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Rev. 1 Draft A

Removal Action Work Plan #1 for 300 Area Facilities

For External Review

United States
Department of Energy

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October 2006

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United States Department of Energy

P.O. Box 550, Richland, Washington 99352

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ACRONYMS

ACM	asbestos-containing material
ALARA	as low as reasonably achievable
ARAR	applicable or relevant and appropriate requirement
BFA	building footprint area
BMP	best management practice
CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CCRC	Centralized Consolidated Recycling Center
CFR	*Code of Federal Regulations*
CWC	Central Waste Complex
D4	deactivation, decontamination, decommissioning and demolition
DAC	Derived Air Concentration
DOE	U.S. Department of Energy
DOT	U.S. Department of Transportation
EE/CA	engineering evaluation/cost analysis
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
ETF	Effluent Treatment Facility
GWQC	groundwater quality criteria
HASP	health and safety plan
HEPA	high-efficiency particulate air (filter)
ISMS	Integrated Safety Management System
MITUS	Mobile Integrated Temporary Utility System
NPL	National Priorities List
OSHA	Occupational Safety and Health Administration
OU	operable unit
PCB	polychlorinated biphenyl
PPE	personal protective equipment
RAWP	removal action work plan
RCF	Radiological Counting Facility
RCRA	*Resource Conservation and Recovery Act of 1976*
RL	U.S. Department of Energy, Richland Operations Office
ROD	record of decision
RWP	radiological work permit
S&M	surveillance and maintenance
SAP	sampling and analysis plan
TBC	to be considered
TEDF	Treated Effluent Disposal Facility
Tri-Party Agreement	*Hanford Federal Facility Agreement and Consent Order*
TSCA	*Toxic Substances Control Act of 1976*
TSD	treatment, storage, and disposal
UMM	unit manager's meeting

Acronyms

WAC	*Washington Administrative Code*
WCH	Washington Closure Hanford
WIDS	Waste Information Data System

METRIC CONVERSION CHART

Into Metric Units			Out of Metric Units		
If You Know	*Multiply By*	*To Get*	*If You Know*	*Multiply By*	*To Get*
Length			**Length**		
inches	25.4	Millimeters	millimeters	0.039	inches
inches	2.54	Centimeters	centimeters	0.394	inches
feet	0.305	Meters	meters	3.281	feet
yards	0.914	Meters	meters	1.094	yards
miles	1.609	Kilometers	kilometers	0.621	miles
Area			**Area**		
sq. inches	6.452	sq. centimeters	sq. centimeters	0.155	sq. inches
sq. feet	0.093	sq. meters	sq. meters	10.76	sq. feet
sq. yards	0.836	sq. meters	sq. meters	1.196	sq. yards
sq. miles	2.6	sq. kilometers	sq. kilometers	0.4	sq. miles
Acres	0.405	Hectares	hectares	2.47	acres
Mass (weight)			**Mass (weight)**		
ounces	28.35	Grams	grams	0.035	ounces
pounds	0.454	Kilograms	kilograms	2.205	pounds
ton	0.907	metric ton	metric ton	1.102	ton
volume			**Volume**		
teaspoons	5	Milliliters	milliliters	0.033	fluid ounces
tablespoons	15	Milliliters	liters	2.1	pints
fluid ounces	30	Milliliters	liters	1.057	quarts
cups	0.24	Liters	liters	0.264	gallons
pints	0.47	Liters	cubic meters	35.315	cubic feet
quarts	0.95	Liters	cubic meters	1.308	cubic yards
gallons	3.8	Liters			
cubic feet	0.028	cubic meters			
cubic yards	0.765	cubic meters			
Temperature			**Temperature**		
Fahrenheit	subtract 32, then multiply by 5/9	Celsius	Celsius	multiply by 9/5, then add 32	Fahrenheit
Radioactivity			**Radioactivity**		
picocuries	37	Millibecquerel	millibecquerels	0.027	picocuries

1.0 INTRODUCTION

This document contains the removal action work plan (RAWP) for performing deactivation, decontamination, decommissioning, and demolition (D4) of surplus facilities[1] in the 300 Area of the Hanford Site. These buildings, vaults, structures, and pipelines are owned and operated by the U.S. Department of Energy (DOE), in Benton County, Washington (Figure 1-1). The facilities were constructed and operated as a reactor fuel fabrication and laboratory complex. Past operations, disposal practices, spills, and unplanned releases have resulted in contamination of the facility structures, underlying soil, and underlying groundwater in the 300 Area. Consequently, in November 1989, the 300 Area was one of four areas of the Hanford Site that were placed on the U.S. Environmental Protection Agency (EPA) National Priorities List (NPL) under the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA). The EPA and the DOE, Richland Operations Office (RL) have determined that hazardous substances[2] in the facilities (listed in Table 1-1) present a potential threat of release that poses a substantial risk to human health and the environment to the extent that a removal action[3] is warranted.

Alternatives for conducting a non-time-critical removal action for various facilities in the north section of the 300 Area were evaluated in the Engineering Evaluation/Cost Analysis #1 for the 300 Area (EE/CA) (DOE-RL 2004b). The Engineering Evaluation/Cost Analysis #3 for the 300 Area (DOE-RL 2006b) addressed the remaining facilities (approximately 145 buildings and structures) in the 300 Area, with the exception of the 324 and 327 Buildings, and associated ancillary structures. Alternatives for these latter two facilities, and their associated ancillary structures, were addressed in the Engineering Evaluation/Cost Analysis #2 for the 300 Area (DOE-RL 2006a), and implementation of the associated removal action is addressed in a separate RAWP (DOE-RL 2006c). The EE/CAs resulted in the recommendation for performing D4 of the facilities in the northern portion of the 300 Area (Figure 1-2)[4]. The recommendation was approved in two action memoranda (EPA 2005, 2006b) signed by the EPA and DOE. The DOE is the agency responsible for implementing the removal actions in the 300 Area. The EPA is the lead regulatory agency for facilities in the 300 Area. This RAWP directs the implementation of the non-time-critical removal action.

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[1] The term "facility" is used generically to encompass all the contaminated and potentially contaminated surface and subsurface structures, buildings, foundations, aboveground utilities, fencing, piping, ducting, etc., associated with the buildings listed in Table 1-1.

[2] "Hazardous substances" means those substances defined by the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA), Section 101(14), and include both radioactive and chemical substances.

[3] "Remove" or "removal" as defined by CERCLA, Section 101(23), refers to the cleanup or removal of released hazardous substances from the environment; actions if a threat of release of hazardous substances occur; actions to monitor, assess, and evaluate the release (or threat of release) of hazardous substances; the disposal of removed material; or other actions that may be necessary to prevent, minimize, or mitigate damage to public health or welfare or to the environment, which may otherwise result from a release or threat of release.**If a planning period of at least 6 months exists before onsite actions must be initiated, the removal action is considered non-time-critical and an engineering evaluation/cost analysis (EE/CA) is conducted.

[4] Table 1-1 includes facility additions that have been made since the action memorandum was approved.

Figure 1-1. Hanford Site Map.

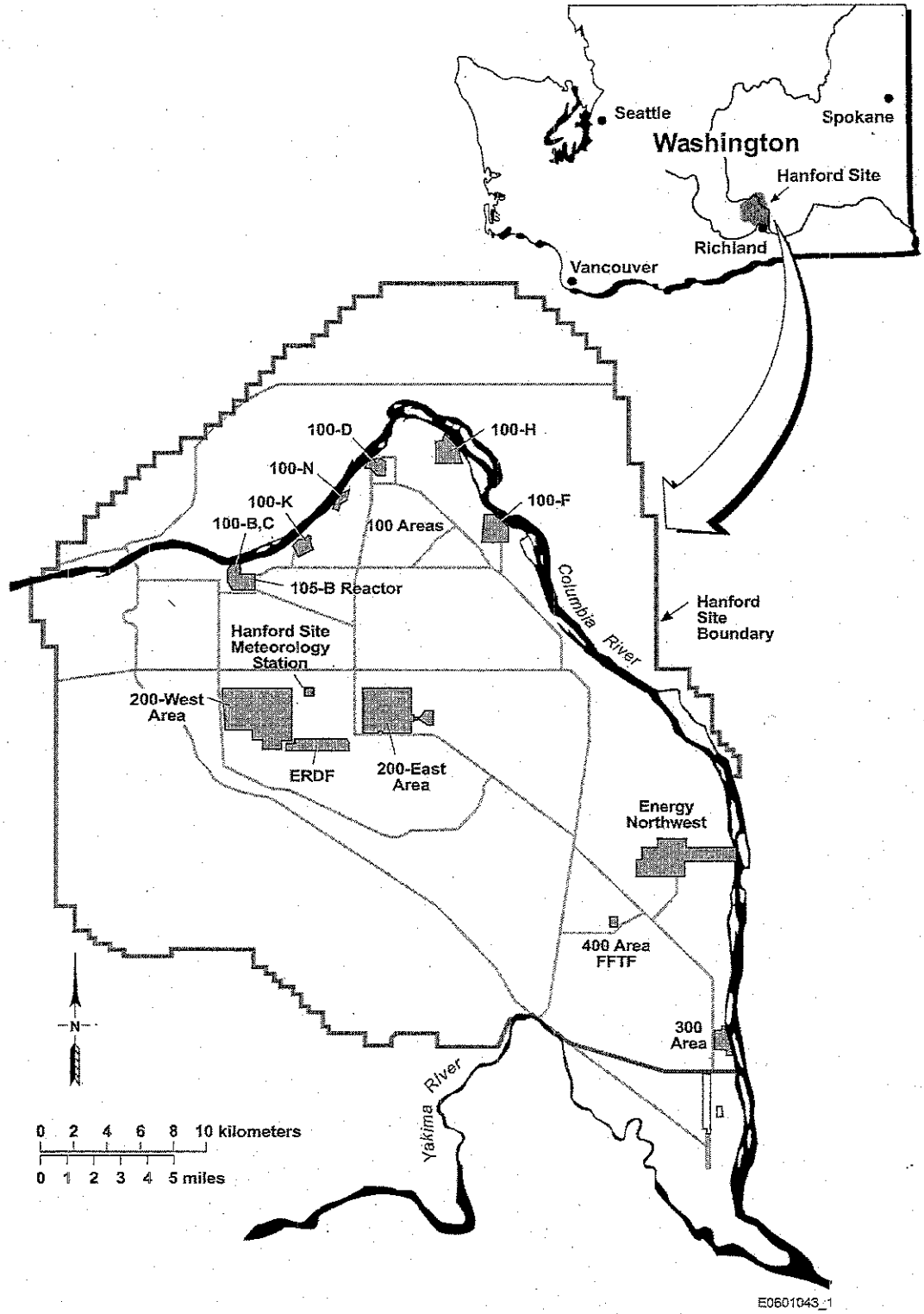


Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
303A	Storage Building	300-15, 300-16, 300-24, 300-28, 300-43	Demolished February 2006
303B	Storage Building	300-15, 300-28, 300-43, 300-48, 300-251	Demolished April 2006
303C	Material Evaluation Laboratory	300-28, 300-48	Demolished July 2006
303E	Storage Building	N/A	Demolished March 2006
303F	Pumphouse	300-224, 313 ESSP, 300-219, UPR-300-39, UPR-300-40, UPR-300-45, 300-28	Demolished April 2006
303G	Storage Building	300-224, 300-219, UPR-300-39, UPR-300-40, UPR-300-45	Demolished February 2006
303J	Material Storage Building	300-15	Demolished March 2006
303K	Waste and Material Storage		Demolished 2001
303M	Uranium Oxide Facility	300-259, 303-M SA, 333 ESHWSA, 303-M UOF, 618-1	Demolished March 2006
304	Uranium Concretion Facility	300-15, 300-28, 300-43, 300-251, 300-249	Demolished February 2006
304A	Uranium Concretion Change Room	300-15, 300-28, 300-43, 300-251, 300-249	Demolished February 2006
305	Engineering Testing Facility, Former Test Pile	300-4, 300-15, 300-29, 300-260	Demolished September 2006
305A	Storage Facility, Former Electrician and Pipefitter Shop		Demolished December 2004
305B	Hazardous Waste Storage Facility/Engineering Development Laboratory Annex	300-15, 300-16, 300-29	Demolished September 2006

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
305BA	Boiler Annex	N/A	Demolished September 2006
305P	Engineering Testing Support Building		Removed between 2001 and 2004
306E	Development, Fabrication, and Test Laboratory (includes 306E Neutralization Tank)	300-258, 300-33, 300-256, 300-42	Inactive
306EBA	Boiler Annex	300-256	Inactive
306W	Material Development Laboratory	300-15, 300-224, 300-33, 300-256, 300-42	Inactive
307	Retention Basins	340 Complex, UPR-300-1, 300-15	Active
308	Fuels Development Laboratory	300-15	Inactive
308A	Fuels Development Laboratory	N/A	Inactive
309	Plutonium Recycle Test Reactor (PRTR)	UPR-300-5, 300-22, 300-255, 300-15	Inactive
310	Treated Effluent Disposal Facility (TEDF)	600-117	Active
310S	Drum Storage Area	600-117	Active
310T1	Equalization Tank T1	600-117	Active
310T1A	Equalization Tank T1A	600-117	Active
310T2	Diversion Tank T2	600-117	Active
310T3	Diversion Tank T3	600-117	Active
310T7A	Clarifier T7A	600-117	Active
310T7B	Clarifier T7B	600-117	Active
310V	Valve Vault	600-117	Active
311TF	Tank Farm	300-224, UPR-300-39, UPR-300-40, UPR-300-45	Demolished February 2006
312	River Pump House	N/A	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3128	Gas Bottle Dock	N/A	Inactive
313[d]	Former Fuels Manufacturing Building	300-15, 300-24, 300-28, 300-224, 300-251, 300-260, 313 ESSP, UPR-300-38, 300-270	Demolished May 2005
314[d]	Research and Craft Facility, Former Engineering Development Laboratory	300-15, 300-16, 300-24, 300-251, 300-260, 300-80, 300-218	Demolished February 2006
314B[d]	Stress Rupture Test Facility for 314 Fuel Fabrication Operations	300-15, 300-16, 300-24, 300-251, 300-260, 300-80, 300-218	Demolished December 2005
315	Filter Water Plant Building	300-15	Inactive
315A	Backwash Disposal Pond	N/A	Inactive
315B	Chlorine Storage Facility	N/A	Inactive
315C	Backwash Lift Station & Sedimentation Pond	N/A	Inactive
315D	Backwash Recycle Pump Station	N/A	Inactive
318	Radiological Calibrations Laboratory	300-15	Active
318B	High Temperature Lattice Test Reactor Stack	N/A	Active
318-BA	318 Boiler Annex	300-15	Active
318C	High Temperature Lattice Test Reactor Filter Facility	N/A	Active
320	Physical Sciences Laboratory	300-15	Active
320-BA	320 Boiler Annex	300-15	Active
321	Hydromechanical/Seismic Facility	UPR-300-4, 300-15	Active
321B	Model Heat Loop	UPR-300-4, 300-15	Inactive
321C	Core Pump Shelter	UPR-300-4, 300-15	Inactive
321D	Seismic Testing Facility	UPR-300-4, 300-15	Inactive
3220	Telephone Exchange	N/A	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3221[c]	Sandblasting Support Building		Demolished May 2002
3222[c]	Storage Building		Demolished May 2002
3223[c]	Storage Building		Demolished May 2002
3224[c]	Storage Building		Demolished May 2002
3225[c]	Bottle Dock	N/A	Demolished December 2005
3228[c]	Craft Lunchroom		Demolished May 2002
3229	Deactivated Former Storage Building		Demolished November 2004
323	Mechanical Properties Laboratory	UPR-300-4	Active
3231	Electrician Shop		Demolished 2004
3232	Storage Building		Demolished 2004
3234[c]	Storage Building		Removed from the 300 Area
323-BA	323 Boiler Annex	UPR-300-4	Active
324-BA	324 Boiler Annex	N/A	Active
325	Radiochemical Processing Laboratory	UPR-300-10, UPR-300-12, UPR-300-48, 300-15, 300 RLWS	Active
325A	Cesium Recovery Facility Part of 325 Building	UPR-300-12, 300-15, 300 RLWS	Active
325B	Shielded Lab Annex Part of 325 Building	UPR-300-10	Active
325-BA	325 Boiler Annex	N/A	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
325C	Fluorine Gas Storage Part of 325 Building	N/A	Active
325D	Maintenance Shop Addition Part of 325 Building	N/A	Active
325E	Fire Riser/Backflow Preventer Building	N/A	Active
326	Material Science Laboratory	300-15	Active
326-BA	326 Boiler Annex	N/A	Active
327-BA	327 Boiler Annex	N/A	Active
328	Engineering Services and Safety Building	300-15	Inactive
328A	Sheet Metal Shop	N/A	Inactive
328-BA	328 Boiler Annex	N/A	Active
329	Chemical Sciences Laboratory	300-15, 300 RLWS	Active
331	Life Sciences Laboratory	300-15	Active
331-BA	331 Boiler Annex	N/A	Active
331C	Storage Facility	N/A	Active
331D	Biomagnetic Effects Laboratory	N/A	Active
331G	Interim Tissue Repository	N/A	Active
331H	Aerosol Wind Tunnel Research Facility	N/A	Active
332	Packaging Test Facility	618-1	Inactive
333	N Fuels Building (includes 333 West Tank Farm)	300-224, 300-32, 300-219, UPR-300-17, UPR-300-46, 618-1, 300-109, 300-110, 333 WSTF, 300-259, 303-M SA, 333 ESHWSA, 303-M UOF	Demolished September 2006
334[d]	Process Sewer Monitor Facility 300	300-224, 300-219, 300-258, 300-259, 618-1, 300-258, 300-110	Demolished December 2005
334A[d]	Waste Acid Storage Building	300-224, 300-219, 300-259, 618-1, 300-110	Demolished December 2005

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
335	Sodium Test Facility	300-15	Inactive
336	High-bay Testing Facility	300-15	Active
337	Technical Management Center	300-15	Inactive
337B	High-bay and Service Wing	N/A	Inactive
337-BA	337 Boiler Annex	N/A	Active
338	Maintenance Building	300-15	Active
339A	Computer Facility	N/A	Active
340	Waste Neutralization Facility Structure	340 Complex, UPR-300-2, UPR-300-11	Active
340A	Waste Retention Building	340 Complex, UPR-300-2, UPR-300-11	Active
340B	Waste Loadout Building	340 Complex	Active
342	Collection Sump 1 – 300 Area TEDF Sewer Line	N/A	Active
342A	Instrument/Electrical Building Shop – TEDF	N/A	Active
342B	Transformer Pad/Vault – TEDF	N/A	Active
342C	Generator Pad – TEDF Sump	N/A	Active
350	Plant Operations and Maintenance Facility	N/A	Active
3503A	Electrical Cable Pit No. 2	N/A	Active
3503B	Electrical Cable Pit	N/A	Active
3506A	Powerhouse Maintenance Shop	N/A	Slab removal remaining
3506B	Maintenance Shop	300-15	Slab removal remaining
3506C	Telecommunications Hub	N/A	Active
3507	Microwave Tower and Building	N/A	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3508T2	Siren northeast of California and Apple Streets	N/A	Active
350A	Paint Shop	N/A	Active
350B	Warehouse	N/A	Active
350C	Storage Facility	N/A	Active
350D	Oil Storage Facility	N/A	Active
351A	Meter and Testing Building	300-4, 618-8	Active
351B	Meter Testing and Switchgear Facility	300-4, 618-8	Active
352E	Switch Station East Side	N/A	Active
352F	Electrical Switch House, 2.4 kV	N/A	Active
3605	Fences, Power Poles, Guard Shacks, and other unnumbered aboveground structures/items	N/A	
3614A	River Monitoring Station	N/A	Inactive
3621-66	Petroleum Tank (Diesel) Replaces Tanks 3621-D	N/A	Inactive
3621BC	Emergency Generator Building	N/A	Inactive
3621D	Emergency Generator Building & Shop	N/A	Inactive
366A	Underground Fuel Oil Bunker		Removed April 2000
3701A[c]	Guard House, west gate (Apple Street)		Demolished
3701D	Office Building (Slab and below-grade structure)	UPR-300-4	Slab and below-grade structure removal remaining
3701U	Security Office Building	N/A	Slab removal remaining

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3703A	Modular Offices		Removed between 2001 and 2004
3704	Deactivated Former Insulators Storage Facility		Demolished November 2004
3705	Photography Building	300-15	Demolished June 2006
3705BA	Boiler Annex	N/A	Inactive
3706	Communication & Documentation Services	300-46, 300-15	Inactive
3706/3706A[a]	Communications & Documentation Services	300-46	Inactive
3706BA	Boiler Annex	N/A	Inactive
3707B[c]	Power House Offices		Demolished June 1996
3707D	Information Services Building	300-28	Demolished March 2006
3707E	Deactivated Construction Storage Facility		Demolished November 2004
3707F	Radiation Monitoring Building	N/A	Active
3707G	Changehouse		Demolished 2001
3707H	Changehouse	N/A	Inactive
3708[e]	Radioanalytical laboratory	300-15	Demolished July 2006
3709[e]	Paint Shop	300-15	Inactive
3709A	Fire Station	N/A	Active
3709B	Fire Equipment Storage	N/A	Active
3710A[c]	Oil Storage Building		Demolished November 2001

