

1 Agency (DOE) and the Lead Regulatory Agency (Ecology). All documentation of such changes will be
2 submitted to the Administrative Record. If characterization results indicate structures in the scope of this
3 RAWP do not contain CERCLA hazardous substances, those structures may be removed from this
4 CERCLA action and handled under separate DOE authority. The 236-Z and 242-Z slabs will be removed
5 as discussed in Section 1.

6 Use of the North Outside Storage Area depicted in Figure 4-2 for staging of transuranic (TRU) waste
7 containers from the PFP removal action is included within the scope of this RAWP.

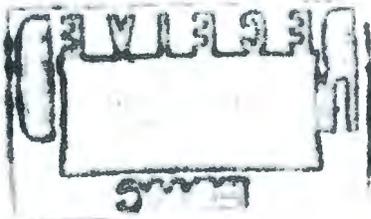
8 1.2.2 Removal Action Objectives

9 The overall objective of this removal action is to demolish the above-grade portion of the PFP Complex
10 to slab-on-grade and place the area in a safe and stable condition consistent with the endpoints defined in
11 HNF-22401, *Plutonium Finishing Plant (PFP) Complex End Point Criteria*. This RAWP implements the
12 selected alternative from the Action Memorandum (DOE/RL-2005-13) by including all D4 activities
13 necessary to achieve the following objectives documented by the EE/CA:

- 14 1. Reduce the inventory of hazardous substances contained within the PFP Complex.
- 15 2. Reduce or eliminate the potential for exposure to hazardous substances above levels that are a danger
16 to personnel, public, and/or environment.
- 17 3. Reduce or eliminate the potential for a release of hazardous substances.
- 18 4. Safely manage (treat and/or dispose) waste streams generated by the removal action.
- 19 5. Reduce or eliminate the need for future surveillance and maintenance (S&M) activities.
- 20 6. Facilitate and not preclude future remediation at the PFP Complex, including remediation of
21 sub-grade portions of the PFP Complex and sub-grade waste sites.

22 This will ensure a site suitable for turnover to S&M, pending final remediation. Because this removal
23 action is not a final remedial action, the endpoints are not driven by closure criteria. Instead, they are
24 driven by the requirement to prepare the site for eventual final remedial action.

25 Thus, this RAWP provides consistency and flexibility through project completion for the entire list of
26 structures included in Table 1-1.



1 **2.1.3.1 Above Grade Deactivation**

2 Deactivation activities to stage structures for final demolition will encompass all work performed to place
3 the structure in a state where release of contaminants and risk to employees and the environment have
4 been minimized to the extent practical, and will enable structure demolition and disposal. This work will
5 be performed to ensure personnel and structure safety and may include isolating systems (i.e., electrical,
6 mechanical, and chemical). Final demolition preparation will include removing final items previously
7 required to support habitability (e.g., remaining instrumentation containing hazardous constituents, and
8 asbestos containing doors), and applying fixatives and sealing penetrations through the floor.

9 All equipment and piping penetrating the floor will be cut or dismantled as close to the floor as possible
10 and plugged. Operations involving radiological contaminants will be performed with personnel protection
11 measures commensurate with the hazards anticipated. If work area monitoring shows the work
12 environment is not as anticipated, work will be stopped to ensure adequate personnel protection. During
13 the performance of activities where unknown radiological or other hazardous conditions exist, appropriate
14 measures will be implemented to protect personnel and to reduce the risk of generating airborne
15 contamination. Items identified as requiring special handling (cannot be rubblized) either will be removed
16 during this phase of work or may be clearly color coded for intact removal after demolition has begun.

17 While deactivation activities are ongoing, systems and equipment may be left in an operational state to
18 support S&M activities prior to the structure being demolished. These systems include electrical power,
19 lighting, ventilation, and radiation monitoring. These items may be deactivated prior to demolition or
20 deferred to structure demolition, as appropriate and needed. Each of the uncertainties known to exist for
21 this removal action will be managed with pre-work surveys, physical/chemical/radiological
22 characterization of the structure, walk throughs, preventive control measures, analytical data, and
23 in-depth planning (such as work packages and hazard reviews).

