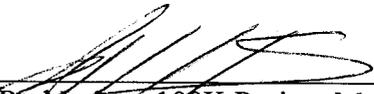


Meeting Minutes Transmittal/Approval
100K Project Managers Meeting
July 14, 2011

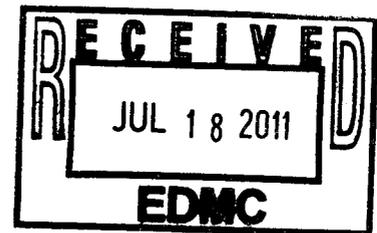
APPROVAL: 
Tom Teynor, 100K Project Manager, DOE RL

Date: July 14, 2011

APPROVAL: 
Rod Lobos, 100K Project Manager, EPA

Date: July 14, 2011

HFFACO Action Plan Section 4.1 states that agreements and commitments resulting from the Project Managers meetings will be prepared and signed by all parties. Approval of these minutes documents approval of agreements and commitments documented in Attachments 2 and 3 to these minutes. Approvals do not apply to any other attachments. Any other attachments are provided for information purposes.



Minutes of the 100K Project Managers meeting of July 14, 2011 are attached. Minutes are comprised of the following.

- | | |
|--------------|--|
| Attachment 1 | Attendance Record |
| Attachment 2 | Milestone Status Report with Agreements,
Commitments and Actions Identified |
| Attachment 3 | Change Request Status with approved changes
signed off at meeting |

ATTACHMENT 2

100K AREA PROJECT MANAGERS MEETING MILESTONE STATUS

July 14, 2011

M-016-140 Submit revised RD/RA Work Plans for 100 K Area RODs as primary document(s) per HFFACO11.6 with new proposed milestones including for the following:

- Complete removal of the K West Basin
- Complete removal of all sludge (includes container, settler tank sludge) from K West Basin except knock out pot contents
- Complete removal of knock out pot contents
- Complete treatment and packaging of first container of TRU sludge waste certifiable for disposal at WIPP
- Complete treatment and packaging of sludge for disposal at WIPP
- Begin 105-KW reactor interim safe storage
- Complete 105-KW reactor interim safe storage
- Initiate soil remediation under KW Basin
- Complete all interim response actions at the 100K Area.

Due 3/31/11, DOE Lead Roger Quintero

- DOE-RL submitted RD/RAWPs and TPA change packages addressing all the elements of Milestone M-16-140 to EPA on March 30, 2011 (letter 11-AMRC-0111). EPA comments were received on May 16, 2011. RL and EPA approved the remaining RD/RAWPs and TPA change packages/change notices on June 15, 2011.

Schedule Status: Complete.

Agreements, Commitments and Actions:

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M-016-170 Complete KOP material pre-treatment.

Due 9/30/2011, DOE Lead Roger Quintero

- KOP Pre-treatment has commenced in the 105-KW Basin.
- TPA- CN-468 was approved that added definition to the DOE/RL-2010-63 RD/RAWP associated with pretreatment completion with considerations to yet to be generated KOP material from processing found fuel and yet to be received SNF from burial ground remediation actions.
- Removal of Found Fuel
 - Inspection continues in the 105-K West Basin to identify and collect any fuel fragments on the basin floor.

- The cleanout of the 118-K-1 burial ground is discovering some SNF that is being further characterized for shipment to 105-K West basin for processing.

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-171 Complete K Basin sludge treatment and packaging technology evaluation report and submit a schedule including proposed new interim milestones for bench scale or identified testing in order to meet M-016-173

Due 03/31/2012, DOE Lead Roger Quintero

- Treatment and Packaging of EC sludge (STP Phase 2 Technology Evaluation and Alternatives Analysis)
 - A Decision Support Board (DSB) made up of personnel from DOE-RL, DOE-CBFO, URS Washington Division, and CHPRC met in a workshop forum to evaluate the technical, operability, and regulatory aspects associated with several sludge treatment options for rating purposes. EPA and DNFSB staff were present as observers.
 - The Technology Alternatives Evaluation Report is in preparation and expected to be delivered to DOE-RL in July 2011.

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-172 Complete KOP material removal from 105-KW Fuel Storage Basin.

Due 9/30/2012, DOE Lead Roger Quintero

- KOP Processing System qualification testing at MASF is complete and a preparation of the test report is in progress.
- Procurement of the “production hardware” associated with the KPS has commenced.
- Offsite fabrication of additional MCOs for load out of the KOP product material is in progress
- Formal design review of final design planned for August 2011.

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-174 Complete final design of sludge retrieval and transfer system.
Due 9/30/2013, DOE Lead Roger Quintero

- Field work on making initial modifications to the 105-KW Basin Annex have commenced.
- Full scale integration testing of the retrieval, transport, and storage system continues at MASF; operator training will follow.
- PNNL is continuing the laboratory analysis on sludge samples from Engineering Containers 210 and 230.

Schedule Status: On schedule.

Agreements, Commitments and Actions:

RL to schedule a tour of MASF with EPA to observe container sludge integrated testing.

M-016-175 Begin sludge removal form 105-KW Fuel Storage Basin
Due 09/30/2014, DOE Lead Roger Quintero
Schedule Status: Pending completion of M-016-174.

Agreements, Commitments and Actions:

M-016-173 Select K Basin sludge treatment and packaging technology and propose new interim sludge treatment and packaging milestones.

Due 03/31/2015 DOE Lead Roger Quintero
Schedule Status: Pending completion of M-016-171.

Agreements, Commitments and Actions:

M-016-176 Complete sludge removal from 105-KW Fuel Storage Basin
Due 12/31/2015, DOE Lead Roger Quintero
Schedule Status: Pending completion of M-016-175.

Agreements, Commitments and Actions:

M-016-53 Complete the interim response actions for the 100 K Area within the perimeter boundary and to the river for Phase 1 actions.

Due 12/31/2012, DOE Lead Ellen Dagan

- Demolition of 183.4 KE-90% Complete
- Demolition of 183.4 KW- 95% Complete
- Demolition of 183.1 KE below grade structure in progress-80% Complete
- Demolition of 183.3 KE in progress-40% Complete
- Waste site below grade demolition and debris load out was conducted during June. The table below displays the number of tons and containers sent to ERDF.

Waste Site	Tons Shipped to ERDF	Number of Containers Shipped
105-KE Admin	7184	433
1706-KER	3195	159
1706-KE	1210	58
UPR-100-K-1 & 100-K-42	3798	215
100-K-56	1113	52
100-K-77	2363	107
116-KE-1	1684	77
100-K-53	119	6
120-KW-1	5235	238

- Completed load out of 100-K-62/117-KE.
- Determined a leach test to determine a site specific K_d value for selenium was not needed in order to support closure of waste site 100-K-63.
- Completing report for Carbon-14 K_d study.
- Three Remaining Sites Verification Packages were approved by DOE-RL and EPA to support the interim closure of the following waste sites 118-KE-2, 118-KW-2 and 130-KE-1.
- Drafting Remaining Sites Verification Packages for waste sites 100-K-110 and 100-K-63
- The Sample Instruction for in-process sampling at 183.2KE, 183.3-KE and 183.7-KE was approved by DOE-RL and EPA.
- The Sample Instruction for sampling at the 183.4-KW and 183.4-KE Clearwells was approved by DOE-RL and EPA.
- The Confirmatory Sampling Instruction for 100-K-79, Subsite 4, Treated Water Lines was approved by DOE-RL and EPA.
- Drafting four Verification Sampling Instructions to include waste sites south of the 183.2-KW Flocculation and Sedimentation Basins (100-K-102, 1607-K3, 100-K-79 Sub-sites 1a and 2a, 100-K-18, 100-K-19, 100-K-34, 120-KW-1, 120-KW-2, 120-KW-3, 120-KW-4, 120-KW-5 120-KW-7, 100-K-109 and 100-K-97).

