APPENDIX G.5.6

B PLANT CRIBS AND TRENCHES (CP-LS-8, CENTRAL PLATEAU) EVALUATION UNIT SUMMARY TEMPLATE

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PART I. EXECUTIVE SUMMARY

EU LOCATION

Liquid waste sites (associated with B Plant operations) on the west side of 200 East.

RELATED EUS

CP-DD-2 (B Plant), CP-GW-1

PRIMARY CONTAMINANTS, CONTAMINATED MEDIA AND WASTES

The waste sites comprising the CP-LS-8 EU include legacy waste sites (e.g., cribs, French drains, reverse/injection wells, a trench, and unplanned releases (UPRs))[1] where liquid waste was discharged to the vadose zone as well as tanks and pipelines and associated equipment. Pipelines and associated equipment are typically treated in this Review as part of the Tank Waste and Farms EU (Appendix E.1 through Appendix E.11)[2]. Of the remaining waste sites, inventory information is reported (Table G.5.6-2 through Table G.5.6-4) for selected legacy sites (i.e., seven cribs, eight French drains, ten reverse/injection wells, one trench, and seven UPRs) in the Soil Inventory Model, Rev. 1 (Corbin, et al. 2005), which is used as the basis for analysis. Inventories are also reported for one miscellaneous underground storage tank (MUST).

The primary contaminants listed in the Soil Inventory Model (Corbin, et al. 2005) for the CP-LS-8 EU include:[3]

- Radionuclides: Am-241, C-14, Co-60, Cs-137/Ba-137m, Eu-154, tritium (H-3), Ni-63, Sr-90/Y-90, Tc-99, U-All isotopes, Pu-All isotopes
- Chemicals: Cr/Cr-VI, mercury (Hg), nitrate (NO_3), lead (Pb), and U-Total

BRIEF NARRATIVE DESCRIPTION

The CP-LS-8 EU legacy waste sites with non-zero reported inventories (Table G.5.6-2 through Table G.5.6-4) and that are included in an OU (Attachment A) are included in the following operable units:

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[1] The 221-B Stack Sand Filter (200-E-30) is managed as part of the B Plant EU (CP-DD-2 in Appendix F.7).

[2] Only one CP-LS-8 pipeline (200-E-195-PL) is part of the single-shell tank (SST) farm system (DOE/RL-2010-114, DRAFT A, p. A-8); however, inventories are not reported for other CP-LS-8 pipelines (i.e., Table G.5.6-2 through Table G.5.6-4). Thus these other pipelines (i.e., those without reported inventories) will not be considered in this Review.

[3] For radionuclides, those are listed if the total activity from the SIM, Rev. 1 exceeds 0.1 Ci or if they are listed in Table 6.1 (CRESP 2015a) and have a non-zero total activity. Unlike for the Interim Report (CRESP 2015b), the activities for all available uranium and plutonium were summed. For chemicals of potential concern, those are listed if the total mass from the SIM, Rev. 1 exceeds 1 kg or if they are listed in Table 6.1 (CRESP 2015a) and have a non-zero total mass. As indicated above, there were several WIDS codes that were included in the Data Sheets for multiple EUs; those WIDS codes with non-zero inventory were included in only a single EU for evaluation purposes (and to not double count inventory).

200-EA-1 (9), 200-DV-1 (2), 200-CB-1 (7), and 200-IS-1 (4)[4]. No remedial decisions have been made for these OUs (DOE/RL-2014-11, Rev. 0, p. 1-7); however, the author has decided to focus on the 200-EA-1 OU as an example. The 200-EA-1 Operable Unit (OU) is part of the Hanford 200 Area Site, which is on the EPA National Priority List (NPL) (DOE/RL-2011-56, Rev. 1). The 200-EA-1 OU consists of waste sites in the 200 East Inner Area not already assigned to other OUs. The CP-LS-8 EU waste sites primarily consist of liquid waste disposal sites associated with PUREX Facility operations and a few other waste sites such as infrastructure buildings and pipelines and associated equipment. Liquid waste disposal sites include cribs, French drains, reverse/injection wells, a trench, and unplanned releases (UPRs). The primary radioactive contaminants include Am-241, C-14, Co-60, Cs-137, Eu-154, H-3, Ni-63, Sr-90, Tc-99, and isotopes of uranium and plutonium. Primary chemical contaminants include Cr, Hg, NO_3, Pb, and uranium (total). All current land-use activities in the 200 West and 200 East Areas (where the CP-LS-8 is located) are *industrial* in nature (Hanford 200-Area ROD[5]). The following remedial actions alternatives will be considered:[6] i) No Action, ii) Maintain Existing Soil Cover, Institutional Controls (ICs), and Monitored Natural Attenuation (MNA), iii) Engineered Surface Barrier or Capping, iv) Removal, Treatment, and Disposal (RTD), and v) combinations of the options (DOE/RL-2004-66, Draft A; DOE/RL-2004-69, Draft A). The four (future) land-use scenarios listed in the Comprehensive Land Use Plan (CLUP) indicate that the 200 West and 200 East Areas are denoted *Industrial-Exclusive* (DOE/EIS-0222-F).

SUMMARY TABLES OF RISKS AND POTENTIAL IMPACTS TO RECEPTORS

Table G.5.6-1 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 B Plant Cribs and Trenches Area (CP-LS-8); a Co-located Person (CP) is an individual located 100 meters from the physical boundaries of the B Plant Cribs and Trenches Area; and 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 that takes engineered and administrative controls and protections into consideration, is shown in parentheses.

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[4] As shown in Attachment A, 13 of the waste sites with reported inventories are not included in an Operable Unit (i.e., indicated as TBD or not applicable).

[5] http://www.epa.gov/region10/pdf/sites/hanford/200/hanford_200_rod.pdf

[6] The BC Cribs and Trenches area includes 28 waste disposal sites, including 26 cribs and trenches. A draft focused feasibility study (FFS) was developed for this area (DOE/RL-2004-66, DRAFT A). A similar study has not been prepared for the B Plant Cribs and Trenches waste sites. Because of similarities in waste sites (primarily cribs and trenches) and location (200 East), the analysis provided in the BC Cribs and Trenches FFS will also be used here (and used instead of those provided in the Evaluation Unit Disposition Table (Appendix B)) because the hazards (associated with buried liquid waste legacy sites) are assumed similar enough for the rough order of magnitude analysis provided in this Review. Thus these alternatives (and the quantitative analysis provided in the BC Cribs and Trenches FFS) are used instead of those provided in the Evaluation Unit Disposition Table (Appendix B) for this EU. Note that the basic remedial component activities (No Action, capping, and RTD) are captured in both sets of remedial alternatives.

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[7]

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[6]

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.

[7] 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.5.6-1. 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: Monitoring and maintenance	Evaluation Time Period: Active Cleanup (to 2064) — From Cleanup Actions: Five alternatives considered
Human Health	Facility Worker	***Not Discernible (ND)-Low*** *(ND-Low)*	***Proposed Alternatives*: *ND-Low (No Action) to High (RTD)*** (*ND-Low to Low (RTD)*)
	Co-located Person	***ND-Low*** *(ND-Low)*	***Proposed Alternatives: ND-Low*** (*ND-Low*)
	Public	***ND*** (*ND*)	***Proposed Alternatives*: *ND*** (*ND*)
Environmental	Groundwater (A&B) from vadose zone[a]	*High* – Cr-VI and Sr-90 *Medium* – Cr(tot) and U(tot) *Low* – other A&B PCs **Overall**: *High*	*High* – Cr-VI *Medium* – Cr(tot), Sr-90[c], U(tot) *Low* – other A&B PCs **Overall**: *High*
	Columbia River from vadose zone[a]	Benthic and Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*	Benthic and Riparian: *ND* Free-flowing: *ND* **Overall**: *ND*
	Ecological Resources[b]	Low	Estimated to be Medium to High[d]
Social	Cultural Resources[b]	**Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: Unknown **Manhattan/Cold War** Direct: Known Indirect: Known	Estimated to be: [d] **Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: Unknown **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 2015a) remaining in the vadose zone. Threats from plumes associated with the B Plant Cribs and Trenches EU are described in Part V with additional information provided in Appendix G.5 (CP-GW-1) for the 200-BP Groundwater Interest Area (GWIA).

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. As described in **Part V**, the change in rating from *High* to *Medium* for Sr-90 is based on decay of the contamination remaining in the vadose zone.

d. No cleanup decisions have been made for this EU.

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

There is no Documented Safety Analysis (DSA) or hazard analysis (HA) for the CP-LS-8 waste sites because these sites do not currently satisfy the requirements for performing these types of analyses.

Thus evaluations of risk for this type of site (i.e., a legacy site) are often more qualitative in nature than those with a formal safety or hazard analysis.

Current

Facility workers are at risk when working near or within those areas with contaminated soil. Exposure to such contaminants is limited because contaminated soils and groundwater are located below grade. However, during certain characterization activities (e.g., drilling and sampling), there may be the potential for exposure to hazardous and radioactive contaminants; however, the potential exposure would be small and limited in duration. The workforce involved with characterization activities (which we will designate a Facility worker) would thus have an unmitigated *Not Discernible* (*ND*) to *Low* risk rating (as described below in **Part VI**). Risk to the Co-located Person (who is not in or near the contaminated soil) would also be rated *ND* to *Low.* The Public is rated as *ND* due to the remote distance to the site, depth from ground surface to soil contamination, and depth to groundwater contamination.

Unmitigated Consequences: Facility Worker – *ND* to *Low*, CP – *ND* to *Low*; Public – *ND*

Mitigation: The Department of Energy and contractor site-specific safety and health planning that includes work control, fire protection, training, occupational safety and industrial hygiene, emergency preparedness and response, and management and organization—which are fully integrated with nuclear safety and radiological protection—have proven effective in reducing industrial accident at the Hanford Site to well below that in private industry. Further, the safety and health program must effectively ensure that ongoing task-specific hazard analyses are conducted so that the selection of appropriate PPE can be made and modified as conditions warrant. Task-specific hazard analyses must lead to the development of written work planning documents and standard operating procedures (SOPs) that specify the controls necessary to safely perform each task, to include continuous employee exposure monitoring. Finally, Institutional Controls (ICs) will be used to control access to residual contaminants in soil and groundwater as long as they exceed the cleanup levels (CULs). Thus resulting Facility worker risks remain rated as *ND* to *Low*; others also remain the same.

Mitigated Consequences: Facility Worker – *ND* to *Low*, CP – *ND* to *Low*; Public – *ND*

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

Cleanup alternatives range from no action (monitoring and natural attenuation) to significant actions, including installation of an engineered barrier, and removal, treatment, and disposal (RTD) (DOE/RL-2004-66, Draft A; DOE/RL-2004-69, Draft A)[8]. Thus impacts to Facility workers (i.e., those performing the cleanup actions) from potential cleanup approaches would vary significantly. As described below (**Section VI**), the risk ratings for Facility workers range from *ND-Low* (No Action) to *High* (RTD) based on the action(s) that would be taken. Other ratings would not be impacted.

Unmitigated Risk: Facility Worker – *ND-Low* (No Action) to *High* (RTD); CP – ND-*Low*; Public – ND

Mitigation: See description in **Section VI**. Thus resulting Facility worker risks are rated as *Low* for active cleanup actions (RTD) and *ND-Low* for other actions; others remain the same.

[8] Because no DSA, Hazards Analysis, or feasibility study has been prepared for the B Plant Cribs and Trenches area, the draft focused feasibility study (FFS), alternatives, and quantitative analysis developed for the BC Cribs and Trenches area (DOE/RL-2004-66, Draft A) is selected to represent the risk and potential impacts associated with remedial options. Geographically, the BC Cribs and Trenches area is most proximate to the B Plant Cribs and Trenches area (for those such areas with focused feasibility studies). The alternatives are very similar to those provided in the Evaluation Unit Disposition Table (Appendix B) for this EU.

Mitigated Risk: Facility Worker – *ND-Low* to *Low* (RTD); CP – *ND-Low*; Public – *ND*

Groundwater, Vadose Zone, and Columbia River

Current

The CP-LS-8 EU is in the 200-BP groundwater interest area (GWIA) that is described in the CP-GW-1 EU (Appendix D.5). The saturated zone beneath the vicinity of the CP-LS-8 (B Plant Cribs and Trenches) area has elevated levels of nitrate, Sr-90, Tc-99, uranium (total), and I-129 based on the 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html); sites within the CP-LS-8 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). The current threats to groundwater and the Columbia River from contaminants already in the groundwater are evaluated as part of the CP-GW-1 EU (Appendix D.5). However, current threats to groundwater corresponding to only the CP-LS-8 EU contaminants *remaining* in the vadose zone (Table G.5.6-5) has an overall rating of *High* (based on Sr-90 and hexavalent chromium (Cr-VI)) as described in **Part V**. Contaminated groundwater is not being treated in the 200-BP GWIA (although there is a treatability study being conducted for uranium in the perched water zone under the B Complex that is not related to CP-LS-8 contamination) (DOE/RL-2016-09, Rev. 0). As indicated in **Part V**, 200-BP plumes have been linked to CP-LS-8 waste sites. Threats from contaminated groundwater in the area to contaminate additional groundwater or the Columbia River are evaluated as part of the CP-GW-1 EU (Appendix D.5).

For the 200-BP GWIA, no plume currently emanating from the CP-LS-8 waste sites 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 remedial actions being considered for the CP-LS-3 EU waste sites include i) No Action; ii) Maintain Existing Soil Cover, Institutional Controls (ICs), and Monitored Natural Attenuation (MNA); iii) Removal, Treatment, and Disposal (RTD); iv) Capping; and v) Partial Removal, Treatment, and Disposal with Capping; however, no final cleanup decisions have been made. Furthermore, no cleanup decisions have been made for the deep vadose zone (200-DV-1), including the CP-LS-8 EU contaminants in the deep vadose zone. Because no final cleanup decisions have been made, there is no way to definitively determine the risks and potential impacts to protected resources (groundwater and Columbia River). However, final cleanup decisions will be made to be protective of human health and the environment and thus it is likely that at least some vadose contamination will be removed to satisfy remedial goals and a cover will be installed (at least in places) to limit infiltrating water that tends to be the primary motive force to mobilize contamination in the vadose zone. Thus even though there are risks to workers associated with the cleanup of the CP-LS-8 waste sites (described above and in **Part VI**), there is unlikely any discernible impact from likely cleanup actions on groundwater or the Columbia River (and thus no changes were made to the current ratings to account for uncertainties).

Contaminants from the CP-LS-8 EU waste sites are currently impacting the vadose zone and groundwater. Without treatment, concentrations are unlikely to fall below thresholds before the Active Cleanup phase commences. Secondary sources in the vadose also threaten to continue to impact groundwater in the future, including the Active Cleanup period. The *High* rating associated with the CP-

LS-8 EU waste sites (Table G.5.6-5) is associated with Sr-90 and hexavalent chromium (Cr-VI) that could potentially impact the 200-BP GWIA (which is part of CP-GW-1, Appendix G.5). As described in the TC&WM EIS and summarized in **Part V**, radioactive decay would support that the rating would be reduced to *Medium* for Sr-90 during the Active Cleanup period and *Low* for the Near-term, Post Cleanup period; no other ratings would be impacted. There would be an insufficient impact from surface barrier emplacement to change ratings; this result is due to the large amounts of contaminants in the subsurface and not necessarily from an ineffective barrier. 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.5.6-5 would only be modified for Sr-90 as described in **Part V**. The ratings for the remaining Group A and B primary contaminants remain unchanged as in Table G.5.6-5 to account for undetermined treatment and to address uncertainties. Thus the overall rating remains *High* for all periods considered.

Ecological Resources

Current

17% of EU and 21% of the buffer is level 3 or greater. There are smaller patches of level 3 resources than other EUs in 200 East, yet there are areas of mature sagebrush in the north and west parts of the EU that support loggerhead shrikes. Low impact rating is based on minimal activity and infrequent application of herbicides.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

No cleanup decisions have been made for deep vadose zone. Cleanup decision for surface may change based on cleanup for deep vadose zone, and as a result, the potential effects of cleanup on ecological resources is uncertain for the active cleanup evaluation period. Multiple remediation actions will be used to address the diversity of waste sites. Remediation has the high potential to impact the resources (population of State sensitive species, including Piper's daisy) within the EU and adjacent buffer. Protection of sensitive species needs to be considered during remediation activities; revegetation with sensitive species is very difficult. Exotic species introduction can preclude the survival of existing native populations. Construction activity and noise can disrupt loggerhead shrike and other sensitive wildlife. Construction of temporary buildings associated with cleanup will increase pedestrian, car and truck traffic on a daily basis. Care should be taken to place the temporary buildings away from sensitive resources. Revegetation of area after remediation needs to consider the potential for competition with other level 3 resources.

Cultural Resources

Current

Area is highly disturbed and most of EU has not been inventoried for archaeological resources. Geomorphology indicates a low potential to contain intact archaeological resources on the surface and/or subsurface. There are no known recorded archaeological resources within the EU or within 500 meters of the EU. Two TCPs are visible from the EU.

National Register eligible Manhattan Project/Cold War Era resources have already been mitigated.

Risks and Potential Impacts from Selected or Potential Cleanup Approaches

No cleanup decisions have been made for the deep vadose zone, and archaeological investigations and monitoring may need to occur prior to remediation. The geomorphology indicates a low 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, installation of surface barriers and from residual contamination that may remain. Temporary indirect effects to viewshed are possible during remediation.

National Register eligible Manhattan Project/Cold War Era buildings will be demolished but they have already been mitigated.

Considerations for Timing of the Cleanup Actions

The saturated zone beneath the CP-LS-8 (B Plant Cribs and Trenches) area currently has elevated levels of I-129, nitrate (NO_3), Sr-90, and Tc-99, and uranium based on 2014 groundwater monitoring results (http://phoenix.pnnl.gov/apps/gw/phoenix.html). Sites within the CP-LS-8 EU (e.g., 216-B-4, 216-B-5, and 216-B-6 reverse/injection wells; 216-B-10A and 216-B-12, 216-B-55, and 216-B-62 cribs; and 216-B-59/59B trench/retention basin) are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0; Table 2-2). Groundwater monitoring is being conducted within the 200-BP GWIA, which is described as part of the CP-GW-1 EU (Appendix D.5). In general, large-scale treatment efforts have not been started in 200 East[9] and some plume areas (e.g., CN, Cr, Sr-90, and Tc-99) are increasing. Thus cleanup actions are warranted for this EU (200 East).

