APPENDIX G.7.1

200-WEST BURIAL GROUND (CP-LS-12 CENTRAL PLATEAU) EVALUATION UNIT SUMMARY TEMPLATE

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PART I. EXECUTIVE SUMMARY

EU LOCATION

200-W Burial Grounds (CP-LS-12) is primarily associated with the 200-SW-2 Operable Unit (OU) located in the 200 Inner Area of the Central Plateau.

RELATED EUS

Not Applicable

PRIMARY CONTAMINANTS, CONTAMINATED MEDIA AND WASTES

CP-LS-12 is composed of a series of burial trenches, ditches, trenches, unplanned releases, the Z-burning Pit, and a pipeline.

Landfills in the 200-SW-2 OU received several waste types, including the following:

- Unsegregated waste that was disposed prior to regulations being in effect that would cause it to be defined as one of the following waste categories;
- Low-level waste (LLW) is defined as radioactively contaminated waste that does not meet the criteria for high-level waste or transuranic (TRU) waste;
- Mixed low-level waste (MLLW) and TRU mixed waste (TRUM) are defined as LLW or TRU waste that contain dangerous waste components; and
- TRU waste is defined in DOE G 435.1

The wastes were placed into the landfills directly or packaged (e.g., in cardboard, wooden, or fiber reinforced polyester boxes, steel drums, concrete burial vaults, or other containers). Some wastes were contaminated with radionuclides, organics, and/or inorganic chemicals from various facilities (mainly from the Hanford Site 200 Area). Relatively small amounts of wastes from the 100 and 300 Areas and from offsite sources were placed in the landfills (mostly in the RCRA TSD units).[1]

BRIEF NARRATIVE DESCRIPTION[1]

The 200-SW-2 OU is composed of 24 landfills and includes about 20 caissons that are located below grade in the 218-W-4A and 218-W-4B Landfills, which are part of CP-LS-12. This OU also includes 11 UPRs that have been consolidated with the landfills where they occurred, and six co-located waste sites. The individual 200-W Landfills operated over periods of from four to thirty years between 1945 and 2003.

The 200-SW-2 OU is made up of six types of landfills, four of which are relevant to the 200-W Burial Grounds (see Figure 2 for their locations):

- **Dry Waste Alpha Landfills**. These past-practice landfills contain waste that is highly contaminated with alpha-emitting radionuclides, mainly plutonium and uranium. A variety of

[1] *200-SW-2 Radioactive Landfills Group Operable Unit RCRA Facility Investigation/Corrective Measures Study/Remedial Investigation/Feasibility Study Work Plan*, DOE/RL-2004-60, Draft B, CH2MHill Plateau remediation Company, March 2015.

miscellaneous wastes, including contaminated soils and potentially contaminated rags, paper, wood, and small pieces of equipment such as tools, has been placed in these sites. A small proportion of the waste is packaged in metal drums. Some larger equipment (e.g., motor vehicles, large canyon processing equipment) is known to have been disposed to these sites. This landfill type includes the 218-W-1, 218-W-2, 218-W-3, and 218-W-4A Landfills.

- **Industrial Landfills.** These past-practice landfills received radioactive waste that usually was packaged in large wooden or concrete boxes containing large pieces of failed or obsolete equipment. Some equipment was shrouded in plastic or placed directly in the ground after partial decontamination in the facility from which it came; mainly 200 Area chemical processing facilities, although some items came from the 100 Area. Landfills of this type include the 218-W-2A, 218-W-1A, and 218-W-11 Landfills.
- **Caissons or Vertical Pipe Units.** These are engineered structures built directly into a trench within a landfill. They were used for disposal of hot cell waste or high-dose-rate waste, and are located within the 218-W-4A and 218-W-4B Landfills. The caissons in the 218-W-4A Landfill, also called vertical pipe units, were made of 55 gal drums welded end to end, or pipes about 1 meter in diameter. The caissons in the 218-W-4B Landfill were larger and made of corrugated metal and concrete, and some contain TRU waste.
- **TSD Unit Landfills.** These are RCRA TSD units that contain waste forms similar to those in past-practice landfills such as dry waste packaged in small fiberboard cartons, directly disposed dirt and weeds, large concrete and wooden boxes containing used equipment, and construction debris. This landfill type includes the 218-W-3A, 218-W-3AE, 218-W-4B, 218-W-4C, and 218-W-5 Landfills.

CP-LS-12 also contains several Ponds and Ditches that were used for disposal of liquid wastes (primarily process and condenser cooling water and steam condensate from T Plant). There were also seven unplanned release sites within this EU.

The waste generators and the waste-generating processes that contributed wastes to the CP-LS-12 landfills (T Plant, PFP, U Plant and other Hanford 200 Areas) varied over time. In addition, the waste generators produced different types and quantities of waste. The cover requirements for landfill wastes varied over the years. Wind erosion exposed some wastes buried shallower in earlier landfills. Shallow burial also resulted in uptake from plants whose roots penetrated into the waste packages. A number of incidents are documented where burial boxes collapsed, dispersing radioactive contamination across wide areas. Most of the collapse issues were resolved through soil compaction, removal of deep-rooted vegetation, and the addition of soil and shallow-rooted vegetation.

SUMMARY TABLES OF RISKS AND POTENTIAL IMPACTS TO RECEPTORS

Table G.7.1-1 provides a summary of nuclear and industrial safety related risks to humans and impacts to important physical Hanford site resources.

Human Health

A Facility Worker is deemed to be an individual located anywhere within the physical boundaries of the 200 West Burial Grounds (CP-LS-12) area; a Co-located Person (CP) is an individual located 100 meters from the physical boundaries of thee; and the Public is an individual located at the closest point on the Hanford Site boundary not subject to DOE access control. The nuclear-related risks to humans are based on unmitigated (unprotected or controlled conditions) dose exposures expressed in a range of from *Not Discernible* (*ND*) to

High. The estimated mitigated exposure, which takes engineered and administrative controls and protections into consideration, is shown in Table G.7.1-1 in parentheses. A remedial investigation/feasibility study has not yet been completed and as such a Rating of IS (Insufficient Information) is used.

Groundwater and Columbia River

Direct impacts to groundwater resources and the Columbia River have been rated based on available information for the current status and estimates for future time periods. These impacts are also expressed in a range of from *Not Discernible* (*ND*) to *Very High*.

Ecological Resources[2]

The risk ratings are based on the degree of physical disruption (and potential additional exposure to contaminants) in the current status and as a potential result of remediation options.

Cultural Resources[2]

No risk ratings are provided for Cultural Resources. The Table identifies the three overlapping Cultural Resource landscapes that have been evaluated: Native American (approximately 10,000 years ago to the present); Pre-Hanford Era (1805 to 1943) and Manhattan/Cold War Era (1943 to 1990); and provides initial information on whether an impact (both direct and indirect) is KNOWN (presence of cultural resources established), UNKNOWN (uncertainty about presence of cultural resources), or NONE (no cultural resources present) based on written or oral documentation gathered on the entire EU and buffer area. Direct impacts include but are not limited to physical destruction (all or part) or alteration such as diminished integrity. Indirect impacts include but are not limited to the introduction of visual, atmospheric, or audible elements that diminish the cultural resource's significant historic features. Impacts to Cultural Resources as a result of proposed future cleanup activities will be evaluated in depth under Section 106 of the National Historic Preservation Act (16 USC 470, et. seq.) during the planning for remedial action.

[2] References throughout this Evaluation Unit Summary Template supporting analyses related to Ecological Resources and/or Cultural Resources may be found in Appendices J and K, respectively. Refer to the specific EU when searching for the reference.

Table G.7.1-1. Risk Rating Summary (for Human Health, unmitigated nuclear safety basis indicated, mitigated basis indicated in parentheses (e.g., "Very High" (Low)).

Population or Resource		Evaluation Time Period	
		Active Cleanup (to 2064)	
		Current Condition: Inactive	**From Cleanup Actions:** Final D&D
Human Health	Facility Worker	Low-Not Discernible (ND) (IS)	IS
	Co-located Person	Low-ND (IS)	IS
	Public	ND	IS
Environmental	Groundwater (A&B) from vadose zone[a]	*High* – C-14, I-129, CCl_4, Cr(tot), Cr-VI *Medium* – Tc-99 *ND* – U(tot)[c] & Sr-90[c] **Overall**: *High*	*High* – C-14, I-129, CCl_4, Cr(tot), Cr-VI *Medium* – Tc-99 *ND* – U(tot)[c] & Sr-90[c] **Overall**: *High*
	Columbia River from vadose zone[a]	CP-LS-5 and CP-LS-11: Benthic and Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*	CP-LS-5 and CP-LS-11: Benthic and Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*
	Ecological Resources[b]	ND to Low	Low to Medium
Social	Cultural Resources[b]	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Known Indirect: Known **Manhattan/Cold War** Direct: Known Indirect: Known	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Known Indirect: Known **Manhattan/Cold War** Direct: Known Indirect: Known

a. Threat to groundwater or the Columbia River from Group A and B primary contaminants (PCs) (Table 6-1, CRESP 2015) remaining in the vadose zone.

b. For both Ecological and Cultural Resources see Appendices J and K, respectively, for a complete description of Ecological Field Assessments and literature review for Cultural Resources. Ecological ratings are described in Table 4-11 of the Final Report.

c. There is no current Sr-90 or total uranium plume associated with CP-LS-12 and thus current ratings are *ND*. The corresponding ratings after the Active Cleanup period are *Low* to account for uncertainties in the evaluation.

SUPPORT FOR RISK AND IMPACT RATINGS FOR EACH POPULATION OR RESOURCE HUMAN HEALTH

Current

The author has assigned a Low-ND human health risk rating to the Facility Worker and Co-located Person, and ND to the Public because there is no information to indicate that any of these sites currently represent a risk to human health, there is little or no worker activity at the sites, and the area is restricted from public access.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

Insufficient information is available to determine potential risks to human health during cleanup.

Groundwater, Vadose Zone, and Columbia River

Current

The CP-LS-12 (200-W Burial Grounds) EU is in the 200 West Area to the west of the T and TX-TY Tank and Waste Farms EUs and overlays part of the 200-ZP groundwater interest area (GWIA). The 200-ZP GWIA is described in the CP-GW-2 EU (Appendix D.6). The saturated zone beneath the CP-LS-12 area overlaying the 200-ZP GWIA has elevated levels of carbon tetrachloride (CCl_4) and nitrate based on 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html); the 216-T-4A site is the only CP-LS-12 EU waste site suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). The current threats to groundwater and the Columbia River from contaminants already in the 200-ZP groundwater are evaluated as part of the CP-GW-2 EU (Appendix D.6). However, current threats to groundwater corresponding to only the CP-LS-12 EU contaminants *remaining* in the vadose zone (Table G.7.1-8) has an overall rating of *High* (related to multiple primary contaminants) as described in **Part V**. In the 200 West Area, contaminated 200-ZP groundwater is treated using the 200 West Pump and Treat (P&T) system[3] (DOE/RL-2016-09, Rev. 0). As indicated in **Part V**, no plumes have been linked to CP-LS-12 waste sites. Threats from contaminated groundwater in the 200 West Area to contaminate additional groundwater or the Columbia River are evaluated as part of the CP-GW-2 EU (Appendix D.6).

For the 200-ZP GWIA, no plume currently intersects the Columbia River at concentrations exceeding the corresponding water quality standard (WQS) as described in **Part V**. Thus current impacts to the Columbia River benthic and riparian ecology would be rated as *Not Discernible* (*ND*). Furthermore, the large dilution effect of the Columbia River on contamination from the seeps and groundwater upwellings also results in *ND* ratings. Thus the overall rating for the Columbia River during the Current period is *ND*.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

As described in **Part VI**, the plausible remedial actions for the CP-LS-12 EU waste sites include (Appendix B): i) excavation, treatment (as necessary), and disposal (ETD) of all waste from within individual landfill; ii) ETD of waste from selected sections of individual landfills followed by capping of remaining waste, including continued cap maintenance and monitoring; iii) capping of individual landfills, including continued cap maintenance and monitoring; and iv) *in situ* treatment/stabilization (e.g., vitrification or grouting) of portions of individual landfills followed by capping, including continued cap maintenance and monitoring. If residual contamination remains after cleanup actions are completed, cleanup work

[3] Soil vapor extraction was used between 1992 and 2012 to remove carbon tetrachloride vapors migrating through the vadose zone into 200-ZP groundwater (Section 12.10.2, DOE/RL-2016-09, Rev. 0).

will transition to LTS, including institutional controls and 5-year reviews of remedy effectiveness. No final cleanup decisions have been made for CP-LS-12.

Contaminants from the CP-LS-12 EU waste sites are suspected of impacting the vadose zone but not groundwater; treatment using the 200 West Pump and Treat Facility is not predicted to decrease all concentrations to below thresholds before the Active Cleanup phase commences although there should be significant decreases in contaminant levels in 200 West. Secondary sources in the vadose also threaten to continue to impact groundwater in the future, including the Active Cleanup period[4]. The *High* ratings for the CP-LS-12 EU waste sites (Table G.7.1-8) are associated with C-14, I-129, carbon tetrachloride (CCl_4), and total and hexavalent chromium that could potentially impact groundwater in the 200 West Area (CP-GW-2, Appendix G.6).

