



Reference Guide on the Proposed Plan for the Remediation of Waste Sites in Hanford's Central Plateau

The U.S. Department of Energy (DOE) and the U.S. Environmental Protection Agency (EPA) are proposing a combination of alternatives to address contamination at waste sites in the Central Plateau of the Hanford Site located near Richland, Washington. These alternatives are described in the "Proposed Plan for the Remediation of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units." The plan also identifies preferred alternatives proposed for implementation. This document is being issued for a 30-day public comment period July 5 through August 5, 2011. The Washington Department of Ecology will concur on the alternative selected by DOE and EPA, to meet the state's dangerous waste permit corrective action requirements.

U.S. Department of Energy • Washington State Department of Ecology • U.S. Environmental Protection Agency

BACKGROUND

Large volumes of liquid waste were generated from the production of plutonium at various processing and finishing plants in Hanford's Central Plateau (see Figure 1). This liquid waste contained low levels of plutonium and other contaminants and was discharged to underground disposal structures such as ditches and cribs. The liquid waste infiltrated into the ground, contaminating the underlying soil. This Proposed Plan describes the remedial alternatives considered for the cleanup of these waste sites. It also identifies DOE and EPA's preferred alternatives for cleanup.

The 21 waste sites considered for cleanup are part of the 200-CW-5, 200-PW-1, 200-PW-3, and 200-PW-6 operable units (OUs). The OUs are divided into six waste groups based on the type of liquid waste they received. The waste groups are Z-Ditches, High-Salt, Low-Salt, Settling Tanks, Cesium-137, and Other Sites. See Table 1 for more information. Underground pipelines associated with the waste sites are also included as part of the proposed plan.

The liquid waste sent to these waste sites came from the Plutonium Finishing Plant (PFP), the Plutonium and Uranium Extraction (PUREX) facility, and other facilities located in Hanford's Central Plateau (see Figure 2). This part of Hanford is known as the Central Plateau's Inner Area and it is approximately 10-square-miles. The Inner Area will serve as the final footprint for long-term waste management and active cleanup at Hanford. The overall objective is to make the final footprint as small as practical.

WHAT IS BEING PROPOSED?

DOE and EPA have identified a combination of preferred remedial alternatives for cleanup of these OUs. These are shown in more detail in Table 1. DOE and EPA are proposing the Removal, Treatment as Needed, and Disposal (RTD) of contaminated soil and debris located beneath the plutonium-containing waste sites in the 200-PW-1, 200-PW-6, and 200-CW-5 OUs. The soil and debris would be disposed at the appropriate on-site or off-site facility.



Figure 1: Hanford Site and Operable Unit (OU) Locations
200-CW-5, 200-PW-1, and 200-PW-6 are located in the 200 West Area and 200-PW-3 is located in the 200 East Area. The 200 Area contains approximately 800 waste sites and includes waste management facilities and inactive processing and finishing plants used during plutonium production.

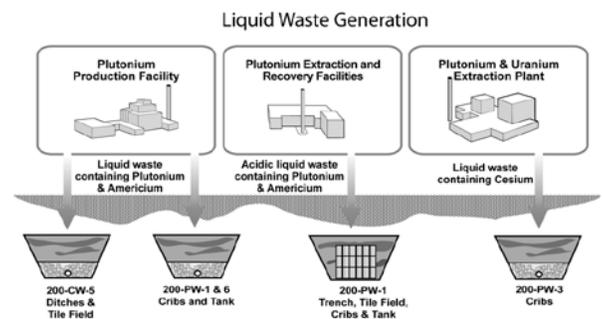


Figure 2: Liquid Waste Generation on Hanford's Central Plateau
This figure shows the facilities where liquid waste was generated and then sent to underground disposal structures. It also describes what kind of waste was generated.

For the 200-PW-3 OU waste sites, which do not contain plutonium but contain cesium-137, DOE and EPA are proposing maintenance and/or enhancement of the existing soil cover (MEESC). This would provide 15 feet of clean soil cover over the waste sites.

All the preferred alternatives are protective of human health and the environment. Since waste would be left in place under these alternatives, institutional controls will be required to minimize the potential for exposure to contamination by limiting use of the land.

TABLE 1: WASTE SITE BACKGROUND

Waste Sites	Waste Site Type	Use During Operations	Location of Contaminants	Primary Contaminants
200-CW-5 Operable Unit	Three shallow open ditches, one tile field, and one unplanned release site	Received cooling water and steam condensate from the Plutonium Finishing Plant Complex	Contamination located primarily at and below the bottom of the trenches, with most contamination between 2 and 14 feet underground	Americium-241, plutonium-239/240, cesium-137, and radium-226
200-PW-1 OU: High-Salt Waste Group	Three subsurface engineered waste sites: 216-Z-9 Trench, 216-Z-1A Tile Field, and 216-Z-18 Crib	Received highly acidic aqueous waste streams from Recovery of Uranium and Plutonium by Extraction (RECUPLEX) facility or the Plutonium Reclamation Facility solvent extraction systems	Contamination remains in the subsurface, radionuclide concentration decreases with depth, organics remain in the soil column beneath waste sites and have contaminated groundwater	Plutonium, americium, and carbon tetrachloride
200-PW-1 and 200-PW-6 OU: Low-Salt Waste	Four cribs	Received neutral to basic aqueous waste streams from the Plutonium Isolation Facility	Contamination remains near bottom of the waste sites, contamination concentrations decrease rapidly with depth	Plutonium and americium
200-PW-6 OU: Other Sites Waste Group	One French drain and one injection/reverse well	Liquid waste discharged into the soil in the injection/reverse well; overflow from the settling tank emptied into the French drain	Contaminants not detected adjacent to well and French drain	Limited contamination, requiring no action under CERCLA
200-PW-3 OU: Cesium-137 Waste Group	Four cribs and one unplanned release site	Received process water from Plutonium and Uranium Extraction (PUREX) Plant operations	Majority of contaminants located in the sediment near the bottom of the waste sites	Cesium-137
200-PW-1 and 200-PW-6: Settling Tanks Waste Group	Two settling tanks	Waste particles (sludge) accumulated before the liquid waste drained to other disposal sites	Contaminants limited to tank interior	Plutonium and americium
Pipelines	Seven pipelines associated with 200-CW-5, 200-PW-1, and 200-PW-6 OU	Conveyed liquid waste from nuclear processing facilities to the disposal structures	Potentially in pipelines as residuals and potentially in soils if pipeline leaked	Americium-241, plutonium-239/240, cesium-137, radium-226, and carbon tetrachloride

