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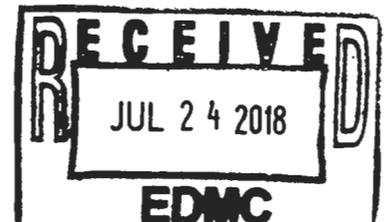
Surveillance and Maintenance Plan for the Plutonium Finishing Plant Complex

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



P.O. Box 550
Richland, Washington 99352

Approved for Public Release;
Further Dissemination Unlimited



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Assistant Secretary for Environmental Management

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Terms

ALARA	as low as reasonably achievable
ARAR	applicable or relevant and appropriate requirement
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
D4	deactivation, decontamination, decommissioning, and demolition
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
EPCC	end point criteria checklist
HASP	health and safety plan
HEPA	high-efficiency particulate air
IC	institutional control
OU	operable unit
PFP	Plutonium Finishing Plant
QA	quality assurance
RAR	removal action report
RAWP	removal action work plan
RCT	radiological control technician
RI/FS	remedial investigation/feasibility study
S&M	surveillance and maintenance
Tri-Party Agreement	<i>Hanford Federal Facility Agreement and Consent Order</i>
TRU	transuranic
URMA	underground radioactive material area
WIDS	Waste Information Data System

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1.1 History and Background

PFP is located on the Central Plateau of the Hanford Site, within the 200 West Area. The PFP Complex included several process and support buildings constructed in 1949 through 1993 that were used to process plutonium solutions or oxides into hockey puck sized plutonium metal "buttons" for shipment to the nation's nuclear weapons production facilities, or the oxide was used to fabricate mixed-oxide reactor fuel. In 1991, the mission changed to plutonium-bearing material stabilization and deactivation and decommissioning. Material stabilization campaigns and the mission for storage of stabilized plutonium materials were completed in December 2009 when the final containers of stored material were shipped from PFP.

The Tri-Party Agreement Action Plan (Ecology et al., 1989b, *Hanford Federal Facility Agreement and Consent Order Action Plan*) identifies the PFP Complex as a key facility. Thus, it is subject to the disposition process of Section 8.0 of the Action Plan. The PFP Complex will be dispositioned under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)*. Potential removal action alternatives for buildings and other structures at the PFP Complex were evaluated in DOE/RL-2004-05, *Engineering Evaluation/Cost Analysis for the Plutonium Finishing Plant Above-Grade Structures*. The preferred alternative is documented in DOE/RL-2005-13, *Action Memorandum for the Plutonium Finishing Plant Above-Grade Structures Non-Time Critical Removal Action* (hereinafter referred to as the Action Memorandum). The selected alternative is demolition of above-grade structures to slab-on-grade, suitable for low cost S&M pending final disposition of the area. Implementation of the selected alternative is described in DOE/RL-2011-03, *Removal Action Work Plan for the Deactivation, Decontamination, Decommissioning, and Demolition of the Plutonium Finishing Plant Complex* (hereinafter referred to as the removal action work plan [RAWP]).

The CERCLA documents cited previously define and make a distinction between the terms above-grade, sub-grade, and below-grade for the purpose of defining the scope of the removal action. When those terms are used in this document, it is within the context of the CERCLA documents¹. The term underground, as used in this document, encompasses sub-grade and below-grade items and includes building slabs remaining after building demolition.

The U.S. Department of Energy (DOE) is the lead agency for CERCLA actions. Ecology is the lead regulatory agency for the removal action and S&M. As part of the completion process of the removal action, the remaining components will be evaluated and assigned to the appropriate operable unit (OU) in accordance with existing Tri-Party Agreement procedures. Dependent on the OU assignment, Ecology or the U.S. Environmental Protection Agency (EPA) may be the lead regulatory agency for final remedial actions at the PFP Complex.

¹ The term above-grade in this document refers to items that are above or on the elevation of the surrounding ground (e.g., a building or concrete slab). The term below-grade means below the elevation of the surrounding ground but not completely covered by soil. For example, the basement of a building would be below-grade. The term sub-grade is used when referring on an item that is completely covered by soil or other covering (e.g., a floor slab) that is not readily removed. For example, piping that is buried under a building is considered sub-grade.

1.2 Milestones

Tri-Party Agreement Major Milestone M-083-00A, *Proposed Tri-Party Agreement Modifications and Reference Documents for Plutonium Finishing Plant Transition and Selected Disposition Milestones (M-83-00A)*, (Ecology et al., 1989a, *Hanford Federal Facility Agreement and Consent Order*), has three key elements:

1. "Completion of all activities necessary to achieve end point criteria established through Milestone M-83-20 for placing the PFP facility in a safe and stable S&M mode."
2. "Completion of all activities described in the approved M-83 series interim milestones and target date."
3. "Completion of the balance of PFP selected disposition activities pursuant to the final action memoranda and work plans."

Upon completion of Milestone M-083-00A, PFP will transition to S&M under this S&M Plan, which was developed in accordance with Target Milestone M-083-24-T01.

In late 2015, Ecology and the DOE, Richland Operations Office agreed on removal of slabs for the 236-Z and 242-Z Buildings, following removal of the above-grade structures, to reduce potential residual radiological inventory in the PFP Complex area. The RAWP (DOE/RL-2011-03) and End Point Criteria document (HNF-22401) were updated using Tri-Party Agreement change notices (TPA-CN-681 and TPA-CN-682, respectively) to allow this change. Consequently, this plan describes an S&M phase with two distinct stages: an initial stage where post-transition actions, such as slab removal, will take place to reduce hazards further, and a caretaker stage pending final remedial action. These stages are further described in Chapter 2 of this plan.

