notification.
5. Soil or other waste that has the potential to generate airborne contamination must be evaluated by the RadCon engineer from the waste-generating organization to determine the potential impact to ERDF operations. No soil (waste) shall subject workers to >2% of the annual limit of intake based on the criteria in the latest revision of RC-100-4.2, *Estimating Airborne Radioactivity Levels*. The evaluation shall use a 1,500-hour work year for determining the annual intake limit.
6. Bulk dumped waste streams with >90% (by activity) hard-to-detect radionuclides carbon-14, iron-55, nickel-63, selenium-79, technetium-99, palladium-107, europium-155, or tritium will require special radiological survey techniques. A WSRP must be developed (see Chapter 5) for receipt and disposal of RO/RO containers that contain these waste streams. Drums, boxes, or other disposable containers that contain these waste streams and that will require opening at ERDF may also require a WSRP.

3.2.1 ERDF Authorization Basis Considerations

ERDF intends to operate the facility as a DOE-STD-1027-2018, *Hazard Categorization of DOE Nuclear Facilities*, Less Than Hazard Category 3 radiological facility by maintaining the radiological inventory sum of fractions for the unburied waste packages less than the adjusted Hazard Category (HC)-3 threshold quantity values in accordance with ERDF-00012, *Final Hazard Categorization for the Environmental Restoration Disposal Facility*. Nonbulk waste shipments with DOT Type B quantities of direct dose radionuclides (e.g., beryllium-7, cobalt-58, cobalt-60, manganese-53, and ruthenium-103) or an adjusted HC-3 sum of fractions ≥0.81 (line 11 on the OWTF) may require a WSRP. Contact ERDF prior to shipping waste.

3.3 Industrial Hygiene

Waste that does not require skin or respiratory protection beyond normal work clothes (Level D personal protective equipment) in order to be handled by workers is acceptable. The waste generator's staff shall notify the ERDF certified industrial hygienist (or designee) via email or at the in-person ERDF 3-week rolling schedule meeting regarding waste to be shipped to ERDF that has the potential to require additional personal protective equipment (e.g., skin or respiratory protection). The waste generator's industrial hygiene sample results shall be made available to ERDF personnel upon request.

3.4 Physical Limits

Waste must meet the physical limits described in this section to be eligible for routine disposal (i.e., a WSRP is not required). Any individual piece of concrete, steel, pipe, miscellaneous metal, building debris, structural steel, or conduit shall not exceed 1.2 m (4 ft) in width, 1.2 m (4 ft) in depth, or 5.2 m (17 ft) in length for RO/RO containers and shall not be placed/stacked over the mid-span reinforcing beams within the RO/RO containers. Concrete in super dumps shall not exceed 1.2 m (4 ft) in width, 1.2 m (4 ft), and 1.5 m (5 ft) in depth without the permission of the waste transportation manager. Nonconcrete, long items in super dump trucks shall not exceed 4.6 m (15 ft) in length. Exceptions (including other types of conveyances) will only be accepted on a case-by-case basis and will require a WSRP. The presence of concrete slabs, blocks, or boulders >1.2 m (4 ft) in any dimension or objects >3.3 m (10 ft) long in a RO/RO container or other conveyance shall be noted on the OWTF in accordance with the guidance provided in the current revision of CPCC-PRO-WM-53829, *ERDF Waste Acceptance Process*.

3.4.1 Concrete Debris

It is preferred that concrete be reduced to rubble with a maximum dimension of approximately 0.3 m (1 ft). However, economics, as low as reasonably achievable (ALARA) considerations, and availability of specialized equipment may dictate that large blocks and boulders be shipped, provided that they meet the following criteria:

- Concrete blocks or slabs and large boulders must meet the physical limits stated in Section 3.4 and must be loaded toward the rear of the container/conveyance.
- The presence of concrete blocks or slabs and large boulders must be noted on the accompanying OWTF in accordance with the guidance provided in CPCC-PRO-WM-53829.

3.4.2 Steel Debris

The presence of metal of any length shall be noted on the OWTF in accordance with the guidance provided in CPCC-PRO-WM-53829.

Steel plates and structural steel members shall not be forced to fit into RO/RO containers/conveyances by bending or folding while being placed into RO/RO containers/conveyances. Bent or folded steel must be able to be easily placed into RO/RO containers/conveyances and be removed from the container/conveyance during dumping. Steel plates and structural steel members should be bedded on soil or cribbing whenever possible. Protrusions that may pierce, gouge, or otherwise damage the container or conveyance shall be removed or adequately padded to protect the container/conveyance. Steel plates and structural steel members may be shipped with larger amounts of soil in RO/RO containers/conveyances but must be placed in a stable configuration that will not cause the waste to be ejected from the container/conveyance during handling.