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3711[c]	Maintenance Storage Building	N/A	Demolished April 2006
3712	Storage Building	300-40, 3712 USSA	Demolished January 2006
3713	Carpenter Shop	N/A	Demolished February 2006
3714	Soils Laboratory	300-175, 300-15	Inactive
3715	Spare Parts Warehouse	N/A	Demolished February 2006
3716	Storage Building	UPR-300-17	Demolished January 2006
3717[c]	Spare Parts Warehouse	300-15	Demolished June 2006
3717B[c]	South Maintenance Facility	300-15	Demolished June 2006
3717C	Materials Archive Building	N/A	Inactive
3718	Office and Storage Building	N/A	Active
3718A	Laboratory Equipment Central Pool Building	N/A	Inactive
3718B	Laboratory Equipment Central Pool Building	N/A	Inactive
3718C	Storage Building	N/A	Inactive
3718M	Sodium Storage Facility	N/A	Inactive
3718N	Insulation Shop	N/A	Inactive
3718O[c]	HEPA Filter Storage		Demolished
3718P	General Storage	N/A	Active
3718S	General Storage	N/A	Inactive

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3719	Computer Facility	N/A	Active
3720	Chemistry and Metal Sciences Laboratory	300-15	Inactive
3720BA	Boiler Annex	300-15	Inactive
3721	Classified Shredder Facility	N/A	Inactive
3722	Fabrication Shop (includes 3226 and 3227)	300-15	Demolished February 2006
3727	Classified Vault	316-3	Inactive
3728	Geotechnical High-bay	N/A	Inactive
3730	Gamma Irradiation Facility	300-15	Active
3731	Laboratory Equipment Central Pool	N/A	Inactive
3731A	Graphite Machine Shop	N/A	Inactive
3732	Storage Building		Demolished September 1996
3734A [c]	Paint Storage Building		Demolished November 2001
3745	Radiological Calibration and Standards	300-15	Inactive
3745A	Van deGraff Electron Accelerator	300-15	Inactive
3745B	Van deGraff Positive Ion Accelerator	300-15	Inactive
3746[e]	Irradiation Physics Building	N/A	Inactive
3746A[e]	Radiological Physics Building	N/A	Inactive
3746D[e]	Technical Service Annex	N/A	Demolished April 2006
3760	Hanford Technical Library	N/A	Active
3762	Technical Security (Remaining slab and below-grade structure)	N/A	Slab removal

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3763	Office Building	N/A	Slab removal
3764	Office Building (Remaining slab and below-grade structure)	N/A	Slab removal
3766	Office Building	300-2	Inactive
3768	Office Building (Remaining slab and below-grade structure)	N/A	Slab removal
3769	Office Building (Remaining slab and below-grade structure)	N/A	Slab removal
377	Former Geotechnical Engineering Laboratory	N/A	Demolished June 2006
3770	Office Building (Remaining slab and below-grade structure)	N/A	Slab removal
3790	Security Office Building	N/A	Active
3802A	Steam PRV Station	N/A	Active
382	Pump House Building	300-15	Active
382B	382B Fire Pump Station	N/A	Active
382-BA	382 Boiler Annex	N/A	Active
382C	Sanitary Water Storage Tank	N/A	Active
382D	Sanitary Water Storage Tank	N/A	Active
384	Powerhouse Building	UPR-300-42	Inactive
3902A [c]	West 75,000-gallon Elevated Water Tank		Demolished
3902B [c]	East 100,000-gallon Elevated Water Tank		Demolished September 2002
3906	Sanitary and Process Lift Station	300-15	Active
3906A	Sanitary Sewer Lift Station #1	N/A	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
3906B	Sanitary Sewer Lift Station #2	300-15	Active
3906C	Sanitary Sewer Sample Station	N/A	Active
Misc.	Miscellaneous Conex box storage, modular buildings such as "HS" designated structures, unnumbered aboveground structures/items, laydown areas and yard storage areas, slabs and/or foundations for previously demolished structures	N/A	
MO-026[b]	Mobile Office	N/A	Demolished June 2006
MO-036	Mobile Office	340 Complex	Inactive
MO-052[a, c]	Mobile Office	618-1	Demolished December 2005
MO-059	Mobile Office	N/A	Inactive
MO-226	Mobile Office	N/A	Active
MO-258	Mobile Office	N/A	Active
MO-262	Mobile Office	N/A	Active
MO-263	Mobile Office	N/A	Active
MO-265[e]	Mobile Office	N/A	Active
MO-270	Mobile Office	N/A	Inactive
MO-271	Mobile Office	N/A	Inactive
MO-274	Mobile Office	N/A	Inactive
MO-275	Mobile Office	N/A	Inactive
MO-391	Mobile Office	N/A	Inactive
MO-423[e]	Mobile Office	N/A	Inactive
MO-443	Mobile Office at TEDF	N/A	Active

Table 1-1. Status of 300 Area Facilities Addressed Under this RAWP. (13 Pages)

Building No.	Building Name	WIDS Sites Expected to be Affected by D4	Building Status
MO-741	Mobile Office	N/A	Active
MO-744	Mobile Office at TEDF	N/A	Active
MO-745	Mobile Office at TEDF	N/A	Active
MO-905	Mobile Office	N/A	Inactive
MO-XXX	Miscellaneous mobile trailers not previously identified or that may be installed for use during the conduct of removal activities	N/A	Inactive

Source: EPA 2005 and EPA 2006b.
[a] Facilities approved for inclusion under the removal action in September 2005 Unit Manager Meeting.
[b] Facility approved for inclusion under the removal action in June 2006 Unit Manager Meeting.
[c] Below-grade structures removed.
[d] Below-grade structures deferred
[e] Facilities are being used to support CERCLA activities

D4 = deactivation, decontamination, decommissioning, and demolition
HEPA = high-efficiency particulate air (filter)
N/A = not applicable
RAWP = removal action work plan
TEDF = Treated Effluent Disposal Facility
WIDS = Waste Information Data System

The 300 Area NPL site is subdivided into three operable units (OUs) to address cleanup of the soil and groundwater contamination that resulted from past operations. The 300-FF-1 and 300-FF-2 OUs address contamination at liquid disposal sites, burial grounds, and soil waste sites. The 300-FF-5 OU addresses groundwater contamination beneath the burial grounds and soil waste sites located within the geographical boundary of the 300 NPL site. Geographically, the facilities that supported the fuel fabrication processes and research and development activities in the 300 Area are co-located with the 300-FF-2 OU waste sites.

1.1 PURPOSE AND OBJECTIVE OF THE REMOVAL ACTION WORK PLAN

The purpose of this RAWP is to establish the methods and activities required to perform the following functions:

- Complete D4 of facilities (e.g., building contents, aboveground structures, on-grade floor slabs, and the below-grade foundations and piping) addressed within the EE/CAs (DOE-RL 2004b, 2006b).

- Manage and dispose of all waste generated during these actions.

This RAWP satisfies the requirement to submit a work plan outlining how compliance with the removal action objectives and applicable or relevant and appropriate requirements (ARARs) (see Section 4.1) will be achieved. This RAWP was prepared in accordance with Section 7.2.4 of the *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989).

This RAWP directs the removal action activities including the development of specific project tasks that are described in work packages and subcontract task orders. 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. Existing contractor procedures and specifically developed instructions will be used to perform and control the facility removal and disposal actions.

Removal actions will be performed on a schedule which ensures that demolition of the 300 Area facilities is completed by September 30, 2015, in accordance with Tri-Party Agreement Milestone M-94-00. Interim milestones were also established to track the progress in meeting Milestone M-94-00. A listing of these milestones is provided in Table 1-2.

Figure 1-2. Portion of the 300 Area Addressed by this Removal Action Work Plan.

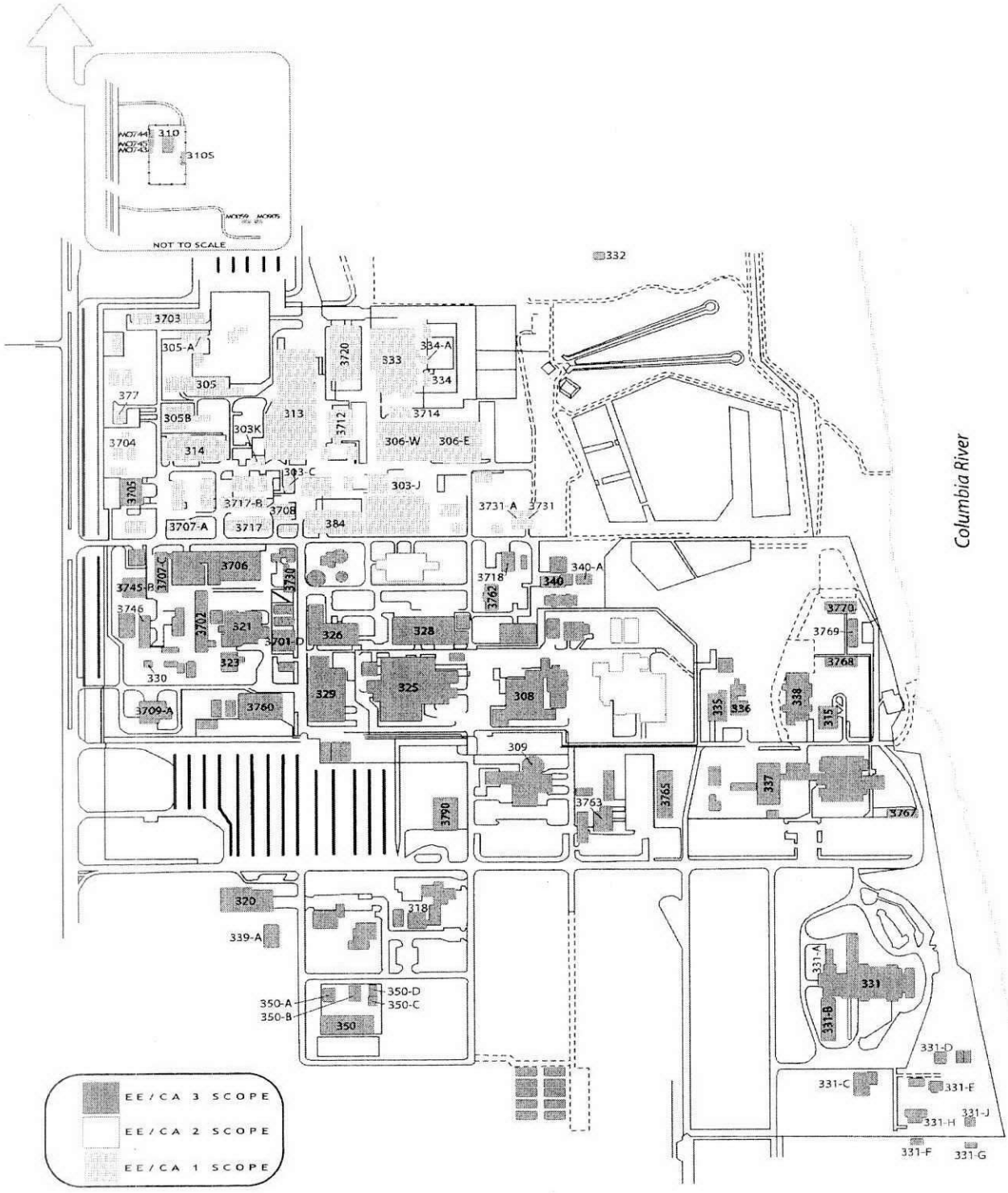


Table 1-2. Summary of Relevant Tri-Party Agreement Milestones. (2 Pages)

Milestone	Description	Due Date
M-94-00	Complete disposition of 300 Area surplus facilities to be defined as the 220 facilities listed in the Hanford River Corridor Closure Contract Solicitation #DE-RP06-04RL14655. Completion of facility disposition is defined as the completion of deactivation, decontamination, decommissioning, and demolition and obtains EPA and/or Ecology approval of the appropriate project closeout documents. The cleanup of 300-FF-2 waste sites associated with 300 Area surplus facilities will be performed in accordance with Tri-Party Agreement Major Milestone M-16-00B.	9/30/2015
M-094-01	Submit a schedule and Tri-Party Agreement milestones to complete disposition of the surplus facilities in the 300 Area. The milestone deliverable shall include at least (1) a schedule for submittals of EE/CAs, removal action memoranda, removal action work plans, closure/post-closure plans, and other documents that require EPA and/or Ecology approval; (2) a schedule that defines initiation and completion dates for the disposition of groups of surplus facilities and associated waste sites; and (3) a Tri-Party Agreement change package that includes milestones for groups of surplus facilities and associated waste sites that will ensure completion of M-094-00. These schedules shall be included (and updated as appropriate) in 300 Area removal action work plans submitted for EPA and/or Ecology approval and will be aligned with the associated schedules required by Milestone M-016-63.	12/31/2005 (milestone completed December 2005)
M-094-03	Complete disposition of the following surplus facilities: 303M, 332, 333, 334, 334A, 3221, 3222, 3223, 3224, 3225, 324, 324B, and 327.	9/30/2010
M-094-05	Complete deactivation, decontamination, decommissioning and demolition (D4) of the 313 and 314 Facilities. Foundations, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	9/30/2006 (milestone completed February 2006)
M-094-06	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720; **to include the 333 Facility**. The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	12/30/2007

Table 1-2. Summary of Relevant Tri-Party Agreement Milestones. (2 Pages)

Milestone	Description	Due Date
M-094-07	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high-priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720; **to include the 306E, 306W, 3720, and 305B Facilities**. The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	12/30/2009
M-094-08	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720. The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	12/31/2011
M-094-09	Complete the selected removal and/or remedial actions that are scheduled for 3 of the following 19 high priority facilities: 305B, 306E, 306W, 307 Retention Basins; 308, 309, 321, 323, 324, 324B, 325, 326, 327, 329, 333, 340, 3706, 307 Trenches; and 3720; **to include the 323 Facility and the 307 Trench**. The 307 Trench (also known as the 316-3 waste site) is a candidate waste site. Completion of this milestone commitment for the 307 Trench includes the necessary characterization to determine if further remediation is necessary and will be met when the sampling results have been accepted by EPA. The selected removal action for the other 18 facilities listed is or is expected to be completion of D4 of the facility. In accordance with approved work plans, foundation, subsurface structures, and/or soil contamination can be deferred to a comprehensive remedial action program, but waste sites will be established in the interim to track this cleanup commitment.	9/30/2013

D4 = deactivation, decontamination, decommissioning, and demolition
Ecology = Washington State Department of Ecology
EE/CA = engineering evaluation/cost analysis
EPA = U.S. Environmental Protection Agency

1.2 OBJECTIVES

The primary goal of CERCLA removal actions is to minimize or eliminate threats to public health or the environment caused by the presence of hazardous substances. The EE/CAs for the 300 Area facilities (DOE-RL 2004b, 2006b) presented three alternatives for future facility management and the resulting levels of protection of public health and the environment that may be anticipated. Based on the evaluation, deactivation followed by decontamination, decommissioning, and demolition was the recommended alternative. This alternative was chosen based on its overall ability to protect human health and the environment and its effectiveness in maintaining protection for both the short term and the long term. The alternative would also reduce the potential for a release by reducing the inventory of contaminants. This alternative provides the best balance of protecting human health and the environment, protecting workers, meeting the removal action objectives, achieving cost effectiveness, and providing an end state that is consistent with future cleanup actions and commitments to the Tri-Party Agreement (Ecology et al. 1989). The selection and approval of this approach are documented in the action memoranda (EPA 2005, 2006b).

Based on the potential hazards identified in Section 1.4, the following removal action objectives have been identified:

- Protect human receptors from exposure to radiological and hazardous substances in facility structures above acceptable exposure levels for nonradiological general employees
- Control the release of radiological and hazardous substances from the facilities into the environment
- Facilitate remediation of 300 Area waste sites in accordance with the 300-FF-2 Record of Decision (EPA 2001)
- Achieve ARARs to the fullest extent practicable
- Safely treat, as appropriate, and dispose of waste streams generated by the removal action.

In addition to the previously identified objectives, the end state of removal actions implemented in response to this removal action must be supportive of institutional controls prescribed by the 300-FF-2 record of decision (EPA 2001) for the period between completion of the facility removal actions and initiation of the waste site remedial actions.

1.3 SCOPE

The 300 Area facilities addressed in the scope of this RAWP include all the facilities within the 300 Area industrial complex except for the 324 and 327 Buildings and associated ancillary structures, which are addressed in a separate EE/CA (DOE-RL 2006a). Figure 1-2 illustrates the geographical boundaries of each of the removal action. The list of facilities that are addressed within this RAWP is provided in Table 1-1. It is recognized that the status of the 300 Area

facilities will change over time. Changes could include, but are not limited to, modifying the status of facilities from active to inactive, adding scope to removal action that was previously missed or excluded, and changing the status of facilities from demolished to closed and/or transferred. Missed or excluded facilities cannot be added unless they are located in the same geographical area identified within the action memoranda (EPA 2005, 2006b). Changes to Table 1-1 are agreed upon by the DOE and the EPA and documented in the unit manager's meeting (UMM) or equivalent. This RAWP will be revised and Table 1-1 updated as needed to incorporate the changes documented in the UMM.

This revision of the RAWP includes all of the facilities addressed in the EE/CAs (DOE-RL 2004b, 2006b). Some of the facilities, as noted in Table 1-1, were demolished prior to implementing this removal action. Where below-grade structures remain, a decision may be made to remove the foundation while performing demolition at an adjacent facility. In other cases, the below-grade structures may remain in place until they are removed to provide access to 300-FF-2 OU waste sites. Or, if the remaining structure and underlying soils are determined to be clean, then no further action may be required.

It is possible that some of the facilities identified in this removal action could be found to be free of or contain de minimis levels of CERCLA hazardous substances. If this situation occurs, then the facilities would be addressed under DOE authority instead of being addressed under this removal action. Section 2.2.1 describes the process that will be used to ensure that facilities are being addressed under the appropriate authority.

1.4 FACILITY AND HAZARD DESCRIPTION

This section discusses the hazards in the 300 Area facilities included in this RAWP. The facilities addressed are limited to those facilities included in Table 1-1. At this time, all of the facilities in this document have not been fully characterized; therefore, CERCLA hazardous substances have not been conclusively identified in all of the facilities. Following characterization, the CERCLA hazardous substances will be known. Should any facilities be determined to be free of CERCLA hazardous substances, they will not be addressed under this removal action. Facilities hazard categorization will be performed in accordance with established procedures.

The hazardous substances will be managed in accordance with as low as reasonably achievable (ALARA) considerations, the applicable requirements provided in Section 4.1, and the waste management plan (Section 4.2) of this RAWP. Compliance with hazardous material protection requirements is ensured as described in the contractor's operating procedures.

1.4.1 Facility Descriptions

The descriptions of the facilities included within this plan are provided in Appendix A. Orphan, excluded, or otherwise unidentified foundations or subsurface structures may be added to the scope of this removal action via UMM minutes, or equivalent, as identified in Section 1.3.

1.4.2 Radiological Hazards

Many of the 300 Area facilities are posted as radiologically controlled areas. In general, the primary contaminants of concern are the following radionuclides:

- Americium-241
- Cesium-137
- Cobalt-60
- Strontium-90
- Plutonium isotopes
- Technetium-99
- Thorium isotopes
- Uranium isotopes.

Most of the radiological inventory has been removed from the 300 Area facilities. However, residual materials could be found in the facilities. In general, the activities of individual isotopes are not currently known, but will be determined as necessary for worker safety and to support disposal. For many other facilities it is not known at this time whether radiological contamination is present. Additional characterization will be required to document the radiological conditions in those facilities and to support disposal.

1.4.3 Chemical Hazards

The inactive 300 Area facilities have been deactivated and all bulk chemical inventories have been removed for recycling or disposal. Bulk chemicals should be removed from active buildings prior to initiating D4 activities. Some residual quantities of hazardous chemicals may remain in the process lines, tanks, and drains. Asbestos and lead are found in the greatest quantities and are located throughout the facilities. In addition, several types of hazardous materials remain in the 300 Area facilities, including the following:

- Asbestos
- Cadmium
- Beryllium
- Lead
- Polychlorinated biphenyls (PCBs)
- Mercury (in electrical switches)
- Refrigerants (freon)
- Lubricants
- Commercial solvents
- Corrosives
- High-efficiency particulate air (HEPA) filter media (desiccants)
- Sodium vapor and mercury vapor lighting.

The removal of these materials will be performed in accordance with contractor procedures that ensure control over hazardous substances. The contractor's standards and procedures for

asbestos and lead ensure that personnel removing, handling, and disposing of waste performed in a manner that achieves the following objectives:

- Protect the safety of employees and the general public
- Minimize spills and releases to the environment
- Meet applicable DOE, federal, state, and local regulatory requirements.

1.4.3.1 Asbestos. Asbestos-containing material (ACM) is found in and around the 300 Area facilities. Disturbance of vessel or piping insulation, loose floor tiles, transite wall coverings or panels, sheetrock, electrical wire insulation, ducting, or other suspect ACM must be avoided. Personnel involved in asbestos cleanup will follow the applicable requirements of 29 *Code of Federal Regulations* (CFR) 1926.1101, "Asbestos." Task-specific requirements will be contained within the associated work package.

1.4.3.2 Cadmium. Cadmium is a byproduct of the metal finishing process. Cadmium could also be present in electrical equipment. At certain levels, cadmium is regulated as a hazardous waste. Waste containing cadmium above regulatory limits will require treatment prior to disposal.

1.4.3.3 Beryllium. Beryllium contamination is present in many of the facilities addressed under this removal action. Although beryllium is not regulated as a hazardous waste, there are health and safety requirements that must be addressed when working with beryllium-contaminated structures.

1.4.3.4 Lead. Lead may exist in surface coatings (i.e., lead-based paint), plumbing, and as radiological shielding (e.g., lead shot, brick, sheet and cast-lead forms) inside some of the 300 Area facilities. Personnel must exercise caution to avoid disturbing or contacting lead or suspect lead material. Workers performing job tasks that involve lead shall follow the applicable requirements in the contractor's procedures and the associated work package.