1.3 Purpose and Scope

The purpose of this S&M Plan is to identify actions necessary to maintain safe and stable conditions until implementation of future remedial actions. The scope of this plan is limited to S&M of the items listed in Tables 1 and 2 within the fenced area shown in Figure 1. The east side of the PFP Complex (outside the fenced area) is the support area. This area contains mobile offices, parking lots, the 2607-WA Septic System (southwest corner of the intersection of 19th Street and Camden Avenue), and the 212-Z Lag Storage Yard. The mobile offices, parking lots, 212-Z lag storage yard, and septic system will remain active for an extended period and are not addressed by this S&M Plan. The 241-Z-361 tank, while inside the fence, has been included in the 200-PW-1/3/6 OU remedial action (EPA et al., 2011, *Record of Decision Hanford 200 Area Superfund Site 200-CW-5 and 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units*) and, therefore, is not included in this S&M Plan.

The scope of this plan may be modified in accordance with the Tri-Party Agreement process for primary document changes as items transition from active to inactive status or transition to coverage under other documents. Activities performed according to this S&M Plan will be conducted in accordance with applicable or relevant and appropriate requirements (ARARs) under CERCLA authorization.

Table 1. Building Slabs

Identification	Description	Identification	Description
232-Z	Waste Incinerator Facility	267-Z	Fire Riser Valve House
234-5Z	Plutonium Fabrication Facility	296-Z-3	241-Z Stack

Table 1. Building Slabs

Identification	Description	Identification	Description
234-5ZA	Change Room Addition	2721-Z	Emergency Generator Building
234-ZB	Clean Special Work Permit (Protective Clothing) Storage	2727-Z	Supply Storage Building
234-ZC	Barrel Storage	2729-Z	Maintenance Storage Building
236-Z	Plutonium Reclamation Facility (slab to be removed during Stage 1 S&M)	2731-Z	Plutonium Drum Storage Building
241-Z	Tank Farm Waste Disposal Building	Not numbered	Construction Forces Buildings
241-ZA	Sample Building	2731-ZA	Container Storage Building
241-ZB	Sodium Hydroxide Tank	2734-ZA, -ZB, -ZC, -ZD, -ZF, -ZG, -ZK	Gas Bottle Storage
241-ZG	Change Facility	2734-ZJ	Liquid Nitrogen Storage and Supply
242-Z	Waste Treatment Facility (Slab to Be Removed during Stage 1 S&M)	2734-ZL	Hydrogen Fluoride Facility
243-Z	Low-Level Waste Treatment Facility	2735-Z	Bulk Chemical Storage Tanks
243-ZB	Cooling Towers	2736-Z	Plutonium Storage Building
252-Z-1	Electrical Substation	2736-ZA	Plutonium Storage Ventilation Structure
270-Z	Operations and Support Facility	2736-ZB	Plutonium Storage Support Facility
2503-Z	Electrical Switchyard	2736-ZC	Cargo Restraint Transport Dock
2701-ZA	Central Alarm Station	2902-Z	Water Tower

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Table 2. Underground Structures

Structure Identification	Name/Description	Status During Stage 2 S&M
232-Z Ventilation Duct	232-Z to 291-Z Ventilation Duct	Filled with grout
236-Z Ventilation Duct	236-Z to 291-Z Ventilation Duct	Sealed at each end
234-5Z	Pipe Tunnels	Filled with backfill material
241-Z	Tank Farm Waste Disposal Building	Vaults and tanks remain (Section 2.2.3)
241-Z Pipe Trench	241-Z Pipe Trench	Depth ranges from approximately 1.5 m (5 ft) to approximately 2.1 m (7 ft)
241-Z-RB	Retention Basin and Valve Pit	Both filled with grout
243-ZA	Low-Level Waste Storage Tanks Sump	Filled with backfill (tanks removed)

Table 2. Underground Structures

Structure Identification	Name/Description	Status During Stage 2 S&M
291-Z	Ventilation Fan Building	Filled with backfill material
291-Z-1	Stack and Monitoring Building	Base of stack (elbow) remain. Filled with backfill material.
2902-Z	Valve Pit	Filled with grout

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2 1.4 Plan Objectives

3 Objectives of the S&M program, as enumerated in DOE G 430.1-2, *Implementation Guide for*
 4 *Surveillance and Maintenance during Facility Transition and Disposition*, are as follows:

- 5 • Ensure adequate containment of remaining radioactive and hazardous material.
- 6 • Provide security control for access to the area and physical safety to surveillance personnel.
- 7 • Maintain remaining components in a manner that will minimize potential hazards to the public,
 8 environment, and surveillance personnel.
- 9 • Provide a plan for identification and compliance with applicable environmental, safety, health, and
 10 security requirements.

11

2 Plutonium Finishing Plant Complex Information

12 Information related to the deactivation, decontamination, decommissioning, and demolition (D4) of the
 13 PFP Complex will be available to guide activities undertaken during the S&M phase and to support the
 14 process for determining the final CERCLA remedial action. Key documents include the following:

- 15 • End point criteria checklists (EPCCs)—These checklists identify the actions required to complete D4
 16 for specific buildings and the PFP Complex area inside the boundary fence to comply with the end
 17 point criteria defined in HNF-22401. The EPCC documents specify which actions will be completed
 18 prior to transition to the S&M phase (pre-transition) and which actions will be completed after
 19 transition to the S&M phase (post-transition). Documentation supporting pre-transition end point
 20 completion will be incorporated into EPCC documents upon completion of the relevant pre-transition
 21 actions. Similarly, the checklist documents will also incorporate documentation of post-transition
 22 actions when completed. The EPCCs for pre-transition will aid the S&M organization during the
 23 initial stage of S&M. EPCCs from post-transition will aid the S&M organization during Stage 2 of
 24 S&M.
- 25 • Removal action report (RAR)—This report documents the review described in Section 5.7 of the
 26 RAWP (DOE/RL-2011-03). The RAR documents the end state of the PFP Complex after D4 and
 27 validates that the Action Memorandum (DOE/RL-2005-13) is completed, the S&M Plan is approved,
 28 the property is turned over to S&M (for long-term care following completion of post-transition
 29 actions), and appropriate documents are incorporated into the Administrative Record. Two RARs will
 30 be developed, one to document completion of pre-transition actions, followed by another RAR upon
 31 completion of post-transition actions.
- 32 • S&M turnover package—This package is compiled following completion of post-transition actions
 33 for use by the S&M organization during the second stage of the S&M phase. It includes essential

1 drawings, available characterization information, location and condition of remaining features, and
2 similar information of particular importance during longer term S&M.