24 **2.1.3.2 Below Grade Deactivation**

25 Below grade areas of structures in the scope of this removal action will remain after completion of the
26 removal action, but also will undergo deactivation to minimize potential release of contaminants, risk to
27 employees, and the environment. Equipment, piping, or ducts in accessible below grade areas will be
28 characterized and removed or decontaminated as required. Items requiring removal (special handling)
29 may be deferred for removal during demolition or during post-demolition activities and may require
30 treatment and/or disposal at an approved off-site facility. For waste slated to go to the Waste Isolation Pilot
31 Project (WIPP), the disposal pathway may entail storage at the Central Waste Complex (CWC), North
32 Outside Storage Area awaiting off-site treatment, and/or shipment to another facility for treatment; then
33 ultimately, shipment to WIPP in accordance with the schedule established for completing remedial actions
34 on the Hanford Site. Any remaining plutonium in the below-grade areas must be verified not to pose a
35 security risk or potential for criticality.

36 Piping that exits or enters a below-grade portion of structures will either be flushed or drained, cut or
37 dismantled as close to the wall as possible, and plugged or capped.

38 After below-grade activities are complete, including final characterization, and as necessary to support
39 planned demolition activities, below grade voids may be filled to provide structural support.

40 Removal of the below-grade structures is not in the scope of this removal action and will be addressed in
41 future CERCLA response actions.

42 **2.1.3.3 Decontamination**

43 After an area (i.e., some part of a structure) has been surveyed and the radiological conditions established,
44 cleanup and general housekeeping will commence, as necessary. Cleanup and general housekeeping will
45 involve removing loose materials and rubble/debris, as well as loose radiological contamination as needed

1 However, quantities of TRU waste or mixed waste, PCB-bulk product waste, and ACM may be
 2 generated. The majority of the waste will be in a solid form; however, some aqueous solutions might be
 3 generated. Wastes resulting from structure preparations, sampling and analysis, and decontamination
 4 (i.e., decommissioning activities) will be managed and disposed of in accordance with the pertinent
 5 ARARs specified by the Action Memorandum (DOE/RL-2005-13) and reproduced in Section 4.2 of this
 6 RAWP. Waste will be packaged to meet the applicable waste acceptance criteria of the receiving facilities.

7 Waste management will include both S&M activities conducted prior to and after D4, as well as wastes
 8 generated during D4 (DOE/RL-2005-13). Certain materials may be eligible for salvage and recycling,
 9 which is encouraged if the appropriate regulatory and project requirements are met and it is economically
 10 feasible for the project to do so. ~~ERDF is onsite under CERCLA (Section 121, "Cleanup Standards") for~~
 11 ~~management and/or disposal of waste from this removal action. DOE has identified ERDF and the North~~
 12 Outside Storage Area as appropriate on-site storage locations. The ERDF and the North Outside Storage
 13 Area are on-site as defined by EPA in 40 CFR 300.400(3)(1) because they are "in very close proximity
 14 to" PFP (i.e., the contamination) and are "suitable areas" for management, storage, and/or disposal of
 15 waste, which is "necessary for implementation of this response action." The suitability of the an off-site
 16 receiving TSD facility to manage CERCLA waste that must be sent off the PFP CERCLA Site will be
 17 determined by the EPA regional office overseeing the receiving TSD facility in accordance with 40 CFR
 18 300.440, "Procedures for Planning and Implementing Off-Site Response Actions." Treatment of waste
 19 (on-site or off-site) may be necessary prior to disposal at ERDF, and containerized waste may be returned
 20 from off-site segregation or treatment for disposal at ERDF. Liquid waste will be sent to an approved
 21 facility, and any treatment residues that meet the waste acceptance criteria may be disposed at ERDF.

