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Revision 0

Removal Action Work Plan For The Plutonium Finishing Plant Above-Grade Structures: Facility Deactivation

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

United States Department of Energy
P.O. Box 550
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited

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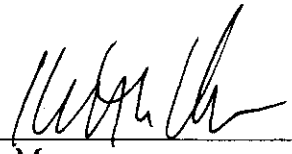

5/04/05

K. A. Klein, Manager
U. S. Department of Energy, Richland Operations Office

Date

Concurrence Page

DOE/RL-2005-14, *Removal Action Work Plan For The Plutonium Finishing Plant Above-Grade Structures: Facility Deactivation*, Revision 0.

_____ _____

Rick Bond, Project Manager
State of Washington, Department of Ecology

Date

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ACRONYMS

ACM	Asbestos Containing Material
ALARA	As Low As Reasonably Achievable
ARAR	Applicable or Relevant and Appropriate Requirements
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR	Code of Federal Regulations
CWC	Central Waste Complex
D&D	Decontamination and Deactivation
DOE	U.S. Department of Energy
DOE-RL	U.S. Department of Energy, Richland Operations Office
DOT	U.S. Department of Transportation
DQO	Data Quality Objective
Ecology	Washington State Department of Ecology
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
FH	Fluor Hanford, Inc.
HASP	Health and Safety Plan
HEPA	High Efficiency Particulate Air
ISMS	Integrated Safety Management System
LLMW	Low-Level Mixed Waste
LLW	Low-Level Waste
NDA	Nondestructive Assay
PA	Protected Area
PCB	Polychlorinated Biphenyl
PFP	Plutonium Finishing Plant
PHASP	Programmatic Health and Safety Plan
PI	Performance Incentive
PM	Project Manager
PPE	Personal Protective Equipment
PRF	Plutonium Reclamation Facility
QA	Quality Assurance
QAPD	Quality Assurance Program Description
RAWP	Removal Action Work Plan
RCRA	*Resource Conservation and Recovery Act of 1976*
RWP	Radiological Work Permit
S&M	Surveillance and Maintenance
SAP	Sampling and Analysis Plan
SEA	Special Entrance Authorization
SSHASP	Site-Specific Health and Safety Plan
SWB	Standard Waste Box
TBC	To-Be-Considered
TPA	Tri-Party Agreement

TRU	Transuranic
TSCA	*Toxic Substances Control Act of 1976*
TSD	Treatment, Storage, and Disposal
WAC	*Washington State Administrative Code*
WMP	Waste Management Plan

1.0 INTRODUCTION

This Removal Action Work Plan (RAWP) describes the activities required to implement the deactivation phase (preparation for demolition) of the non-time-critical removal action selected alternative for the Plutonium Finishing Plant (PFP) above-grade structures (except 2736-Z, ZA, and ZB and the 216-Z-9 structures) as evaluated in DOE/RL-2004-05, *Engineering Evaluation/Cost Analysis for the Plutonium Finishing Plant Above-Grade Structures* (DOE-RL 2004a) and documented in DOE/RL-2005-13, *Action Memorandum for the Plutonium Finishing Plant Above-Grade Structures Non-Time Critical Removal Action* (DOE-RL 2005b).

Under the selected alternative, PFP above-grade structures will be removed to a condition of slab-on-grade where the above-grade portion of the structures is removed, but the building slabs and foundations are left in place. If the structures have basements, vaults, and/or tunnels, then the associated below-grade slab, foundation, and walls are also left in place.

The U.S. Department of Energy DOE is the lead agency for this removal action with the Washington State Department of Ecology (Ecology) as the lead regulatory agency.

Removal action work plans (RAWPs) implementing this removal action will be prepared in a phased approach as depicted in Figure 1-1. Specifically, this RAWP supports the deactivation of the above-grade structures with the exception of 216-Z-9 structures and 2736-Z, ZA, and ZB Buildings, which are planned to have separate, comprehensive RAWPs. Deactivation, for the purpose of this RAWP, includes characterization, removal and/or stabilization of hazards, and equipment removal as appropriate for preparation of the structure for demolition.

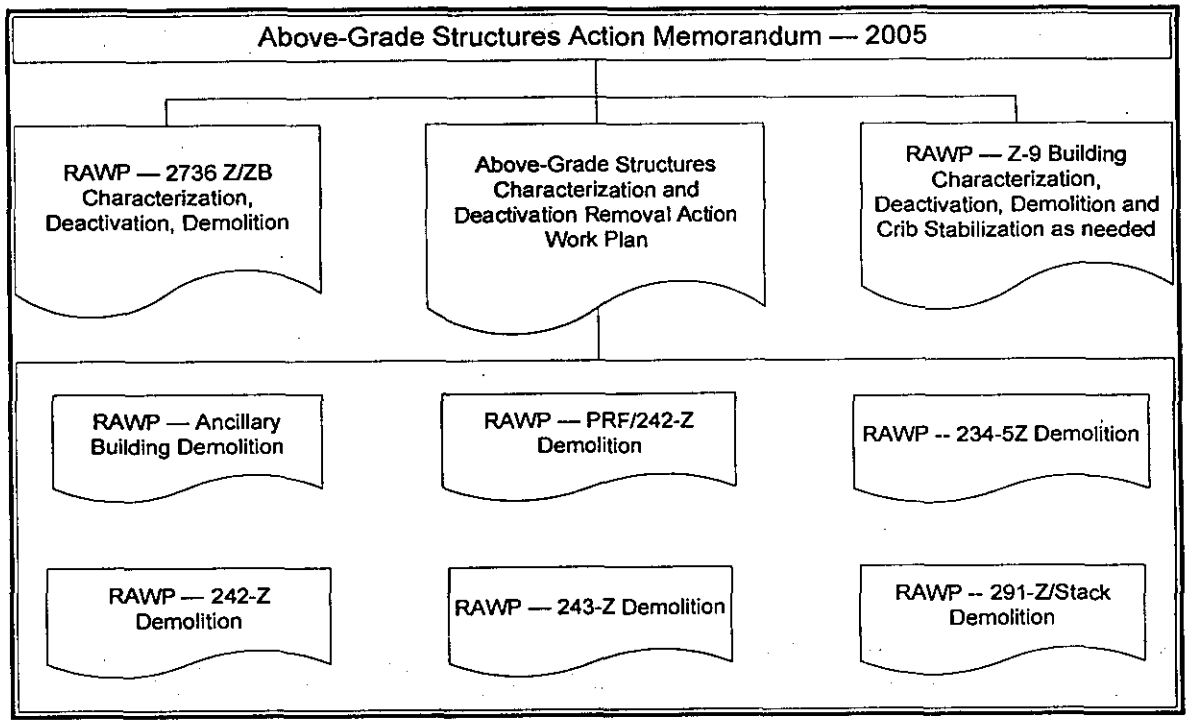
RAWP(s) implementing the demolition phase of this removal action will be prepared subsequent to the deactivation RAWP on a timeframe supportive of the PFP Closure Project schedule. In support of near term demolition activities, DOE/RL-2005-15, *Plutonium Finishing Plant Above-Grade Ancillary Structures Demolition Removal Action Work Plan* (DOE-RL 2005a) is being prepared in parallel with this deactivation RAWP. Follow-on demolition activities under this removal action will either be added through a revision of the ancillary building demolition RAWP, or will be implemented through stand-alone RAWPs as needed.

In accordance with Tri-Party Agreement (TPA) milestone M-83-22, RAWPs prepared for this removal action are *primary* documents and require approval by U.S. Department of Energy, Richland Operations Office, (DOE-RL) and the lead regulatory agency.

Activities performed according to this RAWP will comply with applicable or relevant and appropriate requirements (ARARs) specified in Action Memorandum (DOE-RL 2005b), approved under CERCLA. In addition, the 241-Z facility and related structures that are regulated under the *Resource Conservation and Recovery Act of 1976* (RCRA) will also be subject to the agreements and schedules established in DOE/RL-96-82,

Hanford Facility Dangerous Waste Closure Plan, 241-Z Treatment and Storage Tanks (DOE-RL 2004c).

Figure 1-1. Removal Action Work Plan Approach.



Note: As planning for these facilities develops, the removal actions for these structures could be implemented through revision of similar previously prepared RAWPs rather than preparing separate plans as shown.

1.1 PURPOSE OF THE REMOVAL ACTION WORK PLAN

The purpose of this RAWP is to identify the basis and provide guidance for the preparation of work packages and subcontract task orders for the PFP deactivation project tasks. Using the most recent information concerning facility conditions, field-level work packages will be developed to direct work activities and instruct workers in the most applicable work methods to be used to accomplish the deactivation task(s).

This RAWP describes the activities that will be taken to complete facility/structure characterization, stabilization, decontamination, and deactivation necessary to prepare the facilities for demolition. For purposes of this RAWP, the term "deactivation" includes all activities required to place a facility in a condition where demolition may be implemented. This RAWP will not address those activities associated with facility/structure demolition and disposal. Demolition and disposal activities will be addressed by future RAWPs, as described above.

This RAWP identifies the methods and activities required to perform the following functions for the PFP facilities:

- Non-intrusive and intrusive sampling and analysis, surveying, monitoring and field screening of structures (buildings and/or portions of buildings and caissons), equipment, containers, and waste identified during facility walk downs to support waste characterization and designation requirements.
- Service system isolations and/or installation, including limited excavation and backfilling activities that may be needed to support stabilization, deactivation, and demolition of a specific structure/facility.
- Decontamination and/or removal of systems and building features that are known or suspected to contain significant chemical or radiological material inventory, including sumps, gloveboxes, hoods, tanks, internal equipment, piping, exhaust ducts, and filtration systems.
- Decontamination and/or stabilization, including but not limited to scraping, scabbling, cutting, sawing, grinding, chemical decontamination methods, pressurized gasses, sand blasting, equipment removal, and application of fixatives, plastic, cover soil, and sealants.
- Stabilization and disposal of laboratory and process chemicals found in pipes, tanks, glove boxes, hoods, equipment, and components.
- Waste treatment, packaging, and storage within the removal action area involving treatments such as, but not limited to, filtration, evaporation, separation, elementary neutralization, solidification, size reduction, waste repackaging, and amalgamation and waste packaging and storage for shipment and offsite storage and/or disposal.
- Isolating and/or sealing of subsurface piping and ducts in place.
- Decontamination and/or stabilization of building surfaces.

- Activities required to maintain the facility in a safe state before, during, and following the activities noted above that occur prior to the facility entering the demolition phase of this removal action. This includes system operations necessary to support control of effluents (air, water, and solids) or to maintain safe working conditions, facility and system surveillance, and all maintenance activities required to maintain the facility/systems in a safe state.

The activities described in the preceding bullets may be utilized at or on the specific structures listed in Table 1-1, and may be performed in any sequence, including concurrent activities.

Table 1-1. PFP Above-Grade Structures. (2 Sheets)

Structure	Name/description	Comments
225-WC	Wastewater Sampling Facility	Also known as the Instrumentation & Local Control Unit 55C-23.
234-ZB	Clean SWP Storage	
234-ZC	Barrel Storage	
234-5Z	Plutonium Fabrication Facility	Includes the Plutonium Process Support Laboratory (PPSL), the hazardous waste storage area, the 267-Z Riser #9 Valve House, and basement tunnels.
234-5ZA	Change Room Addition	
236-Z	Plutonium Reclamation Facility	
241-Z	Waste Storage and Treatment Facility	RCRA TSD
241-ZA	Sample Building	
241-ZB	Sodium Hydroxide Tank	Also known as D-9
241-ZG	Change Facility	
241-Z-RB	Retention Basin	Also known as the 207-Z building. Includes basins, valve room, and piping.
242-Z	Waste Treatment Facility	
243-Z	Low-Level Waste Treatment Facility	
243-ZA	Low-Level Waste Storage Facility	Includes sump pit
243-ZB	Cooling Towers and Concrete Pad	
252-Z-2	Electrical Substation	Electrical transformers and pad
270-Z	Operations and Support Facility	
291-Z	Ventilation Building and associated ductwork	
291-Z-001	Exhaust Stack	Associated with the 291-Z Building
2503-Z	Electrical Switchyard	Associated with the 252-Z-1 Substation
2701-ZA	Central Alarm Station Facility	
2701-ZD	Badge house	
2702-Z	Microwave Tower and Communications Support Building	
2704-Z	Safeguards and Security Building	
2705-Z	Operations Control Facility	
2712-Z	Stack Monitoring Station	For 291-Z-001 stack.
2721-Z	Emergency Generator Building	Does not include below-grade fuel tank
2727-Z	Supply Storage Building	
2729-Z	Maintenance Storage Building	
2731-Z	Plutonium Drum Storage Building	

Table 1-1. PFP Above-Grade Structures. (2 Sheets)

Structure	Name/description	Comments
2731-ZA	Container Storage Building	Also known as the Clean Laundry Building
2734-ZA,-ZC, -ZK, and -ZL	Gas Bottle Storage	
2734-ZB, -ZD, -ZF, -ZG	Gas Bottle Storage	
2734-ZJ	Liquid Nitrogen Storage and Supply	
2735-Z	Bulk Chemical Storage Tanks	
2736-ZC	Cargo Restraint Transport Dock	
2736-ZD	Vault-EBR II Casks	
2902-Z	Elevated Water Storage Tower and Tank	Includes below-grade valve pit
Hazardous Waste Storage Areas	HWSA	
Perimeter Fence	Same	
Security E-Field	Same	
Lay Down Yard	Same	
200-Z Area	PFP Yards and Grounds	Includes mobile offices buildings (e.g., MO-XXX), hazardous waste storage units and hazardous substance storage cabinets (e.g., HS-XX), interim storage vaults, and other miscellaneous items.