There is potential for additional contaminant release and migration through the vadose that may eventually impact groundwater as cleanup decisions and remedial 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

Groundwater: During the Near-term, Post-Cleanup period (described in Table G.5.6-6), the ratings for contaminants are unchanged from the current ratings in Table G.5.6-5 because treatment options have not been defined. The exception is Sr-90, which is rated *Medium* during the Active Cleanup period and *Low* during the Near-term, Post Cleanup period due to radioactive decay (**Part V**).

Columbia River: As indicated in **Part V**, no radionuclides or chemicals from the 200-BP GWIA 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* as is the overall rating (Table G.5.6-6).

PART II. ADMINISTRATIVE INFORMATION

OU AND/OR TSDF DESIGNATION(S)

CP-LS-8 EU. The *Operable Unit Cross-Walk* in Attachment 1 indicates 200-EA-1, 200-DV-1, and 200-OA-1. Other Operable Units mentioned in Attachment 1 (for WIDS codes included in the evaluation) are 200-SW-2, 200-IS-1, and 200-CB-1.

COMMON NAME(S) FOR EU

B Plant Cribs and Trenches

[9] A treatability study to remove uranium from the perched water zone beneath the B Complex is ongoing (DOE/RL-2016-09, Rev. 0).

KEY WORDS

B Plant Cribs and Trenches, B Plant, Central Plateau, 200 Area, 200-EA-1, 200-DV-1, 200-OA-1, 200-BP, 200-BP-5

REGULATORY STATUS:

Regulatory basis

The Hanford Federal Facility Agreement and Consent Order (also known as the Tri-Party Agreement or TPA) (Ecology et al., 1996) identifies the responsibilities of DOE, EPA, and the Washington State Department of Ecology under Section 120, "Federal Facilities," of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERLCA) to jointly administer remedial actions on the Hanford Site (DOE/RL-2010-49, Draft B). The CERCLA process is clearly established and described in detail at: www.epa.gov/superfund.

The TPA is a living document incorporating the remedial investigations (RIs), decisions, and actions agreed upon by DOE, EPA, and Ecology. DOE is the lead agency responsible for the remedial process at the Hanford Site, involving conducting an RI/FS, developing a plan and record of decision (ROD), and performing the remedial actions. Planning follows EPA guidance for the RI/FS, which are intended to meet RCRA facility investigation/corrective measures study (RFI/CMS) requirements. Finally, the TPA requires that the technical requirements of the Resource Conservation and Recovery Act (RCRA) corrective action process be fulfilled (DOE/RL-2010-49, Draft B).

No remedial decisions, including an interim or final Record of Decision (ROD), have been made for the 200-EA-1 OU (nor any of the other OUs referred to in this Appendix) (DOE/RL-2014-11, Rev. 0, p. 1-7).

There is also deep vadose zone contamination associated with CP-LS-8 waste sites (DOE/RL-92-19, Rev. 0) that will be treated as part of the 200-DV-1 OU. However, no remedial decisions have been made for the deep vadose zone and thus no regulatory documents are available (DOE/RL-2014-11, Rev. 0).

Applicable regulatory documentation

No remedial decisions, including an interim or final Record of Decision (ROD), have been made for the 200-EA-1, 200-DV-1, and 200-OA-1 OUs (DOE/RL-2014-11, Rev. 0, p. 1-7) although a draft work plan has been prepared for 200-DV-1 (DOE/RL-2011-102, Draft A). A draft remedial investigation and related plans have been prepared for the 200-BP-5 GW OU (DOE/RL-2006-55, Rev. 0; DOE/RL-2007-18, Rev. 1; DOE/RL-2009-127, Draft A).

Applicable Consent Decree or TPA milestones

Federal Facility Agreement and Consent Order, 1989 and amended through June 16, 2014 (Ecology et al., 1996):

- Milestone M-015-92A; Lead Regulatory Agency: Ecology. *Submit a RCRA Facility Investigation/Corrective Measures Study & Remedial Investigation/Feasibility Study work plan for the 200-EA-1 operable unit (200 East Inner Area) to Ecology.* Due Date: 09/30/2017.
- Milestone M-015-92B; Lead Regulatory Agency: Ecology. *Submit RCRA Facility Investigation/Corrective Measures Study & Remedial Investigation/Feasibility Study Report and Proposed Corrective Action Decision/Proposed Plan for the 200-EA-1 OU (Central Plateau 200 East Inner Area) to Ecology*. Due Date: 11/30/2022

- Milestone M-015-110B; Lead Regulatory Agency: Ecology. *Submit Corrective Measures Study & Feasibility Study Report and Proposed Plan/Proposed Corrective Action Decision for the 200-DV-1 OU to Ecology.* Due Date: 09/30/2023.

RISK REVIEW EVALUATION INFORMATION

Completed

February 24, 2017

Evaluated by

Kevin G. Brown

Ratings/Impacts Reviewed by

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PART III. SUMMARY DESCRIPTION

CURRENT LAND USE

DOE Hanford Site for industrial use. All current land-use activities in the 200 East Area are *industrial* in nature (EPA 2012).

DESIGNATED FUTURE LAND USE

Industrial-Exclusive. All four land-use scenarios listed in the Comprehensive Land Use Plan (CLUP) indicate that the 200 East Area is denoted *Industrial-Exclusive* (DOE/EIS-0222-F). An industrial-exclusive area is "suitable and desirable for treatment, storage, and disposal of hazardous, dangerous, radioactive, and nonradioactive wastes" (DOE/EIS-0222-F).

PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

The CP-LS-8 waste sites primarily consist of *liquid waste disposal* sites associated with 221-B Facility (B Plant) operations (see CP-DD-2 EU). The CP-LS-8 liquid waste disposal sites include cribs, French drains, reverse/injection wells, a trench, and unplanned releases (UPRs).

High-Level Waste Tanks and Ancillary Equipment

Note that the CP-LS-8 EU waste sites include one pipeline related to the Single Shell Tank System (DOE/RL-2010-114, Draft A, p. A-8) and thus the Tank and Waste Farms EUs (Appendix E.1 through Appendix E.11). This and potentially other pipeline and associated equipment waste sites are treated in the Tank Waste and Farms EU (Appendix E.1 through Appendix E.11). Any remaining pipeline and related wastes sites will not be evaluated further due to a lack of inventory information. Known leaks from pipelines and associated equipment are managed as UPRs.

Groundwater Plumes

The saturated zone beneath the CP-LS-8 area (B Plant Cribs and Trenches) has elevated levels of I-129, nitrate, Sr-90, and Tc-99, and total uranium based on the groundwater monitoring data from 2014

(http://phoenix.pnnl.gov/apps/gw/phoenix.html). The 200 East Area plumes are described in detail as part of the CP-GW-1 EU (Appendix D.5). Sites, primarily cribs, reverse wells, and French drains, within the CP-LS-8 EU are suspected of contributing contaminants to the saturated zone although the potential impact to groundwater from unplanned releases in the area is considered low because these sites were remediated by either removing soil or covering the area with uncontaminated fill material (DOE/RL-92-19, Rev. 0). Monitoring and a treatability study of the perched water zone beneath the B Complex (to remove uranium) is being conducted within the 200-BP GWIA, which is described as part of the CP-GW-1 EU (Appendix D.5).

Operating Facilities

Not applicable

D&D of Inactive Facilities

Not applicable

LOCATION AND LAYOUT MAPS

The CP-LS-8 EU is located in the Hanford Central Plateau Inner Area (shown in Figure G.5.6-1 and Figure G.5.6-2). The PUREX Cribs and Trenches (inside 200-E) (Figure G.5.6-3) are located in the southern part of 200-E Area.

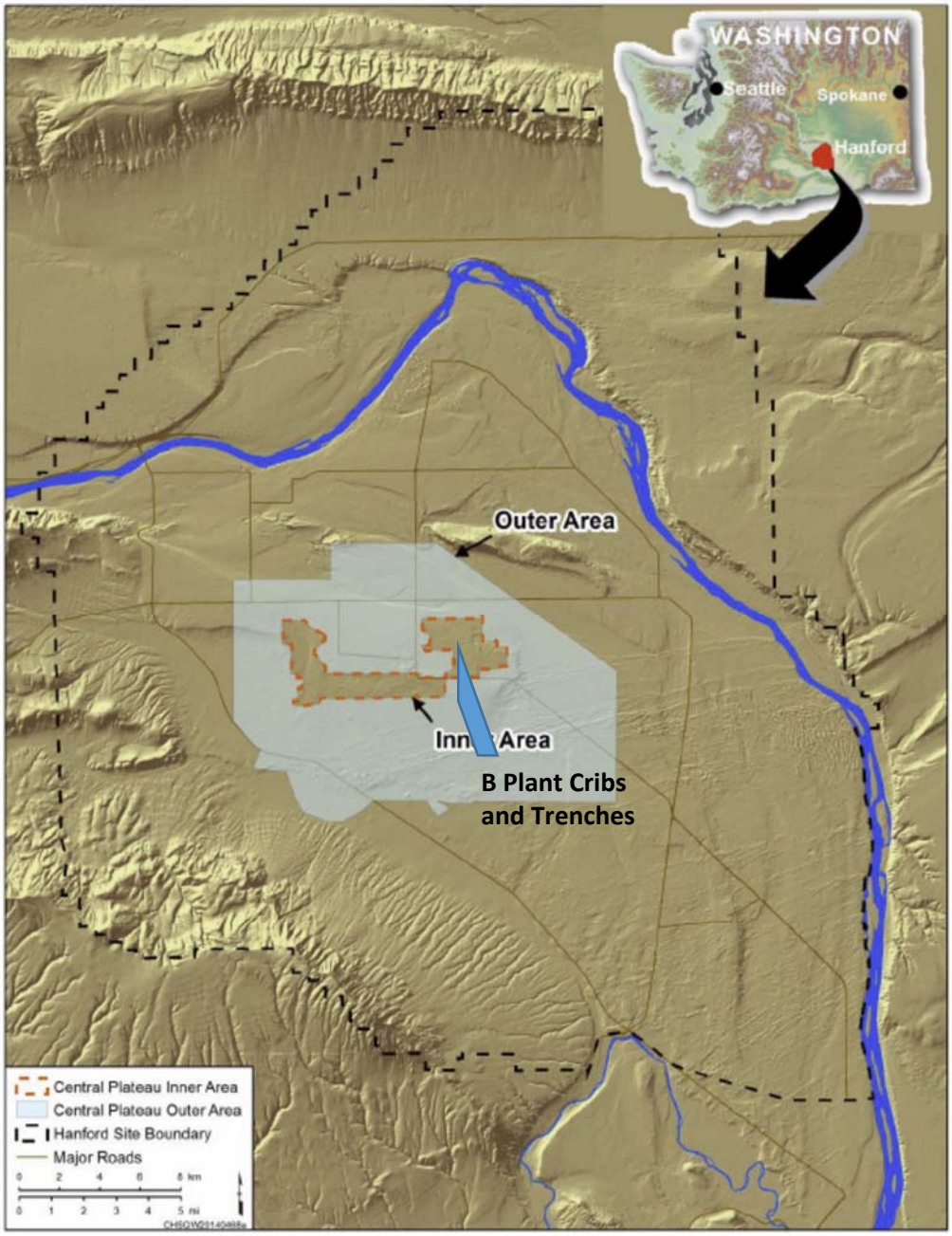

Figure G.5.6-1. The Hanford Site showing the Central Plateau Inner and Outer Areas (reproduced from (DOE/RL-2010-49, Draft B, p. 1-2))

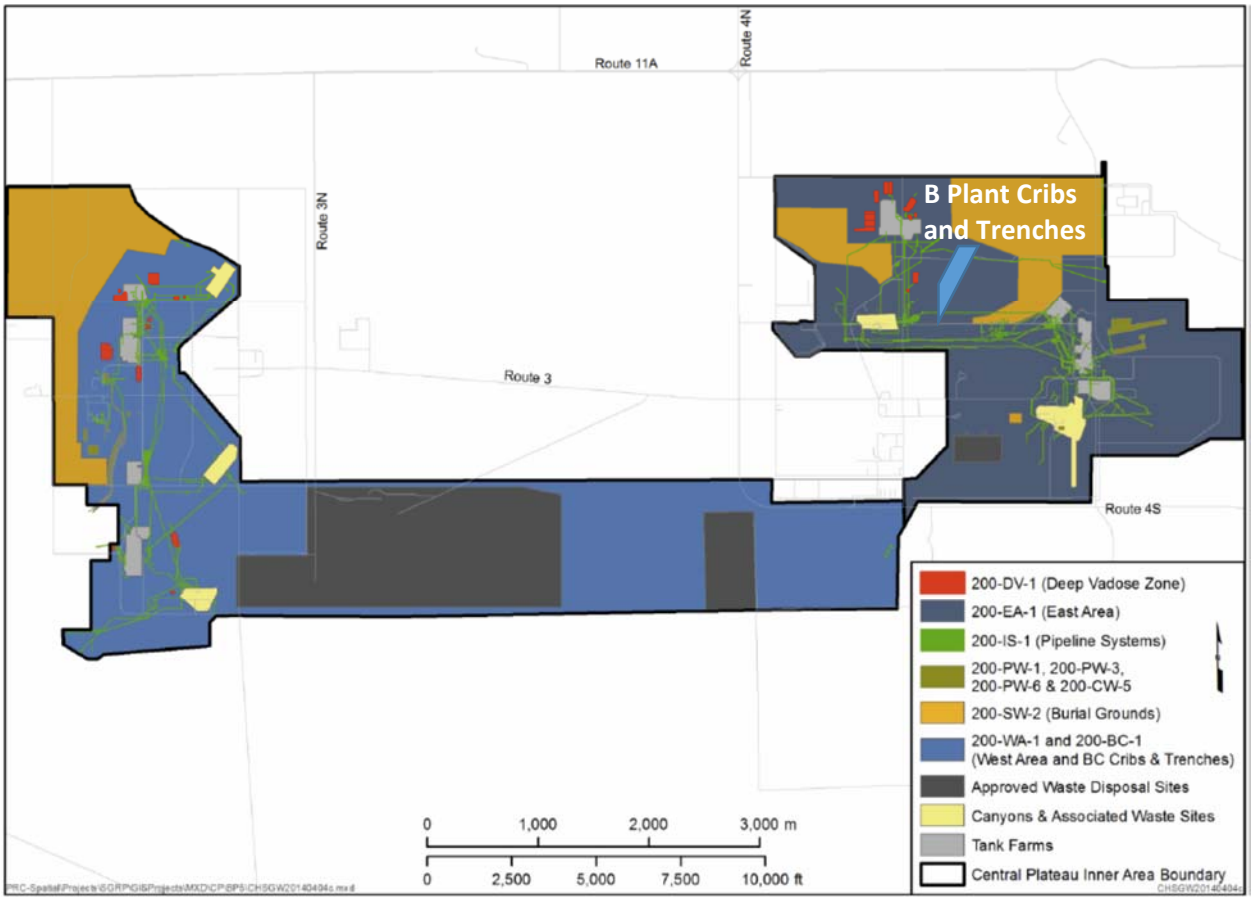

Figure G.5.6-2. Operable Units in the Hanford Central Plateau Inner Area (reproduced from (DOE/RL-2010-49, Draft B, p. 1-10))

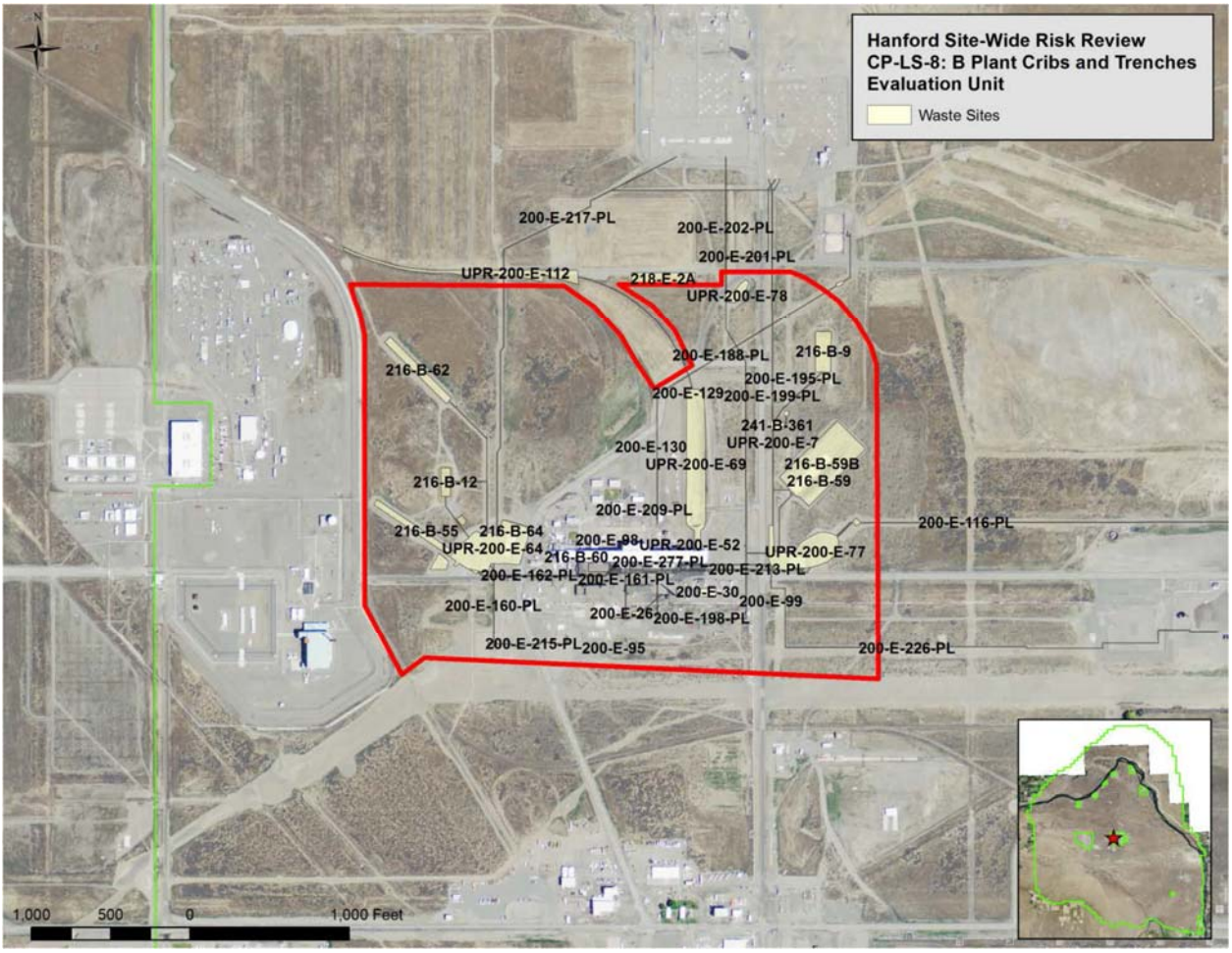

Figure G.5.6-3. CP-LS-8 (B Plant Cribs and Trenches) Site Location Map and Locations of Waste Sites

PART IV. UNIT DESCRIPTION AND HISTORY

EU FORMER/CURRENT USE(S)

The CP-LS-8 waste sites primarily consist primarily of *liquid waste disposal* sites associated with 221-B Facility (B Plant) operations (see the CP-DD-2 EU described in Appendix F.7). B Plant was a plutonium recovery facility located in the 200 East Area that operated from 1945 to 1952 using the bismuth-phosphate chemical separation process; the Plant was then used between 1968 and 1983 to separate more than 100 million curies of high-heat isotopes (Cs-137 and Sr-90) from single-shell tank wastes that was then stored at the Waste Encapsulation and Storage Facility (WESF) adjacent to B Plant; and B Plant then continued to support WESF operations from 1990 to 1995 when US DOE issued a shutdown order for B Plant (WA7890008967 Part V, Closure Unit Group 24; B Plant Complex). Of the wastes generated from B Plant operations, steam and process condensate streams were sent to cribs and chemical sewer waste sent to a trench (DOE/EIS-0089-D 1983, p. 5-12; WHC-SD-WM-ER-575, Rev. 0).