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-143 Complete the interim response actions for the 100 K Area within the perimeter boundary and to the river for Phase 2 actions.

Due 12/31/2015, DOE Lead Ellen Dagan/Steve Balone

- Asbestos Abatement began in 1720K.
- Completed demolition on 110KW
- Completed demolition of 1605KW Guard Tower

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-178 Initiate deactivation of 105-KW Fuel Storage Basin

Due 12/31/2015, DOE Lead Steve Balone

Schedule Status: Below water debris that will remain in the basin for removal as part of the basin substructure during demolition of the basin is being prepared for grouting by transloading the debris underwater into bins which includes an inspection for found fuel and removal of sludge from the internals of pumps once used for transferring sludge within the basin.

Agreements, Commitments and Actions:

M-016-181 Complete deactivation, demolition and removal of 105-KW Fuel Storage Basin

Due 09/30/2019, DOE Lead Steve Balone

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-186 Initiate soil remediation under 105KW Fuel Storage Basin

Due 12/31/2019, DOE Lead Steve Balone

Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-016-00C Complete All Response Actions in the 100 K Area.
Due 12/31/2020, DOE Lead Tom Teynor
Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-093-22 Complete 105KE Reactor interim safe storage in accordance with remedial design/remedial action work plan.
Due 07/31/2014, DOE Lead Ellen Dagan

- Statement of work has been prepared and procurement actions are in progress for the design of the modifications to the 105KE Reactor for placing it in interim safe storage.

Schedule Status: On Schedule.

Agreements, Commitments and Actions:

M-093-26 Initiate 105-KW Reactor Interim Safe Storage
Due 12/31/2015, DOE Lead Steve Balone
Schedule Status: On schedule.

Agreements, Commitments and Actions:

M-093-27 Complete 105-KW Reactor Interim safe storage
Due 12/31/2019, DOE Lead Steve Balone
Schedule Status: On schedule.

Agreements, Commitments and Actions:

**ATTACHMENT 3
100K AREA PROJECT MANAGERS' MEETING CHANGE
NOTICE STATUS**

None

100K Area Waste Site Remediation Status
July 14, 2011

Phase 1 M-016-053: December 31, 2012	Phase 2 M-016-143: December 31, 2015	Phase 3 (to be determined)	M-016-57 (Initiate soil remediation at K East Basin)	Legend
<p>100-K-3 100-K-6 100-K-18 100-K-19 100-K-34 100-K-36 100-K-37 100-K-38 100-K-46 100-K-53 100-K-55 (pt#1) 100-K-56 100-K-57 100-K-62 100-K-63 100-K-64 100-K-68 100-K-69 100-K-70</p>	<p>100-K-1 100-K-4 100-K-5 100-K-13 100-K-14 100-K-25 100-K-27 100-K-48 100-K-49 100-K-54 100-K-55 100-K-56 (pt#2) 100-K-60 100-K-61 100-K-66 100-K-67 100-K-83 116-KW-1 118-KW-2 120-KE-1 120-KE-2 120-KE-3 120-KE-4 120-KE-5 120-KE-6</p>	<p>100-K-35 100-K-43 100-K-47 100-K-55 100-K-56 100-K-72 100-K-73 100-K-74 100-K-75 100-K-80 100-K-81 100-K-82 116-K-3 116-KE-2 116-KW-2 118-KW-1 128-K-2</p>	<p>UPR-100-K-1</p>	<p>Excavation in progress Failed CSNA Mixed Failed CSNA and RTD Closure Sampling and Docs in Process RSVP approved Backfill complete Revegetation complete</p> <p>Waste site listing is based on DOE/RL-97-16 TPA CN320</p>
<p>100-K-71 100-K-77 100-K-79 116-KE-1 116-KE-3 116-KE-6A 116-KE-6B 116-KE-6C 116-KE-6D 118-KE-2 120-KW-1 120-KW-2 120-KW-3 120-KW-4 120-KW-5 120-KW-7 130-KE-1 132-KE-1 1607-K3 100-K-102</p>	<p>120-KE-8 120-KE-9 120-KW-6 126-KE-2 130-K-2 130-KE-2 130-KW-1 130-KW-2 132-KW-1 1607-K1 1607-K2 1607-K4 1607-K5 1607-K6 100-K-94 100-K-97 100-K-101 100-K-103 100-K-104 100-K-105 100-K-106 100-K-107 100-K-108 100-K-109 100-K-110</p>			

100K Area Removal Action Status (July 14, 2011)

Phase 1 M-016-053: December 31, 2012	Phase 2 M-016-143: December 31, 2015	Phase 3 (M-16-00C)
<p>110KW Gas Storage Facility 110KE Gas Storage Facility 115KE Gas Recirculation Building 116KE Reactor Exhaust Stack 117KE Exhaust Air Filter Building 118KE Horizontal Control Rod Storage Cave 119KE Exhaust Air Sampling 1706KE Radiation Control Counting Lab 1706KEL Developmental Lab 1706KER Water Studies Recirculation Bldg 1713KE Warehouse 1714KE Oil and Paint Storage Shed 183.4KW Clearwell 183.1KW Head House 181KE River Pump House 183.2KW Sedimentation Basin 183.3KW Filter Basin MO048 Construction Lunch Trailer MO060 Conference Trailer MO872 Leased trailer MO873 Leased trailer MO969 HPT Change Trailer 1605KE Guard Tower East</p>	<p>115KW Gas Recirculation Building 116KW Reactor Exhaust Stack 117KW Exhaust Air Filter Building 118KW Horizontal Control Rod Storage Cave 119KW Exhaust Air Sampling Building 166AKE Oil Storage Facility 166KE Oil Storage Vault 166KW Oil Storage Vault 1705KE Effluent Water Treatment Pilot Plant 1713KER Shop Building 1713KW Warehouse 1714KW Oil and Paint Storage Shed 1720K Administration Office Building 1724KB Gas Bottle Storage Facility 182K Emergency Water Reservoir Pump House 183.5KW Lime Feeder Building 183.6KW Lime Feeder Building MO101 Administration MO102 Administration MO214 Administration MO382 Office MO401 Administration MO402 Administration MO442 Classroom/Office MO506 CVDF Lunch Room MO507 CVDF Conference Room MO907 Administration MO917 CVDF Administration MO928 Administration</p>	<p>105KW Water Tunnel 142K CVDF 1506K1 Fiber Optics Hut 165KE Power Control Bldg 142KA CVDF Generator Bldg 165KW Power Control Bldg 167K Cross-tie Tunnel Bldg 1717K Maintenance Shop 1724K Maintenance Shop 1724KA Storage Shed 181KW River Pump House 183KE Chlorine Vault 183.2KE Sedimentation Basin 183.3KE Filter Basin 183.4KE Clearwell 183.1KE Headhouse 183.5KE Lime Feeder 183.6KE Lime Feeder 185K Potable Water Treatment Plant 1908K Outfall Structure 1908KE Outfall Structure 190KE Main Pump House 190KW Main Pump House MO054 Construction Lunch Room MO500 Administration MO236 KW Ops/HPT Change MO237 KW Construction Forces MO323 CVD Change Trailer MO955 Conference Room 1605KW Guard Tower West</p>

Field Work In Progress

Demolition Complete

Closure Actions and
Documentation Complete

TPA Milestone Breakdown

Due Date Sequence:

TPA #	Due Date	DOE Lead	Milestone	Comments
M-016-140	Due 3/31/11	DOE Lead Roger Quintero	Submit revised RD/RA Work Plans for 100 K Area RODs as primary document(s) per HFFACO11.6 with new proposed milestones including for the following:	
M-016-170	Due 9/30/2011	DOE Lead Roger Quintero	Complete KOP material pre-treatment.	
M-016-171	Due 03/31/2011	DOE Lead Roger Quintero	Complete K Basin sludge treatment and packaging technology evaluation report and submit a schedule including proposed new interim milestones for bench scale or identified testing in order to meet M-016-173	
M-016-172	Due 9/30/2012	DOE Lead Roger Quintero	Complete KOP material removal from 105-KW Fuel Storage Basin.	
M-016-53	Due 12/31/2011	DOE Lead Ellen Dagan	Complete the interim response actions for the 100 K Area within the perimeter boundary and to the river for Phase 1 actions.	
M-016-174	Due 9/30/2013	DOE Lead Roger Quintero	Complete final design of sludge retrieval and transfer system.	
M-016-175	Due 09/30/2011	DOE Lead Roger Quintero	Begin sludge removal form 105-KW Fuel Storage Basin	
M-016-173	Due 03/31/2011	DOE Lead Roger Quintero	Select K Basin sludge treatment and packaging technology and propose new interim sludge treatment and packaging milestones.	
M-016-176	Due 12/31/2011	DOE Lead Roger Quintero	Complete sludge removal from 105-KW Fuel Storage Basin	
M-016-178	Due 12/31/2011	DOE Lead Steve Balone	Initiate deactivation of 105-KW Fuel Storage Basin	
M-016-181	Due 09/30/2011	DOE Lead Steve Balone	Complete deactivation, demolition and removal of 105-KW Fuel Storage Basin	
M-016-186	Due 12/31/2011	DOE Lead Steve Balone	Initiate soil remediation under 105KW Fuel Storage Basin	
M-093-22	Due 07/31/2011	DOE Lead Ellen Dagan	Complete 105KE Reactor interim safe storage in accordance with remedial design/remedial action work plan.	
M-016-143	Due 12/31/2011	DOE Lead Ellen Dagan/Steve Balone	Complete the interim response actions for the 100 K Area within the perimeter boundary and to the river for Phase 2 actions.	
M-093-26	Due 12/31/2011	DOE Lead Steve Balone	Initiate 105-KW Reactor Interim Safe Storage	
M-093-27	Due 12/31/2011	DOE Lead Steve Balone	Complete 105-KW Reactor Interim safe storage	
M-016-00C	Due 12/31/2012	DOE Lead Tom Teynor	Complete All Response Actions in the 100 K Area.	

TPA Numerical Sequence:

TPA #	Due Date	DOE Lead	Milestone	Comments
M-016-00C	Due 12/31/2012	DOE Lead Tom Teynor	Complete All Response Actions in the 100 K Area.	
M-016-140	Due 3/31/11	DOE Lead Roger Quintero	Submit revised RD/RA Work Plans for 100 K Area RODs as primary document(s) per HFFACO11.6 with new proposed milestones including for the following:	
M-016-143	Due 12/31/2011	DOE Lead Ellen Dagan/Steve Balone	Complete the interim response actions for the 100 K Area within the perimeter boundary and to the river for Phase 2 actions.	
M-016-170	Due 9/30/2011	DOE Lead Roger Quintero	Complete KOP material pre-treatment.	
M-016-171	Due 03/31/2011	DOE Lead Roger Quintero	Complete K Basin sludge treatment and packaging technology evaluation report and submit a schedule including proposed new interim milestones for bench scale or identified testing in order to meet M-016-173	
M-016-172	Due 9/30/2012	DOE Lead Roger Quintero	Complete KOP material removal from 105-KW Fuel Storage Basin.	
M-016-173	Due 03/31/2011	DOE Lead Roger Quintero	Select K Basin sludge treatment and packaging technology and propose new interim sludge treatment and packaging milestones.	
M-016-174	Due 9/30/2013	DOE Lead Roger Quintero	Complete final design of sludge retrieval and transfer system.	
M-016-175	Due 09/30/2011	DOE Lead Roger Quintero	Begin sludge removal form 105-KW Fuel Storage Basin	
M-016-176	Due 12/31/2011	DOE Lead Roger Quintero	Complete sludge removal from 105-KW Fuel Storage Basin	
M-016-178	Due 12/31/2011	DOE Lead Steve Balone	Initiate deactivation of 105-KW Fuel Storage Basin	
M-016-181	Due 09/30/2011	DOE Lead Steve Balone	Complete deactivation, demolition and removal of 105-KW Fuel Storage Basin	
M-016-186	Due 12/31/2011	DOE Lead Steve Balone	Initiate soil remediation under 105KW Fuel Storage Basin	
M-016-53	Due 12/31/2011	DOE Lead Ellen Dagan	Complete the interim response actions for the 100 K Area within the perimeter boundary and to the river for Phase 1 actions.	
M-093-22	Due 07/31/2011	DOE Lead Ellen Dagan	Complete 105KE Reactor interim safe storage in accordance with remedial design/remedial action work plan.	
M-093-26	Due 12/31/2011	DOE Lead Steve Balone	Initiate 105-KW Reactor Interim Safe Storage	
M-093-27	Due 12/31/2011	DOE Lead Steve Balone	Complete 105-KW Reactor Interim safe storage	