EBR II = Experimental Breeder Reactor II
HWSA = Hazardous Waste Storage Areas
PPSL = Plutonium Process Support Laboratory
SWB = Standard Waste Box

Existing internal work requirements and processes will be used to perform and control the sampling, characterization, stabilization, decontamination, removal, and disposal actions, as appropriate.

1.2 SCOPE AND OBJECTIVES OF THE REMOVAL ACTION

The scope of the removal action is to eliminate the structures listed in Table 1-1 to slab-on-grade condition. The scope of work addressed in this RAWP is the deactivation of the listed PFP Above-Grade Structures. Potential contaminant releases from below ground sources, such as subsurface structures, buried pipelines, soil, groundwater, tanks, or unplanned releases will be the subject of future CERCLA response actions and subsequent RAWPs. Subsequent RAWPs will address the demolition and disposal phase of the removal action for individual facilities, or groups of facilities included in the Above-Grade Structures.

All structures in this RAWP are either known to be contaminated or are considered to be potentially contaminated. If one of these structures is determined through characterization to be non-contaminated, the structure will be deleted from the scope of the removal action and will be removed under existing DOE authority. Concurrence for

removal of a structure from the scope of this removal action will be obtained from the DOE-RL and Ecology project managers (PMs) and documented and approved through meeting minutes from the relevant Project Managers Meeting (PMM). Likewise, if structures similar to those in Table 1-2, but not currently identified in the scope, are determined to be contaminated during deactivation activities, this RAWP may be used as the vehicle to clean up and remove those structures. Decisions to add or delete buildings from the scope of this removal action will be made by the PM for DOE-RL and the Lead Regulatory Agency, and will be documented in meeting minutes from the periodic PMM.

1.3 PFP FACILITY HISTORY

The PFP facilities are located in the Hanford 200-West Area (Figures 1-2 and 1-3) and were used to conduct plutonium processing and storage for national defense, including the following activities:

- Special nuclear material handling and storage
- Plutonium recovery
- Plutonium conversion
- Plutonium Reclamation and recycling
- Plutonium Processing Systems development Laboratory
- Laboratory support
- Waste handling
- Shutdown and operational facility surveillances.

The buildings/facilities/structures associated with the PFP were described in the engineering evaluation/cost analysis (EE/CA) for the above grade structures (DOE-RL 2004a). The descriptions for these facilities are provided in the EE/CA and the Action Memorandum (DOE-RL 2005b).

Figure 1-2. Hanford Site Map.

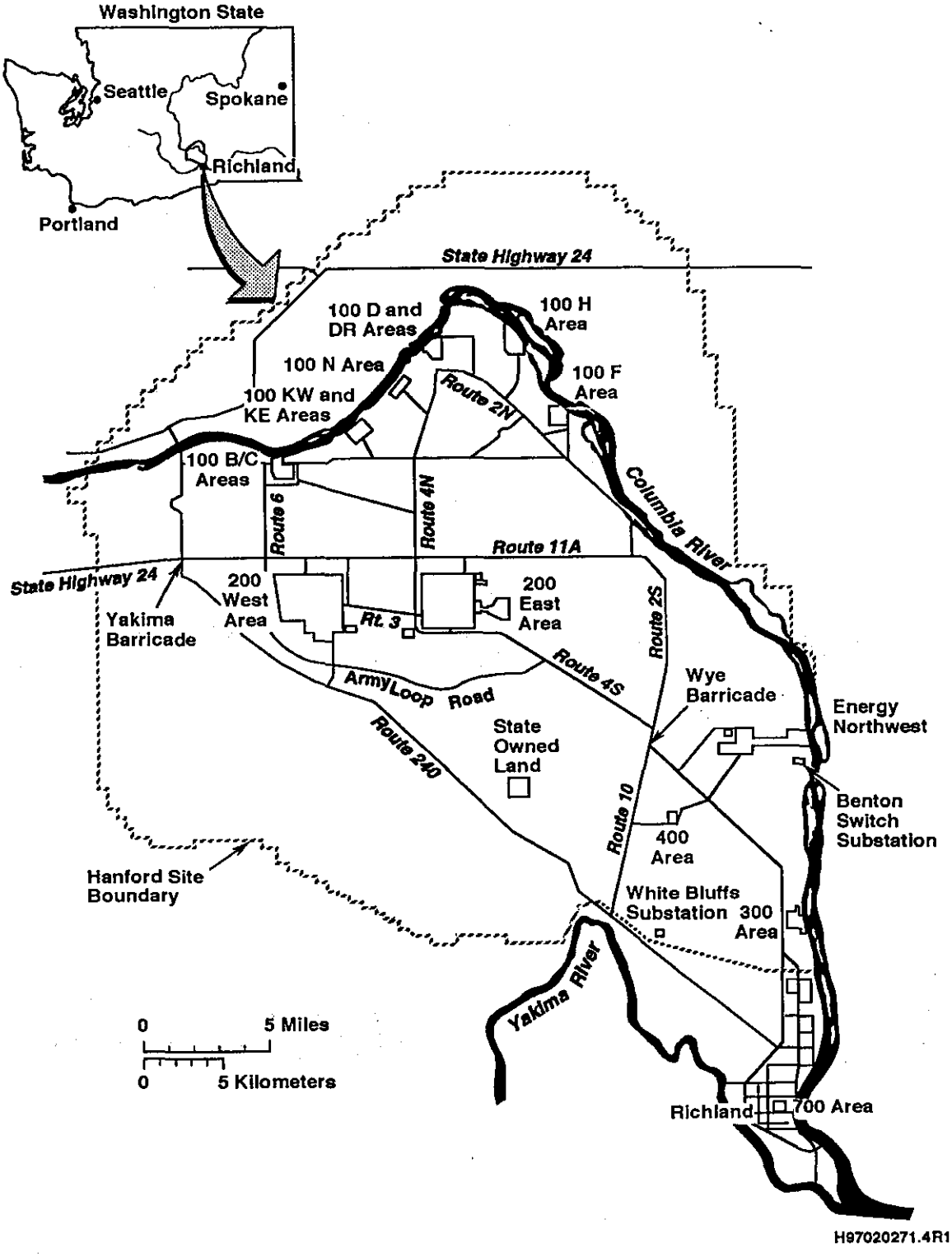
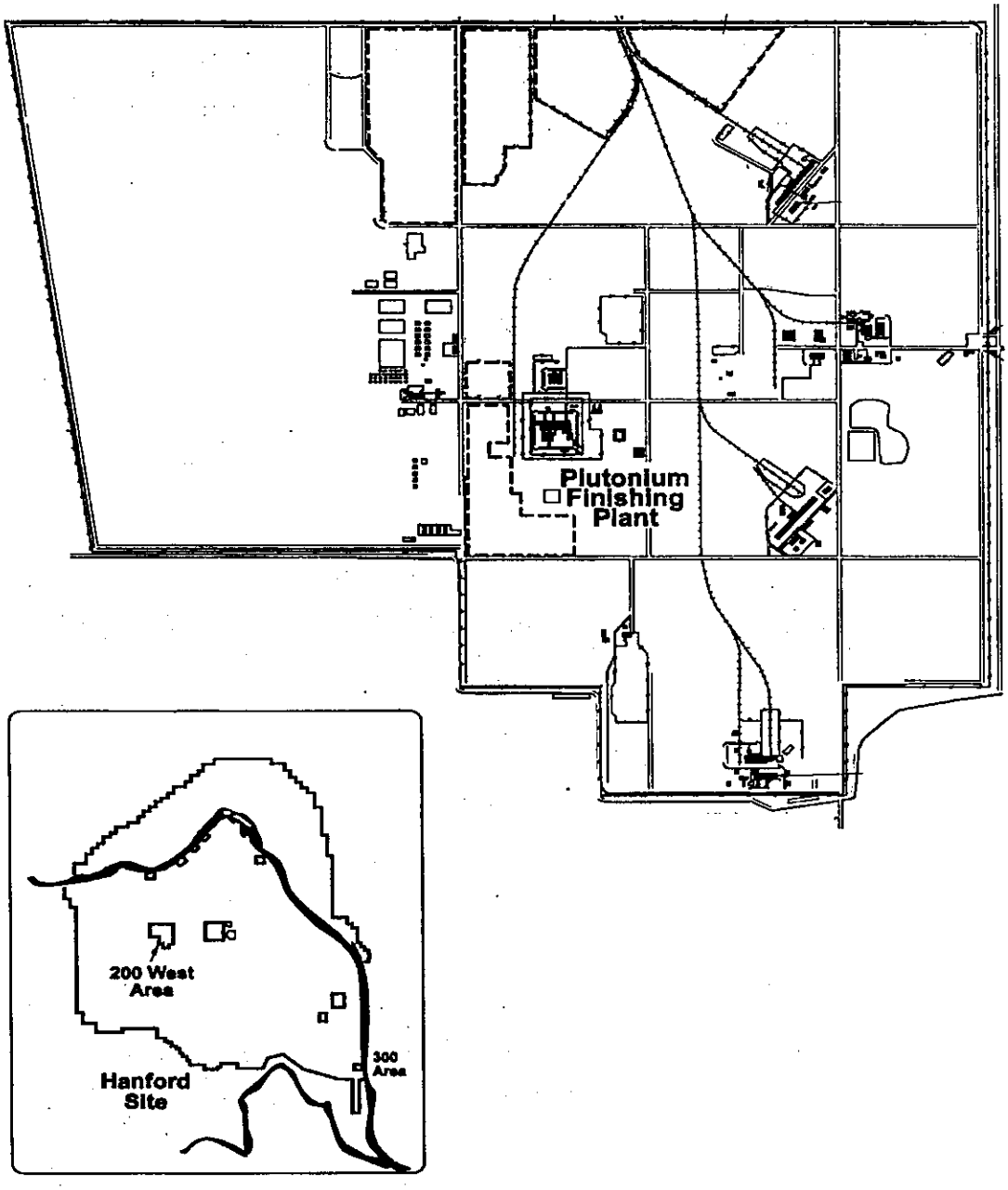


Figure 1-3. 200 West Area Map



1.4 SOURCE, NATURE, AND EXTENT OF CONTAMINATION

The 234-5Z, 236-Z, 241-Z, 242-Z, and 243-Z Buildings contain plutonium chemical process equipment and/or process waste handling equipment. These process structures and equipment are contaminated with radiological and chemical substances used or generated during plutonium processing and process waste management operations. Potential radiological and chemical substances in these buildings have been identified from characterization data, historical operating data, process knowledge, and knowledge of hazardous substances contained in construction materials (e.g., asbestos, lead, polychlorinated biphenyls [PCBs]) and are listed in the EE/CA (DOE-RL 2004a)].

The remaining buildings within the scope of this RAWP are non-process support structures that are potentially contaminated with radionuclides and process chemicals.

The primary hazardous substances of concern for personnel safety are radioactive materials. Key radionuclide contaminants are the plutonium isotopes (Pu-238 through Pu-242) and their decay products (primarily Americium-241), uranium isotopes U-234 through U-238, and neptunium-237, and lesser amounts of mixed fission products, primarily Strontium-90 and Cesium-137.

The majority of the contaminants are found in the form of adherent films and residues in deactivated process vessels, piping, equipment, filters, and ventilation system ductwork. These contaminants also might be found in walls, cracks, and crevices in the processing buildings walls and floors. The presence of these materials in "non-process areas" is due to process upsets or releases that occurred throughout the decades of PFP operations. These releases could have affected the immediate release area (e.g., spills of liquid or 'heavy' materials) or could have affected a wider area (e.g., rooms and hallways) downstream of the upset/release (e.g., releases of plutonium oxide or fluoride powders) that is serviced by the affected ventilation system. Thus, mobile forms of plutonium could be found in any process area of the primary plutonium processing facilities, areas containing process pipes (drains, transfer lines, vacuum systems, etc.), or areas containing the ventilation systems in these facilities. In most instances, the contamination will be fixed (painted over), but loose powder (plutonium oxides and fluorides) could exist in areas not generally accessed (e.g., panels, electric junction boxes, lighting fixtures, false ceilings, walls, ventilation ductwork, etc.).