22 2.1.8 Surveillance and Maintenance

23 The goal of S&M is to sustain a structure or area in a safe condition and reduce the potential release or
 24 migration of hazardous materials to the environment. Prior to turnover to S&M, any remaining plutonium
 25 in below-grade systems must be verified not to pose a security risk or potential for criticality. Some S&M
 26 activities may be applicable to structures prior to demolition (in the case where there is a waiting period
 27 between being demo-ready and the start of demolition). Turnover to S&M will follow completion of the
 28 portion of the removal action that includes above-grade structure demolition, removal of TRU waste in
 29 below-grade spaces, and stabilization of the contaminated areas. After turnover, slab removal and final
 30 site stabilization would be performed as necessary. Subsequently, the S&M measures will include routine
 31 radiological and hazard monitoring of the area, safety inspections, and maintenance activities necessary to
 32 keep the area in a safe condition and any remaining hazards contained. The S&M activities are tailored to
 33 the specific conditions of the area. Waste generated during this period will be evaluated for disposal at
 34 ERDF. Most waste generated during S&M activities is expected to meet the ERDF Waste Acceptance
 35 Criteria. However, some waste generated during the S&M period does not contain hazardous substances
 36 and, therefore, does not require disposal at ERDF. Examples include, but are not limited to, "replacement
 37 in kind" items, such as light bulbs or trash that do not contain CERCLA hazardous substances. This waste
 38 will be disposed in the appropriate nonhazardous waste disposal facility.

39 A separate S&M Plan addressing post-demolition activity for the PFP Complex will be completed per the
 40 TPA (Ecology et al., 1989) Target Date M-083-24-T01. Turnover to S&M will be implemented near the
 41 end of this removal action.

42 2.2 Project Site Closeout

43 A site closeout characterization package will be generated for all of the PFP Complex at some point in the
 44 future. The characterization package may include several areas, as opposed to an individual package for
 45 each area. The packages will summarize demolition activities and describe the final disposition of each
 46 structure. The Waste Information Data System will be updated to reflect the status and conditions of
 47 affected waste sites, as appropriate. Verification will be conducted to ensure the waste
 48 accumulation/management areas have been cleaned up. A turnover package will be developed to provide
 49 as left information and document compliance with project endpoints.

1 criteria and would be considered "on-site"¹ for management and/or disposal of waste from activities
2 addressed in this document.

3 The identification, storage, treatment, and disposal of hazardous waste and the hazardous component of
4 mixed waste are governed by RCRA. Authority to implement most of the RCRA was delegated to the
5 State of Washington, which implements RCRA requirements under WAC 173-303. The dangerous waste
6 standards for generation and storage will apply to the management of any dangerous or mixed waste
7 generated under this removal action. Treatment standards for dangerous or mixed waste subject to RCRA
8 land disposal restrictions are specified in WAC 173-303-140, "Land Disposal Restrictions," which
9 incorporates 40 CFR 268, "Land Disposal Restrictions," by reference.

10 The management and disposal of PCB wastes are governed by the *Toxic Substances Control Act of 1976*
11 (TSCA), which is implemented by 40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing,
12 Processing, Distribution in Commerce, and Use Prohibitions." The TSCA regulations contain specific
13 provisions for PCB waste, including PCB waste that contains a radioactive component. PCBs are also
14 considered underlying hazardous constituents under RCRA and, thus, may be subject to
15 WAC 173-303-140 and 40 CFR 268 requirements.

