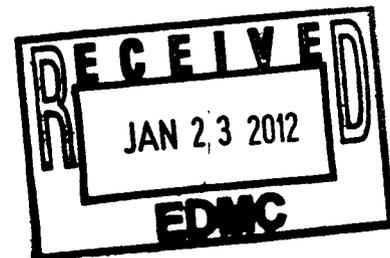


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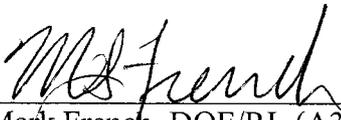
## 100/300 AREA UNIT MANAGER MEETING ATTENDANCE AND DISTRIBUTION

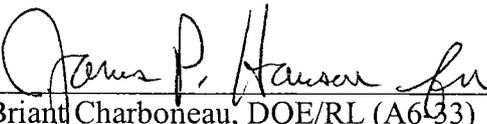
NAME	E-MAIL ADDRESS	MSIN	COMP
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Gadbois, Larry E	Gadbois.larry@epa.gov	B1-46	EPA
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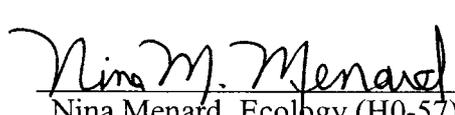


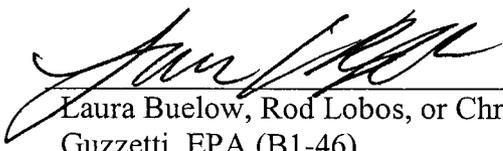
100/300 AREA UNIT MANAGERS MEETING  
APPROVAL OF MEETING MINUTES

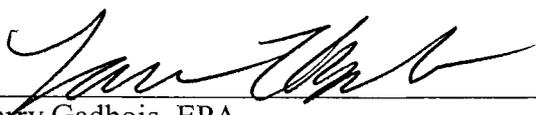
November 10, 2011

APPROVAL:  Date 12/8/11  
Mark French, DOE/RL (A3-04)  
River Corridor Project Manager

APPROVAL:  Date 12/8/11  
Brian Charboneau, DOE/RL (A6-33)  
Groundwater Project Manager

APPROVAL:  Date 12/8/11  
Nina Menard, Ecology (H0-57)  
Environmental Restoration Project  
Manager

APPROVAL:  Date 12/8/11  
Laura Buelow, Rod Lobos, or Christopher  
Guzzetti, EPA (B1-46)  
100 Area Project Manager

APPROVAL:  Date 12/8/11  
*Laura C. Buelow for* Larry Gadbois, EPA  
(B1-46)  
300 Area Project Manager

**100 & 300 AREA UNIT MANAGER MEETING MINUTES**

**Groundwater and Source Operable Units; Facility Deactivation, Decontamination, Decommission, and Demolition (D4); Interim Safe Storage (ISS); Field Remediation (FR); and Mission Completion**

**November 10, 2011**

**ADMINISTRATIVE**

- Next Unit Manager Meeting (UMM) – The next meeting will be held December 8, 2011, at the Washington Closure Hanford (WCH) Office Building, 2620 Fermi Avenue, Room C209.
- Attendees/Delegations – Attachment A is the list of attendees. Representatives from each agency were present to conduct the business of the UMM.
- Approval of Minutes – The October 13, 2011, meeting minutes were approved by the U.S. Environmental Protection Agency (EPA), Washington State Department of Ecology (Ecology), and U.S. Department of Energy, Richland Operations Office (RL).
- Action Item Status – The status of action items was reviewed and updates were provided (see Attachment B).
- Agenda – Attachment C is the meeting agenda.

**EXECUTIVE SESSION (Tri-Parties Only)**

An Executive Session was held by RL, EPA, and Ecology prior to the November 10, 2011, UMM. Attachment D is the meeting agenda.

It was decided that the groundwater, D4, FR, and Mission Completion presentations should continue to be provided in advance of the UMM.

Presenters should discuss highlights from or background behind the summaries (e.g., significant progress or changes, system start-ups or shutdowns, arising issues, decisions or agreements made or being worked on outside of the UMM and the rationale for those decisions, etc.). The intent is to allow regulators and contractors to learn about crosscutting issues from other projects. Regulators will identify a week in advance any special topics they want to have presented in greater detail.

Technical and/or project staff should be present to respond to questions posed by the regulators. To allow more time for staff to commute from the outer areas, the UMM will start at 2:00 p.m., instead of 1:30 p.m.