Nonradiological hazardous substances identified as having a potential to be present in removal action waste originate from construction materials, process chemicals, and decontamination solutions. PCBs, asbestos, beryllium, heavy metals, acids/caustics, and other hazardous process chemicals (e.g., carbon tetrachloride, tributyl phosphate, dibutylbutyl phosphate) are the nonradiological contaminants generally considered to provide the most significant personnel health risks through ingestion, contact, and/or inhalation. To the extent practicable, bulk quantities of containerized hazardous chemicals will be removed from the PFP facilities/structures in preparation for facility demolition. Residual quantities of hazardous chemicals could remain as hold up or heels in process piping, tanks and vessels, or as residues on contaminated process equipment and/or structures, and will be addressed during facility demolition.

Although most tanks and vessels have been drained, there is little documentation indicating that these systems have been flushed and, therefore, residues containing these hazardous materials are anticipated to be present at some locations. Because all PFP plutonium processes were radioactive, chemical contamination in these systems likely will include radionuclides.

2.0 REMOVAL ACTION

The removal action addressed in this RAWP will involve a number of different activities, depending upon the specific scope of work being performed. Section 2.1 describes the various activities that may be conducted under this RAWP. These activities are identified as characterization (including sampling and analysis, surveys, and inspections), decontamination (including mechanical and chemical means of removing adhering contaminants), deactivation (encompassing all activities required to take equipment and systems "out of service" including size reduction and removal from the facility), and stabilization (including cleanup, system flushing, material removal, application of fixatives, etc.).

As noted above, demolition (all activities required to remove the decontaminated structure/equipment to slab-on-grade) will be addressed in future RAWPs.

2.1 REMOVAL ACTION WORK ACTIVITIES

The general scope of work to implement this phase of the removal action includes the following activities, as needed, to prepare facilities for open-air or similar demolition:

- Performing characterization sampling and analysis;
- Removing necessary quantities of hazardous substances (chemical, radiological, and biological);
- Removing highly contaminated equipment, ducting, and piping necessary to support demolition;
- Decontamination of equipment and structures. (Note equipment that has been cleaned to meet Low Level Waste criteria may be left in the building if it supports the demolition method);
- Stabilization of equipment and structures for surveillance and maintenance (S&M); and
- Disposing of waste (including those associated with S&M activities).

Note: Activities may be performed in any sequence or order, including being concurrent.

2.1.1 Surveillance and Maintenance

The S&M task is to sustain a facility/structure or area in a safe, stable condition. The S&M measures include routine radiological and hazard monitoring of each structure, safety inspections, and maintenance activities necessary to keep these PFP facilities in a safe and stable condition. The S&M activities are tailored to the specific conditions of each unique facility/structure.

2.1.2 Characterization

The U.S. Environmental Protection Agency (EPA) -developed data quality objectives (DQO) process has been used to establish the data collection, sampling, and analysis rationale, strategy, and requirements for the characterization efforts required to describe the Above-Grade Structures. The results of the DQO process for the Above-Grade Structures are documented in the regulator-approved HNF-19958, *Data Quality Objectives for the Plutonium Finishing Plant, Above-Grade Structures* (FHa), and DOE/RL-2004-29, *Sampling and Analysis Plan for the Plutonium Finishing Plant, Above-Grade Structures* (DOE-RL 2004c).

Characterization of facility systems, equipment, and surfaces will be performed throughout this project to provide information pertinent to personnel and environmental safety, and waste shipping and disposal information for the various waste streams that will be generated. Characterization will be performed consistent with the criteria and processes identified in the sampling and analysis plan (SAP) for the above grade structures (DOE-RL 2004c).

Information provided through characterization will be used, where appropriate, to identify the required personal protective equipment (PPE) for specific operations, air monitoring requirements, and packaging of waste in accordance with solid waste disposal criteria [Environmental Restoration Disposal Facility (ERDF) for disposal or Central Waste Complex (CWC) for storage]. Because characterization is used to provide insight on unknown, uncertain, and/or suspect conditions, characterization will be performed prior to or in conjunction with planned operations, as discussed in the SAP (DOE-RL 2004c).

Analytical samples (if required) and survey results will provide information concerning existing conditions within each facility. These samples and surveys will establish the presence and distribution of hazardous and/or radiological substances and/or the depth of contaminant penetration into facility surfaces.

Radiological monitoring and radiation surveying, as necessary, will be used to verify facility conditions during project activities and to ensure the adequacy of personnel protective measures.

Sampling and analytical efforts will be performed early in the deactivation process to ensure there is no delay or uncertainty in the identification of radiological or chemical hazards. These analyses will use standard procedures and protocols as identified in the SAP and sampling instructions (e.g., Field Sampling Plan).

2.1.3 Site Mobilization and Preparation Work

Concurrent with the mobilization of temporary structures (i.e., trailers), if required, personnel, equipment, and materials, the following onsite activities may take place:

- Waste storage areas may be established within the on-site area to facilitate transportation of waste material and/or waste streams for recycling or disposal, as appropriate.

- Enclosures required to maintain control of contaminants during this phase of the removal action may be installed.
- Support systems may be added to support the Decontamination and Deactivation (D&D) process, including but not limited to breathing air supplies, nitrogen (and other) gas supply systems, portable/temporary ventilation and exhaust systems, and nondestructive assay (NDA) systems.
- Upgrades or replacements to portable monitoring systems (for criticality, air monitoring, industrial hygiene, etc.).
- Decontamination capabilities (enclosures, structures, and/or systems) may be installed.
- Facility modifications may also occur including, but not limited to, new door ways, wall removal, new air locks, and other changes necessary for equipment and waste packaging movements through out the facility.
- Material and equipment required to support any/all of the activities addressed by this RAWP may be obtained and staged.

In general, facilities will undergo characterization, stabilization, and decontamination using the existing utility and ventilation systems. It is anticipated that electrical power will normally be terminated immediately prior to facility/structure demolition. However, as some of these facilities may have been out of service for an extended period, installation of temporary electrical power and ventilation may be desired or required and, therefore, is included in the scope of this RAWP.

Occupational Safety and Health Administration concerns (e.g., fall protection, guarding, and electrical) will be addressed during Job Control System work package development and during pre-job field walk-downs. Concerns arising during field activities will be addressed as they are identified in the work planning documents.

Although work needs and conveniences have been established for routine characterization and stabilization activities in the various contaminated facilities, specialized capabilities using routine and non-routine chemicals may be needed to conduct the decontamination of a facility. As experience is gained, processes, equipment, and chemicals are likely to change to improve the activities included in this RAWP. The necessary material, equipment, and/or personnel will be obtained to implement any new decontamination methods/processes as required during this phase of the facility deactivation.

2.1.4 Stabilization/Deactivation

Stabilization and/or deactivation activities will encompass all work that is performed to place the facility/structure in a state where release of contaminants and risk to employees and the environment have been minimized, and will enable building/structure demolition and disposal. This work will be performed to ensure personnel and facility safety and may include isolating systems (electrical, mechanical, and chemical), sealing doors and other penetrations, re-roofing or roof repairs, painting, maintenance of/on operational

systems such as roofs and exterior walls, heat, lighting, radiation monitoring, electrical systems, ventilation systems (fans, belts, ductwork), and similar activities.

Operations involving radiological contaminants will be performed with personnel protection measures commensurate with the hazards anticipated. If work area monitoring shows the work environment is not as anticipated during work planning, work stoppage will be one of the processes available to ensure adequate personnel protection. During the performance of activities where unknown radiological or other hazardous conditions exist, appropriate measures will be implemented to protect personnel and to reduce the risk of generating airborne contamination.

While deactivation activities are ongoing, systems/equipment may be left in an operational state to support S&M activities prior to the facility/structure being demolished. These systems include electrical power, lighting, radiation monitoring, etc. These items may be deactivated prior to demolition or deferred to facility/structure demolition, as appropriate and needed.

Each of the uncertainties known to exist for this removal action will be managed through the use of pre-work surveys, physical/chemical/radiological characterization of the structure and walk throughs, preventive control measures, analytical data, and in-depth planning (work packages and hazard reviews). The stabilization and deactivation activities include the following uncertainties:

- Personnel exposure to unexpected hazardous substances;
- Inadvertent generation of high airborne contamination concentrations;
- Unknown structural integrity of the facility and systems that could cause industrial accidents;
- Depth of contaminant penetration into facility surfaces;
- Common industrial risks associated with working in industrial areas and around heavy equipment; and
- Unknown facility conditions.

2.1.5 Decontamination/Risk Reduction

Deactivation will include steps to reduce the risk associated with radiological and non-radiological contamination to levels that will allow open-air demolition of the above-grade structures. This will be accomplished through removal, decontamination, and/or stabilization of the hazard. Decontamination and stabilization activities will be conducted within the footprint of each structure within each of the PFP facilities. The footprint of each facility/structure is defined as the area covered by the structure as seen from a plan view.

After an area (i.e., some part of a structure) has been surveyed and the radiological conditions established, cleanup and general housekeeping will commence as necessary. Cleanup and general housekeeping will involve removing loose materials and rubble/debris, as well as loose radiological contamination. If it is advantageous, these materials may be staged for removal during the demolition phase of the project.

The initial decontamination and deactivation work scope is focused on removing the remaining internal equipment and debris from gloveboxes, hoods, operating areas, ductwork, etc., decontaminating the interior surfaces of gloveboxes, and packaging the internal equipment and debris for disposal. If the equipment/debris can be decontaminated to the extent it can be categorized as low-level waste (LLW) or low-level mixed waste (LLMW), the equipment/debris will be disposed at the ERDF once treatment standards have been met. Alternatively, if equipment may be disposed to ERDF without treatment, it may be left for disposal during the demolition of the facility. Glove boxes, hoods and other contaminated equipment (pipes such as transfer lines, vacuum lines and drains, ducts and filter boxes, and other components) that can not be cleaned, decontaminated, or otherwise treated to meet ERDF acceptance criteria will be size reduced, packaged into an acceptable container, and transferred to the CWC.

If contaminated soil requires excavation/removal to support this phase of the removal action (for example, to access building utilities), the soil will typically be set aside, then placed back into the excavation and stabilized with an appropriate cover material. If for some reason contaminated soil is containerized, it will be disposed at ERDF.

Spent decontamination water and associated contaminated materials from the decontamination of characterization and stabilization equipment may be discharged to the ground within the decontamination area. Verification sampling of the area will be performed in accordance with the approved SAP (DOE-RL 2004c) before closure of the project.

Friable asbestos containing materials (ACMs) and presumed ACMs will be removed before the facility/structure is demolished. If specific systems must remain in operation or non-friable ACM is of a type and/or condition allowing the substantive exemption from renovation of all ACM before demolition, DOE may decide to perform those actions during the demolition phase of the removal action.

ACM typically consists of insulation for piping, floor tiles, cement asbestos board, etc. Removal of piping insulation will be conducted, as needed, as Class I asbestos work. Most of the remaining ACM (again, as needed) will be removed as Class II (e.g., floor tiles and cement asbestos board). Asbestos work, air monitoring, and worker safety requirements will be performed in accordance with internal work requirements and processes for ACM removal and will meet all applicable state and federal regulations.

If alternate removal methods for friable asbestos are developed or if non-friable asbestos is to be left in place during demolition, a certified *Asbestos Hazard Emergency Response Act of 1986* (40 CFR 763) project designer will evaluate the work area, projected work practices, and engineering controls and certify in writing that: (1) the planned control method is adequate, (2) that it is in compliance with all applicable state and federal regulations, and (3) in the case of non-friable that is left in place, actions taken during the demolition phase will not cause non-friable asbestos to become friable.

Unattached, not-in-use, and accessible lead bricks and sheeting, PCBs (e.g., motor oils and light ballasts), mercury (primarily in lighting components and switches), and other hazardous materials will be removed and either reused/recycled in accordance with guidelines discussed in Section 4.2.2 (where possible), or disposed as hazardous or mixed

waste. If convenient from a scheduling or cost perspective, these materials may be left in place for disposal during demolition of the facility.

It is anticipated that contamination control structures (greenhouse, glovebox, and/or temporary ventilation systems) will be installed to limit airborne releases. Waste package assay station(s) for drums, Standard Waste Boxes (SWBs), and other waste containers will be installed to characterize radiological material contents of waste packages prior to disposal. In addition, a decontamination station(s) may be installed to support a variety of operational needs. Decontamination processes and solutions will be utilized to reduce the concentrations of radiological contaminants on surfaces in gloveboxes, hoods, filter boxes, ductwork, floors, walls, and other surfaces.

Other activities and/or processes, yet to be identified, to improve processes may be procured and implemented during decontamination.

If size reduction of material is required and/or beneficial prior to waste disposal, this activity may be implemented by on-site or off-site facilities as appropriate.

Throughout all of these activities radiation monitoring capabilities will be maintained or installed as needed to ensure personnel and environmental safety.