1.4.3.5 PCBs. PCBs may be found in the painted surfaces of the ancillary facilities and in the waste oils generated during facility decontamination and deactivation. Material that is painted and for which the paint contains PCBs will be managed as "PCB Bulk Product Waste."

1.4.3.6 Mercury. Mercury could be present in electrical equipment. At certain levels, mercury is regulated as a dangerous waste. Waste containing mercury above regulatory limits will require treatment prior to disposal. The expectation is that most (if not all) mercury waste will be treated within the boundary of the removal action.

1.4.3.7 Refrigerants. Refrigerants are regulated due to their effect on the ozone layer of the atmosphere. Refrigerants may be "recovered" or disposed of prior to disposal of the equipment.

1.4.3.8 Lubricants. Lubricants sometimes contain hazardous substances. Equipment will be drained of lubricants to the extent practical prior to disposal.

1.4.3.9 Commercial Solvents. Commercial solvents may designate as a dangerous waste. Equipment will be drained of commercial solvents and may require treatment prior to disposal.

1.4.3.10 Corrosives. Corrosives may be present in facilities that have not been deactivated. In the State of Washington, corrosive solids and liquid waste above the regulatory limits must be managed, treated, and disposed of as a dangerous waste.

1.4.3.11 HEPA Filter Media. HEPA filter media may contain toxic metals above the regulatory limits. HEPA filters may need to be sampled prior to disposal to demonstrate whether (or not) they contain toxic metals above the regulatory limits.

1.4.3.12 Sodium Vapor and Mercury Vapor Lighting. Sodium vapor and mercury vapor lighting will be dispositioned through the Centralized Consolidated Recycling Center (CCRC) whenever possible. Sodium above a certain concentration is regulated within the State of Washington as a dangerous waste. Mercury above a certain concentration is regulated as a dangerous waste.

2.0 REMOVAL ACTION ELEMENTS

The following subsections provide a general description of how work activities will be performed to remove the 300 Area facilities. The general scope of work involved to implement this removal action includes the following activities:

- Performing surveillance and maintenance (S&M) activities
- Performing characterization sampling and analysis
- Performing site mobilization and preparation activities
- Facility deactivation, decontamination, and decommissioning
- Facility demolition
- Site restoration
- Site stabilization
- Equipment decontamination
- Disposing of waste (including waste generated during S&M activities prior to D4)
- Demobilization.

The scope of work will be accomplished by completing the activities described in the following sections.

2.1 SURVEILLANCE AND MAINTENANCE

The goal of the long-term S&M is to sustain a facility in a safe condition. S&M activities are applicable to facilities prior to demolition and may also apply to remaining structures and waste sites following demolition. The S&M measures include routine radiological and hazard monitoring of a facility, safety inspections, and maintenance activities necessary to keep the facility in a safe condition. The S&M activities are tailored to the specific conditions of the facility. Waste generated during this period shall be evaluated for (if acceptable) disposal at the Environmental Restoration Disposal Facility (ERDF). Waste generated during the S&M period sometimes does not require or is not eligible for disposal at ERDF. Examples include, but are not limited to, "replacement in kind" items such as light bulbs or trash that do not contain CERCLA hazardous substances. It is expected that most waste generated during S&M activities will meet the acceptance criteria for ERDF.

2.2 CHARACTERIZATION SAMPLING AND ANALYSIS

Characterization is necessary to support waste disposal activities, to define contaminants present before or after the completion of the removal action, and in some cases to support site closure documentation.

Waste characterization documents produced to support this removal action include the development of the *Data Quality Objective Summary Report for D&D Waste Characterization of*

the 300 Area Buildings (BHI 2004), which was used as an input to the waste characterization sampling and analysis plan (SAP) (DOE-RL 2005). Waste characterization will be conducted prior to and during D4 activities for each facility, as needed. Facility-specific historical information will be used to identify which waste streams are expected to be generated; the initial characterization data needs; and the rationale, strategy, and requirements for the data collection and analysis. Data collection may include survey and sample data. The initial characterization data will be used to:

- Characterize waste for treatment and/or disposal;
- Identify radiological and hazardous conditions that will be encountered during D4 of the facility; or
- Specify health and safety requirements.

In process sampling will also be performed as necessary to characterize unexpected waste materials encountered during D4 of the facilities.

At this time, it is expected that most (if not all) of the characterization activities conducted to support site closure will be performed as part of the 300-FF-2 work. The documents needed to support sampling and final closure verification will not be produced as part of this removal action. Instead, the *300 Area Remedial Action Sampling and Analysis Plan* (300 Area SAP) (DOE-RL 2004a) and the 300 Area Remedial Design Report/Remedial Action Work Plan (RDR/RAWP) (DOE-RL 2004c) established under the 300-FF-2 work scope will be used in cases where it is appropriate to demonstrate that a site is below the desired cleanup levels. Final characterization sampling will be performed during site restoration as described in Section 2.6.

2.2.1 Characterization for Potentially Contaminated Facilities

Some of the facilities listed in Table 1-1 are considered to be potentially contaminated. Prior to performing D4 of the facility, an evaluation of the following information will be performed:

- Facility history (i.e., what the building was used for, construction materials)
- Potential for radiological contamination from outside sources (i.e., biological intrusion)
- Radiological and industrial hygiene surveys performed in the facility
- Characterization data, as appropriate
- Criteria for disposal to an offsite disposal facility.

If this information shows that the facility is free of or contains de minimis levels of CERCLA hazardous constituents, and meets the criteria for disposal to an offsite disposal facility, then the facility will be addressed under DOE authority. Changes in removal action authority will be documented in the UMM minutes and identified in future updates to this removal action work plan.

2.3 SITE MOBILIZATION AND PREPARATION WORK

Upon initiation of D4 activities, personnel will be mobilized and required equipment and materials will be procured. The first activities to be performed will include mobilizing manual personnel and trailers to support project activities. Personnel will also terminate and/or verify termination of the 300 Area facilities services and utilities, as appropriate. Electrical systems that will be used throughout the D4 activities are discussed in further detail in Section 3.4.

Concurrent with these activities, waste storage areas will be set up within the building footprint area (BFA) (see Section 4.2.3.1) or within the onsite location outside the BFA to facilitate transportation of the material for recycling or disposal in accordance with this document. Supervisor trailers, lunch trailers, change trailers, office trailers, mobile shower trailers, and restroom facilities will also be mobilized as required at the sites to prepare for D4 activities. Temporary power will be connected from an outside line or generator, and temporary power and lighting will be installed as needed. Occupational Safety and Health Administration (OSHA) concerns (e.g., fall protection, guarding, and electrical) will be managed as the concerns are identified.

2.4 DEACTIVATION, DECONTAMINATION, AND DECOMMISSIONING ACTIVITIES

In general, work activities will begin by developing a baseline of the facility conditions. Biological cleanup, general housekeeping, and removal of hazardous materials may also be necessary. Fluids will be drained from piping and equipment. Overhead utilities and adjacent concrete and asphalt will be removed, as needed, from the BFA to support demolition activities. Contaminated materials may be fixed in place. These activities will be managed in accordance with the contractor's procedures and work packages that address removing, handling, and disposing of these materials in a manner that protects that safety of employees and the general public, minimizes spills and releases to the environment, and meets all regulatory requirements.

Many of the facilities are suspected to contain beryllium contamination. Special controls will be necessary when working with beryllium-contaminated equipment, furniture, and tools. Beryllium-contaminated materials will be managed in a manner that ensures worker protection. Prior to facility demolition, beryllium contamination may be fixed in place, as required.

All friable and most nonfriable ACMs and presumed ACMs will be removed prior to demolition of the area, as appropriate. Unattached, not-in-use, and accessible lead bricks and sheeting; PCBs (primarily in paint, motor oils, and light ballasts); mercury (primarily in lighting components and switches); and other hazardous materials will be removed and disposed as hazardous or mixed waste or will be recycled. Guidelines for waste management are found in Section 4.2.

Most of the loose, accessible radiological contamination will either be removed or fixed in place, depending on the levels, accessibility, complex shapes (e.g., grating), and type of contamination found. Some of the equipment/piping will be removed, and loose contamination will be wiped

or vacuumed with a HEPA filter-equipped vacuum. If loose contamination remains after the initial decontamination effort (unless the area will be inaccessible after completion of the removal project, or if the building configuration or conditions make removal of loose contamination impractical), the contamination may be fixed in place, as required. Removal of fixed contamination (radiological or chemical) will be performed using nonaggressive means (e.g., wiping or using decontamination solutions). Aggressive means of decontamination (e.g., scabbling, grinding, or other abrasive/mechanical means) are planned to be used only as necessary to maintain levels ALARA.

Groundwater wells may be located near or within the footprint of the structures undergoing demolition. The groundwater wells may or may not be affected by the facility demolition. If required, the wells will be decommissioned prior to initiating facility demolition.

2.5 FACILITY DEMOLITION

The facilities will be demolished using standard demolition techniques (e.g., excavator with a hoe-ram, a hydraulic shear with steel shear jaws, concrete pulverizer jaws or breaker jaws, a crane with wrecking ball, and/or controlled explosives). Water may be used to control dust generated from demolition activities. The amount of water used will be minimized to prevent ponding and runoff. Additional work practices/controls may need to be implemented to control runoff because the 300 Area is mostly covered by asphalt. Controls will be described in work controlling documents (e.g., work packages) and could include removing asphalt to allow water to infiltrate into the ground. Steel will be segregated for salvage if economically feasible and if meeting DOE criteria for free release from radiological controls. The above-grade structures of the facilities will be demolished and disposed.

How the below-grade structures are addressed will depend on the condition of the structures and if any soil contamination site may be affected by the D4 activities. The portions of the below-grade areas of the facilities that meet the cleanup criteria and that do not interfere with future remediation efforts may be left in place. Portions of the below-grade structures that are above cleanup levels will either be removed during facility demolition or deferred to the 300-FF-2 remedial action, as described in Sections 2.6 and 2.7, respectively.

2.6 SITE CLOSURE

Site closure will be pursued when there are no known waste sites underlying the building foundation, or when the waste site is small and is not expected to require extensive soil excavation.

When there are no known waste sites underlying the building foundation, field sampling and a visual inspection will be performed to support facility closure. Field sampling results will be reviewed to determine that no radiological contamination exists in the soil or remaining below-grade structures (if present). A visual inspection will be performed to confirm that there is no soil staining or anomalies present. Should the visual inspection identify anomalies in the soil,

verification sampling will be performed in accordance with the 300 Area SAP (DOE-RL 2004a). After sampling/inspections indicate that no further remediation is necessary, the below-grade void spaces will be backfilled with nonhazardous/nonrecyclable material (e.g., clean concrete, rubble, and soil). The area will be backfilled (approximately the top 0.6 to 1.0 m [2 to 3.3 ft]) to facilitate future revegetation of the site. The final grade of the site will match the surrounding terrain. Existing borrow pits will be used to obtain the backfill material.

When final closure of a 300-FF-2 waste site is pursued, verification samples will be collected and analyzed in accordance with the 300 Area SAP (DOE-RL 2004a). After verification sampling of the site indicates that cleanup levels for both soils and any remaining below-grade structures (if present) have been met, the below-grade void spaces will be backfilled with nonhazardous/nonrecyclable material (e.g., clean concrete rubble and/or soil). Approximately the top 0.6 to 1 m (2 to 3.3 ft) will be backfilled to facilitate future revegetation of the site. The final grade of the site will match the surrounding terrain. Existing borrow pits will be used to obtain the backfill material. Based on safety concerns and access issues during D4 activities, backfilling in and around the facilities may occur prior to the preparation of site closure documentation. Final waste site closeout documentation will be submitted in accordance with 300-FF-2 remedial action documents.

If in-process measurements or final characterization sampling indicates that the cleanup standards have not been met, an evaluation will be performed (e.g., location, site access, contaminants of concern) to determine how much, if any, of the site will be backfilled. If it is determined that cleanup actions must stop, the site will be stabilized in a manner that will not unduly hinder future remediation. Site restoration will be coordinated with 300 Area remedial actions. Characterization information for this area will be generated to document the status of conditions at the conclusion of this project. Determination of whether to proceed with soil cleanup or to perform the work later under the remedial action will be approved by the EPA. Safety concerns and access issues may necessitate backfilling in and around the facilities prior to the site being closed out. In this circumstance, the remaining contamination will be documented in the Waste Information Data System (WIDS) database so that the information is available when the site undergoes final remediation.

Other contaminated underground structures (including pipelines, pipe tunnels, and pipe trenches) may be exposed or affected by removing the below-grade ancillary facility structures. "Chasing" these other contaminated underground structures will be evaluated on a case-by-case basis to determine the practicality of removing the structure as part of this removal action work scope or deferring to a later remedial action.

In the event that large volumes of contaminated soil are encountered, other soil contamination sites are adversely affected by D4 activities, utilities of active facilities are impacted, or removal of contaminated soil inhibits D4 activities, the removal of contaminated soils may be accomplished under a future remedial action with concurrence of the EPA. The sites will be stabilized in a manner that will not unduly hinder future remediation. Future cleanup efforts of the facility (if necessary) or deferral of the removal action scope to later remedial action will be coordinated with and approved by the EPA. Future cleanup efforts will occur at the same time that waste sites are addressed in the 300-FF-2 OU.

2.7 SITE STABILIZATION (IF CLOSURE IS NOT COMPLETED)

As described in the EE/CAs (DOE-RL 2004b, 2006b), on a case-by-case basis, the facility slab or foundation may be left in place where the facilities are located above or adjacent to known or suspected 300-FF-2 OU waste sites. The D4 activities may leave at-grade or below-grade structures in place to accomplish one or more of the following objectives:

- Limit infiltration into an underlying waste site during the period between demolition and remedial action
- Minimize/reduce potential exposure to contaminants from an underlying waste site
- Avoid double-handling and potential cross-contamination of clean backfill material that would be excavated as part of the remedial action remedy
- Avoid negative impact on active 300 Area utilities (e.g., electrical, sewer, water) or on adjacent facilities or operations.

Following the facility demolition activity if the site does not meet the 300-FF-2 closure criteria, the site will be stabilized in a manner that will not unduly hinder future remediation. Stormwater runon and/or runoff issues may need to be addressed. Characterization information for the area will be generated to document the status of conditions at the conclusion of this project. S&M requirements will be established for the site. Final site stabilization will be coordinated with remedial actions. The WIDS database will be updated to reflect the condition of the site following the D4 activity. Additional data may be included in deferral documents. The EPA will be provided documentation describing the environmental conditions at the end of the D4 activity.

Should the decision be made to leave at- or below-grade structures in place, approval would be sought from the EPA and DOE. If these decisions are made during the course of D4 activities, informal concurrence from the EPA would be obtained, followed by documenting the decision through the UMM.

2.8 EQUIPMENT DECONTAMINATION

Gross equipment decontamination methods will be employed to remove loose contamination within the contamination area. Best management practices (BMPs) for gross cleaning and/or decontamination of heavy equipment and vehicles consist of using wipes and nonhazardous materials to remove loose contamination. Wet grit blasting or grinding may be used if other methods are not effective. Decontamination that is necessary to allow removal of demolition equipment from contamination areas will be accomplished using standard industry practices and BMPs. Water may be used to clean equipment in the contamination area; however, the use of large volumes of water will be minimized. Soaps, detergents, or other cleaning agents will not be added to the wash water. Pressure washing (if required) will normally be performed using cold water; however, hot water may be used if needed. Steam cleaning may be used if other decontamination methods prove to be ineffective.

One or more areas will be established within the BFA or in the onsite area, at a location that may or may not have been previously contaminated, to conduct additional or final decontamination. Spent decontamination water and associated contamination from the decontamination of equipment (e.g., trackhoe excavators, front-end loaders) will be discharged to the ground within the decontamination area. EPA and RL will agree on a case-by-case basis whether (or not) a decontamination area shall be clean closed at the end of D4 activities or whether the final cleanup can be deferred to a later remedial action. Closeout of decontamination areas will be performed in accordance with the 300 Area SAP (DOE-RL 2004a) and the 300 Area RDR/RAWP (DOE-RL 2004c) prior to closeout of the project.

Decontamination practices will be documented in the field superintendent's/work supervisor's (as appropriate) status log. Personnel responsible for equipment decontamination will be knowledgeable of the applicable requirements of this RAWP.

2.9 WASTE MANAGEMENT AND DISPOSAL

The D4 activities will be conducted within the footprint of a given facility (although staging may occur in an onsite location within the 300 Area); however, the size of the area needed to excavate soils and/or demolish structures will exceed the size of the footprint. It is important to note when waste is moved outside the BFA because when waste leaves the BFA, the substantive requirements of the *Resource Conservation and Recovery Act of 1976* (RCRA) and *Washington Administrative Code* (WAC) 173-303 are applicable to any hazardous or dangerous waste.

Waste management will include both S&M activities conducted prior to D4 as well as wastes generated during D4. All waste management activities will be performed in accordance with waste management ARARs identified in the action memoranda for the 300 Area facilities (EPA 2005, 2006b) and this RAWP. Certain materials are eligible for salvage and recycling, which is encouraged if the appropriate regulatory and project requirements are met and it is economically feasible for the project to do so. It is believed that nearly all the CERCLA waste from the removal action will be disposed at ERDF. Treatment of waste may be necessary prior to disposal at ERDF.

EPA has provided its approval for sample waste generated as part of this removal action, which is shipped to Hanford Site laboratories for analysis, to be returned to the point of origin for disposal. The approval is documented within the waste characterization SAP (DOE-RL 2005). If transuranic waste or mixed waste that cannot be sent to ERDF is encountered, storage (for eventual disposition) is allowed at the Central Waste Complex (CWC) per the approved offsite determination for this facility (EPA 2002). Any transuranic waste generated will be shipped to the Waste Isolation Pilot Plan for final disposition in accordance with this work plan and a schedule established for remedial actions, no later than September 30, 2024. Liquid waste will either be sent to the Hanford Site's Effluent Treatment Facility (ETF) or treated to meet the acceptance criteria of the receiving facility. Liquid waste sent to the ETF will be treated separately from other non-CERCLA sources, and any treatment residues that meet ERDF waste acceptance criteria (BHI 2002) may be disposed at ERDF. By approval of this work plan, EPA has determined that ETF is an acceptable facility for storage and treatment of liquid waste (with

segregated treatment residues disposed at ERDF) generated from this removal action, in accordance with 40 CFR 300.440, provided the applicable facility waste acceptance criteria are met.

2.10 DEMOBILIZATION

At the completion of D4 activities, the trailers and equipment may be demobilized or turned over to personnel conducting the soil remediation work under the 300-FF-2 work scope.

3.0 SAFETY AND HEALTH MANAGEMENT AND CONTROLS

3.1 EMERGENCY MANAGEMENT

The contractor's Emergency Management Program (including preparedness, planning, and response) contains the administrative responsibilities for compliance with the *Hanford Emergency Management Plan* (DOE-RL 2002) and all applicable DOE orders. The Washington Closure Hanford (WCH) 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 contractor-managed 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 initial protective actions, and making the proper notifications. The emergency action plans are consistent with Hanford Site emergency procedures and meet the requirements of the *Hanford Emergency Management Plan* (DOE-RL 2002).

All emergency planning and preparedness activities for these projects will be consistent with planning and preparedness actions taken by other Hanford Site contractors and similar projects. Activities will be 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 D4 of the 300 Area facilities.

3.2 SAFEGUARDS AND SECURITY

Access to the 300 Area is controlled via postings (warning signs), fencing, and security patrols. Access and keys to 300 Area facilities are controlled by the contractor. Access requirements for employees and/or visitors are defined in contractor's procedures.

3.3 STRUCTURES, SYSTEMS, AND COMPONENTS TO PROTECT FACILITY WORKERS

Controls that will be employed during the 300 Area facilities removal project include temporary confinement enclosures, glovebag containments, and personal protective equipment (PPE), as directed by the work planning documents. To control emissions, vacuums will be equipped with HEPA and/or charcoal filters, and the exhausters will be equipped with HEPA filters. Radiological work permits (RWPs) and work packages specifically addressing the hazards associated with D4 activities will also be in place. Personnel monitoring and area monitoring will be used as required to determine and document worker exposures and work conditions.

Temporary confinement enclosures will be constructed as required to provide proper airflow conditions and will be fabricated of noncombustible and fire-retardant materials. A standard

type of temporary confinement is a glovebag enclosure, which will essentially be a one-time-use protective measure used to prevent contamination release during specific operations (e.g., pipe cutting and sample collection). Glovebags are available in a variety of sizes and designs and will be ordered to tailored specifications in accordance with their intended uses. Radiological containments will be evaluated and constructed in accordance with the contractor's procedure(s).

3.4 ELECTRICAL SYSTEMS

The removal of electrical systems is typically the last isolation activity performed because power would be needed to support many of the D4 and remediation activities. However, if the existing electrical systems pose a threat to workers (e.g., underground conduit interfering with an excavation or demolition), the electrical system would be deactivated first and alternative power supplies would be used.

Alternative power will consist of either generators or a stand-alone power system such as the Mobile Integrated Temporary Utility System (MITUS).

3.5 HEALTH AND SAFETY PROGRAM

3.5.1 Worker Safety Program

The contractor's Hazardous Waste Operations Safety and Health Program was 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. The Integrated Safety Management System (ISMS) will be incorporated into all work activities. The program includes the following elements:

- Organizational structure that specifies 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
- Development of a site-specific health and safety plan when workers may be exposed to hazardous substances
- Worker training commensurate with individual job duties and work assignments
- Medical surveillance program administered to comply with the OSHA requirements (29 CFR 1910.120)
- Contractor's procedures and project/task-specific implementing plans and procedures
- Voluntary Protection Plan.