16 LLW that meets ERDF acceptance criteria will be disposed at ERDF, which is engineered to meet
17 appropriate performance standards under 10 CFR 61, "Licensing Requirements for Land Disposal of
18 Radioactive Waste." ~~Waste that is characterized as either contact-handled or remote-handled TRU waste
19 or TRU mixed waste will be staged at PFP or CWC and will be shipped to WIPP. For waste slated to go to WIPP,~~
20 the disposal pathway may entail storage at the CWC, North Outside Storage Area awaiting off-site treatment
21 and/or shipment to another facility for treatment; then ultimately, shipment to WIPP in accordance with the
22 schedule established for completing remedial actions at the Hanford Site. WIPP meets 40 CFR 191,
23 "Environmental Radiation Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level
24 and Transuranic Radioactive Wastes," requirements for TRU waste disposal and is a RCRA-permitted disposal
25 facility. ERDF and the North Outside Storage Area are is considered on-site for the purposes of CERCLA for
26 management, storage, and/or disposal of waste from this removal action. The suitability of the receiving TSD
27 facility to manage CERCLA waste that must be sent off the PFP CERCLA Site will be determined by the EPA
28 regional office overseeing the receiving TSD facility in accordance with 40 CFR 300.440. Treatment of waste
29 (on-site or off-site) may be necessary prior to disposal at ERDF, and containerized waste may be returned from
30 off-site segregation or treatment for disposal at ERDF. PFP generated TRU mixed waste will be stored at CWC. It
31 is anticipated that up to 75 1800 cubic foot top loading (1800TL) containers of TRU waste will be stored at the
32 North Outside Storage Area until the waste can be repackaged to meet WIPP acceptance criteria. In the event that
33 greater than 75 1800TL containers are needed, or a different type of storage container and/or waste type is
34 required to facilitate the scope and objectives of this RAWP, DOE will address such conditions with the Lead
35 Regulatory Agency prior to utilizing different containers or storing waste other than TRU waste.

36 Waste designated as dangerous or mixed waste will be treated, to the extent practical, as appropriate to
37 meet land disposal restrictions and ERDF acceptance criteria, and disposed at ERDF. ERDF is also
38 engineered to meet landfill design standards under WAC 173-303-665, "Landfills." All applicable
39 packaging and pre-transportation requirements for dangerous or mixed waste generated during this
40 removal action will be identified and implemented prior to movement of any wastes.

41 Some of the aqueous waste that is characterized as LLW, dangerous, or mixed waste may be transported
42 to ETF or other approved facility for treatment and disposal that is authorized to treat aqueous waste
43 streams generated at the Hanford Site and dispose of them at an approved facility in accordance with all
44 applicable requirements.

¹ CERCLA Section 104(d)(4) states that where two or more noncontiguous facilities are reasonably related on the basis of geography, or on the basis of the threat or potential threat to the public health or welfare or the environment, the facilities can be treated as one for purposes of CERCLA response actions. Consistent with this, the Hanford buildings/structures, the North Outside Storage Area and ERDF would be considered to be "on-site" for purposes of Section 104 of CERCLA, and waste may be transferred between the facilities without requiring a permit. This determination will be made upon issuance of the Action Memorandum(s).

1 Waste characterized as PCB waste will likely be disposed at ERDF or WIPP, depending on whether it is a
 2 LLW or a TRU waste, respectively. ERDF is authorized to accept solid PCB waste for disposal. All TRU
 3 waste suspected to contain PCBs will be evaluated to determine whether the waste meets waste
 4 acceptance criteria. Asbestos and ACM will be removed, packaged as appropriate, and disposed in ERDF.

5 It is anticipated that all alternatives will be performed in compliance with waste management ARARs.
 6 All waste streams will be evaluated, designated, and managed in compliance with the appropriate
 7 requirements.

8 **4.2.1. Project Waste Streams**

9 The PFP above-grade structures removal action may generate solid, dangerous, LLW, PCB, and/or mixed
 10 wastes, as well as TRU and TRU mixed wastes during decommissioning activities. All wastes will be
 11 evaluated and managed to comply with the waste management ARARs.

12 ERDF ~~and the North Outside Storage Area are~~ is considered on-site for the purposes of CERCLA for
 13 management, storage, and/or disposal of waste from this removal action. There is no requirement to
 14 obtain a permit to manage or dispose of CERCLA waste at the PFP Complex.

15 The suitability of the receiving TSD facility to manage CERCLA waste that must be sent off the PFP
 16 CERCLA Site will be determined by the EPA regional office overseeing the receiving TSD facility in
 17 accordance with 40 CFR 300.440.