Each of these needs involves uncertain or unknown conditions that must be addressed to support the implementation of facility deactivation and stabilization. As the facility undergoes deactivation, structural features, airflow conditions, background radiation levels, and airborne contamination concentrations are likely to change and are some of the facility uncertainties that exist at this time. The following uncertainties are associated with decontamination activities:

- Personnel exposure to unexpected toxic substances;
- Inadvertent generation of high airborne contamination concentrations;
- Unknown structural integrity of the facility and systems that could cause industrial accidents;
- Depth of contaminant penetration into facility surfaces;
- Common industrial risks associated with working in industrial areas and around heavy equipment;
- Chemical burns; and
- Unknown facility conditions.

Each of the uncertainties will be managed through the use of pre-work surveys, physical/chemical/radiological characterization of the structure and walk throughs, preventive control measures, analytical data, and in-depth planning (work packages and hazard reviews).

All waste generated will be characterized in accordance with the SAP (DOE-RL 2004c).

2.1.5.1 Specialized Equipment for Deactivation, Stabilization, and Decontamination

Specialized project equipment may be needed during deactivation and decontamination operations. Equipment for concrete cutting, decontamination, dismantling, and

system/equipment isolation will be evaluated, as needed, to ensure that personnel training and equipment are adequate for safe integration into the work activities. In most cases, personnel training will be derived from equipment operational manuals and procedures. More complex equipment might require specialized training by vendor representatives. Modifications to equipment that will limit the exposure to contamination will be incorporated when possible. These modifications generally would involve alterations that allow only the working components to be used in contamination areas, with the power/collection/process units maintained in clean areas (i.e., outside of the contaminated area).

2.1.5.2 Process Equipment

Contamination levels associated with process equipment may need to be reduced through application of controls in order to allow open-air or limited-containment demolition of facilities.

Glovebox, hood, filter boxes, and process cell decontamination may use the following processes to remove, fix, or stabilize contaminated surfaces:

- Aggressive chemicals (etching, solvents, degreasers, peels, strip coats) and a wide variety of other chemical cleaners;
- Mechanical means (scraping, grinding, cutting, scabbling, explosive scabbling, sand blasting, laser ablation systems, robotics, pressurized gas systems, etc.); and
- Brushing the surfaces to remove contamination followed by use of fixatives.

Special equipment may be procured or developed to enhance this work as experience is gained and unique challenges are identified during the life of the project.

Decontamination chemicals identified at this time include water, Environmental Alternatives Inc. RadPro™, Lucas's GlyGel™, Cerium 4 nitrate, and compressed nitrogen gasses. It is expected that other chemicals, compounds, and methods will be added as experience is gained.

Prior to leaving glove boxes and hoods in the facility for demolition, the glove boxes and hoods will be verified as compliant with the ERDF Waste Acceptance Criteria to allow shipping the waste along with the remainder of the building debris that will be generated during facility demolition. In some cases, the decontamination of the glovebox (hood and process cell) will be followed by removal and disposal of portions or all of the glove boxes and hoods.

2.1.5.3 Ductwork

Contaminated ventilation ductwork will be decontaminated, stabilized, and/or removed as needed to support open-air or limited-containment demolition. The ducts will be fixed or stabilized as necessary for the disposal/waste management path chosen.

Transuranic (TRU) waste being loaded into a container may not require stabilization, but fixatives may be required for the waste prior to removal to ensure environmental and personnel exposures are as low as reasonably achievable (ALARA).

Decontaminating or stabilizing duct work may involve the use of simple brush, spray, foams or fixative procedures, or it may require more extensive preparations including special glove bags, vacuum systems, crawlers, chemicals, and/or other special equipment.

Prior to leaving ductwork in the facility for later demolition, the ductwork will be verified as compliant with the ERDF Waste Acceptance Criteria to allowing shipping the waste along with the remainder of the building debris that will be generated during facility demolition.

2.1.5.4 Contaminated Piping Systems

A contaminated piping system may include transfer lines, vacuum lines, drain lines, and in some places the outsides of clean chemical feed lines. These pipes will first be drained of liquids. The liquids will be disposed to the Effluent Treatment Facility (ETF) or ERDF, or absorbed and disposed of as solid waste.

Additional decontamination steps may include chemical or mechanical treatments, followed by stabilization (paints, epoxies, foams or other methods) as required for removal of the piping to ensure personnel and environmental safety.

As with the ductwork, decontamination of these lines may utilize crawlers, "slugs", simple flushing procedures, acids, foaming, or other technologies to clean or stabilize the contamination associated with the piping.

Prior to leaving piping in the facility for demolition, the piping will be verified as compliant with the ERDF Waste Acceptance Criteria to allow shipping the waste along with the remainder of the building debris that will be generated during facility demolition.

2.2 FACILITY HAZARDS

The PFP Complex contains significant quantities of residual radiological materials as well as chemicals used in and/or generated from the various plutonium process operations. In addition, the removal activities at the PFP Complex must consider all of the normal hazardous materials associated with buildings (asbestos insulation, lead in paint, PCBs in electrical equipment, etc.) and the hazards associated with the nature of the deactivation work (e.g., cuts, falls, strains, and falling equipment).

Health and safety plans detail the hazards within the PFP Complex. Health and safety concerns may be addressed in greater detail in site-specific health and safety plans (SSHASPs) to be created on an as-needed basis to support activities at process facilities.

2.2.1 Radiological Materials

The PFP Complex is posted as a radiologically controlled area. The following radioactive materials are contained within the structures and equipment in the PFP Complex:

- Uranium-233, -234, -235, -236, -237 and -238
- Plutonium-238, -239, -240, -241 and -242
- Americium-241

- Neptunium-237
- Fission products (cesium-137 and strontium-90)
- Tritium sealed sources in exit signs.

2.2.2 Lead and Other Metals

Lead could exist in surface coatings (i.e., lead-based paint), as shielding (lead bricks, glass, and sheets), or as components of plumbing inside the PFP Complex. Workers performing job tasks that involve lead will follow the internal work requirements and processes for handling this material.

Beryllium and/or cadmium may exist in a number of locations in the process facilities, maintenance areas, and laboratories. Workers performing job tasks that involve these heavy metals will follow the internal work requirements and processes for handling these materials.

2.2.3 Asbestos

ACM is found in and around the PFP Complex in vessel and/or piping insulation, loose floor tiles, wall coverings or panels, sheet-rock, electrical wire insulation, and ducting. Personnel involved in asbestos cleanup will follow the internal work requirements and processes for handling this material.

2.2.4 Biological Hazards

Health and safety plans describe the biological hazards within the PFP Complex. Examples of biological hazards include rodent and bird feces, insects, and snakes.

2.2.5 Chemicals

Bulk chemical inventories that remain within facilities will be disposed or recycled during deactivation of the PFP Complex. The potential exists for the discovery of old containers of residual chemical contaminants (e.g., laboratory chemicals, acids and bases in chemical feed lines, solvents, greases, hydraulic fluids and fuel oils, and aerosols). In addition, chemical heels may be found in tanks or other containers, and/or facility piping and drains. If such containers or materials are found, they will be managed in accordance with internal work requirements and processes, and in accordance with the *Plutonium Finishing Plant Above-Grade Structures Waste Management Plan* (DOE-RL 2005c).

2.2.6 PCBs

PCBs may be found on the painted surfaces in the PFP Complex, in light ballasts, electrical equipment, stained soils, hydraulic fluids in the Remote Mechanical "C" process lines, and in the waste oils generated during deactivation. Material that is coated with paint containing PCBs will be managed as "PCB Bulk Product Waste".

2.2.7 Industrial Hazards

Industrial hazards will be typical of those generally found in shutdown/inactive facilities and construction areas. These include, for example, tripping, falling, sharp edges, high noise areas, and lifting (ergonomic) hazards. Hazards are described in project health and safety plans.

2.3 STRUCTURES, SYSTEMS, AND COMPONENTS THAT PROTECT FACILITY WORKERS

Controls employed during the PFP Above-Grade Structures deactivation project will include temporary containment enclosures, glovebag containments, high-efficiency air particulate (HEPA) ventilation control, and PPE, as directed by the health and safety plan (HASP), SSHASP, or Work Package.

To control radiological emissions, vacuums will be equipped with HEPA-type and/or charcoal filters, and portable ventilation exhausters will be equipped with HEPA-type filters.

Radiological work permits (RWPs) and an asbestos abatement work plan for asbestos removal will be in place, as needed.

Personnel monitoring and area monitoring will be used as required to determine and document worker exposures and work conditions.

If needed, temporary containment enclosures will be constructed to provide proper airflow conditions and will be fabricated of noncombustible and fire-retardant materials. A standard type of temporary containment is a glovebag enclosure, which essentially will be an one-time-use protective measure to prevent contamination release during specific operations (e.g., pipe cutting, sample collection, and decontamination). Longer term containment structures may be installed for size reduction operations. These enclosures will be evaluated and constructed in accordance with internal work requirements and processes.

2.4 ELECTRICAL/UTILITY SYSTEMS

Removal of electrical systems is typically the last isolation activity performed, because power and other utilities will be needed to support the characterization, deactivation, and stabilization activities. If the existing electrical systems pose a threat to workers (e.g., degraded condition or interference with other work), the electrical system could be deactivated first and alternative power supplies provided (e.g., generators and/or temporary overhead lines).

3.0 SAFETY AND HEALTH MANAGEMENT AND CONTROLS

All emergency planning and preparedness activities for these projects will be consistent with planning and preparedness actions taken by Hanford Site contractors for similar projects. Activities will be conducted in a manner that ensures the health and safety of workers and the public, and the protection of the environment in the event of an abnormal incident during characterization, decontamination, deactivation, and stabilization of the PFP facilities.

3.1 EMERGENCY MANAGEMENT

The Emergency Management Program (including preparedness, planning, and response) contains the administrative responsibilities for compliance with the *Hanford Emergency Response Plan* (DOE-RL 1994), and all applicable DOE Orders.

The Emergency Management Program establishes a coordinated emergency response organization capable of planning for, responding to, and recovering from industrial, security, and hazardous material incidents. Emergency action plans for hazardous facilities identify the capabilities necessary to respond to emergency conditions, provide guidance and instruction for initiating emergency response actions, and serve as a basis for training personnel in emergency actions for each facility. The emergency response actions within the emergency action plan are provided for recognizing incidents and/or abnormal conditions, initiating protective actions, and making the proper notifications.

The emergency action plans are consistent with Hanford Site emergency processes and meet the requirements of the emergency response plan (DOE-RL 1994), applicable DOE Orders, and state and federal regulations (e.g., 29 CFR 1910.38, *Washington Administrative Code* (WAC) 173-303-340, WAC 173-303-350, and WAC 173-303-360).

3.2 HEALTH AND SAFETY PROGRAM

The Hazardous Waste Operations Safety and Health Program were developed for employees involved in hazardous waste site activities. The program was developed to comply with the requirements of 29 CFR 1910.120 and 10 CFR 835 to ensure the safety and health of workers during hazardous waste operations.

Health and safety plans describe how environment, safety, and health are integrated into the work planning and execution for the Project Hanford Management Contract scope of work. The overall objective is to "DO WORK SAFELY" while ensuring protection of workers, the public, and the environment.

3.2.1 Personnel Safety Program

The Integrated Safety Management System (ISMS) will be incorporated into all work activities. The program includes the following elements:

- Organizational structure specifying the official chain of command and the overall responsibilities of supervisors and employees;
- Comprehensive work plan developed before work begins at a site to identify operations and objectives and to address the logistics and resources required to accomplish project goals;
- SSHASP developed (if needed) when workers could be exposed to hazardous substances or conditions beyond the scope of the Programmatic Health and Safety Plan (PHASP);
- Worker training commensurate with individual job duties and work assignments;
- Medical surveillance program administered to comply with the Occupational Safety and Health Administration requirements (29 CFR 1910.120);
- Internal work requirements and processes; and
- Voluntary Protection Program.

3.2.2 Programmatic HASP and Activity Hazards Analysis

Health and safety plans have been prepared for the removal of the above-grade structures, which identifies the chemical, radiological, and physical hazards, and specifies the controls and requirements for work activities for both deactivation and subsequent demolition. It also addresses the health and safety hazards of each phase of site operation, and includes the requirements for hazardous waste operations and/or deactivation activities, as specified in 29 CFR 1910.120.

Access and work activities are controlled in accordance with approved work packages, as required by established internal work requirements and processes. As part of work package development, a job or activity hazards analysis will be written to identify the hazards associated with specific tasks.

Depending on the specific hazards present, and the complexity of the project, one or more site-specific health and safety plans (SSHASPs) could be written for the demolition of individual PFP facilities/structures or groups of facilities/structures. The following elements are included in a SSHASP:

- General overview of the hazards associated with the facility or facilities
- List of employee training assignments
- List of personal protective equipment (PPE) to be used at the work site
- Medical surveillance requirements
- Standard Operating Procedures
- Work site control measures
- Emergency response
- Confined space entry internal work requirements and processes

- Spill containment program
- Contingency Plan.
- Frequency and type of air monitoring
- Necessary personnel monitoring
- Environmental sampling techniques and instruments to be used
- Personnel decontamination procedures as needed

In addition to the SSHASP, as needed, a radiological work permit (RWP) will be prepared for work in areas with potential radiological hazards. The RWP extends the Radiological Protection Program (discussed in Section 3.2.3) to the specific work site or operation. All personnel assigned to the project and all work site visitors must adhere to the provisions identified in the SSHASP and RWP.