LEGACY SOURCE SITES

Of the wastes generated from B Plant operations, steam and process condensate streams were sent to cribs and chemical sewer waste sent to a trench. Examples of the wastes streams include (WHC-SD-WM-ER-575, Rev. 0):

- The 216-B-4 reverse well collected drainage from the 291-B stack from 1945 to 1947; afterwards, the drainage was rerouted to the 216-B-13 French drain, and the 216-B-4 reverse well collected floor drainage from the 292-B Stack Monitoring Building until December 1949 when it was closed and the drainage was sent to the 216-B-10A crib.
- The 216-B-6 reverse well collected radioactive waste water from the 222-B laboratory from 1945 to 1949 when the radionuclide capacity was reached. Afterwards, this waste was sent to the 216-B-10A crib.
- The 216-B-13 French drain collected drainage from the 291-B stack from 1947 to 1976.
- The 216-B-10A crib started operations in 1949 by collecting acid waste from the 222-B laboratory and floor drainage from the 292-B Building. Some waste overflowed into the 216-B-10B crib. The 216-B-10A crib continued to receive the 292-6 Building floor drainage until 1973.
- The 216-B-10B crib collected overflow from the 216-B-10A crib from 1949 to 1969.
- The 216-B-60 crib collected the 221-B Building cell cleanout solid and liquid waste in 1967. WESF was constructed above this crib in 1974.
- The 216-B-5 reverse well collected 224-B Building liquid waste from 1945 to 1946 and 221-B Building cell drainage from 1945 to 1947.
- The 216-B-9 crib was built in 1948 to replace the 216-B-5 reverse well and collected 221-B Building cell drainage until it was closed in 1951 when the radionuclide capacity was reached.
- The 216-B-12 crib received process condensate from the 221-U and 224-U Buildings and the 270-E-1 tank from 1952 to 1957. The crib was inactive for 10 years, then received B-Plant renovation construction waste in 1967. The 216-B-12 crib received neutralized waste fractionation process condensate from the 221-B Building from 1967 to 1973, when the crib collapsed.
- The 216-B-62 crib received process condensate from the 221-B Building from 1973 until 1985.
- The 216-B-56 crib was constructed in 1965 to receive organic waste from the 221-B Building but was never used.
- Retention basin 216-B-59 has operated since 1967 originally as a trench but was converted to a lined retention basin in 1974. If radioactivity is detected in the 221-B Building cooling water, it is diverted to retention basin 216-B-59 and returned to the 221-B Building for treatment. One discharge to the unlined trench occurred in 1968.
- The 216-B-55 crib received steam condensate from the 221-B Building from 1967 to 1990.
- Retention basin 216-B-64 was constructed in 1974 to receive contaminated process condensate from the 221-B Building but was never used.

As indicated in Table G.5.6-2 through Table G.5.6-4, the B Plant Cribs and Trenches EU waste sites *with reported inventory data* consists of seven cribs, eight French drains, ten reverse/injection wells, one

trench, and seven UPRs. These waste sites are considered representative of the major inventory sources and thus risks from this EU.

GROUNDWATER PLUMES

The saturated zone beneath the CP-LS-8 area (B Plant Cribs and Trenches) has elevated levels of I-129, nitrates, Sr-90, and Tc-99, and uranium based on the groundwater monitoring data from 2014 (http://phoenix.pnnl.gov/apps/gw/phoenix.html). The 200 East Area plumes are described in detail as part of the CP-GW-1 EU (Appendix D.5). Sites, including the 216-B-4, 216-B-5, and 216-B-6 reverse/injection wells; 216-B-10A and 216-B-12, 216-B-55, and 216-B-62 cribs; and 216-B-59/59B trench/retention basin, within the CP-LS-8 EU are suspected of being able to contribute mobile contaminants to the saturated zone although the potential impact to groundwater from unplanned releases in the area is considered low because these sites were remediated by either removing soil or covering the area with uncontaminated fill material (DOE/RL-92-19, Rev. 0). Monitoring of groundwater is being conducted within the 200-BP GWIA as described as part of the CP-GW-1 EU (Appendix D.5). A treatability study to remove uranium from the perched water zone beneath the B Complex is currently being conducted (DOE/RL-2016-09, Rev. 0). Only plumes in the 200-BP GWIA have been linked to CP-LS-8 waste sites.

D&D OF INACTIVE FACILITIES

Not applicable

ECOLOGICAL RESOURCES SETTING

Landscape Evaluation and Resource Classification

The B Plant Cribs and Trenches EU encompasses a large contiguous area of bare ground containing buildings, waste sites and roads centered around the B Plant EU (Appendix J, Figure J.24). Approximately 41% of the EU is classified as level 1 or 2 resources that are cut by roads and pipelines kept clear of vegetation. Altogether, more than 82% of the EU is classified as resource level 2 or below (Table J.22). Habitat classified as level 3 occurs primarily in the west and north sections and comprises over 17% of the EU resources.

The amount and proximity of biological resources surrounding the B Plant Cribs and Trenches EU were examined within the adjacent landscape buffer area, which extends 4152 feet (1266 m) from the geometric center of the EU. Within the combined EU and adjacent buffer area, over 79% of the is classified as level 2 or lower , while over 20% is classified as level 3 and level 4 (Appendix J, Table J.22). Level 3 resources are primarily found in the southwest section of the combined area, where it is broken by facilities, roads and waste sites into several large patches (Appendix J, Figure J.24).

Field Survey

Within the B Plant Cribs and Trenches EU boundary, nearly half the landscape is bare or graveled ground on or adjacent to waste sites, pipelines, and roads and is generally kept free of vegetation by spraying. Some areas occasionally hit by herbicides contain Russian thistle (*Salsola tragus*) as the dominant species. Fragments of successional and climax shrub-steppe habitat occur around the edges of the EU. Successional patches range from stands of the native grass Sandberg's bluegrass (*Poa secunda*) in the southwest and east parts of the EU to patches of gray rabbitbrush (*Ericameria nauseosa*) with an understory mixture of native and introduced grasses (Appendix J, Table J.21). Climax vegetation patches, classified as level 3 resources, are dominated by 10 to 25% big sagebrush (*Artemisia tridentata*) with an

understory composed of introduced and native grasses and forbs (Appendix J, Table J.21). Small circular patches of level 3 resources (Appendix J, Figure J.24) indicate locations where the state sensitive species, Piper's daisy (*Erigeron piperianus*), has been observed in the past, although none was noted this year.

Four loggerhead shrikes (*Lanius ludovicianus*), 1 adult and 3 food-begging juveniles, were observed in mature sagebrush in the northwest portion of the EU. Loggerhead shrikes are a Washington state candidate species. Field data records at the end of this EU description in Appendix J provide lists of plants and animals observed during the June 2015 survey.

CULTURAL RESOURCES SETTING

Much of the CP-LS-8, B Plant Cribs and Trenches EU has not been inventoried for archaeological resources and it is unknown if an NHPA Section 106 review has been completed specifically for remediation of the CP-LS-8, B Plant Cribs and Trenches EU. Five archaeological surveys were completed within portions of the EU, all with negative findings. 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.

Segments of the National Register-eligible Hanford Site Plant Railroad have been recorded within the CP-LS-8, B Plant Cribs and Trenches EU. The Plant Railroad is considered a contributing property within the Manhattan Project and Cold War Era Historic District (with documentation required). In addition, 12 National Register-eligible buildings associated with the Manhattan Project/Cold War Era Landscape have been recorded within the EU (all 12 are contributing within the Manhattan Project and Cold War Era Historic District, 3 with documentation required, and 9 with no additional documentation required). All National-Register-eligible Manhattan Project and Cold War Era buildings/properties have been documented as described in the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998).

Table K.9 (Appendix K) has more details on the 12 buildings that are National Register-eligible Manhattan Project and Cold War Era buildings located within the CP-LS-8, B Plant Cribs and Trenches EU.

Cultural resources located within 500 meters of the CP-LS-8, B Plant Cribs and Trenches EU include: five National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District (all 5 are contributing within the Manhattan Project and Cold War Era Historic District, 1 with documentation required, and 4 with no additional documentation required). All National-Register-eligible Manhattan Project and Cold War Era buildings/properties have been documented as described in the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998). In addition, the 216-B-5 Reverse Well has been documented within 500 meters of the EU and is also considered as a contributing property to the Historic District.

Historic maps and aerial imagery of the area suggest a low potential for archaeological resources associated with the Pre-Hanford Early Settlers/Farming Landscape to be present within the EU and its vicinity. Geomorphology indicates a low potential for the presence of archaeological resources associated with the Native American Precontact and Ethnographic Landscape to be present within the CP-LS-8, B Plant Cribs and Trenches EU. Further, extensive ground disturbance within the EU suggests a low potential for intact cultural resources at or below ground surface.

Because much of the CP-LS-8, B Plant Cribs and Trenches EU has not been inventoried for cultural resources, it may be appropriate to conduct surface archaeological investigations proper to 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

There are 35 waste sites in the CP-LS-8 EU that have reported inventory information in the TC&WM EIS (DOE/EIS-0391 2012) and SIM, Rev. 1 (Corbin, et al., 2005) (i.e., Table G.5.6-2 through Table G.5.6-4) and are considered representative of the major inventory sources and risks from this EU. These waste sites (with reported inventories) consist of one MUST, eight French drains, seven cribs, one trench, ten reverse/injection wells, and seven UPRs:

- The 241-B-361 Settling Tank operated from 1945 to 1947 and received 121,000 L of low salt, alkaline radioactive waste from cell washings collected in 5-6W Cell in 221-B and from 224-B. Solids are primarily $Bi(PO)_4$ (DOE/RL-92-19, Rev. 0).
- No information could be found concerning the operation of the 200-E-100, 200-E-25, and 200-E-99 French drains.
- The 200-E-55 French drain received 231,000 L of liquid waste between 1945 and 1997 (DOE/EIS-0391 2012, Appendix S, p. S-61).
- The 200-E-95 French drain received 219,000 L of liquid waste between 1945 and 1994 (DOE/EIS-0391 2012, Appendix S, p. S-61).
- The 200-E-97 French drain received 232,000 L of liquid waste between 1945 and 1997 (DOE/EIS-0391 2012, Appendix S, p. S-60).
- The 200-E-98 French drain received 192,000 L of liquid waste between 1945 and 1997 (DOE/EIS-0391 2012, Appendix S, p. S-60)
- The 216-B-10A Crib operated from 1949 to 1952 and received 9.99 million L of decon sink and sample slurper waste from 222-B and floor drainage from 292-B (DOE/RL-92-19, Rev. 0).
- The 216-B-10B Crib operated from 1969 to 1973 and received 28,000 L of decon sink and shower waste from 221-B and overflow from 216-B-10A (DOE/RL-92-19, Rev. 0).
- The 216-B-12 Crib operated from 1952 to 1973 and received 520 million L of process condensate from 221-U and 224-U waste evaporators, construction waste from 221-B, and process condensate from 221-B (DOE/RL-92-19, Rev. 0).
- The 216-B-13 French drain operated from 1947 to 1976 and received 28,000L of 291-B stack drainage (DOE/RL-92-19, Rev. 0).
- The 216-B-55 Crib operated from 1967 to 1991 and received 1,230 million L of steam condensate from 221-B (DOE/RL-92-19, Rev. 0; DOE/RL-2007-02-VOL II Rev. 0, pp. AD1-25).
- In 1967 the 216-B-60 Crib received 18.9 m^3 of cell cleanout solid and liquid waste from the sewer in 221-B (DOE/RL-92-19, Rev. 0).

- The 216-B-62 Crib operated from 1973 to 1986 and received 282 million L of process condensate from the 221-B Separations Facilities (DOE/RL-92-19, Rev. 0; DOE/EIS-0391 2012, Appendix S, p. S-60).
- The 216-B-9 Crib operated from 1948 to 1951 and received 36 million L of cell drainage and other liquid waste via Tank 5-6 in 221-B (DOE/RL-92-19, Rev. 0).
- No information could be found concerning the operation of the 200-E-88, 200-E-89, 200-E-90, 200-E-91, 200-E-92, 200-E-93, and 200-E-94 reverse/injection wells.
- The 216-B-4 reverse well operated from 1945 to 1949 and received 10,000 L of 291-B stack drainage and floor drainage from 292-B (DOE/RL-92-19, Rev. 0).
- The 216-B-5 reverse well operated from 1945 to 1947 and received 30.6 million L of supernatant overflow from the 216-B-361 settling tank waste via Tank 5-6 in 221-B and liquid waste from 224-B as well as cell drainage and other liquid waste via Tank 5-6 in 221-B (DOE/RL-92-19, Rev. 0).
- The 216-B-6 reverse well operated from 1945 to 1949 and received 6.0 million L of decontamination sink and sample slurper waste from 222-B (DOE/RL-92-19, Rev. 0).
- In 1967 the 216-B-59 Trench received 0.477 million L of liquid waste (DOE/EIS-0391 2012, Appendix S, p. S-60).
- Unplanned release UPR-200-E-1 (UN-200-E-1) occurred in 1966 as a failure of the 221-B to 241-BX-154 waste line resulting in an unknown volume of waste released to the soil (DOE/RL-92-19, Rev. 0).
- Unplanned release UPR-200-E-3 (UN-200-E-3) occurred in 1957 as a failure of a 221-B to 241-BX waste line resulting in an unknown volume of waste released to the soil (DOE/RL-92-19, Rev. 0).
- Unplanned release UPR-200-E-7 (UN-200-E-7) occurred in 1954 resulting in 19,000 L of cell wash water from 5-9 Tank being released to the soil (DOE/RL-92-19, Rev.0).
- Unplanned release UPR-200-E-77 occurred in 1946 when an unknown volume of metal waste solution with fission products spilled from 241-B-154 Diversion Box (DOE/RL-92-19, Rev.0).
- Unplanned release UPR-200-E-78 occurred in 1955 when an unknown volume of mixed fission product salt waste was discharged to the soil (DOE/RL-92-19, Rev.0).
- Unplanned release UPR-200-E-80 (UN-200-E-80) occurred in 1946 when an underground waste line south of 221-B Building leaked an unknown volume of waste into the soil (DOE/RL-92-19, Rev. 0).
- Unplanned release UPR-200-E-85 (UN-200-E-85) occurred in 1972 when the 18-1 waste line was suspected of leaking an unknown volume of waste into the soil (DOE/RL-92-19, Rev. 0).

CONTAMINATION WITHIN PRIMARY EU SOURCE COMPONENTS

Legacy Source Sites

The CP-LS-8 EU waste sites are primarily legacy sites and the reported inventory information is provided in Table G.5.6-2 through Table G.5.6-4. The exception is the 241-B-361 IMUST (Settling Tank), which is considered sufficiently isolated from the vadose zone to exclude from consideration (DOE/RL-88-30, Rev. 23, pp. 2401-2402 and 1062).

Vadose Zone Contamination

Because the CP-LS-8 EU waste sites are primarily legacy sites that represent soil and other vadose zone contamination, the reported inventory information is also provided in Table G.5.6-2 through Table G.5.6-4. However, because the 241-B-361 Settling Tank is considered sufficiently isolated from the vadose zone[10], the reported inventories for these waste sites are considered not part of the vadose zone inventory for the purpose of this Review.

The inventories provided in Table G.5.6-2 through Table G.5.6-4 (minus that for 241-B-361) represent the reported contamination originally discharged (without decay correction[11]) to the vadose zone from the CP-LS-8 EU waste sites. These values are used to estimate the inventory remaining in the vadose zone using the process described in the Methodology Report (CRESP 2015a) 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 2015a) in the vadose zone due to their mobility and persistence and potential threats to groundwater (a protected resource). To summarize (where current 200-BP (Group A and B) plumes for I-129 and CN are not associated with the B Plant Cribs and Trenches EU waste sites as described below) (DOE/RL-2016-09, Rev. 0)[12]:

- *Chromium* – There are reported inventories for chromium in the CP-LS-8 waste sites (Table G.5.6-4) but no current plumes in the 200-BP GWIA in the vicinity[13]. The inventory is dominated by the 216-B-5 and 216-B-6 injection/reverse wells.
- *Carbon tetrachloride (CCl_4) and trichloroethene (TCE)* – There are no reported vadose zone inventories for these contaminants for the CP-LS-3 waste sites (Table G.5.6-4).
- *I-129* – There are reported inventories for I-129 (Table G.5.6-2) as well as a very large plume in the vicinity. Sources include the BY Cribs, 216-B-8 Crib, and the UPR from tank 241-BX-102, which are managed in CP-TF-6 (B-BX-BY Tank and Waste Farms) and thus the plume is not associated with CP-LS-8. The vadose zone inventory is small (0.002 Ci) and is dominated by 216-B-62 Crib and UPR-200-E-85.
- *Tc-99* – There are reported inventories for Tc-99 (Table G.5.6-3) and plumes in the vicinity to the northeast of B Plant. Sources for the plumes include past releases from cribs and tanks in the B Complex (CP-TF-6), WMA C (CP-TF-7), and the 216-B-5 injection/reverse well, which is part of CP-LS-8. The vadose zone inventory is dominated by 216-B-12 and 216-B-62 Cribs.