3 **2.1 Stage 1 S&M Expected Conditions and Activities**

4 At the time of transition to S&M, all end point criteria pre-transition actions will have been completed.
5 Documentation verifying completion will be provided in appendices to each of the EPCC documents.
6 A brief summary of expected conditions at the beginning of Stage 1 S&M follows:

- 7 • Process and storage facilities, and their supporting ancillary structures, will have been removed to
8 slab on grade.
- 9 • Areas with residual radioactive contamination will have been placed in a safe and stable condition
10 that satisfies underground radioactive material area (URMA) requirements.
- 11 • Radiological and other required postings (e.g., vehicle exclusion areas and confined spaces) will be
12 in place.
- 13 • Hazardous materials and transuranic (TRU) wastes will have been removed from accessible
14 below-grade spaces.
- 15 • Ventilation ducting will have been isolated and sealed at building boundaries.
- 16 • Buried piping that entered or exited buildings will have been checked for liquids and drained
17 if needed.
- 18 • Process drains to 243Z/ZA will have been flushed.
- 19 • The 241Z RCRA unit will have been clean closed (see Section 2.2.3).
- 20 • Drain lines, vents, and penetrations will have been isolated and sealed.
- 21 • No plutonium that poses a significant security risk or criticality potential will remain in underground
22 systems.
- 23 • Unattached materials and equipment in below-grade spaces in buildings will have been removed and
24 the space stabilized to prevent release of contamination and structural collapse.
- 25 • Manhole covers to inactive systems will be isolated or sealed to prevent water intrusion and removal
26 from confined space listing.
- 27 • PFP Complex electrical supply will be isolated at a point minimizing dead legs.
- 28 • Septic tanks 2607-Z and 2607-Z1 will be backfilled.
- 29 • Above-grade steam lines will be removed.
- 30 • Inactive PFP Complex utility poles will be removed.
- 31 • TRU waste (e.g., equipment, piping, and ducting) in accessible below-grade spaces will have been
32 removed or decontaminated to the point that remaining equipment, piping, and ducting could be
33 dispositioned as low-level waste.

1 During Stage 1 S&M, slab removal and other EPC post-transition actions will take place. The following
2 is a summary of actions that will be conducted in accordance with the RAWP (DOE/RL-2011-03).

- 3 • Remove 242-Z and 236-Z slabs.
- 4 • Finalize characterization data for remaining tubing, piping, ducting, and drain lines and identify and
5 label those containing contamination.
- 6 • Remove, fix, and contain any radiological contamination.
- 7 • Install contamination control caps where required.
- 8 • Perform final radiological survey to document radiological conditions.
- 9 • Remove miscellaneous above-grade structures and materials.
- 10 • Remove and dispose of waste and verify/document elimination of waste accumulation areas.
- 11 • Isolate the PFP Complex water supply at a point minimizing isolation points and dead legs.
- 12 • Grade soil to promote drainage away from below-grade structures.
- 13 • Stabilize soil to mitigate dust and erosion.
- 14 • Provide posting as needed (e.g., radiological, confined space, vehicle restrictions).
- 15 • Provide controls to prevent unauthorized access.
- 16 • Compile documentation for remaining industrial hazards, radiological issues, and hazardous
17 substances.
- 18 • Develop S&M procedures.
- 19 • Fulfill remaining RAWP (DOE/RL-2011-03) and End Point Criteria document (HNF-22401)
20 regulatory commitments, and prepare regulatory documentation.

21 **2.2 Stage 2 S&M Expected Conditions**

22 Following completion of remaining RAWP and end point criteria document requirements, the PFP
23 Complex will transition to Stage 2 S&M (i.e., long-term S&M pending final remediation). All remaining
24 components (structure slabs, underground portions of the original structures, pipelines, tanks, and
25 potentially contaminated soil below or around the original structures) will be evaluated under the
26 CERCLA process to determine potential threats to human health and the environment and, if determined
27 to need further action, assigned to an OU and added to Appendix C of the Tri-Party Agreement Action
28 Plan (Ecology et al., 1989b).

29 The area subject to this S&M Plan will be controlled with a continuous chain link fence with locked
30 access points. High mast lights may remain in place. The following active structures and equipment will
31 remain in place and are not covered by this S&M Plan:

- 32 • 2702-Z cell tower and support building, along with associated active utility poles
- 33 • 2607-Z-1 sewage lift station and associated main sewer line through the PFP Complex
- 34 • Groundwater monitoring well 299-W15-42

1 Actions taken during Stage 1 S&M will facilitate an S&M program that will require minimal resources to
2 execute. Radioactive contamination will be maintained in URMA's with a robust contamination control
3 cap, where needed, and the area will be graded to promote drainage. Posting and labeling of remaining
4 hazards will have been completed. Void spaces will have been identified, posted, and stabilized as
5 necessary or backfilled to prevent structural collapse.

6 Table 1 provides a list of building slabs that are expected to remain, and Table 2 provides a list of
7 underground structures. Figure 1 provides the location of slabs and underground structures.

8 Slabs and underground structures and components left in place may be covered by one or more
9 contamination control covers, in accordance with the RAWP (DOE/RL-2011-03) and End Point Criteria
10 document (HNF-22401), and will be stabilized to meet URMA requirements. In the case of 232-Z
11 and 236-Z, there are underground ventilation ducts that go to the 291-Z exhaust facility.
12 The 2704-Z safeguards and security building is not included in this list because there is no slab associated
13 with this building.