As described in the TC&WM EIS and summarized in **Part V**, there appears to be insufficient impact to the overall rating for CP-LS-12 from radioactive decay (since primary contaminants other than Sr-90 are risk drivers) and recharge rate (due to large amounts of contaminants already in the groundwater). Treatment of contaminants in the 200-ZP GWIA (via the 200 West Pump and Treat System) would support that *groundwater* ratings could be reduced (e.g., to *Low*) for most CP-LS-12 Group A and B contaminants by the end of the Active Cleanup period. However, treatment of groundwater does not reduce the threat (or rating) from remaining vadose zone contamination and thus ratings are not changed. If final remedial decisions are selected to manage sources or reduce infiltrating water to these wastes sites, then the corresponding ratings are subject to change. There would not be a sufficient impact on peak concentrations in near-shore region of the Columbia River during or after cleanup to modify ratings (which are already *ND*). Thus the ratings for current threats provided in Table G.7.1-9 would not be modified, except for Sr-90 and total uranium after the Active Cleanup period (to address uncertainty) as described in **Part V**. The overall rating remains *High* (for multiple Group A and B primary contaminants with reported inventories) for the Active Cleanup and Near-term, Post-Cleanup periods.

Ecological Resources

Current

7% of EU and 40% of the buffer is level 3 or greater. Higher quality resources are only located in the northeast corner. Low impacts are based on truck traffic and herbicide applications.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

Uncertainties in the remediation activities makes it difficult to predict the extent and magnitude of impacts to the EU and buffer. Excavation and capping options will include increased traffic. Medium impacts would occur from truck traffic, introduction of invasive species, compaction of soil, and loss of seed banks.

Cultural Resources

Current

A National Register eligible historic/ethnohistoric trail/road is located within the EU. Area is heavily disturbed and only portions of the EU have been inventoried for archaeological resources. Geomorphology indicates a moderate potential to contain intact archaeological resources on the surface

[4] Note that Sr-90 and total uranium, which have large remaining vadose zone sources, may not be considered significant threats to groundwater depending on the subsurface due to limited mobility in the Hanford subsurface and decay. See **Part V** for additional details.

and/or subsurface. Traditional cultural places are visible from EU. Known archaeological isolates (unevaluated for the National Register) located within 500 meters of the EU.

National Register eligible Manhattan Project/Cold War Era significant resources located within the EU and 500 meters of the EU will be demolished, but they have already been mitigated.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

Archaeological investigations and monitoring may need to occur prior to remediation. The geomorphology indicates a moderate potential for intact archaeological resources. Remediation disturbance may result in impacts to archaeological resources if they are present in the subsurface. Permanent indirect effects to viewshed are possible from capping. Temporary indirect effects to viewshed are possible during remediation.

National Register eligible Manhattan Project/Cold War Era significant resources located within the EU and 500 meters of the EU will be demolished, but they have already been mitigated.

Considerations for Timing of the Cleanup Actions

The saturated zone beneath the CP-LS-12 area currently has elevated levels of carbon tetrachloride (CCl_4) and nitrate based on 2014 groundwater results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). One site (216-T-4A) within the CP-LS-12 EU is suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0) and may be currently contributing contamination to the vadose zone. Monitoring and treatment of groundwater is being conducted within the 200-ZP GWIA (via the 200 West Pump and Treat System); these actions are described as part of the CP-GW-2 EU (Appendix D.6). Treatment efforts indicate a general downward trend in contaminant concentrations; however, some plume areas have increased (e.g., carbon tetrachloride) and concentrations continue to exceed cleanup levels. Thus additional cleanup actions may be warranted for this EU, especially control of vadose zone sources.

There is potential for additional contaminant release and migration through the vadose that may eventually impact groundwater if additional cleanup activities are delayed. There is also potential risk from direct radiation to workers (and ecological receptors) from routine maintenance operations. However, there would be no *additional* risk to facility workers, co-located persons, or the public if cleanup is delayed.

Near-Term, Post-Cleanup Risks and Potential Impacts

Insufficient information is available.

Groundwater: During the Near-term, Post-Cleanup period (described in **Parts V** and **VI** and Table G.7.1-8), the current ratings do not change for Group A and B primary contaminants with reported inventories, except for Sr-90 and total uranium (that are rated *Low*) to address uncertainties.

Columbia River: As indicated in **Part V**, no radionuclides or chemicals from the 200 West Area are predicted to have concentrations exceeding screening values in this evaluation period. Thus the rating will not be modified and all ratings are *Not Discernible* (*ND*) as is the overall rating (Table G.7.1-8).

PART II. ADMINISTRATIVE INFORMATION

OU AND/OR TSDF DESIGNATION(S)

CP-LS-12. The Operable Unit Crosswalk in the CP-LS-12 Data Sheet indicates 200-SW-2. Other OUs mentioned in the Data Sheet are 200-OA-1 and 200-WA-1.

COMMON NAME(S) FOR EU

200 West Burial Grounds or Landfills

KEY WORDS

Burial sites, landfill, ditches

REGULATORY STATUS:

Regulatory basis

The site CP-LS-12 is part of Operating Unit 200-SW-2 and is under regulation by CERCLA and RCRA.

Applicable regulatory documentation

As noted below, DOE has until June 30, 2026 to prepare RI/FS analysis on this and most other non-tank farm OUs

Applicable Consent Decree or TPA milestones[5]

Milestone M-015-93B: Submit RCRA Facility Investigation/Corrective Measures Study & Remedial Investigation/Feasibility Study Report and Proposed Corrective Action Decision/Proposed Plan for the 200-SW-2 OU to Ecology. Due Date January 31, 2023

Milestone M-015-93C: Initiate characterization field work for the 200-SW-2 Operable Unit landfills in accordance with the schedule in the approved RI/FS/RFI/CMS Work Plan. Due date September 30, 2018

Milestone M-016-00: Complete remedial actions for all non-tank farm and non-canyon operable units in accordance with schedules established in approved RD/RA work plans. Due date September 30, 2042

The schedule for completion of the construction of the remedy will reflect the scope and complexity of the selected remedial action. The schedule for remedial action implementation will be established upon regulatory agency approval of the RD/RA Work Plans and is enforceable as a HFFACO requirement.

RISK REVIEW EVALUATION INFORMATION

Completed

August 25, 2016, updated February 19, 2017

[5] *Final Approval package for the Tentative Agreement on Hanford Federal facility Agreement and Consent Order Revisions for Central Plateau Cleanup*, US Department of Energy, US Environmental Protection Agency, and State of Washington, Department of Ecology, May 2016

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Ratings/Impacts Reviewed by

Kevin Brown

PART III. SUMMARY DESCRIPTION

CURRENT LAND USE

The current land use is classified as industrial.

Table G.7.1-2. 200-SW-2 OU Western Landfills

Landfill	Number of Trenches	Total Length of Trenches (Cumulative)		Volume[a] of Buried Waste		Area[a]	
		km	mi	m^3	ft^3	ha	ac
Western Inner Area (12 Landfills)							
218-W-1	15	1.2	0.8	7,200	250,000	2.2	5.5
218-W-1A	12	0.5	0.3	14,000	490,000	3.4	8.4
218-W-2	20	2.9	1.8	8,200	290,000	2.8	7.0
218-W-2A[b]	27[c]	4.1	2.6	25,000	880,000	15.3	38
218-W-3	20	2.8	1.8	11,000	390,000	3.1	7.6
218-W-3A[d]	61[c]	14.3	8.9	92,000	3,200,000	21	52
218-W-3AE[d, b]	8	2.9	1.8	34,000	1,200,000	20	49
218-W-4A	22	5.0	3.1	18,000	640,000	7.0	17
218-W-4B[d]	15	2.4	1.5	6,600	230,000	3.5	8.6
218-W-4C[d,e]	16[c]	3.0	1.8	15,000	530,000	15	37
	Portion that was unused					4.3	11
218-W-5[d]	11	3.6	2.4	19,000	700,000	24	59
	Lined trenches 31 and 34 (out of scope)					10	25
218-W-11	2[f]	0.1	0.1	1,200	42,000	0.87	2.1

a. All numbers are estimates based on historical information, rounded to the nearest tenth (trench length) or two significant figures (waste volume and area). Waste volumes include in-scope waste only.

b. The 218-W-2A and 218-W-3AE Landfills are collocated with the 216-T-4, 216-T-4A, and 216-T-4B Ponds and the 216-T-4-2 Ditch.

c. Five of the trenches in the 218-W-2A Landfill, four in the 218-W-3A Landfill, and one in the 218-W-4C Landfill were not used. These numbers include the unused trenches.

d. Landfill is a permitted treatment, storage, and/or disposal unit landfill under RCRA. These landfills include the "Green Islands" (see Figures 1-2 and 1-3 for the Green Island locations).
e. The 218-W-4C Landfill is collocated with the Z Plant burn pit.
f. 2006 geophysical investigations suggest that only one trench exists.

DESIGNATED FUTURE LAND USE

CP-LS-12 as part of the Inner 200 Area will remain designated Industrial pursuant to DOE/EIS-0222F, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (HCP EIS) and associated ROD (64 FR 61615, "Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement (HCP EIS)") issued in 1999, and a supplemental analysis (DOE/EIS-0222-SA-01, *Supplement Analysis: Hanford Comprehensive Land-Use Plan Environmental Impact Statement*) in 2008.

PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

The 200-SW-2 OU is composed of 24 landfills and includes about 20 caissons that are located below grade in the 218-W-4A and 218-W-4B Landfills, which are part of CP-LS-12. This OU also includes 11 UPRs that have been 37 consolidated with the landfills where they occurred, and six co-located waste sites. The individual 200 W Landfills operated over periods of from four to thirty years between 1945 and 2003.

The 200-SW-2 OU is made up of six types of landfills, four of which are relevant to CP-LS-12 (see Figure 2 for their locations within CP-LS-12):

- **Dry Waste Alpha Landfills**. These past-practice landfills contain waste that is highly contaminated with alpha-emitting radionuclides, mainly plutonium and uranium. A variety of miscellaneous wastes, including contaminated soils and potentially contaminated rags, paper, wood, and small pieces of equipment such as tools, has been placed in these sites. A small proportion of the waste is packaged in metal drums. Some larger equipment (e.g., motor vehicles, large canyon processing equipment) is known to have been disposed to these sites. This landfill type includes the 218-W-1, 218-W-2, 218-W-3, and 218-W-4A Landfills.
- **Industrial Landfills.** These past-practice landfills received radioactive waste that usually was packaged in large wooden or concrete boxes containing large pieces of failed or obsolete equipment. Some equipment was shrouded in plastic or placed directly in the ground after partial decontamination in the facility from which it came; mainly 200 Area chemical processing facilities, although some items came from the 100 Area. Landfills of this type include the 218-W-2A, 218-W-1A, and 218-W-11 Landfills.
- **Caissons or Vertical Pipe Units.** These are engineered structures built directly into a trench within a landfill. They were used for disposal of hot cell waste or high-dose-rate waste, and are located within the 218-W-4A and 218-W-4B Landfills. The caissons in the 218-W-4A Landfill, also called vertical pipe units, were made of 55 gal drums welded end to end, or pipes about 1 meter in diameter. The caissons in the 218-W-4B Landfill were larger and made of corrugated metal and concrete, and some contain TRU waste.
- **TSD Unit Landfills.** These are RCRA TSD units that contain waste forms similar to those in past-practice landfills such as dry waste packaged in small fiberboard cartons, directly disposed dirt and weeds, large concrete and wooden boxes containing used equipment, and construction

debris. This landfill type includes the 218-W-3A, 218-W-3AE, 218-W-4B, 218-W-4C, and 218-W-5 Landfills.

CP-LS-12 also contains several Ponds and Ditches that were used for disposal of liquid wastes (primarily process and condenser cooling water and steam condensate from T Plant). There were also seven unplanned release sites within this EU.

The waste generators and the waste-generating processes that contributed wastes to the CP-LS-12 landfills (T Plant, PFP, U Plant and other Hanford 200 Areas) varied over time. In addition, the waste generators produced different types and quantities of waste. The cover requirements for landfill wastes varied over the years. Wind erosion exposed some wastes buried shallower in earlier landfills. Shallow burial also resulted in uptake from plants whose roots penetrated into the waste packages. A number of incidents are documented where burial boxes collapsed, dispersing radioactive contamination across wide areas. Most of the collapse issues were resolved through soil compaction, removal of deep-rooted vegetation, and the addition of soil and shallow-rooted vegetation.