[10] There has been no indication of leaking from the 241-B-361 IMUST although appears to have overflowed into a reverse well from the tank (DOE/RL-88-30, Rev. 23, p. 1064).
[11] As described in the Methodology Report (CRESP 2015a) 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 2015a).
[12] 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.
[13] There was a plume near the B Complex based on 2014 groundwater monitoring results; however, this plume is no longer present (Table 9-1, DOE/RL-2016-09, Rev. 0).

- *Uranium* – There are plumes in the vicinity[14] and reported vadose zone inventories for uranium (Table G.5.6-3 and Table G.5.6-4). The source for the B Complex plume is associated with the UPR from tank 241-BX-102, and the sources for the plume in the vicinity of B Plant are associated with the 216-B-12 Crib and the 216-B-5 injection well. The vadose zone inventory is dominated by the 216-B-12 Crib, with a smaller contribution from the 216-B-5 injection well.
- *Sr-90* – There is a plume in the vicinity and reported vadose zone inventories for Sr-90 (Table G.5.6-3). The plume near B Plant is associated with the injection of waste containing Sr-90 into the groundwater using the 216-B-5 injection well. The vadose zone inventory (outside of 241-B-361) is dominated by cribs, UPRs, and the 216-B-5 injection well. The Sr-90 originally discharged into the vadose zone (i.e., not that injected into groundwater using 216-B-5) would have had to travel through much of the vadose zone to impact groundwater. Using an analysis similar to that for Sr-90 in the A-AX Tank and Waste Farms EU (Section 6.5 in Appendix E.5), additional significant contribution to the existing Sr-90 plume from the 216-B-5 injection well is not expected in the next 150 years due to retardation in the vadose zone. Furthermore, the times required for the remaining vadose zone Sr-90 inventory from the CP-LS-8 EU sources to decay to values that would result in *Medium* and *Low* ratings are approximately 30 and 125 years, respectively, indicating that the vadose zone source is not excessively high and that decay would significantly impact the risk during the evaluation period.
- *Other Group A&B Primary Contaminants (PCs)* – There are no current plumes for other Group A and B PCs not mentioned above (i.e., C-14, Cl-36, or CN) *in the vicinity*[15]; however, there are reported vadose zone inventories C-14 (Table G.5.6-2) but none for Cl-36 (Table G.5.6-2) or CN (Table G.5.6-4). The reported C-14 inventory is dominated by cribs and the 216-B-5 injection well; furthermore, the reported C-14 inventory is very small (0.011 Ci total). Thus the remaining Group A and B PCs are not considered significant threats to the Hanford groundwater during the first 150 years.

Using the process outlined in Chapter 6 of the Methodology Report (CRESP 2015a) 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 in Table G.5.6-5 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 as illustrated in Table G.5.6-5. Note that the vadose zone (VZ) ratings range from *High* for Sr-90 and hexavalent chromium (Cr-VI) to *Medium* for total chromium to *Low* for the other Group A and B PCs with reported inventories. The overall current rating is defined as the highest over all the ratings and thus *High*.

Groundwater Plumes

Sites within the CP-LS-8 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). Monitoring of groundwater is being conducted within the 200-BP GWIA, which is described as part of the CP-GW-1 EU (Appendix D.5). There is also a treatability study underway to remove uranium from the perched water zone beneath the B Complex. The saturated zone inventories related to the CP-LS-8 EU are provided in Table G.5.6-5; the process for deriving these

[14] There is also significant uranium contamination in the perched water zone beneath the B Complex that is considered as part of the B-BX-BY Tank and Waste Farms EU (CP-TF-6 in Appendix E.7).

[15] There is a CN plume in the 200-BP that is associated with sources at the BY Cribs and B Tank Farm (CP-TF-6 in Appendix E.7) and not CP-LS-8 sources.

inventories is described in CRESP Methodology Report (CRESP 2015a) 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); however, as described in the previous sections, portions of the groundwater plumes can be associated with the B Plant Cribs and Trenches EU based on source information in the Groundwater Monitoring Report (DOE/RL-2016-09, Rev. 0), and these partial plume areas will be evaluated to provide a better idea of the saturated zone versus remaining vadose zone threats to groundwater. The estimated inventory for the saturated zone contamination is provided in Table G.5.6-5 where Photoshop was used to estimate the fraction of plumes considered associated with the U Plant Cribs and Ditches EU (Attachment 6-4 in the Methodology Report (CRESP 2015a) as revised for the 2015 Groundwater Monitoring Data (DOE/RL-2016-09, Rev. 0) described in Appendix D.1). This information is also used to estimate amounts treated and remaining in the vadose zone. For the groundwater plumes described in the 200-BP GWIA, apportionment of plumes and ratings to the B Plant Cribs and Trenches EU would be as follows (DOE/RL-2016-09, Rev. 0):

- *I-129* – There is a very large plume in the vicinity of the CP-LS-8 EU waste sites. Sources include the BY Cribs, 216-B-8 Crib, and the UPR from tank 241-BX-102, which are managed in CP-TF-6 (B-BX-BY Tank and Waste Farms) and thus the plume is not associated with CP-LS-8 and thus no portion of the 200-BP plume area is associated with the CP-LS-8 EU.
- *Tc-99* – There are plumes in the vicinity to the northeast of B Plant. Sources for the plumes include past releases from cribs and tanks in the B Complex (CP-TF-6), WMA C (CP-TF-7), and the 216-B-5 injection/reverse well, which is part of CP-LS-8. Because the 216-B-5 well is part of CP-LS-8, only the small plume near 216-B-5 is assumed associated with this EU, and the portion of the 200-BP plume area assigned is less than 1% (Appendix D.1).
- *Uranium* -- There are plumes in the vicinity near both B Complex (larger plume) and B Plant (smaller plume)). The source for the B Complex plume is the UPR from tank 241-BX-102, and the sources for the plume in the vicinity of B Plant are the 216-B-12 Crib and the 216-B-5 injection well. Because the 216-B-12 Crib and 216-B-5 well are part of the CP-LS-8 EU, the plume near B Plant is assumed associated with the EU, and portion of the 200-BP plume area assigned is 34% (Appendix D.1).
- *Sr-90* – There is a plume in the vicinity of B Plant as well as a larger plume near Gable Mountain Pond. The smaller plume near B Plant is associated with the injection of waste containing Sr-90 into the groundwater using the 216-B-5 injection well. Because the 216-B-5 well is part of the CP-LS-8 EU, the smaller 200-BP plume near B Plant is assumed associated with the EU, and portion of the 200-BP plume area assigned is 10% (Appendix D.1).
- *CN* – There is a plume near the B Complex. Sources include the BY Cribs and B Tank Farm, which are managed in CP-TF-6 (B-BX-BY Tank and Waste Farms) and thus the plume is not associated with CP-LS-8 and thus no portion of plume area is associated with the CP-LS-8 EU.
- *Group C&D Contaminants* – There are plumes and reported inventories for nitrate and tritium; however, these are not the focus of this discussion.

Thus portions of some of the 200-BP GWIA plumes are associated with the CP-LS-8 EU waste sites. Future treatment actions in the 200-BP GWIA would impact the CP-LS-8 EU contaminants and their associated risk to groundwater.

The groundwater plumes (i.e., Sr-90, Tc-99, and total uranium) associated with the Group A and B PCs from the B Plant Cribs and Ditches EU are described in detail in the Appendix G.5 for the CP-GW-1 EU (200-BP GWIA). Note that Sr-90 (*High*) is the primary risk driver for the 200-BP GWIA, where the CP-LS-8 EU waste sites contribute approximately 10% to the current Sr-90 plume and will likely contribute to this and others 200-BP plumes until active remedial actions are taken.

Impact of Recharge Rate and Radioactive Decay on Groundwater Ratings

As described in Appendix E.7 for the B-BX-BY Tank and Waste Farms EU, 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 on the predicted peak groundwater concentrations (relative to thresholds) at the B Barrier[16]. This result is not ascribed to an ineffective barrier, but instead to large amounts of contaminants already present in the subsurface and possible influence from sources outside the B Plant Cribs and Trenches EU. To summarize, the screening groundwater results including sources in addition to those for the B-BX-BY Tank and Waste Farms EU (Appendix O, DOE/EIS-0391 2012) include:

- Tc-99 peak concentration is 26,500 pCi/L (CY 3957) for the No Action Alternative versus 3,570 pCi/L (CY 2056) for Landfill Closure where the threshold value is 900 pCi/L.
- I-129 peak concentration is 58.8 pCi/L (CY 3577) for the No Action Alternative versus 4.5 pCi/L (CY 2056) for Landfill Closure where the threshold value is 1 pCi/L.
- Chromium peak concentration is 864 µg/L (CY 3882) for the No Action Alternative versus 215 µg/L (CY 2050) for Landfill Closure where the threshold value is 100 µg/L (total) or 48 µg/L (hexavalent).
- Uranium peak concentration is 41 µg/L (CY 11,778) for the No Action Alternative versus 4 µg/L (CY 11,778) for Landfill Closure where the threshold value is 30 µg/L.
- No values are reported at the B Barrier for Sr-90 for either scenario, which indicates that peak fluxes (related to the sources considered) were less than 1×10^{-8} Ci/yr (Appendix O, DOE/EIS-0391 2012, p. O-2).

Despite impacts on the predicted peak concentrations, the peak values for Tc-99, I-129, and chromium exceed thresholds at the B Barrier within 150-200 years and longer for either scenario, and thus ratings for these primary contaminants will not be altered based on recharge rate scenarios[17].

Uranium is already in the groundwater with contributions from the B Plant Cribs and Trenches waste sites (216-B-12 and 216-B-5) (DOE/RL-2016-09, Rev. 0). Furthermore, no treatment activities are underway to 200-BP to treat uranium in groundwater (although there is a treatability study extracting uranium from the perched water zone underneath the B Complex, which is unrelated to CP-LS-8). Thus despite the TC&WM EIS screening results, it is assumed that uranium would continue to contaminate

[16] 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 B Barrier is the closest to the B Plant Cribs and Trenches EU. Despite including sources other than those for the B Plant Cribs and Trenches EU, the analysis in the TC&WM EIS was considered the best and most consistent information to assess the impact of the engineered surface barrier emplacement.

[17] 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. These results do not indicate that the sources for the high concentrations of future contaminants in question are primarily from the B Plant Cribs and Trenches EU.

groundwater in sufficient quantity to exceed the standard during the period considered (i.e., the existing plume would be contained near the current area and not reach the B Barrier); therefore, the Active Cleanup and Near-term Post-Cleanup ratings would remain *Medium*.

For Sr-90, the times required for the remaining vadose zone inventory to decay to values that would result in *Medium* and *Low* ratings are approximately 30 and 125 years, respectively. Thus assuming that additional sources do not contribute to the current Sr-90 plume during the evaluation period as indicated above, the ratings for the end of the Active Cleanup would be changed to *Medium* and that for the Near-term Post-Cleanup periods would be changed to *Low* to account for decay and uncertainties in the evaluation.

Columbia River

Threats to the Columbia River similar to those presented by the B Plant Cribs and Ditches EU were evaluated in Section 7.5 of Appendix E.7 for CP-TF-6 (B-BX-BY Single-shell Tank and Waste Farm in 200 East) where all risks and potential impacts were rated *Not Discernible* (*ND*).

Table G.5.6-2. 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]			0.6	0.11	NR	0.71	12000	0.044	3.5	2300	0.0017
241-B-361	MUST		EIS-S	NR	NR	NR	NR	190	NR	NR	NR	NR
200-E-100	French drain	2001	SIM	2.20E-07	3.40E-08	NR	9.80E-08	0.0013	3.90E-09	2.90E-07	1.50E-06	7.20E-10
200-E-25	French drain	2001	SIM	NR	NR	NR	NR	2.20E-04	NR	NR	NR	NR
200-E-55	French drain	2001	SIM	5.90E-06	7.90E-07	NR	9.10E-07	3.80E-02	6.20E-08	4.70E-06	4.10E-05	1.70E-08
200-E-95	French drain	2001	SIM	6.00E-06	8.00E-07	NR	9.30E-07	3.90E-02	6.30E-08	4.80E-06	4.20E-05	1.70E-08
200-E-97	French drain	2001	SIM	6.00E-06	8.00E-07	NR	9.30E-07	3.90E-02	6.30E-08	4.80E-06	4.20E-05	1.70E-08
200-E-98	French drain	2001	SIM	5.00E-06	6.70E-07	NR	7.80E-07	0.032	5.30E-08	4.00E-06	3.50E-05	1.40E-08
200-E-99	French drain	2001	SIM	2.20E-07	3.40E-08	NR	9.80E-08	0.0013	3.90E-09	2.90E-07	1.50E-06	7.20E-10
216-B-10A	Cribs	2001	SIM	0.0017	2.30E-04	NR	2.70E-04	11	1.80E-05	0.0014	0.064	4.90E-06
216-B-10B	Cribs	2001	SIM	3.70E-09	1.20E-09	NR	9.40E-09	0.00013	3.60E-10	2.90E-08	5.10E-08	1.60E-05
216-B-12	Cribs	2001	SIM	5.40E-02	9.50E-03	NR	1.10E-02	330	5.70E-04	4.40E-02	2300	1.50E-04
216-B-13	French drain	2001	SIM	9.00E-07	1.20E-07	NR	1.40E-07	0.0057	9.40E-09	7.10E-07	6.20E-06	2.60E-09
216-B-55	Cribs	2001	SIM	6.40E-05	3.40E-05	NR	3.90E-04	0.14	9.90E-06	7.40E-04	1.80E-04	7.60E-07
216-B-60	Cribs	2001	SIM	2.90E-06	4.50E-08	NR	3.00E-07	0.0028	4.70E-08	3.30E-06	4.60E-06	1.10E-05
216-B-62	Cribs	2001	SIM	0.22	0.065	NR	6.20E-01	9.70E+03	0.035	2.7	0.36	1.30E-03
216-B-9	Cribs	2001	SIM	1.30E-01	1.10E-02	NR	7.60E-03	1.20E+01	3.40E-03	2.60E-01	0.0017	1.30E-06
200-E-88	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	1.30E-03	3.80E-09	2.90E-07	1.50E-06	7.20E-10
200-E-89	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	0.0013	3.80E-09	2.90E-07	1.50E-06	7.20E-10
200-E-90	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	0.0013	3.80E-09	2.90E-07	1.50E-06	7.20E-10
200-E-91	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	0.0013	3.80E-09	2.90E-07	1.50E-06	7.20E-10
200-E-92	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	0.0013	3.80E-09	2.90E-07	1.50E-06	7.20E-10
200-E-93	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	0.0013	3.80E-09	2.90E-07	1.50E-06	7.20E-10
200-E-94	Injection/Reverse Well	2001	SIM	2.20E-07	3.40E-08	NR	9.70E-08	0.0013	3.80E-09	2.90E-07	1.50E-06	7.20E-10
216-B-4	Injection/Reverse Well	2001	SIM	1.70E-06	2.30E-07	NR	2.70E-07	0.011	1.80E-08	1.40E-06	1.20E-05	4.90E-09
216-B-5	Injection/Reverse Well	2001	SIM	0.12	0.011	NR	0.0053	8.7	0.0023	0.23	0.00011	1.90E-06
216-B-6	Injection/Reverse Well	2001	SIM	0.001	0.00014	NR	0.00016	6.5	1.10E-05	0.00081	0.0071	2.90E-06
216-B-59	Trenches	2001	SIM	2.60E-08	1.40E-08	NR	1.60E-07	5.70E-05	4.00E-09	2.90E-07	7.10E-08	3.00E-10
UPR-200-E-1	UPR	2001	SIM	0.0021	0.0019	NR	0.0023	6.4	4.30E-05	0.0041	0.059	1.50E-06
UPR-200-E-3	UPR	2001	SIM	0.00017	2.70E-05	NR	0.0001	0.15	3.80E-06	0.00027	0.002	5.80E-07
UPR-200-E-7	UPR	2001	SIM	0.00011	5.40E-06	NR	4.90E-06	0.0063	2.70E-06	0.0002	1.60E-06	NR
UPR-200-E-77	UPR	2001	SIM	2.90E-05	1.10E-05	NR	5.20E-06	0.48	2.30E-07	2.20E-05	0.0004	1.10E-07

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)
UPR-200-E-78	UPR	2001	SIM	0.044	2.20E-05	NR	0.0032	3.4	0.00061	0.048	5.00E-05	5.10E-08
UPR-200-E-80	UPR	2001	SIM	3.20E-05	1.20E-05	NR	5.80E-06	0.54	2.60E-07	2.50E-05	0.00045	1.20E-07
UPR-200-E-85	UPR	2001	SIM	0.017	0.0094	NR	0.059	37	0.0027	0.2	0.049	0.00021

a. NR = Not reported for indicated EU
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0 (Corbin, et al. 2005)
d. Radionuclides are summed without decay correction since the uncertainties in inventories are large.