A daily pre-job briefing will be held with the involved workers. This briefing will include reviews of the hazards that could be encountered and the associated safety requirements. Throughout an activity, special briefings may be performed before major work evolutions.

3.2.3 Radiological Controls and Protection

The radiological controls and protection program is defined in DOE-approved programs and internal work requirements and processes. The radiological controls and protection program reduces the risks to personnel safety and/or health to levels that are as low as reasonably achievable (ALARA) and ensures adequate protection of workers. The radiological protection program meets the requirements of 10 CFR 835. Appropriate dosimetry, RWPs, personal protective equipment, ALARA planning, periodic surveys, and radiological control technical support also will be provided.

The standard controls for work in radiological areas will govern project activities. These RWPs will provide for radiological control(s) planning to identify the site-specific conditions. In addition, the controls identify the specific requirements for an activity, periodic radiation and contamination surveys of the work area, and periodic or continuous observation of the work by the radiological controls organization. The ALARA planning process will be used to identify shielding requirements, contamination control requirements (including local ventilation controls), radiation monitoring requirements, and other radiological control requirements for the individual tasks conducted during the projects.

Measures will also be taken to minimize the possibility of releases to the environment. Section 4.3 of this RAWP addresses the controls that may be utilized during project activities to prevent the potential release of contamination. Radiological monitoring of personnel and the immediate environs will be completed as described in this section. Personnel monitoring will be monitored using approved occupational radiological protection methods.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

The Action Memorandum (DOE-RL 2005b) for the PFP facilities identifies the ARARs for this removal action, which are summarized in Section 4.1. The following sections discuss how the deactivation activities will comply with these ARARs.

4.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

A removal action must, to the extent practicable, meet ARARs. ARARs are either applicable or relevant and appropriate requirements.

Applicable requirements are cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site.

Relevant and appropriate requirements, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similar to those encountered at the CERCLA site that their use is well suited to the particular site.

Removal actions are exempt from obtaining Federal, state, and local permits [CERCLA, Section 121(e) (1)] for activities performed onsite.

To-be-considered (TBC) information includes advisories or guidance issued by federal or state governments; these materials are not legally binding and do not have the status of ARARs. As appropriate, however, TBCs should be referenced with ARARs when determining the removal activities necessary for protection of human health and the environment.

Because the PFP stabilization and deactivation activities will result primarily in waste generation and have the potential for air emissions, the key ARARs include waste management standards and standards controlling emissions to the environment. Preliminary ARARs were identified in the EE/CA and final ARARs are listed in the Action Memorandum for the above-grade structures (DOE-RL 2005b). Table 4-1 lists the ARARs for the removal action.

Table 4-1. Identification of Applicable or Relevant and Appropriate Requirements and To Be Considered Materials for the PFP Above-Grade Structures. (4 Sheets)

ARAR Citation	ARAR or TBC	Requirement	Rationale for Use
WASTE MANAGEMENT STANDARDS			
Regulations pursuant to the *Resource Conservation and Recovery Act of 1976*, 42 USC 6901, et seq. -- Implemented through the *Hazardous Waste Management Act*, RCW 70.105			
Dangerous Waste Regulations, (WAC 173-303):			
Solid Waste Identification Specific subsections: WAC 173-303-016 WAC 173-303-017	ARAR	These regulations define how to identify when materials are and are not solid waste.	Substantive requirements of these regulations are applicable because these define how to determine which materials are subject to the designation regulations. Specifically, materials that are generated for removal from the CERCLA site during the removal action would be subject to the procedures for identification of solid waste to ensure proper management.
Dangerous/Mixed Waste Designation WAC 173-303-070(3)	ARAR	This regulation establishes the procedures to be used to determine if solid waste requires management as dangerous waste. These procedures are used to identify which waste codes are appropriate for application to the waste.	Substantive requirements of these regulations are applicable to materials encountered during the removal action. Specifically, solid waste that is generated for removal from the CERCLA site during this removal action would be subject to the dangerous waste designation procedures to ensure proper management.
Dangerous/Mixed Waste Management Specific subsections: WAC 173-303-073 WAC 173-303-077 WAC 173-303-170(3)	ARAR	These regulations establish the management standards for solid waste designated as dangerous or mixed waste. Special waste is addressed in WAC 173-303-073. Universal waste is addressed in WAC 173-303-077. Generator standards are identified through WAC 173-303-170(3).	Substantive requirements of these regulations are applicable to materials encountered during the removal action. Specifically, the substantive standards for management of special waste and universal waste and the substantive standards for management of dangerous/mixed waste are applicable to the interim management of certain waste that will be generated during the removal action. For purposes of this removal action, WAC 173-303-170(3) includes the substantive provisions of WAC 173-303-200 by reference. WAC 173-303-200 further includes certain substantive standards from WAC 173-303-630 and -640 by reference.
Dangerous/Mixed Waste Disposal Specific subsection: WAC 173-303-140(4)	ARAR	This regulation establishes state standards for land disposal of dangerous waste and incorporates by reference federal land disposal restrictions of 40 CFR 268, that are applicable to solid waste that designates as dangerous or mixed waste in accordance with WAC 173-303-070(3).	The substantive requirements of this regulation are applicable to materials encountered during the removal action. Specifically, dangerous/mixed waste that is generated and removed from the CERCLA site during the removal action for offsite (as defined by CERCLA) land disposal would be subject to the identification of applicable land disposal restrictions at the point of generation of the waste. The actual offsite treatment of such waste would not be ARAR to this removal action, but would instead be subject to all applicable laws and regulations.

Table 4-1. Identification of Applicable or Relevant and Appropriate Requirements and To Be Considered Materials for the PFP Above-Grade Structures. (4 Sheets)

ARAR Citation	ARAR or TBC	Requirement	Rationale for Use
Recycling Requirements Specific subsections: WAC 173-303-120(3) WAC 173-303-120(5)	ARAR	These regulations define the requirements for the recycling of materials that are solid and dangerous waste. Specifically, WAC 173-303-120(3) provides for management of certain recyclable materials, including spent refrigerants, antifreeze, and lead-acid batteries. WAC 173-303-120(5) provides for the recycling of used oil.	Substantive requirements of these regulations are applicable to certain materials that might be encountered during the removal action. Recyclable materials that are exempt from regulation as dangerous waste and that are not otherwise subject to CERCLA as hazardous substances can be recycled and/or conditionally excluded from certain dangerous waste requirements.
Final TSD Unit Requirements Specific subsection: WAC 173-303-610(2)	ARAR	This regulation establishes requirements applicable to final status TSD units undergoing closure.	Substantive requirements of this regulation are applicable to any RCRA final status TSD unit within the CERCLA site and undergoing closure activities in conjunction with the removal action. Substantive requirements of this regulation are relevant and appropriate to any interim status TSD unit undergoing closure in conjunction with the removal action.
Regulations pursuant to the *Toxic Substances Control Act (TSCA)*, 15 USC 2601 et seq.			
Polychlorinated Biphenyls Manufacturing, Processing, Distribution in Commerce, and Use Provisions (40 CFR 761)			
PCB Waste Management and Disposal Specific subsections: 40 CFR 761.50(b)(1) 40 CFR 761.50(b)(2) 40 CFR 761.50(b)(3) 40 CFR 761.50(b)(4) 40 CFR 761.50(b)(7) 40 CFR 761.50©	ARAR	These regulations establish standards for storage and disposal of PCB wastes.	Substantive requirements of these regulations are applicable to the storage and disposal of PCB liquids, items, remediation waste, and bulk product waste at ≥50 ppm. The specific identified subsections from 40 CFR 761.50(b) reference the requirements for management of each PCB waste type. Radioactive PCB waste can be disposed in accordance with 40 CFR 761.50(b)(7).
Regulations pursuant to the *Solid Waste Management, Recovery and Recycling Act*, RCW 70.95			
"Minimum Functional Standards for Solid Waste Handling," (WAC 173-304)			
Nondangerous, Nonradioactive Solid Waste Management Specific subsection: WAC 173-304-200(2)	ARAR	This regulation establishes requirements for the on-site storage of solid waste that is not dangerous or radioactive waste.	Substantive requirements of these regulations are applicable to materials encountered during the removal action. Specifically, nondangerous, nonradioactive solid wastes (i.e., hazardous substances that are only regulated as solid waste) that will be containerized for removal from the CERCLA site would be managed onsite according to the substantive requirements of this standard.
To-Be-Considered pursuant to relevant facility acceptance criteria			

Table 4-1. Identification of Applicable or Relevant and Appropriate Requirements and To Be Considered Materials for the PFP Above-Grade Structures. (4 Sheets)

ARAR Citation	ARAR or TBC	Requirement	Rationale for Use
Environmental Restoration Disposal Facility Waste Acceptance Criteria (BHI-00139)	TBC	This document establishes waste acceptance criteria for the Environmental Restoration Disposal Facility.	Waste destined for management at ERDF must meet acceptance criteria to ensure proper disposal.
STANDARDS CONTROLLING RELEASES TO THE ENVIRONMENT			
Regulations pursuant to the *Clean Air Act of 1976*, 42 USC 7401, et seq.			
"National Emission Standards for Hazardous Air Pollutants (NESHAP)," (40 CFR 61)			
40 CFR 61.92	ARAR	Emissions of radionuclides to the ambient air shall not exceed amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr.	Substantive requirements of this standard are applicable because this removal action may include activities such as open-air demolition of contaminated structures, excavation of contaminated soils, and operation of exhausters and vacuums, each of which may provide airborne emissions of radioactive particulates to unrestricted areas. As a result, requirements limiting emissions potentially apply. This is a risk-based standard for the purposes of protecting human health and the environment.
40 CFR 61.93	ARAR	Emissions from point sources of airborne radioactive material shall be measured. Measurement techniques may include, but are not limited to, sampling, calculation, smears, or other reasonable methods for identifying emissions as determined by the lead agency.	Substantive requirements of this standard are applicable because point source emissions of radionuclides to the ambient air may result from activities performed during the removal action, such as open-air demolition of contaminated structures, excavation of contaminated soils, and operation of exhauster and vacuums. This standard exists to assure compliance with emission standards.
40 CFR 61.145(a) 40 CFR 61.145© 40 CFR 61.150	ARAR	Regulated asbestos-containing materials shall be removed in accordance with specific handling, packaging, and disposal requirements where the potential to emit asbestos exists.	Substantive requirements of this standard are applicable because this removal action includes abatement of asbestos and asbestos-containing materials in the form of pipe and tank insulation, transite siding, and ductwork. As a result, there is potential to emit asbestos to unrestricted areas and the requirements for the removal, handling, and packaging of asbestos potentially apply.
Regulations pursuant to the *Washington Clean Air Act*, RCW 70.94 / *Department of Ecology*, RCW 43.21A			
"Radioactive Protection – Air Emissions," (WAC 246-247)			
WAC 246-247-040(3) WAC 246-247-040(4)	ARAR	Emissions shall be controlled to assure emission standards are not exceeded.	Substantive requirements of this standard are applicable because fugitive, diffuse, and point source emissions of radionuclides to the ambient air may result from activities performed during the removal action, such as open-air demolition of contaminated structures, excavation of contaminated soils, and operation of exhauster and vacuums. This standard exists to assure compliance with emission standards.

Table 4-1. Identification of Applicable or Relevant and Appropriate Requirements and To Be Considered Materials for the PFP Above-Grade Structures. (4 Sheets)

ARAR Citation	ARAR or TBC	Requirement	Rationale for Use
WAC 246-247-075		Emissions from non-point and fugitive sources of airborne radioactive material shall be measured. Measurement techniques may include, but are not limited to sampling, calculation, smears, or other reasonable method for identifying emissions as determined by the lead agency.	Substantive requirements of this standard are applicable because fugitive and non-point source emissions of radionuclides to the ambient air may result from activities performed during the removal action such as open-air demolition of contaminated structures and excavation of contaminated soils. This standard exists to assure compliance with emission standards.
"General Regulations for Air Pollution Sources," (WAC 173-400)			
Air Contaminant Emission Standards Specific subsections: WAC 173-400-040 WAC 173-400–113	ARAR	Methods of control shall be employed to minimize the release of air contaminants associated with fugitive emissions resulting from materials handling, construction, demolition, or other operations. Emissions are to be minimized through application of best available control technology.	Substantive requirements of these standards are relevant and appropriate to this removal action because there may be visible, particulate, fugitive, and hazardous air emissions and odors resulting from decontamination, demolition, and excavation activities. As a result, standards established for the control and prevention of air pollution may be relevant and appropriate.
"Controls for New Sources of Toxic Air Pollution," (WAC 173-460)			
WAC 173-460-030 WAC 173-460-060 WAC 173-460-070	ARAR	Emissions of toxic air contaminants shall be quantified and ambient impacts evaluated. Best available control technology for toxics shall be used as determined by the lead agency to protect human health and the environment.	Substantive requirements of these standards are relevant and appropriate to this removal action because there is the potential for toxic air pollutants to become airborne as a result of decontamination, demolition, and excavation activities. As a result, standards established for the control of toxic air contaminants may be relevant and appropriate.