3.5.2 Site-Specific Health and Safety Plan and Activity Hazards Analysis

The *Health and Safety Plan (HASP) 300 Area Building Complex Demolition* (WCH 2005) defines the chemical, radiological, and physical hazards and specifies the controls and requirements for work activities. Building access and work activities are controlled in accordance with approved work packages, as required by established contractor procedures. The HASP addresses the health and safety hazards of each phase of site operation and includes the requirements for hazardous waste operations and/or construction activities, as specified in 29 CFR 1910.120. As part of work package development, a hazards analysis will be written to identify the hazards associated with specific tasks not already covered under a HASP. The elements included in the HASP are as follows:

- A general overview of the hazards associated with the facility or facilities and the appropriate actions necessary to mitigate the hazards
- List of employee training assignments
- List of PPE to be used by employees at the work site
- Medical surveillance requirements
- Work site control measures
- Emergency response
- Confined space entry procedures
- Spill containment program.

In addition to the HASP, a RWP will be prepared for work in areas with potential radiological hazards. The RWP extends the Radiological Protection Program (discussed in Section 3.5.3) to the specific work site or operation. All personnel assigned to the project and all work site visitors must strictly adhere to the provisions identified in the HASP and RWP.

Before work and each activity begin, a pre-job briefing will be held with the involved workers. This briefing includes reviews of the hazards that may be encountered and the associated requirements. Throughout an activity, daily briefings may also be held, as well as special briefings prior to major evolutions.

3.5.3 Radiological Controls and Protection

The Radiological Controls and Protection Program is defined in DOE-approved programs and contractor-approved procedures. The Radiological Controls and Protection Program implements the contractor's policy to reduce safety or health risks to levels that are ALARA and to ensure the adequate protection of workers. The contractor's Radiological Protection Program meets the

requirements of 10 CFR 835. Appropriate dosimetry, RWPs, PPE, ALARA planning, periodic surveys, and radiological control technical support will also be provided.

The standard contractor's controls for work in radiological areas are assessed as adequate to control project activities. These controls provide for radiological controls planning to identify the specific conditions, and the controls also govern 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 radiation control requirements for the individual tasks conducted during the projects.

Boundary air samplers, to monitor worker protection, will be stationed around the perimeter of the demolition area; these air samplers will be positioned in accordance with prevailing wind directions and can be moved as conditions warrant. Additionally, an air sampler may be mounted on the heavy equipment used for demolition. All air samples are analyzed on a daily operating basis. The demolition area will be posted as an Airborne Radioactivity Area at 1 Derived Air Concentration (DAC) or 12 DAC-h based on a 40-hour work week (.3 DAC). If analysis of samples indicates anomalous results, the work processes will be reassessed as appropriate to ensure worker protection and help prevent an offsite release.

Measures are also taken to minimize the possibility of releases to the environment. The air monitoring section of this document (see Appendix B) addresses the radionuclide inventory and activities that could cause potential release of this inventory, but not to the exclusion of 10 CFR 835 requirements.

4.0 ENVIRONMENTAL MANAGEMENT AND CONTROLS

4.1 APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

40 CFR 300.415(j) requires that ARARs be met (or waived) to the extent practicable during the course of removal actions. When requirements are identified, a determination must be made as to whether those requirements are applicable or relevant and appropriate. A requirement is applicable if the specific terms (or jurisdictional prerequisites) of the law or regulations directly address the circumstances at a site. If not applicable, a requirement may nevertheless be relevant and appropriate if (1) circumstances at the site are, based on best professional judgment, sufficiently similar to the problems or situations regulated by the requirement; and (2) the use of the requirement is well suited to the site.

ARARs include only substantive requirements of environmental standards. ARARs do not include administrative requirements, including requirements to obtain any federal, state, or local permits (40 CFR 300.400[e] and CERCLA 42 U.S.C. Section 9621(e)).

To-be-considered (TBC) information consists of nonpromulgated advisories or guidance issued by federal or state governments that are not binding legally and do not have the status of ARARs. As appropriate, TBC information should be considered in determining the removal action necessary for protection of human health and the environment. Requirements drawn from TBC information may be included in the selected alternative.

Because the alternatives would result primarily in waste generation and potential releases to the environment, the key ARARs identified for the alternatives considered include waste management standards, standards controlling releases to the environment, standards for protection of natural resources, and safety and health standards[1]. The ARARs are discussed generally in the following sections.

The ARARs for this removal action were identified in the action memoranda for the 300 Area facilities (EPA 2005, 2006b). These ARARs include waste management standards; standards controlling releases to the environment; cleanup standards; and standards for the protection of cultural, historical, and ecological resources. A discussion of how the removal action will comply with these ARARs is provided in the following subsections.

4.2 WASTE MANAGEMENT PLAN

Waste management activities performed in this RAWP shall be in accordance with the waste management ARARs identified in the action memoranda for the 300 Area facilities (EPA 2005,

[1] Safety standards are not environmental standards per se and therefore not potential ARARs. Instead, compliance with applicable safety regulations, such as OSHA requirements, is required external to the CERCLA ARAR process. However, due to the nature and importance of these standards, a discussion of the safety requirements is included in this work plan.

2006b). Waste management activities will be performed in accordance with the following ARARs:

- The *Toxic Substances Control Act of 1976* (TSCA), as implemented by 40 CFR 761 and WAC 173-303-071(3)(k) with regards to management of PCB waste
- RCRA as implemented by 40 CFR 260-268 and WAC 173-303 with regards to management of dangerous waste
- The *Hazardous Material Transportation Act of 1974* (49 U.S.C. 1801 to 1813), as implemented by 49 CFR 100-179 with regards to offsite transportation of hazardous materials.

The requirements specified by the ARARs and other applicable guidance will be addressed in the contractor's procedures or work control documents. The work control documents will address designation, waste minimization, packaging, handling, marking and labeling, storage, transportation, and treatment as they specifically apply to waste streams associated with the 300 Area facilities. Wastes will be generated from both S&M activities conducted prior to D4 as well as from D4 activities. The expected waste streams include, but are not limited to, the following:

- Solid waste (nonradioactive, nondangerous waste)
- Low-level radioactive waste
- Hazardous and dangerous wastes
- Mixed waste (waste that is both low-level radioactive waste and hazardous waste)
- Asbestos waste
- PCB wastes
- Transuranic waste
- Refrigerants (ozone-depleting substances).

4.2.1 Waste Characterization and Designation

The waste characterization requirements were developed as part of the data quality objectives process (BHI 2004). Waste generated will be characterized in accordance with the contractor's procedures, the requirements of the receiving facility, and an approved waste characterization SAP. Characterization will be conducted through process knowledge, sampling/analysis, and radiological and industrial hygiene surveys.

A team of select personnel will inspect the portions of the facilities as the removal action/maintenance occurs. The inspection will identify suspect chemical/hazardous and radiological materials in order to identify the waste streams for project planning.

Radiological surveys will be performed using hand-held and/or large-area detection equipment that may be augmented with data logging equipment for record keeping during surveys.

Additional advanced characterization equipment (e.g., AIL GammaCam™ M31 gamma-ray/video imaging system, for locating hot spots, or a Canberra In Situ Object Counting System gamma-ray spectrometric system) may be deployed for the rapid, economical, and accurate characterization of materials for radiological contamination.

The data generated as part of waste characterization will be used to develop the following information (as applicable):

- Contaminant identification
- Contaminant concentrations
- Waste treatment requirements
- Waste packaging and disposal requirements
- Worker health and safety conditions
- Decontamination requirements
- Operational precautions
- Waste acceptance documents
- Transportation documents.

Additional characterization may be required based on disposal facility acceptance criteria.

4.2.2 Waste Minimization

Waste minimization practices will be followed to the extent technically and economically feasible during all phases of waste management. Waste materials will be recycled, reused, or reclaimed when feasible. To be suitable for recycling or reuse, the materials in question must (1) be needed or in demand, (2) be able to meet the DOE and Hanford Site free release criteria, and (3) not result in an excessive cost to the government. The decision of whether or not the materials meet the criteria will be made by contractor management with input from technical personnel.

Introduction of clean materials into a contamination area and contamination of clean materials will be minimized to the extent practicable. During all phases of waste management, emphasis will be placed on source reduction to eliminate or minimize the volume of wastes that will be generated.

All materials released offsite for disposal/recycle must be certified free of radiological contamination in accordance with the contractor's material release procedures. Waste materials with no or de minimis levels of 300 Area CERCLA hazardous substance are not considered CERCLA waste and are therefore not subject to the 40 CFR 300.440 offsite acceptability determination.

™ GammaCam is a trademark of AIL Systems, Inc., Deer Park, New York.

4.2.3 Waste Handling, Storage, and Packaging

CERCLA Section 104(d)(4) states that where two or more noncontiguous facilities are reasonably related on the basis of geography or on the basis of the threat or potential threat to the public health or welfare or the environment, these facilities may be treated as one for the purposes of this section. The preamble to the "National Oil and Hazardous Substances Pollution Contingency Plan" (40 CFR 300) clarifies the stated EPA interpretation that when noncontiguous facilities are reasonably close to one another and wastes at these sites are compatible for a selected treatment or disposal approach, CERCLA Section 104(d)(4) allows the lead agency to treat these related facilities as one site for response purposes and, therefore, allows the lead agency to manage waste transferred between such noncontiguous facilities without obtaining a permit. For CERCLA wastes that are transferred to a facility not considered "onsite," 40 CFR 300.440 requires an offsite acceptability determination from the EPA for the receiving facility. With respect to this removal action, EPA has issued determinations for the following locations/waste streams:

- ERDF is considered "onsite" for management/disposal of waste from removal actions addressed in the action memoranda (EPA 2005, 2006b)

- CWC, in accordance with the approved offsite acceptability determination (EPA 2002) for transuranic and mixed waste (including radioactive PCB waste) that cannot be sent to ERDF

- Pacific EcoSolutions (PECOS), in accordance with the approved offsite acceptability determination (EPA 2006a) for waste requiring treatment consistent with Section 4.2.

In addition to these previously established determinations, a noncontiguous onsite approval is appropriate for the Radiological Counting Facility (RCF) in the 300 Area to receive and analyze CERCLA samples associated with 100 Area and 300 Area CERCLA actions, including ERDF. Activities in the RCF (comprised of MO-265 and MO-423) involve the preparation and counting of radiological samples (e.g., soil, smears) from Hanford Site CERCLA projects. This facility receives and processes only samples associated with Hanford Site CERCLA response actions. Air discharge standards associated with operation of the RCF are presented in the Air Monitoring Section (Appendix B). Approval of this RAWP constitutes EPA approval of the RCF as a noncontiguous onsite facility under CERCLA Section 104(d)(4) for receipt and processing of samples associated with Hanford Site CERCLA actions in the 100 and 300 Areas and ERDF.

4.2.3.1 Building Footprint Area and Onsite Area. The BFA for this removal action is defined to include the individual facility footprint and the surrounding area needed to support the excavation of soils and/or demolition of the structure. The CERCLA onsite area is defined as all other areas included in this removal action (see Figure 1-2), and includes the ERDF container queue located directly north of the 300 Area boundary fence, which is shared between 300-FF-2 remedial actions and the removal actions performed under this work plan.

Any waste management locations outside of the BFA and within the onsite area must meet the substantive requirements of all ARARs. For waste management inside the BFA, safe and

effective management practices shall be established to ensure protection of human health and the environment. Substantive provisions of waste management ARARs may be used, when appropriate, within the BFA in this regard. Standards for managing waste within and outside the BFA shall be documented in the contractor's work control documents.

For the 300 Area facilities addressed under this action, the onsite area is defined as the main industrial portion of the 300 Area (see Figure 1-2), and includes the ERDF container queue located directly north of the 300 Area boundary fence, which is shared between 300-FF-2 remedial actions and the removal actions performed under this work plan. Within the onsite area only the substantive requirements of the ARARs apply.

4.2.3.2 Staging Piles. As an alternative to storage within the BFA, waste that is not immediately transported to ERDF or other EPA-approved disposal facility may be stored in staging piles. Staging piles used for the onsite management of RCRA hazardous or dangerous waste must be operated in accordance with the standards and design criteria prescribed in 40 CFR 264.554, paragraphs (d) through (k). General requirements for staging piles include the following:

- Staging piles are to be used only as part of this removal action for temporary storage at a facility and must be located within the contiguous property where the waste to be managed in the staging piles is oriented.

- The staging pile must be designed to prevent or minimize releases of hazardous wastes and hazardous constituents into the environment and minimize or adequately control cross-media transfer. To protect human health and the environment, this can include installation of berms, dust control practices, or using plastic liners or covers, as appropriate.

- The staging pile must not operate more than 2 years (measured from the first time remediation waste is placed in the pile), except when EPA grants an operating term extension. A record of the date when remediation waste was first placed in the staging pile must be maintained until final closeout of the site is achieved.

- Ignitable or reactive waste must not be placed in a staging pile unless it has been treated or mixed before being place in the pile so that the waste no longer meets the definition of ignitable or reactive waste, or the waste is managed in order to protect it from exposure to any material or condition that may cause it to ignite.

- Incompatible wastes may not be placed in the same staging pile, unless the requirements in 40 CFR 264.17(b) have been met. The incompatible materials must be separated or the waste may not be piled on the same base where incompatible wastes or materials were previously piled, unless the base has been decontaminated sufficiently to comply with 40 CFR 264.17(b).

Approval of this RAWP by EPA constitutes general authorization to operate staging piles during the execution of this removal action. Specific staging pile locations will be identified in project drawings and approved by EPA in the UMMs. Field operation of staging piles within the

referenced regulatory provisions will be accomplished compliant with the requirements described above.

Once the materials have been removed, to close out the staging pile, samples of the residual soil will be collected in accordance with the 300 Area SAP (DOE-RL 2004a). In cases where staging piles for industrial waste sites are located in an uncontaminated area, the sample results should be compared against the soil cleanup levels identified in the 300 Area RDR/RAWP (DOE-RL 2004c). If the sample results exceed the cleanup levels, the area shall be further remediated or deferred to the 300-FF-2 work following lead regulator concurrence.

4.2.3.3 Common Waste Handling, Storage, and Packaging Requirements. The requirements in the following paragraphs are common to both the BFA and the onsite area.

Nonbulk containers or packages of waste requiring tracking (e.g., hazardous, mixed) will be assigned a package identification number by a waste transportation specialist. Containers in poor condition will have the contents transferred to a container in good condition. Portable fire extinguishers and spill-control equipment will be available.

Bulk waste may be placed in bulk roll-off containers for ERDF disposal. The containers will be covered. Lightweight material (e.g., paper and plastic) will be bagged, if appropriate, prior to placement in the container to eliminate the potential of the materials blowing out of the container.

All containers, packages, or items requiring storage in a radioactive materials area will be marked/labeled with radioactive material markings. Storage of all containers (except for containers used to collect fluorescent light tubes) will be closed and secured when not being filled or emptied. Containers will be appropriately labeled and/or marked in accordance with all applicable requirements. Containers will be stored to prevent the accumulation of water.

4.2.3.4 Specific Waste Handling, Storage, and Packaging Requirements. The following specific requirements apply only outside the BFA, either in the onsite area or at an offsite facility for the variety of wastes that may be encountered during S&M and the D4 removal actions.

Solid Waste. Nondangerous solid waste will be managed in accordance with WAC 173-350, with an emphasis on recycling. Management under WAC 173-303 is addressed in the Hazardous/Dangerous Waste subsection. Recyclable wastes (i.e., lead, aerosols, fluorescent light tubes) should be managed in accordance with the Management Plan for Recyclable Materials administered by the Hanford Site's CCRC. All materials released offsite for disposal, recycle, or salvage must be certified as free of radioactive contamination in accordance with the contractor's material release procedures. Additionally, waste containing CERCLA hazardous substances (unless present in de minimis concentrations) may only be released to an offsite facility that has received approval from EPA in accordance with 40 CFR 300.440.

Low-Level Radioactive Waste. Liquids will be collected in appropriate containers. Dependant upon volume and characteristics (e.g., pH, oils, waste codes), containers will vary from drums to bulk holding tanks.

Demolition debris will be sized in accordance with the waste acceptance criteria of the disposal facility. Radioactive solids will be placed in containers for ERDF disposal.

Hazardous/Dangerous Waste. Hazardous/dangerous waste managed outside of the BFA will be packaged and stored to prevent dispersion and public exposures as required by WAC 173-303. Waste-specific storage and packaging requirements will be described in the contractor's work control documents, as appropriate, to address WAC and U.S. Department of Transportation (DOT) requirements.

Mixed Waste. Mixed waste will be managed in compliance with the substantive requirements for both hazardous/dangerous wastes and radioactive waste. Storage is allowed at the Hanford Site's CWC under the offsite acceptability determination issued by EPA (EPA 2002).

Asbestos. Multiple forms of asbestos are expected to be encountered. Removal and disposal of asbestos and ACM are regulated under the *Clean Air Act Amendments of 1977* (implemented via 40 CFR 61, Subpart M) and under health and safety regulations promulgated pursuant to the OSHA regulations (implemented via 29 CFR 1926.1101, 29 CFR 1910.1001 and WAC 296-62 Part I). The 40 CFR 61 requirements applicable to this removal action are contained in 40 CFR 61.145(c) and 40 CFR 61.150. These regulations establish removal requirements based on quantity present and handling requirements. These regulations also specify handling, packaging, and disposal requirements for regulated sources having the potential to emit asbestos. There could be instances where the facility is structurally unsound and in danger of imminent collapse. In these cases only the requirements of 40 CFR 61.145(c)(4) through (c)(9) would apply, in accordance with 40 CFR 61.145(a)(3). The substantive requirements of the *Clean Air Act Amendments of 1977* standards are applicable to the abatement of asbestos and ACMs. Both the substantive and administrative requirements of the OSHA standards are applicable to the removal of asbestos and ACM. Asbestos removal and waste management practices will be further addressed in work-specific documents.

All friable and most nonfriable ACMs and presumed ACMs will be removed prior to demolition of the area. ACM typically consists of insulation for piping, floor tiles, and cement asbestos board. Insulation on piping and surfacing materials (e.g., sprayed on fire stop) will be removed as Class I asbestos work, and nearly all other ACM in the facilities 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 40 CFR 61.145(c), 40 CFR 61.150, 29 CFR 1926.1101, and the contractor's procedures for ACM removal.

If alternate emission control and waste treatment methods for friable asbestos are developed or if nonfriable asbestos is to be left in place during demolition, a certified industrial hygienist or licensed professional engineer who is also qualified as a certified *Asbestos Hazard Emergency Response Act of 1986* (40 CFR 763) project designer shall evaluate the work area, projected work practices, and engineering controls and shall certify in writing that the planned control

method is adequate and meets the requirements of 40 CFR 61.145(c), 40 CFR 61.150, and 29 CFR 1926.1101.

Ozone-depleting substances. 40 CFR 82, Subpart F establishes requirements for the recovery, recycling, and reclamation of ozone depleting substances from refrigeration equipment that may be present within facilities addressed by this removal action. The substantive requirements of Subpart F will apply to actions being taken within the onsite area. The substantive and administrative requirements are applicable when performing recovery, recycling, reclamation, or disposal actions at offsite facilities. Wastes containing CERCLA hazardous substances (unless present in de minimis concentrations) may only be released to an offsite facility that has received approval from EPA in accordance with 40 CFR 300.440.

PCBs. PCBs are identified as potential contaminants in the 300 Area facilities, and PCB-contaminated waste will likely be generated. The various waste matrixes that may contain PCBs include PCB oils, PCB remediation waste, and PCB-contaminated items.

The PCB bulk product waste or remediation waste will be managed within the facility of origination or a centralized area within the CERCLA onsite area (following approval of a centralized area by the EPA). Outside the facility, containers will be marked with a M_L marking (CAUTION – CONTAINS PCBs) as required by the TSCA.

Areas outside the facility containing packaged PCBs will be marked with signs posting "DANGER-UNAUTHORIZED PERSONNEL KEEP OUT" at each entrance. The M_L marking will also be posted in accordance with 40 CFR 761.

Staging of PCB waste at the 300 Area facilities must be done in a manner that satisfies substantive provisions of 40 CFR 761.65(b). The use of an "overpack" container is acceptable for outside storage. Although the "overpack" containers may not represent the typical concept of a "facility," they satisfy the substantive requirements for roof, walls, nonporous floors, and spill protection.

Transuranic Waste. If encountered, transuranic waste will be managed in accordance with the contractor's procedure. The CWC or the Waste Receiving and Processing facility will be used for interim storage of any transuranic waste encountered. Storage is allowed at the Hanford Site's CWC under the offsite acceptability determination issued by EPA (EPA 2002). An offsite acceptability determination from EPA will be required under 40 CFR 300.440 prior to sending any waste to Waste Receiving and Processing facility.

Liquid Waste. All liquid waste treated or disposed of at a location other than ERDF must first be approved by the EPA. This does not include liquid waste that is free or contains de minimis levels of CERCLA hazardous substances. Possible disposal locations include the ETF, or a facility outside of the Hanford Site.

Radiological Counting Facility Sample Wastes. The RCF (MO-432 and MO-265) will continue to process samples under CERCLA authority for an extended period of time prior to being subject to D4. The primary waste materials generated from radiological counting at the

RCF includes samples, sample residues, and secondary waste (e.g., personnel protective equipment such as gloves and wipes). Laboratory calibration standard wastes or inter-laboratory comparison sample wastes may be generated. Some waste may be generated from maintenance or calibration of sample equipment.

Sample counting wastes, including any associated secondary waste, will routinely be sent back to the project of origin for disposition. Alternatively, sample counting associated wastes may be sent directly to ERDF for disposal if the waste meets the ERDF waste acceptance criteria.

Other RCF sample related waste, such as inter-laboratory comparison samples and maintenance/calibration waste may also be sent to ERDF for disposal if it contains CERCLA hazardous substances (including potentially radiologically contaminated wastes) and meets the waste acceptance criteria. Otherwise, the wastes will be handled as solid waste as described above. Some oils associated with the equipment may be recycled as appropriate.