14 Underground portions of the 234-5Z, 241-Z, and 291-Z Buildings will be left in a configuration such that
15 human entry will not be possible, thus minimizing S&M of these locations. Other significant underground
16 structures in this area include the 232-Z underground ventilation duct, 236-Z underground ventilation
17 duct, 241-Z-RB retention basin and valve pit, 243-ZA sump, and 2902-Z valve pit. If not removed with
18 the slab, the piping and exhaust ducts under 236-Z (H-2-29620, *Structural Concrete Foundation Plan &*
19 *Details*) would remain in place. The following subsections provide information about the major
20 underground structures from Table 2. (NOTE: Turnover packages and other documentation, described at
21 the beginning of Chapter 2, will provide additional details.)

22 2.2.1 234-5Z Plutonium Fabrication Facility

23 The main plutonium processing facility was 234-5Z. The first floor slab and basement are constructed of
24 reinforced poured concrete. The basement consists of pipe tunnels (Figure 2). Pipe trenches that connect
25 to the pipe tunnels are embedded in the slab and will have been filled with grout prior to transition to
26 S&M. All materials that require disposition as TRU waste will have been removed from the tunnels, and
27 they will be filled with backfill prior to transition to S&M. There will be no access to the pipe tunnels
28 during S&M because the doors will have been sealed, and the tunnels and stairwells will have
29 been backfilled.

30 2.2.2 291-Z Exhaust Air Filter Stack Building Description

31 A cutaway of the 291-Z exhaust fan and compressor house is shown in Figure 3. Most of
32 the 291-Z Building is underground and will remain in place. Prior to transition to S&M, above-grade
33 ductwork from 234-5Z and the roof of 291-Z will be removed. Segments of the 66 cm (26 in.) vacuum
34 line that require disposition as TRU waste will have been removed. The walls will be removed down to
35 existing grade. Asbestos and other hazardous materials will have been removed, but the fans and other
36 equipment will remain in place. The structure including access stairs will be filled with backfill. The air
37 ducts (plenums) under 291-Z will not be void filled, but the duct will be filled with backfill at the vertical
38 transition point to the stack after stack removal.

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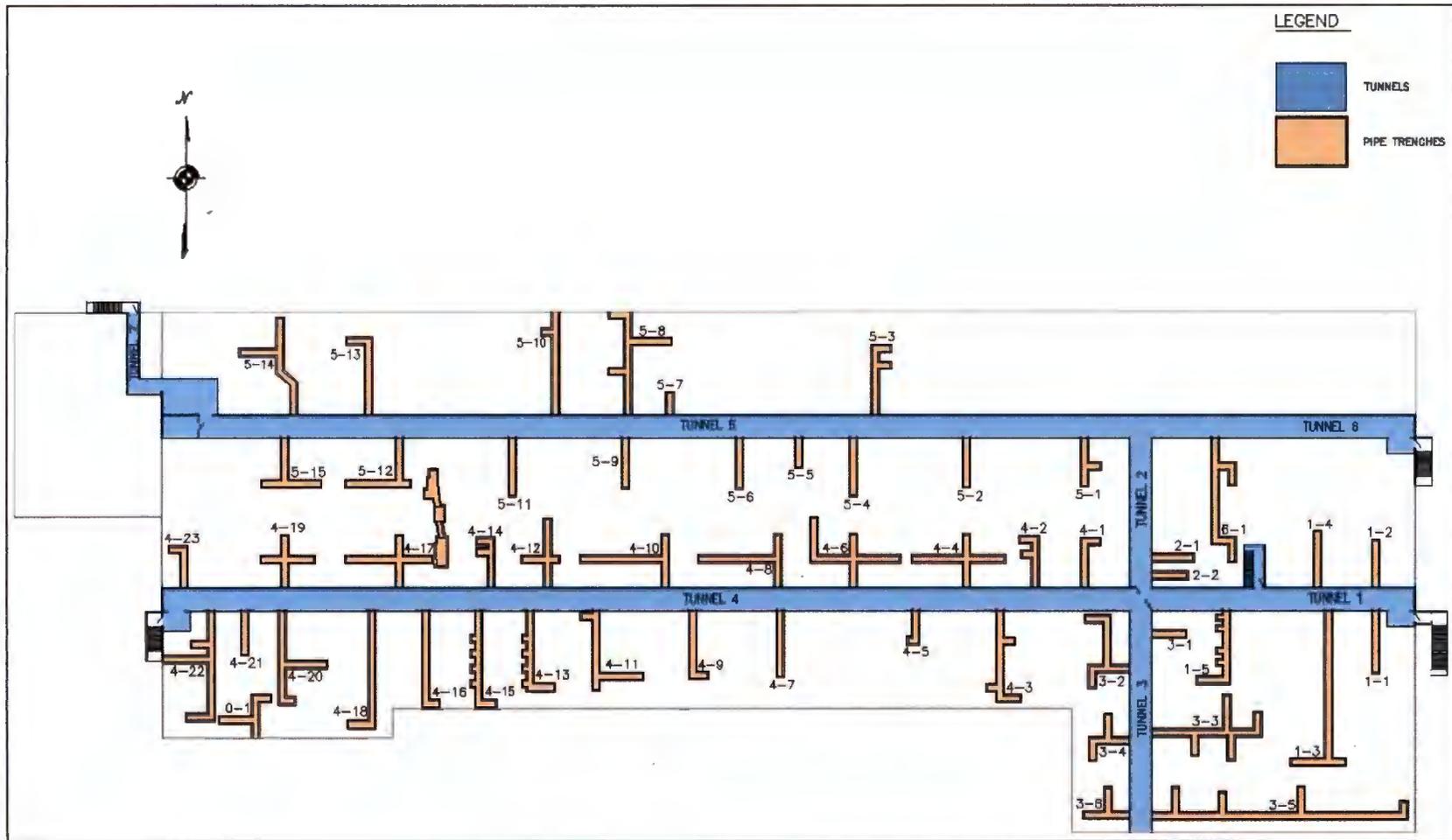
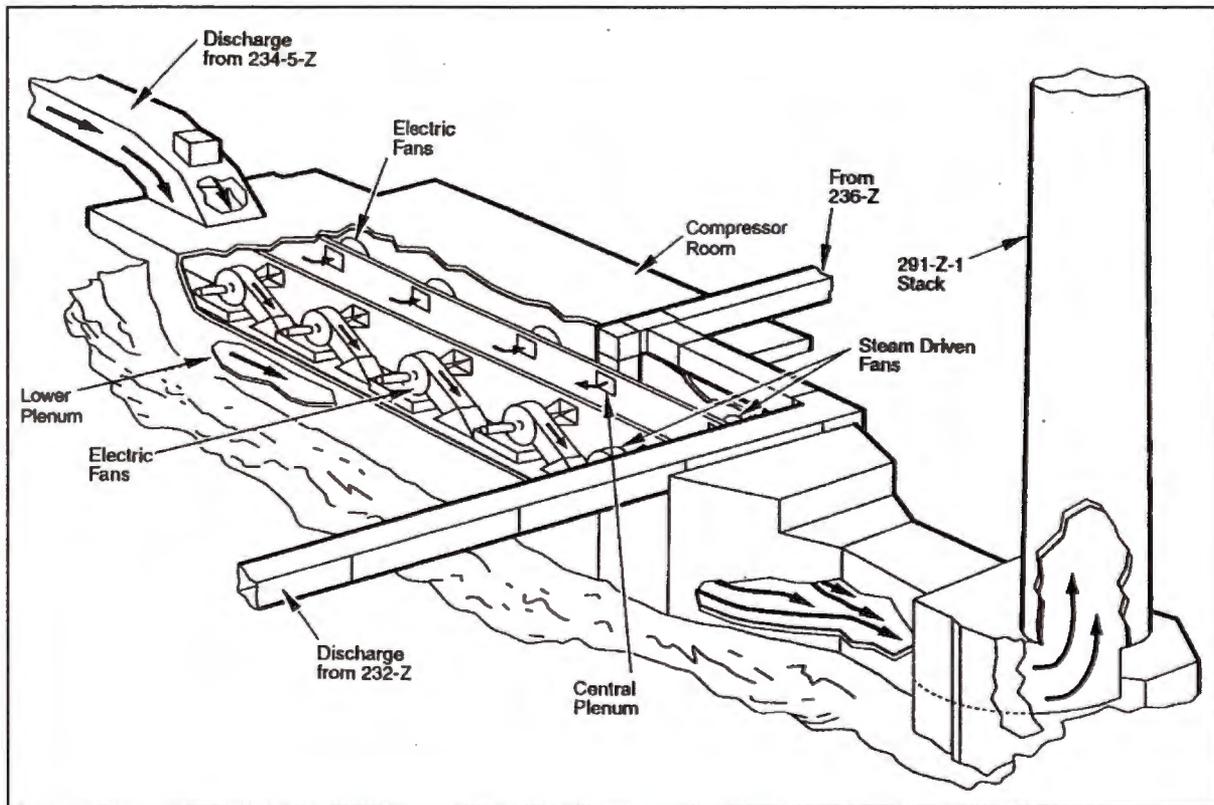