Table G.5.6-3. 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			0.028	2.7	210	6300	4.4	10
241-B-361	MUST		EIS-S	NR	NR	150	3100	NR	NR
200-E-100	French drain	2001	SIM	9.30E-09	8.80E-07	9.10E-07	0.00016	8.10E-07	4.10E-08
200-E-25	French drain	2001	SIM	NR	NR	3.00E-05	1.90E-03	NR	2.30E-08
200-E-55	French drain	2001	SIM	2.30E-07	2.20E-05	8.70E-05	9.50E-03	1.70E-05	1.20E-06
200-E-95	French drain	2001	SIM	2.40E-07	2.30E-05	8.20E-05	9.30E-03	1.70E-05	1.20E-06
200-E-97	French drain	2001	SIM	2.40E-07	2.30E-05	8.70E-05	9.60E-03	1.70E-05	1.20E-06
200-E-98	French drain	2001	SIM	2.00E-07	1.90E-05	7.20E-05	0.008	1.40E-05	1.00E-06
200-E-99	French drain	2001	SIM	9.30E-09	8.80E-07	9.10E-07	0.00016	8.10E-07	4.10E-08
216-B-10A	Cribs	2001	SIM	6.80E-05	6.40E-03	0.0072	1.3	0.0054	0.0033
216-B-10B	Cribs	2001	SIM	1.90E-09	1.80E-07	1.90E-08	1.00E-06	3.10E-08	1.00E-10
216-B-12	Cribs	2001	SIM	1.50E-03	0.15	0.27	120	1.60E+00	1.00E+01
216-B-13	French drain	2001	SIM	3.60E-08	3.40E-06	7.20E-06	0.0011	2.60E-06	1.80E-07
216-B-55	Cribs	2001	SIM	6.40E-06	6.10E-04	0.00015	0.00022	1.30E-03	3.50E-07
216-B-60	Cribs	2001	SIM	4.20E-07	4.00E-05	5.10E-01	0.0023	8.10E-07	5.00E-03
216-B-62	Cribs	2001	SIM	0.019	1.7	4.50E-01	8.30E+01	2.40E+00	8.50E-04
216-B-9	Cribs	2001	SIM	2.90E-03	2.50E-01	1.00E+01	1.10E+01	0.0057	8.40E-03
200-E-88	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.10E-07	1.60E-04	8.10E-07	4.10E-08
200-E-89	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.00E-07	1.60E-04	8.10E-07	4.10E-08
200-E-90	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.10E-07	1.60E-04	8.10E-07	4.10E-08
200-E-91	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.00E-07	0.00016	8.10E-07	4.10E-08
200-E-92	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.10E-07	0.00016	8.10E-07	4.10E-08
200-E-93	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.10E-07	0.00016	8.10E-07	4.10E-08
200-E-94	Injection/Reverse Well	2001	SIM	9.30E-09	8.80E-07	9.10E-07	0.00016	8.10E-07	4.10E-08
216-B-4	Injection/Reverse Well	2001	SIM	6.80E-08	6.40E-06	7.20E-06	0.0013	4.90E-06	3.40E-07
216-B-5	Injection/Reverse Well	2001	SIM	0.0029	0.25	42	7.6	0.0043	0.0072
216-B-6	Injection/Reverse Well	2001	SIM	4.10E-05	0.0039	0.0043	0.79	0.0029	0.0002
216-B-59	Trenches	2001	SIM	2.60E-09	2.40E-07	5.90E-08	8.80E-08	5.10E-07	1.40E-10
UPR-200-E-1	UPR	2001	SIM	0.00039	0.057	0.12	5.5	0.0031	0.00043
UPR-200-E-3	UPR	2001	SIM	8.80E-06	0.0012	2.40E-05	0.022	6.70E-05	7.00E-06
UPR-200-E-7	UPR	2001	SIM	1.40E-06	0.00012	0.004	0.0054	2.70E-06	3.00E-06

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)
UPR-200-E-77	UPR	2001	SIM	2.90E-06	0.00025	0.00016	0.086	0.00024	2.30E-05
UPR-200-E-78	UPR	2001	SIM	0.00045	0.042	0.0024	15	0.00084	3.30E-06
UPR-200-E-80	UPR	2001	SIM	3.20E-06	0.00027	0.00018	0.096	0.00026	2.50E-05
UPR-200-E-85	UPR	2001	SIM	0.0017	0.16	0.04	6.2	0.36	9.50E-05

a. NR = Not reported for indicated EU
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0 (Corbin, et al. 2005)
d. Radionuclides are summed without decay correction since the uncertainties in inventories are large.

Table G.5.6-4. Inventory of Primary Contaminants (cont)[a]

WIDS	Description	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		NR	NR	7600	NR	2.2	4.00E+06	14	NR	NR	15000
241-B-361	MUST	EIS-S	NR	NR	NR	NR	NR	NR	NR	NR	NR	NR
200-E-100	French drain	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.12	0.0011	NR	NR	6.10E-05
200-E-25	French drain	SIM	NR	NR	NR	NR	0.00063	0.067	1.10E-03	NR	NR	2.80E-05
200-E-55	French drain	SIM	NR	NR	0.0019	NR	0.0017	0.6	0.0029	NR	NR	1.80E-03
200-E-95	French drain	SIM	NR	NR	0.002	NR	0.0016	6.00E-01	2.70E-03	NR	NR	1.80E-03
200-E-97	French drain	SIM	NR	NR	0.002	NR	0.0017	0.61	0.0029	NR	NR	0.0018
200-E-98	French drain	SIM	NR	NR	0.0016	NR	0.0014	0.51	0.0024	NR	NR	0.0015
200-E-99	French drain	SIM	NR	NR	7.00E-05	NR	2.10E-08	1.20E-01	0.0011	NR	NR	6.10E-05
216-B-10A	Cribs	SIM	NR	NR	42	NR	1.80E-04	1200	NR	NR	NR	4.8
216-B-10B	Cribs	SIM	NR	NR	12	NR	NR	270	NR	NR	NR	2.60E-08
216-B-12	Cribs	SIM	NR	NR	5.60E+02	NR	2.10E+00	2.90E+06	3.50E+00	NR	NR	15000
216-B-13	French drain	SIM	NR	NR	2.90E-04	NR	1.30E-04	0.079	0.00023	NR	NR	0.00027
216-B-55	Cribs	SIM	NR	NR	1.50E-02	NR	2.90E-06	600	6.6	NR	NR	0.00028
216-B-60	Cribs	SIM	NR	NR	7.90E+00	NR	NR	180	NR	NR	NR	0.63
216-B-62	Cribs	SIM	NR	NR	3.00E+01	NR	1.10E-02	760	3.10E+00	NR	NR	1.00E+00
216-B-9	Cribs	SIM	NR	NR	640	NR	NR	170000	NR	NR	NR	1.20E+01
200-E-88	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	0.0011	NR	NR	6.10E-05
200-E-89	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	1.10E-03	NR	NR	6.10E-05
200-E-90	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	1.10E-03	NR	NR	6.10E-05
200-E-91	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	0.0011	NR	NR	6.10E-05
200-E-92	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	0.0011	NR	NR	6.10E-05
200-E-93	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	0.0011	NR	NR	6.10E-05
200-E-94	Injection/Reverse Well	SIM	NR	NR	7.00E-05	NR	2.10E-08	0.11	0.0011	NR	NR	6.10E-05
216-B-4	Injection/Reverse Well	SIM	NR	NR	0.00056	NR	1.70E-07	0.12	NR	NR	NR	0.0005
216-B-5	Injection/Reverse Well	SIM	NR	NR	3800	NR	NR	950000	NR	NR	NR	11
216-B-6	Injection/Reverse Well	SIM	NR	NR	2500	NR	NR	58000	NR	NR	NR	0.3
216-B-59	Trenches	SIM	NR	NR	5.90E-06	NR	1.20E-09	0.24	0.0026	NR	NR	1.10E-07
UPR-200-E-1	UPR	SIM	NR	NR	7.3	NR	NR	2200	NR	NR	NR	0.63
UPR-200-E-3	UPR	SIM	NR	NR	0.12	NR	0.00011	35	NR	NR	NR	0.01
UPR-200-E-7	UPR	SIM	NR	NR	0.41	NR	NR	91	NR	NR	NR	0.0044

WIDS	Description	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)
UPR-200-E-77	UPR	SIM	NR	NR	0.0063	NR	NR	0.4	NR	NR	NR	0.033
UPR-200-E-78	UPR	SIM	NR	NR	0.061	NR	5.00E-05	7.6	0.07	NR	NR	0.0047
UPR-200-E-80	UPR	SIM	NR	NR	0.007	NR	2.20E-09	0.45	NR	NR	NR	0.037
UPR-200-E-85	UPR	SIM	NR	NR	4.1	NR	0.00081	190	0.25	NR	NR	0.078

a. NR = Not reported for indicated EU
b. EIS-S = DOE/EIS-0391 2012
c. SIM = RPP-26744, Rev. 0 (Corbin, et al. 2005)

Table G.5.6-5. 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	0.25	0	1.82	1.08E-01 Ci	---	---	1.08E-01 Ci	5.41E-02	*Low*
I-129	A	1 pCi/L	0.25	0.2	1.82	1.69E-03 Ci	---	---	1.69E-03 Ci	6.89E-01	*Low*
Sr-90	B	8 pCi/L	0.25	22	1.82	2.50E+02 Ci	1.41E-01 Ci	---	2.50E+02 Ci	1.94E+02	*High*
Tc-99	A	900 pCi/L	0.25	0	1.82	4.42E+00 Ci	3.67E-01 Ci	2.18E-04 Ci	4.05E+00 Ci	4.50E+00	*Low*
CCl4	A	5 µg/L	0.25	0	1.82	---	---	---	---	---	*ND*
Cr	B	100 µg/L	0.25	0	1.82	7.59E+03 kg	---	---	7.59E+03 kg	7.59E+01	*Medium*
Cr-VI	A	48 µg/L[b]	0.25	0	1.82	7.59E+03 kg	---	---	7.59E+03 kg	1.58E+02	*High*
TCE	B	5 µg/L	0.25	2	1.82	---	---	---	---	---	*ND*
U(tot)	B	30 µg/L	0.25	0.8	1.82	1.51E+04 kg	1.13E+02 kg	2.41E+01 kg	1.50E+04 kg	7.33E+01	*Medium*

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

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). Amounts removed are from the perched water treatability study.

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

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?

Waste sites were covered in soil, which is maintained as needed to prevent release to the air or intrusion by biological receptors or humans. The primary accident scenarios are direct human and ecological contact as well as continued groundwater impact. There is little remedial work being done in the 200 East Area; thus risk to workers would tend to be related to standard industrial risks ("slips, trips, and falls") and those related to monitoring activities including sampling and well drilling.

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

Not applicable.

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

Not applicable.

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?

The primary barriers to release and transport from the waste sites, include sorption to vadose zone and saturated zone media and soil cover (DOE/RL-2016-09, Rev. 0). The cover soil is still in place although waste sites within the CP-LS-8 EU continue to contaminate the surrounding vadose zone media and may be leading to additional saturated zone contamination. There is a deep vadose zone beneath the 200 East Area through which contaminants must travel to reach groundwater and then to off-site areas (e.g., Columbia River) where receptors could be exposed. Restrictions on use of site groundwater also represent a barrier to exposure. Because of relatively long travel times, natural attenuation of the radionuclides with relatively short half-lives (when compared to travel times) can also be considered a barrier. Furthermore, the large flow in the Columbia River tends to dilute the concentration of any contaminants to which receptors might be exposed via the surface water pathway. Thus there are currently no complete pathways to human or ecological receptors; however, there is a complete path to the saturated zone (via the vadose zone), which is treated as a protected resource.

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

Any events (e.g., significant water line break or increased infiltration including temporary cover degradation) that could provide sufficient water to the CP-LS-8 waste sites to cause additional release and migration of the relatively more mobile species (e.g., chromium, Tc-99, and I-129) in the Hanford subsurface environment.

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

The primary pathway from the CP-LS-8 EU waste sites is release to the vadose zone (primarily from contact with infiltrating water) and then migration of the released contaminants to the saturated zone

(groundwater), which is considered a protected resource (and thus receptor) in this Review and ultimately the Columbia River (which is also considered a protected resource and thus a receptor for the purpose of this study). Either contaminated groundwater (after use restrictions are lifted) or surface water (Columbia River) could be used by human or ecological receptors.

There are complete pathways for the exposure of ecological receptors to vadose zone contaminants in the CP-LS-8 EU legacy source areas. There will also be other possible pathways (ingestion, external radiation and dermal, inhalation) from residual wastes to human and ecological receptors after institutional controls are lifted.

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

As described in the CP-GW-1 (Appendix D.5), the relatively long residence times in Hanford groundwater are consistent with recharge conditions for a semi-arid site; however, there is variation in expected residence times (PNNL-6415 Rev. 18, p. 4-72). Groundwater travel time from 200 East where the CP-LS-8 EU waste sites are located to the Columbia River is ~10-30 years, which limits impacts to the Columbia River to very mobile contaminants over very long time frames. Travel times from the 200 Areas to the Columbia River are expected to decrease because of the reduced hydraulic gradient from the discontinued wastewater recharge in the 200 Areas.

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

Waste sites in the CP-LS-8 EU pose a current risk (where constituents have already migrated from waste sites to the saturated zone) and continuing risk to protected natural resources in the area including groundwater and perhaps the Columbia River over the long-term. However, since there is prohibition on the use of groundwater through the Active and Near-term, Post-Cleanup periods, there is no risk to humans. Furthermore, the risks to benthic, riparian zone, and free-flowing ecology are minimal as described in **Part V** of Appendix D.5 (CP-GW-1 EU).

POPULATIONS AND RESOURCES CURRENTLY AT RISK OR POTENTIALLY IMPACTED

As mentioned in **Part I**, there is no Documented Safety Analysis or hazard analysis for the CP-LS-8 waste sites because they do not currently satisfy the requirements for performing these types of analyses. Thus evaluations of risk for this type of site (i.e., a legacy site) are often more qualitative in nature than those with a formal safety analysis.

The Department of Energy and contractor site-specific safety and health planning that includes work control, fire protection, training, occupational safety and industrial hygiene, emergency preparedness and response, and management and organization—which are fully integrated with nuclear safety and radiological protection—have proven to be effective in reducing industrial accidents at the Hanford Site to well below that in private industry. Further, the safety and health program must effectively ensure that ongoing task-specific hazard analyses are conducted so that the selection of appropriate PPE can be made and modified as conditions warrant. Task-specific hazard analyses must lead to the development of written work planning documents and standard operating procedures (SOPs) [DOE uses the term work planning documents in addition to procedures] that specify the controls necessary to safely perform each task, to include continuous employee exposure monitoring. Last, ICs will be used to control access to residual contaminants in soil and groundwater as long as they exceed the cleanup levels (CULs). As such, mitigation actions will generally lead to reduced risks.

Facility Worker

Facility workers are at risk when working in or around areas with contaminated soils, including working on active remedial activities involving these legacy sources, which are currently not being conducted. Exposure to such contaminants is currently limited because waste sites and contaminated soils are located below grade. However, during maintenance and monitoring operations near the CP-LS-8 waste sites (e.g., drilling and sampling), there may be the potential for limited exposure to hazardous and radioactive contaminants; however, risks would be minimal and short-term resulting from monitoring and maintenance activities conducted by experienced workers and appropriate safety precautions (DOE/RL-2004-66, Draft A). Thus current risks to workers are considered not an issue due to protective soil covers over most waste sites and the safety measures taken for work activities in the area.

Facility Worker: Risks are thus rated as *Not Discernible* (*ND*) to *Low* because of the soil cover over most sites, with mitigated risk of *ND* to *Low* due to both soil cover and employed safety measures (as described above).

Co-Located Person (CP)

For this EU, co-located persons would be expected to have similar reduced exposures as for facility workers.

Co-Located Person: Risks are thus rated as *ND* to *Low*, with mitigated risk of *ND* as described above.

Public

The public would be expected to have significantly reduced exposure, even lower than that for facility workers and co-located persons, due to the remote distance to the site, depth from ground surface to soil contamination, and depth to groundwater contamination (and restrictions on use).

Public: Risks are rated as *ND*; mitigated risk is rated as *ND*.

Groundwater

Table G.5.6-5 represents the risks and associated ratings for the saturated zone (groundwater) from remaining vadose zone contamination associated with the CP-LS-8 waste sites. Sites within the CP-LS-8 EU are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). The current risk and potential impact ratings for the CP-LS-8 EU are *High* (Sr-90 and hexavalent chromium), *Medium* (total chromium), and *Low* (other Group A and B PCs with reported inventories) (Table G.5.6-5). Monitoring of groundwater is being conducted within the 200-BP GWIA and a treatability study is being conducted to remove uranium from the unrelated perched water zone beneath the B Complex, which is described as part of the CP-GW-1 EU (Appendix D.5). Plumes within only the 200-BP GWIA have been linked to CP-LS-8 EU waste sites.

Columbia River

As described in Appendix D.5 (CP-GW-1 EU, **Part V**), because no plumes associated with CP-LS-8 currently intersect the Columbia River, current ratings for all contaminants for the benthic, riparian, and free-flowing ecology are *ND*.

Ecological Resources

Summary of Ecological Review:

- The B Plant Cribs and Trenches EU encompasses and borders large industrial areas that have no vegetation (e.g., B Plant, E-W transfer line and CSB EUs) and is crossed by several pipelines. Cleanup

activities resulting in loss of all vegetation within the EU is not expected to impact habitat connectivity with areas outside the 200 East Area.

- Removal of mature sagebrush in the west and north parts of the EU will reduce overall habitat available to loggerhead shrikes, a Washington state candidate for listing as a threatened or endangered species.
- In the past, Piper's daisy, a state sensitive species, has been observed at numerous locations within the EU, and although none were observed in 2015, it is considered likely to occur in the area. Loss of individual Piper's daisies is not expected to affect population viability.
- Large areas of level 3 resources in the southwest part of the adjacent buffer area are near contact with similar or higher quality biological resources beyond the 200 East Area.

Cultural Resources

The CP-LS-8, B Plant Cribs and Trenches EU is located within the 200 East 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.

Most of the CP-LS-8, B Plant Cribs and Trenches EU has not been inventoried for archaeological resources and it is unknown if an NHPA Section 106 review has been completed specifically for remediation of CP-LS-8, B Plant Cribs and Trenches EU. Five archaeological surveys have been completed in portions of the EU: HCRC#87-200-004 (Chatters 1987), HCRC#87-200-037 (Hoover and Chatters 1988), HCRC#88-200-038 (Chatters and Cadoret 1990), HCRC#2011-200-035a (Hay, Hughes and White 2011), and HCRC#2013-600-010 (Mendez, Hay, Sexton and Clark 2013). All of these surveys resulted in negative archaeological findings within the EU. In addition, one archaeological monitoring report resulted in negative findings (Hughes 2011). 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), particularly because the soils in the CP-LS-8, B Plant Cribs and Trenches EU appear to be heavily disturbed.

Archaeological sites, buildings and Traditional Cultural Properties (TCPs) located within the EU[18]

- 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 CP-LS-8, B Plant Cribs and Trenches EU. In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all documentation requirements have been completed for this property.

[18] 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).

- There are 12 National Register-eligible buildings that are contributing properties within the Manhattan Project and Cold War Era Historic District located within CP-LS-8 B Plant Cribs and Trenches EU (all 12 are contributing within the Manhattan Project and Cold War Era Historic District, 3 with individual documentation required, and 9 with no additional documentation required). In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all documentation requirements have been completed for these properties.

Table K.9 (Appendix K) has more information about the 12 buildings that are National Register-eligible Manhattan Project and Cold War Era buildings located within CP-LS-8 B Plant Cribs and Trenches EU.

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

- There are 5 National Register-eligible building that are contributing properties within the Manhattan Project and Cold War Era Historic District located within 500 meters of the CP-LS-8 B Plant Cribs and Trenches EU (all 5 are contributing with the Manhattan Project and Cold War Era Historic District, 1 with individual documentation required, and 4 with no additional documentation required). In accordance with the *Hanford Site Manhattan Project and Cold War Era Historic District Treatment Plan* (DOE-RL 1998), all documentation requirements have been completed for these properties.
- Table K.10 (Appendix K) has more information about the 5 buildings that are National Register-eligible Manhattan Project and Cold War Era building located within 500 meters of the CP-LS-8 B Plant Cribs and Trenches EU. In addition, the 216-B-5 Reverse Well has been documented within 500 meters of the EU as a contributing component of the Manhattan Project and Cold War Era Historic District.