**100-F & 100-IU-2/100-IU-6 AREAS (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. No issues were identified and no action items were documented.

Agreement 1: Attachment 3 provides an agreement to remove and resample three small stained areas at 100-F-57.

### **100-D & 100-H AREAS (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. No issues were identified and no action items were documented.

Agreement 1: Attachment 4 provides an agreement to relocate air monitor N510 approximately 150 feet to the North to allow access to the 100-H borrow pit.

### **100-N AREA (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. Attachment 5 provides status and information for D4/ISS activities at 100-N. No issues were identified and no action items were documented.

Agreement 1: Attachment 6 provides an agreement to update the 100-N bioremediation Ex-Situ Phase 1 plan to add a decision (outcome) statement to clarify that if concrete/debris is present and cannot be segregated the material will be disposed to ERDF.

### **100-K AREA (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. No issues were identified and no action items were documented.

Agreement 1: During the UMM, the EPA authorized future shipments could be made to K Basins of any remaining fuel pieces discovered during remediation of 118-K-1. As of November 10, 2011, there are 9 pieces of SSNF stored at the 118-K-1 burial ground.

### **100-B/C AREA (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. Attachment 2 provides status and information for Field Remediation activities. No issues were identified and no agreements or action items were documented.

### **300 AREA – 618-10/11 (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. No issues were identified and no agreements or action items were documented.

### **300 AREA - GENERAL (GROUNDWATER, SOILS, D4/ISS)**

Attachment 1 provides status and information for groundwater. Attachment 7 provides status of the 300 Area Closure Project activities. No issues were identified and no agreements or action items were documented.

## **REGULATORY CLOSEOUT DOCUMENTS OVERALL SCHEDULE**

No issues were identified and no agreements or action items were documented.

## **MISSION COMPLETION PROJECT**

Attachment 8 provides status and information regarding the Orphan Sites Evaluations, Long-Term Stewardship, River Corridor Baseline Risk Assessment, the Remedial Investigation of Hanford Releases to the Columbia River, and a Document Review Look-Ahead. No issues were identified and no agreements or action items were documented.

## **5-YEAR RECORD OF DECISION ACTION ITEM UPDATE**

No changes were reported to the status of the CERCLA Five-Year Review action Items. No issues were identified and no agreements or action items were documented.

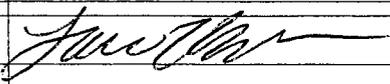
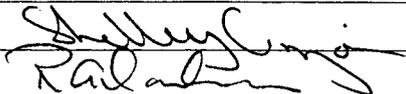
# Attachment A

100/300 AREA UNIT MANAGER MEETING

ATTENDANCE AND DISTRIBUTION

November 10, 2011

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<i>Joy Shoemaker</i>	<i>joy-shoemaker@vt.gov</i>		<i>CH</i>	<i>Joy Shoemaker</i>

# Attachment B

100/300 Area UMM  
Action List  
November 10, 2011

Open (O)/ Closed (X)	Action No.	Co.	Actionee	Project	Action Description	Status
O	100-181	RL	J. Hanson	100-HR	DOE will provide Ecology with a briefing on the applicability and status of bioremediation of chromium and the associated feasibility studies.	Open: 4/14/11; Action:
O	100-189	RL	J. Hanson	100-HR	DOE will provide Ecology with the decommissioning schedule for the ISRM Pond by October 17, 2011.	Open: 9/8/11; Action:
X	100-190	RL	J. Hanson	100-D	DOE will provide Ecology with a information for filling the 182-D reservoir or an update at the October 2011 UMM.	Open: 9/8/11; Action: Closed 10/13/11
O	100-191	RL	J. Hanson	100-HR	DOE will have CHPRC provide Ecology with a schedule for evaluating the decommissioning path-forward of the ISRM Pond and a schedule for when a meeting will be held to present recommendations.	Open: 10/13/11; Action:

# Attachment C

100/300 Area Unit Manager Meeting  
November 10, 2011  
Washington Closure Hanford Building  
2620 Fermi Avenue, Richland, WA 99354  
Room C209; 1:30p.m.