Figure 2. 234-5Z Pipe Tunnels and Pipe Trenches



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2 **Figure 3. Cutaway View of the 291-Z Exhaust Fan and Compressor House**

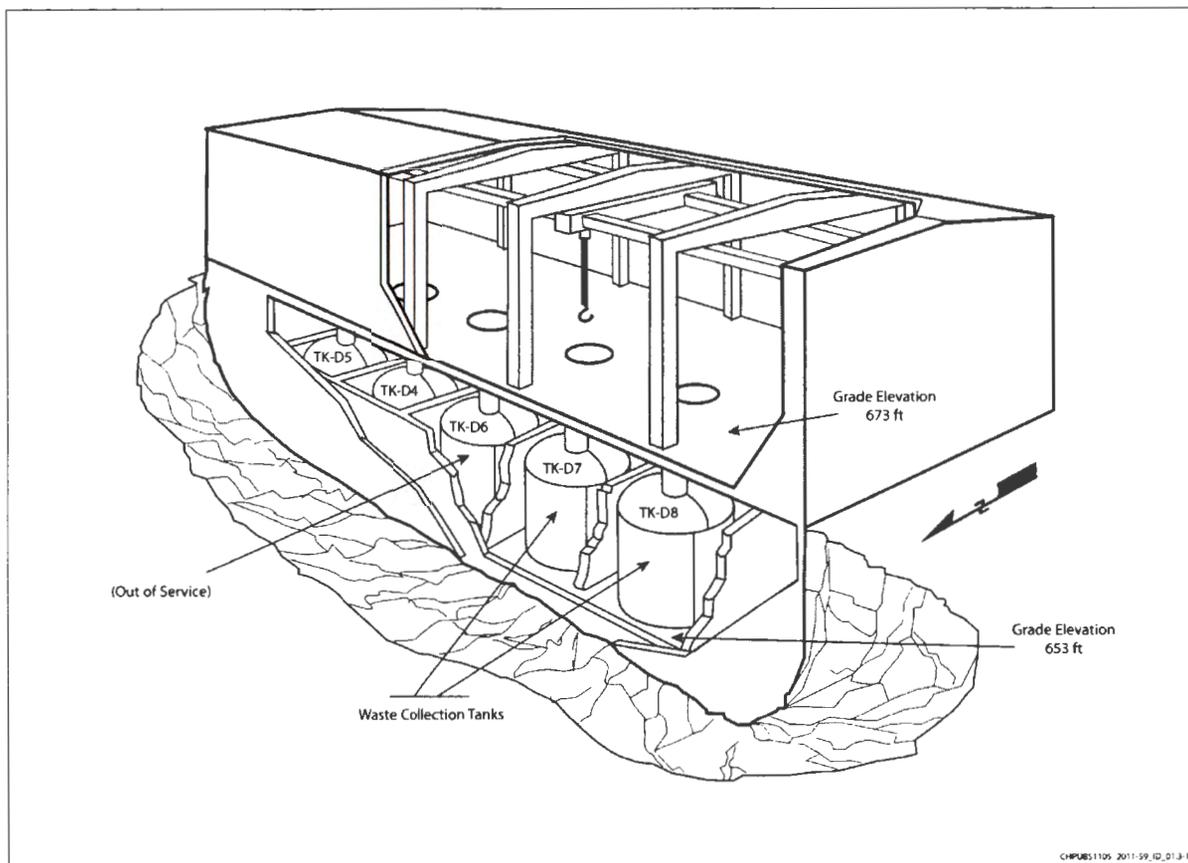
3 **2.2.3 241-Z Tank Cells Description**