100-K Waste Site Status as of 7/14/2011

Site Code	Site Names	TPA-CN-320	PMB Remedy	CSNA Documentation	RTD Status	RSVP	Backfill Date (estimated)	Revegetation Date (estimated)
100-K-18	100-K-18, 183-KW Caustic Neutralization Pit	Phase 1	RTD	N/A	Verification Sampling		6/30/2012	11/30/2012
100-K-19	100-K-19, 183-KW Caustic Soda Storage Tank Site	Phase 1	CSNA	RA-00134	Verification Sampling		6/30/2012	11/30/2012
100-K-3	100-K-3, 1706-KE Fish Pond Heat Exchanger Pit and Pump Pit, Water Studies Semi-Works	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-34	100-K-34, 183-KW Acid Neutralization Pit	Phase 1	RTD	N/A	Verification Sampling		6/30/2012	11/30/2012
100-K-36	100-K-36, 1706-KE Chemical Storage Facility Dry Well	Phase 1	CSNA	RA-00122	Working		6/30/2012	11/30/2012
100-K-37	100-K-37, 1706-KE Sulfuric Acid Tank	Phase 1	CSNA	RA-00122	Closed	DOE/RL-2010-44	N/A	11/30/2012
100-K-38	100-K-38, 1706-KE Caustic Soda Tank	Phase 1	CSNA	RA-00122	Closed	DOE/RL-2010-44	N/A	11/30/2012
100-K-46	100-K-46, 119-KE French Drain, Drywell	Phase 1	CSNA	RA-00145	Working		6/30/2012	11/30/2012
100-K-53	100-K-53, 100-KE Glycol Heat Recovery Underground Pipelines	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-55	100-K-55, 100-KW Reactor Cooling Water Effluent Underground Pipelines (See Subsites)	Phase 1	RTD	N/A	Not Started		TBD	TBD
100-K-56	100-K-56, 100-KE Reactor Cooling Water Effluent Underground Pipelines (See Subsites)	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-57	100-K-57, 107-KE Drainage Ditch	Phase 1	RTD	N/A	Not Started		TBD	TBD
100-K-6	100-K-6, Vacuum Pit, Cyclone Separator, 105-KE Vacuum Pit	Phase 1	CSNA	RA-00142	Working		6/30/2012	11/30/2012
100-K-62	100-K-62, 117-KE Filter Building	Phase 1	CSNA	RA-00136	Working		6/30/2012	11/30/2012
100-K-63	100-K-63, 100-KW Floodplain, 100-K Flood Plain Contamination Area	Phase 1	CSNA	RA-00086	Working for closure		6/30/2012	11/30/2012
100-K-64	100-K-64, 100-KE Floodplain, 100-KE Flood Plain Contamination Area	Phase 1	CSNA	RA-00086	Not Started		TBD	TBD
100-K-68	100-K-68, 105-KE Pump Gallery and Catch Tank, D Sump	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-69	100-K-69, 105-KE Sump C	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-70	100-K-70, 105-KE Waste Storage Tank, Holding Tank	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-71	100-K-71, 105-KE Collection Box	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
100-K-77	100-K-77, Underground Railroad Ties Southeast of 1706KE	Phase 1	RTD	N/A	Working		6/30/2012	11/30/2012
100-K-79	100-K-79; Sodium Dichromate and Sulfuric Acid Product Pipelines at 100-K	Phase 1	CSNA	RA-00134	Not Started / Confirmatory / Verification Sampling		TBD	TBD
116-KE-1	116-KE-1, 115-KE Condensate Crib	Phase 1	RTD	N/A	NEED PATH FORWARD		TBD	TBD
116-KE-3	116-KE-3, 105-KE Storage Basin French Drain, 105-KE Fuel Storage Basin Sub-Basin Drainage Disposal System Crib	Phase 1	RTD	N/A	Drafting V.S.I.		6/30/2012	11/30/2012
116-KE-6A	116-KE-6A, 1706-KE Condensate Collection Tank, 1706-KE Waste Treatment System	Phase 1	CSNA	RA-00121	Closed	DOE/RL-2010-42	N/A	11/30/2012
116-KE-6B	116-KE-6B, 1706-KE Evaporation Tank, 1706-KE Waste Treatment System	Phase 1	CSNA	RA-00121	Closed	DOE/RL-2010-42	N/A	11/30/2012
116-KE-6C	116-KE-6C, 1706-KE Waste Accumulation Tank, 1706-KE Waste Treatment System	Phase 1	CSNA	RA-00121	Closed	DOE/RL-2010-42	N/A	11/30/2012
116-KE-6D	116-KE-6D, 1706-KE Ion Exchange Column, 1706-KE Waste Treatment System	Phase 1	CSNA	RA-00121	Closed	DOE/RL-2010-42	N/A	11/30/2012
118-KE-2	118-KE-2, 105-KE Horizontal Control Rod Storage Cave	Phase 1	CSNA	RA-00119	Closed	DOE/RL-2010-50	N/A	11/30/2012
120-KW-1	120-KW-1, 183-KW Filter Water Facility Dry Well, 100-KW-1, 183-KW Acid Neutralization Pit, 100-K-17	Phase 1	RTD	N/A	Verification Sampling		6/30/2012	11/30/2012
120-KW-2	120-KW-2, 183-KW Filter Water Facility French Drain, 100-KW-2	Phase 1	RTD	N/A	Verification Sampling		6/30/2012	11/30/2012
120-KW-3	120-KW-3, 183-KW1 Sulfuric Acid Storage Tank	Phase 1	CSNA	RA-00134	Verification Sampling		6/30/2012	11/30/2012
120-KW-4	120-KW-4, 183-KW2 Sulfuric Acid Storage Tank	Phase 1	CSNA	RA-00134	Verification Sampling		6/30/2012	11/30/2012
120-KW-5	120-KW-5, 183-KW Sodium Dichromate Storage Tank	Phase 1	CSNA	RA-00134	Verification Sampling		6/30/2012	11/30/2012
120-KW-7	120-KW-7, 183-KW Brine Pit, 183-KW Salt Dissolving Pits and Brine Pump Pit	Phase 1	CSNA	RA-00134	Verification Sampling		6/30/2012	11/30/2012
130-KE-1	130-KE-1, 105-KE Emergency Diesel Oil Storage Tank, 105-KE Emergency Diesel Fuel Tank	Phase 1	CSNA	RA-00133	Closed	DOE/RL-2010-45	N/A	11/30/2012
132-KE-1	132-KE-1, 116-KE Reactor Exhaust Stack	Phase 1	CSNA	RA-00136	Working		6/30/2012	11/30/2012
1607-K3	1607-K3, 1607-K3 Septic Tank and Associated Drain Field, 124-KW-2, 1607-K3 Sanitary Sewer System, 1607-K3 Septic Tank	Phase 1	RTD	N/A	Verification Sampling		6/30/2012	11/30/2012
100-K-96	100-K-96, 100KE River Effluent Pipeline, 100KE River Line, River Line (East) from 116-K-3 Outfall	Phase 2	RTD	N/A	Not Started			
100-K-1	100-K-1, 119-KW French Drain, 119-KW Exhaust Air Sample Building French Drain, 100-K-45	Phase 2	RTD	N/A	Not Started			
100-K-100	100-K-100, Radioactive Material Area Remaining After 107-KW Basin Removal, 116-KW-3 Remaining Contaminated Soil and Items	Phase 2	RTD	N/A	Not Started			
100-K-101	100-K-101, French Drains and Mercury Stained Soils near the 183KE Sedimentation Basin	Phase 2	RTD	N/A	Not Started			
100-K-102	100-K-102, French Drains and Mercury Stained Soils near the 183KW Sedimentation Basin	Phase 2	RTD	N/A	Verification Sampling			
100-K-103	100-K-103, 1704-K and 1717-K Septic Systems, 1607-K4	Phase 2	RTD	N/A	Not Started			