Administrative:

- Approval and signing of previous meeting minutes (September 2011)
- Update to Action Items List
- Next UMM (12/8/2011, Room C209)

Open Session: Project Area Updates - Groundwater, Field Remediation, D4/ISS:

- 100-F & 100-IU-2/6 Areas (Greg Sinton/Tom Post/Jamie Zeisloft)
- 100-D & 100-H Areas (Jim Hanson/Tom Post/Joanne Chance)
- 100-N Area (Joanne Chance, Rudy Guercia, Mike Thompson)
- 100-K Area (Jim Hanson, Jamie Zeisloft, Ellen Dagon, Steve Balone)
- 100-B/C Area (Greg Sinton, Tom Post)
- 300 Area - 618-10/11 exclusively (Jamie Zeisloft)
- 300 Area (Mike Thompson/Rudy Guercia)
- Regulatory Closeout Documents Overall Schedule (John Neath, Mike Thompson)
- Mission Completion Project (John Sands)

Special Topics/Other

- 5-Year Record of Decision Action Item Update (Jim Hanson)

Adjourn

# Attachment D

100/300 Area Executive Session  
Tri-Parties Only  
November 10, 2011  
Washington Closure Hanford Building  
2620 Fermi Avenue, Richland, WA 99354  
Room C209; 1:00-1:30 p.m.

1:00 - 1:30 p.m.

Executive Session (Tri-Parties Only):

- Amount of discussion to have during the Regular Session for handouts distributed in advance
- Attendance at Regular Session by DOE and/or contractors that can answer questions about each Operable Unit
- Next Executive Session (12/8/2011, Room C209)

# Attachment 1

**100/300 Areas Unit Managers Meeting  
November 10, 2011**

**RL Concurrence on RI/FS Report and PP Submittal Dates**

Letter 11-AMCP-0247 received from RL on October 3, 2011, concurs with the revised schedule set forth at the request of letter CHPRC-1104577, "Contract Number DE-AC06-08RL14788 – Request for Clarification Direction Regarding River Corridor Remedial Investigation/Feasibility Study and Proposed Plan Documentation Schedule," dated September 14, 2011 as identified below:

<b>Operable Unit</b>	<b>TPA #</b>	<b>Current Tri-Party Agreement Target Date</b>	<b>Submittal Date to Regulators</b>
D/H	M-015-70-T01	11/24/11	1/12/12
BC	M-015-68-T01	11/30/11	3/15/12
FIU	M-015-64-T01	12/17/11	5/14/12

**General information on Aquifer Tube Sampling**

The comprehensive, annual sampling event for FY 2012 is scheduled for October through December. No aquifer tubes were sampled in October because well sampling takes higher priority. Sampling staff intend to devote overtime on Fridays to aquifer tube sampling. Relative priority for aquifer tube sampling has been set so that tubes that were not sampled in FY 2011 (100-BC, 100-F, Hanford Town Site, and fall event in 300 Area) get highest priority.

**General information on Groundwater Sampling**

The sampling organization reported delays in obtaining CERCLA groundwater samples scheduled for October. The wells completed successfully are reported in a table on the last page of this handout. Primary contributors to delays include the large number of samples scheduled during October, drilling activities continuing into FY12, and laboratory issues being resolved at WSCF. CHPRC is working to resolve the backlog.

**100-FR-3 Groundwater Operable Unit – Bert Day / Mary Hartman**

(M-015-64-T01, 12/17/2011, Submit CERCLA RI/FS Report and Proposed Plan for the 100-FR-1, 100-FR-2, 100-FR-3, 100-IU-2, and 100-IU-6 Operable Units for groundwater and soil.)

*Schedule Status - The new planned delivery date for the 100-FIU Draft A RI/FS Report to the regulators is May 14, 2012. Field investigations are complete.*

Status of FY 2011 groundwater sampling: All wells were sampled successfully. See the table provided on the last page of this handout for a listing of the wells sampled during October 2011.

No new groundwater monitoring results to report. The full network of wells was scheduled for sampling in October but has been delayed.

**100-HR-3 Groundwater Operable Unit – Bert Day / John Smoot**

(M-15-70-T01, 11/24/2011, Submit feasibility study report and proposed plan for the 100-HR-1, 100-HR-2, 100-HR-3, 100-DR-1 and 100-DR-2 operable units for groundwater and soil.)

*Schedule Status - The new planned delivery date for the 100-D/H Draft A RI/FS Report to the regulators is January 12, 2012. Field investigations will be complete after slug testing is complete.*

(M-16-111C, Expand current pump-and-treat system at 100-HR-3 operable unit utilizing ex situ treatment, in situ treatment or a combination of both to a total 800 gpm capacity or as specified in the work plan.)