4 The 241-Z Liquid Waste Treatment Facility was a reinforced concrete structure with below-grade vaults
5 and tanks (Figure 4). This facility, which was permitted under the *Resource Conservation and Recovery*
6 *Act of 1976*, was clean closed per the RCRA Closure plan (DOE/RL-96-82) and the above-grade portion
7 of the building was demolished in 2007. Drain lines that were part of the 241-Z RCRA unit going to 241Z
8 have also been clean closed. All drain lines entering 241Z have been verified empty at 241Z.

9 The remaining underground structure consists of five separate cells (vaults), each containing a 16,277.3 L
10 (4,300 gal) tank. The tanks were cleaned out and stabilized as part of the facility deactivation and closure;
11 HNF-33999, *241-Z As Left Characterization*, provides a detailed description of conditions. The cell
12 access hatches are sealed and covered with grout and gravel. The cell for the TK-D6 tank has about 0.6 m
13 (2 ft) of grout in the bottom. The underground cells, tanks, and associated piping remain in place.
14 A concrete contamination control cover was placed over the underground portion of the structure in 2007.

15 **2.3 Stage 2 S&M Activities**

16 Stage 2 S&M will include actions to keep the PFP Complex area in a safe and stable condition pending
17 final remediation. The focus will be on ensuring that contamination control measures remain in place to
18 avoid the spread of contamination, but actions may be taken to reduce hazards further or minimize
19 S&M costs.



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Figure 4. 241-Z Building Cutaway View

Activities associated with future remedial action for the PFP Complex (e.g., remedial investigation/feasibility study [R/FS] process) will be conducted under remedial action authority and will not be addressed by this S&M Plan.

2.4 Stage 2 S&M Routine S&M

Routine S&M will consist of performing an annual surveillance of the area, within the scope of this S&M Plan to verify that conditions have not changed, and will address actions necessary to resolve issues as identified. The primary focus will be to perform radiological surveys to ensure that no contamination from URMA has migrated to the surface. The surveillance will identify indications of changed site conditions, such as subsidence or vegetation changes. Signs or other postings and security features will also be checked to ensure that appropriate controls are in place and remain effective.

The primary S&M activity for the PFP Complex is periodic surveillance to ensure that structural integrity and hazardous substance confinement is maintained. The surveillance frequency is annual but may be adjusted later based on actual inspection history. Routine S&M activities will include periodic general inspections, radiological surveys, erosion control, pest control, vegetation and weed control, and specialized inspections (e.g., covers over underground structures remain sound). Nonroutine activities may include necessary repair work on installed covers. These activities are addressed in the following subsections.

2.5 Types of PFP Complex Surveillance and Maintenance

A proper balance of corrective and preventive maintenance is employed to provide confidence that degradation of controls, if any, is identified, corrected and documented. This section summarizes the types of S&M conducted during the Stage 2 S&M phase of the PFP Complex.

2.5.1 General Inspection

An annual inspection will be conducted to determine how site conditions have changed from the initial site transfer and from the previous inspection. Changes identified during the annual inspection will be evaluated to determine if maintenance or repair activities are necessary. These annual inspections will include the following elements.

- Fence condition and access controls
- Slab and cover condition
- Postings
- Evidence of contamination migration
- Erosion control
- Suspect hazardous materials
- Hazardous conditions
- Excess combustible materials
- Excess equipment or material
- Ground subsidence
- Housekeeping
- Occupational hazards
- Previously unidentified hazards
- Unidentified or unlabeled containers
- Animal or insect intrusion
- Vegetation and weed control

2.5.2 Maintenance Activities

Deficiencies identified during surveillance activities will be evaluated, and corrective maintenance will be planned, implemented, and documented, as needed. Preventive maintenance activities may include, but are not limited to, regular herbicide application, slab resealing, pesticide application, tumbleweed and loose vegetation removal, and fence repair.

3 Quality Assurance

Activities performed during S&M that will require implementation of quality assurance principles and processes (e.g., inspections, periodic maintenance) will be planned and implemented in a graded approach, based on the potential effect on the environment, safety, health, reliability, and continuity of operations. Quality assurance requirements in effect at the time of performance of the work, and as identified in the Contractor's contract, will be followed.

4 Training and Qualifications

The company's training program will provide workers with the knowledge and skills necessary to execute assigned duties safely. A graded approach is used to ensure that workers receive a level of training

1 commensurate with their responsibility. During Stage 1 S&M activities, workers will meet the training
 2 and qualification requirements outlined in the RAWP (DOE/RL-2011-03). Thereafter, training
 3 requirements will be established based on the complexity and risk associated with the work being
 4 performed. Routine surveillance activities will typically require training in the following areas:

- 5 • Radiological worker
- 6 • Site-specific conditions and hazards
- 7 • Potential emergency conditions and appropriate responses
- 8 • Waste management
- 9 • Job-specific duties and responsibilities

10 **5 Environmental Compliance/Protection**

11 During Stage 1 of the PFP S&M phase, actions will be conducted in accordance with the ARARs and
 12 other provisions of the RAWP (DOE/RL-2011-03). After completion of the post-transition actions and
 13 initiation of Stage 2 S&M, environmental compliance will transition to CERCLA authority for the
 14 investigative phase of the remedial action process. Record keeping and document control will be
 15 maintained for all field activities conducted.