ARAR = Applicable or Relevant and Appropriate Requirements
CERCLA = *Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CFR = *Code of Federal Regulations*
CWC = Central Waste Complex
ERDF = Environmental Restoration Disposal Facility
ETF = Effluent Treatment Facility
NESHAP = National Emission Standards for Hazardous Air Pollutants
PCB = Polychlorinated biphenyl
RCRA = *Resource Conservation and Recovery Act of 1976*
RCW = Revised Code of Washington
TSD = Treatment, Storage, and Disposal
WAC = *Washington Administrative Code*
WRAP = Waste Receiving and Processing

4.2 WASTE MANAGEMENT

The waste management organization within the PFP Project will provide waste coordination services for PFP.

A variety of waste streams will be generated during the PFP removal action. It is anticipated that most of the waste will designate as LLW; however, quantities of

dangerous or mixed waste, PCB- bulk product waste, asbestos and ACM, and TRU waste also could be generated. Although the great majority of the waste will be in a solid form, some aqueous solutions might be generated. Waste management activities performed under this RAWP will be in accordance with ARARs identified in the Action Memorandum (DOE-RL 2005b) and the PFP Waste Management Plan (WMP) (DOE-RL 2005c).

It is anticipated that waste generated through this removal action will be disposed to ERDF. Alternate disposal locations may be considered for waste, if a suitable and cost effective location is identified. Any potential alternate disposal location will be evaluated for appropriate performance standards to assure that it is adequately protective of human health and the environment and must be reviewed by EPA for an offsite determination.

Some of the aqueous waste designated as LLW, dangerous, or mixed waste will be transported to ETF for treatment and disposal. ETF is a RCRA-permitted facility authorized to treat aqueous waste streams generated on the Hanford Site and dispose of these streams at a designated state-approved land disposal facility. Use of this facility will require an offsite determination by EPA prior to disposal of the waste.

4.2.1 Waste Characterization and Designation

The waste characterization requirements to support this removal action were developed as part of the DQO process (Section 2.1.2). Waste generated will be characterized in accordance with the internal work requirements and processes, the requirements of the receiving facility, and the approved SAP (DOE-RL 2004c), as well as project-specific instructions for individual removal actions. Characterization will be conducted through process knowledge, sampling/analysis, and radiological surveys.

4.2.2 Waste Minimization and Recycling

Waste generation will be kept to a minimum through waste separation and segregation. Waste will be segregated at the PFP as it is generated, which will minimize the volume of regulated waste. Waste will be separated into the following categories: TRU, TRU mixed, LLW, LLMW, dangerous, and nonregulated/nondangerous to ensure that all wastes are managed according to the most appropriate, applicable procedures.

All materials released offsite for disposal/recycle must meet the contamination criteria required for the selected disposal path. Contamination levels of the materials will be established in accordance with the material release internal work requirements and processes.

4.2.3 Waste Handling, Storage and Packaging

The CERCLA Removal Action Area of Contamination and On-site Area are described in the PFP WMP (DOE-RL 2005c). Waste handling internal work requirements and processes, including containerizing and inspecting, will meet the requirements of WAC 173-303 and 40 CFR 261. Packaging and labeling of waste will meet the requirements of U.S. Department of Transportation regulations (49 CFR 171-179), or the waste acceptance criteria of the onsite disposal facility, as appropriate.

Waste management will appropriately manage special wastes that cannot be dispositioned in bulk by the project. Waste management will ensure wastes not meeting the ERDF Waste Acceptance Criteria are placed in separate material transfer areas (i.e., not co-mingled with ERDF waste). Materials will be packaged such that repackaging for shipping will not be required. After the material is classified for disposal, waste management will arrange and manage shipping and disposal.

4.2.4 Waste Treatment

Waste that is prohibited from the ERDF and requires treatment will be managed by PFP and treated to meet the applicable acceptance criteria prior to disposal, or sent to a permitted TSD for appropriate disposition.

4.2.5 Waste Transportation and Shipping

All shipments to off site treatment or disposal facilities will be made in accordance with U.S. Department of Transportation regulations, 49 CFR 171-179, or a DOE-approved transportation document, applicable sections of WAC 173-303, and waste transportation internal work requirements and processes.

4.2.6 Waste Management Strategy

Any TRU waste that is generated will be packaged for shipment to WIPP; all other regulated waste will be shipped to the ERDF for disposal. Each waste stream will require management to achieve specific packaging and disposal criteria. Each of these waste streams is defined and discussed in the WMP for the PFP (DOE-RL 2005c).

4.2.7 Release of Property

All property released for offsite disposal and/or reuse and recycle is nonreal property. The release of nonreal property will follow DOE guidance in accordance with DOE Order 5400.5. If the property meets the surface contamination limits and the recipient is aware of the measured radioactivity on the property, the property may be dispositioned with low-levels of residual radioactivity. Property released via this process will be viewed as containing no or *de minimis* levels (i.e., levels are negligible such that the associated risks to public health are so low that action to reduce risks generally is unwarranted) of CERCLA hazardous substances, and, therefore, will not be subject to CERCLA.

4.3 EMISSIONS

The removal action has the potential to release a variety of regulated contaminants to the air, water, or soil column. The following section describes the management of these emission streams.

4.3.1 Air Emissions

The federal Clean Air Act (42 United States Code 7401 et seq.) and the Washington Clean Air Act (RCW 70.94) require regulation of air pollutants. The federal implementing regulations, found in Title 40 CFR Part 61, Subpart H, require that radionuclide airborne emissions from the facility shall be controlled so as not to exceed amounts that would cause an exposure to any member of the public of greater than 10 millirem per year (mrem/yr) effective dose equivalent. The same regulation requires monitoring of point sources (i.e., stacks or vents) with a major potential for radioactive airborne emissions and periodic confirmatory measurement of minor sources sufficient to verify low emissions. The state implementing regulations require added control of radioactive airborne emissions where economically and technologically feasible [WAC 246-247-040(3) and -040(4) and associated definitions]. In order to address the substantive aspect of these requirements, best or reasonable control technology will be addressed by ensuring that applicable emission control technologies (those reasonably operated in similar applications) will be used when economically and technologically feasible (i.e., based upon cost/benefit). The substantive aspect of the requirements for monitoring of fugitive or non-point sources emitting radioactive airborne emissions [WAC 246-247-075(8)] will be addressed by sampling the effluent streams and/or ambient air as appropriate using reasonable and effective methods.

The federal implementing regulations also contain requirements for managing asbestos material associated with demolition and waste disposal (Title 40 CFR Part 61, Subpart M). At the state level, the substantive requirements for control of criteria/toxic emissions will be administered in accordance with Section 4.3.1.2 and as identified in Table 4.1 (i.e., WAC 173-400 and WAC 173-460).

4.3.1.1 Airborne Source Information

Handling radiologically contaminated materials during PFP Complex deactivation activities has the potential to generate particulate radioactive air emissions. The annual unabated and abated potential-to-emit values for the maximum public receptor (MPR) were calculated based on the unit dose factors from *Calculating Potential-to-Emit Releases and Doses for FEMPs and NOCs*, HNF-EP-3602, Rev. 1, dated January 2002. The distance to the MPR at the Laser Interferometer Gravitational Wave Observatory (LIGO) receptor is 18,310 meters East-Southeast of the 200 West Area.

The primary radionuclides of concern are uranium-233, uranium-234, uranium-235, uranium-236, uranium-237, uranium-238, plutonium-238, plutonium-239, plutonium-240, plutonium-241, plutonium-242, americium-241, americium-243, and neptunium-237. Other radioisotopes may be present. These other isotopes may be present due to activation products, fission products, decay products, sources and standards (e.g., thorium, californium) and internal residual contamination on fuel storage containers (cobalt-60, strontium-90, and cesium-137).

The conservative unabated potential-to-emit from PFP Complex deactivation activities, including all point source and diffuse and fugitive emissions, is 910 mrem/yr to the receptor (the unabated PTE contributions from the 291-Z-1, 296-Z-7, and 296-Z-3 stacks are 350 mrem/yr, 542 mrem/yr, and 8 mrem/yr, respectively with the remainder coming

from other miscellaneous minor point sources and diffuse an fugitive sources). The combined abated emission estimate is 7.5 E-02 mrem/yr to the MPR.

As progress is made on PFP Complex deactivation activities, potential stack emissions will be evaluated to address appropriate controls/monitoring regarding major sources, minor sources, and possible downgrade from major to minor (as inventories decrease) or upgrades from minor to major, when appropriate. Similarly, potential diffuse and fugitive emissions will be evaluated to ensure that applicable emission control technologies are being used, considering economical and technological feasibility.

4.3.1.2 Airborne Emission Controls

Based on analysis of the potential emissions and evaluation of available control technologies, the following controls have been selected for use during the removal action:

- Water will be applied, as needed, for suppression of fugitive emissions and dust during any excavation, backfilling, and demolition activities.
- As practicable, activities will be conducted using HEPA filtration. For example, activities conducted within structures with active ventilation systems (e.g., the 243-Z Low-Level Waste Treatment Facility, with emissions through the 296-Z-15 Stack) will be ventilated through the existing emission control system until such time that a decision is made that the emission control system is not needed to provide beneficial control of airborne effluent, or if needed, other effective ventilation and/or containment is in place and operational. At such time, the emission control system and associated stack will be shutdown and removed from service.
- Radiological survey (e.g., smears) will be taken of equipment, tools, and materials in areas where there is the potential for smearable contamination.
- Equipment, tools, and materials with smearable contamination above 100,000 dpm/100 cm^2 beta/gamma or 2000 dpm/100 cm^2 alpha will be wrapped or the contamination otherwise fixed by an appropriate means before being moved from a structure.
- Appropriate controls such as water, fixatives, covers, containment tents, or windscreens or other controls including cessation of work activities will be applied, if needed, as determined by the Radiological Control organization based on conditions in the work environment (i.e., weather conditions, wind speeds greater than 32 km/hr (20 mph), etc.).
- Fixatives or cover material (e.g., soil, gravel, plastic, etc.) will be applied to disturbed contaminated soils associated with the PFP Complex deactivation activities when field activities will be inactive for more than 24 hours. Additionally, if the sustained wind speed is predicted to be greater than 32 km/hr (20 mph) overnight, based on the Hanford Meteorological Station morning forecast, fixative or cover material will be applied, as needed to allow the project enough time, if necessary, to prepare for the application of dust control measures.
- As appropriate, before starting intrusive activities (such as isolating utilities and piping, or dismantling the exhaust system), removable contamination in the affected area(s) will be fixed or reduced to as low as reasonably achievable. Measures such as

decontamination solutions, expandable foam, fixatives, or glovebags also may be used to help reduce the spread of contamination.

- Transuranic waste containers will remain closed, except during packaging and waste inspection activities. The trucks will be loaded with the waste containers and the loaded containers will be covered at the staging area before being transported to either CWC or WIPP.
- The vacuum cleaners and portable exhausters used for PFP Complex deactivation activities will be equipped with HEPA rated filters.
- Temporary contamination control structures may be used with or without a portable HEPA filtered exhauster(s) during some portion of the deactivation activities as needed.

4.3.1.3 Airborne Emission Monitoring

While the existing ventilation systems for the structures are active, the existing monitoring systems for the associated stacks will be operational.

For structures with active ventilation systems, when it is determined that the emission control system is no longer needed for contamination and emission control, the emission control system and associated stack will be shutdown and removed from service; attendant monitoring will be discontinued.

HEPA vacuums intended for PFP Complex deactivation activities will vary in size and primarily will be small portable units currently in use on the Hanford site with flow capacities between 50 and 300 cubic feet per minute (CFM); a larger capacity unit with flow rates up to 2,000 CFM could be used. These units will be used to remove contaminated soil from outdoor areas, including soils generated from excavations associated with PFP Complex deactivation activities. To periodically verify low emissions, a contamination survey of the outlet of the HEPA-type filtered device will be performed at the completion of each use. Vacuuming using one of these devices has no specific contamination limit, but rather will be controlled based on the specifics of the situation. If contamination levels over 2,000 disintegrations per minute (dpm) alpha/100 cm^2 (i.e., high surface contamination area) are exceeded, a separate evaluation regarding any monitoring adjustments will be conducted.

Portable HEPA-type-filtered vacuums, portable HEPA-type-filtered exhausters, and various types of containments also will be used, as needed. Due to the nature of the activities using HEPA-type-filtered air movers, significant abated release associated with these devices is not anticipated, and the near field monitoring network will be used to measure air emissions for the activities associated with these temporary point sources in conjunction with the fugitive unit. To periodically verify low emissions, a contamination survey of the outlet of the HEPA-type filtered device will be performed at the completion of each use.