Closest Recorded TCP

There are two recorded TCPs associated with the Native American Precontact and Ethnographic Landscape that are visible from the CP-LS-8, B Plant Cribs and Trenches EU.

CLEANUP APPROACHES AND END-STATE CONCEPTUAL MODEL

Selected or Potential Cleanup Approaches

There is no Documented Safety Analysis, hazards analysis, or feasibility study that includes the CP-LS-8 EU waste sites. It was decided by the author to use the evaluation provided in the *Focused Feasibility Study for the BC Cribs and Trenches Area Waste Sites* (FFS) (DOE/RL-2004-66, Draft A) for CP-LS-8 remedial alternatives because the hazards (associated with buried liquid waste legacy sites) are considered similar enough for the rough order of magnitude analysis provided in this Risk Review. Thus the alternatives (and corresponding analysis) provided in the BC Cribs and Trenches FFS are used instead of those provided in the Evaluation Unit Disposition Table (Appendix B) for this EU. Note that the basic remedial component activities (No Action, capping, and RTD) are captured in both sets of remedial alternatives.

As described in the BC Cribs and Trenches FFS, remedial action alternatives were developed, including: No Action (Alternative 1); Maintain Existing Soil Cover, Institutional Controls (ICs), and Monitored Natural Attenuation (MNA) (Alternative 2); Removal, Treatment, and Disposal (RTD) (Alternative 3); Capping (Alternative 4); and Partial Removal, Treatment, and Disposal with Capping (Alternative 5). The alternatives were considered as standalone alternatives; however, impacts from remedial activities at adjacent sites should also be considered during implementation. These alternatives provide a range of remedial responses deemed appropriate to address site-specific conditions. The alternatives were evaluated and compared to the nine CERCLA criteria (DOE/RL-2004-66, Draft A).

More detailed descriptions of the alternatives provided in the BC Cribs and Trenches FFS (DOE/RL-2004-66, Draft A) are summarized in **Part VI** of Appendix G.5.7 (CP-LS-9 EU).

Contaminant Inventory Remaining at the Conclusion of Planned Active Cleanup Period

The remedial actions that were proposed for CP-LS-8 or were evaluated above would leave existing contamination in CP-LS-8 waste sites as well as that contamination that has been released from CP-LS-8 waste sites into some shallow and deep vadose zones (Appendix B). Waste sites within the CP-LS-8 EU have likely contributed to groundwater contamination in the 200-BP GWIA/200-BP-5 GW OU (DOE/RL-92-19, Rev. 0). Remedial decisions for the remaining CP-LS-8 waste sites have not been made; however, remedial actions will be taken until resulting residual contamination levels satisfy remedial objectives and monitoring of both vadose and saturated zone contamination will continue to assess remedial action performance. Residual concentrations cannot be determined at this time.

Risks and Potential Impacts Associated with Cleanup

There is no Documented Safety Analysis (DSA), hazards analysis, or feasibility study that includes the CP-LS-8 EU waste sites. The risks and potential impacts associated with cleanup actions are assumed to be the same as those described for the CP-LS-9 EU (Appendix G.5.7, **Part VI**). As for the CP-LS-9 impacts, the BC Cribs and Trenches FFS results are used to evaluate *possible* radiological impacts to workers during selected remedial alternatives. However, because the FFS evaluation is not done according to the same standard as for a DSA (DOE-STD-3009-2014), results should not be considered of the same quality of those for a DSA and should not be represented as such (i.e., FFS dose estimates should only be tabulated with appropriate caveats and should not be plotted on the same graphs as DSA results to avoid confusion).

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

Facility Worker

In term of potential impacts to workers, the cleanup alternatives that are being evaluated for the BC Cribs and Trenches range from *No Action* (monitoring and natural attenuation) to installation of an engineered barrier to significant actions, including removal, treatment, and disposal (RTD) (DOE/RL-2004-66, Draft A). Thus impacts to facility workers (i.e., those performing cleanup actions) from potential cleanup activities would also vary significantly.

For example, the estimated unmitigated dose for an *unprotected construction worker* (exposed to contaminated soil that relates to a facility worker for the purpose of this evaluation) for all the BC Cribs and Trenches would be approximately 127 person-rem (DOE/RL-2004-66, Draft A, p. F-iv). The inventories and measured borehole soil concentrations for the representative BC Cribs and Trenches waste sites are:

- 216-B-26 Trench -- Cs-137 and Sr-90 with inventories of 585 and 488 Ci, respectively, (Corbin 2005) and maximum soil concentrations of 529,000 and 974,000 pCi/g, respectively at 4.0 m (13 ft) bgs (DOE/RL-2004-66, Draft A, p. 2-21). The estimated unprotected worker collective dose for this waste site is 13.4 person-rem (DOE/RL-2004-66, Draft A, p. F-16) with an estimated protected worker dose of 8 person-rem (DOE/RL-2004-66, Draft A, p. F-17). This waste site has the highest Cs-137 inventory and corresponding risk.
- 216-B-58 Trench -- Cs-137 and Sr-90 with inventories of 4.9 and 4.2 Ci, respectively, (Corbin 2005) and maximum soil concentrations of 14,600 and 18,400 pCi/g, respectively at 4.6 m (15 ft)

bgs (DOE/RL-2004-66, Draft A, p. 2-21). The estimated unprotected worker collective dose for this waste site is 0.12 person-rem (DOE/RL-2004-66, Draft A, p. F-16) with an estimated protected worker dose of 0.07 person-rem (DOE/RL-2004-66, Draft A, p. F-17).

Cs-137 and Sr-90 were the dominant radionuclides in the BC Cribs and Trenches.

For this evaluation, it is assumed that the worker risk is strongly related (i.e., proportional) to inventory[19] and would be dominated by the external dose from Cs-137. The Cs-137 inventories for the CP-LS-8 (with reported values from the SIM, Rev. 1) are found in Table G.5.6-2 and range from very low (< E-04 Ci) to 9700 Ci for 216-B-62. Thus the Cs-137 inventories for CP-LS-8 waste sites (with reported values) are more than an order of magnitude higher than that for the 216-B-26 Trench that was the basis for assessing excavation risks in the BC Cribs and Trenches FFS (DOE/RL-2004-66, Draft A, p. F-6). Furthermore, the 216-B-12 Crib had a measured maximum Cs-137 concentration of ~250,000 pCi/g at a depth corresponding to the bottom of the crib (PNNL-23666), which is about one-half of that measured for the 216-B-26 Trench. Using the proportionality assumption from the BC Cribs and Trenches FFS (DOE/RL-2004-66, Draft A, p. F-16), the measured borehole Cs-137 concentration for the 216-B-12 Crib, and assuming excavation risks are related to the Cs-137 inventory and concentration, the estimated unprotected worker collective dose for the CP-LS-8 waste sites would be comparable to those from CP-LS-9 (Appendix G.5.7). Based on uncertainties in the inventories and the proportionality assumption used, these values are thus rated *High* considering the "worker" limit from Table 2-4 (although this limit is for a single, unmitigated event). *As described above, these dose estimates are not computed to the same standard as for a DSA and should be treated accordingly.* For the No Action alternative, the monitoring and maintenance actions are also assumed to be conducted (as described above for *Current* conditions) with an *ND-Low* risk rating. The unmitigated risk ratings for facility workers range from *Low* to *High* based on the action that would be taken (or not taken) (i.e., *ND-Low* for *No Action*, which is the same as for current conditions, to *High* for RTD).

Unmitigated Consequences: Facility Worker – *ND-Low* (No Action) to *High* (RTD)

Mitigation: The *collective* dose to excavate, transport, and dispose (RTD alternative) of contaminated soil with representative radiological controls for all the BC Cribs and Trenches (assuming a single worker performing all the work) exceeds the 25-rem limit for a "worker" from Table 2-4 and the 65-rem limit from NCRP (Table 2-3). Thus the calculated doses are assumed for a single receptor, when in reality, multiple personnel would be performing the tasks. For example, most ALARA exposure goals for DOE sites limit worker doses to 500 to 1,000 mrem/year (DOE/RL-2003-23, Rev. 0); therefore, multiple laborers would be required to share incurred doses. Additional radiological controls would also be implemented to maintain ALARA exposure goals, which would result in *Low* rating. Risk ratings for other scenarios would be *Low*.

Mitigated Consequences: Facility Worker – *ND-Low* (No Action) to *Low* (RTD)

Co-located Person

The only workers at increased risks (over those for *Current* conditions as described above) are facility workers. Thus the ratings for co-located persons are the same as those for *Current* conditions.

[19] In the BC Cribs and Trenches FFS, the exposure and thus dose for excavation is assumed roughly proportional to the Cs-137 inventory in the waste site (DOE/RL-2004-66, Draft A, p. F-6); however, the relationship of dose to soil concentration would be stronger, especially for different types of legacy sites. Measured soil concentrations could not be located for the CP-LS-10 so the assumed proportionality to inventory will be used.

Unmitigated Consequences: Co-located Person – *ND-Low*

Mitigation: No *additional* mitigation actions (to those described above for *Current* conditions) are required.

Mitigated Consequences: Co-located Person – *ND-Low*

Public

Only workers would be at risk due to distance and soil cover.

Unmitigated Consequences: Public – *ND*

Mitigation: No *additional* mitigation actions (to those described above for *Current* conditions) are required.

Mitigated Consequences: Public – *ND*

Groundwater

As described in **Part V**, there will be a continuing impact during this period to groundwater (as a protected resource) from mobile primary contaminants from the B Plant Cribs and Trenches EU currently with plumes that exceed thresholds. These impacts are described in more detail in Appendix G.5 for the CP-GW-1 EU.

Furthermore, there are contaminant sources (legacy source sites) in the vadose zone that pose continuing risk to groundwater (via the vadose zone). The vadose zone (VZ) GTM values for the Group A and B primary contaminants for the B Plant Cribs and Trenches EU translate to ratings of *High* (hexavalent chromium because treatment has not been selected); *Medium* (total chromium and total uranium because treatment has not been selected and Sr-90 due to decay); *Low* (other Group A and B primary contaminants with reported inventories to represent uncertainties in the evaluation). As indicated in **Part V**, Sr-90 and total uranium from CP-LS-8 waste sites are linked existing plumes that are likely to impact the groundwater in sufficient quantities to exceed the drinking water standard over this evaluation period and thus their ratings are not changed. Radioactive decay will impact the remaining Sr-90 in the vadose zone over this period, and thus its rating is changed to *Low* for the Near-term, Post-Cleanup period. The ratings for all the Group A and B primary contaminants correspond to an overall rating of *High* for both the Active and Near-term, Post-Cleanup periods.

There are no treatment actions currently associated with contamination from the CP-LS-8 EU waste sites (e.g., the treatability study for uranium in the perched water zone beneath B Complex is not associated with contamination from CP-LS-8). Treatment options for groundwater in 200-BP are still being considered. 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 the B Plant Cribs and Trenches waste sites are described in Appendix G.5 for the CP-GW-1 EU (200-BP 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

No cleanup decisions have been made for deep vadose zone, and as a result, the potential effects of cleanup on ecological resources is uncertain.

Cultural Resources

No cleanup decisions have been made for deep vadose zone, and as a result, the potential effects of cleanup on cultural resources is uncertain.

ADDITIONAL RISKS AND POTENTIAL IMPACTS IF CLEANUP IS DELAYED

Sites within the CP-LS-8 EU have contaminated the vadose zone and are suspected of being able to contribute mobile contaminants to the saturated zone (DOE/RL-92-19, Rev. 0). Vadose zone contamination will likely continue and some contaminant plumes in the 200 East Area may continue to increase in size and impact additional groundwater.

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

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

Table G.5.6-6. Summary of Populations and Resources at Risk or Potentially Impacted after Cleanup.

Population or Resource		Risk/Impact Rating	Comments
Human	Facility Worker	ND-Low	Only risks during monitoring and maintenance activities (assumed similar to current risks)
	Co-located Person	ND	*De minimus* risks related to residual contamination (after capping or retrieval), which will be remedied to acceptable levels.
	Public	ND	*De minimus* risks related to residual contamination (after capping or retrieval), which will be remedied to acceptable levels. Access restrictions and ICs in place, when required.
Environmental	Groundwater (A&B) from vadose zone[(a)]	*High* (Cr-VI) *Medium* (U(tot), Cr(tot)) *Low* (Sr-90, C-14, I-129, Tc-99) **Overall**: *High*	*Current* GTM values for Group A&B primary contaminants (Table G.5.6-5): *High* (Cr-VI and Sr-90); *Medium* (U(tot) and Cr(tot)) and *Low* (other A&B PCs with reported inventories). U(tot) and Sr-90 likely to impact groundwater (**Part V**). No treatment in 200-BP and decay to only impact Sr-90 (*Low* after Active Cleanup period). Also predicted impact from changes in recharge rates not sufficient to change ratings.
	Columbia River from vadose zone[(a)]	Benthic: *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[(b)]	No cleanup decisions have been made for this EU. Estimated to be Low to Medium	Post-cleanup monitoring might pose a risk to level 3 and above resources in the buffer area. Possible disruption of migratory birds and loggerhead shrike.
Social	Cultural Resources[(b)]	No cleanup decisions have been made for this EU. Estimated to be: **Native American** Direct: Unknown Indirect: Known **Historic Pre-Hanford** Direct: Unknown Indirect: Unknown **Manhattan/Cold War** Direct: None Indirect: None	Potential direct impacts are unknown and difficult to estimate without further information on the remediation. Any remediation activity has potential for indirect impacts.

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 B Plant Cribs and Trenches EU are described in **Part V** with more detailed evaluation in Appendix G.5 (CP-GW-1).

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 B Plant Cribs and Trenches area needs to remain under DOE control to maintain a safety buffer for all future remedial alternatives, including RTD, because of the deep vadose zone contamination in the area.

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ATTACHMENT A

Hanford Site-Wide Risk Review

Evaluation Unit:	B Plant Cribs and Trenches
ID:	CP-LS-8
Group:	Legacy Source
Operable Unit Cross-Walk:	200-EA-1, 200-DV-1, 200-OA-1
Related EU:	CP-DD-2, CP-GW-1
Sites & Facilities:	Liquid waste sites on the west side of 200-East (associated with B Plant operations).
Key Data Sources Docs:	Supplemental Remedial Investigation/Feasibility Study Work Plan for the 200 Areas Central Plateau Operable Units (DOE-RL-2007-02-Rev0-Vol2-ADD2) Supplemental Remedial Investigation/Feasibility Study Work Plan for the 200 Area Central Plateau Operable Units (DOE-RL-2007-02-DFT-A) Remedial Investigation/Feasibility Study and RCRA Facility Investigation/Corrective Measures Study Work Plan for the 200-DV-1 Operable Unit (DOE-RL-2011-102_DFT-A) Remedial Investigation/Feasibility Study Work Plan 200-WA-1 and 200-BC-1 Operable Units (DOE_RL-2010-49, Draft A) Characterization Sampling and Analysis Plan for the 200-DV-1 Operable Unit (DOE_RL-2011-104, Rev 0)