**100/300 Areas Unit Managers Meeting  
November 10, 2011**

*Schedule Status – Completed 9/29/2011 with the startup of HX facility. Currently HR-3 Operable Unit pump and treat systems are running at a combined treatment rate of approximately 1050 gpm. A letter is forthcoming to document the completion of this milestone.*

- HR-3 Treatment System
  - For the period October 1 through 31, 2011:
  - The HR-3 system has been placed in cold standby on May 5, 2011.
- DR-5 Treatment System
  - For the period October 1 through 31, 2011:
  - The DR-5 system has been placed in cold standby on February 28, 2011.
- DX Pump and Treat system
  - For the period October 1 through 31, 2011:
  - The DX pump and treat system is operating.
  - Total average flow through the system is 502 gpm.
  - October 1 through 31, 2011 performance:
    - The system treated 21.8 million gallons.
    - The system removed 65.92 kg of hexavalent chromium.
  - Design modifications are being prepared to protect the four wells on the flood plain from damage in future high water events. Work packages are being prepared to repair the wells and return them to service.
  - Performance monitoring is ongoing.
- HX Pump and Treat System,
  - Construction of the facility been turned over to S&GRP operations to commence operations testing.
  - Operational Testing is scheduled from October through December 2011.
  - Performance monitoring will be initiated concurrently with Operational Testing.
  - October 1 through 31, 2011 performance:
    - The system treated 24 million gallons.
    - The system removed 3.25 kg of hexavalent chromium
- ISRM Pond Sealing
  - This topic has been added to the IAMIT meeting agenda for November.
- RI/FS Activities
  - The replacement well was installed at the 100-D-12 waste site location (well R5). Construction of the well was completed November 3.
  - Slug testing for the HR-3 RI/FS wells is currently being planned for November and December 2011.

**100-NR-2 Groundwater Operable Unit – Nathan Bowles / Deb Alexander**

(M-015-62-T01, 9/17/2012, Submit a Feasibility Study [FS] Report and Proposed Plan [PP] for the 100-NR-1 and 100-NR-2 Operable Units including groundwater and soil. The FS Report and PP will evaluate the permeable reactive barrier technology and other alternatives (petroleum remediation) and will identify a preferred alternative in accordance with CERCLA requirements.)

*Schedule Status – On schedule. Field investigations are now complete with all well-drilling/sampling work completed in September (discussed further below).*

- RI/FS Activities
  - Well drilling/sampling:

**100/300 Areas Unit Managers Meeting  
November 10, 2011**

- 199-N-182 (C8184/#R1), 199-N-183 (C8185/#2), 199-N-185 (C8187/#R2), 199-N-186 (C8188 #3), and 199-N-189 (C8191/#6) – Field activities were completed in previous months.
- 199-N-184 (C8186/#1), 199-N-187 (C8189/#4), and 199-N-188 (C8190/#5) – Well drilling and sampling were completed for all three wells as planned in the SAP, and the wells have been constructed and accepted for routine use
- 199-N-186 (C8188 #3), 199-N-187 (C8189/#4), and 199-N-188 (C8190/#5) – The three wells completed in the footprint of either the 1301-N or the 1325-N trenches will be sampled quarterly for one year using the RI/FS SAP groundwater analyte list as now required under approved TPA-CN-478.

- Apatite PRB Extension

The *Design Optimization Study for Apatite Permeable Reactive Barrier Extension for the 100-NR-2 Operable Unit* (DOS; DOE/RL-2010-29, as modified by approved TPA-CN-474) for the expansion of the existing Apatite Barrier by an additional 600 feet was completed in September 2011. This study had several objectives: (1) Refine application of the high-concentration calcium-citrate-phosphate solution (HCS) over a larger scale, (2) Test the effectiveness of the HCS in previously untested sediment to compare with all previous injection scenarios, (3) Test the new well design installed under DOE/RL-2009-32 to evaluate the adequacy of injection solution delivery to the target zones (vadose, groundwater), (4) Test and optimize operation of the new injection delivery system to verify the system can deliver the designed injection flow volume at multiple well locations, (5) Evaluate that the PRB can achieve up to a 90 percent reduction in Sr-90 flux to the river, and (6) Further test the impact of the HCS has on release of Sr-90 and other metals from previously untreated sediments to the river. At this time it appears that objectives 1 through 4 have all been met; further discussion on how these objectives were met will be given in a summary report of this test to be completed after the initial injection and monitoring data are all in and evaluated. Over time, performance monitoring of the extension injection areas, both upstream, and downstream, will determine if the 5<sup>th</sup> and 6<sup>th</sup> objectives have been met.