For wastes containing CERCLA hazardous substances that must be sent offsite for disposal, EPA approval of the offsite facility would be sought in accordance with 40 CFR 300.440.

4.2.4 Waste Treatment

Treatment of waste streams may be necessary to provide for safe transport or storage. Treatment may also be required prior to disposal or to meet the appropriate waste acceptance criteria. The type of treatment for RCRA hazardous or dangerous waste and the location of treatment will be determined by DOE and the EPA on a case-by-case basis in accordance with the substantive requirements of RCRA and WAC 173-303. Upon EPA approval, solidification, encapsulation, neutralization, and size reduction/compaction may be employed to treat various wastes. For wastes requiring treatment, the techniques will be documented in a treatment plan approved by the EPA.

Several mixed waste streams have already been reviewed and approved for treatment and disposal at ERDF. These mixed waste streams are as follows:

- Radioactively contaminated elemental mercury may be amalgamated within the geographical area of the removal action.
- Radioactively contaminated elemental lead or hazardous/dangerous waste debris may be macroencapsulated at ERDF.
- Aqueous solutions may be treated in accordance with the approved waste treatment plan and sent to ERDF.

Stabilization of soils contaminated with lead or other heavy metals may be treated at ERDF, provided the soils meet the ERDF waste acceptance criteria.

The above-listed waste streams will be treated as they are encountered, and the contractor will notify the DOE and regulatory agencies via e-mail. If waste is encountered for which there is no

available treatment, DOE will meet with the regulatory agencies to determine the appropriate action for the waste stream.

4.2.5 Waste Transportation and Shipping

All shipments will be made in accordance with DOT regulations, 49 CFR 171-179, applicable sections of WAC 173-303, and the contractor's waste transportation procedures.

The removal action is expected to require offsite transportation of wastes and potentially contaminated samples. The offsite handling and shipping of wastes and potentially contaminated samples will be in accordance with the *Hazardous Materials Transportation Act of 1974*, as implemented through 49 CFR 100 through 179.

4.2.6 Disposal

All waste resulting from this action will be evaluated to determine if the waste meets ERDF waste acceptance criteria for disposal. CERCLA waste disposed of at any disposal facility other than ERDF requires EPA approval in accordance with 40 CFR 300.440. Any PCB waste that does not meet ERDF waste acceptance criteria (BHI 2002) may be transported for disposal to a TSCA offsite disposal facility following the receipt of an offsite acceptability determination by the EPA.

Solid waste may be sent for offsite disposal at a municipal/industrial landfill. Disposal of materials containing no or de minimis levels of CERCLA hazardous substances would not require an offsite acceptability determination per 40 CFR 300.440.

The *Hanford Site Solid Waste Acceptance Criteria* (FH 2005) identifies criteria for acceptance of waste at the CWC. The *Liquid Waste Processing Facilities Waste Acceptance Criteria* (FH 2004) identifies criteria for acceptance of waste at the ETF. The *Environmental Restoration Disposal Facility Waste Acceptance Criteria* (BHI 2002) and ERDF supplemental waste acceptance criteria (BHI 2003) provide the waste acceptance criteria for ERDF.

4.2.7 Recycling

Some of the waste from the D4 of the 300 Area facilities may contain materials that could be beneficially recycled. As applicable, these materials would be managed/recycled in accordance with the contractor excess procedures or the CCRC management plan. Recycling of materials from D4 activities that contain CERCLA hazardous substances will require an offsite acceptability determination from EPA in accordance with 40 CFR 300.440.

Recycling of materials (e.g., noncontaminated wood, steel, masonry brick) containing no or de minimis levels of CERCLA hazardous substances would not require an offsite acceptability determination per 40 CFR 300.440. Recycling of items generated as a result of routine operational or maintenance activities (e.g., replacement of burned-out light bulbs or discharged batteries from functioning equipment) would also not require an offsite acceptability determination. Aqueous waste may be reused for dust suppression with EPA approval.

4.3 STANDARDS CONTROLLING RELEASES TO THE ENVIRONMENT

4.3.1 Standards Controlling Air Emissions to the Environment

The proposed removal action alternatives would have the potential to generate both radioactive and nonradioactive airborne emissions.

The federal *Clean Air Act* and the "Washington Clean Air Act" (Revised Code of Washington [RCW] 70.94) regulate both criteria/toxic and radioactive airborne emissions. Implementing regulations found in 40 CFR 61.92 set limits for emissions of radionuclides from the entire facility to ambient air. Radionuclide emissions cannot exceed those amounts that would cause any member of the public to receive an effective dose equivalent of 10 mrem/yr. Compliance with this standard is determined on a Hanford Site-wide basis and is documented in the annual radionuclide air emissions report for the Hanford Site.

Radioactive air emissions are to be controlled through the use of best available radionuclide control technology (WAC 246-247-040[3]) or ALARA control technology (WAC 246-247-040[4]). Emissions of radionuclides are to be measured for point sources (40 CFR 61.93) and for nonpoint sources (WAC 246-247-075[8]). Measurement techniques may include, but are not limited to, sampling, calculation, smears, or other reasonable method for identifying emissions as determined by the EPA. The substantive requirements of these regulations are applicable because fugitive, diffuse, and point source emissions of radionuclides to the ambient air may result from activities performed during the removal action. Appendix B describes how the substantive portions of these requirements are to be implemented for this removal action.

WAC 173-400 and 173-460 establish requirements for emissions of criteria/toxic air pollutants. The primary source of emissions resulting from this removal action would be fugitive particulate matter. Requirements applicable to this removal action are contained in WAC 173-400-040(3) and (8). These regulations require that reasonable precautions be taken to (1) prevent the release of air contaminants associated with fugitive emissions resulting from materials handling, demolition, or other operations; and (2) prevent fugitive dust from becoming airborne from fugitive sources of emissions.

WAC 173-460 may be applicable to removal actions that require the use of a treatment technology that emits toxic air pollutants. No treatment requirements have been identified at this time that would be required to meet the substantive applicable requirements of WAC 173-460. Treatment of some waste encountered during the removal action may be required to meet ERDF waste acceptance criteria. In most cases, the type of treatment anticipated would consist of solidification/stabilization techniques such as macroencapsulation or grouting, and WAC 173-460 would not be considered an ARAR. If more aggressive treatment is required that would result in the emission of toxic air pollutants, the substantive requirements of WAC 173-460-030, WAC 173-460-060, and WAC 173-460-070 would be evaluated to determine if the requirements are applicable.

APPENDIX B

AIR MONITORING SECTION

B.1 INTRODUCTION

Deactivation, decontamination, decommissioning, and demolition (D4) of certain facilities located in the main industrial complex of the 300 Area (Table 1-1 of this Removal Action Work Plan [RAWP]), have the potential to emit (PTE) radionuclides. This activity is being conducted as part of a non-time-critical *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) removal action under an action memoranda (EPA 2005, 2006).

Implementing best available radionuclide control technology (BARCT) for new construction or significant modifications, or as low as reasonably available control technology (ALARACT) for existing emission units or nonsignificant modifications, pursuant to *Washington Administrative Code* (WAC) 246-247-040(3) and (4), and 40 CFR 61.12(c) have been identified as applicable requirements. Air monitoring (40 *Code of Federal* Regulations [CFR] 61.93 (appropriate sections) and WAC 246-247-075[8]) has also been identified as a requirement that is applicable for the removal action. This plan describes how the substantive portions of these requirements will be implemented for this removal action.

Updates to this air monitoring plan may be accomplished through the unit manager's meeting (UMM) minutes. When the RAWP is updated, changes to this air monitoring plan will be incorporated into the revised RAWP.

Additional standards controlling air emissions to the environment are addressed in Section 4.3.1. of this RAWP.

B.1.1 Planned Activities

The removal action work scope includes conducting routine surveillances, sampling to characterize the nature and extent of contamination; deactivating, decontaminating, and demolishing facilities; excavating contaminated soil; treating waste (e.g., solidification) as necessary to meet waste acceptance criteria; and storing, handling, loading, and transporting waste for disposal. The facilities within the scope of this plan are identified in Table 1-1 (of the RAWP).

Routine surveillances are necessary on buildings awaiting deactivation, decontamination and demolition to ensure conditions within the facility have not changed to the point where the threat of a release has increased. The purpose of deactivation is to identify and remove barriers (e.g., physical, chemical, and radiological) to demolition of each facility. Hazardous substances and contaminated equipment and materials are removed and disposed. Process systems and utility systems are removed and drains plugged. Piping is drained and residual materials are removed from tanks, lubricant reservoirs, refrigerant systems, etc.

Decontamination activities are conducted to remove loose accessible contamination from components, equipment, structures, etc. Decontamination activities also include stabilizing or "fixing" contaminants in place so that contaminants are attached to the materials and would be less likely to be disturbed during subsequent demolition activities. Decontamination methods may include, but are not limited to, wiping; decontamination solutions; applying paint, asphalt, or other fixatives; scabbling; abrasive blasting; and vacuuming.

Demolition generally means large-scale facility destruction using heavy equipment. Demolition methods will be selected based on the structural elements to be demolished, remaining contamination, location, and integrity of the structure. Standard equipment, such as the following, will be utilized:

- Excavator with a hoe-ram
- Hydraulic shears with steel shear jaws
- Concrete pulverizer jaws or breaker jaws
- Crane with wrecking ball
- Pneumatic hammers
- Crane to remove and size reduce materials
- Mechanical/power saws
- Cutting torch.

It is assumed that a portion of concrete demolition work will make use of a high-efficiency particulate air (HEPA)-filtered vacuum cleaner. Portable ventilation filter units and gloveboxes may also be used. Standard construction equipment will be used for excavation, loading, and hauling. If extensive soil contamination is found in adjacent and underlying soils, work will be deferred to the Field Remediation Closure Project, with approval from the U.S. Department of Energy, Richland Operations Office and the U.S. Environmental Protection Agency (EPA).

Equipment (e.g., haul trucks, containers) used in D4 activities will also be decontaminated, as necessary. Conventional methods (e.g., brushing or wiping, water wash, or HEPA-filtered vacuum cleaners) will be used. More aggressive equipment decontamination methods (e.g., grinding or wet grit blasting) may be used for equipment decontamination if other methods fail.

B.2 AIRBORNE SOURCE INFORMATION

The potential exists for radioactive airborne emissions resulting from the D4 activities. The characterization, surveillance and D4 activities will be conducted over several years. Prior to the D4 of a facility, emissions estimates will be provided to the EPA for review and approval. Approval will be received from the EPA prior to the facilities being deactivated/demolished.

In addition, several of the facilities identified within this RAWP are believed to have little or no radiological contamination based on historical data reviews. The PTE from facilities with no appreciable radiological contamination is negligible. Therefore, emission estimates for these facilities will only be provided to EPA for review and approval if appreciable levels of

contamination are discovered. The facilities which are currently believed to contain little or no radiological contamination are shown in Table B-1. Facilities may be added to Table B-1 as additional information becomes available. Additions to Table B-1 will be documented in UMM minutes. Facility descriptions are provided in Appendix A of this RAWP.

There is also a small potential for radioactive airborne emissions resulting from surveillance and characterization activities. The PTE for these types of activities is expected to be insignificant compared to that of the D4 activities. Because potential emissions are anticipated to be inconsequential, no estimate will be made for potential emissions from surveillance and characterization activities.

Emission estimates will be developed based on inventory assumptions for the facilities. The PTE will be determined by applying a release fraction is of 1E-03 for particulate and liquids for most of the pre-demolition and demolition activities. A release fraction of 1 will be assumed for gases (if any are present), activities involving torch cutting, the use of HEPA-filtered vacuums and HEPA-filtered decontamination tools (e.g., scabblers, scarifiers). It is anticipated that no more than 1% of the total inventory will be subject to techniques that assume a release fraction of 1. The CAP-88-PC, Version 2.0, model will be used to determine the total effective dose equivalent (or annual unabated offsite dose) to the maximally exposed individual.

When D4 activities will include the use of the large portable ventilation units (e.g., ~20,000 ft^3/min), the emission estimate documentation will include a 40 CFR 61 Appendix D calculation, to supplement the monitoring information discussed in Section B.4. For those facilities that are estimated to be potential major sources (>0.1 mrem/yr) of radionuclide air emissions, further evaluation of appropriate monitoring requirements, for the ventilation units, will be conducted. The additional monitoring requirements will be documented in UMM minutes.

The emission estimates will be based on the primary isotopes (e.g., uranium isotopes) that are anticipated to be encountered and that make up most of the potential offsite dose. It is recognized that other isotopes may be present in very limited quantities that would not impact the emission estimates. Characterization data will be used to verify the inventory assumptions for the facilities and the emission estimates will be revised if the inventory is not within the assumptions used for the PTE calculations.

Any residual contamination in soils removed during D4 of structures will be assumed to be accounted for in the inventory for that structure. If extensive soil contamination is found, remediation will be accomplished in accordance with 300-FF-2 remedial action documents.

Table B-1. 300 Area Facilities Believed to Contain Little or No Radiological Contamination.

305BA	310T1A	352E	3721
306EBA	310T2	352F	3728
332	310T3	382	3760
342	310T7A	382B	3763
342A	310T7B	382-BA	3766
342B	310V	382C	3790
342C	312	382D	3802A
351A	315	3128	3906
351B	315B	3220	3906B
3503A	315C	3503B	3906C
3508T2	315D	3506A	MO-036
3706BA	318-BA	3506B	MO-059
3707D	320-BA	3506C	MO-226
3707H	323-BA	3507	MO-258
3711	324-BA	3508-T	MO-262
3713	325-BA	3605	MO-263
3717B	325E	3614A	MO-0265
3719	326-BA	3621BC	MO-270
3720BA	327-BA	3621D	MO-271
3722 (includes 3226 and	328	3701D	MO-274
3227)	328A	3701U	MO-275
3731	328-BA	3709A	MO-391
3731A	331-BA	3709B	MO-423
3746D	337	3718	MO-443
3225	337B	3718A	MO-741
MO-052	337-BA	3718B	MO-744
334A.	338	3718C	MO-745
310	339A	3718N	MO-905
310S	350B	3718P	MO-XXX
310T1	350C	3718S	

B.3 BEST AVAILABLE RADIONUCLIDE CONTROL TECHNOLOGY/AS LOW AS REASONABLY ACHIEVABLE CONTROL TECHNOLOGY

The surveillance and D4 activities have the potential to release radioactive emissions to the atmosphere. Implementing BARCT/ALARACT for these radioactive emissions has been identified as an applicable or relevant and appropriate requirement.

The use of wiping or applying fixatives is an ALARA control that has been accepted as BARCT/ALARACT for fugitive particulate radionuclide air emissions, particularly when the potential offsite dose is low. Glovebags may also be used to reduce potential emissions. For vacuuming and the use of portable ventilation units, HEPA filters are used to collect generated dust. The use of HEPA filters has been generally accepted as BARCT/ALARACT. Because structure demolition may be a source of radioactive fugitive emissions, dust suppressants (e.g., water and fixatives) will be used and are considered BARCT/ALARACT for demolition.

When using water, quantities used will be minimized to prevent water accumulation, puddles, and runoff within the area where the water is being used.

The following provides additional details concerning the implementation of the controls described above.

- Water will be applied during demolition, excavation, container loading, and backfilling processes to minimize airborne releases.

- Fixatives will be applied to any contaminated debris or soils that are being stockpiled, that have not been wrapped.

- If a soil fixative has already been applied and the soil and/or debris will remain undisturbed, further uses of fixatives will not be reapplied, unless needed. The fixatives or other controls will not be applied when the contaminated soils and/or debris are frozen or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

- Dust control is to be applied at the end of the work shift, and verified in the field superintendent's status log.

- Haul trucks transporting bulk materials, with removable contaminants, will be covered to contain the materials while in transit to the Environmental Restoration Disposal Facility.

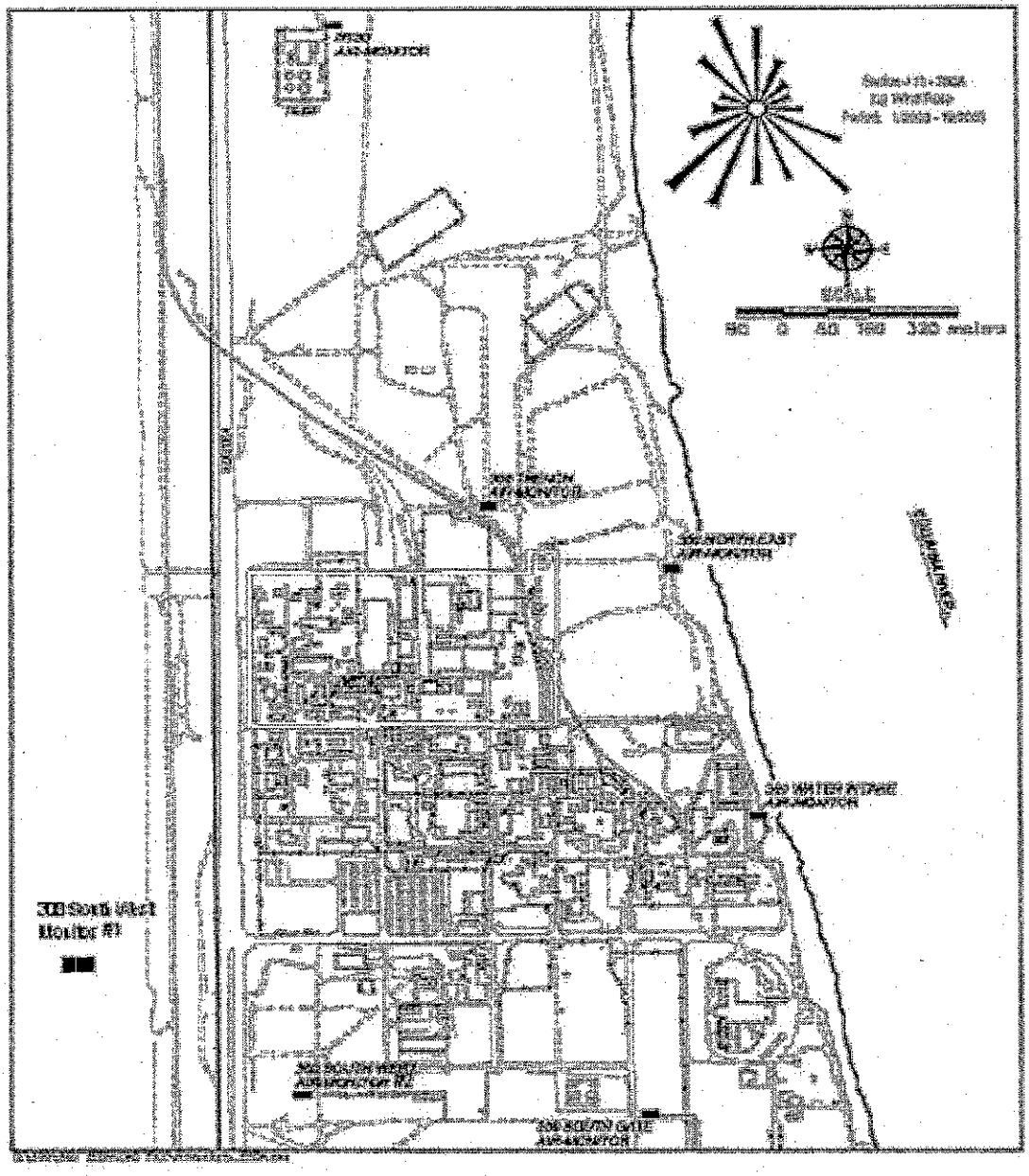
B.4 MONITORING

Air monitoring stations 300 South West #1 (N557), 300 Trench, 300 NE, South Gate, and 300 Water Intake will be used to monitor radionuclide air emissions from the surveillance and D4 activities discussed in this plan. The locations of the air monitoring stations are shown in Figure B-1.

The operation of these air monitors will follow the protocol for the Environmental Surveillance Program or the Near-Facility Monitoring Program, as appropriate. The air samples will be changed every 2 weeks and analyzed for total alpha and total beta. The samples are composited quarterly and analyzed for gamma energy-emitting radionuclides, strontium-90, plutonium isotopes, and uranium isotopes. EPA may choose to take split samples of composite air samples.

Air monitoring station N130 will also be utilized during the D4 activities at the Treated Effluent Disposal Facilities (including 310, 310S, 310T1, 310T1A, 310T2, 310T3, 310T1A, 310T7B, and 310V).

Figure B-1. Scope Boundary and 300 Area Air Monitor Locations.



The data results for these air monitors are entered into the Hanford Environmental Information System and/or the Automated Bar Coding of Air Samplers at Hanford database. The data collected from air monitoring will be included in the annual report that is prepared for the Hanford Site in compliance with 40 CFR 61 Subpart H and WAC 246-247 and that is used to demonstrate compliance with 40 CFR 61.92. EPA may request additional or alternate air monitors as new buildings are deactivated and/or demolished. Existing stack monitoring systems of operating facilities may also be utilized if appropriate. See discussion of operating emission point below in Section B.5

B.5 OPERATION OF ACTIVE EMISSION POINTS

Some facilities (see Section 4.3.1) within the scope of the removal action are currently operating under terms and conditions documented in Washington State Department of Health Approval Orders and the Hanford Site Operating Permit. The substantive regulatory requirements associated with these facilities may, over time, be incorporated into this appendix, if the emission unit is not shut down prior to transition to CERCLA. These terms and conditions or any subsequent approvals will be considered obsolete upon EPA approval of a revision to this appendix. Changes ,may also be documented in the UMM minutes.