Pipes or tubes may be flattened by the waste generator. Flattened pipes/tubes shall not have any voids exceeding 15 cm (6 in.) at any point in the pipe or tube after being flattened. Table 1 applies to any pipes/tubes that are not flattened. Section 4.7 provides further direction regarding pipe disposal.

Table 1. Pipe Disposal

Inner Diameter (in.)	Split	Grout	Soil Bedding	Packaging	Other
≤6[a]	N/A	N/A	May be intermixed with soil	Loose	Shall not be bundled; RACM may be left on[b]
>6 ≤18	N/A	Yes, pipe ends must allow free flow	Soil bedding should be used	Must be shipped separate from other waste	RACM may be left on[b]
>18 ≤48	Shall be split in half	N/A	Soil bedding should be used	Nest[c]	RACM shall be removed[d]
>48	Shall be split in thirds	N/A	Soil bedding should be used	Nest[c]	RACM shall be removed[d]
Fittings and valves >18	N/A	Yes, pipe shall be removed as close to fitting/valve as possible	Soil bedding should be used	Must be shipped separate from other waste	RACM may be left on[d]

Notes:

Intact transite pipe (i.e., cement asbestos pipe) shall be considered RACM.

Questions regarding definition of pipe (e.g., length versus diameter) shall be referred to the ERDF waste management officer.

a. See CHPRC-1702676, 2017, "Six Inch Pipe Void Space Position Paper," to W.A. Borlaug from M.A. Casbon, CH2M HILL Plateau Remediation Company, Richland, Washington, June 20.

b. RACM (e.g., thermal system insulation) must be properly wetted, double-wrapped on the pipe, and labeled, and it requires a WSRP in accordance with Chapter 5 of this document. As an alternative to double-wrapping on the pipe, the container may be double-lined. The interior contamination levels of such pipes/tubes must be within the contamination levels specified in Chapter 3. Tearing or ripping of wrapping should be avoided by using careful handling and preventive techniques. Pipe ends of >6 in. pipe should be configured to permit piercing at ERDF to allow free flow of grout into the pipe (for pipe requiring grouting).

c. Split piping shall be placed one length inside the other (maximum of three pieces) with the open side up. Placing more than three pieces of split piping into a container/conveyance requires a WSRP.

d. Removed RACM shall be packaged and labeled separately in accordance with asbestos handling procedures.

ERDF = Environmental Restoration Disposal Facility

N/A = not applicable

RACM = regulated asbestos-containing material

WSRP = waste shipping and receiving plan

3.4.3 Rebar

All rebar must be cut as close to flush with the surface of concrete blocks or slabs as possible, consistent with maintaining personnel radiation exposure ALARA. Rebar that is attached to concrete rubble should be no more than 0.6 m (2 ft) long. Rebar should be cut into lengths of approximately 1.2 m (4 ft) and mixed with soil to the extent practical. Rebar pieces from decontamination and decommissioning projects where soil is not common can be placed in bulk RO/RO containers/conveyances with other hard debris. Rebar configuration and placement within RO/RO containers/conveyances must ensure that the rebar cannot damage either the walls or floor of the container/conveyance or its tarp during loading and unloading. Rebar balls present handling difficulties at ERDF and could cause equipment damage; therefore, their presence in a container/conveyance should be clearly noted on the accompanying OWTF.

3.5 Asbestos-Containing Material

Asbestos-containing material (ACM) includes both regulated asbestos-containing material and nonregulated asbestos-containing material. A minimum of one liner is required for ACM. Waste containing ACM shall be discussed with the ERDF WMO at the 3-week planning meeting. The ACM will generally be disposed as SBW; however, the ERDF WMO may determine that other disposal methods are more appropriate, based on information about the waste provided by the generator. Air monitoring data gathered by the waste generator while ACM is being excavated, loaded into containers, or otherwise handled shall be communicated to the ERDF disposal certified industrial hygienist.