100-K Waste Site Status as of 7/14/2011

Site Code	Site Names	TPA-CN-320	PMB Remedy	CSNA Documentation	RTD Status	RSVP	Backfill Date (estimated)	Revegetation Date (estimated)
100-K-104	100-K-104, 166-KE French Drain	Phase 2	RTD	N/A	Not Started			
100-K-105	100-K-105, Pit at Southeast Corner of 100K	Phase 2	RTD	N/A	Not Started			
100-K-106	100-K-106, 182-K Fuel Oil Crib	Phase 2	RTD	N/A	Not Started			
100-K-107	100-K-107, 1706-KER Abandoned Drain Field	Phase 2	RTD	N/A	Not Started			
100-K-108	100-K-108, 1706-KER Septic System	Phase 2	RTD	N/A	Not Started			
100-K-109	100-K-109, Unplanned Chemical Release near 183.1KW Head House, Yellow Stained Soil adjacent to 183.1KW Head House	Phase 2	RTD	N/A	Verification Sampling			
100-K-13	100-K-13, French Drain West of the 166-KW Oil Storage Tank Facility	Phase 2	CSNA	RA-00144	Not Started			
100-K-14	100-K-14, 183-KE Acid Neutralization Pit and Overflow French Drain	Phase 2	RTD	N/A	Not Started			
100-K-25	100-K-25, 183-KE Caustic Neutralization Pit	Phase 2	CSNA	RA-00139	Not Started			
100-K-27	100-K-27, 183-KE Caustic Soda Storage Tank Site	Phase 2	RTD	N/A	Not Started			
100-K-4	100-K-4, 1706-KE Wet Fish Studies Ponds and Valve Pit	Phase 2	RTD	N/A	Closed	DOE-RL-2010-43		
100-K-48	100-K-48, 100-KE Oil Contamination Areas	Phase 2	CSNA	RA-00147	Not Started			
100-K-49	100-K-49, 100-KW Oil Contamination Area	Phase 2	CSNA	RA-00147	Not Started			
100-K-5	100-K-5, 1705-KE French Drain	Phase 2	CSNA	RA-00146	Not Started			
100-K-54	100-K-54, 100-KW Glycol Heat Recovery Underground Pipelines	Phase 2	RTD	N/A	Not Started			
100-K-56	100-K-56, 100-KE Reactor Cooling Water Effluent Underground Pipelines (See Subsites)	Phase 2	RTD	N/A	Not Started			
100-K-60	100-K-60, 1904-K Process Sewer (165-KW)	Phase 2	CSNA	RA-00148	Not Started			
100-K-61	100-K-61, 117-KW Filter Building	Phase 2	CSNA	RA-00136	Not Started			
100-K-66	100-K-66, 165-KW Power Control Building	Phase 2	CSNA	RA-00136	Not Started			
100-K-67	100-K-67, 165-KE Power Control Building	Phase 2	CSNA	RA-00136	Not Started			
100-K-83	100-K-83, 1904-K Spillway, 116-K-3, 1904-K Outfall Structure	Phase 2	CSNA	RA000149	Not Started			
100-K-94	100-K-94, 1702-KE and 1702-KW Guard House Dry Wells	Phase 2	RTD	N/A	Not Started			
100-K-97	100-K-97, 183-KW French Drain and Rail Spur Unplanned Release	Phase 2	RTD	N/A	Drafting V.S.I.			
100-K-98	100-K-98, 183-KE French Drain and Rail Spur Unplanned Release	Phase 2	RTD	N/A	Not Started			
100-K-99	100-K-99, Radioactive Material Area Remaining After 107-KE Basin Removal, 116-KE-4 Contaminated Soil and Items	Phase 2	RTD	N/A	Not Started			
116-KW-1	116-KW-1, 115-KW Condensate Crib	Phase 2	RTD	N/A	Not Started			
118-KW-2	118-KW-2, 105-KW Horizontal Control Rod Storage Cave	Phase 2	RTD	N/A	Closed	DOE/RL-2011-35		
120-KE-1	120-KE-1, 183-KE Filter Waste Facility Dry Well, 100-KE-1, 183-KE Filter Water Facility, 183-KE Acid Neutralization Pit, 100-K-26	Phase 2	RTD	N/A	Not Started			
120-KE-2	120-KE-2, 183-KE Filter Waste Facility French Drain, 100-KE-2, 183 KE Filter Water Facility	Phase 2	RTD	N/A	Not Started			
120-KE-3	120-KE-3, 100-KE-3, 183-KE Filter Water Facility Trench	Phase 2	CSNA	RA-00134	Not Started			
120-KE-4	120-KE-4, 183-KE1 Sulfuric Acid Storage Tank	Phase 2	RTD	RA-00134	Not Started			
120-KE-5	120-KE-5, 183-KE2 Sulfuric Acid Storage Tank	Phase 2	RTD	RA-00134	Not Started			
120-KE-6	120-KE-6, 183-KE Sodium Dichromate Tank	Phase 2	CSNA	RA-00134	Not Started			
120-KE-8	120-KE-8, 165-KE Brine Pit, 165-KE Brine Mixing Tank	Phase 2	CSNA	RA-00141	Not Started			
120-KE-9	120-KE-9, 183-KE Brine Pit, 183-KE Salt Dissolving Pits and Brine Pump Pit	Phase 2	RTD	N/A	Not Started			
120-KW-6	120-KW-6, 165-KW Brine Pit, 165-KW Brine Mixing Tank	Phase 2	CSNA	RA-00141	Not Started			
126-KE-2	126-KE-2, 183-KE Liquid Alum Storage Tank #2	Phase 2	RTD	N/A	Not Started			
130-K-2	130-K-2, 1717-K Waste Oil Storage Tank	Phase 2	CSNA	RA-00150	Not Started			
130-KE-2	130-KE-2, 166-KE Oil Storage Tank	Phase 2	CSNA	RA-00136	Not Started			
130-KW-1	130-KW-1, 105-KW Emergency Diesel Oil Storage Tank, 130-KW-1A/130-KW-1B Tanks, 105-KW Emergency Diesel Fuel Tank	Phase 2	CSNA	RA-00137	Not Started			
130-KW-2	130-KW-2, 166-KW Oil Storage Tank	Phase 2	CSNA	RA-00136	Not Started			
132-KW-1	132-KW-1, 116-KW Reactor Exhaust Stack	Phase 2	CSNA	RA-00136	Not Started			
1607-K1	1607-K1, 1607-K1 Septic Tank and Associated Drain Field, 124-K-1, 1607-K1 Sanitary Sewer System, 1607-K1 Septic Tank	Phase 2	RTD	RA-00135	Not Started			
1607-K2	1607-K2, 1607-K2 Septic Tank and Associated Drain Field, 124-KE-1, 1607-K2 Sanitary Sewer System, 1607-K2 Septic Tank	Phase 2	RTD	RA-00135	Not Started			
1607-K4	1607-K4, 1607-K4 Septic Tank and Associated Drain Field, 124-K-2, 1607-K4 Sanitary Sewer System, 1607-K4 Septic Tank	Phase 2	RTD	N/A	Closed			
1607-K5	1607-K5, 1607-K5 Septic Tank and Associated Drain Field, 124-KE-2, 1607-K5 Sanitary Sewer System, 1607-K5 Septic Tank	Phase 2	RTD	RA-00135	Not Started			
1607-K6	1607-K6, 1607-K6 Septic Tank and Associated Drain Field, 124-KW-1, 1607-K6 Sanitary Sewer System, 1607-K6 Septic Tank	Phase 2	RTD	RA-00135	Not Started			
100-K-35	100-K-35, 183-KE Acid Neutralization Pit	Phase 3	CSNA	RA-00139	Not Started			
100-K-43	100-K-43, KW Basin, 105-KW Fuel Storage Basin, K West Basin, Irradiated Fissile Material Storage	Phase 3	RTD	N/A	Not Started			
100-K-47	100-K-47, 1904-K Process Sewer	Phase 3	RTD	N/A	Not Started			

100-K Waste Site Status as of 7/14/2011

Site Code	Site Names	TPA-CN-320	PMB Remedy	CSNA Documentation	RTD Status	RSVP	Backfill Date (estimated)	Revegetation Date (estimated)
100-K-56	100-K-56, 100-KE Reactor Cooling Water Effluent Underground Pipelines (See Subsites)	Phase 3	RTD	N/A	Not Started			
100-K-55	100-K-55, 100-KW Reactor Cooling Water Effluent Underground Pipelines (See Subsites)	Phase 3	RTD	N/A	Not Started			
100-K-72	100-K-72, 105-KW Pump Gallery and Catch Tank, D Sump	Phase 3	RTD	N/A	Not Started			
100-K-73	100-K-73, 105-KW Collection Box	Phase 3	RTD	N/A	Not Started			
100-K-74	100-K-74, 105-KW Waste Storage Tank, Holding Tank	Phase 3	RTD	N/A	Not Started			
100-K-75	100-K-75, 105-KW Sump C	Phase 3	RTD	N/A	Not Started			
100-K-80	100-K-80, 100K River Effluent Pipeline, 100K River Line, 116-K-3 Outfall Structure, 1908 K Outfall	Phase 3	RTD	N/A	Not Started			
100-K-81	100-K-81, Contamination Area West of 116-K-3	Phase 3	RTD	N/A	Not Started			
100-K-82	100-K-82, 105 -KW Fuel Storage Basin Leak	Phase 3	CSNA	N/A	Not Started			
116-K-3	116-K-3, 1904-K Outfall Structure, 1908-K Outfall Structure	Phase 3	RTD	RA-00143	Not Started			
116-KE-2	116-KE-2, 1706-KER Waste Crib	Phase 3	RTD	N/A	Not Started			
116-KW-2	116-KW-2, 105-KW Storage Basin French Drain, 105 KW Basin Reverse Well, 105-KW Fuel Storage Basin Sub-Basin Drainage Disposal System Crib	Phase 3	RTD	N/A	Not Started			
118-KW-1	118-KW-1, 105-KW Reactor Building	Phase 3	CSNA	RA-00136	Not Started			

SGW-40896
Revision 2

Air Monitoring Plan for Waste Site Remediation in the 100-K Area

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

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788



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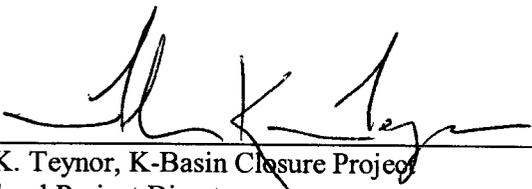
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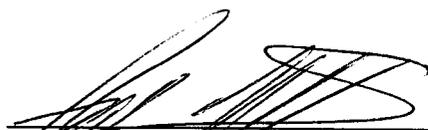
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Terms