In the event that the emission point operations continue after initiation of CERCLA activities at a specific facility, the existing emission controls and air monitoring systems on the stacks may be utilized as appropriate. Each stationary source shall be maintained and operated, including associated equipment for air pollution control, in a manner consistent with good air pollution control practice for minimizing emissions pursuant to WAC 246-247-040(3) and 40 CFR 61.12(c). For stacks that are operated during the CERCLA action, the associated records will be maintained for a period of 1 year at the 300 Area or other nearby location, and/or in an electronic format such that the records are readily retrievable. When it is determined that the emission control system is no longer needed, the emission control and monitoring system and air monitoring and the associated stack will be shut down. This RAWP will become the air emissions approval for the facility upon implementation of the CERCLA action at the specific facility.

The Radiological Counting Facility (RCF) is expected to operate for purposes of analyzing CERCLA samples throughout the course of the 300 Area D4 activities. Air operating requirements for this facility are presented in Section B.5.1.

B.5.1 Air Operating Requirements for the Radiological Counting Facility

The RCF, composed of MO-265 and MO-423, is a minor source for potential diffuse and fugitive radionuclide emissions resulting from the preparation and counting of radiological samples (e.g., soil, smears) from CERCLA projects, both within the 300 Area and the 100 Areas and ERDF. Since this facility receives only samples associated with CERCLA response actions it will continue to operate under CERCLA authority. Radiological material in the RCF is controlled through the use of standard radiological control procedures. Sample activities at the RCF are conducted under a radiological work permit. Samples may be opened within a

contamination area, if warranted by the radiation levels, which is typically established just prior to opening the sample. After sample handling activities (e.g., sample preparation or counting) are completed, the area is surveyed and the contamination area is removed. Potential diffuse and fugitive emissions from the RCF are monitored utilizing the existing air monitoring network described in Section B.4.

B.6 REFERENCES

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, as amended.

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

EPA, 2005, *Action Memorandum #1 for the 300 Area Facilities*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

EPA, 2006, *Action Memorandum #3 for the 300 Area Facilities*, U.S. Environmental Protection Agency, Region 10, Seattle, Washington.

WAC 246-247, "Radiation Protection – Air Emissions," *Washington Administrative Code*, as amended.

339A Computer Facility. The 339 Building houses the main hub for the Hanford local area network.

340 Waste Neutralization Facility Structure. The 340 Building provides for temporary storage, neutralization, and shipment of radioactive waste. The building is constructed of corrugated steel including an operating gallery, control panels, caustic tank, restroom facilities, and truck loadout area. Adjacent to the 340 Building is a concrete pit for two 56,781-L (15,000-gal) neutralization tanks. The pit is covered by removable concrete blocks. The walls and roof are of corrugated steel.

340A Waste Retention Building. The 340A Building provides for temporary storage, neutralization and shipment of radioactive waste. The building is a steel frame structure with a concrete floor 1 m (3 ft) below-grade and concrete walls to grade. The above-grade walls and roof are steel. The building contains six 30,283-L (8,000-gal) stainless steel waste storage tanks.

340B Waste Loadout Building. The 340B Building provides a railroad tank car loadout facility for temporary storage, neutralization and shipment of radioactive waste. The area can accommodate two 75,708-L (20,000-gal) tank cars. The walls and roof are corrugated steel.

350 Plant Operations and Maintenance Facility. The 350 Facility is a single level facility constructed in 1980 to serve as the central location for maintenance staff. The 350 Building is constructed on a concrete foundation and is a steel-sided building assembled on a steel frame. The shop areas of the main building have a 3.7-m (12-ft) clear ceiling height to accommodate material clearance requirements. The facility is basically a central craft shop with offices for supervisory and support personnel. It and its support buildings (350A, 350B, 350C, and 350D) provide a base for craft and operations support services.

350A Paint Shop. The 350A Paint Shop is a single-story above-grade structure. It was constructed to provide services for the painting of items that can be relocated to the shop.

350B Warehouse. The 350B Warehouse is a high-bay single-level storage warehouse. It provides storage for craft maintenance supplies and inventories.

350C Storage Facility. The 350C Storage Facility is a single-level above-grade structure and provides storage capabilities for carpentry sheet goods.

350D Oil Storage Facility. The 350D Building is a single-level above-grade structure and provides storage of oil used to support maintenance activities.

352E Switch Station East Side. The 352E Building is a substation and electrical switchgear facility. The building houses electrical switchgear that provides a portion of the electrical distribution to the southeast sections of the 300 Area. The building also contains batteries and charging equipment for operation of the control equipment. A below-grade cable spreading area contains jacketed cables on cable trays. The building is unprotected noncombustible with roof and exterior walls of corrugated sheet metal on steel columns, beams and girts. The interior

walls consist of a 1.2-m (4-ft)-high painted plywood wainscot with exposed foil faced fiberglass insulation on the upper portion of the walls and the ceiling. An interior wall separating the battery room from the remainder of the facility is gypsum board on steel studs. The battery room is sheathed with gypsum board. The floor is reinforced concrete.

352F Electrical Switch House, 2.4 kV. The 352F Electrical Switch House is an electrical switchgear facility. The building houses electrical switchgear that provides a portion of the electrical distribution of the 300 Area. The building has exterior walls of corrugated sheet metal on steel columns, beams and girts. The floor is reinforced concrete.

382 Pump House Building. The 382 Pump House Building is a one-story concrete block structure with a concrete floor and roof slabs. It houses five electrical driven water pumps. Two pumps are 2400 volt and the other three pumps are 480 volts. These pumps receive their supply from the two aboveground water storage tanks. These pumps supply potable and fire water to the entire 300 Area.

382B Fire Pump Station. The 382B Building is a one-story structure with exterior walls and a roof of corrugated sheet metal on steel columns, beams, and girts. The floor is reinforced concrete. The facility houses two diesel driven fire pumps that are emergency backups to the electrical pumps. It also has two 2,082-L (550-gal) diesel fuel tanks that are aboveground in the facility.

382C and 382D Sanitary Water Storage Tanks. The 382C Tank is a steel aboveground water storage tank. It measures 18.3 m (60 ft) in diameter and is 14 m (46 ft) high. It stores potable and fire water for the 300 Area grid. The tank is fed from the City of Richland, and holds 3,406,871 L (900,000 gal) of water.

The 382D Tank is a steel aboveground, water storage tank. It measures 17 m (56 ft) in diameter and is 13 m (45 ft) high. It stores potable and fire water for the 300 Area grid. The tank is fed from the City of Richland, and holds 3,028,330 L (800,000 gal) of water.

3128 Gas Bottle Dock. The 3128 provides gas bottle storage.

3220 Telephone Exchange. The 3220 Building is a Hanford Switch Facility in the 300 Area. The roof is split into two levels and is composed of 1.5-cm (0.6-in.) plywood decking and a built-up membrane roof cover over open web trusses on 61-cm (24-in.) centers.

3503B Electrical Cable Pit. 3503B is an in-ground electrical vault that houses the emergency feeders. It has a concrete floor, walls and roof. It has a 1- by 1-m (3- by 3-ft) metal lid in the center. It houses cable connections for 2400-volt power.

Remaining Slab and Below-Grade Structures Removal: 3506A Powerhouse Maintenance Shop, 3506B Maintenance Shop, 3701D Office Building, 3701U Security Office Building, 3762 Technical Security, 3763 Office Building, 3764 Office Building, 3768 Office Building, 3769 Office Building, 3770 Office Building. The listed buildings above-grade structure has been removed and only a slab or slab and below-grade structure remains. Low levels of

radiological and/or chemical contamination may be present as fixed contamination on the slab surface or within the below-grade structure.

3506C Telecommunications HUB. The 3506C Building is a modular trailer "hut" used for fiber optic network connections to the 300 Area facilities.

3507 Microwave Tower and Building. The 3507 Building houses microwave communications equipment. Construction consists of a metal building, painted concrete floor, no windows, transite siding and felt roof.

3605 Fences, Power Poles, Guard Shacks and other unnumbered aboveground structures/items. It is intended that EE/CA #3 cover all aboveground structures/items not covered in EE/CA #1 or EE/CA #2. Fences, power poles, guard shacks as well as other miscellaneous unnumbered structures that may be identified or temporarily installed during conduct of this CERCLA action will be removed.

3614A River Monitoring Station. The 3614A River Monitoring Station houses equipment for monitoring Columbia River water and for air sampling studies. 3614A is a concrete block structure, erected on a concrete slab.

3621-66 Petroleum Tank (Diesel). The 3621-66 Tank provides diesel storage for the 3621BC Emergency Generator Building. This tank replaced tanks in 3621-D.

3621BC Emergency Generator Building. The 3621BC Building provides emergency electrical power for the 300 Area. The building is constructed of prefabricated steel.

3621D Emergency Generator Building and Shop. The 3621D Building provided emergency generator services and shop space for associated maintenance.

3706 Communication and Documentation Services. The 3706 Building was the original Radiochemistry Laboratory for the Hanford Engineering Works. By 1964 the 3706 Building was called the General Services Building. Although it still contained some analytical laboratories, most of its space was devoted to mail services, duplicating, photographic, and drafting services; a first aid station; and the 300 Area patrol headquarters. During the 1970s and 1980s, all laboratory work was eventually phased out. The single-story building is a wood frame and concrete block structure with concrete floor and foundation, wood section exterior walls covered with asbestos shakes, and roofing of mineral surface asphalt shingles over tar paper.

3707F Radiation Monitoring Building. The 3703F Building provides a radiation monitoring office and shielded personnel space for those involved in the waste handling activities at the 340 Building. The building is a prefabricated self-framing galvanized steel panel structure erected on a concrete slab.

3709 Paint Shop. The 3709 Paint Shop provides space for a paint and sign shop. The building is constructed as a single-story wood frame structure on-grade with concrete foundation and

concrete slab floor. The roof is wooden with built-up felt, tar, and gravel surface. Exterior walls are covered with asbestos shakes. A 3-m (10-ft) addition was built on the east side.

3709A Fire Station and 3709B Fire Equipment Storage. The 3709A Building is the 300 Area Fire Station. The office and dormitory roof areas of the main building have asbestos insulation applied to the interior of the metal decking. The 3709B Building is a pre-engineered metal building with a sloped roof. The building is used as a storage building supporting the 3709A Fire House. The interior of the 3709B roof is insulated, presumably with asbestos insulation.

3714 Soils Laboratory. The 3714 Soils Laboratory provides storage of laboratory solvents, lubricants and flammable chemicals. It also serves as a laboratory. The building is a one-story building having reinforced concrete walls, roof, and floor, and blowout windows with pressure-release latches on all but the solid west wall.

3717C Materials Archive Building. The 3717C Materials Archive Building provides controlled storage. The 3717C Building is a single-story corrugated sheet metal building with concrete floor. The building is insulated with batt fiberglass.

3718 Office and Storage Building, 3718A Laboratory Equipment Central Pool Building, 3718B Laboratory Equipment Central Pool Building, 3718C Storage Building, 3718M Sodium Storage Facility, 3718N Insulation Shop, 3718P General Storage, and 3718S General Storage. The 3718 facilities listed provide storage space and office space. The 3718P Building is a single-level high-ceiling facility and serves as a storage/warehouse primarily used for storage of high-efficiency particulate air (HEPA) and dust type filters used for the operations of most facilities within the 300 Area. A portion of the building is also used as a storage area for research supported project items.

The 3718S Building is a single-level warehouse used principally as a research storage building. The building is currently vacant and has been placed in standby.

3721 Classified Shredder Facility. The 3721 Facility houses a shredder for disposition of classified materials. The 3721 Facility is a single-story building with concrete block walls, cast-in-place concrete floor, and built-up asphalt/gravel roofing over corrugated steel panels and structural members.

3727 Classified Vault. The 3727 Building provided storage of fissile specimens of nuclear fuel elements. The 3727 Building is a reinforced concrete structure. Storage vault walls are 41 cm (16 in.) thick.

3728 Geotechnical High-bay (or FFTF Test Article Storage Facility). The 3728 Building provided shielded space for storing FFTF test article assemblies. The 3728 Building is a corrugated metal structure with a concrete foundation and floor. The roof is corrugated metal, pitched, and insulated with fiberglass blankets. The walls are also insulated with fiberglass blankets. Big roll-up doors on the south side and east side north end are double-insulated.

Gamma Irradiation Facility. The 3730 Building is a single-story facility constructed of concrete masonry units overlaid with sheet foam insulation. The insulation is covered with a textured and colored elastimer material. The 3730 Building was originally constructed in 1949 as a shop. In 1956 the work performed in the 3741 Building was transferred to this building including gamma irradiation testing of materials, analyzing waste tank solutions, and performing studies of corrosion and stress corrosion cracking, and evaluation of probes under irradiated conditions. The facility also houses hot cells, which were used to support sampling operations in the adjacent 326 Building. Radioactive source material is located in a water-filled pool in the basement of the facility. The 3730 Building was constructed to house fabrication operations for specialized graphite shapes. In 1956 a concrete vault was added to the facility. Safety upgrades including improved ventilation, filtration, a central heating system and sewer connections were made during 1974-1976. Additions in 1980 included gloveboxes, HEPA filters, and a blower addition.

3745 Radiological Calibration and Standards. The 3745 Building was opened in 1944 to provide a radiological calibrations and standards lab. The two-story wood framed building contains a low scatter room in which dosimeters were calibrated. The building contained a reinforced concrete vault, a large calibration room, and two laboratories.

3745A Van deGraaff Electron Accelerator. The 3745A Building provides a shielded laboratory space for research. The 3745A Building is rectangular with concrete walls and an on-grade concrete slab floor. The concrete roof has a tar and gravel finish. The electron accelerator room has 1-m (3-ft)-thick concrete end walls and 20-cm (8-in.) concrete block side walls. The central section of the building near the control room wall is a high-bay section. The facility is presently unoccupied.

3745B Van deGraaff Positive Ion Accelerator Facility. The 3745B Van deGraaff Building provides shielded laboratory space for research with positive ion bombardment using a 20MeV accelerator. The 3745B Building is rectangular and has evolved into its present configuration through a series of additions. Initially the building had a concrete floor, walls and roof at the target area while the remainder was constructed of wood frame covered with asbestos shake siding. Subsequent additions to the north and south sides of the building were constructed of concrete block with some walls of shielding concrete. All the roof areas are essentially flat with slight slopes to carry water runoff and consist of tar and gravel coverings. A concrete block addition for storage was added in 1981. The building is presently unoccupied.

3746 Irradiation Physics Building. The 3746 Building provides support space such as offices, lunchroom and restrooms. The building is a one-story frame structure with asbestos shake siding and an asphalt shingle roof. The floor is a concrete pad on-grade, covered with asphalt tile. Recent building modifications provided a connecting hallway and vestibule to the 3746A Building constructed of concrete masonry units and gypsum wallboard over rigid insulation.

3746A Radiological Physics Building. The 3746A Building provides laboratory and office space. The building is constructed on a concrete foundation with an on-grade concrete floor

slab. Outside walls and internal bearing walls are constructed of concrete block. All other internal partitions are constructed of gypsum board on steel studs. The roof is constructed of wood planking with built-up roofing and insulation supported on glue laminated wood beams. The laboratory floor consists of sheet vinyl; office/corridor floor covering is vinyl asbestos tile. The addition was constructed of concrete masonry units and gypsum wallboard over rigid insulation.

3760 Hanford Technical Library. The 3760 Building housed the Hanford Technical Library. The second floor has office space. The building is a partial two-story structure with no basement. The framework is bolted steel. The parapet roof is slightly sloped steel deck topped with Class II 20-year tar and gravel finish. Exterior walls are fluted steel with insulated panels. The building contains a classified vault enclosed in concrete.

3766 Office Building. This building provides office and conference space.

3790 Security Office Building. The 3790 Building provides office space and conference rooms for safeguards and security personnel. The building is a single story, modified rectangular structure. It has a raised foundation and a basement. The flat, metal deck roof has rigid insulation and built-up asphalt and gravel finish.

3802A Steam Pressure Reducing Valve (PRV) Station. The 3802A Steam PRV Station provides manhole connection for steam service to the 377 Building area. The subgrade structure is 20-cm (8-in.) reinforced concrete walls, floor and roof. The building is concrete block walls and concrete slab roof.

3906 Sanitary and Process Lift Station. The 3906 Lift Station provides a gravity drain collection point for the sanitary and process sewer systems.

3906B Sanitary and Process Lift Station #3. The 3906B Lift Station provides a gravity drain collection point for the sanitary and process sewer systems.

3906C Sanitary Sewer Sample Station. The 3906C Sanitary Sewer is a concrete in-ground vault measuring 2.6 by 1.4 by 2.1 m (8.5 by 4.5 by 7 ft) with a 1- by 1-m (3- by 3-ft) metal lid. It has a sanitary sewer line that runs through the bottom of the vault to the City of Richland.

Mobile Offices: MO-036, MO-059, MO-226, MO-258, MO-262, MO-263, MO-265, MO-270, MO-271, MO-274, MO-275, MO-391, MO-423, MO-443, MO-741, MO-744, MO-745, MO-905, MO-XXX. Most of these buildings provide mobile or temporary office or storage space. They are transportable metal clad buildings on steel frames. MO-265 and MO-423, which together comprise the Radiological Counting Facility, are being used to count radiological samples in support of CERCLA response actions.

Miscellaneous Conex box storage, modular buildings such as "hazardous storage" (also used as alternate storage) ("HS") designated structures, unnumbered aboveground structures/items, lay-down areas and yard storage areas, slabs and/or foundations for

previously demolished structures. It is intended that EE/CA #3 cover all aboveground structures/items not covered in EE/CA #1 or EE/CA #2. Although a diligent search of records has been conducted, as well as walkdowns of the area, it is likely that a structure or item may have inadvertently been omitted from the building list. This item is intended to capture all remaining miscellaneous items intended for D4 under this removal action.

REFERENCES

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. 103, et seq.

DOE-RL, 2004, *Engineering Evaluation/Cost Analysis #1 for the 300 Area*, DOE/RL-2001-30, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2006a, *Engineering Evaluation/Cost Analysis #2 for the 300 Area,* DOE/RL-2005-84, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2006b, *Engineering Evaluation/Cost Analysis #3 for the 300 Area,* DOE/RL-2005-87, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

National Historic Preservation Act of 1966, 16 U.S.C. 470, et seq.

Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901, et seq.

APPENDIX B

AIR MONITORING SECTION

References

APPENDIX A

300 AREA FACILITY DESCRIPTIONS FROM THE EE/CA

APPENDIX A

300 AREA FACILITY DESCRIPTIONS FROM THE EE/CAs

303A Storage Building, 303B Storage Building, 303C Material Evaluation Laboratory, 303E Storage Building, and 303G Storage Building. These five 303 series buildings, constructed during World War II, were used to store fresh metal (unirradiated uranium) and chemicals, as well as uranium scrap. They are all the same size (120.4 m^2 [1,296 ft^2]) and were constructed with concrete block walls, concrete foundation and floor slab, and a reinforced concrete roof.

Soon after the end of World War II, monitoring indicated contamination problems in and around these buildings similar to those encountered inside and near the 313 and 314 fuel fabrication buildings. Spontaneous fires occurring in uranium scrap barrels and in concreted uranium scrap "billets," along with oxide conversion activities, produced particulate contamination that settled in surrounding soils.

The 303C Facility was in use for storage until 1984. During the late 1990s, the 303C Facility was being considered for use as a small research and development laboratory and was renamed. It is not clear if it was ever used as a laboratory.

As of mid-2004, the 303A, 303C, 303E, and 303G facilities were empty and not in use. The 303B Facility continues to provide storage for fresh metal, chemicals, and uranium, but its contents will soon be removed. All five of these 303 buildings are radiologically contaminated and contain, contact, or are in close proximity to a number of 300-FF-2 Operable Unit (OU) waste sites.

303F Pump House. The original purpose of the 303F Building was the storage of fresh metal (uranium billets), chemicals, and uranium scrap. It was built during World War II and is constructed with concrete block walls, concrete foundation and floor slab, and a reinforced concrete roof. From 1954 to 1973 the building was used as a chemical makeup facility. Beginning in 1973, the building was used as a pump house until it ceased operation completely. It was part of the 300 Area Waste Acid Treatment System (WATS) *Resource Conservation and Recovery Act of 1976* (RCRA) treatment, storage, and disposal (TSD) unit, but the 303F Building portion of the TSD unit was clean closed in 1999. It is a reinforced concrete and concrete block structure. The building is radiologically contaminated. It is adjacent to or overlies several 300-FF-2 waste sites.

303G Storage Building. See 303A Storage Building.

303J Material Storage Building. The 303J Facility is a one-story wood frame structure built on a concrete foundation and floor slab. The siding is asbestos shake shingles and the roof is roll tar paper. The 303J Facility was used for storage and as office space. It is adjacent to several 300-FF-2 waste sites.

303M Uranium Oxide Facility. The 303-M Uranium Oxide Facility was constructed in the early 1980s to calcine saw fines and lathe turnings of slightly enriched uranium and Zircaloy-2. A RCRA Part A, Form 3 Permit Application was initially submitted as a protective filing in anticipation of using the 303M Facility to support future fuel manufacturing and depleted uranium projectile fabrication activities in May 1983; however, operations ceased in February 1987, and the unit was never incorporated into the Hanford Facility RCRA Permit. The facility is a cast concrete structure. It is located directly over the 618-1 Burial Ground. The facility is radiologically contaminated. The facility is a RCRA/*Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) integration site.