Near-facility ambient air monitoring currently is being performed at several locations around the PFP Complex. As shown in Figure 4-1, current monitoring stations in the 200 West Area are available to provide an array of sampling locations (including several downwind). As appropriate, these monitors will continue to be operated during all activities and operations described in this removal action work plan.

The Hanford Site protocol established for emission monitoring will be followed for data collection, sampling frequencies, sample analysis, and data reporting (DOE/RL-91-50, or latest revision). Emissions will be reported as part of the Hanford Site annual reporting.

4.3.2 Reporting Requirements for Non-Routine Releases

The following reporting requirements apply for hazardous substances and PCBs that could be released during characterization and stabilization activities.

4.3.2.1 Federal Hazardous Substance

40 CFR 302 requires immediate notification to the National Response Center on discovery of a release of a hazardous substance into the environment in excess of a reportable quantity.

40 CFR 355 requires immediate notification to the community emergency coordinator for the local emergency planning committee and to the State Emergency Response Commission for a release of a reportable quantity of an extremely hazardous substance, a comprehensive release of a reportable quantity of an extremely hazardous substance, or a CERCLA hazardous substance.

4.3.2.2 Dangerous Waste/State Hazardous Substances

WAC 173-303-145 requires immediate notification for any release of a dangerous waste or a state hazardous substance such that human health or the environment is threatened, regardless of the quantity. Notifications must be made to the local authorities, fire officials, air officials, and Ecology as appropriate, in accordance with the local emergency plan.

WAC 173-303-360 requires immediate notification to the local authorities in the event of a release, fire, or explosion at a dangerous waste treatment, storage, and/or disposal facility if the event represents an emergency that could threaten human health or the environment if the facility emergency coordinator determines that evacuation of local areas might be advisable. In addition, immediate notification is required to Ecology, the on-scene coordinator and National Response Center, as appropriate. A written report on any incident that requires implementation of the facility contingency plan must be submitted to Ecology within 15 days in accordance with WAC 173-303-360(2)(k).

4.3.2.3 Polychlorinated Biphenyl Spills

40 CFR 761.125 requires notification in the shortest time possible after discovery (but no later than 24 hours) to the Pesticides and Toxics Substances Branch of the EPA regional office for PCB spills in excess of 4.5 kilograms (10 pounds). Notification will also be made to the local EPA office.

4.4 ECOLOGICAL, HISTORIC, AND CULTURAL RESOURCES PROTECTION

Cultural, historical, and ecological resource reviews will be performed concurrent with deactivation, as appropriate, and before demolition of the structures to identify any

potential impacts. The resource reviews will be conducted in accordance with DOE requirements. If potential impacts are discovered by these reviews, an appropriate mitigation plan will be developed and implemented.

4.5 SURFACE AND GROUND WATER

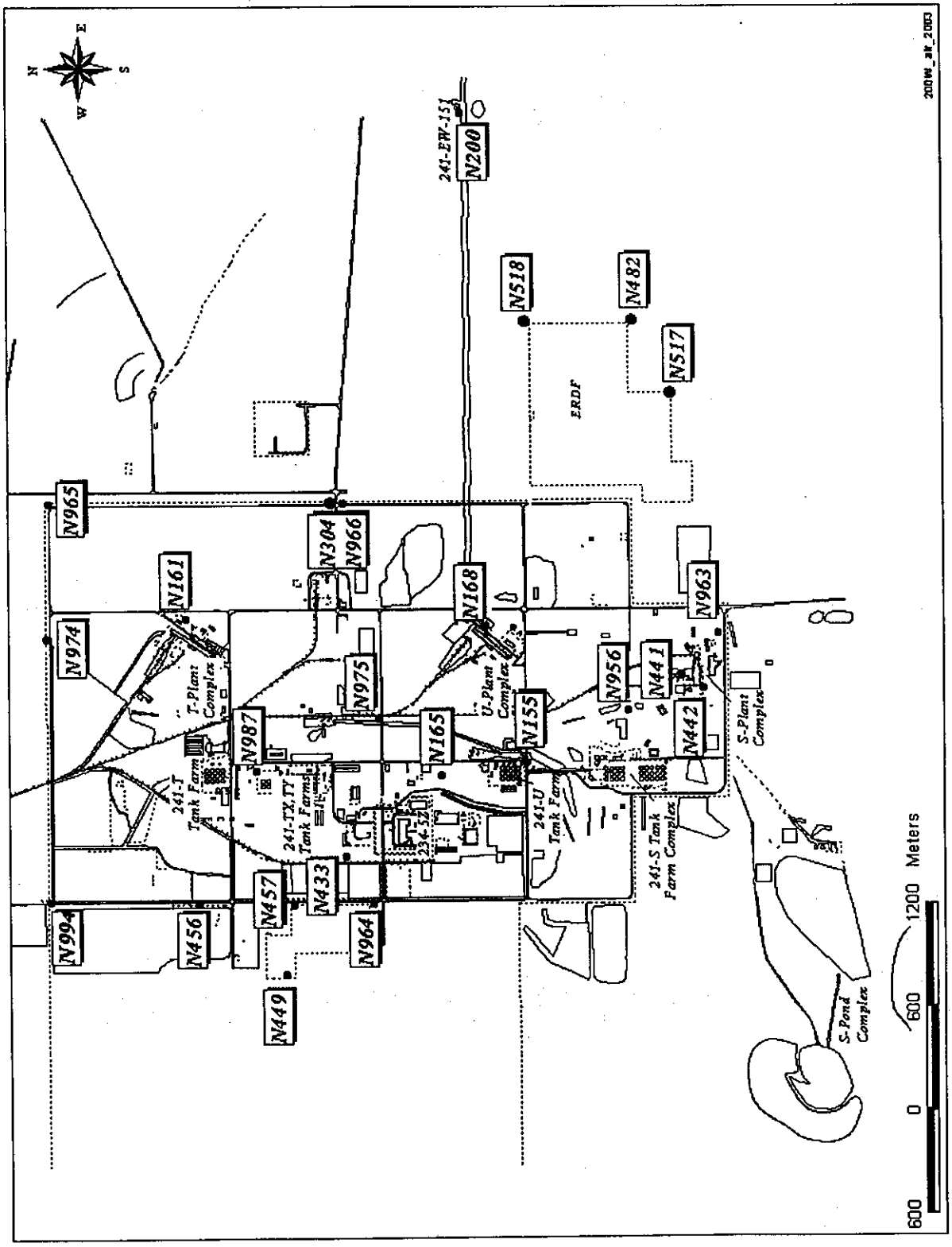
The Washington State Waste Discharge Program (WAC 173-216-020) requires the use of all known available and reasonable methods to prevent and control the discharge of wastes into the waters of the state.

The deactivation phase of this removal action is not anticipated to require the use of significant quantities of water that would require a controlled discharge.

4.6 ADDITIONAL RELEVANT CONTROLS OR ACTIONS

The PFP is a security area within the Hanford Site. Because of the controls related to site access, drums, SWBs, and roll-on/roll-off boxes used for transport of waste to the ERDF must be staged for transportation. Waste containers will be transferred to a staging area outside the PFP fence, on Camden Avenue to the North of 19th Street, where they will be left in a secure storage area for pick up and transport to the ERDF. Drivers will pick up empty containers for return to the D&D site. This approach will facilitate the transfer of waste materials without requiring the clearance of ERDF drivers for access to the PFP.

Figure 4-1. Near-Facility Ambient Air Monitoring.



5.0 PROJECT MANAGEMENT AND ORGANIZATION

The PFP Above-Grade Structures characterization, deactivation, and stabilization activities will be performed using the hierarchy of schedules, which include activity logic and constraints.

5.1 ORGANIZATIONAL ROLES AND RESPONSIBILITIES

The roles and responsibilities for the PFP Project are contained and maintained in PFP documents.

The Vice-President of the PFP Closure Project has the responsibility for the safe, compliant, and successful execution of the project mission. He is accountable to the Fluor Hanford, Inc. (FH) Executive Vice-President and Chief Operating Officer for all aspects of project execution. The Vice-President is also responsible for developing, maintaining, and staffing an organization structure that facilitates cost effective execution of the project. The PFP Vice-President has delegated selected authorities and responsibilities to each of the managers and organizations that collectively constitute the project.

The Vice-President is the "PFP Manager" and is responsible for overall PFP operations, and delegates in writing the succession to this responsibility during absences. The Vice President of the PFP Closure Project position corresponds to the functional position of Project Director.

The PFP Closure Project management structure consists of four directors, two functional support managers, and one director hard-matrixed from the Central Project Control Organization.

The Directors of the Plutonium Finishing Plant position corresponds to the functional position of PMs.

Line managers reporting to the Mission Directors are personally accountable to the respective Director for project execution – that is, the safe, compliant, efficient performance of the major mission objectives in their assigned areas of responsibility.

Discipline Leads are assigned for the following areas:

- Acquisitions
- Construction
- Criticality Safety
- Employee Concerns
- Environmental Protection
- Fire Protection
- Industrial Relations
- Maintenance
- Nuclear Safety
- Configuration Management
- Contract Management
- Emergency Preparedness
- Engineering Program
- Financial Management
- Human Resources
- Information Resource Management
- Management Systems
- Nuclear Regulatory Compliance

Operations
Project Control
Quality Assurance
Radiation Protection
Safeguards and Security
Training and Qualification
Occupational Safety and Health
Project Management
Property Management
Transportation and Packaging
Nuclear Materials Management

The listing of the assigned Discipline Leads will be installed and maintained current on the PFP Home Page, "Controlled Lists".

Support organization managers are accountable to the Vice-President for facilitating project execution by supplying technical expertise and support staff, project-specific requirements, procedures and work processes, support services, and coordination with the Fluor Hanford central support and service organizations in their assigned areas of responsibility. The supporting field organizations include the following groups:

- Project Closure Office

  The Project Closure Office major responsibilities include long term planning, performance incentive management and activity integration / prioritization, project documentation, nondestructive assay program, decontamination/ deactivation/demolition characterizations, process equipment removal project management, legacy plutonium removal project management, and waste sites and underground areas project management.

- PFP Facility Management

  The PFP Facility Management major responsibilities include Authorization Basis Compliance, Emergency Response, Occurrence Reporting, Administrative & Technical Procedures, the Training Program, maintaining required plant systems, and lessons learned.

- PFP Technical Support

  The PFP Technical Support major responsibilities include NDA, safety basis document maintenance /management, the Un-reviewed Safety Question process, Criticality Engineering, and all other engineering disciplines and functions except Radiological Engineering and Environmental Engineering.

- PFP Environmental, Safety, Health, and Quality

  The PFP Environmental, Safety, Health, and Quality major responsibilities include fire safety, industrial safety, industrial hygiene, independent oversight, regulatory strategy, environmental permitting, generation of environmental documentation, regulator interface, corrective action management, quality engineering and surveillances, and quality control support.

Roles and responsibilities for individual positions within these organizations are further defined in written *Exempt and Non-exempt Job Descriptions* for exempt and non-exempt, non-unit staff and in the *Fluor-Hanford Atomic Metal Trades Council contract* for bargaining unit staff.

Roles and responsibilities for individual workers at the task/activity level are described in the project's procedures, work plans, and work packages and through individual work assignments.