ALARA	as low as reasonably achievable
APQ	annual possession quantity
ARAR	applicable or relevant and appropriate requirement
BARCT	Best Available Radionuclide Control Technology
CERCLA	<i>Comprehensive Environmental Response, Compensation, and Liability Act of 1980</i>
CFR	Code of Federal Regulations
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
HPT	health physics technician
MEI	maximally exposed individual
PNNL	Pacific Northwest National Laboratory
PTE	potential-to-emit
RL	U.S. Department of Energy, Richland Operations Office
TEDE	total effective dose equivalent
Tri-Party Agreement	<i>Hanford Federal Facility Agreement and Consent Order</i>
WAC	<i>Washington Administrative Code</i>
WIDS	waste information data system

1. Introduction

This air monitoring plan supports the *Remedial Design Report/Remedial Action Work Plan for the 100 Area* (DOE/RL-96-17) for remediation of the 100-K Area Waste Sites located inside the fence and on the floodplain. This revision incorporates the following changes made to Revision 0:

- Changes made to the 100-K Area Near Facility ambient air monitoring network, *Hanford Federal Facility Agreement and Consent Order* (Tri-Party Agreement) (Ecology et al. 1989) change notices (TPA-CN-318 and TPA-CN-319) for relocation of near-facility ambient air monitors currently supporting the 100-K Area *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA) remedial action to support ongoing and future facility demolition and soil remediation activities.
- Changes made to the potential-to-emit (PTE) estimate. Instead of using estimates based on soil contamination levels, the curies associated with the waste information data system (WIDS) site at 105-KE Basin are assumed to be bounding for all the remaining sites for remediation within the 100-K Area since all the combined curie inventory of the 100-K Area remediation sites is less than the 105-KE Basin boundary estimates. The curie values for 105-KE Basin boundary are based on WIDS information (SGW-40896, Rev. 0) and are considered bounding for the remaining 100-K Area waste sites. Although the project lifetime is listed as 6 years, it is assumed all the curies would be addressed within one year for calculating the offsite dose consequences.
- Changes made to the radionuclide air monitoring activities supporting the 100-K Area remediation work. A paragraph has been added which details additional monitoring that will be performed consisting of a combination of radiological contamination field surveys for removable alpha and beta-gamma activity, and work place air monitoring.

2. Radiological Air Emissions

The State implementing regulation Washington Administrative Code (WAC) 173-480, "Ambient Air Quality Standards and Emission Limits for Radionuclides," sets standards that are as stringent or more so than the federal standards under the *Clean Air Act of 1990* and Amendments (42 United States Code 7401 et seq.), and under the Federal implementing regulation, 40 Code of Federal Regulations (CFR) 61, Subpart H, "National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities." U.S. Environmental Protection Agency (EPA) partial delegation of the 40 CFR 61 authority to the State of Washington includes all substantive emissions monitoring, abatement, and reporting aspects of the federal regulation. The State standards protect the public by conservatively establishing exposure standards applicable to even the maximally exposed public individual, be that individual real or hypothetical. To that end, the standards address any member of the public, at the point of maximum annual air concentration in an unrestricted area where any member of the public may be. All combined radionuclide airborne emissions from the U.S. Department of Energy (DOE) Hanford Site "facility" are not to exceed amounts that would cause an exposure to any said member of the public of greater than 10 mrem/yr effective dose equivalent. The State implementing regulation WAC 246-247, "Radiation Protection – Air Emissions," which adopts the WAC 173-480 standards and the 40 CFR 61, Subpart H standard, requires verification of compliance with the 10 mrem/yr standard, and would be applicable or relevant and appropriate to this remedial action.

The WAC 246-247 addresses emission sources emitting fugitive or diffuse radioactive airborne emissions by requiring monitoring of such sources. Such monitoring requires physical measurement of the effluent or ambient air, and quality assurance measures to assure the precision, accuracy, and completeness of the

environmental measurements. The substantive provisions of WAC 246-247 that require monitoring of radioactive airborne emissions would be applicable or relevant and appropriate to this remedial action.

The above State implementing regulations further address control of radioactive airborne emissions where economically and technologically feasible [WAC 246-247-040(3) and -040(4), "Radiation Protection Air Emissions," "General Standards," and associated definitions]. To meet the substantive aspect of these requirements, best or reasonably achieved control technology will be applied by ensuring that applicable emission control technologies (those successfully operated in similar applications) will be used when economically and technologically feasible (i.e., based on cost/benefit). If it is determined that there are substantive aspects of the requirement for control of radioactive airborne emissions, then controls will be administered as appropriate using reasonable and effective methods.

3. Criteria/Toxic Air Emissions

Under WAC 173-400, "General Regulations for Air Pollution Sources," and WAC 173-460, "Controls for New Sources of Toxic Air Pollutants," requirements are established for the regulation of emissions of criteria/toxic air pollutants. The primary nonradioactive emissions resulting from this remedial action will be fugitive particulate matter. In accordance with WAC 173-400-040, "General Standards for Maximum Emissions," reasonable precautions must be taken to (1) prevent the release of air contaminants associated with fugitive emissions resulting from excavation, materials handling, or other operations; and (2) prevent fugitive dust from becoming airborne from fugitive sources of emissions. The use of treatment technologies that would result in emissions of toxic air pollutants that would be subject to the substantive applicable requirements of WAC 173-460 are not anticipated to be a part of this remedial action. Treatment of some waste encountered during this remedial action may be required to meet Environmental Restoration Disposal Facility (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 applicable or relevant and appropriate requirement (ARAR). If more aggressive treatment is required that would result in the emission of regulated air pollutants, the substantive requirements of WAC 173-400-113(2) and WAC 173-460-060 would be evaluated to determine applicability.

Emissions to the air will be minimized during implementation of this remedial action through use of standard industry practices such as the application of water sprays, fixatives, and wind speed dependent work restrictions. These techniques are considered to be reasonable precautions to control fugitive emissions as required by the regulatory standards.

4. Radiological Airborne Source Information

There is a potential for particulate radionuclide airborne emissions to result from the remedial action activities. The total potential fugitive and diffuse emissions were estimated to be less than those for remediation of the WIDS site at 105-KE Basin boundary. A conservative estimate of potential airborne release was assured by use of the WAC 246-247-030(21)(a) method for estimating the airborne fraction of material excavated or otherwise handled. One part in one thousand of all curies involved in the remedial action was assumed released to the ambient air. Resultant potential exposure to the maximally exposed individual (MEI) of the public was then estimated using dose factors calculated from CAP88-PC runs (EPA 402-R-00-004).

The primary representative radionuclides comprising the combined total curie values within the UPR-100-K-1, 100-K-69, 100-K-70 and a portion of the 100-K-53, 100-K-68 and 100-K-71 waste sites located within the 105-KE Basin boundary are considered bounding for these and all remaining sites to be remediated within 100-K Area located inside the fence and on the floodplain. The total estimates are

1.3E+02 curies of americium-241 and 3.1E+03 curies of cesium-137 as shown in Table 1. These bounding estimates are based on WIDS information for sites within the 105-KE Basin boundary and the known operating history and contamination history of those sites. The combined curie inventory of the 100-K Area sites remaining to be remediated inside the fence and on the floodplain is less than the 105-KE Basin boundary estimates as discussed in Section 1.

This project is expected to take 6 years to complete, however, it is assumed all the annual possession quantity (APQ) would be addressed within one year. The exposure risk will be minimized during this time frame by backfilling as work progresses, thereby keeping the work-related emissions as low as reasonably achievable (ALARA) by keeping exposed areas of contamination minimized.

The distance to the MEI is 8,900 meters north-northwest of the 100-K East Area. This location represents the nearest unrestricted public access and therefore the MEI for purposes of assessing potential public exposure due to airborne releases. The total estimated unabated emissions in terms of PTE could result in up to 4.8 mrem/yr total effective dose equivalent (TEDE) to the MEI (DOE/RL-2006-29). Although effective controls will be utilized, for conservatism the unabated emissions are also assumed to represent the abated emissions. Because the PTE is greater than 0.1 mrem/yr TEDE to the MEI, continuous emissions monitoring is required as discussed in Section 6.