304 Uranium Concretion Facility. Originally, the 304 Facility was built for storage during World War II. Later, the 304 Facility was a pilot plant for the processes housed in the 313 Building. This operation moved in 1962, and the 304 Facility was used to store uranium scraps waiting for reclamation. The facility has been known as the Concretion Facility since 1971, at which time a process to solidify pyrophoric uranium scraps in a concrete matrix was initiated. A fire occurred in August 1977, spreading airborne particulate contamination within and near the building. This facility is a former RCRA TSD unit that has been clean closed with respect to dangerous waste constituents. However, the residual radioactive contamination site 300-249 was not closed out as part of the 304 Facility RCRA closure. Contamination is present on surfaces inside the building, and intrusive activities have the potential to spread or release contamination. This structure meets *National Historic Preservation Act of 1966* (NHPA) criteria as a historical property.

304A Uranium Concretion Facility Change Room. The 304A Building is a sheet-metal change facility that is attached to the 304 Facility.

305 Engineering Testing Facility. The 305 Engineering Testing Facility was constructed during World War II as a single-story structure with a central two-story high bay. The 305 Test Pile, as it was called, was the first operating reactor at the Hanford Site and was located in the 305 Building. The facility operated in this capacity until the late 1960s, in addition to housing quality assurance trials for N Reactor tritium production and a few critical experiments. During its years of operation, the test pile activities in the 305 Building produced no significant environmental contamination. The reactor was dismantled and disposed during the 1977 to 1978 time period. From 1968 to 1973, casting and machining activities took place in the west end of the building. In the late 1970s, a large addition was placed on the south/southeast side of the building. Various testing operations have been housed in the facility since that time.

305B Hazardous Waste Storage Facility. The original 305B Hazardous Waste Storage Facility structure was built in 1952, with a 1981 modification adding a high-bay laboratory area. The building is a RCRA TSD unit and has historic status according to NHPA criteria. The two reactors placed in the 305B Building were used to conduct experiments until the 1970s. As of mid-2004, the building is being used as a waste handling, packaging, and storage facility for hazardous materials and mixed waste. The facility will need to be vacated prior to the start of deactivation, decontamination, decommissioning, and demolition (D4). The building itself is radiologically contaminated, is designated as waste site 305-BSF, and is in close proximity to a

number of other waste sites. If the 305B Facility is not closed under RCRA prior to the start of CERCLA remediation, the facility may be a RCRA/CERCLA integration site.

306W Material Development Laboratory. The 306 Building was originally used as fuel fabrication pilot plant in support of 313 Building operations. In 1960, the facility was expanded to contain the co-extrusion fabrication process for N Reactor fuel fabrication. The building is of two-story bolted steel frame construction with insulated steel wall panels and tar and gravel roof. The first floor is reinforced concrete, and the second floor is a steel deck topped with concrete. In 1972, the west portion of the building was named 306W.

306E Development, Fabrication, and Test Laboratory. The 306 Building was originally used as fuel fabrication pilot plant in support of 313 Building operations. In 1960, the facility was expanded to contain the co-extrusion fabrication process for N Reactor fuel fabrication. The building is of two-story bolted steel frame construction with insulated steel wall panels and tar-and-gravel roof. The first floor is reinforced concrete, and the second floor is a steel deck topped with concrete. In 1972, the east half was designated as 306E, and that portion of the building became the Hanford Engineering Development Laboratory.

311TF Tank Farm. The original purpose of the 311TF Tank Farm was for chemical storage and to support methanol recovery operations in support of fuel fabrication. In 1973 it became part of the 300 WATS. The 311TF Building portion of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The tank farm is radiologically contaminated. It is adjacent to or overlies several waste sites. The 311TF Building was built in 1954 and consisted of four aboveground chemical storage tanks, two belowground methanol storage tanks, and the small methanol still house. The tanks were located inside a concrete containment curb or catch basins. One additional tank was built for use in the WATS program in 1985. The 311TF Building and the two belowground methanol storage tanks were removed in 1989.

313 Fuels Manufacturing Building. The 313 Metal Fabrication Building was a World War II structure that housed fuel element preparation activities from 1944 to 1989. Work involving uranium during the early years of operation was treated as ordinary foundry work, and special precautions for radiological activities were slowly added. A few isolated contamination events occurred in the 313 Building. Contamination problems in this structure resulted from the ongoing augmentation of wastes over time. Contamination during fuel fabrication resulted not only from radiological materials, but also hazardous solvents, metals (including beryllium), and other process chemicals. The majority of fabrication equipment for single-pass reactor fuel elements was removed from the 313 Building between the mid-1970s and mid-1980s. The south end of the building continued to support reactor fuel production for a period of time, but is now deactivated. The north section was leased to a private firm in the late 1990s and early 2000s, but is now vacant. The 313 Fuels Manufacturing Building was part of the 300 Area WATS RCRA TSD unit. The above-grade portion of the 313 Building that was part of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The soil under the south part of the 313 Building is still part of the 300 Area WATS RCRA TSD unit and is a RCRA/CERCLA integration site. The 313 Building contains, contacts, or is in close proximity to a number of 300-FF-2 OU waste sites.

314 Engineering Development Laboratory. The 314 Building, referred to as the Press Building or the Metal Extrusion Building, originated as one of two primary fuel fabrication structures at the Hanford Site. It was a World War II structure that housed fuel element preparation activities from 1944 to 1971. Several additions have been constructed over the past years along the north side of the building. The 314 Building experienced very few large, isolated contamination events. Contaminants include metals, radiological materials, and hazardous process chemicals. No fuel element preparation activities for the single-pass reactors have taken place in the 314 Building since 1971, when the last of the single-pass reactors closed. The 314 Building was modified in the 1970s and used for a variety of research projects and crafts services. The 314 Engineering Development Laboratory Building has been designated the 300-218 waste site and also contacts, or is in close proximity to, a number of 300-FF-2 OU waste sites.

314B Stress Rupture Test Facility. The 314B Stress Rupture Test Facility supported fuel fabrication operations and shares a building with the 314 Engineering Development Laboratory at its northwest corner. The structure currently provides safe, shielded space for stress rupture and burst tests. Interior wall partitions are arranged to form eight test cells and a central corridor. Each cell has a blast door and an individual blowout roof panel providing safe, shielded space for stress rupture or burst tests for tubular materials under high-temperature and high-pressure conditions. The original mission of the 314B Building as a whole was fabrication of uranium metal fuel for single-pass production reactors, and it had numerous other uses before being retired. Permanent equipment used in processing, storing, or disposing of material or waste within the building consists of pits, sumps, drywells, tanks, trenches, air shafts, and the soil column. All are suspected of being contaminated. The 314B Building has been designated as part of the 300-218 waste site.

332 Packaging Test Facility. The 332 Building is used as a holding area for nonradioactive hazardous waste. It is a pre-engineered, insulated metal building on a concrete floor slab. The floor slab is sloped so that it drains to an exterior sump.

333 N Fuels Building. The original purpose of the 333 N Building was the manufacture of fuel elements for N Reactor. During the period of 1965 to 1967 the building supported the production of special lithium aluminate fuel targets. The fuel target processes included autoclave testing, etching with nitric-hydrofluoric acid, and inspection. It was part of the 300 Area WATS RCRA TSD unit. The 333 N Building portion of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The 333 N Building is of steel frame construction and sits on a concrete slab with steel wall and roof panels. The facility is radiologically contaminated.

334 Process Sewer Monitor Facility. The 334 Building housed the control instruments for the acid system in the 333 N Fuels Building and stored small amounts of chemicals. It is a steel frame structure on a concrete slab with steel wall and roof panels. The facility is radiologically contaminated.

334A Waste Acid Storage Building. The 334A Building served as the waste treatment and waste storage facility for the 333 N Fuels Building. The facility has undergone deactivation.

It was part of the 300 Area WATS RCRA TSD unit. The 334A Building portion of the 300 Area WATS RCRA TSD unit was clean closed in 1999. The structure consists of a small steel frame structure, an above-grade steel frame structure supporting three acid tanks, and an at-grade reinforced concrete pit. The pit is lined with an acid-resistant glass-filled polyester coating. The facility is radiologically contaminated.

342 Collection Sump 1 - 300 Area TEDF Sewer Line, 342A Instrument/Electrical Building Shop - TEDF, 342B Transformer Pad/Vault - TEDF, and 342C Generator Pad - TEDF Sump. These facilities support operation of the 300 Area Treated Effluent Disposal Facility (TEDF). As of mid-2004, these facilities are in use and will need to be shut down prior to the start of D4.

351A Meter and Testing Building. This sheet-metal building houses equipment supporting operation of the 300 Area electrical substation. As of mid-2004, this facility is in use and will need to be shut down prior to the start of D4.

351B Meter Testing and Switchgear Facility. This sheet-metal building houses equipment supporting operation of the 300 Area electrical substation. As of mid-2004, this facility is in use and will need to be shut down prior to the start of D4.

377 Laboratory. This facility was constructed to house nondestructive testing, inspection, and examination of a retired nuclear steam generator. The generator has been removed and the facility was vacated in 1996. The building is radiologically contaminated.

384 Power House Building. This facility was constructed as a coal-fired power plant to provide electrical power to the 300 Area. It is a steel frame structure with reinforced concrete floor and foundation, concrete block and corrugated transite exterior walls, and tar-and-gravel roof. Between 1964 and 1974, the 384 Facility was converted to burn fuel oil. It was shut down in 1998. The facility sits over a waste site.

3225 Bottle Dock. The 3225 Building is a small, open, steel-framed and roof loading dock with cinder block walls used to store cylinders of compressed gas.

3503A Electrical Cable Pit No. 2. This is a storage facility in support of the 384 Building. It is a small rectangular building with fluted metal walls and gabled, fluted metal roof.

3508T2 Siren Northeast of California and Apple Streets. This is a pole-mounted alarm siren used for emergency alerts in the 300 Area.

3705 Photography Building. This facility served as the site photography laboratory with office space. The facility is a rectangular single-story building with concrete block walls and slab-on-grade construction. The roof is tar and gravel. A metal-sided mechanical room is located on the roof. The photography operations relocated and the facility has been shut down.

3706 Communications & Documentation Services /3706A Ventilation Equipment Room for 3706 Building. The 3706 Building is a single-story wood frame and concrete block structure with concrete floor and foundation, wood section exterior walls covered with asbestos shakes, and roofing of mineral surface asphalt shingles over tar paper. The 3706 Building includes a laboratory section with .6-m (2-ft)-thick concrete wall.

The 3706A Building is of masonry block construction. The roof structure consists of 5-cm (2-in.) tongue and groove wood decking supported by 10-cm by 33-cm (4-in. by 13-in.) roof joists. The 3706A Building houses the heating, ventilation, and air conditioning (HVAC) equipment for 3706 Building.

3707D Information Services Building. This facility was an office building. It is a single-story wood-framed structure with an on-grade concrete floor and concrete foundation. The floors are covered with tile and the exterior walls are covered with asbestos shakes. The roof is built-up felt with tar and gravel.

3707H Change House. This facility provided space for change rooms, lockers, restrooms, and showers. It is an insulated modular-type relocatable structure placed on a reinforced concrete wall footing. The exterior walls are polyurethane insulating core between reinforced precast concrete.

3708 Radioanalytical Laboratory. The original use of this facility was as a vehicle maintenance shop. Later it was used for research and analysis of activation and/or mixed fission products and for some storage. It is a one-story concrete block structure on grade with a concrete foundation and concrete slab floor. The roof is a concrete slab with tar-and-gravel surface. The facility is radiologically contaminated.

3711 Maintenance Storage Building. This facility provides storage space for landlord materials. This facility is of prefabricated steel with corrugated metal siding and roof on a concrete floor.

3712 Storage Building. The 3712 Building is a one-story steel frame structure on a concrete floor slab with metal panel walls and roof. It was used to store "green" (i.e., nonirradiated) fuel for N Reactor. The facility is radiologically contaminated.

3713 Carpenter Shop. The original use for this facility was as a receiving storeroom. Later, it was converted into a carpenter shop. It is a one-story wooden frame building with concrete foundation walls with concrete spread footings, wooden beams, and interior wood posts. As of mid-2004, this facility was still in use.

3715 Spare Parts Warehouse. This facility is a storage building. It is a single-story corrugated sheet-metal building on a concrete slab. A concrete dock with ramp is located on the west side of the building adjacent to the railroad track.

3716 Storage Building. The original purpose of the 3716 Building was to support development of alternative reactor fuel fabrication processes. The last use of this facility was to store "green" (i.e., nonirradiated) N Reactor fuel. This one-story building consists of 1.2-m (4-ft)-high concrete walls mounting a metal frame structure with insulated aluminum wall and roof panels. The facility is radiologically contaminated.

3717 Spare Parts Warehouse. This building may originally have been used as a storage building. By 2001 it was used as an instrument shop. It is a wooden frame structure with a reinforced concrete slab floor and concrete curbing, supported by concrete foundation walls. The exterior walls are of wood, and the building has a built-up roof with felt surface.

3717B South Maintenance Facility. This facility provided space for shops and associated offices. It is a single-story rectangular concrete block and metal structure with a typical Quonset arch roof of built-up finish.

3719 Computer Facility. This facility provides space for official records and documents. It is of modular construction with a poured concrete slab foundation. Exterior walls are a polyurethane insulating core placed between reinforced precast concrete.

3720 Chemistry and Metal Sciences Laboratory. The 3720 Laboratory was built in 1959 on the site of the old 3722-A Building and was used for analytical chemistry work in support of the production reactors in the 1960s and early 1970s. In 1971, the facility was transferred to Pacific Northwest Laboratory and used by many departments including craft services, fuels and metallurgy, and atmospheric sciences. In 1980, a one-story concrete block addition was constructed on the north end. The addition contained general laboratory and office facilities. The original structure is a metal frame structure erected on concrete foundations, footings, and floor slab. The roof is a medium-sloped gable roof with insulated, built-up roofing, and tar and gravel placed on a corrugated sheet-metal base.

3722 Fabrication Shop. This facility was originally built as a receiving warehouse. It was later converted into a fabrication shop. It is a one-story wooden frame structure with a reinforced concrete slab floor.

3731 Laboratory Equipment Central Pool. This facility provided storage space for laboratory-type equipment. It is a prefabricated metal storage-type building constructed on a concrete stub wall and concrete pad. The building has a metal exterior wall and gable roof.

3731A Graphite Machine Shop. This facility was used to machine graphite and provided storage of graphite materials. It is a cement block masonry structure constructed on a concrete pad. The wood low-gable-type roof is covered with asbestos shingles.

3746D Technical Service Annex. The 3746D Building is a Quonset hut-type building with curved sheet-metal sides and plywood ends on a concrete slab. It was used for storage.

3906A Sanitary Sewer Lift Station #1. The 3906A facility serves as a gravity collection point and lift station for the sanitary and process sewer systems. The lift station consists of an at-grade concrete pad and a 5.6-m (18.5-ft)-deep concrete pit with walls up to 0.3 m (1 ft) thick. As of mid-2004, this facility is in use and will need to be shut down prior to the start of D4.

305BA Boiler Annex, 306EBA Boiler Annex, 3705BA Boiler Annex, 3706BA Boiler Annex, and 3720BA Boiler Annex. These buildings are recently constructed (mid-1990s) steel frame structures that currently house package boilers to provide steam heat to their associated buildings. These systems have been shut down.

307 Retention Basins. The 307 Retention Basins provided a collection point for laboratory liquid wastes that contained low-level radioactive waste material. The four lined basins are constructed of reinforced concrete with above-grade tops. The basins are currently used for collection and transfer of retention process sewer to TEDF.

308 Fuels Development Laboratory. The 308 Building provides laboratory and office space. The building consists of a two-story laboratory, a high-bay, and a one-story rectangular office wing. The slightly sloped roof is a steel deck with insulating concrete and 20-year built-up asphalt and gravel finish. Exterior walls are reinforced concrete and concrete block. Ground floor interior walls are concrete block with plaster on both sides. The laboratory includes plutonium contaminated gloveboxes and ductwork. The gloveboxes have been partially deactivated including partial decontamination, fixative application, and sealing of ports.

308A Fuels Development Laboratory. The 308A Building provides office space and loading area for a 9-metric ton (10-ton) crane. The framework of the building is bolted steel and reinforced concrete with exterior walls of reinforced concrete and concrete block. Interior walls were concrete block with plaster and polyvinyl chloride finish. The roof is slightly sloped and topped with steel deck with concrete and finished with tar and gravel. The 308A Building contains a reactor used to perform neutron radiography.

309 Plutonium Recycle Test Reactor. The 309 Facility was originally constructed to develop technology for using plutonium as a fuel in power reactors. In 1969, the facility was placed in a layaway condition. However, in 1985, the facility was designated as a test site for the space technology development program that led to an extensive cleanout of the original plutonium recycle test reactor equipment. The facility is currently unoccupied and has undergone additional deactivation measures. However, the original plutonium recycle test reactor core remains in the facility. The containment vessel is of all-welded construction with a hemiellipsoidal bottom and a hemispherical dome. The above-grade vessel exterior is covered with 7.6-cm (3-in.) insulation with a waterproof membrane. The service building framework is welded steel. The roof is steel deck topped with 20-year built-up tar and gravel finish. Exterior walls are fluted steel insulated panels. The floor is concrete with vinyl tile.

310 TEDF, 310S Drum Storage Area, 310T1 Equalization Tank T1, 310T1A Equalization Tank T1A, 310T2 Diversion Tank T2, 310T3 Diversion Tank T3, 310T7A and T7B Clarifiers, 310V Valve Vault. The 310 TEDF was constructed as part of a Tri-Party Agreement

milestone to cease discharges to the 300 Area Process Trenches. The facility began operation in December 1994 and continues to operate. The TEDF collects nonradioactive process waste water which is discharged to the 300 Area Process Sewer from approximately 45 office buildings, research laboratories, and support facilities in the 300 Area. The facility removes metals and organic contaminants before the purified water is discharged to the Columbia River. The TEDF, and associated ancillary support facilities and structures will need to be shut down prior to the start of D4.

312 River Pump House. The 312 River Pump House provided fresh water supply from the Columbia River to the 315 Filter Water Plant Building and the fish-rearing facilities in the 331 Building.

315 Filter Water Plant Building, 315A Backwash Disposal Pond, 315B Chlorine Storage Facility, 315C Backwash Lift Station and Sedimentation Pond, 315D Backwash Recycle Pump Station. The 315 Building and ancillary structures provide sanitary water for the 300 Area. The 315 Facility operations consisted of: coagulation, sedimentation, chlorination and filtering processes. The filter water plant is a concrete structure. The 315B Chlorine Storage Facility consists of two .9-metric ton (10-ton) chlorine storage containers.

318 Radiological Calibrations Laboratory, 318B High Temperature Lattice Test Reactor Stack, 318C High Temperature Lattice Test Reactor Filter Facility. The 318 Building was built in 1967 to house the high temperature lattice test reactor, which operated from 1968 to 1972 and provided reactor physics data. In the 1980s, the reactor was removed and the heavily shielded reactor cell was converted to a free-in-air calibration facility. A shield facility was built in the basement to house a high-level cobalt-60 source to create accident dose rate levels and three 300-kVp X-ray machines. The 318 Facility is currently operational.

Boiler Annexes: 318-BA, 320-BA, 323-BA, 324-BA, 325-BA, 326-BA, 327-BA, 328-BA, 331-BA, 337-BA, 382-BA, XXX-BA. These buildings are recently constructed (mid-1990s) steel frame structures that currently house package boilers to provide steam heat to their associated buildings. Engineering Evaluation/Cost Analysis (EE/CA #3) (DOE-RL 2006b) is intended to include all Boiler Annex Buildings in the 300 Area not previously included in EE/CA #1 (DOE-RL 2004) or EE/CA #2 (DOE-RL 2006a). The designator XXX-BA represents any boiler buildings not included by number in EE/CA #3, as the intent of EE/CA #3 is to cover all buildings remaining in the 300 Area after EE/CAs #1 and #2.

320 Physical Sciences Laboratory. The 320 Building was built in 1966 to house analytical chemistry services and plant support. The current missions include radiochemical environmental analysis, sample preparation, and methods development. Throughout the years, small spills of radioactive material have occurred in the facility. In all known cases, the contamination was contained within the building.

321 Hydromechanical/Seismic Facility, 321B Model Heat Loop, 321C Core Pump Shelter, 321D Seismic Testing Facility. The 321 Facility was used for hydraulic and mechanical testing of reactor materials and components. The facility consists of one-story concrete and bolted steel

framework with fiberglass insulation in the ceiling, a basement and canyon area, and 321B, 321C, and 321D additions.

323 Mechanical Properties Laboratory. The 323 Building (originally the 321-A Building) served as a support building for waste vitrification techniques in the 321 Facility. In 1968 the mission changed to metallurgical research initiatives. There are four below-grade tanks encased in concrete underlying the 323 Building.

325 Radiochemical Processing Laboratory, 325A Cesium Recovery Facility, 325B Shielded Lab Annex, 325D Maintenance Shop, 325E Fire Riser/Backflow Preventer Building. The 325 Building was constructed in 1953 to house and manipulate multi-curie-level radioactive chemical development work. During 1959 and 1960, two large additions known as the High-Level Radiochemistry Facility and Shielded Analytical Laboratory were constructed. These wings were identified as 325A Cesium Recovery Facility and 325B Shielded Lab Annex. Also, additional modifications included construction of the 325D Maintenance Shop and 325E Fire Riser/Backflow Preventer Building. The building has three levels and contains over 50 laboratories and 11 hot cells. The building also houses processing equipment for preparation of radioactive waste and has specially shielded ventilated laboratory space for studies with chemical and mechanical processes that have high radiation levels. In 1981, an event occurred that resulted in a spread of contamination to two main floor rooms and in basement Room 50.

The superstructure framework is welded steel with exterior walls of fluted steel and insulated panels. The first and second floors are steel deck topped with concrete and finished with sheet and tile vinyl. The building is constructed on three levels with a central building and three wings as described above. The facility is a hazard category II nuclear facility.