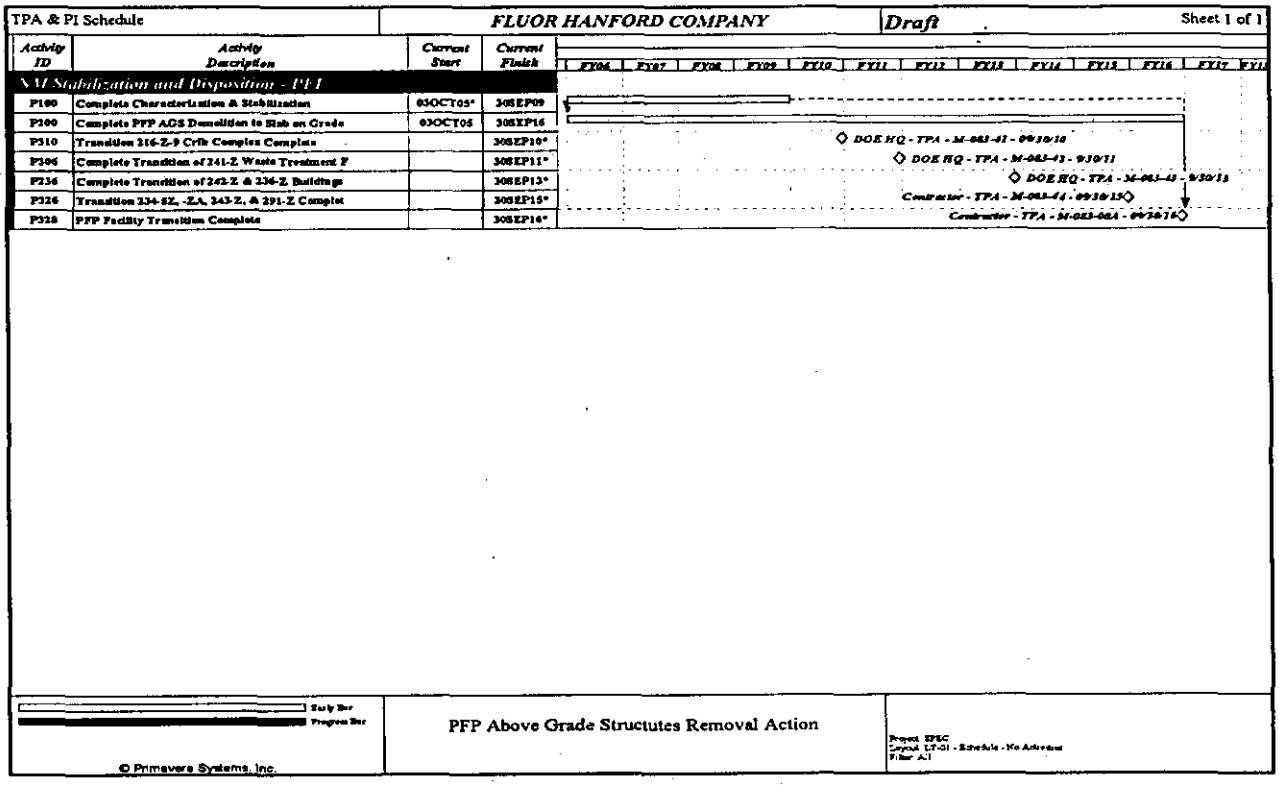
5.2 PROJECT COST AND SCHEDULE TRACKING

The deactivation of the PFP facilities is part of the overall PFP Closure Project schedule, included in line item P200. This overall schedule is provided as Figure 5-1. The actual schedule and priority of demolition activities will be determined by DOE and the Closure Project. It should be noted that this summary schedule is a 'living document". As such, this schedule is subject to acceleration or delay due to changes in priority and/or funding as determined by the TPA signatories.

An earned-value system will track the cost, schedule, and performance as the project progresses towards completion. Cost/schedule performance reports will provide budgeted cost of work-scheduled comparisons and budgeted costs of work performed against the actual cost of work performed. These reports will provide variances to the baseline schedule and cost as budgeted. Variances above threshold values will be documented, as well as the rationale for the variance(s) and any recovery plan required.

Earned value methodologies are to be in accordance with FH procedures. Additional major efforts involved in the project include engineering evaluations, project management, waste assaying, and waste processing, which are continuous throughout the project. Weekly PFP subproject status meetings will be conducted to monitor against the detailed schedule. Project status will be reported monthly to FH PFP D&D management.

Figure 5-1. Project Schedule.



5.3 CONDUCT OF OPERATIONS

The conduct of operations manual for the PFP contains all the procedures needed to meet the requirements of DOE Order 5480.19, *Conduct of Operations Requirements for DOE Facilities,* as applicable to the facilities D&D phase. Conduct of operations strongly emphasizes technical competency, workplace discipline, and personal accountability to ensure the achievement of a high level of performance during all activities. Project personnel are responsible for fully complying with the procedures. If conflict arises with other instructions or directions, then work will safely be stopped until resolution is achieved. Safety is the number one priority and all planning shall include appropriate safety analyses to identify potential safety and health risks and the means to appropriately mitigate them. Personnel will not start work until approved safety procedures, instructions, and directions are understood for both normal and abnormal operations. Conduct of operations applies directly to all operating activities at the PFP.

5.4 SECURITY REQUIREMENTS

One of the key aspects of working at PFP is related to the security issues associated with handling plutonium. The PFP is enclosed in a Protected Area (PA) within the 200 West Area of the Hanford Site. Access is restricted to mission-essential personnel with a defined need to enter. A safeguards plan addressing safeguards and security for PFP deactivation will be prepared and implemented.

5.5 CHANGE MANAGEMENT AND CONFIGURATION CONTROL

Established configuration/change control processes will ensure that proposed changes are reviewed in relation to the specified commitments. If a breach of these commitments is discovered, work will cease so stabilization and/or recovery actions can be identified and implemented as appropriate. Change management will comply with the appropriate internal work requirements and processes.

The management of the change process for facilities that have a final hazard classification of less than nuclear is defined by internal processes. The management of change process will be used for the following purposes:

- Evaluate the impact of proposed changes that could affect authorization basis documents
- Determine whether proposed changes require DOE approval
- Evaluate the impact of discovered conditions
- Evaluate the effect of deviations from activities or commitments described in authorization basis documents.

5.6 PERSONNEL TRAINING AND QUALIFICATIONS

During the performance of project activities, the experience and capabilities of the operating staff will be extremely important in maintaining worker and environmental safety. Day-to-day knowledge of ongoing operations, month-to-month understanding of conditions encountered, and lessons learned will be imperative to continued safe operations.

Training requirements will ensure that personnel have been instructed in the appropriate technologies to work safely in and around radiological areas, and to maintain their individual radiation exposure and the radiation exposures of others ALARA. Standardized core courses and training material will be presented, and site-specific information and technologies will be added to adequately train workers.

Health physics workers will be required to have completed and be current in radiological control technician qualification training. These training courses require the successful completion of examinations to demonstrate understanding of theoretical and classroom material.

Specialized training will be provided as needed to instruct workers in the use of nonstandard equipment, in the performance of abnormal operations, and in the hazards of specific activities.

Specialized training could be provided by on-the-job training activities, classroom instruction and testing, or pre-job briefings. The depth of training in any discipline will be commensurate with the degree of the hazard(s) involved and the knowledge required for task performance.

Some activities will require the acquisition of expert services as opposed to project staff training. Assaying of waste packages is one example of activities requiring expert assistance.

The Training Program will provide workers with the knowledge and skills necessary to safely execute assigned duties. A graded approach will be used to ensure that workers receive a level of training commensurate with their responsibility and which complies with applicable requirements. Specialized employee training will include pre-job safety briefings, plan-of-the-day meetings, and facility/work site orientations. The following training and qualifications could be applicable, as required by job assignment for work activities:

- Training in accordance with 29 CFR 1910.120
  - 40-Hour Hazardous Waste Worker/8-Hour Refresher
  - 24-Hour Experience Component
  - 8-Hour Supervisor Training (for selected individuals)
  - Programmatic HASP, SSHASP, and RWP
  - Respirator Training (as required)
  - First Aid (two qualified persons per shift/crew)
  - Certified Asbestos Worker and/or Asbestos Awareness, as appropriate
  - Lead Worker as appropriate
  - Radiation Worker II. (as required)

- Training in accordance with 49 CFR 172, Subpart H, "Training"
  - -- Hazardous material training
- Medical surveillance requirements appropriate requirements of 29 CFR 1910
  - Hazardous waste worker physical (29 CFR 1910.120
  - Mask fit (as required) (29 CFR 1910.134
  - Lead worker baseline (29 CFR 1910.1025)
  - Asbestos worker (29 CFR 1910.1001)
- Dosimetry and bioassay requirements in accordance with 10 CFR 20.1502
  - Thermoluminescent dosimeter (as directed in the RWP)
  - Whole body count (as required/directed)

The programmatic HASP, SSHASP, RWP, and activity hazards analysis will include specific requirements for project activities being conducted, which will include PPE and required training for project personnel.

5.7 PLAN FOR READINESS

The plan for readiness is governed by DOE Order 425.1C, "*Startup and Restart of Nuclear Facilities*". This DOE Order is implemented site wide for FH-managed activities via guidance that identifies the level of detail and preparation that must be achieved prior to initiation of any task.

The project will employ a phased startup process for ensuring project readiness. Activities will be evaluated to determine the level of project readiness review required prior to work initiation. Initiation of facility/site deactivation and stabilization will be evaluated to determine the appropriate level of readiness review for each activity or group of activities. Routine work activities (e.g., replacing lights, filters, etc.) that are covered by existing procedures will require no readiness preparations, while other activities (i.e., glovebox size reduction and removal) may require more substantial preparations including training, mockups, and "dry-runs".

5.8 QUALITY ASSURANCE REQUIREMENTS

All levels of FH management are responsible for contributing to the achievement of quality and for taking a leadership role in ensuring that Quality Assurance (QA) requirements are factored into their work activities, understood by personnel, continually assessed, and fully implemented in accordance with 10 CFR 830, Subpart A.

Quality Assurance requirements are identified in TPA Section 7.8. Implementation of QA requirements will be consistent with these requirements.

The graded approach for environmental activities that involve generating, acquiring ,or using environmental data is based on the intended use of the data, the analytical protocol selected, and on parameters of accuracy, precision, comparability, completeness, and representativeness.

The SAP (DOE-RL 2004b) contains a Quality Assurance Project Plan that details the specific QA requirements for the collection of environmental samples (e.g., duplicates, blanks, sampling equipment decontamination, etc.). A QA functional area representative is matrixed to the PFP Project from the FH QA organization to provide functional support to the project.

5.8.1 Quality Assurance Implementation

All project-related activities will establish and implement appropriate quality assurance requirements. Conditions adverse to quality will be identified in nonconformance reports, audit reports, surveillance reports, and corrective action requests. Investigation and corrective actions in response to these adverse conditions will be completed in a timely manner.

5.8.2 Document Control

Quality engineering, design reviews, surveillance, and audits (as necessary) will be performed to achieve quality assurance objectives. Control design and quality assurance will also be conducted in accordance with applicable requirements. The characterization and stabilization contractor(s) must establish, implement, and document an inspection plan in accordance with approved specifications and drawings.

5.8.3 Quality Assurance Records

Each organization that maintains quality assurance records will be required to control the records in accordance with applicable quality assurance requirements. A project records checklist will be initiated to identify those records required for the final project file.

5.8.4 Audits/Assessments

Internal and external audits will be performed to ensure project compliance with the quality assurance program requirements.

5.8.5 Self-Assessments

Internal and external audits will be performed to ensure project compliance with the quality assurance program requirements.

5.9 PROJECT CLOSEOUT

Project closeout consists of end point criteria completion, as described in the *Plutonium Finishing Plant (PFP) Closure Project Execution Plan* (D&D-21452).

When deactivation activities under this RAWP are completed to the extent that a structure(s) is ready for demolition, demolition of the structure will then be initiated under the respective demolition RAWP. It is not intended that deactivation activities for all structures under this RAWP will be complete before initiating demolition activities for a given structure.

Each PFP Project will dispose and retain records demonstrate completion of the removal action.

6.0 REFERENCES

10 CFR 61, "Licensing Requirements for Land Disposal of Radioactive Waste," Title 10, *Code of Federal Regulations*, Part 61, as amended.

10 CFR 830, "Nuclear Safety Management," Subpart A – Quality Assurance Requirements, Title 10, *Code of Federal Regulations,* Part 830, Subpart A, as amended.

10 CFR 835, "Occupational Radiation Protection," Title 10, *Code of Federal Regulations,* Part 835, as amended.

29 CFR 1910, "Occupational Safety and Health Standards," Title 29, *Code of Federal Regulations*, Part 1910, as amended.

29 CFR 1926, "title," Title 29, *Code of Federal Regulations,* Part 1926, as amended.

40 CFR 61, "National Emissions Standards for Hazardous Air Pollutants," Title 40, Code of Federal Regulations, Part 61, as amended.

40 CFR 261, "Identification and Listing of Hazardous Waste," Title 40, *Code of Federal Regulations*, Part 261, as amended.

40 CFR 268, "Land Disposal Restrictions," Title 40, *Code of Federal Regulations*, Part 268, as amended.

40 CFR 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Title 40, *Code of Federal Regulations*, Part 300, as amended.

40 CFR 302, "Designation, Reportable Quantities, and Notification," Title 40, *Code of Federal Regulations*, Part 302, as amended.

40 CFR 355, "Emergency Planning and Notification," Title 40, *Code of Federal Regulations*, Part 355, as amended.

40 CFR 761, "Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions," Title 40, *Code of Federal Regulations*, Part 761, as amended.

40 CFR 763, "Asbestos," Title 40, *Code of Federal Regulations,* Part 763, as amended.

49 CFR, "Transportation," Title 49, Code of Federal Regulations, as amended.

49 CFR 171-179, "Research and Special Programs Administration, Department of Transportation, Part 171, General Information, Regulations, and Definitions, through Part 179, Specifications for Tank Cars," Title 49, Code of Federal Regulations, Parts 171-179, as amended.

Atomic Energy Act of 1954, 42 U.S.C. 2011, et seq., as amended.

BHI-00139, 2003, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, Rev. 4, Bechtel Hanford, Inc., Richland, Washington.

Clean Air Act of 1977. 42 USC 7401, et seq., as amended in 1990.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 9601, et seq., as amended.

D&D-21452, 2004, *Plutonium Finishing Plant (PFP) Closure Project Execution Plan*, July 2004, Fluor Hanford, Inc., Richland, Washington.

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