Table 1. Dose Calculations for the Remediation of Remaining Waste Sites in the 100-K Area

Isotope ^a	APQ Ci ^b	WAC 246-247-30(21)(a) Release Factor	PTE (Ci/yr) ^c	Abated Emissions (Ci/yr) ^d	Dose Factor (mrem/Ci) ^e	Unabated Effective Dose (mrem/yr TEDE) ^f	Abated Effective Dose (mrem/yr TEDE) ^g
Am-241	1.3E+02	1.0E-03	1.3E-01	1.3E-01	2.5E+01	3.3E+00	3.3E+00
Cs-137+Progeny	3.1E+03	1.0E-03	3.1 E+00	3.1E+00	4.7E-01	1.5E+00	1.5E+00
Total						4.8E+00	4.8E+00

- a. All alpha emitters are conservatively represented as Am-241 and all beta/gamma emitters are conservatively represented as Cs-137+Progeny.
- b. Ci = Ci values for 105-KE Basin boundary, which are based on WIDS information (SGW 40896, Rev. 0) and are considered bounding for the remaining 100-K Area waste sites. Although the project lifetime is listed as 6 years, it is assumed all APQ would be addressed within one year.
- c. PTE (Ci/yr) = APQ Ci•[WAC 246-247-030(21)(a) Release Factor for liquids or particulate solids].
- d. Abated Emissions (Ci/yr) = PTE (assuming no credit for abatement efficiencies).
- e. Dose Factor Source: DOE/RL-2006-29, *Calculating Potential-to-Emit Radiological Releases and Doses*, Table 4-7 for 100-K Area, effective release height <40 m for onsite MEI.
- f. Unabated Effective Dose (mrem/yr TEDE to the MEI)=[PTE (Ci/yr)]•[Dose Factor (mrem/Ci)].
- g. Abated Effective Dose (mrem/yr TEDE to the MEI)=[Abated Emissions (Ci/yr)]•[Dose Factor (mrem/Ci)].

5. Emission Controls

As a new and significant activity with regard to potential for airborne radionuclide emissions, the removal action will be subject to the substantive provisions of the Best Available Radionuclide Control Technology (BARCT) standard. Due to the straightforward (i.e., excavation type) methods utilized for the removal action, and the allowance in the standard for cost benefit based case-by-case feasibility in the BARCT evaluation process, straightforward BARCT analysis was performed with regard to the potential for emissions associated with these short term cleanup-oriented excavations. Research and operational experience has shown the methods bulletized below to be very effective in reducing and minimizing emissions. Specific citations of studies showing the effectiveness of these methods across the DOE Complex are found in the following:

- *Fixative Analysis for Soil Stabilization Activities at Hanford (Task #3) (ARC 1997)*
- *Demonstration of DeconGel™ at the Oak Ridge National Laboratory Building 2026 (ORNL 2009)*
- *Environmental Assessment and (FONSI) for Mound Plant Decontamination and Decommissioning Projects (EA-683)*
- *233-S PCF Demolition Project, RadCon Practices and Techniques (SRS 2004)*
- *Open Air Demolition of Radiological Contaminated Structures (FH 2008).*

In addition, Hanford experience and ongoing operations have demonstrated that the listed available methods, systems, and techniques for the control of radionuclide emissions represent the most effective control technology from among all known feasible alternatives, and represent the required level of BARCT for the subject removal action. Recent and successful application of these controls at Hanford cleanup projects has included the BC Cribs Characterization, 100 Area soil cleanup, TRU Waste Retrieval Project, 300 Areas soil cleanup, and 212-N, -P, and -R Facilities cleanup each demonstrating excellent radionuclide controls with no measurable impact to any member of the public, be they real or hypothetical maximally exposed individuals.

In general, the BARCT evaluation for the outdoor, relatively short-term removal actions supports use of proven technology. Based on analysis of the potential emissions and consideration of all available and feasible control technologies, the following controls have been selected for use during the removal action.

- Health physics technician (HPT) coverage will be provided as described for these types of excavations in the Hanford Sites radiological control manual of standard practices. This coverage allows for close monitoring of field conditions during the cleanup work, and requires ALARA control of airborne material.
- Water sprays and/or fogging will be applied, as needed, during any excavation and backfilling activities, for suppression of fugitive emissions and dust.
- Water and or chemical-based fixatives will be applied to contaminated soil and/or debris and equipment, as needed, to minimize airborne contamination during the remedial action activities for fugitive emissions and dust. Fixative application techniques may include spraying, brushing on, pouring or some other method, as necessary. Due to the high tack and soil binding nature of the fixatives, they provide greater suppression of the soil matrix and reduce the amount of particle movement when exposed to wind forces of 10-30 mph.

- Fixatives or cover material (e.g., soil, gravel, etc.) will be applied to disturbed contaminated soils associated with the remedial action, when field activities will be inactive more than 24 hours except as noted in the next bullet.
- If the sustained wind speed is predicted overnight to be greater than 32 km/hr (20 mph) based on the Hanford Meteorological Station morning forecast, fixative or cover material will also be applied, as needed. This will allow the project enough time, if necessary, to prepare for the application of dust control measures. If a fixative has already been applied and the contaminated items will remain undisturbed, further use of fixatives will not be needed. The fixatives or other controls will not be applied when the contaminated soil surface is frozen, or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.
- Field activities will be temporarily ceased and the area will be placed in a safe configuration if contamination control measures are not adequate, based on site conditions (e.g., excessive wind).
- The waste packages will remain closed, except during packaging and waste inspection activities, once they are staged, within the CERCLA Area of Contamination or the CERCLA Waste Management Area.
- Operational limits for removable or transferable contamination levels will be established in the activity work packages and associated radiation work plans. Fixatives or other controls will be employed if removable or transferable contamination levels (other than specks of contamination) above 100,000 disintegrations per minute per 100 cm² beta/gamma or exceeding 2,000 disintegrations per minute per 100 cm² alpha are measured or expected. Work will be suspended when either airborne contamination levels are reached or remediation activities cause the migration of dust and or waste from posted contamination area.
- The area of highly-contaminated soil exposed at any one time will be minimized.
- Excavation activities will be stopped if removable or transferable contamination (other than specks of contamination) with detection readings greater than 500,000 disintegrations per minute per 100 cm² beta/gamma or greater than 28,000 disintegrations per minute per 100 cm² alpha is encountered on the soil outside of active work areas posted for contamination control. The size of the posted area at any one time will be minimized to facilitate contamination control and the area stabilized. Excavation in that area will not continue until an internal review of the work and encountered conditions has been performed and an internal determination has been made that no threat to personnel safety or the environment exists, or until proper controls (i.e., removal and disposal, water, fixatives, or covers) have been put in place to mitigate any further potential for emissions, and EPA and DOE, Richland Operations Office (RL) have been contacted and briefed of the situation.
- The ambient air 2-week sampling results for gross alpha and beta will be trended and checked for statistical elevations greater than 3 standard deviations above the mean (> 3 sigma). If greater than 3 sigma results are realized, then administrative and/or engineered contamination controls, for the activities ongoing during the time frame of the sampling period, shall be reviewed for adequacy. If warranted, modifications to the controls shall be implemented.

6. Monitoring

The calculated unabated annual dose combined for all related activities during the remedial action is 4.8 mrem/yr TEDE to the MEI. Therefore, this activity is subject to emissions monitoring in accordance with the substantive requirements of WAC 246-247-075(1). Fugitive and diffuse emissions monitoring

with applicable quality assurance will be provided, reflecting the substantive requirements of WAC 246-247-075(8). Near facility monitors and radiological field surveys are sufficient to meet the continuous monitoring requirement.