16 **5.1 Stage 1 S&M Radiological Air Emissions**

17 Slab removal (i.e., 236-Z and 242-Z slabs) presents the most significant potential for radioactive air
 18 emissions after slab-on-grade conditions are achieved. Air dispersion modeling will be performed to
 19 evaluate potential emissions from slab removal. Other S&M activities, such as excavating and backfilling,
 20 have the potential to release radioactive contaminants into the air. Emissions will be kept as low as
 21 reasonably achievable (ALARA) and will be appropriately monitored by applying the controls identified
 22 in Section 4.3.1.2 of the RAWP (DOE/RL-2011-03).

23 **5.2 Stage 2 S&M Radiological Air Emissions**

24 After slab removal and completion of remaining RAWP and End Point Criteria document requirements,
 25 S&M activities at the PFP Complex will have low potential for generating airborne contamination.
 26 Building belowgrade spaces (e.g., basements) will be sealed to preclude entry, and slabs with remaining
 27 radiological contamination will be fixed and covered.

28 **5.2.1 Airborne Source Information**

29 Potential emissions from the PFP Complex would mainly be diffuse and fugitive from the general area.
 30 If used during S&M, portable temporary radioactive air emission units would represent point sources.

31 The primary radionuclides of concern are americium-241 and plutonium-238, -239, -240, -241, and -242.
 32 Other radioisotopes may be present because of activation products, fission products, and decay products.
 33 The remaining contamination associated with PFP demolition will be stabilized in underground spaces
 34 or slabs.

35 **5.2.2 Potential Annual Emissions**

36 Other than site maintenance activities, there are no planned active S&M processes or anticipated
 37 disturbances of the remaining radiological material that could cause meaningful emissions. Underground
 38 spaces (building basements) left after the current removal action will be sealed, and contamination
 39 remaining on building slabs will be fixed and covered with a contamination control cover. Therefore, the
 40 PFP Complex will represent a minor emissions area source during Stage 2 S&M. The annual unabated

1 potential-to-emit and resultant effective dose calculations for the maximally exposed individual from
2 diffuse and fugitive sources associated with Stage 2 S&M is anticipated to be much less than
3 0.1 mrem/yr.

4 Activities such as sampling, excavation, or other required intrusive work would need to be evaluated for
5 air emissions and appropriate monitoring and controls, based on the site-specific conditions prior to
6 performing the work.

7 **5.2.3 Airborne Emission Controls**

8 Based on analysis of the potential emissions and evaluation of available control technologies, the
9 following controls of diffuse and fugitive emissions have been selected for use during S&M activities:

- 10 • Water will be applied in the most effective method, as needed, for suppression of fugitive emissions
11 and dust.
- 12 • Radiological surveys (e.g., smear samples) will be taken of external areas where there is the potential
13 for emissions.
- 14 • Appropriate controls such as fixatives, covers, containment tents, windscreens, or other controls will
15 be applied, if needed, as determined by the radiological control organization, based on conditions in
16 the area of work.
- 17 • Fixatives or cover material (e.g., soil, gravel, and plastic) will be applied to exposed and/or disturbed
18 contaminated soils.
- 19 • Any vacuum cleaners and portable exhausters used for maintenance activities will be equipped with
20 high-efficiency particulate air (HEPA) filters. These systems will be used in a manner consistent with
21 Hanford Site HEPA vacuum and portable exhauster practices for similar maintenance activities,
22 including confirmation surveys of system outlets.

23 **5.2.4 Airborne Emission Monitoring**

24 Monitoring will be performed via the near-facility ambient air monitoring network, which has an array of
25 monitoring stations near the PFP Complex and throughout the 200 West Area of the Hanford Site
26 (Figure 5). This system will act as indication of changes in emissions at the PFP Complex during Stage 2
27 S&M. The Hanford Site protocol established for emission monitoring includes provisions for data
28 collection, sampling frequencies, sample analysis, and data reporting (DOE/RL-91-50, *Hanford Site*
29 *Environmental Monitoring Plan*). Emissions will continue to be reported as part of the Hanford Site
30 annual reporting.

31 **5.3 Waste Management**

32 Wastes generated during slab removal and other post-transition actions during Stage 1 S&M will be
33 managed in accordance with Section 4.2, "Waste Management," and the associated ARARs of the RAWP
34 (DOE/RL-2011-03). Due to the fact that waste sites within the area covered by this S&M plan could be
35 assigned to different OUs, waste generated during Stage 2 S&M will be managed in accordance with the
36 CERCLA decision document covering the waste site generating the waste.