Table G.7.1-3. Landfill Source Waste Descriptions[6]

Site	Site & Waste Description
218-W-1	The 218-W-1 Landfill contains alpha-contaminated solid wastes and miscellaneous dry wastes. “V” trenches typically were used to dispose of small contaminated articles such as paper, filters, and small pieces of equipment. The flat-bottom trenches contain large pieces of contaminated equipment and wooden, metal, and concrete burial boxes. The trenches have been backfilled, and the site was stabilized in 1983. A surface radiological survey is performed annually.
218-W-1A	The site is the first burial ground in the 200 West Area to receive large, contaminated equipment. Most of the equipment was disposed in wooden boxes that eventually rotted and settled, creating sinkholes. The sinkholes were filled in 1975 with 1.8 m (6-ft) thick concrete cell blocks and clean fill. Radiological surveys are performed annually.
218-W-2	This landfill received packaged waste materials from the western Inner Area. No material was stored above ground. The wastes disposed to the 218-W-2 Landfill likely are similar to those in the 218-W-1 Landfill. Before backfilling, waste was observed to be within 46 cm (18 in.) of the ground surfaces. Sinkholes were filled in 1974. The site was surface stabilized in 1983 with a minimum of 0.6 m (2 ft) of clean fill and vegetated. A surface radiological survey is performed annually.
218-W-2A	Solid wastes disposed to the site includes tanks, concrete blocks, facility wastes, process equipment, contaminated soil scraped from the 216-T-4-1 Pond (Trench 27), REDOX centrifuges, jumpers, pumps, filters, and miscellaneous cell equipment and wastes. Trench 21 contains a plutonium glovebox. In January 1959, a contamination spread occurred when a burial box containing REDOX jumpers collapsed during backfill operations (UPR-200-W-53). The site was backfilled and surface stabilized in 1980. However, the site remained active until 1985 because of two unused trenches and the cell block burial sites. An

[6] *200-SW-2 Radioactive Landfills Group Operable Unit RCRA Facility Investigation/Corrective Measures Study/Remedial Investigation/Feasibility Study Work Plan*, DOE/RL-2004-60, Draft B, CH2MHill Plateau Remediation Company, March 2015.

Site	Site & Waste Description
	undocumented burial box was discovered in June 1983 while extending an active trench. The site was re-stabilized with clean fill and gravel in 2001.
218-W-3	The site received miscellaneous unsegregated wastes including drums of depleted uranium, a 1951 pickup truck, and other miscellaneous items, mainly in cardboard boxes. The site is backfilled and was surface stabilized in 1983. A surface radiological survey is performed annually.
218-W-3A	Landfill operated from 1970 to 1998, and received contaminated equipment and waste from various Hanford Site operations, especially from the 200 West Area, and offsite waste generators. This was the first burial ground in 200 West Area to receive TRU waste for retrievable storage. Inventories include 270,000 Ci of Cs-137; 140,000 Ci of Tritium; and 99,000 Ci of Sr-90.
218-W-3AE	Landfill operated from 1981 to 2004, and received miscellaneous wastes including rags, paper, rubber gloves, disposable supplies, broken tools, laboratory wastes and industrial waste such as failed equipment, tanks, pumps, ovens, agitators, heaters, hoods, jumpers, decommissioned change trailers, etc. Trenches 5 and 8 contain post-1987 mixed waste. The location of this site also included a portion of the 216-T-4B Pond that received condensate and condenser cooling water from the 242-T Evaporator and nonradioactive wastewater from 221-T air conditioning units and floor drains. Inventories include 130,000 Ci of Cs-137; 70,000 Ci of Tritium; 87,000 Ci of Sr-90; and 370,000 Kg of total U.
218-W-4A	The 218-W-4A landfill contains 21 miscellaneous dry waste trenches oriented east to west and 6 or 8 vertical pipe units or drywells, also known as caissons. The vertical pipe units were installed near the east end of Trench 16 and consist of two to five 55-gal drums welded together with the lids and bottoms removed. They typically received high beta-gamma radiation remote handled waste. The landfill contains miscellaneous waste, including failed equipment, plutonium-contaminated laboratory waste, and about 1,800 containers of depleted uranium. It is estimated that the landfill contains 390,000 kg of uranium.
218-W-4B	The 218-W-4B Landfill operated from 1967 to 1990 and contains USG, LLW, and TRU waste, some of which is contained in caissons (SWITS). The waste is mainly from 222-S, PFP and the T-Plant. The site contains 13 trenches and one row of 12 caissons. The row of caissons includes 5 alpha caissons, 6 mixed fission product (MFP) caissons and one silo type caisson used for high activity N-Reactor waste. Retrievably stored TRU waste was placed in four of the caissons. Inventories included moderate amounts (measured in Ci) of Cs-137, Tritium, and Sr-90.
218-W-4C	Landfill operated from 1978 to 2005. The Z Plant burn pit is collocated with the 218-W-4C Landfill. This burn pit was exhumed during construction of the 218-W-4C Landfill. Trenches 1, 4, 7, 20, 29, and the east end of Trench 24 contain retrievably stored, suspected TRU waste. The RSW in the 218-W-4C Landfill has been fully retrieved under TPA Milestone M-91-40. Trenches NC, 14, 19, 23, 28, 33, 48, 53, 58, and the remainder of Trench 24 received LLW. In addition, some wastes in Trenches NC, 14, and 58 currently are identified as containing post-1987 MLLW ("Green Islands"). The northernmost trench contains a number of core barrels originating from the U.S. Department of the Navy. Inventories included moderate amounts (measured in Ci) of Cs-137, Total Pu, Tritium and Sr-90, and 380,000 Kg of Pb.

Site	Site & Waste Description
218-W-5	Landfill operated from 1985 to 2004 and was designed to store non-TRU waste and retrievable TRU waste. There are five distinct storage and disposal areas within the expansion: However, its current use includes only low level radiological solid waste and low level mixed waste. Trench 22 contains post-August 19, 1987 mixed waste.
218-W-11	The 218-W-11 Landfill was used as an aboveground regulated storage area for low-level contaminated equipment in the 1960s. Equipment was sometimes buried here until radiation levels decayed to an acceptable value and then exhumed for reuse. Some material was buried here permanently.

Table G.7.1-4. CP-LS-12 Non-Landfill Sites[7]

Site	Description
216-T-1	The site is a ditch that received miscellaneous waste from a pilot plant doing experimental work. The ditch also received waste from the T plant, and 271-T and miscellaneous waste from PNL head end operations. The site is best known for receiving cooling water and steam condensate discharge from 221-T and 271-T. The ditch is backfilled and is marked with Underground Radioactive Material Signs.
216-T-4-2	The site is a ditch that received steam condensate and condenser cooling water from the 242-T Evaporator and nonradioactive wastewater from 221-T air conditioning filter units and floor drains. The first 15 meters of the ditch is recorded as contaminated. There are conflicting reports of plutonium contamination in the ditch, but no record of it has been verified. The ditch has been backfilled and surface stabilized and has a grass cover. It is marked as an Underground Radioactive Material Area.
216-T-4A	The site is a pond formed in a natural surface depression of the 216-W-2A; it is no longer visible because the space was used to expand the burial ground. The pond received waste in the form of steam condensate from process vessel leaks in the 221-T building. The pond also received waste from the 224-T building.
216-T-4B	The site is a previous pond that was located in the 218-W-3AE burial ground. The pond is no longer visible and is not marked separately from the burial ground. The pond received steam condensate and condenser cooling water from the 242-T Evaporator and nonradioactive wastewater from 221-T air condition filter units and floor drains.
600-292-PL	The site is a buried PVC pipeline approximately 6 miles long that feeds the State Approved Land Disposal Site. The pipeline carries liquid waste that has been treated and verified at the 200 Area Effluent Treatment Facility which meets delisting requirements to be discharged as non-dangerous waste but it might contain tritium.
200-W-128	The site is defined as an unplanned release within the 218-W-4A burial ground. The site is posted as an Underground Radioactive Material signs. There are no detailed records of the unplanned release.
200-W-73	The site is an inactive unplanned release. The site was found in a previously marked area and consisted of contaminated wood and debris with a maximum

[7] US DOE, (2016). *Hanford Site Waste Management Units Report (DOE/RL-88-30 Rev 25).*

Site	Description
	direct contact activity of 12,000 dis/min and consists of miscellaneous trash and debris. This site is partially cleaned up and had no detectable surface radiation before it was covered with gravel and posted as an area of Underground Radioactive Material.
200-W-81	The site is an unplanned inactive waste site. The site occurred in sections along the railroad and consisted of soil and tumbleweeds. The area was surveyed and down posted to a soil contamination area it was later covered with gravel and is now marked as an Underground Radioactive Material Area.
200-W-90	The site is three posted Underground Radioactive Material areas which are unplanned releases. They are on the south side of 23rd street across from 218-W-2A. The waste type is soil.
UPR-200-W-16	The site is an unplanned release through a fire in the 218-W-1 burial ground. The fire in the dry waste spread plutonium outside of the burial trench. The fire occurred on July 9th, 1952 and spread plutonium around the trench and airborne transportation settled around the Z facility. Survey of the area at the time found maximum contamination inside the burial ground of 20,000 disintegrations and 30,000 disintegrations outside the burial grounds (no time dimension was listed). It is classified as consolidated as of 2004.
UPR-200-W-26	The site is an unplanned release occurring along the railroad track near the 218-W-1A burial ground and the T Plant. The contamination came from a box dislodged from a flatcar and spread contamination from used connectors from the 221-T. The areas of the burial and the track were analyzed and the, "survey results were as follows: general particulate contamination in and near the burial garden with spots up to 600 mrem/hour (uncorrected for source size) at the surface; numerous spots along the T plant spur of similar levels, with one spot of 15 rep/hour at surface; general particulate contamination in large areas to the southeast and southwest of the burial garden; and numerous spots on both sides of the main railroad line to REDOX having dose rates up to 2 rep/hour (uncorrected for source size) at surface. Highest concentrations of particles (greater than one particle per square yard) were found along the main line west of U plant and west of the powerhouse, and in a large area southwest of the burial garden."
UPR-200-W-37	This site is associated with an unplanned release in the Z plant Burn Pit. 3 high level dry waste boxes containing miscellaneous trash and debris were accidentally placed in the Z burn pit. They were discovered before they were burned and then placed in the correct burial trench and the areas was decontaminated before the burn pit was utilized again.
UPR-200-W-53	The site is an unplanned release that occurred after a burial box collapsed spreading contamination in a general eastern direction over 101 hectares in the 200 west area. The contamination gave ten people low level skin and personal clothing contamination as well as contaminating vehicles and railroad diesel engines. The area contaminated is not marked separately from the burial grounds. The release contained fission products.
UPR-200-W-58	The site is an unplanned release occurring along the railroad track between the T-plant and the 200 West Burial ground. The contamination originated from a cell block from 221-T canyon. The chemicals contaminated spots on the track and the undercarriage of the locomotive as well as some personnel's shoes. The

Site	Description
	contamination consisted of beta/gamma contamination with levels ranging from 100,000 counts/minute to a maximum of 5 rads/hour. The site is not marked separately from the postings on the railroad.
UPR-200-W-71	The site is an unplanned release site that has been rejected and is no longer posted. It occurred as a result of chemicals contaminated the roadways in the 200 West Area from a hell jet from the 241-U-102 tank. The beta contamination occurred on the road with contamination up to 600 millirads/hour.
UPR-200-W-72	The site is an unplanned release in the 218-W-4A burial site. Miscellaneous trash and debris surfaced when the soil cover (which is suspected to not meet requirements) eroded away and exposed contaminated waste. The gross alpha and mixed fission product with beta/gamma readings up to 100,000 counts/minute and alpha reading to 70,000 disintegrations/minute were measure at the site.
UPR-200-W-84	The site is an unplanned release associated with the 218-W-3A burial ground. The contamination occurred when liquid spilled from a pump during a burial contaminating the ground and truck. The site is not marked separately from the waste trench. The waste had a beta and gamma contamination with readings up to 2,000 millirads/hour.
293W	Listed as an enclosure at 218-W-3A but no further documentation was found.
219F	Listed as a weather protection tent in the 218-W-4C burial ground but no further documentation was found.
2508W11	Listed as the siren between Dayton and Compton but no further documentation on the structure has been found. The site is simultaneously listed as part of CP-LS-5, likely associated with the annex of 218-W-4C to the same EU which was not accepted.

High-Level Waste Tanks and Ancillary Equipment

Not applicable

Groundwater Plumes

The saturated zone beneath the CP-LS-12 area currently has elevated levels of carbon tetrachloride (CCl_4) and nitrate based on 2014 groundwater results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). The 200 West Area plumes are described in detail in the CP-GW-2 EU (Appendix D.6). One waste site within the CP-LS-12 EU is suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0) but no plumes have been linked to CP-LS-12 sources (DOE/RL-2016-09, Rev. 0). Monitoring and treatment of groundwater is being conducted within the 200-ZP (in the 200 West P&T facility) GWIA, which are described as part of the CP-GW-2 EU (Appendix D.6).

Operating Facilities

Not applicable

D&D of Inactive Facilities

Not applicable

LOCATION AND LAYOUT MAPS

CP-LS-12 is located in the inner area of the Hanford site as shown below.