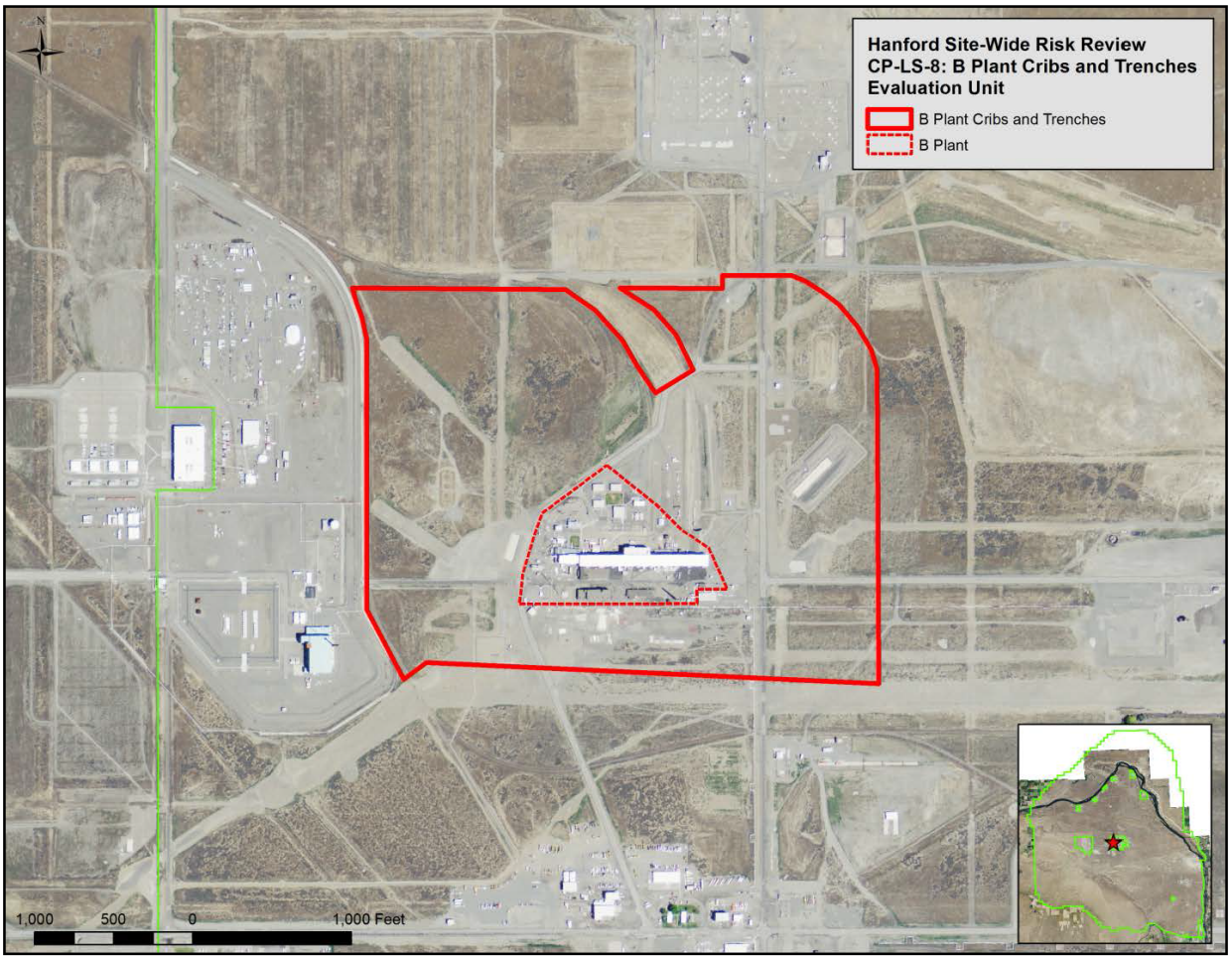

Figure 1. CP-LS-8 (B Plant Cribs and Trenches) Site Location Map

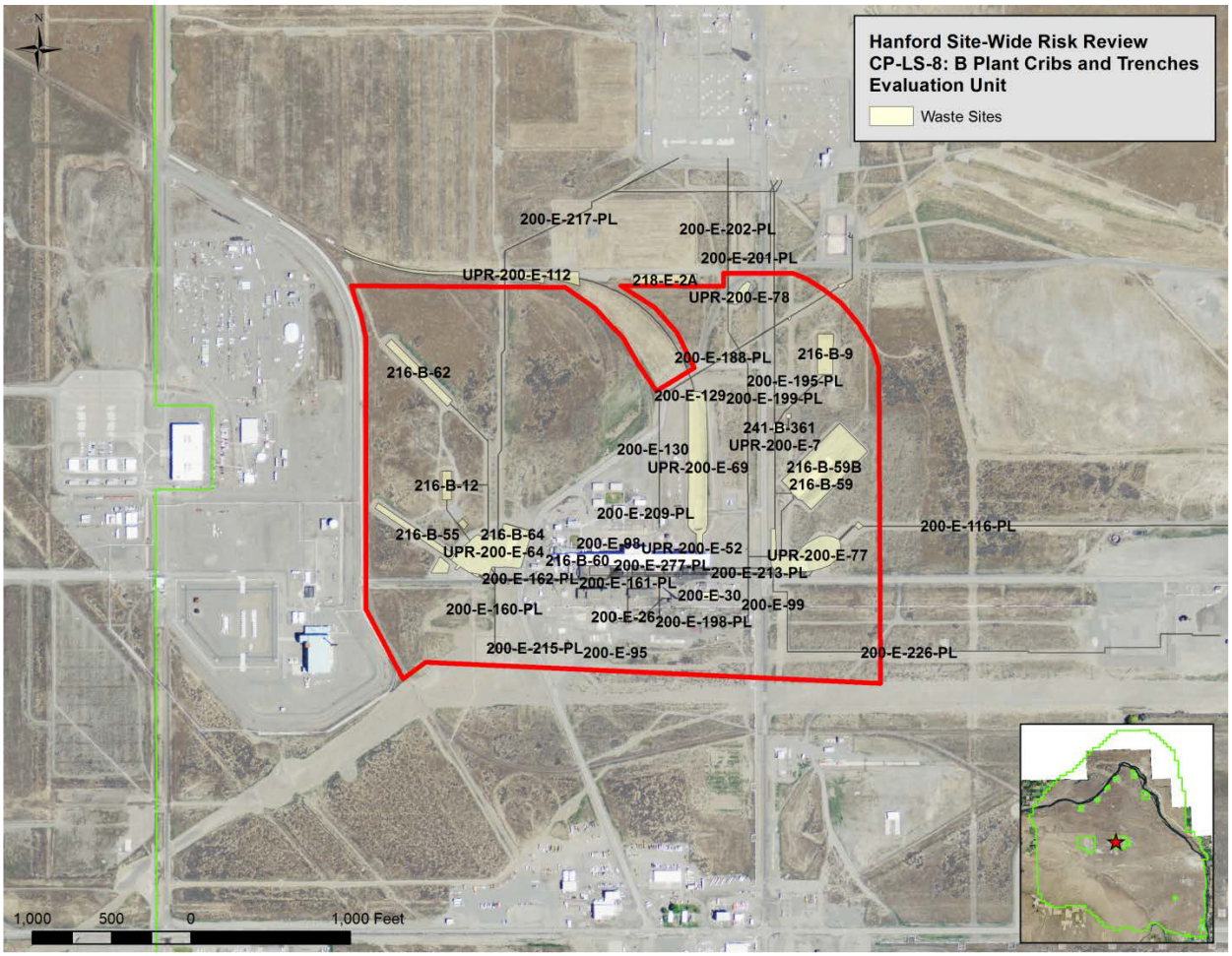

Figure 2. CP-LS-8 (B Plant Cribs and Trenches) Site Location Map and WIDS Locations

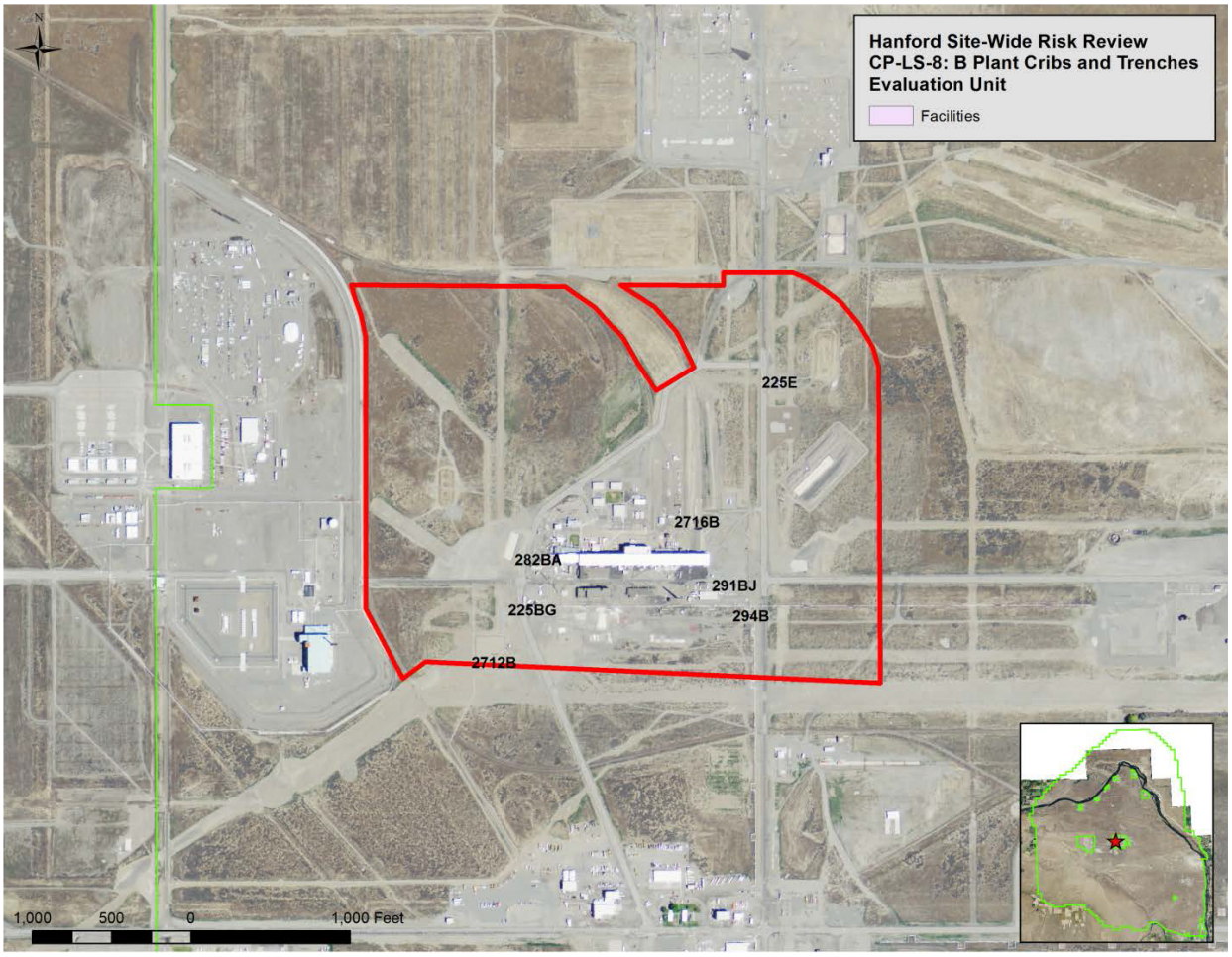

Figure 3. CP-LS-8 (B Plant Cribs and Trenches) Site Location Map and Facility Locations

Hanford Site-Wide Risk Review
CP-LS-8 (B Plant Cribs and Trenches)
Waste Site and Facility List

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-E-2A	218-E-2A; Burial Trench; Regulated Equipment Storage Site No. 02A	Waste Site	Inactive	Accepted	None	Burial Ground	Burial Ground	200-SW-2		
218-E-7	218-E-7; 200 East 222-B Vaults	Waste Site	Inactive	Accepted	None	Burial Vault	Burial Ground	200-EA-1		
200-E-179	200-E-179; Catch Tank in 216-B-10 ABB Pipeline (See Sitecode 200-E-174-PL); B-13 Catch Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	100_200-S-1		
241-B-302B	241-B-302B; 241-3-302-B Catch Tank; MUST: Inactive Miscellaneous Underground Storage Tank; Line V217; 241 B 302	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-S-1		
241-BX-302C	241 BX 302C; 241 3X 302 C Catch Tank; MUST; Inactive Miscellaneous Underground Storage Tank; Lines V322 and V321	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-S-1		
UPR-200-E-64	UPR-200-E-64; Radioactive Soil and Ant Hills; UN-200-E-64; UN-216-E-36	Waste Site	Inactive	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	200-EA-1		
216-B-10A	216-B-10A; 222-B-1 Crib; 292-B Drainage; 216-B-10 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-10B	216-B-10B; 222-B-2 Crib; 216-B-10 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-12	216-B-12; 216-ER Crib; 216-ER-1,2,3 Cribs	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-55	216-B-55; 216-B-55 Crib; 216-B-55 Enclosed Trench	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-60	216-B-60; 216-B-60 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-CB-1		
216-B-62	216-B-62; 216-B-62 Crib; 216-B-62 Enclosed Trench	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-9	216-B-9; 216-B-9T; 241-B-361 Crib; 5-6 Crib and Tile Field; 216-B-361 Crib	Waste Site	Inactive	Accepted	None	Crib	Crib - Subsurface Liquid Disposal Site	200-EA-1		
200-E-142	200-E-142; Paint Brush Cleaning Station	Waste Site	Inactive	Accepted	None	Depression/Pit (nonspecific)	Burial Ground	100		
200-E-116-PL	200-E-116-PL; Direct Buried Pipelines V111/V210/V130, 8902; Pipelines from 241-B-154 Diversion Box to 241-C-151 and 241-C-152 Diversion Boxes	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-199-PL	200-E-199-PL; Lines V304, V305, V308, V209, V211, V213, V215, and V285; Tank Farm Lines from 241-B-154 Diversion Box to 241-B Tank Farm	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-201-PL	200-E-201-PL; Lines V315 and V319; Transfer Lines from 241-BX-155 to Diversion Boxes in 241-B Tank Farm	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-202-PL	200-E-202-PL; Lines V315, V316, V317, V318 and V319; Transfer Lines from 241-BX-155 Diversion Box to 241-BX-153 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-213-PL	200-E-213-PL; Lines V200, V329, V330, V331, V332, V333, and V334; Transfer Lines from 221-B to 241-B-154 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-215-PL	200-E-215-PL; Line V229; Transfer Line Between 241-ER-151 Diversion Box and 241-ER-152 Diversion Box	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-226-PL	200-E-226-PL; Promethium Transfer Line; Transfer Line from 221-B to 241-C-154; V748	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
241-B-154	241-B-154; 241-B-154 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-S-1		
241-BX-154	241-BX-154; 241-3X-154 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-S-1		
241-BX-155	241-BX-155; 241-3X-155 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-S-1		
200-E-198-PL	200-E-198-PL; Encased Tank Farm Pipeline from 241-BX-154 Diversion to 241-BX-155 Diversion Box; Lines V282, V283, V284 and V285	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-217-PL	200-E-217-PL; Encased Transfer Line from 241-ER-151 Diversion Box to 241-BX Tank Farm; Lines 9808, 9653, 9719 and V225	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	100_200-S-1		
200-E-100	200-E-100; Miscellaneous Stream #571; Steam Trap 2P-Yard-MSS-TRP-019	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-25	200-E-25; 272-AB French Drain; Insulation Shop French Drain; Miscellaneous Stream #559	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-EA-1		
200-E-55	200-E-55; Effluent Drain East of 291-B Sand Filter; Miscellaneous Stream #322	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-CB-1		
200-E-95	200-E-95; 2223 Steam Condensate; Miscellaneous Stream #308	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-97	200-E-97; 2224 Building Steam Condensate; Miscellaneous Stream #470	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-98	200-E-98; 2713 Building Ice Machine Overflow; Miscellaneous Stream #490	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-99	200-E-99; Miscellaneous Stream #570; Steam Trap 2P-Yard-MSS-TRP-017	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	Not Applicable		
216-B-13	216-B-13; 216-B-13 Crib; 216-B-13 French Drain; 216-B-8; 291-B Crib	Waste Site	Inactive	Accepted	None	French Drain	Crib - Subsurface Liquid Disposal Site	200-CB-1		
200-E-88	200-E-88; B Plant Yard Steam Condensate; Miscellaneous Stream #3	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-89	200-E-89; B Plant Yard Steam Condensate; Miscellaneous Stream #4	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-90	200-E-90; B Plant Yard Steam Condensate; Miscellaneous Stream #5	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-91	200-E-91; B Plant Yard Steam Condensate; Miscellaneous Stream #6	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-92	200-E-92; B Plant Yard Steam Condensate; Miscellaneous Stream #7	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-93	200-E-93; B Plant Yard Steam Condensate; Miscellaneous Stream #8	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		
200-E-94	200-E-94; B Plant Yard Steam Condensate; Miscellaneous Stream #9	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	Not Applicable		

Note that only those waste sites with a WIDS (Waste Information Data System) Classification of "Accepted" are included in the evaluation, along with non-duplicate facilities, identified via the Hanford Geographic Information System (HGIS).

Hanford Site-Wide Risk Review
CP-LS-8 (B Plant Cribs and Trenches)
Waste Site and Facility List

Site Code	Name, Aliases, Description	Feature Type	Site Status	ERS Classification	ERS Reclassification	Site Type	Site Type Category	Operable Unit	Exclude from Evaluation	Comments
216-B-4	216-B-4; 216-B-4 Dry Well; 216-B-4 French Drain; 216-B-4 Reverse Well	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-CB-1		
216-B-5	216-B-5; 241-B-361 Dry Well; 241-B-361 Reverse Well; 241-B-5 Dry Well; 299-E28-29	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-DV-1		
216-B-6	216-B-6; 216-B-6 Crib; 216-B-6 Dry Well; 222-B-110 Dry Well; 222-B-110 Reverse Well	Waste Site	Inactive	Accepted	None	Injection/Reverse Well	Crib - Subsurface Liquid Disposal Site	200-EA-1		
270-E-1	270-E-1; IMUSI; Inactive Miscellaneous Underground Storage Tank; 216-BR-1; 270-E CN1; 270-E Condensate Neutralization Tank	Waste Site	Inactive	Accepted	None	Neutralization Tank	Pipeline and associated valves, etc.	200-EA-1		
200-E-180-PL	200-E-180-PL; Pipeline from 270-E-1 to 216-B-12 Crib; V239	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-151-PL	200-E-151-PL; Pipeline from 221-B to 216-B-55 Crib; V841	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-152-PL	200-E-152-PL; Lateral line to 216-B-12 Crib #2; Pipeline from 221-B to 216-B-55 Crib; V842	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-174-PL	200-E-174-PL; 216-B-10 (A&B) Pipeline; Pipeline from 221-BC and 222-B to 216-B-10 A&B Cribs	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-175-PL	200-E-175-PL; Pipeline from 292-B to 216-B-10 A&B	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-188-PL	200-E-188-PL; 2904-E-2; 3 Plant Chemical Sewer Line; BCT; 15 Inch VP line	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-195-PL	200-E-195-PL; Line V204; Pipeline form 241-B-154 Diversion Box to 241-B-361 Settling Tank and 216-B-9 Crib	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-209-PL	200-E-209-PL; Pipeline from 272-BB to 200-E-25 Dry Well	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-214-PL	200-E-214-PL; Pipeline from 291-B Sand Filter to the 200-E-55 French Drain	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-230-PL	200-E-230-PL; Pipeline from 292-B to 216-B-4 Reverse Well	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-243-PL	200-E-243-PL; Pipeline from 291-B-1 Stack to the 216-B-13 French Drain	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-277-PL	200-E-277-PL; Pipelines from 221-B and 221-BA to 216-B-59 and 216-B-59B Basins	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
200-E-279-PL	200-E-279-PL; Pipeline from 241-B-361 Settling Tank to 216-B-5 Reverse Well	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1		
216-B-59B	216-B-59B; 216-B-59 Retention Basin	Waste Site	Inactive	Accepted	None	Retention Basin	Crib - Subsurface Liquid Disposal Site	200-EA-1		
216-B-64	216-B-64; 216-B-64 Crib; 216-B-64 Retention Basin; 216-B-64 Trench	Waste Site	Inactive	Accepted	Interim No Action	Retention Basin	Crib - Subsurface Liquid Disposal Site	200-EA-1		
291-B-30	291-B-30; 221-B Stack Sand Filter; 291-B Sand Filter	Waste Site	Inactive	Accepted	None	Sand Filter	Pipeline and associated valves, etc.	TBD		
241-B-361	241-B-361; 241-B-361 Settling Tank; IMUSI; Inactive Miscellaneous Underground Storage Tank	Waste Site	Inactive	Accepted	None	Settling Tank	Underground Storage Tank	200-EA-1		
216-B-58	216-B-58; 216-B-58 Ditch; 216-B-58 Trench	Waste Site	Inactive	Accepted	None	Trench	Crib - Subsurface Liquid Disposal Site	200-EA-1		
200-E-117	200-E-117; Contamination Zone South of B Plant	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-179	200-E-179; Stabilized Area on East Side of B Plant Railroad Cut	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-130	200-E-130; Stabilized Area on West Side of B Plant Chemical Spur	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
200-E-26	200-E-26; Diesel Fuel Contaminated Soil: Heavy Equipment Storage Area	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-200-E-1	UPR-200-E-1; Waste Line Failure on South Side of 221-B	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-103	UPR-200-E-103; RCS Line Leak South of B-17 at 221-B; UN-200-E-103	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-CB-1		
UPR-200-E-112	UPR-200-E-112; Contaminated Railroad Track from B-Plant to the Burial Ground; UN-200-E-112	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-200-E-3	UPR-200-E-3; Line Leak from 221-B to 241-BX-154; UN-200-E-3	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		
UPR-200-E-44	UPR-200-E-44; RCS Waste Line Leak South of 221-B; UN-200-E-44	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-CB-1		
UPR-200-E-45	UPR-200-E-45; Contamination Spread from the 241-B-154 Diversion Box; UN-200-E-45	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-E-52	UPR-200-E-52; Contamination Spread Outside the North Side of 221-B; UN-200-E-52	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-54	UPR-200-E-54; Contamination Outside 221-B Doorway; UN-200-E-54	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-55	UPR-200-E-55; Contamination Spread South of B Plant; UN-200-E-55	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1		
UPR-200-E-69	UPR-200-E-69; Railroad Car Flush Water Radioactive Spill; UN-200-E-69; UN-216-E-69	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1		
UPR-200-E-7	UPR-200-E-7; Cave-in Near 216-B-9 (241-B-361 Crib); Pipeline Leak; UN-200-E-7	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1		
UPR-200-E-77	UPR-200-E-77; 241-B-154 Diversion Box Ground Contamination; UN-200-E-77; UN-216-E-6	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		
UPR-200-E-78	UPR-200-E-78; 241-BX-155 Diversion Box Ground Contamination; UN-200-E-78; UN-216-E-6	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-IS-1		