18 The majority of the LLW will be disposed at ERDF in accordance with the ERDF Waste Acceptance
 19 Criteria. Waste will be shipped either in containers or in plastic-wrapped bulk shipments, depending on
 20 the characteristics of the waste matrix. Waste shipped off-site (e.g., Perma-fix Northwest) will have prior
 21 EPA approval.

22 **Low-Level Waste.** It will be assumed that any regulated waste not determined to be mixed waste, TRU,
 23 greater-than-Class C, or TRU mixed waste will be LLW. The LLW will include step-off pad waste, soft
 24 waste, material used in decontamination activities, process items that have been decontaminated below
 25 TRU levels, structure rubble, and waste packages characterized as LLW. This LLW will be mainly solid
 26 in form, although some liquid and sludge waste may be generated during the decommissioning activities.
 27 LLW will be shipped to ERDF (Figure 4-1) and will be packaged and placed in storage within the PFP
 28 On-site Area (Figure 4-2) prior to shipment.

29 **Dangerous Waste.** The major source of nonradioactive dangerous waste is expected to be from the use of
 30 acids and cleaning solutions in specific nonradiological, surface decontamination efforts, as well as
 31 mercury switches and lead-based paints. With a viable waste minimization program and the substitution
 32 of nonregulated material, the portion of this waste stream that has not become radioactively contaminated
 33 should be a minor source of dangerous waste. This regulated dangerous waste may be in either liquid or
 34 solid form.

35 **Mixed Waste.** Another waste stream that can be expected is mixed waste. Any hazardous substances that
 36 will be disposed of will be classified as dangerous waste or mixed waste (if radioactive). The source of
 37 this waste stream will likely be remaining contaminant residues (e.g., lead) on radioactively contaminated
 38 equipment and surfaces and the chemicals/materials used for decontamination.

39 **Transuranic Waste.** These wastes contain TRU nuclides with a half-life greater than 20 years that exist in a
 40 concentration greater than 3.7 KBq/g (100 nCi/g). The process system, exhaust duct and filters and,
 41 possibly, drains are all potential sources of TRU waste. Some of the structure surface materials removed
 42 during decontamination may also be TRU waste, most likely in solid form. Liquids and sludges in the
 43 process system and drains may also be encountered.

1 associated structure footprint and positioned to allow equipment access to the structure undergoing
 2 demolition and equipment access to the bulk waste.

3 The CERCLA hazardous waste areas will be inspected weekly, and the universal waste and recyclables
 4 management areas will be inspected quarterly at a minimum to verify container integrity, legibility of
 5 markings and labels, and proper placement of signs. An inventory of the waste generated will be
 6 maintained. Before shipment to ERDF or an offsite location, the containers must be properly sealed and
 7 checked for leaks or other damage. At that time, a final inspection will be performed. Regulated waste
 8 from the removal action activities will be packaged per 49 CFR 100-185 regulations (or equivalent
 9 approved packaging guidelines for Hanford Site shipments). Samples and associated sample waste may
 10 be returned to PFP for disposition or sent to ERDF for disposal, if it meets the waste acceptance criteria.

11 Most contaminated soil and other remediation waste (e.g., structure rubble) that can be characterized as
 12 LLW and meeting ERDF Waste Acceptance Criteria will be shipped in bulk to ERDF using
 13 roll-off/roll-on containers that will have liners. Additionally, the trailer units will be equipped with tarps.
 14 If needed, other approved packages (e.g., burial boxes and/or sea-land containers) may be used for surface
 15 contaminated objects, bulk, and low specific activity shipments.

16 Waste not appropriate for bulk shipment (e.g., piping, transfer columns, or other processing equipment)
 17 will be cut to size, packaged, and shipped in non-bulk containers to meet the appropriate facility's waste
 18 acceptance criteria. The containers must also be weighed and visually inspected for leaks or other damage
 19 before the waste is transported.