Final post-injection samples were collected during the month of October and included: (1) 2<sup>nd</sup> and 4<sup>th</sup> week samples on the downriver extension monitoring sites (monitoring wells 199-N-350, -351, -352, -353, and aquifer tubes C7881 (Array-7A replacement) and Array-8A) and (2) 4<sup>th</sup> week samples on the upriver extension monitoring sites (monitoring wells 199-N-349, -348, -96A, -347, and aquifer tubes Array-1A and Array-2A). As data become available, more information will be provided on performance monitoring results at upcoming UMMs.

- Apatite PRB Performance Monitoring of the Original 300 ft PRB

The low river stage performance monitoring is tentatively scheduled for early November. It will include the four monitoring wells (199-N-122, -123, -146, -147) and four aquifer tubes (Array-3A, Array-4A, Array-6A, and NVP-2-116.0m).

- Diesel Plume and Monitoring Data

All five WCH wells were sampled in late May/early June (199-N-167, -169, -170, -171, and -172). Wells N-18, N-96A, and other nearby monitoring wells were sampled in September. Well 199-N-173 has not been sampled yet, but should be done in October or November. Once these data are in, we will begin generating the new plume map for the 2011 Groundwater Annual Report. The new RI/FS well (C8185/N-183) installed to replace N-18 (for sampling) will be sampled annually in September along with the rest of the CERCLA wells at 100-N. Data from sampling during this year's drilling will be used to augment the plume map generated for 2011.

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Well 199-N-18 will be used for product removal only after this year (2011). Smart sponge removal data (for N-18) to date is reported below.

<b>Year</b>	<b>TPH Product Removed (g)</b>	<b>Notes</b>
2003	~1,200 (see notes below)	Estimate provided per information given in note below; data records lost when original work package was lost in the field.
2004	3,475	Changed out twice per month.
2005	780	Changed approximately every 2 months.
2006	1,370	Changed every 2 months.
2007	1,294	Changed every 2 month.
2008	920	Changed every 2 months.
2009	1,380	Changed approximately every 2 months.
2010	225.5	Changed only twice prior to June 2010; smart sponge broke apart in well. No removal for second half of 2010.
2011*	400	Changed approximately every two months.
<b>Total</b>		<b>~11.31 kg removed through September of 2011</b>

**Notes:**

- DOE/RL-2004-21, *Calendar Year 2003 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit (OU) Pump & Treat Operations*, reports that product removal started in October 2003.
- DOE/RL-2005-18, *Calendar Year 2004 Annual Summary Report for the 100-HR-3, 100-KR-4, and 100-NR-2 Operable Unit Pump-and-Treat Operations*, states that the average mass removal for FY 2004 (October 2003 through October 2004) was approximately 0.4 kilograms per month, so an estimate is provided for the 3 months missing in CY 2003.

\*Through 9-27-11

**100-KR-4 Groundwater Operable Unit – Bert Day / Chuck Miller**

**M-015-66-T01: Submit CERCLA RI/FS Report and PP for the 100-KR-1, 100-KR-2, and 100-KR-4 Operable Units for groundwater and soil, due 9/21.** Both documents submitted ahead of schedule on 9/19 for a 45 day review; comments anticipated in early November.