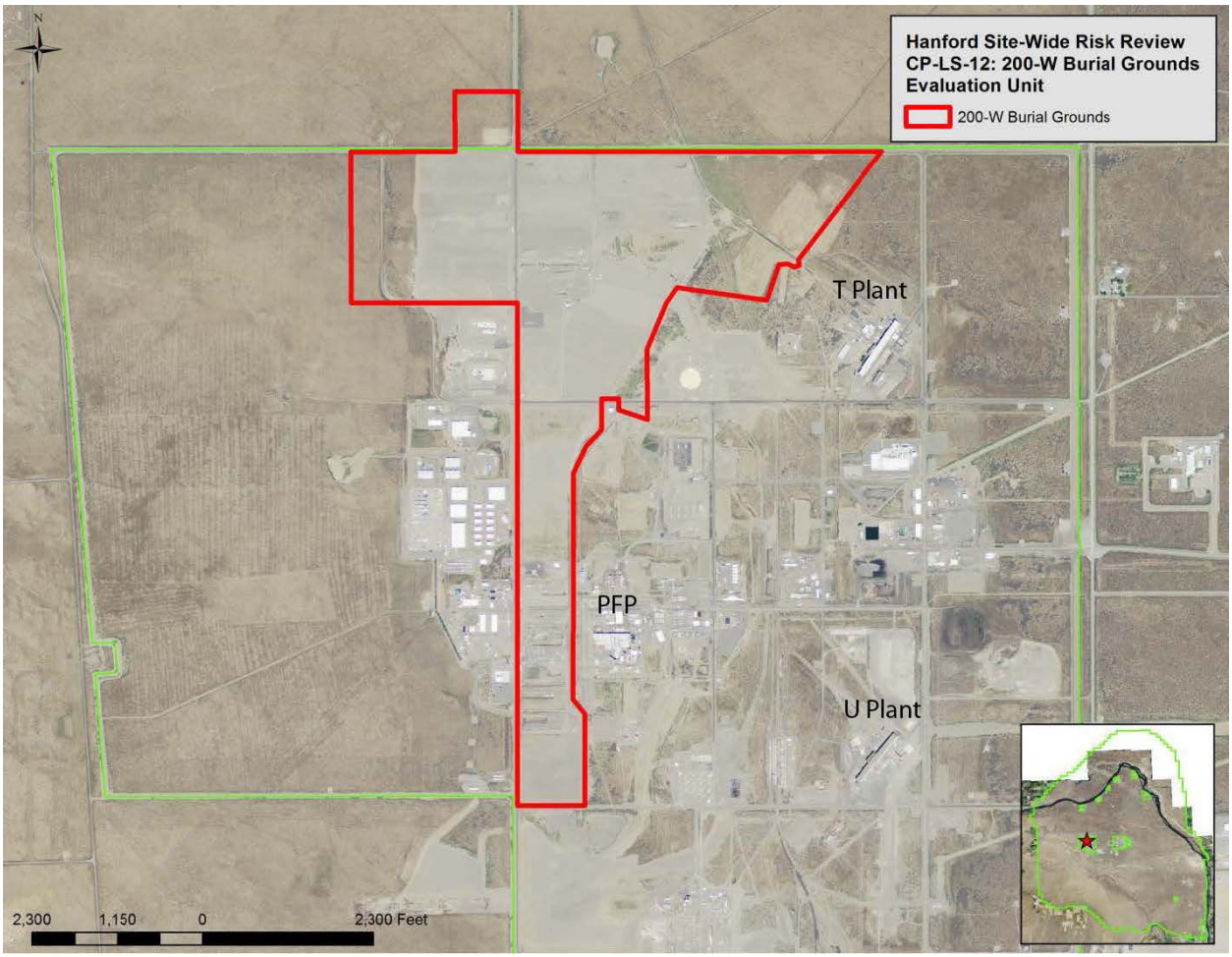

Figure G.7.1-1. Location of CP-LS-12 Evaluation Unit

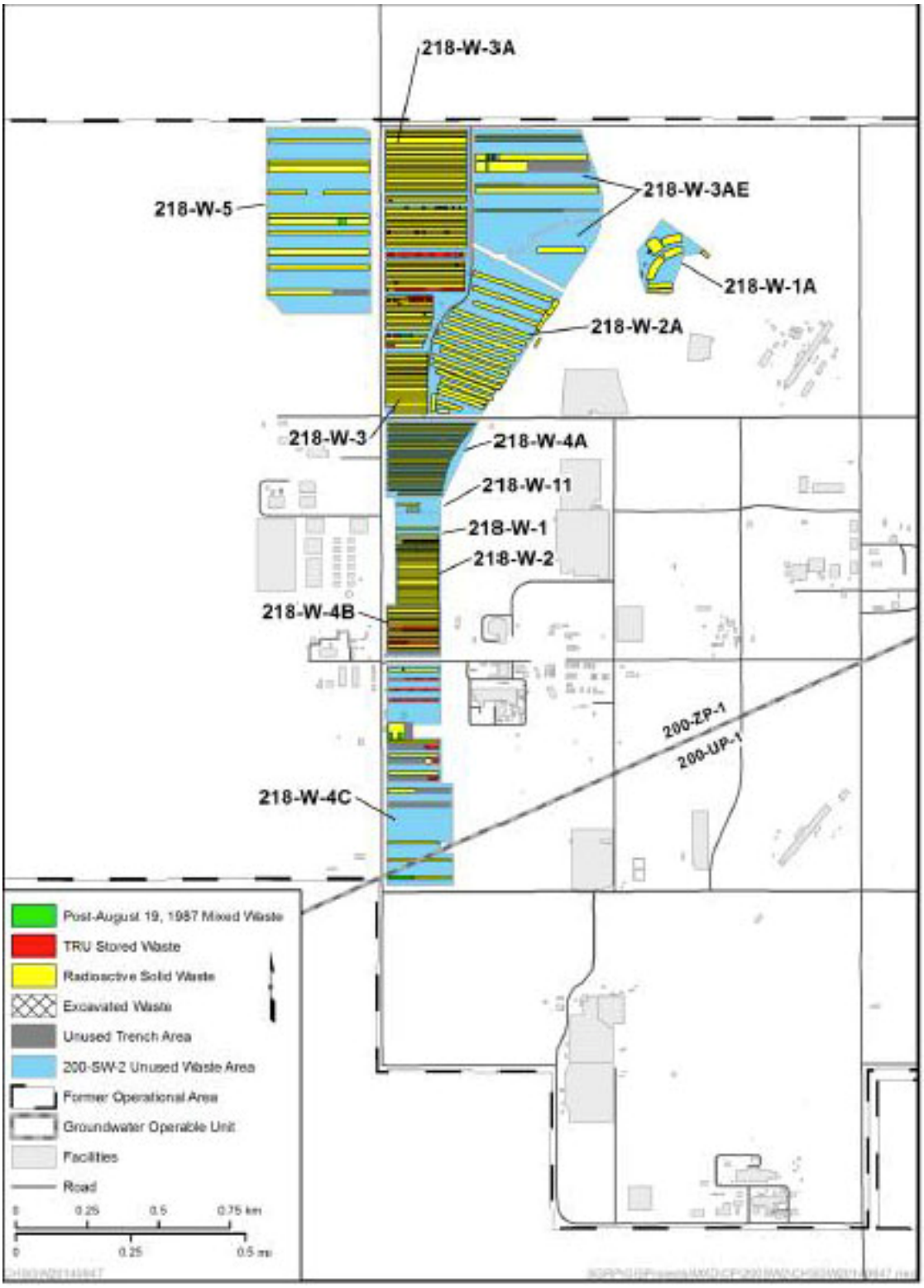

Figure G.7.1-2. Location of 200-SW-2 OU Landfills in Western Inner Area (DOE/RL 2004-60 Draft B)

PART IV. UNIT DESCRIPTION AND HISTORY

EU FORMER/CURRENT USE(S)

LEGACY SOURCE SITES

The CP-LS-12 landfills are part of 200-SW-2 OU which contain approximately 387,000 m^3 (506,000 yd^3) of waste. This waste is a heterogeneous mixture of solid waste generated during various operating periods that began in the mid-1940s and ended about 2005. All landfill waste included in the 200-SW-2 OU has been buried in trenches that were designed and constructed to varying lengths, widths, and depths. The CP-LS-12 landfills received waste between 1945 and 2003. The exact time frames in which the landfills received waste can be seen below. The landfill waste sites exist un-remediated at present excluding work done to patch the soil caps of some of the landfill waste sites. CP-LS-12 is within the inner area of the central plateau of the Hanford site so it will be within the final foot print of Hanford and will always be DOE land.

CP-LS-12 landfills received waste from 1945 to 2003, the detail timeline of this site can be seen below.

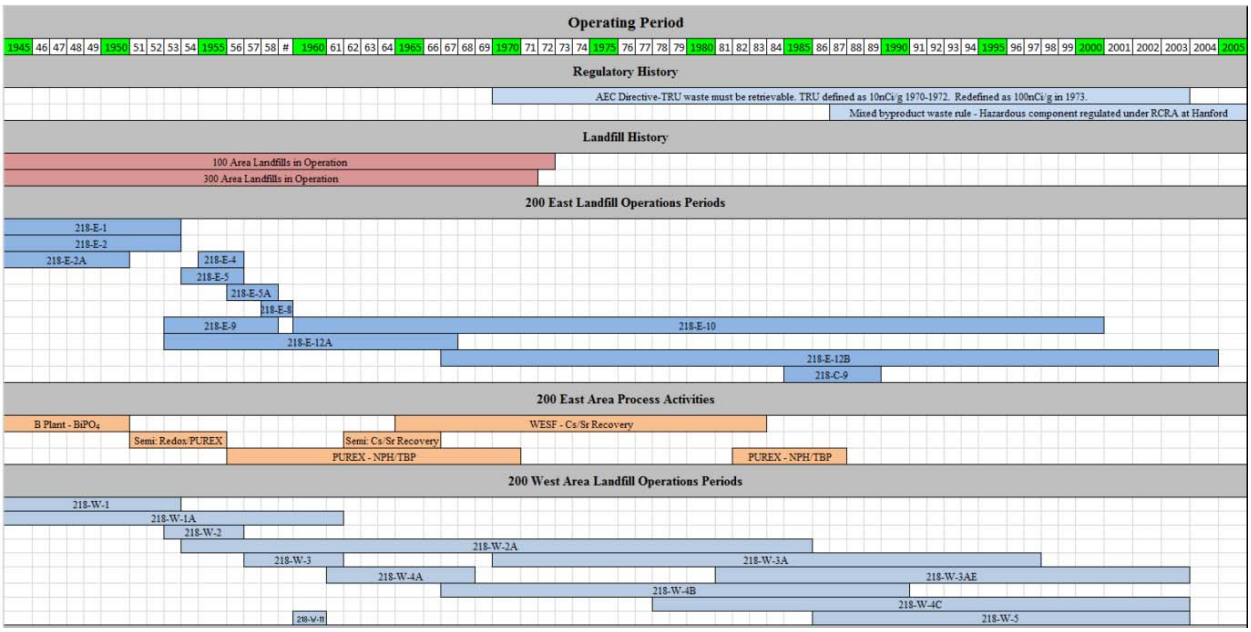

Figure G.7.1-3. Timeline of Waste Received in Landfills (DOE/RL-2004-60, Draft B)

The wastes in CP-LS-12 are mostly dry and solid wastes that have been placed in covered landfills. Liquid waste was also seen in the associated ponds and ditches. Each landfill has its own records of when covers and stabilizations were put in place. Some of the landfills experienced sinkholes due to the nature of buried waste and repairs imposed on the individual landfills. Not all of the landfills have detailed inventories of the contents or information on potential dose rates.

The regulations for appropriate covers over the landfills changed over the course of Hanford's operational period. "Before 1965, wastes were covered with approximately 0.6 m (2 ft) of soil. Since 1965, these wastes were covered with approximately 1.2 m (4 ft) of soil cover but, by the late 1960s, the standard was changed to approximately 2.4 m (8 ft). After 1967, all alpha-contaminated wastes from the 105-N Reactor and 300 Area were sent to the 200 Area for disposal (DOE/RL-96-81). Since the mid-

1960s, increasing attention to reducing potential contamination to groundwater led to a decision to send all LLW from all Hanford Site facilities for burial within the 200 Area, 60 to 90 m (200 to 300 ft) above groundwater. The last 300 Area landfill (618-7 Burial Ground) was closed in 1972. The last 100 Area landfill closed in 1973 (WHC-EP-0912)" [DOE/RL-2004-60, Draft B 2015. Appendix C Page C-12].