4 Special Handling Waste

Special handling methods have been developed at ERDF to allow safe disposal of waste streams that cannot be disposed as SBW due to the waste form. Waste generators having a waste stream listed in this chapter may use the predetermined special handling methods associated with the waste stream. The ERDF WMO shall be notified of waste using one or more of these methods at the in-person ERDF 3-week rolling schedule meeting. In special circumstances, notification may be made via email no less than 24 hours prior to offering the shipment into the transportation system. Packaging descriptions in this chapter do not take precedence over DOT requirements. All waste described in this chapter must meet the radiological contamination and radiation limits of SBW (Section 3.2). Refer to CPCC-PRO-WM-53829 for documentation requirements for special handling waste.

4.1 Packaged Waste Without Voids

Packaged waste (e.g., containers, vaults, boxes, drums, and wrapped or otherwise enclosed objects) with contents that meet the Section 3.2 radiological limits and arrivals at ERDF with all voids adequately filled[1] will be handled in the same manner as SBW.

Packaged waste that is adequately filled,[1] but with contents exceeding the internal radiological limits of Section 3.2, is acceptable for disposal using the place-and-cover disposal method. Packages must be able to maintain their integrity during handling and covering at ERDF to be eligible for this disposal method. Final determination regarding whether waste is acceptable for this methodology will be made by the ERDF WMO and the RadCon engineer.

[1] Adequately filled applies to waste items that are at least 90% filled as required by Section 4.3.5 in ERDF-00011, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*. The fill material shall have long-term stability (e.g., cement grout, sand, and polyurethane foam) and compressive strength of at least 140 lb/in.^{2}. Contact the ERDF resident engineer prior to using polyurethane foam.

4.2 Hazardous Debris Treatment

Hazardous debris treatment performed at ERDF is described in CP-59970, *Environmental Restoration Disposal Facility Debris Treatment Plan, formerly WCH-546 Rev. 1*. The plan describes the immobilization treatment methods used at ERDF and the waste generator's regulatory permission required for waste treatment at ERDF. A WSRP is required for hazardous debris waste treatment that takes place inside the ERDF trench (see Chapter 5). All other hazardous debris treatment at ERDF shall be performed outside of the trench. An approval to treat form signed by the appropriate regulatory agency (U.S. Environmental Protection Agency [EPA] or Washington State Department of Ecology [Ecology]) and the U.S. Department of Energy (DOE) is required for ERDF to treat the waste. Waste generators must not fill steel RO/RO liners with hazardous debris beyond 50% full and shall not place/stack hazardous debris over the mid-span reinforcing beam within the RO/RO containers. At least one foot of freeboard must be maintained between the top of the steel liner and any waste placed within that steel liner. Failure to maintain one foot of freeboard may result in the respective container/steel liner being returned to the waste generator for repackaging to bring the waste shipment into compliance with this requirement.

4.3 Hazardous Waste Stabilization

Hazardous waste that requires stabilization treatment for *Resource Conservation and Recovery Act of 1976* metals and meets the radiological contamination limits of SBW (Section 3.2) but does not meet the regulatory definition of debris may be treated at ERDF. While not requiring a WSRP, this waste requires extensive coordination with ERDF prior to shipment in order to develop and receive regulatory approval of a treatment plan. An approval to treat form signed by the appropriate regulatory agency (EPA or Ecology) and DOE is required for ERDF to treat the waste.

4.4 Empty Conex Boxes, Office Trailers, or Other Large Containers

Conex boxes, office trailers, or other large containers that can be collapsed by ERDF heavy equipment and that meet SBW contamination limits will be placed into the disposal trench and crushed.

4.5 Nonreleasable Retired Rolling Stock

Rolling stock equipment (e.g., trucks, dozers, and trackhoes) that meets SBW contamination limits may be disposed at ERDF. Rolling stock is placed or driven into the disposal area and prepared for disposal. The draining, collection and disposal of hazardous materials, liquids (oils, coolants), and batteries are the responsibility of the waste-generating organization sending the rolling stock to ERDF. The generating organization is responsible for adding absorbents to soak up excess liquids prior to shipment. If the generator is unable to drain liquids prior to shipment this shall be clearly communicated to the ERDF WMO 21 days prior to shipment at the 3-week rolling schedule meeting.

4.6 Tumbleweeds

Tumbleweeds are acceptable for disposal in ERDF. Disposal of this waste is wind-sensitive, which may delay actual disposal.

4.7 Void Fill Pipe and Vessels

Pipe packaged in containers, vaults, boxes, or drums shall meet the requirements specified in Section 4.1 or Section 4.9.

Noncontainerized pipe from 6 to 18 in. in diameter and pipe fittings and valves (as shown in Table 1) may be filled with grout at ERDF. The pipe must meet SBW contamination limits on inner and outer surfaces

and shall not be pinched, shut, or otherwise closed in a manner that would preclude the free flow of grout through the pipe. Pipes >18 in. should be split as shown in Table 1.