325C Fluorine Gas Storage. The 325C Building is a small one level stand-alone concrete block structure adjacent to the southeast corner of the 325 Building. It was initially constructed to provide fluorine gas storage. The fluorine gas storage has been discontinued and the building is currently being used for storage of inert (nonhazardous, nonradiological) laboratory supplies. The building is supplied with electrical power for lighting and receptacles but no other utilities or services.

326 Material Science Laboratory. The 326 Building is a three-level L-shaped building with offices along the outside and wet and dry labs along the inside of the first and second floor. It also has a concrete basement. The 326 Building opened in 1953 and was called the material sciences laboratory. The primary mission of the 326 Building is analysis of metallurgical samples of post-irradiated materials. During 1970 and 1980s, several laboratories were converted to chemical work involving unirradiated or low-level radioactive materials, though the central mission continued to support research or reactor components and fuel elements. A high energy electron microscope was installed in the basement in 1971 to perform materials studies.

328 Engineering Services and Safety Building, 328A Sheet Metal Shop. The 328 Building was constructed in 1952 to house the craft, equipment, and fabrication services to the 300 Area.

The 328A Building, attached to the 328 Building, was constructed to replace the 3717 Instrument Shop and the two 3722 Area shops. The building was built as a central shop and housed craft personnel, equipment and fabrication services.

329 Chemical Sciences Laboratory. The 329 Building, also known as the Biophysics Laboratory, was built in 1952 and 1953 to support the environmental and bioassay programs. In 1974 Section D of the building, a pit known as the Neutron Multiplier Facility was added but it did not receive nuclear material until 1977. In 1975, Room 14-C was designated as an isolated facility for work with plutonium and enriched uranium.

The structure is bolted steel framework with exterior walls of fluted steel and insulated panels. The two-story facility portion of the building has a partial basement. The neutron multiplier facility was added in 1974. The interior consists of standard laboratories, maintenance shop, offices and counting rooms with thick concrete walls and ceilings. Numerous "caves" constructed of lead bricks have been built to work with radioactive materials.

331 Life Sciences Laboratory, 331C Storage Facility, 331D Biomagnetic Effects Laboratory, 331G Interim Tissue Repository, 331H Aerosol Wind Tunnel Research Facility. The 331 Building was constructed in 1970. The main portion of the facility is a three-story reinforced concrete building. It consists of laboratories on the first and third floor with a mechanical service floor between them. The functions of the 331 Building and its many ancillary facilities have always involved biological and botanical research. The facility was used to perform radiation effects studies on plants, animals, and fish. The 331 facilities conducted plutonium inhalation studies on dogs and plutonium injection studies on rats. Experiments with the effects of radiation exposure on hair and skin were conducted on swine. The facility contained a cobalt-60 irradiation room, electron microscope suite, labs devoted to dosimetry, isotope preparation, plant physiology, terrestrial ecology, aquatic biology, and biochemistry.

The 331C Building is a low gable single-story butler building constructed on a concrete pad. This building was constructed to support storage of programmatic materials in support of the 331 Laboratory.

The 331D Laboratory is a semi high-bay prefabricated metal building constructed on a concrete slab. The 331D Building was originally constructed as an animal waste facility in support of the 331 Laboratory. In 1977, the facility was converted to the Biomagnetic Effects Laboratory supporting electromagnetic field studies. In early 1990, the facility was converted to general storage space.

The 331G Building is a one story concrete block building erected on a concrete slab. The building was originally constructed as a swine birthing facility but was later converted to an archive for radioactively contaminated animal tissue samples. All samples were removed and disposed of in 1977.

The 331H Building is a one-story concrete block structure built on a concrete foundation and slab. The facility provides space to accommodate the exposure equipment required for

performing advanced stages of research on plants. The building contains a test chamber where plants are exposed to various aerosols and actinide elements. In 1980, a lean-to was attached to the northwest corner.

335 Sodium Test Facility. The 335 Building, constructed in 1968 provided space for experimental equipment to support sodium and potassium tests. The sodium test loops were deactivated in 1977 and removed during 1983-84. The building is a rectangular one-story structure with a reinforced concrete floor and corrugated steel sides. The roof is insulated corrugated steel. The addition has a concrete tile-covered floor with concrete block sides and a tar and gravel roof.

336 High-bay Testing Facility. The 336 Building is a two-level structure with a 15-m (50-ft)-deep pit. The roof is corrugated steel with insulation and built-up roofing topped with gravel. The building consists primarily of a high-bay and dry lab space with associated wet lab and office space. The high-bay portion of the building includes a pit that was originally intended for piping structures. The building was completed in 1969 with the original purpose of housing experimental equipment for the study of the properties of sodium. It was know as the Core Segment Development Facility and supported the Fast Flux Test Facility (FFTF) studies. The sodium test loop equipment was dismantled and removed. The building most recently has been used as a high-bay mechanical test building for research related to multiphase flow phenomena and to experimentally address issues related to the Hanford Site such as waste retrieval, transport, and disposal using nonradioactive simulates. There was a small laboratory built in the early 1990s to support the high-bay testing. Additionally, in 1995 two wet labs were added to the building for research support. The construction also included a common area with a set of restrooms.

337 Technical Management Center, 337B High-bay and Service Wing. The 337 Technical Management Center was constructed to support the 337 High-bay High-Temperature Sodium Facility as an administrative support building. The facility has two reinforced concrete office wings, each three stories high, extending to the east of the 337 High-bay. They are connected by a corridor. The facility is largely used as a support office building. It has a very flexible design and contains large open bay areas with partial wall partitions, which can be configured to accommodate traffic flow and organizational arrangements of the occupants. The eastern first level of the facility contains a kitchen and cafeteria.

The 337 High-bay was constructed during 1970 through 1972 in five segments. The original mission was to support FFTF development in "cold" (nonradioactive) mockup work. The high-bay area is 28.3 m (93 ft) high and housed facilities to test large-scale components prior to installation in the FFTF.

338 Maintenance Building. The 338 Building was moved from the 100 Area in 1971 to provide space to receive, mock up, test and store components and certified materials for use in the 337 High-bay High-Temperature Sodium Facility. By 1981 the building was converted to house the Secured Automated Fabrication Cold Test Facility. In 1988, the facility was converted to a chemical and hazardous materials storage area.

Beryllium contamination is present in many of the facilities addressed under this removal action. Although beryllium is not regulated as a hazardous waste, there are health and safety requirements that must be addressed when working with beryllium-contaminated structures. When work is performed inside a beryllium building, monitoring will be performed to insure that airborne beryllium levels inside of the building do not exceed 0.1 $\mu g/m^3$. Once the building structure is breached, perimeter sampling will be conducted for airborne beryllium using 0.8 micron dust filters analyzed for beryllium using National Institute for Occupational Safety and Health (NIOSH) method 7300. Monitoring will be conducted whenever demolition activities are being performed on buildings found to be beryllium contaminated, and will be discontinued upon completion of facility demolition. The control limit at the boundary will follow the Hanford Site Chronic Beryllium Disease Prevention Program for a safe level of exposure for sensitized workers.

Emissions to the air will be minimized during D4 activities through the use of standard industry practices such as the application of water sprays and fixatives, temporary confinement enclosures/glovebag containments that may be HEPA filtered, and HEPA-filtered and/or charcoal-filtered vacuums. These techniques are considered to be reasonable precautions to control fugitive emissions as required by the regulatory standards and are the same techniques as those applied to control radionuclide air emissions.

Conditions and limitations for the control and monitoring of radioactive and nonradioactive emissions for 318, 320, 323, 325, 326, 329, 331, 340, 340B, 3720, and MO-423 are currently incorporated into the *Hanford Air Operating Permit* (Ecology 2001). The substantive regulatory requirements associated with these facilities may, over time, be incorporated into this RAWP (Appendix B for radioactive emission sources) as part of future revisions to this RAWP, if the emission unit is not shut down prior to transition to CERCLA. The terms and conditions contained in the Washington State Department of Health License, the Washington State Department of Ecology Approval Orders, and the Hanford Site Air Operating Permit will be considered obsolete upon EPA approval of the revised RAWP.

Appendix B of this document provides additional information pertaining to the release and control of potential radiological contaminants to the air. Appendix B is applicable only to emissions of radiological materials to the air.

4.3.2 Stormwater Discharges and Well Decommissioning

Stormwater runoff from some of the facilities listed in the action memoranda (EPA 2005, 2006b) discharge to engineered structures (e.g., injection wells). These injection wells are registered pursuant to WAC 173-218. State Waste Discharge Permit ST 4511 (Ecology 2005) issued pursuant to WAC 173-216 addresses discharges of stormwater to engineered structures. Substantive provisions of the permit include the implementation of BMPs, which are intended to prevent or reduce the spread of contamination and pollution of groundwater of the state, and meeting the groundwater quality criteria (GWQC). The substantive requirements of WAC 173-218 are applicable to the decommissioning of underground injection control wells that do not require further remediation under the 300-FF-2 OU. Sampling and analysis of the stormwater discharge is not normally required as long as the proper pollution prevention and

BMPs are followed, unless contamination exists. Stormwater that has become contaminated is to be sampled to verify that the GWQC are met prior to discharge to the injection well.

The BMPs identified in State Waste Discharge Permit ST4511 (Ecology 2005) will be implemented as appropriate. These BMPs include actions such as conducting inspections to identify and remove materials, etc., that could contaminate stormwater discharges; implementing good housekeeping practices to segregate and store materials and wastes in a manner to prevent the potential for contaminating stormwater; taking reasonable efforts to minimizing ponding; collecting discharges that have become contaminated; cleaning up spilled materials and liquids promptly; and informing work crews of the appropriate BMPs to be implemented.

The removal actions specified in the action memoranda (EPA 2005, 2006b) will result in a unique set of circumstances for each facility. Additional BMPs may be needed to prevent the discharge of contaminated stormwater runoff to an injection well. These practices could include berming, rerouting stormwater discharges, creating new discharge locations, or closing the injection well. If an existing injection well must be closed and does not require further action under CERCLA, it will be decommissioned in accordance with WAC 173-218. Where additional BMPs are required to prevent contamination of stormwater runoff to the injection wells, they will be documented in facility-specific work controlling documents (e.g., work packages). Creating a new injection well will require prior EPA approval.

The substantive requirements of the *Minimum Standards for Construction and Maintenance of Wells* (WAC 173-160) are applicable when decommissioning groundwater wells that are found to require closure prior to performing D4 activities (i.e., the well is located within the BFA boundary).

There is also overland stormwater runoff from areas adjacent to some of the facilities. Some of this stormwater runoff has the potential to reach the bank of the Columbia River, or possibly the Columbia River, through drainage ditches, erosion areas, or other conveyances. These areas were at one time included in a stormwater pollution prevention plan written to address the requirements of a National Pollutant Discharge Elimination System general permit issued pursuant to 40 CFR 122. It was subsequently determined that the discharges did not meet the applicability requirements of the permit and were not subject to the permit requirements. The potential to impact these areas during the removal action will be evaluated, and the potential for runoff from these areas will be eliminated or appropriate best management practices and controls will be implemented to manage runoff. Substantive control requirements from the General Permit for Storm Water Discharges from Construction Activities will be considered, as appropriate. Appropriate controls will be documented in work controlling documents.

4.4 CLEANUP STANDARDS

4.4.1 Final Characterization

As previously stated, it is anticipated that very few sites will be closed as part of this removal action. The process for performing site closure is described in Section 2.6 of this document.

Where the building foundation is above, or intersecting, significant underground contamination or active utilities characterization information for the area will be generated to document the status of conditions at the conclusion of this project, as described in Section 2.7 (Site Stabilization).

4.4.2 Release of Property

All property that is released for offsite disposal and/or reuse and recycle is nonreal property. The release of nonreal property will follow the guidance provided in the contractor's documents. Property released via this process will be viewed as containing no or de minimis levels of CERCLA hazardous substances and therefore will not be subject to CERCLA.

4.5 STANDARDS FOR THE PROTECTION OF NATURAL AND HISTORICAL RESOURCES

The *Archeological and Historic Preservation Act of 1974* (16 U.S.C. 469-469c) provides for the preservation of historical and archeological data (including artifacts) that might be irreparably lost or destroyed as the result of a proposed action. Although the removal action will occur in previously disturbed areas and the discovery of artifacts is unlikely, this law would be applicable to any significant artifacts that may be discovered. The likelihood would be greater at borrow sites from which backfill material is obtained. Awareness training will be provided to site workers. If archeological materials are discovered, a mitigation plan will be developed in consultation with appropriate authorities.

The *Native American Graves Protection and Repatriation Act of 1990* (as implemented by 43 CFR 10) requires agencies to consult and notify culturally affiliated tribes when Native American human remains are inadvertently discovered during project activities. It is unlikely that work proposed in this removal action would inadvertently uncover human remains. If human remains were encountered, the procedures documented in the *Hanford Cultural Resources Management Plan* (DOE-RL 2003) would be followed.

The *National Historic Preservation Act of 1966* (as implemented by 36 CFR 800) requires federal agencies to evaluate historic properties for National Register of Historic Places (36 CFR 800, Section 106) eligibility and to mitigate adverse effects of federal activities on any site eligible for listing in the Register. A programmatic agreement prepared by DOE (DOE-RL 1996) specifies how activities at the Hanford Site will identify, evaluate, and treat buildings and historic archaeological remains from the Hanford era. The accompanying treatment plan (DOE-RL 1998) directs the process for evaluating properties on the Hanford Site, and identifies several 300 Area buildings within the scope of this RAWP as contributing facilities recommended for individual documentation. Stipulation V(C) of the programmatic agreement requires that an interior assessment be undertaken for these facilities to identify artifacts that may have interpretative or education value prior to D&D/D4 activities. Historic items tagged during this walkdown will either be photographed or the items will be retrieved and transported to an appropriate curation facility as stipulated by DOE.

The *Endangered Species Act of 1973* and WAC 232-012-297 require the conservation of critical habitat on which endangered or threatened species depend and prohibit activities that threaten the continued existence of listed species or destruction of critical habitat. The *Migratory Bird Treaty Act of 1918* makes it illegal to remove, capture, or kill any migratory bird or any part of nests or the eggs of any such birds. Although adverse impacts to endangered or threatened species or migratory birds are not expected, activity specific ecological reviews will be conducted to identify and mitigate any potentially adverse impacts prior to beginning field work.

5.0 PROJECT MANAGEMENT AND ORGANIZATION

5.1 PROJECT SCHEDULE AND COST ESTIMATE

The 300 Area facilities' removal action will be scheduled and estimated using the contractor's hierarchy of schedules, which include activity logic and restraints. Activities will be resource loaded for both nonmanual and manual personnel. Equipment needs are identified, and other materials are estimated and included in the budgeted cost of work scheduled.

The schedule, which encompasses the work scope of the 300 Area facilities' removal action, was submitted to EPA under Tri-Party Agreement interim Milestone M-94-01. The schedule for accomplishing this removal action will support completion of the Tri-Party Agreement Milestone M-94-00.

5.1.1 Project Cost and Schedule Tracking

Performance measurement and analysis is performed by the contractor. Project cost and schedule are controlled and updated using the contractor's Management Control System.

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

Trends and baseline change proposals are readily identified through the contractor's formal trend and change control program. All changes that affect the baseline are documented. The contractor's trend register, which is reviewed monthly by contractor senior management, categorizes trends from conception to final resolution. Trends are identified as either performance trends or scope trends and are further defined as resolved or unresolved.

Fiscal year project staffing, as budgeted, is reconciled monthly during project review meetings to the actual number of full-time-equivalent personnel used during the month. Likewise, the corresponding number of hours actually worked are presented and compared to the budgeted current work plan. Actual overtime is monitored monthly (by department) and is reconciled to the current budgeted overtime.

Cost and schedule variances to the current budget are tracked both on a monthly and to-date basis and are reconciled back to the cause of the variance. Project impacts due to the cost and/or schedule variance are described and corrective actions are identified and tracked to the point of final resolution.

5.2 CONDUCT OF OPERATIONS

Conduct of operations is imposed to ensure that work is performed in a controlled and organized manner, such that all facets of work activities have been considered, and that necessary documentation is maintained. Line organizations review existing and planned programs important to safe and reliable facility operations and assess the effectiveness of corporate directives, plans, or procedures at facilities under their cognizance.

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. Safety is the first priority, and all planning will include appropriate safety analyses to identify potential safety and health risks and the means to appropriately mitigate these risks. Workers will not start work until approved safety procedures, instructions, and directions implementing ISMS are provided.

Conduct of operations requires workers to be alert and aware of conditions affecting the job site. Operators and workers conducting field activities should be notified of changes in the building and/or work area status, abnormalities, and difficulties encountered in performing project operations. Similarly, operators and workers will notify the chain of command of any unexpected situations. In accordance with the severity of a finding (i.e., emergency condition), notification requirements will be expanded to include upper tier management and regulatory agencies.

5.3 CHANGE MANAGEMENT/CONFIGURATION CONTROL

If a change arises that results in a fundamental change to the selected response action that is not within the scope of work, another EE/CA or proposed plan and supporting documentation will be prepared to allow DOE and the EPA to select a revised response action.

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

Change management for facilities that have a hazard categorization of Nuclear-Less than Category 3 will comply with the contractor's procedure for management of change process. Change management for facilities that have a hazard categorization of Nuclear-Category 3 will comply with the contractor's procedure for unreviewed safety question process.

5.4 PERSONNEL TRAINING AND QUALIFICATIONS

During the performance of project activities, the experience and capabilities of the operating staff are 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 methods and 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 are 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 may 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 and dismantling the facility by specialized methods (e.g., diamond wire sawing) are examples of activities requiring expert assistance.

The contractor training program provides workers with the knowledge and skills necessary to safely execute assigned duties. A graded approach is used to ensure that workers receive a level of training commensurate with their responsibility that complies with applicable requirements. Specialized employee training includes pre-job safety briefings, plan-of-the-day meetings, and facility/work site orientations. The following training and qualifications may 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)
  - HASP and RWP
  - Respirator Training
  - First Aid (two qualified persons per shift/crew)
  - Certified Asbestos Worker and/or Asbestos Awareness
  - Lead Worker
  - Radiation Worker
  - Beryllium Training
- Training in accordance with 49 CFR 172 Subpart H, "Training"
- Hazardous material training
- Medical surveillance requirements

  - Hazardous waste worker physical
  - Mask fit
  - Lead worker baseline
  - Asbestos worker

- Dosimetry and bioassay requirements

  - Thermoluminescent dosimeter (as directed in the RWP)
  - Plutonium bioassay (as determined by the Radiological Controls organization)
  - Whole body count.

The HASP, RWP, and hazards analysis will include specific requirements for project activities being conducted, which include PPE and required training for project personnel. This is discussed in detail in Section 3.5.

5.5 QUALITY ASSURANCE REQUIREMENTS

Overall quality assurance for the RAWP will be planned and implemented in accordance with 10 CFR 830.120 and other applicable standards. The quality assurance activities will be graded based on the potential impact on the environment, safety, health, reliability, and continuity of operations. Specific activities include quality assurance implementation, responsibilities and authority, document control, quality assurance records, and audits.

5.5.1 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/or corrective action requests. Investigation and corrective actions in response to these adverse conditions will be completed in a timely manner.

5.5.2 Responsibilities and Authority

The contractor must perform quality engineering, design reviews, surveillance, and audits (as necessary) to achieve quality assurance objectives. The contractor must also ensure that the various contractors and design agencies establish design and quality assurance programs to control design in accordance with applicable requirements.

5.5.3 Document Control

All technical documents (e.g., specifications and drawings) will be controlled in accordance with approved configuration management procedures. The responsible design agency will maintain control of the design documents through acceptance of the documents. A project records checklist will be initiated to identify those records required for the final project file.

5.5.4 Quality Assurance Records

Each organization that maintains quality assurance records will be required to control the records in accordance with applicable contractor quality assurance requirements.

5.5.5 Audits/Assessments

Internal and external audits are to be performed by the contractor's Quality Assurance and Services organization to ensure project compliance with the quality assurance program requirements.

5.5.6 Self-Assessments

Self-assessments will be conducted by project personnel to determine compliance in accordance with the requirements of the contractor's procedure.

5.6 PROJECT CLOSEOUT

At the completion of all removal action activities, any documentation that addresses remaining facility conditions that has not already been recorded will be forwarded to the records retention center where it will be included in the Administrative Record for the 300 Area facilities. End state condition of facilities at the time of project closeout will be provided to the EPA.

6.0 REFERENCES

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

10 CFR 830, "Nuclear Safety Management," *Code of Federal Regulations,* as amended.

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

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

29 CFR 1926, "Safety and Health Regulations for Construction," *Code of Federal Regulations,* as amended.

36 CFR 800, "Protection of Historic and Cultural Properties," *Code of Federal Regulations*, as amended.

40 CFR 61, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations,* as amended.

40 CFR 82, "Protection of Stratospheric Ozone," *Code of Federal Regulations,* as amended.

40 CFR 260, "Hazardous Waste Management System: General," *Code of Federal Regulations,* as amended.

40 CFR 264, "Standards for Owners and Operators of hazardous Waste Treatment, Storage, and Disposal Facilities, *Code of Federal Regulations,* as amended.

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

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

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

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

43 CFR 10, "Native American Graves Protection and Repatriation Regulations," *Code of Federal Regulations*, as amended.

49 CFR 100-179, "U.S. Department of Transportation Requirements for the Transportation of Hazardous Materials," *Code of Federal Regulations,* as amended.

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DOE-RL, 2003, *Hanford Cultural Resources Management Plan*, DOE/RL-98-10, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2004a, *300 Area Remedial Action Sampling and Analysis Plan*, DOE/RL-2001-48, Rev. 1, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

DOE-RL, 2004b, *Engineering Evaluation/Cost Analysis #1 for the 300 Area*, DOE/RL-2001-30, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

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