"Before 1980, dry waste landfills generally were restricted from receiving waste with surface dose rates over 100 mrem/h. However, packages were evaluated on an individual basis, depending on container integrity and method of handling, and some surface dose rates are considerably higher. Industrial waste landfills typically received waste with surface dose rates over 100 mrem/h." [DOE/RL-2004-60 Draft B 2015. Appendix C Page C-13]

GROUNDWATER PLUMES

The saturated zone beneath the CP-LS-12 area currently has elevated levels of carbon tetrachloride (CCl_4) and nitrate based on 2014 groundwater results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). Plumes in the 200-ZP GWIA are described in CP-GW-2 EU (Appendix D.6). One site within the CP-LS-12 EU with reported inventories (Table G.7.1-5 through Table G.7.1-7), i.e., the 216-T-4A Pond is suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0) although no CP-LS-12 sources are linked to current plumes (DOE/RL-2016-09, Rev. 0). Monitoring and treatment of groundwater is being conducted within the 200-ZP GWIA (using the 200 West P&T facility).

D&D OF INACTIVE FACILITIES

Not applicable

ECOLOGICAL RESOURCES SETTING

Landscape Evaluation and Resource Classification

Eighty-four percent of the habitat of the 200-W Burial Grounds EU is associated with waste sites and roads and is classified as either a level 0 or a level 1 resource (Appendix J, Table J.30). Remnant shrub-steppe habitat (level 2 and level 3 resources) cover the remaining 16% of the EU (Appendix J, Table J.30).

The amount and proximity of biological resources surrounding the 200-W Burial Grounds EU were examined within the adjacent landscape buffer area, which extends 10,078 ft (3072 m) from the geometric center of the EU. The buffer area encompasses nearly all of the 200-W Area (Appendix J, Table J.30) and relatively undisturbed areas north and east of the Area fence. The areas within the 200-W area comprise a mosaic of highly disturbed industrial areas, pockets of successional habitat (primarily level 2 resources) and remnants of higher quality climax shrub-steppe vegetation along the eastern edge of the 200-W Area (Appendix J, Table J.30). Habitat to the east and north of the 200-W fence comprises all of the level 4 resources within the combined EU and buffer area (1830 acres) and nearly all of the 940 acres of level 3 resources (96%).

Part of the west side of the combined EU and buffer area was revegetated with a mixture of native and non-native grasses and shrubs classified as a level 2 resource. There are no level 5 resources identified within the combined EU and buffer area.

Field Survey

Surveys of the 200-W Burial Grounds EU were conducted on May 27, 2015 and were re-checked on 9/3/15. Approximately 64% of the EU is used as burial grounds for contaminated waste and both paved and dirt roads which are kept clear of vegetation (Appendix J, Figure J.32). Another 20% of the EU,

primarily in the northeast corner and middle of the EU, is dominated by crested wheatgrass (*Agropyron cristatum*) sown to control erosion and blowing dust.

Portions of this EU burned in 2000; those along the northwest side of the EU were revegetated with a mixture of crested wheatgrass, saltbush (unidentified non-native *Atriplex* species), and native grasses (Appendix J, Table 21, patches 2-1 and 2-2). The extension of the EU north of 200-W was not revegetated and contains a successional community dominated by green rabbitbrush (*Chrysothamnus viscidiflorus*) with an understory of cheatgrass (*Bromus tectorum*) and Sandberg's bluegrass (*Poa secunda*) with a mixture of native and introduced forbs. Field data records at the end of this EU description in Appendix J provides lists of the plant and animal species observed.

On the northeast side of the EU, several patches of habitat contain up to 20% of the climax shrub, big sagebrush (*Artemisia tridentata*), and are therefore classified as level 3 resources (Appendix J, Figure 22). The understory of this is somewhat degraded appears to be dominated by cheatgrass and Russian thistle (*Salsola tragus*).

CULTURAL RESOURCES SETTING

Portions of the CP-LS-12, 200-W Burial Grounds EU have been inventoried for archaeological resources by eight previous cultural resources reviews. It is unknown if an NHPA Section 106 review has been completed specifically for remediation of the CP-LS-12, 200-W Burial Grounds EU. It is unlikely that intact archaeological material is present in the areas that have not been inventoried for archaeological resources (both on the surface and in the subsurface), because the soils in the EU are extensively disturbed.

Two archaeological resources have been documented within the EU boundary. Non-contributing portions of a National Register eligible historic/ethnohistoric trial/road corridor run through the EU. In addition, segments of the National Register-eligible Hanford Site Plant Railroad, a contributing property within the Manhattan Project and Cold War Era Historic District, with documentation required, are located within the EU. In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan (*DOE/RL-97-56) (DOE-RL 1998), all documentation requirements have been completed for this property.

Five archaeological isolates have been documented within 500 meters of the EU. These isolates have not been formally evaluated for listing in the National Register of Historic Places, however, it should be noted that isolates are typically considered not eligible. In addition, two archaeological sites (one associated with the Native American Precontact and Ethnographic Landscape and one associated with the Pre-Hanford Early Settlers/Farming Landscape) have also been documented within 500 meters of the EU. Neither of these sites have been evaluated for the National Register. Twenty-three National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District are located within 500 meters of the EU (all 23 are contributing to the Manhattan Project and Cold War Era Historic District, 20 with individual documentation required, 3 with no additional documentation required). In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan (*DOE/RL-97-56) (DOE-RL 1998), all documentation requirements have been completed for the applicable properties. Additionally, it should be noted that T Plant (221-T) is located within 500 meters of the CP-LS-12, 200-W Burial Grounds EU. This building has been selected for preservation, and HAER level documentation has been completed. Additionally, T Plant (221-T) has been identified as part of the Manhattan Project National Historic Park by the National Park Service.

Historic maps and imagery do not indicate cultural use of the area, with the exception of the historic/ethnohistoric trail/road which runs through portions of the EU. This suggests a high potential for archaeological resources associated with the Pre-Hanford Early Settlers/Farming Landscape to be present within the EU in these areas. Geomorphology indicates a moderate potential for the presence of Native American Precontact and Ethnographic cultural resources to be present within the CP-LS-12, 200-W Burial Grounds EU. However, extensive ground disturbance throughout much of the EU suggests a low potential for intact cultural resources at or below ground surface. Resources, if present, would likely be limited to areas of intact or undisturbed soils (particularly in the northeast and northwest portions of the EU).

Because of the potential for buried archaeological deposits within portions of the CP-LS-12, 200-W Burial Ground EU, it may be appropriate to conduct surface and subsurface archaeological investigations in these areas prior to initiating any remediation activities. Indirect effects are always possible when TCPs are known to be located in the general vicinity. Consultation with Hanford Tribes (Confederated Bands of the Yakama Nation, Wanapum, Confederated Tribes of the Umatilla Indian Reservation, and the Nez Perce) and other groups associated with these landscapes (e.g. East Benton Historical Society, the Franklin County Historical Society and the Prosser Cemetery Association, the Reach, and the B-Reactor Museum Association) may be necessary to provide input on indirect effects to both recorded and potential unrecorded TCPs in the area and other cultural resource issues of concern.

PART V. WASTE AND CONTAMINATION INVENTORY

CONTAMINATION WITHIN PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

Table G.7.1-5 through Table G.7.1-7 below summarize the primary contaminate inventories in each of the burial grounds and T-Pond. A portion of waste site 218-W-5 (Trenches 31 and 34) are contained in the CP-OP-8 (Mixed Waste Trenches) Evaluation Unit and the balance in this 200 West Burial Grounds EU. These two trenches were created as RCRA Part A Permitted Low Level Burial Grounds in 2008 as an alternative location for storing various sized containers of mixed waste other than the nearby Central Waste Complex. A new WIDS waste site 200-W-254 was created in 2014 to represent the two active RCRA storage trenches and the 218-W-5 WIDS site designation represents the inactive portions.

The analysis of which contaminant amounts should be allocated to each of these two WIDS codes and their related EUs was made difficult by different sources of data that were available for the two trenches and the waste site as a whole and that the two trenches are continuing to accept new wastes. The data for the trenches was deemed more current than the data available for the site as a whole, and the cutoff date for the entire site inventory data was deemed to overlap with when additional wastes were coming into the two trenches. The authors chose to use the SWITS data for 200-W-254 as the most accurate estimate of contaminants in the two trenches, and to subtract these amounts from the DOE/EIS-0391 2012, Appendix S data for 218-W-5 to estimate the contaminants in the inactive portion. This may have resulted in some duplication of inventories between the two waste sites, but the authors believe that it is the most accurate method of estimation available. These calculated inventories for 218-W-5 are contained in the inventory summaries below.

Vadose Zone Contamination

The CP-LS-12 waste sites with reported inventories (Table G.7.1-5 through Table G.7.1-7) are primarily burial ground sites and one pond that represent soil and other vadose zone contamination. The inventories provided represent the reported contamination originally discharged (without decay correction[8]) to the vadose zone from the CP-LS-12 waste sites. These values are used to estimate the inventory remaining in the vadose zone using the process described in the Methodology Report (CRESP 2015) for the 2013 groundwater plume information as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1. The focus in this section will be on the Group A and B contaminants (CRESP 2015) in the vadose zone due to their mobility and persistence and potential threats to groundwater (a protected resource); however, no plumes have been associated with CP-LS-12 waste sites. To summarize[9]:

- *Chromium* – There are reported inventories for chromium in the CP-LS-12 waste sites (Table G.7.1-7) but none of the current plumes in 200 West are associated with CP-LS-12 sources. The inventory is dominated by the 216-T-4A Pond.
- *Carbon tetrachloride (CCl_4)* – There are reported vadose zone inventories in the CP-LS-12 waste sites (Table G.7.1-7) but these sites are not related to the current plume that straddles the 200-UP and 200-ZP GWIAs (200 West). The CP-LS-12 inventories are dominated by the 218-W-4C burial ground and 216-T-4A Pond.
- *Cyanide* (*CN*) and *trichloroethene (TCE)* – There are no reported vadose zone inventories for these contaminants for the CP-LS-12 waste sites (Table G.7.1-7).
- *I-129* – There are reported inventories for the CP-LS-12 EU (Table G.7.1-5) that are not related to the 200-UP plumes. The CP-LS-12 EU inventory source is dominated by the 218-W-4B Burial Ground.
- *Tc-99* – There are reported vadose zone inventories for the CP-LS-12 EU (Table G.7.1-6) that are unrelated to plumes in both 200 East and 200 West Area. The CP-LS-12 vadose zone inventory is dominated by the 218-W-5 Burial Ground.
- *Uranium* – There are reported vadose zone inventories for the CP-LS-12 EU (Table G.7.1-6 and Table G.7.1-7) that are unrelated to the plumes in 200 West. The CP-LS-12 vadose zone inventory is dominated by the 218-W-5 Burial Ground.
- *Sr-90 and other Group A&B Primary Contaminants (PCs)* – There are reported vadose zone inventories for Sr-90 (Table G.7.1-6) and C-14 (Table G.7.1-5) but none for Cl-36 (Table G.7.1-5) or CN (Table G.7.1-7). The reported Sr-90 vadose zone inventory is distributed over several burial grounds, with largest in 218-W-5 Burial Ground. The reported C-14 inventory is dominated by the 218-W-3A Burial Ground.

[8] As described in the Methodology Report (CRESP 2015) values are typically not decay corrected because of the large uncertainties in many of the values used in the CRESP evaluations and the rough-order-of-magnitude evaluations presented in the Review. One exception, for example, is when evaluating long-term impacts to groundwater for Group A and B radionuclides (e.g., Sr-90) with half-lives that are relatively short relative to the evaluation period (CRESP 2015).

[9] The plume information is primarily taken from PHOENIX (http://phoenix.pnnl.gov/apps/gw/phoenix.html) that show the 2014 groundwater plumes. These plumes were assumed representative of 2015 groundwater plumes.

No CP-LS-12 waste sites have been linked to existing plumes in the Hanford Central Plateau (DOE-RL/2016-09, Rev. 0). Because of the tendency of uranium and Sr-90 to sorb to Hanford vadose zone media and that the TC&WM EIS groundwater transport analysis at the T Barrier[10] (see Section 2.5 in Appendix E.2) indicates that neither Sr-90 or uranium are expected to migrate appreciably in the area (Appendix O, DOE/EIS-0391 2012), these primary contaminants (both with reported inventories) are given *Not Discernible* (*ND*) current ratings and *Low* ratings afterwards to address uncertainties in the evaluation. For the other Group A and B constituents, the TC&WM EIS groundwater transport analysis indicates that predicted peak concentrations at the T Barrier for Tc-99, I-129, and chromium could exceed thresholds during the evaluation period; however, sources for the plumes for these contaminants are not part of CP-LS-12 and thus any contributions from CP-LS-12 in the future would be assumed to be subsumed in existing plumes. The ratings for these are thus not changed based on this analysis.

Using the process outlined in Chapter 6 of the Methodology Report (CRESP 2015) for the 2013 groundwater results as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1, the remaining vadose zone inventories for CP-LS-12 in Table G.7.1-8 are estimated by difference and used to calculate Groundwater Threat Metric (GTM) values for the Group A and B contaminants remaining in the vadose zone. The vadose zone (VZ) ratings range from *High* for C-14, I-129, carbon tetrachloride (CCl_4), and total and hexavalent chromium to *Medium* for Tc-99 where ratings for Sr-90 and total uranium are described above. The overall current rating is defined as the highest over all the ratings and thus *High*.