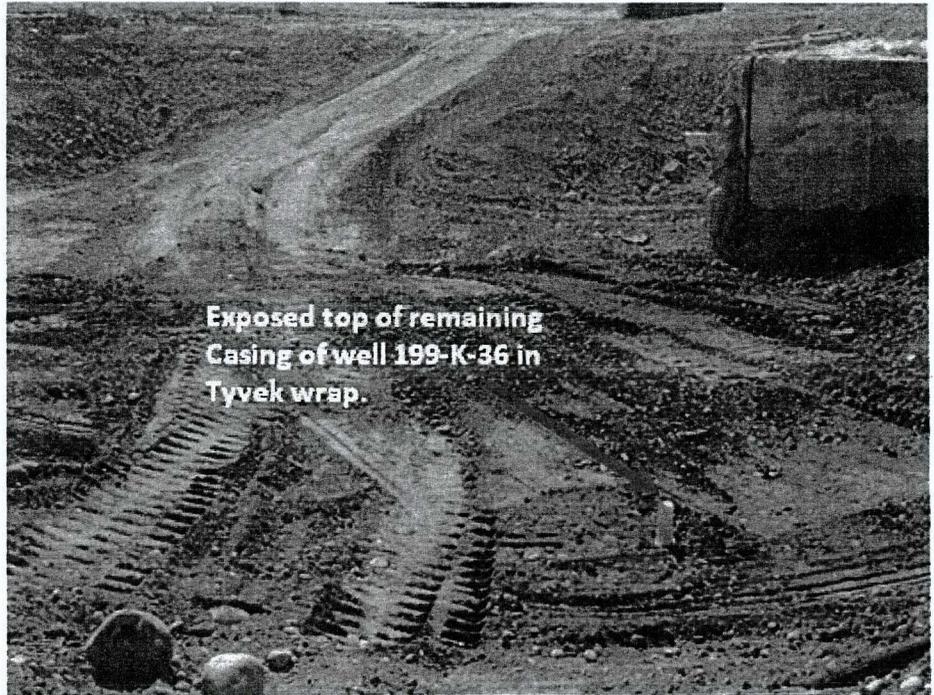
- CERCLA Process Implementation:
  - Draft A of both the *Remedial Investigation/Feasibility Study for the 100-KR-1, 100-KR-2, and 100-KR-4 Operable Units* and the *Proposed Plan for Remediation of the 100-KR-1, 100-KR-2, and 100-KR-4 Operable Units*, were submitted to EPA on 9/19 (meeting M-015-66-T01 two days ahead of schedule) for a 45 day review. Comments are anticipated in early November.
- Remedial Actions:
  - KR-4, KX, and KW pump and treat systems are operating normally. The KW system is now operating with SIR-700 resin modifications.
  - October 1 through 31, 2011 performance:

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- The systems treated 36.4 million gallons.
- The system removed 5.3 kg of hexavalent chromium

- Monitoring & Reporting:

- 199-K-36: The well was inspected using a down-hole camera on 25 October 2011. The exposed stainless steel well casing is straight, round, and vertical. The casing broke at the weld where the thread pins were attached to the casing section above the break. The pin section remains seated in the box end of the lower section. Visual inspection indicated sand and gravel in the casing at

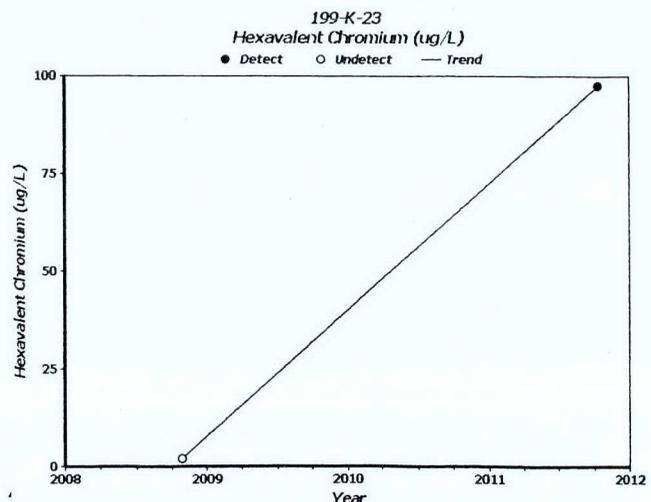


a depth of about 3 m (10 ft) below the exposed top of the casing. The Hydrostar™ pump actuator rod is still extended above the casing top. Maintenance personnel noted that the pump actuator can be moved up and down by hand, suggesting that the sand and gravel may be bridged within the casing and may not extend to the casing bottom. The level of the visible sand and gravel in the well is about 6.5 m (20 ft) below plant grade elevation; about 28 m (90 ft) of casing and screen remain in the ground.

- The well was drilled in August 1992 and constructed with a completed depth of 34 m (109 ft) below ground surface. . The visible portion of the casing is intact and is recoverable, the remaining issue is whether or not the sand and gravel that entered the casing can be removed. The contractor is preparing to recover and repair the well.