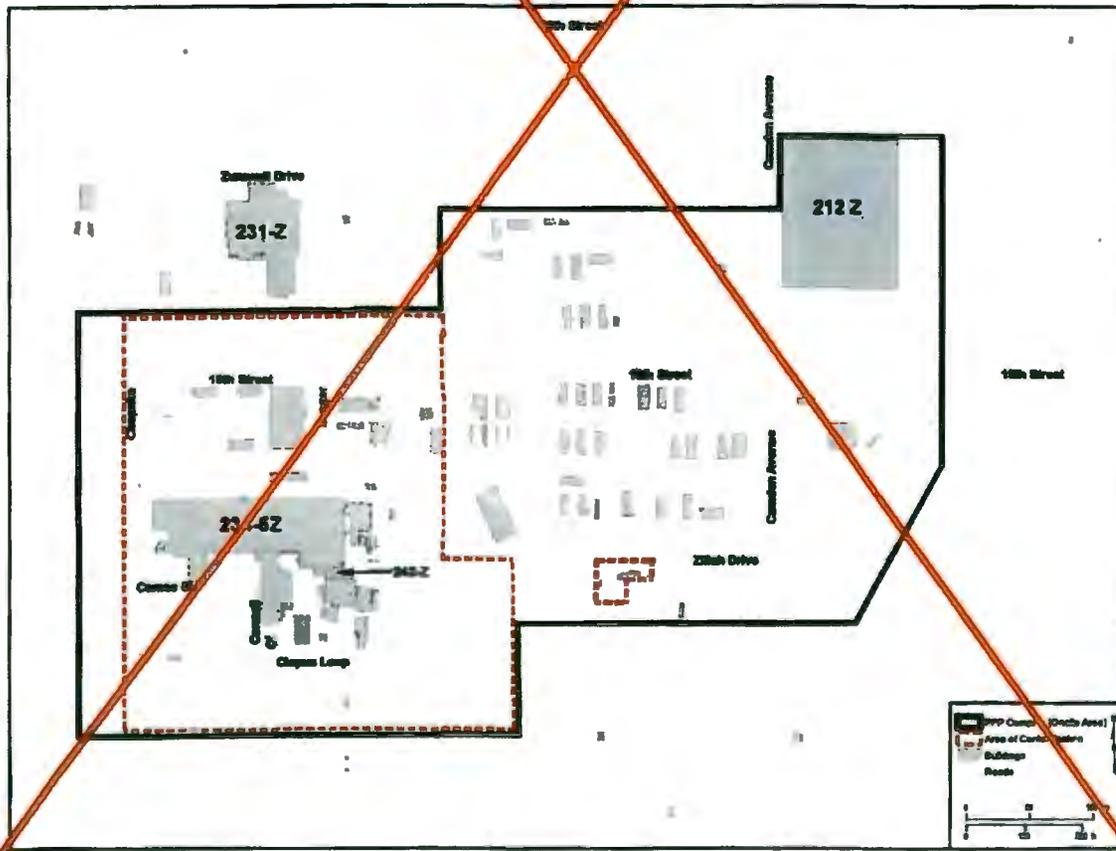


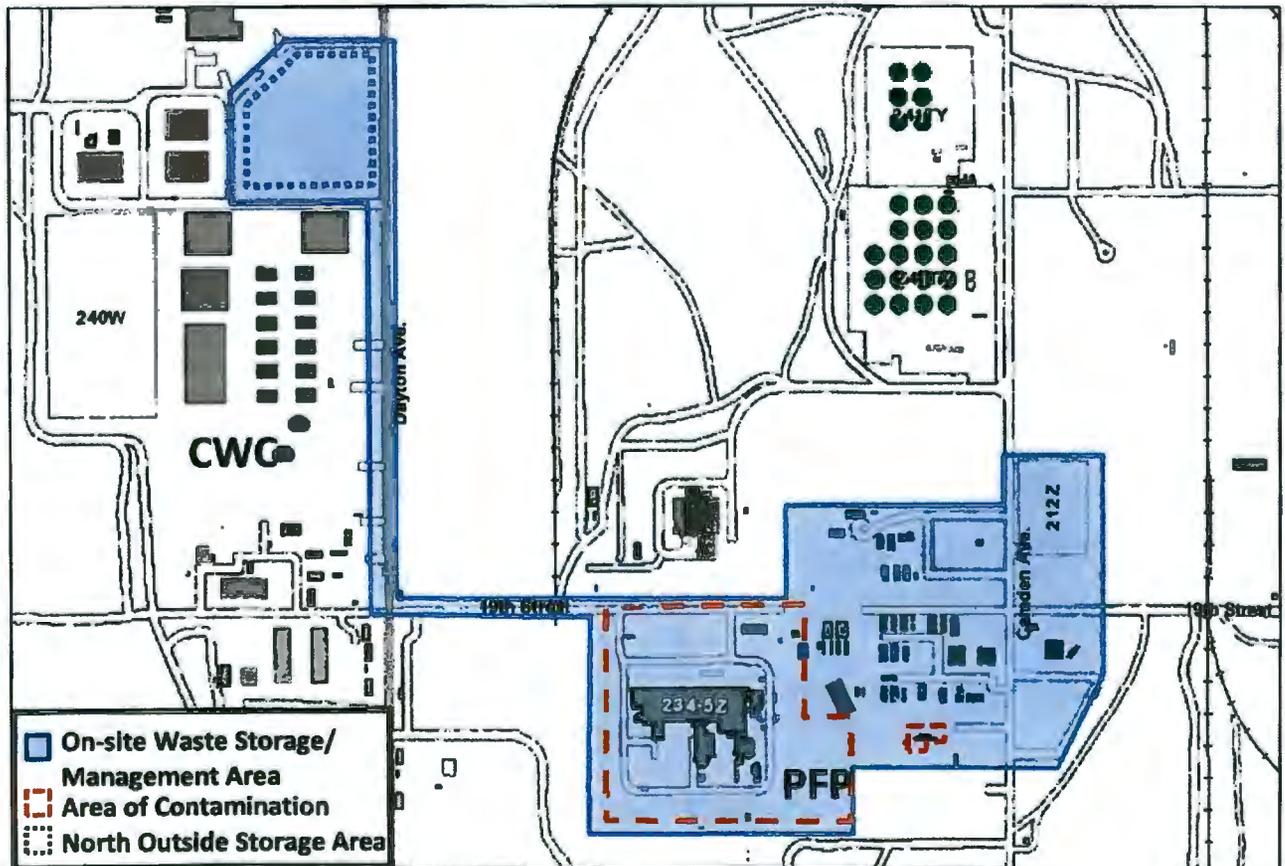
Figure 4-2. PFP Removal Action Onsite Area and Area of Contamination

1 associated structure footprint and positioned to allow equipment access to the structure undergoing
2 demolition and equipment access to the bulk waste.

3 The CERCLA hazardous waste areas will be inspected weekly, and the universal waste and recyclables
4 management areas will be inspected quarterly at a minimum to verify container integrity, legibility of
5 markings and labels, and proper placement of signs. An inventory of the waste generated will be
6 maintained. Before shipment to ERDF, the North Outside Storage Area, or an off-site location (e.g.,
7 Perma-fix Northwest), the containers must be properly sealed and checked for leaks or other damage. At
8 that time, a final inspection will be performed. Regulated waste from the removal action activities will be
9 packaged per 49 CFR 100-185 regulations (or equivalent approved packaging guidelines for Hanford Site
10 shipments). Samples and associated sample waste may be returned to PFP for disposition or sent to ERDF
11 for disposal, if it meets the waste acceptance criteria.