Groundwater Plumes

One site within the CP-LS-12 EU with a reported inventory is suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). Monitoring and treatment of groundwater is being conducted within the 200-ZP GWIA using the 200 West P&T facility; these actions are described as part of the CP-GW-2 EU (Appendix D.6). As shown in Table G.7.1-8, no saturated zone inventories have been associated with CP-LS-12; the process for deriving these inventories is described in CRESP Methodology Report (CRESP 2015) originally for the 2013 groundwater plume information as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1.

In general the 2015 groundwater plumes are evaluated in separate EUs (see Appendix D.1 through Appendix D.6); furthermore, as described in the previous sections, no portions of the groundwater plumes are associated with CP-LS-12 (DOE/RL-2016-09, Rev. 0). Note that carbon tetrachloride is the primary risk driver for the 200-ZP GWIA; however, there are no CP-LS-12 sources associated with these plumes, and the remaining vadose zone sources from other EUs would drive future risks to groundwater.

Impact of Recharge Rate and Radioactive Decay on Groundwater Ratings

As described in Section 2.5 of Appendix E.2 for the T Tank and Waste Farms EU (CP-TF-1), the TC&WM EIS screening groundwater transport analysis (Appendix O, DOE/EIS-0391 2012) indicates that there is little impact of emplacing an engineered surface barrier (and resulting reduction of infiltrating water) on the predicted peak groundwater concentrations (relative to thresholds) at the T Barrier, which is

[10] The barrier represents the edge of the infiltration barrier to be constructed over disposal areas that are within 100 meters [110 yards] of facility fence lines (DOE/EIS-0391 2012). The T Barrier is the closest to CP-LS-12. Despite including sources other than those for CP-LS-12, the analysis in the TC&WM EIS was considered a reasonable source of information to assess the potential transport in the Hanford subsurface.

assumed representative of impacts in the CP-LS-12 area. This result is likely due to the significant amounts of contaminants already in the groundwater including from sources including other than CP-LS-12 and not due to an ineffective surface barrier. To summarize, the screening groundwater results at the T Barrier (Appendix O, DOE/EIS-0391 2012) include:

- Tc-99 peak concentration is 6,480 pCi/L (CY 2050) for the No Action Alternative versus 6,600 pCi/L (CY 2051) for Landfill Closure where the threshold value is 900 pCi/L.
- I-129 peak concentration is 26.1 pCi/L (CY 4560) for the No Action Alternative versus 12.6 pCi/L (CY 2050) for Landfill Closure where the threshold value of 1 pCi/L.
- Chromium peak concentration is 336 µg/L (CY 2036) for the No Action Alternative versus 353 µg/L (CY 2045) for Landfill Closure where the threshold value is 100 µg/L (total) or 48 µg/L (hexavalent).
- Uranium peak concentration is 9 µg/L (CY 11,840) for the No Action Alternative versus 1 µg/L (CY 11,843) for Landfill Closure where the threshold value is 30 µg/L. Thus no appreciable uranium plume is expected during the evaluation period; the rating will be *Low* after the Current period to address uncertainty in the evaluation. Thus uranium is not considered a threat to groundwater; however, because the rating would be *Very High* if considered mobile in the environment, uranium is a threat to the vadose zone or groundwater if conditions change significantly.
- No values are reported at the T Barrier for Sr-90 for either scenario, which indicates that predicted peak fluxes that were less than 1×10^{-8} Ci/yr (Appendix O, DOE/EIS-0391 2012, p. O-2).

Thus an appreciable Sr-90 plume is not expected in the next 150 years due to retardation in the vadose zone or after due to radioactive decay (+97% reduction in inventory). The time for the Sr-90 rating (which would rate *Very High* if considered mobile) to be either *Medium* or *Low* due to radioactive decay is approximately 300 or 400 years, respectively. Thus Sr-90 is not considered a significant threat to the Hanford groundwater but remains a threat to the vadose zone or groundwater if conditions change significantly.

Since the predicted peak concentrations are predicted to remain above thresholds for Tc-99, I-129, and chromium even after surface barrier emplacement, it is decided to not alter the CP-LS-12 ratings related to groundwater based on different recharge rate scenarios. This effect is likely not due to an ineffective surface barrier but instead the amount of these contaminants already in the groundwater and possible contributions of sources outside CP-LS-12 (used in the TC&WM EIS analysis[11]). Furthermore, groundwater is being treated in the area using the 200 West P&T System.

Columbia River

Threats to the Columbia River similar to those presented by the CP-LS-12 EU were evaluated in Section 2.5 of Appendix E.2 for CP-TF-1 (T Single-shell Tank and Waste Farm in 200 West) where all risks and potential impacts were rated *Not Discernible* (*ND*).

[11] Analyses specific to each Tank Farm or Central Plateau EU are not available; thus the aggregate screening analysis provided in the TC&WM EIS was used as an indication.

Table G.7.1-5. Inventory of Primary Contaminants [a]

WIDS	Description	Decay Date	Ref[b, c]	Am-241 (Ci)	C-14 (Ci)	Cl-36 (Ci)	Co-60 (Ci)	Cs-137 (Ci)	Eu-152 (Ci)	Eu-154 (Ci)	H-3 (Ci)	I-129 (Ci)
All	Sum[d]			16,000	320	NR	0.00016	480,000	8.70E-06	0.00066	350,000	0.55
218-W-1	Burial Ground	1986	EIS-S	NR	NR	NR	NR	4.2	NR	NR	NR	NR
218-W-1A	Burial Ground		EIS-S	NR	NR	NR	NR	1000	NR	NR	NR	NR
218-W-2	Burial Ground	1986	EIS-S	NR	NR	NR	NR	10	NR	NR	NR	NR
218-W-2A	Burial Ground		EIS-S	NR	NR	NR	NR	3200	NR	NR	NR	NR
218-W-3	Burial Ground		EIS-S	NR	NR	NR	NR	19	NR	NR	NR	NR
218-W-3A	Burial Ground	1995	EIS-S	NR	290	NR	NR	270,000	NR	NR	140,000	0.014
218-W-3AE	Burial Ground	1995	EIS-S	110	15	NR	NR	130,000	NR	NR	70,000	0.00045
218-W-4A	Burial Ground	1986	EIS-S	NR	NR	NR	NR	63	NR	NR	NR	NR
218-W-4B	Burial Ground	1995	EIS-S	NR	11	NR	NR	16,000	NR	NR	52,000	0.5
218-W-4C	Burial Ground	1995	EIS-S	16,000	2.6	NR	NR	58,000	NR	NR	33,000	0.0015
218-W-5[e]	Burial Ground	1995	EIS-S	0.0	4.5	NR	NR	0.0	NR	NR	51000	0.030
216-T-4A	Pond	2001	SIM	0.00083	0.00011	NR	0.00016	5.5	8.70E-06	0.00066	1,300	0.00044

a. NR = Not reported
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0
d. Radionuclides are summed without decay correction since the uncertainties in inventories are large.
e. Represents the difference between the inventory provided in EIS-S and the inventory of 200-W-254 as described in the text. If the difference would be less than zero, zero is reported.

Table G.7.1-6. Inventory of Primary Contaminants (cont) [a]

WIDS	Description	Decay Date	Ref[b, c]	Ni-59 (Ci)	Ni-63 (Ci)	Pu (total) (Ci)	Sr-90 (Ci)	Tc-99 (Ci)	U (total) (Ci)
All	Sum[d]			3.30E-05	0.0031	41,000	210,000	52	1,100
218-W-1	Burial Ground	1986	EIS-S	NR	NR	6,800	3.9	NR	0.024
218-W-1A	Burial Ground		EIS-S	NR	NR	150	930	NR	0.3
218-W-2	Burial Ground	1986	EIS-S	NR	NR	9,100	9.7	NR	0.47
218-W-2A	Burial Ground		EIS-S	NR	NR	NR	3,000	NR	NR
218-W-3	Burial Ground		EIS-S	NR	NR	4,900	18	NR	24
218-W-3A	Burial Ground	1995	EIS-S	NR	NR	NR	99,000	0.25	NR
218-W-3AE	Burial Ground	1995	EIS-S	NR	NR	37	87,000	35	190
218-W-4A	Burial Ground	1986	EIS-S	NR	NR	2,600	58	NR	130
218-W-4B	Burial Ground	1995	EIS-S	NR	NR	NR	15,000	NR	NR
218-W-4C	Burial Ground	1995	EIS-S	NR	NR	17,000	7,300	16	73
218-W-5[e]	Burial Ground	1995	EIS-S	NR	NR	NR	2,000	0.0	650
216-T-4A	Pond	2001	SIM	3.30E-05	0.0031	0.27	2.9	0.067	0.41

a. NR = Not reported
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0
d. Radionuclides are summed without decay correction since the uncertainties in inventories are large.
e. Represents the difference between the inventory provided in EIS-S and the inventory of 200-W-254 as described in the text. If the difference would be less than zero, zero is reported.

Table G.7.1-7. Inventory of Primary Contaminants (cont) [a]

WIDS	Descrip-tion	Ref[b, c]	CCl4 (kg)	CN (kg)	Cr (kg)	Cr-VI (kg)	Hg (kg)	NO3 (kg)	Pb (kg)	TBP (kg)	TCE (kg)	U (total) (kg)
All	Sum		1,200	NR	12,000	NR	240	370,000	380,000	NR	NR	840,000
218-W-1	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	70
218-W-1A	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	900
218-W-2	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	1,400
218-W-2A	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
218-W-3	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	70,000
218-W-3A	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
218-W-3AE	Burial Ground	EIS-S	1.9	NR	320	NR	150	32	7000	NR	NR	370,000
218-W-4A	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	390,000
218-W-4B	Burial Ground	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
218-W-4C	Burial Ground	EIS-S	820	NR	380	NR	84	290	380,000	NR	NR	84
218-W-5[d]	Burial Ground	EIS-S	0.0	NR	0.0	NR	0.0	5.0	0.0	NR	NR	0.0
216-T-4A	Pond	SIM	360	NR	11,000	NR	1.1	370,000	1.4	NR	NR	610

a. NR = Not reported
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0
d. Represents the difference between the inventory provided in EIS-S and the inventory of 200-W-254 as described in the text. If the difference would be less than zero, zero is reported.

Table G.7.1-8. Summary of the Evaluation of Current Threats to Groundwater as a Protected Resource from Saturated Zone (SZ) and Remaining Vadose Zone (VZ) Contamination associated with the Evaluation Unit

PC	Group	WQS	Porosity[a]	K_d (mL/g)[a]	ρ (kg/L)[a]	VZ Source M^{Source}	SZ Total M^{SZ}	Treated[c] M^{Treat}	VZ Remaining M^{Tot}	VZ GTM (Mm^3)	VZ Rating[d]
C-14	A	2000 pCi/L	0.23	0	1.84	3.24E+02 Ci	---	---	3.24E+02 Ci	1.62E+02	*High*
I-129	A	1 pCi/L	0.23	0.2	1.84	5.47E-01 Ci	---	---	5.47E-01 Ci	2.10E+02	*High*
Sr-90	B	8 pCi/L	0.23	22	1.84	2.13E+05 Ci	---	---	2.13E+05 Ci	1.51E+05	*ND*[e]
Tc-99	A	900 pCi/L	0.23	0	1.84	5.17E+01 Ci	---	---	5.17E+01 Ci	5.75E+01	*Medium*
CCl4	A	5 µg/L	0.23	0	1.84	1.18E+03 kg	---	---	1.18E+03 kg	2.36E+02	*High*
Cr	B	100 µg/L	0.23	0	1.84	1.21E+04 kg	---	---	1.21E+04 kg	1.21E+02	*High*
Cr-VI	A	48 µg/L[b]	0.23	0	1.84	1.21E+04 kg	---	---	1.21E+04 kg	2.52E+02	*High*
TCE	B	5 µg/L	0.23	2	1.84	---	---	---	---	---	*ND*
U(tot)	B	30 µg/L	0.23	0.8	1.84	8.36E+05 kg	---	---	8.36E+05 kg	3.77E+03	*ND*[e]

a. Parameters obtained from the analysis provided in Attachment 6-1 to Methodology Report (CRESP 2015).

b. "Model Toxics Control Act—Cleanup" (WAC 173‑340) Method B groundwater cleanup level for hexavalent chromium.

c. Treatment amounts from the 2015 Hanford Annual Groundwater Report (DOE/RL-2016-09, Rev. 0).

d. Groundwater Threat Metric rating based on Table 6-3, Methodology Report (CRESP 2015).

e. As discussed in **Part V**, no appreciable Sr-90 or total uranium plume would be expected in the next 150 years due to transport and decay considerations. Thus the *Low* rating would apply after the Active Cleanup to account for uncertainties.

PART VI. POTENTIAL RISK/IMPACT PATHWAYS AND EVENTS

CURRENT CONCEPTUAL MODEL

Pathways and Barriers

Briefly describe the current institutional, engineered and natural barriers that prevent release or dispersion of contamination, risk to human health and impacts to resources:

1. What nuclear and non-nuclear safety accident scenarios dominate risk at the facility? What are the response times associated with each postulated scenario?