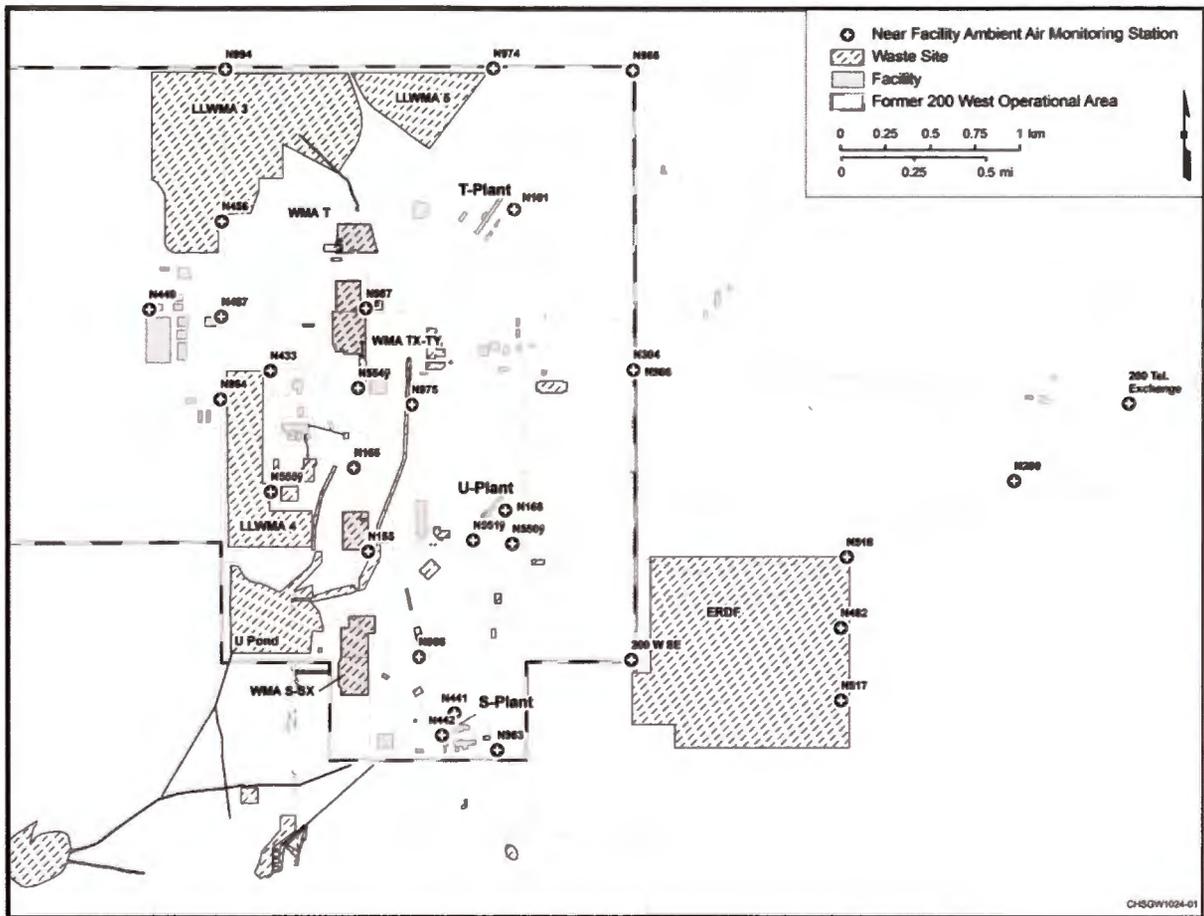


Figure 5. Near-Facility Ambient Air Monitoring (Typical)

5.4 Hazardous Material Management

Hazardous materials present during Stage 1 S&M will be managed in accordance with the RAWP. The amount of hazardous material remaining after transitioning to Stage 2 S&M should be minimal and would consist of those materials described in WIDS site descriptions or be associated with surveillance, maintenance, or site investigation activities. During Stage 2 S&M, these materials would be managed in accordance with Hanford Site standard methods.

During both Stage 1 and Stage 2 S&M, applicable requirements for occupational safety, nuclear safety, and radiological safety will be implemented for control of potential personnel exposures to hazardous materials or conditions.

Work instructions will integrate occupational safety, nuclear safety, criticality safety, and radiological safety, as applicable, to ensure worker protection.

5.5 Record Keeping and Documentation

Records generated from S&M activities are managed in accordance with Section 9.4 of the Tri-Party Agreement Action Plan (Ecology et al., 1989b). The End Point Criteria document (HNF-22401) specifies required documentation for turnover to S&M.

6 Radiological Controls

The radiological controls and protection program reduces the risks to personnel safety and/or health to ALARA levels and ensures adequate protection of workers. The radiological protection program meets the requirements of 10 CFR 835, "Occupational Radiation Protection."

Before S&M is performed, the proposed activity will be discussed with the radiological controls organization to determine the scope and necessary radiological survey requirements. Technical assessment documentation may be issued by the radiological controls organization to provide direction concerning the isotopes of concern and any specific survey and/or air sampling requirements. Dependent upon work scope and expected radiological conditions, an ALARA review may be performed as well. Radiological control technicians (RCTs) will assess radiological conditions of the work/surveillance area in accordance with standard practices and issued technical assessments, document survey results, and ensure correct radiological postings/boundaries of the area.

Based upon the results of the radiological survey, a radiological work plan is issued describing the appropriate personal protective clothing, dosimeter requirements, respiratory protection, and RCT coverage requirements.

7 Emergency Management and Preparedness

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 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. An emergency response plan (or Building Emergency Plan) may continue to be in effect during slab removal but is likely to be discontinued as hazards are reduced and work transitions into Stage 2 S&M. 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 state and federal regulations.

The potential hazards expected to be present during slab removal may warrant the staging of emergency equipment in support of that activity. Subsequent to slab removal and other post-transition activities, the S&M area of the PFP Complex will be unoccupied. Therefore, no permanent emergency equipment, communication equipment, warning systems, personal protective equipment, or spill control and containment supplies will be located within the fenced S&M area at the PFP Complex.

Prior to periodic entries during Stage 2 S&M, personnel will review appropriate procedures and attend pre-job safety meetings. The procedures, emergency plans, and meetings dictate the appropriate emergency equipment to be taken into the work areas and will identify PFP Complex specific hazards, appropriate evacuation routes, and notifications to be made if an accident occurs.

8 Health and Safety

DOE self-implements the requirements of 29 CFR 1910.120, "Occupational Safety and Health Standards," "Hazardous Waste Operations and Emergency Response," under the 10 CFR 851, "Worker Safety and Health Program," regulatory program, which requires a fully developed health and safety program. A health and safety plan (HASP), required under CERCLA, is developed when the decisions and documents (e.g., RI/FS, RAWP, and other documents) are completed for the final disposition of the facility in question. During Stage 1 S&M, the PFP HASP used during above-grade structure demolition

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