- Well Monitoring:

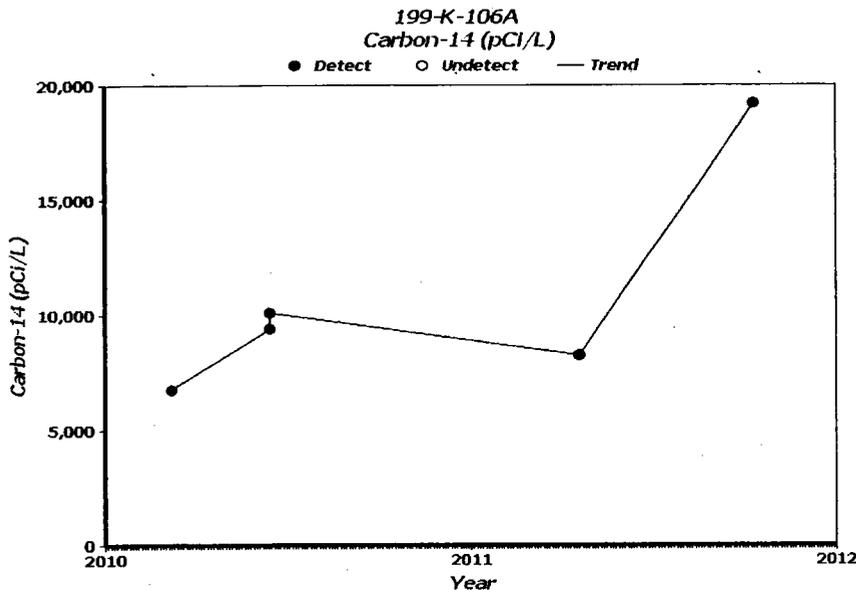
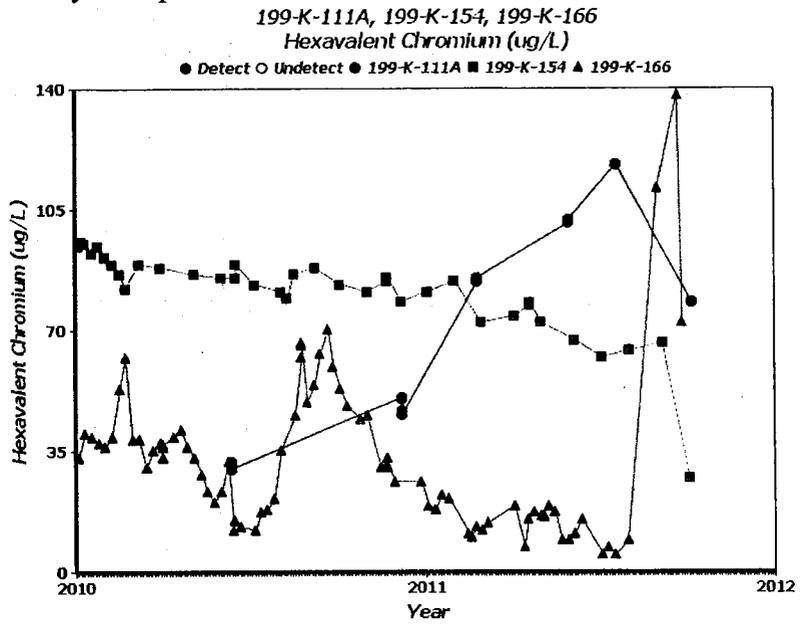
- Well 199-K-23, which had not been analyzed for hexavalent chromium since 2008, exhibited a notable up-tick in concentration. This well is up gradient of the 105-KE plume depicted in the 2010 annual report, and the results are being incorporated into new plume representations. For other wells, recent hexavalent chromium concentration trends were generally steady or declining.
- Three wells (199-K-111A, 199-K-154, and 199-K-166) exhibited substantial decreases in



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hexavalent chromium concentration in recent samples.

- Three wells at 100-K exhibited increases in carbon-14 concentration (199-K-106A, 199-K-165, and 199-K-173). The most notable increase was observed in well 199-K-106A, located immediately down-gradient of the 116-KW-1 gas condensate crib, where the carbon-14 concentration increased from 8,250 pCi/L in April 2011 to 19,200 pCi/L in October. Efforts are still underway to explain this trend. Possible causes for the increased results include contribution from the periodically rewetted zone, ongoing vadose zone remedial actions, or hydraulic changes in the plume as a result of ongoing groundwater remediation.
- An overview of the wells sampled during October is presented in the table on the last page of this template.



- Modifications & Expansions

- ResinTech SIR-700:

- KW P&T continuing to operate on SIR-700 resin. Observations indicate satisfactory function.
- Review of the draft Test Report documenting the use of SIR-700 at KW is ongoing.