Insufficient documentation to answer.

2. What are the active safety class and safety significant systems and controls?

Insufficient documentation to answer.

3. What are the passive safety class and safety significant systems and controls?

Insufficient documentation to answer.

4. What are the current barriers to release or dispersion of contamination from the primary facility? What is the integrity of each of these barriers? Are there completed pathways to receptors or are such pathways likely to be completed during the evaluation period?

Insufficient documentation to answer fully. The landfills are covered to varying degrees. “The cover requirements for landfill wastes varied over the years. Wind erosion exposed some wastes buried shallower in earlier landfills. Shallow burial also resulted in uptake from plants whose roots penetrated into the waste packages. A number of incidents are documented where burial boxes collapsed, dispersing radioactive contamination across wide areas. Most of the collapse issues were resolved through soil compaction, removal of deep-rooted vegetation, and the addition of soil and shallow-rooted vegetation. Site maintenance programs also include the application of herbicides by licensed applicators to control deep-rooted plant growth on stabilized landfills.” [DOE/RL-2004-60 Draft B, p. 3-2]

5. What forms of initiating events may lead to degradation or failure of each of the barriers?

Insufficient documentation to answer

6. What are the primary pathways and populations or resources at risk from this source?

Insufficient documentation to answer

7. What is the time frame from each of the initiating events to human exposure or impacts to resources?

Insufficient documentation to answer

8. Are there current on-going releases to the environment or receptors?

Insufficient documentation to answer

POPULATIONS AND RESOURCES CURRENTLY AT RISK OR POTENTIALLY IMPACTED

Facility Worker

Insufficient documentation to answer

Co-Located Person (CP)

Insufficient documentation to answer

Public

Insufficient documentation to answer

Groundwater

Table G.7.1-8 represents the risks and associated ratings for groundwater from remaining vadose zone contamination associated with the CP-LS-12 waste sites. Sites within the CP-LS-12 EU have likely contaminated the vadose zone, and one site (216-T-4A Pond) is suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). The current risk and potential impact ratings for the CP-LS-12 EU Group A and B primary contaminants are *High* (C-14, I-129, carbon tetrachloride, and total and hexavalent chromium), *Medium* (Tc-99), and *Not Discernible* (*ND*) (Sr-90 and total uranium) (Table G.7.1-8). Monitoring and treatment of groundwater is being conducted within the 200-ZP GWIA (using the 200 West P&T facility), which is described as part of the CP-GW-2 EU (Appendix D.6). No plumes have been linked to CP-LS-12 EU waste sites.

Columbia River

As described in Appendix D.6 (CP-GW-2 EU) and **Part V**, no plumes from the 200 West Area (that includes the CP-LS-12 waste sites) currently intersect the Columbia River, thus current ratings for all contaminants for the benthic, riparian, and free-flowing ecology are *ND*.

Ecological Resources

Summary of ecological review:

- Approximately 93% of the EU consists of biological resources classified as level 2 resources or below.
- Level 3 resources within the EU contain big sagebrush, but the understory is dominated by introduced and invasive forb and grass. Loss of these isolated patches of habitat is not expected to significantly affect connectivity with habitat outside the 200-W Area.

62% of the combined EU and adjacent landscape buffer area is classified as level 2 resources or below.

Cultural Resources

The CP-LS-12, 200-W Burial Grounds EU is located within the 200-West Area of the Hanford Site, an area known to have low potential to contain Native American Precontact and Ethnographic archaeological resources and Pre-Hanford Early Settlers/Farming resources. Much of the 200 Areas were addressed in a cultural resources report entitled *Archaeological Survey of the 200 East and 200 West Areas, Hanford Site* (Chatters and Cadoret 1990). The focus of this archaeological survey was on inventorying all undisturbed portions of the 200-East and 200-West Areas. This report concluded that much of the 200-East and 200-West Areas can be considered areas of low archaeological potential with the exception of intact portions of an historic/ethnohistoric trail/road corridor which runs through the 200-West Area.

Portions of the CP-LS-12, 200-W Burial Grounds EU have been inventoried for archaeological resources under eight cultural resources reviews: HCRC#87-200-016 (Cadoret and Chatters 1988), HCRC#88-200-032a (Hoover and Chatters 1988), HCRC#88-200-038 (Chatters and Cadoret 1990), HCRC#88-200-038a (Chatters and Cadoret 1990), HCRC#88-200-038b (Chatters and Cadoret 1990), HCRC#95-200-039 (Crist 1995), HCRC#96-200-058 (Nickens et al. 1996), and HCRC#2000-600-023 (Hale 2000). It is unknown if an NHPA Section 106 review has been completed specifically for remediation of the CP-LS-12, 200-W Burial

Grounds EU. It is unlikely that intact previously undocumented archaeological material is present in the EU, both on the surface and in subsurface areas, because the soils in the CP-LS-12, 200-W Burial Grounds EU appear to have been extensively disturbed by Hanford Site activities.

Archaeological sites, buildings and Traditional Cultural Properties (TCPs) located within the EU[12]

- A non-contributing section of a National Register eligible historic/ethnohistoric trail/road corridor is located within this EU.
- Segments of the National Register-eligible Hanford Site Plant Railroad, a contributing property within the Manhattan Project and Cold War Era Historic District, with documentation required, are located within the EU. In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan (*DOE/RL-97-56) (DOE-RL 1998), all documentation requirements have been completed for this property.

Archaeological sites, buildings, and TCPs located within 500 meters of the EU

- Five archaeological isolates have been documented within 500 meters of the EU (4 associated with the Native American Precontact and Ethnographic Landscape and 1 with the Pre-Hanford Early Settlers/Farming Landscape). None of these isolates have been evaluated for listing in the National Register of Historic Places, however, it should be noted that isolates are typically considered not eligible.
- There are two archaeological sites (one associated with the Native American Precontact and Ethnographic Landscape and one associated with the Pre-Hanford Early Settlers/Farming Landscape) located within 500 meters of the EU. Neither of these sites have been evaluated for listing in the National Register of Historic Places.
- There are 23 National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District that are located within 500 meters of the CP-LS-12, 200-W Burial Grounds EU (all 23 are contributing properties within the Manhattan Project and Cold War Era Historic District, 20 with individual documentation required, and 3 with no additional documentation required) In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan (*DOE/RL-97-56) (DOE-RL 1998), all documentation requirements have been completed for these properties.

Appendix K, Table 14, has more detail about the 23 buildings that are National Register-eligible Manhattan Project and Cold War Era buildings located within 500 meters of the CP-LS-12, 200-W Burial Grounds EU.

- T Plant (221-T) is located within 500 meters of the CP-LS-12, 200-W Burial Grounds EU. This building has been selected for preservation, and HAER level documentation has been completed. Additionally, T Plant (221-T) has been identified as part of the Manhattan Project National Historic Park by the National Park Service.

Closest Recorded TCP

There are two recorded TCPs associated with the Native American Precontact and Ethnographic Landscape that are visible from the CP-LS-12, 200-W Burial Grounds EU.

[12] Traditional cultural property has been defined by the National Park Service as "a property, a place, that is eligible for inclusion on the National Register of Historic Places because of its association with cultural practices and beliefs that are (1) rooted in the history of a community, and (2) are important to maintaining the continuity of that community's traditional beliefs and practices" (Parker & King 1998).

CLEANUP APPROACHES AND END-STATE CONCEPTUAL MODEL

Selected or Potential Cleanup Approaches

The 200-SW-2 OU includes 24 landfills that include those in CP-LS-14 (200-E Burial Area) as well as this EU and 14 collocated waste sites. Seven of the landfills are RCRA treatment, storage, and/or disposal (TSD) units and 17 are past-practice waste sites. The collocated sites include 11 unplanned release (UPR) sites, the Z Plant burn pit, the T Ponds, and the 216-C-9 Pond.

No cleanup decisions have been made to remediate the 200-SW-2 OU. (Note that this OU is not a single contaminated site, but comprises a large number of land disposal units.)

Range of Plausible Alternatives[13]

- Excavation, treatment (as necessary), and disposal of all waste from within individual landfills.
- Excavation, treatment (as necessary), and disposal of waste from selected sections of individual landfills followed by capping of remaining waste; includes continued cap maintenance and monitoring.
- Capping of individual landfills; includes continued cap maintenance and monitoring.
- In situ treatment/stabilization (e.g., vitrification or grouting) of portions of individual landfills followed by capping; includes continued cap maintenance and monitoring.
- If residual contamination remains after cleanup actions are completed, cleanup work will transition to LTS, including institutional controls and 5-year reviews of remedy effectiveness.

Contaminant Inventory Remaining at the Conclusion of Planned Active Cleanup Period

Insufficient documentation to answer

Risks and Potential Impacts Associated with Cleanup

Insufficient documentation to answer

POPULATIONS AND RESOURCES AT RISK OR POTENTIALLY IMPACTED DURING OR AS A CONSEQUENCE OF CLEANUP ACTIONS

Facility Worker

Insufficient documentation to answer

Co-located Person

Insufficient documentation to answer

Public

Insufficient documentation to answer

Groundwater

As described in **Part V**, there is unlikely to be a significant impact during this period to groundwater (as a protected resource) from mobile primary contaminants from CP-LS-12. However, there are contaminant sources (legacy source sites) in the vadose zone that pose continuing risk to groundwater (via the

[13] DOE/RL-2014-11 Table B-3 CP-14

vadose zone). Because the area associated with CP-LS-12 sources is best represented by the T Barrier analysis in Appendix E.2 (see previous section), the vadose zone (VZ) GTM values for the Group A and B primary contaminants for CP-LS-12 (during the Active Cleanup period) translate to ratings of up to *High* (because of large amounts of contaminants in the vadose zone to be treated). As indicated in **Part V**, Sr-90 and uranium are unlikely to impact the groundwater in sufficient quantities to exceed the drinking water standard by the end of the Active Cleanup period and are thus rated *Low* to address uncertainty in the analysis. Groundwater in the area is being treated using the 200 West Pump and Treat Facility, which when combined with expected future measures to limit the infiltration of water would result in lower ratings for those contaminants being treated (e.g., carbon tetrachloride, total and hexavalent chromium, I-129, Tc-99, and trichloroethene); however, these actions would not impact the ratings related to vadose zone ratings. Final remedial actions that manage the vadose zone contamination or limit infiltrating water would result in reduced ratings. These ratings correspond to an overall rating of *High* for both the Active and Near-term, Post-Cleanup periods to account for uncertainties. The 200 West Area P&T system in the 200-ZP GWIA is assumed to be operational during this evaluation period, which will be treating necessary groundwater contamination in the 200 West Area.

It is considered unlikely that additional groundwater resources would be impacted as a result of either interim remedial actions (e.g., pump and treat) or final closure activities (that are not covered in the Ecological or Cultural Resources results).

Columbia River

As described in **Part V**, impacts to the Columbia River benthic, riparian, and free-flowing ecology for the Active Cleanup and Near-term, Post Cleanup periods are rated as *Not Discernible* (*ND*). Additional information on groundwater plumes and potential threats associated with sources including those from CP-LS-12 waste sites are described in Appendix G.6 for the CP-GW-2 EU (200-ZP GWIA).

It is considered unlikely that additional benthic or riparian resources would be impacted as a result of either interim remedial actions (e.g., pump and treat) or final closure activities (that are not covered in the Ecological or Cultural Resources results).

Ecological Resources

Remove, Treat and Dispose of waste involves personnel through the target (remediation) area, car and pickup truck traffic through the non-target and target (remediation) area, truck, heavy equipment (including drill rigs) traffic on roads through the non-target and target area, caps (and other containment), soil removal and contamination in the soil, vegetation control, and irrigation (for revegetation) will cause the following disturbance from remediation activities: Carry seeds or propagules (pieces of vegetation or other biological parts that can grow and/or reproduce) on tires of vehicles or blowing from heavy equipment; injure or kill vegetation or small invertebrates or small animals; vehicle traffic can make paths, compact soil, scare or displace animals, can impact animal behavior or reproductive success; affect animal dispersion and habitat use (e.g., some birds avoid nesting near roads because of song masking); displacement of animals from near roads due to increased noise or other disturbances; and heavy equipment may permanently destroy areas of the site with intense activity. soil removal can cause more severe effects because of blowing soil (and seeds) During remediation, radionuclides or other contaminants could be released or spilled on the surface, and depending upon the type and quantity, could have adverse effects on the plants and animals on-site. Use of non-specific herbicides for vegetation control results in some mortality of native vegetation (especially native forbes), and allows exotic species to move in; it may change species composition of native communities, but it also could make it easier for native species to move in; improved methods could yield positive results. Irrigation requires a system of pumps and water, resulting in physical

disturbance; repeated irrigation from the same locations could result in some soil compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area.