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Hanford Site-Wide Risk Review
CP-LS-8 (B Plant Cribs and Trenches)
Waste Site and Facility List

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UPR-200-E-80	UPR-200-E-80; 221-B R-3 Line Break; R-3 Radiation Zone; UN-200-E-80; UN-216-E-8	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-CS-1		
UPR-200-E-85	UPR-200-E-85; Line Leak at 221-B Stairwell R-13; UN-200-E-41; UN-200-E-85; UN-216-E-13; UPR-200-E-41	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CS-1		
218-E-6	218-E-6; B Stack Stack Burning Pit; Buried Contamination	Waste Site	Inactive	Accepted	Rejected	Burial Ground	Burial Ground	Not Applicable	X	Rejected
241-BX-302B	241-BX-302-B Catch Tank; MUST; Inactive Miscellaneous Underground Storage Tank; Line V288	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1	X	Included in B Plant Eval.
241-ER-311	241-ER-311; 241-ER-311 Catch Tank; 241-ER-311A Replacement Tank; MUST	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
241-ER-311A	241-ER-311A; 241-ER-311A Catch Tank; MUST; Inactive Miscellaneous Underground Storage Tank; Old 241-ER-311; Original 241-ER-311 Catch Tank	Waste Site	Inactive	Accepted	None	Catch Tank	Underground Storage Tank	200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
UPR-600-20	UPR-600-20; Old Cross Site Transfer Line Surface Contamination; UN-216-E-41	Waste Site	Inactive	Accepted	None	Contamination Migration	Unplanned Release - Surface/Near Surface	200-CA-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
216-B-55	216-B-55; 216-B-55 Crib	Waste Site	Inactive	Accepted	Rejected	Crib	Crib - Subsurface Liquid Disposal Site	Not Applicable	X	Rejected
200-E-228-PL	200-E-228-PL; Drain Lines from 241-ER-151 Diversion Box to 241-ER-311 and 241-ER-311A Catch Tanks; Lines V224, V226 and V226-1	Waste Site	Inactive	Accepted	None	Direct Buried Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
241-ER-151	241-ER-151; 241-ER-151 Diversion Box	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
241-ER-152	241-ER-152; 241-ER-152 Diversion Box; Line DR311	Waste Site	Inactive	Accepted	None	Diversion Box	Pipeline and associated valves, etc.	200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
TFS OF 216-E-4	TFS OF 216-E-4; Tile Field South of 216-E-4; 2607-E3 Tile Field	Waste Site	Inactive	Accepted	Consolidated	Drain/Tile Field	Septic System	Not Applicable	X	Septic System
200-E-111-PL	200-E-111-PL; 3.38 Encasement; "ncased Pipeline from 241-ER-151 Diversion Box and 221-B to 241-C Tank Farm and 244-AR Vault; Lines V10R/VR7/R51B/R51/PR01PAS, R09, R16, VR16 and VR14	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in C Tank Farm Eval.
200-E-145-PL	200-E-145-PL; Interplant Transfer Line; Tank Farm Transfer Line VZ28; Transfer Pipeline from 241-ER-151 to 241-CR-153	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in C Tank Farm Eval.
200-E-147-PL	200-E-147-PL; Interplant Transfer Line; Tank Farm Transfer Line PAS-244; Transfer Line from 244-CR-TK-003 to 241-ER-153	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in C Tank Farm Eval.
600-284-PL	600-284-PL; Cross Site Transfer Pipeline; Lines V360, V361, V362, V363, V364 and V365; Old Cross Site Transfer Line; Original Cross Site Transfer Pipeline; Piping Associated with UPR-600-20, Cross Site Transfer Line	Waste Site	Inactive	Accepted	None	Encased Tank Farm Pipeline	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
200-E-16	200-E-16; B Plant Waste Concentrator: Low Level Waste Concentrator: Single-Stage Thermal Siphon Reboiler	Waste Site	Inactive	Accepted	None	Evaporator	Process Building	Not Applicable	X	Included in B Plant Eval.
217-B-NU	217-B-NU; Elementary Neutralization Unit/217-B Building; 217-B Neutralization Unit	Waste Site	Inactive	Accepted	Rejected	Neutralization Tank	Pipeline and associated valves, etc.	Not Applicable	X	Rejected
221-B-NANU	221-B-NANU; 221-B Nitric Acid Neutralization Unit; 221-B Elementary Neutralization Unit for Nitric Acid	Waste Site	Inactive	Accepted	Interim No Action	Neutralization Tank	Pipeline and associated valves, etc.	Not Applicable	X	Included in B Plant Eval.
221-B-SHNU	221-B SHNU; 221-B Sodium Hydroxide Neutralization Unit; 221-B Elementary Neutralization Unit for Sodium Hydroxide	Waste Site	Inactive	Accepted	Interim No Action	Neutralization Tank	Pipeline and associated valves, etc.	Not Applicable	X	Included in B Plant Eval.
600-291-PL	600-291-PL; LERF Line; TEDF Line; 200 Area Treated Effluent Disposal Facility Pipeline	Waste Site	Active	Accepted	None	Process Sewer	Pipeline and associated valves, etc.	Not Applicable	X	Included in TEDF Eval.
224-B	224-B; 224-B Concentration Facility	Waste Site	Inactive	Accepted	None	Process Unit/Plant	Process Building	Not Applicable	X	Included in B Plant Eval.
B PLANT FILTER	B PLANT FILTER; Filter F-34-4; 221-B-TK-34-2 Decant Filter; B Plant Filter	Waste Site	Inactive	Accepted	None	Process Unit/Plant	Process Building	Not Applicable	X	Included in B Plant Eval.
200-E-112-PL	200-E-112-PL; 24-inch VP Line; 2904-E-1; B Plant Process Sewer; Pipeline from B Plant to 207-B Retention Basin	Waste Site	Inactive	Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	TBD_200-IS-1	X	Included in B Plant Eval.
200-E-163-PL	200-E-163-PL; Pipeline from BCS Diverting Pit to 216-B-64 Retention Basin	Waste Site	Inactive	Not Accepted	None	Radioactive Process Sewer	Pipeline and associated valves, etc.	Not Applicable	X	Not Accepted
200-E-6	200-E-6; Sanitary Sewer Repair and Replacement 2607-E4; Septic Tank	Waste Site	Inactive	Accepted	None	Septic Tank	Septic System	200-CS-1	X	Septic System
2607-E3	2607-E3; 2607-E3 Septic System; 2607-E3 Septic Tank and Drainfield; TFS of 218-E-4; Tile Field South of 218-E-4	Waste Site	Inactive	Accepted	None	Septic Tank	Septic System	200-EA-1	X	Septic System
2607-E4	2607-E4; 2607-E4 Septic Tank and Tile Field	Waste Site	Inactive	Accepted	None	Septic Tank	Septic System	200-CS-1	X	Septic System
221-B SDT	221-B SDT; 221-B Settle and Decant Tank; 221-B-8-1 and 221-B-8-2; 221-B-TK-8-1 and 221-B-TK-8-2; B Plant Settle and Decant Tank	Waste Site	Inactive	Accepted	None	Settling Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
200-E-137	200-E-137; 291-B Exhaust Stack; 291-B-1	Waste Site	Inactive	Accepted	None	Stack	Process Building	Not Applicable	X	Included in B Plant Eval.
200-E-138	200-E-138; 291-B Replacement Stack; 296-B-1 Exhaust Stack; Canyon Exhaust System; Canyon Ventilation Upgrade	Waste Site	Active	Accepted	None	Stack	Process Building	Not Applicable	X	Included in B Plant Eval.
200-E-122	200-E-122; CF Bullpen; Construction Forces Bullpen; Equipment Storage Yard; Laydown Yard	Waste Site	Inactive	Accepted	Rejected	Storage	Storage Pad	Not Applicable	X	Rejected
221-B-WS-1	221-B-WS-1; B Plant Storage	Waste Site	Inactive	Accepted	None	Storage	Storage Pad	Not Applicable	X	Included in B Plant Eval.
221-B-WS-2	221-B-WS-2; B Plant Waste Piles	Waste Site	Inactive	Accepted	None	Storage	Storage Pad	Not Applicable	X	Included in B Plant Eval.
WESF	WESF; 225-B; Waste Encapsulation and Storage Facility	Waste Site	Active	Accepted	None	Storage	Process Building	Not Applicable	X	Included in WESF Eval.
200-E-119	200-E-119; 225-B West Side 90 Day Pad	Waste Site	Inactive	Not Accepted	None	Storage Pad (<90 day)	Storage Pad	Not Applicable	X	Not Accepted
226-B HWSA	226-B HWSA; 226-B Hazardous Waste Storage Area	Waste Site	Active	Accepted	Rejected	Storage Pad (<90 day)	Storage Pad	Not Applicable	X	Rejected
221-B-26-1	221-B-26-1; 221-B-TK-26-1; B Plant Radioactive Organic Waste Solvent Tank 1	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.

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CP-LS-8 (B Plant Cribs and Trenches)
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221-B-27-3	221-B-27-3; 221-B-TK-27-3; B Plant Radioactive Organic Waste Solvent Tank 2	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
221-B-27-4	221-B-27-4; 221-B-TK-27-4; B Plant Radioactive Organic Waste Solvent Tank 3	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
221-B-28-3	221-B-28-3; 221-B-TK-28-3; B Plant Radioactive Organic Waste Solvent Tank 4	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
221-B-28-4	221-B-28-4; 221-B-TK-28-4; B Plant Radioactive Organic Waste Solvent Tank 5	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
221-B-29-4	221-B-29-4; 221-B-TK-29-4; B Plant Radioactive Organic Waste Storage Tank #7; 221-B-TK-29-4	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
221-B-30-3	221-B-30-3; 221-B-TK-30-3; B Plant Radioactive Organic Waste Solvent Tank #6; 221-B-TK-30-3	Waste Site	Inactive	Accepted	None	Storage Tank	Underground Storage Tank	Not Applicable	X	Included in B Plant Eval.
200-E-28	200-E-28; 221-B Building Contaminated Steam Condensate Release	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable	X	Included in B Plant Eval.
200-E-29	200-E-29; Unplanned Release from 241-ER-152 Diversion Box	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-EA-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
UPR-200-E-11	UPR-200-E-11; Railroad Track Contamination Spread; UN-200-E-11	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-OA-1	X	Included in 200-E Maintenance Waste Site Eval.
UPR-200-E-140	UPR-200-E-140; PCB Oil Spill at 231-B Bulk Chemical Storage Area; UN-200-E-140	Waste Site	Inactive	Accepted	Rejected	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable	X	Rejected
UPR-200-E-2	UPR-200-E-2; Spotty Contamination Around the B and T Plant Stacks; UN-200-E-2	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1	X	Included in B Plant Eval.
UPR-200-E-84	UPR-200-E-84; 241-ER-151 Catch Tank Leak (241-E-311A); UN-200-E-84; UN-216-E-12	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Subsurface	200-IS-1	X	Included in 200 Area HLW Transfer Pipeline Eval.
UPR-200-E-87	UPR-200-E-87; 216-E-15; 224-3 South Side Plutonium Ground Contamination; UN-200-E-87; UN-216-E-15	Waste Site	Inactive	Accepted	None	Unplanned Release	Unplanned Release - Surface/Near Surface	200-CB-1	X	Included in B Plant Eval.
UPR-200-E-90	UPR-200-E-90; Ground Contamination Around B Plant Sand Filter; Radioactive Spill Near 221-B Building; UN-200-E-90; UN-216-E-10; UN-216-E-90	Waste Site	Inactive	Accepted	Rejected	Unplanned Release	Unplanned Release - Surface/Near Surface	Not Applicable	X	Rejected
225BG	WEST CLOSED LOOP COOLING EQUIPMENT BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			
225E	PUMP STATION NO 2 AND LOCAL CNTRL UNIT SSC-10	Facility	ACTIVE			BUILDING	Infrastructure Building			
271B	ELECTRICAL / INSTRUMENTATION BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			
271SB	RM CHECK OUT STATION R8 TUNNEL	Facility	INACTIVE			BUILDING	Infrastructure Building			
282BA	WATER PUMP HOUSE NORTH	Facility	ACTIVE			BUILDING	Infrastructure Building			
291BG	INSTRUMENT BUILDING AND GT-4 FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building			
291BJ	INSTRUMENT BUILDING AND GT-4 FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building			
294B	BACKFLOW PREVENTOR BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building			
2418154	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
211RA	ELECTRICAL EQUIPMENT STORAGE	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
211B3	MOTOR CONTROL CENTER (MCC) BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
212B	FISSION PRODUCTS LOAD OUT STATION	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
217B	DEMINERALIZATION BUILDING	Facility	INACTIVE			BUILDING	Process Building		X	Included in B Plant Eval.
218B	EMERGENCY EQUIPMENT STORAGE SHED	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221B	B PLANT	Facility	INACTIVE			BUILDING	Process Building		X	Included in B Plant Eval.
221BA	COOLING WATER MONITORING STATION	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221B3	PROCESS STREAM AND CONDENSATION BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221BC	SWP CHANGE HOUSE	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221BD	LAUNDRY STORAGE BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221BF	CONDENSATE EFFLUENT DISCHARGE FACILITY	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221BG	B PLANT COOLING WATER SAMPLING BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
221BK	B PLANT CANYON VENTILATION INSTRUMENT BLDG	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
222B	OFFICE BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
224B	CONCENTRATION FACILITY	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Duplicative
225B	WASTE ENCAPSULATION AND STORAGE FACILITY	Facility	ACTIVE			BUILDING	Process Building		X	Included in WESF Eval.
225B3	K3 FILTER PIT ENCAPSULATION FACILITY	Facility	ACTIVE			BUILDING	Process Building		X	Included in B Plant Eval.
225B-8A	225B BOILER ANNEX	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
225BC	ENCAPSULATION COMPRESSOR FACILITY	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.

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2258D	ENCAPSULATION WASTE MONITORING AND SAMPLE BLDG	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
2258E	ENCAPSULATION VAINTENANCE SHOP	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
2258F	WESF TANKER LOADOUT STATION	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
2258G-GEN1	BACKUP GENERATOR BLDG WITH 2 DIESEL FUEL TANKS	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
2711B	BREATHING AIR COMPRESSOR BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
2715B	PAINT STORAGE FACILITY	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
271B	B PLANT SUPPORT BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
271BA	LAUNDRY STORAGE BUILDING	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
272B	ELECTRICAL MAINTENANCE SHOP	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
272BA	DRY MATERIAL STORAGE BUILDING	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
272BB	TOOL CRIB	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
276B	PAINT SHOP	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
282B	WATER PUMP HOUSE SOUTH	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291B	EXHAUST AIR CONTROL HOUSE AND SAND FILTER / STACK	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291BA	EXHAUST AIR SAVPLE HOUSE	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291BB	INSTRUMENT BUILDING 1ST AND 2ND FILTER VAULTS	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291BD	INSTRUMENT BLDG AND 3RD FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291BF	INSTRUMENT BUILDING AND 4TH FILTER VAULT	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291BH	FIFTH FILTER VAULT PLUG COVER	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
291BK	INSTRUMENT BUILDING FOR 5TH AND 6TH FILTER VAULTS	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
292B	STACK MONITOR STATION	Facility	INACTIVE			BUILDING	Infrastructure Building		X	Included in B Plant Eval.
MO029	MOBILE OFFICE AT B-PLANT NORTH OF 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO032	MOBILE OFFICE AT 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO312	LAUNDRY STORAGE AT 2259	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO400	MOBILE OFFICE AT 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO408	MOBILE OFFICE AT B PLANT NORTH OF 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
MO410	MOBILE OFFICE AT B PLANT NORTH OF 271B	Facility	ACTIVE			BUILDING	Infrastructure Building		X	Mobile Office
2116A151	DEMOTD -- MONITORING STATION	Facility	DEMOTED			STRUCTURE	Infrastructure Building		X	Demoed
216B108	CRIB AND TILE FIELD	Facility	INACTIVE			STRUCTURE	Crib - Subsurface Liquid Disposal Site		X	Duplicate of 216-B-108
2258A	K1 FILTER PIT ENCAPSULATION FACILITY	Facility	ACTIVE			STRUCTURE	Process Building		X	Included in B Plant Eval.
241BX154	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241BX155	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241ER151	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
241ER152	DIVERSION BOX	Facility	INACTIVE			STRUCTURE	Pipeline and associated valves, etc.		X	Duplicative
291BC	1ST AND 2ND FILTER VAULTS AND 291BD ACCESS CONTROL	Facility	INACTIVE			STRUCTURE	Infrastructure Building		X	Included in B Plant Eval.
H0023	HAZARDOUS STORAGE CONTAINER	Facility	ACTIVE			STRUCTURE	Infrastructure Building		X	Included in B Plant Eval.
2418351	UNDERGROUND WASTE SETTLING TANK	Facility	INACTIVE			TANK	Underground Storage Tank		X	Duplicative

Note that only those waste sites with a WIDS (Waste Information Data System) Classification of "Accepted" are included in the evaluation, along with non-duplicate facilities, identified via the Hanford Geographic Information System (HGIS).