Grout filling pipes or other vessels >18 in. diameter at ERDF requires a WSRP. A cost benefit analysis and regulatory screening will be required to demonstrate that flood grouting is preferable to putting the pipe or vessels in an acceptable configuration from the onset. Piping or vessels that cannot or planned to be sized reduced to meet the packaging requirements as detailed in Table 1, shall be communicated to the ERDF WMO prior to packaging at the generator's facility. The ERDF WMO shall communicate specific packaging requirements to the generator following a review of the configuration by the ERDF Operations.

4.8 Flatbeds

Loads on flatbed trucks and ERDF flats must be placed on dunnage or pallets in a manner that allows safe offloading from the chosen conveyance using the ERDF forklift. Waste placed on pallets shall be securely strapped or banded to pallets. Contact the ERDF WMO prior to shipping for forklift and crane lift capacities. Dunnage shall be no less than 6 x 6 inch. Items placed on smaller dunnage will be returned to the generator.

4.9 Packaged Waste with Voids

In accordance with WAC 246-249-050(2)(a), "Radioactive Waste—Use of the Commercial Disposal Site," "Acceptable Radioactive Waste Forms and Packaging"; and 10 CFR 61.56(b)(1), "Licensing Requirements for Land Disposal of Radioactive Waste," "Waste Characteristics," waste shall be in a structurally stable form that will generally maintain its physical dimensions and its form under the expected disposal conditions, such as weight of overburden and compaction equipment; the presence of moisture and microbial activity; and internal factors such as radiation effects and chemical changes. Structural stability can be provided by the waste form itself, processing the waste to a stable form, or placing the waste in a disposal container or structure that provides stability after disposal.

Waste generators shall be required to fill all voids in waste packages whenever possible, waste packages with voids will only be accepted following a review by ERDF Operations (at a minimum ERDF Disposal Manager, ERDF Engineering, ERDF WMO, ERDF RadCon). ERDF Operations will communicate specific packaging and shipping requirements to the generator prior to acceptance of the shipment at ERDF. If determined by the waste generators that void fill or size reduction is not feasible, the waste generators must notify ERDF Operations via the ERDF WMO prior to packaging waste. The ERDF Operations team will review the waste configuration and communicate specific packaging and shipping requirements to aid the final disposal at ERDF. As required on a case-by-case basis, the generator may be required to present package configuration to the ERDF Operations and provide data to aid and support the determined packaging and disposal configuration. The intent of this advanced notification is to ensure the generator, shipper and ERDF are in concurrence with the configuration of the package prior to shipment and receipt at ERDF. Waste packages (e.g., containers, vaults, boxes, drums, and wrapped or otherwise enclosed objects) that require void fill shall meet the following criteria:

- Waste that meets the internal radiological limits (see Section 3.2) shall be packaged in a manner that allows for easy access to ports on the package exterior to facilitate filling interior voids to at least 90% full without opening the waste package (e.g., container, vault, box, drum, and wrapped or otherwise enclosed objects). Final determination of void fill methodology rests with the ERDF Operations. The generator will be responsible for furnishing all necessary hardware (e.g. camlock valves, etc.) to facilitate the void fill. Voids within and between waste objects in the package shall allow soil or grout (as determined by the ERDF Operations) to fill the voids. Items that may float

shall be secured so that they will not rise when the grout is added to the container. Wooden boxes used for this purpose must be able to withstand the hydraulic head of grout without leaking or bursting. The generator must include a calculation on the void volume needing filled.

- Waste that does not meet the internal radiological limits identified in Section 3.2 shall meet one of the following criteria:
  - Package is configured to facilitate void filling through valved filling and vent ports equipped with high-efficiency particulate air filters approved by ERDF to allow grout easy access from the package exterior to facilitate filling interior voids to at least 90% full. A WSRP (see Chapter 5) is required for this void fill activity. The generator must include a calculation on the volume that will be needed for the void fill.
  - Packaged in a structurally stable, reinforced-concrete vault with a minimum compressive strength of 140 psi approved by ERDF.
  - Packaged in a structurally stable, reinforced-concrete vault with a minimum compressive strength less than 140 psi approved by ERDF (with concurrence from DOE and EPA), with the disposal location elevation specified in a WSRP to ensure that the compressive strength supports the overburden load at the disposal location.
  - Packaged in a structurally stable disposal container or structure (e.g., stainless steel, thick steel, or high-density polyethylene) with a minimum compressive strength of 140 psi approved by ERDF with concurrence from DOE and EPA.
  - Packaged in a structurally stable disposal container or structure (e.g. stainless steel, thick steel, or high-density polyethylene) with a minimum compressive strength less than 140 psi approved by ERDF (with concurrence from DOE and EPA), with the disposal location elevation specified in a WSRP to ensure that the compressive strength supports the overburden load at the disposal location.