12 Most contaminated soil and other remediation waste (e.g., structure rubble) that can be characterized as
13 LLW and meeting ERDF Waste Acceptance Criteria will be shipped in bulk to ERDF using
14 roll-off/roll-on containers that will have liners. Additionally, the trailer units will be equipped with tarps.
15 If needed, other approved packages (e.g., burial boxes and/or sea-land containers) may be used for surface
16 contaminated objects, bulk, and low specific activity shipments.

17 Waste not appropriate for bulk shipment (e.g., piping, transfer columns, or other processing equipment)
18 will be cut to size, packaged, and shipped in non-bulk containers to meet the appropriate facility's waste
19 acceptance criteria. The containers must also be weighed and visually inspected for leaks or other damage
20 before the waste is transported.



21
22 Figure 4-2. PFP Removal Action On-site Waste Storage/Management Area and Area of Contamination

4.2.5 Waste Treatment

Treatment of waste streams may be necessary to provide for safe transport or effective disposal. The waste treatment may occur on-site at the PFP or ERDF, as practical, in accordance with the substantive requirements of WAC 173-303 and the applicable disposal site waste acceptance criteria. On-site waste treatments may include, but not be limited to, solidification, separation, elementary neutralization, filtration, evaporation, amalgamation, size reduction, or repackaging. In the event waste cannot be treated on-site, an off-site search will be conducted to determine whether the waste can be treated effectively at an off-site treatment, storage, and disposal (TSD) facility. Once a TSD facility is found, an off-site determination will be requested from EPA.

ERDF and the North Outside Storage Area are is considered on-site. The suitability of the receiving TSD facility to manage CERCLA waste that must be sent off the PFP CERCLA Site will be determined by the EPA regional office overseeing the receiving TSD facility in accordance with 40 CFR 300.440.

4.2.6 Waste Transportation and Shipping

Although not an ARAR for shipments occurring on the Hanford Site, DOT requirements specified in 49 CFR 171, "General Information, Regulations, and Definitions," through 49 CFR 179, "Specifications for Tank Cars," or an equivalent level of compliance to these regulations are used as guidance for describing waste packaging, marking, and labeling.

Before transport to ERDF or another disposal site, all waste containers must be properly packaged, marked, labeled, and in proper condition for disposal. The LLW may be shipped in either non-bulk or bulk mode. Dangerous and mixed waste must be shipped in specific containers for either storage or disposal, and TRU and TRU mixed waste must be shipped in specific containers for storage or disposal, as appropriate. The applicable shipping paperwork will be prepared for each waste shipment. A tracking form will be completed for each waste shipment destined for ERDF. The completed tracking form is used as the basic shipping document and must accompany the shipment when the waste is sent to ERDF. Emergency response information must be attached to the tracking form. All markings and labeling will be completed under the direction of the properly trained personnel.

4.2.7 Solid Waste Disposal

ERDF and the North Outside Storage Area are is considered on-site for the purposes of CERCLA for management, storage, and/or disposal of waste from this removal action. There is no requirement to obtain a permit to manage or dispose of CERCLA waste at this facility. The suitability of the receiving TSD facility to manage CERCLA waste that must be sent off the PFP CERCLA Site will be determined by the EPA regional office overseeing the receiving TSD facility in accordance with 40 CFR 300.440.

It is anticipated that most of the LLW and mixed LLW and debris from the removal action will be disposed at ERDF, which is designed to meet RCRA minimum technical requirements for land disposal. ERDF can also accept some asbestos and PCB waste. Aqueous waste that is characterized as LLW, dangerous, or mixed waste may be transported to ETF or other approved facility for treatment and disposal.

Any PCB waste that does not meet the ERDF Waste Acceptance Criteria, as well as TRU and TRU mixed waste, will be staged at PFP or CWC awaiting final disposal. in accordance with ARARs and the provisions of this RAWP, or will be shipped to off-site areas that have been deemed suitable by the EPA regional office. Dangerous waste that does not meet the ERDF Waste Acceptance Criteria will be disposed at a permitted off-site facility, with approval from EPA. In the event that TRU waste is generated, it will be shipped off-site to WIPP in accordance with the schedule established for completing remedial actions.