The 100-K Area Near-Facility ambient air monitoring network will be used for continuous monitoring since the PTE is greater than 0.1 mrem/yr TEDE to the MEL. These monitors will be operated equivalent to those in the 200 Area Near-Facility Monitoring Network already approved for major source monitoring of fugitive/diffuse emissions. Near-facility monitoring is performed in the 105-KE/105-KW Basins locale as part of the Hanford Site Near-Facility Monitoring Program, described in the *Environmental Monitoring Plan* (DOE/RL-91-50, latest revision) to monitor ambient air quality as may be impacted by localized fugitive/diffuse radionuclide emissions. This existing network of near-facility ambient air monitoring stations is maintained in the 100-K Area to address U.S. DOE requirements (as described in the referenced plan) which are separate from requirements under this remedial action. The latest Near-Facility Monitoring Program direction is to replace the 8 currently operating ambient air monitoring stations very near the 105-KE/105-KW Basins with a perimeter of 6 stations, each within a radius of roughly 500 m from the footprint of the combined facilities as shown in Figure 1. One existing ambient air monitoring station operated by Pacific Northwest National Laboratory (PNNL) and within the 500m arc will provide data utilized for the Near-Facility Monitoring Program. In addition, as noted in Figure 1, one ambient air monitor will be added approximately midway between the 105-KE and 105-KW Buildings. While additional adjustment in the number or location of these monitoring stations may occur to support the Near-Facility Monitoring Program, it will be assured that no less than three of these air monitoring stations will remain within the 100-K Area locale as part of the Near-Facility Monitoring Program for the duration of the remedial action project at waste sites within the 100-K Area. Any outage of the ambient air monitoring stations will be corrected as expeditiously as practicable.

In addition, if one of the Near-Facility Program air monitors at 100-K Area is out of operation for more than 48 hours during normal work operations (excluding weekends and holidays, when work activities are not being conducted), where there is a potential for radiological airborne emissions, RL and EPA will be notified. If two of the Near-Facility Program air monitors at 100-K Area are out of operation during normal work operations, activities where there is a potential for radiological airborne emissions shall be temporarily suspended until operation of at least one of the two designated air monitors is restored or backup equipment is deployed and operational.

As part of the sitewide evaluation of near facility monitoring data, the electronic release summary database compares near-facility monitoring composite air sample results to 10% of the 40 CFR 61, Appendix E, Table 2 values. The database identifies results that exceed these values. Results from the air monitors identified in this document that are above these values will be reviewed, the adequacy of the controls evaluated as appropriate, and RL and EPA will be notified.

Using a graded approach, additional monitoring for diffuse and fugitive emissions may be conducted in place of using hand held instruments during excavation activities at radiologically contaminated waste sites. The additional monitoring may consist of a combination of radiological contamination surveys for removable alpha and beta-gamma activity, and work place air monitoring. Work progress contamination surveys may be performed adjacent to contamination area boundaries during active remediation to monitor for contamination spread, as needed. Contamination surveys adjacent to contamination area boundaries during active remediation are performed several times per shift, if warranted. Periodic contamination surveys are performed, when needed, on those portions of the heavy equipment working within the posted contamination areas (e.g., track-hoe buckets, demolition hammers, and pipe cutting shears) to ensure removable contamination levels are below the limiting conditions of the applicable

Radiation Work Permit. Contamination surveys on those portions of the heavy equipment within the contamination area are normally performed once per shift.

Using a graded approach, workplace air monitoring may be conducted during soil excavation and structure demolition activities performed in radioactively contaminated waste sites. Low volume air samplers with the sample head positioned adjacent to the excavator bucket and/or demolition hammer may be mounted on heavy equipment performing soil remediation during excavation, loading out of waste material, and concrete demolition, if needed. In addition, air samples may be collected in downwind positions along the contamination area boundary of waste sites undergoing remediation. Lapel air samplers may be worn by personnel entering areas that are monitored for occupational exposure to airborne radioactivity when workplace air samplers are determined to be non-representative of active work areas (i.e., not close enough to the workers or in the wrong position to be representative of the breathing zone air activity).

Following completion of the remedial action, monitoring data will be reviewed to verify the approved emission levels were not exceeded.

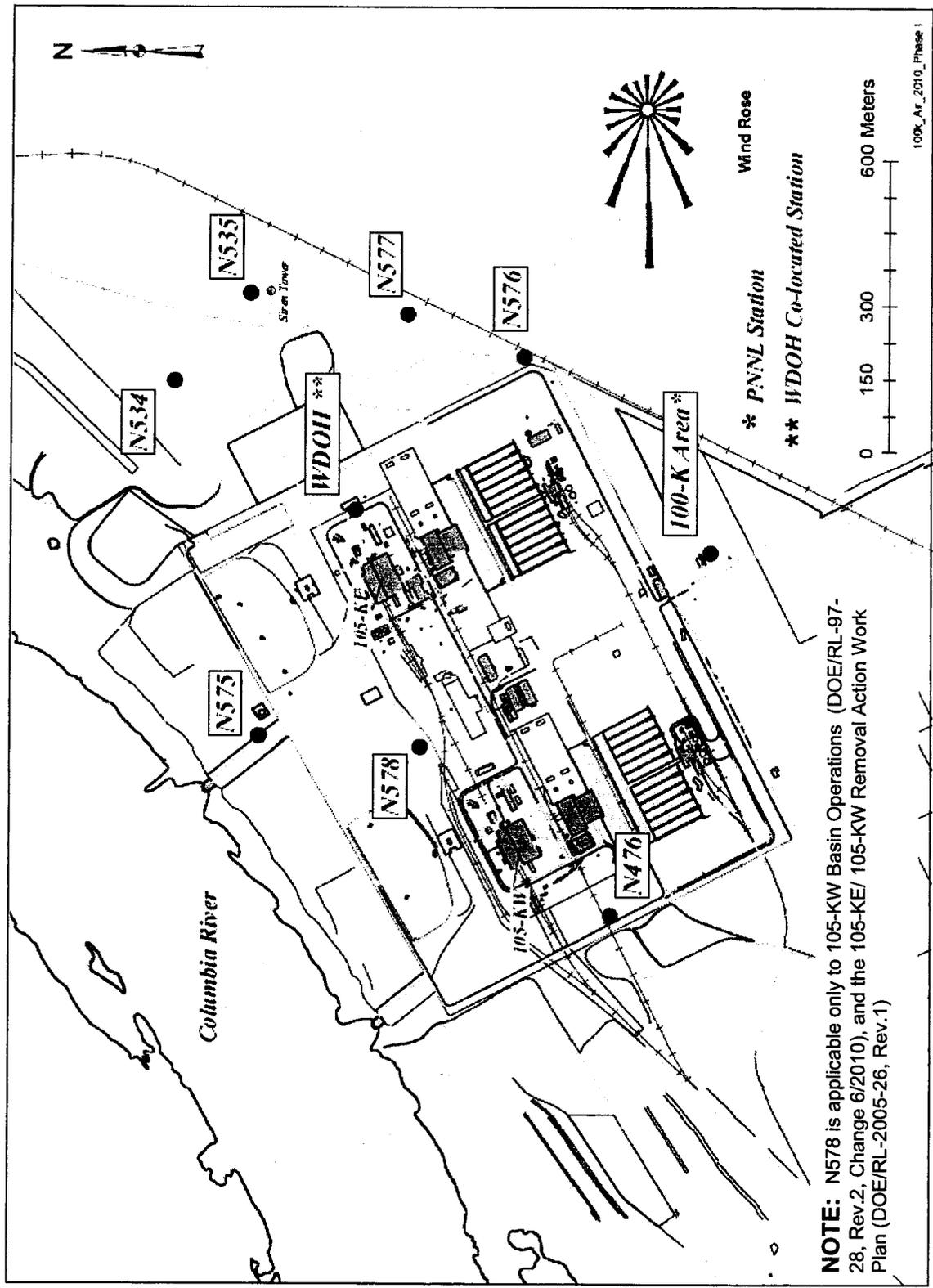


Figure 1. Locations of Ambient Air Monitoring Stations

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