5 Waste Shipping and Receiving Plans

Waste not falling into the categories of SBW or SHW requires a WSRP.

The WSRP is a requirements document that contains physical, radiological, and industrial hygiene information about the waste (as appropriate); specific requirements for packaging, shipping, and disposal of the waste; hazards specific to the waste; and ERDF procedures or work packages that will be used to handle the waste at ERDF. As stated in ERDF-PRO-EN-54025, *Waste Shipping and Receiving Plans*, determining the packaging in the WSRP is an iterative process. Handling, treatment, and/or disposal processes at ERDF may require changes to proposed packaging. A WSRP may pertain to a specific waste item or to an entire waste stream. Waste generators with waste that does not fall into either SBW or SHW categories, as described, shall contact the ERDF WMO regarding the need for a WSRP. It may also be advisable to generate a WSRP for waste or waste streams that require complex arrangements or coordination for proper handling and disposal. A WSRP is developed in accordance with ERDF-PRO-EN-54025. Refer to CPCC-PRO-WM-53829 for additional documentation requirements for WSRPs.

Packages that must be opened (beyond opening external filling ports/vents) to perform void filling, macroencapsulation or other operations are not the preferred configuration and will only be accepted on a case-by-case basis. If there are no alternatives to such a package configuration, then coordinate with the

ERDF WMO to set a meeting up with ERDF Operations to discuss options and to obtain input on the package configuration prior to developing the packaging requirements for the WSRP.

Hazardous debris treated inside the ERDF trench must be authorized in accordance with CP-59970 and accompanied by a WSRP. The approval to treat form(s) for the waste must be referenced in the WSRP.

6 References

10 CFR 61.56, "Licensing Requirements for Land Disposal of Radioactive Waste," "Waste Characteristics," *Code of Federal Regulations*. Available at: https://www.ecfr.gov/cgi-bin/text-idx?SID=2ae544cecade7b213fa64cc057178570&mc=true&node=pt10.2.61&rgn=div5#se10.2.61_156.

CHPRC-1702676, 2017, "Six Inch Pipe Void Space Position Paper," to W.A. Borlaug from M.A. Casbon, CH2M HILL Plateau Remediation Company, Richland, Washington, June 20.

CP-59970, 2016, *Environmental Restoration Disposal Facility Debris Treatment Plan, formerly WCH-546 Rev. 1*, CH2M HILL Plateau Remediation Company, Richland, Washington.

CPCC-PRO-WM-53829, *ERDF Waste Acceptance Process*, current revision, Central Plateau Cleanup Company, Richland, Washington (formerly WMT-1-2.2, Rev. 26).

DOE-STD-1027-2018, *Hazard Categorization of DOE Nuclear Facilities*, DOE Technical Standard, U.S. Department of Energy, Washington, D.C.

ERDF-00011, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, current revision, Central Plateau Cleanup Company, Richland, Washington.

ERDF-00012, *Final Hazard Categorization for the Environmental Restoration Disposal Facility*, current revision, CH2M HILL Plateau Remediation Company, Richland, Washington.

ERDF-PRO-EN-54025, 2021, *Waste Shipping and Receiving Plans*, WO-100-1.1, Revision 1, Change 3, Central Plateau Cleanup Company, Richland, Washington.

RC-100-4.2, *Estimating Airborne Radioactivity Levels*, RCC-PRO-RP-53707, current revision, CH2M HILL Plateau Remediation Company, Richland, Washington.

Resource Conservation and Recovery Act of 1976, 42 USC 6901, et seq. Pub. L. 94-580, 90 Stat. 2795. Available at: https://elr.info/sites/default/files/docs/statutes/full/rcra.pdf.

WAC 246-249-050, "Radioactive Waste—Use of the Commercial Disposal Site," "Acceptable Radioactive Waste Forms and Packaging," *Washington Administrative Code*, Olympia, Washington. Available at: https://apps.leg.wa.gov/wac/default.aspx?cite=246-249-050.

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