TABLE 1: WASTE SITE BACKGROUND (CONTINUED)

Waste Sites	Remedial Alternatives	Preferred Alternative	Overall Cost	
200-CW-5 Operable Unit	<p>These remedial alternatives were among those evaluated:</p> <ul style="list-style-type: none"> No Action Maintain Existing Soil Cover (MESC) Maintain or Enhance Existing Soil Cover (MEESC) Engineered Surface Barrier (Barrier alternative) In-Situ Vitrification (ISV) Removal, Treatment, and Disposal (RTD) Combination of Alternatives 	Removal, Treatment (as needed) and Disposal (RTD) <ul style="list-style-type: none"> Excavate contaminated soil and place it in the Environmental Remediation Disposal Facility(ERDF) onsite Backfill excavation with clean fill 	Present Worth: \$58.1 M	
200-PW-1 OU: High-Salt Waste Group		Combination of Alternatives : <ul style="list-style-type: none"> Continue operating system that treats the carbon tetrachloride soil contamination Excavate highest concentrations of contaminated soils and dispose at WIPP Remove associated structures Backfill excavation with clean fill Construct physical ET barrier over sites 	Present Worth: \$107.2 M	
200-PW-1 and 200-PW-6 OU: Low-Salt Waste		<ul style="list-style-type: none"> Remove significant portion of plutonium contamination Use ET barriers Dispose onsite at Hanford’s ERDF and offsite at WIPP Backfill 	Present Worth: \$81.4 M	
200-PW-3 OU: Cesium-137 Waste Group		<ul style="list-style-type: none"> Maintain or enhance existing soil cover (MEESC) to assure coverage of at least 15 feet depth 	Present Worth: \$11.1 M	
200-PW-1 and 200-PW-6: Settling Tanks Waste Group		<ul style="list-style-type: none"> Remove sludge and liquid containing plutonium and americium Stabilize and dispose of sludge at WIPP Grout tanks in place 	Present Worth: \$39.6 M	
Pipelines		<ul style="list-style-type: none"> Excavate pipelines below a waste site to remove the contamination beneath the waste site 	Present Worth: \$4.9 M	

HOW CAN YOU BECOME INVOLVED?

The TPA agencies are seeking public input on this Proposed Plan. The public comment period runs from July 5 through August 5, 2011. The agencies will consider all comments before finalizing the proposed plan.

**Please submit comments by
August 5, 2011 to:**

Paula Call

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Email: PW136PP@rl.gov

**This Proposed Plan can
be viewed online at**

www.hanford.gov

under Hanford Events Calendar.

*To access the document, click on More
Event Calendar. Select any date between
July 5 – August 5.*

*Click on: Public Comment Period,
The Proposed Plan for the Remediation of
200-CW-5, 200-PW-1, 200-PW-3,
and 200-PW-6 Operable Units*

**The documents are also
available for review at the
Public Information
Repositories listed below**

Seattle

University of Washington
Suzallo Library
Government Publication Division
Attn: David Maack,
(206) 543-4664

Portland

Portland State University
Branford Price Millar Library
1875 SW Park Avenue
Attn: Claudia Weston
(503) 725-4542

Richland

U.S. Department of Energy Public
Reading Room
Washington State University, Tri Cities
Consolidated Information Center, Room
101-L
2770 University Drive
Attn: Janice Parthree
(509) 372-7443

Spokane

Gonzaga University
Foley Center
East 502 Boone
Attn: Linda Pierce
(509) 323-3834

Administrative Record and Public Information Repository:

Address: 2440 Stevens Center Place, Room
1101, Richland, WA
Phone: 509-376-2530
Website address:
<http://ww2.hanford.gov/arpir/>

The TPA agencies are hosting public meetings to discuss the details of this proposed plan and to accept public comments.

The meeting schedule is listed below:

<p><u>Tuesday, July 19, 2011</u> 5:30 – 8:30 p.m. Richland Public Library Gallery 955 Northgate Drive Richland, WA</p>	<p><u>Thursday, July 21, 2011</u> 6 – 9 p.m. Seattle Center Olympic Room 305 Harrison Street Seattle, WA</p>	<p><u>Tuesday, July 26, 2011</u> 6 – 9 p.m. Best Western Columbia Room 1108 East Marina Way Hood River, OR</p>	<p><u>Wednesday, July 27, 2011</u> 6 – 9 p.m. Portland State University Smith Memorial Student Union Vanport Room 338 1825 SW Broadway Portland, OR</p>
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Please e-mail us at PW136PP@rl.gov if you require special accommodations to participate in the meetings.

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