Alternatively, barriers could be the remediation option and involves personnel car and pickup truck traffic through the non-target and target (remediation) area, truck and heavy equipment traffic on roads through the non-target and target area, dust suppression, and irrigation (for revegetation) will cause the following disturbance from remediation activities: Carry seeds or propagules (pieces of vegetation or other biological parts that can grow and/or reproduce) on person (boots, clothes, equipment) or tires of vehicles or blowing from heavy equipment; injure vegetation or small invertebrates or small animals (e.g., insects, snakes); make paths or compact soil; scare or displace animals. Caps and other containment can cause compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area. Destruction of soil invertebrates at depths of pits. Potential bringing up of dormant seeds from soil layers; disruption of ground-living small mammals and hibernation sites of snakes and other animals on-site of containment; often disrupts local aquatic environment and drainage; often non-native plants used on caps (which can become exotic/alien adjacent to the containment site). Additional water from dust suppression could lead to more diverse and abundant vegetation in areas that receive water, which could encourage invasion of exotic species; the latter could displace native plant communities; excessive dust suppression activities could lead to compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area. Irrigation requires a system of pumps and water, resulting in physical disturbance; repeated irrigation from the same locations could result in some soil compaction, which can decrease plant growth in those areas, decrease abundance and diversity of soil invertebrates, and prevent fossorial snakes or mammals from using the area. These effects will be higher in the EU itself.

Cultural Resources

Potential direct effects are possible from personnel, car, pick-up, truck and heavy equipment traffic/use through both target (remediation) and non-target areas during active cleanup. These activities may inadvertently expose resources close to the surface. Additionally, traffic through these areas may lead to the introduction of invasive species and/or a decrease in the presence of native plants used for medicinal or tribal religious purposes. Heavy equipment use for remedial activities (such as the excavation, treatment and disposal of waste) may lead to an alteration of the landscape, and the act of soil removal may destroy resources; if resources are not destroyed, then, soil removal may disturb or adversely affect resources. Utilization of caps and/or other containments may destroy resources located close to the surface. If resources are not destroyed, containments may disturb or adversely affect resources. Lastly, during remediation, radionuclides or other contamination released or spilled on the surface could have long-term effects if the contamination remains and resources become contaminated and/or plants having cultural importance to Tribes do no recolonize or thrive.

Potential indirect effects are possible from personnel traffic through target (remediation) areas as well as car, pick-up, truck and heavy equipment traffic/use through both target (remediation) and non-target areas. It is possible that these activities may decrease viewshed values and/or impact viewshed through the introduction of increased dust, the creation of trails, etc. Heavy equipment use for remedial actions/soil removal and the utilization of caps and/or other containments could potentially cause alterations to the landscape and impacts to viewsheds. Lastly, during remediation, radionuclides or other contamination released or spilled on the surface could have long-term effects if the contamination remains and resources become contaminated and/or plants having cultural importance to Tribes do no recolonize or thrive.

ADDITIONAL RISKS AND POTENTIAL IMPACTS IF CLEANUP IS DELAYED

Sites within the CP-LS-12 EU have likely contaminated the vadose zone and one site is suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-16, Rev. 0). Despite on-going treatment using the 200 West Pump and Treat Facility, vadose zone contamination may continue (depending on the control of infiltrating water to the waste sites) and some contaminant plumes in the 200 West area (however, currently unrelated to CP-LS-012 waste sites) may continue to increase in size and impact additional groundwater. Additional remedial actions may be required in the future.

NEAR-TERM, POST-CLEANUP STATUS, RISKS AND POTENTIAL IMPACTS

Insufficient documentation to answer

POPULATIONS AND RESOURCES AT RISK OR POTENTIALLY IMPACTED AFTER CLEANUP ACTIONS (FROM RESIDUAL CONTAMINANT INVENTORY OR LONG-TERM ACTIVITIES)

Table G.7.1-9. Summary of Populations and Resources at Risk or Potentially Impacted after Cleanup

Population or Resource		Risk/Impact Rating	Comments
Human	Facility Worker	IS	
	Co-located Person	IS	
	Public	IS	
Environmental	Groundwater (A&B) from vadose zone[a]	*High* – C-14, I-129, CCl_4, Cr(tot), Cr-VI *Medium* – Tc-99 *Low* – U(tot)[c] & Sr-90[c] **Overall**: *High*	*Current* GTM values for Group A&B primary contaminants (Table G.7.1-8): *High* (C-14, I-129, CCl4, Cr(tot), Cr-VI), *Medium* (Tc-99), *ND* (Sr-90 and U(tot)). Sr-90 and U(tot) not likely to impact groundwater (**Part V**) but assigned *Low* here to address uncertainties. Treatment in 200-UP assumed effective for groundwater but would not impact *vadose zone* ratings. Predicted impacts from changes in recharge rates not sufficient to adjust ratings.
	Columbia River from vadose zone[a]	Benthic: *Not Discernible* (*ND*) Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*	TC&WM EIS screening results indicate that exposure to radioactive and chemical contaminants from peak groundwater discharge below benchmarks for both benthic and riparian receptors (**Part V**). Dilution factor of greater than 100 million between Columbia River and upwellings.
	Ecological Resources[a]	ND to Low	Post-cleanup monitoring might pose a risk to higher level resources in the buffer area.
Social	Cultural Resources[a]	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Known Indirect: Known **Manhattan/Cold War** Direct: None Indirect: None	Permanent direct effects are possible if residual contamination remains after remediation. Permanent indirect effects to viewshed are possible from capping and from residual contamination that may remain. National Register eligible Manhattan Project/Cold War Era significant resources located within the EU and 500 meters of the EU will be demolished, but they have already been mitigated.

a. Threat to groundwater or Columbia River for Group A and B contaminants remaining in the vadose zone. Threats from existing plumes associated with the CP-LS-12 EU are described in **Part V** with more detailed evaluation in Appendix G.6 (CP-GW-2).

b. For both Ecological and Cultural Resources see Appendices J and K, respectively, for a complete description of Ecological Field Assessments and literature review for Cultural Resources. Ecological ratings are described in Table 4-11 of the Final Report.

LONG-TERM, POST-CLEANUP STATUS – INVENTORIES AND RISKS AND POTENTIAL IMPACT PATHWAYS

The long-term, post-cleanup status is dependent on the selected remedial alternative. Regardless of that alternative selected, long-term site use restriction, vadose zone and groundwater monitoring, and maintenance must remain due to the presence of persistent contaminants in the deep vadose zone that are not amendable to excavation and the likely continued release and migration of contaminants through the vadose zone to the groundwater. DOE is expected to continue industrial exclusive activities for at least 50 years (DOE/EIS-0222-F).

PART VII. SUPPLEMENTAL INFORMATION AND CONSIDERATIONS

The 200-W Burial Grounds area needs to remain under DOE control to maintain a safety buffer for all remedial alternatives, including RTD, because of the deep vadose zone contamination in the area.

Waste Site and Facility List

Table G.7.1-10. Waste Site and Facility List, CP-LS-12 (200-W Burial Grounds)

Site Code	Name, Aliases, Description	Feature Type	Site Status	ERS Classification	ERS Reclassification	Site Type	Site Type Category	Operable Unit	Exclude from Evaluation	Comments
218-W-1	218-W-1; Solid Waste Burial Ground #1; 200-W Area Dry Waste No. 001	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-11	218-W-11; Regulated Storage Site	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-1A	218-W-1A; Equipment Burial Ground #1; 200-W Area Industrial Waste Burial Ground #1	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-2	218-W-2; Dry Waste Burial Ground No. 2; 200-W Area Dry Waste No. 002	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-2A	218-W-2A; Equipment Burial Ground #2; Industrial Waste No. 02A	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-3	218-W-3; Dry Waste No. 003	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-3A	218-W-3A; Dry Waste No. 003A	Waste Site	Active	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-3AE	218-W-3AE; Dry Waste No. 3AE; Industrial Waste No. 3AE	Waste Site	Active	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-4A	218-W-4A; Dry Waste No. 04A	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-4B	218-W-4B; Dry Waste No. 04B	Waste Site	Active	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-4C	218-W-4C; Dry Waste No. 004C	Waste Site	Active	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-W-5	218-W-5; Dry Waste Burial Ground; Low-Level Radioactive Burial Grounds	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
Z PLANT BP	Z PLANT BP; Z Plant Burn Pit; Z Plant Burning Pit	Waste Site	Inactive	Accepted	Consolidated	Burn Pit	Burial Ground	Not Applicable		

216-T-1	216-T-1; 216-T-1 Trench; 221-T Ditch; 221-T Trench	Waste Site	Inactive	Accepted	None	Ditch	Pond/Ditch – Surface Liquid Disposal Site	200-OA-1		
216-T-4-2	216-T-4-2; 216-T-4-2 Ditch	Waste Site	Inactive	Accepted	None	Ditch	Pond/Ditch – Surface Liquid Disposal Site	200-SW-2		
216-T-4A	216-T-4A; 216-T-4 Swamp; 216-T-4-1 (P); 216-T-4-1 Pond	Waste Site	Inactive	Accepted	None	Pond	Pond/Ditch – Surface Liquid Disposal Site	200-SW-2		
216-T-4B	216-T-4B; 216-T-4 New Pond; 216-T-4-2 (P); 216-T-4-2 Pond	Waste Site	Inactive	Accepted	None	Pond	Pond/Ditch – Surface Liquid Disposal Site	200-SW-2		
600-292-PL	600-292-PL; SALDS Pipeline; State Approved Land Disposal Site Pipeline	Waste Site	Active	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	Not Applicable		
200-W-128	200-W-128; Underground Radioactive Material Area East of 218-W-4A	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	TBD		
200-W-73	200-W-73; Contaminated Debris Near Railroad Track; URMA East of 218- W-2A	Waste Site	Inactive	Accepted	Interim No Action	Unplanned Release	Unplanned Release - Surface/Near Surface	TBD		
200-W-81	200-W-81; Contaminated Tumbleweed Fragments Along Railroad Track East of 218-W-3AE	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
200-W-90	200-W-90; Underground Radioactive Material Areas Posted Along 23rd Street in 200 West Area	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-WA-1		
UPR-200-W-16	UPR-200-W-16; Fire at 218-W-1 Burial Ground	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-26	UPR-200-W-26; Contamination Spread During Burial Operation	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-37	UPR-200-W-37; Contaminated Boxes Found in a Burn Pit (Z Plant Burn Pit)	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		

UPR-200-W-53	UPR-200-W-53; Burial Box Collapse	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-58	UPR-200-W-58; Railroad Track Contamination; UN-200-W-58	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-OA-1		
UPR-200-W-71	UPR-200-W-71; Contamination Spread from 16th Street to Dayton Ave.; UN-200-W-71	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-WA-1		
UPR-200-W-72	UPR-200-W-72; Contamination at 218-W-4A	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
UPR-200-W-84	UPR-200-W-84; Ground Contamination During Burial Operation at 218- W-3A	Waste Site	Inactive	Accepted	Consolidated	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable		
200-W-33	200-W-33; Debris Near 609 Gate; Solid Waste Dumping Area	Waste Site	Inactive	Accepted	Interim Closed Out	Dumping Area	Burial Ground	200-OA-1	X	Interim Closed Out
218-W-4C ANNEX	218-W-4C ANNEX; Unused Portion of 218-W-4C Burial Ground	Waste Site	Inactive	Not Accepted	None	Burial Ground	Burial Ground	Not Applicable	X	Not Accepted
218-W-6	218-W-6; 218-W-6 Burial Ground	Waste Site	Inactive	Accepted	Closed Out	Burial Ground	Burial Ground	Not Applicable	X	Closed Out
200-W-32	200-W-32; 216-Z-19 Borrow Pit	Waste Site	Inactive	Not Accepted	None	Depression/Pit (nonspecific)	Burial Ground	Not Applicable	X	Not Accepted
UPR-200-W-134	UPR-200-W-134; Improper Drum Burial at 218-W-3A	Waste Site	Inactive	Accepted	Rejected	Unplanned Release	Unplanned Release - Subsurface	Not Applicable	X	Rejected
UPR-200-W-45	UPR-200-W-45; Burial Box Collapse	Waste Site	Inactive	Accepted	Rejected	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable	X	Rejected
293W	ENCLOSURE AT 218W3A BURIAL GROUND	Facility	ACTIVE			BUILDING	Infrastructure Building			
219F	WEATHER PROTECTION TENT AT 4C BURIAL GROUND	Facility	ACTIVE			STRUCTURE	Infrastructure Building			
2508W11	SIREN BETWEEN DAYTON AND CAMDEN N OF 16TH	Facility	ACTIVE			STRUCTURE	Infrastructure Building			

MO2163	PPE CHANGE TRAILER AT DAYTON AND 23RD	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO223	OPERATIONS TRAILER N/O WRAP ON DAYTON AVE.	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO2323	RESTROOM TRL BETWEEN MO264 AND MO760	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO2500	SHOWER TRAILER AT DAYTON AND 19TH	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO264	MOBILE OFFICE S OF 19TH AND E OF DAYTON	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO611	REMOTE VENTING FIELD TRAILER	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO618	MOBILE OFFICE AT 218-W-4B BUIAL GROUND	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO760	MOBILE OFFICE FOR TRU RETRIEVAL SUPPORT	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office

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