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**100-BC-5 Groundwater Operable Unit – Bert Day/ Mary Hartman**

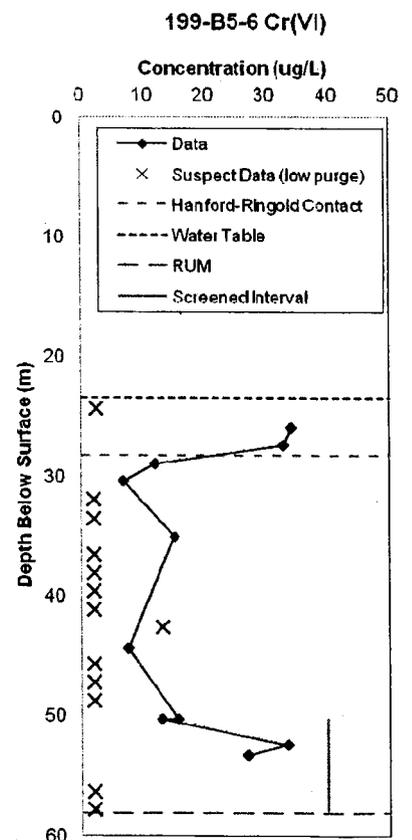
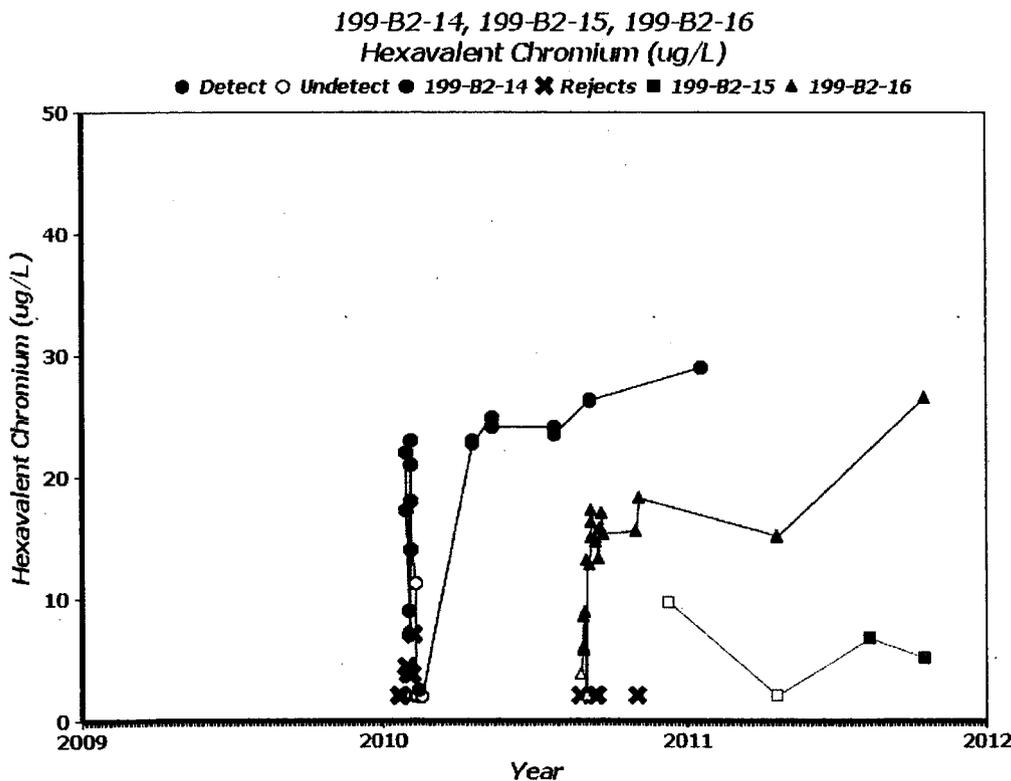
(M-015-68-T01, 11/30/2011, Submit CERCLA RI/FS Report and Proposed Plan for the 100-BC-1, 100-BC-2 and 100-BC-5 Operable Units for groundwater and soil.)

*Schedule Status - The new planned delivery date for the 100-BC Draft A RI/FS Report to the regulators is March 15, 2012. Field investigations are complete.*

Status of FY 2011 groundwater sampling: All wells were sampled successfully, except the July sample for well 199-B2-16 was delayed into FY 2012 and combined with the October 2011 sampling event.

Eight wells scheduled in October were sampled, completing the quarterly sampling event. Hexavalent chromium data have been loaded into HEIS. The comprehensive annual sampling event is scheduled for January 2012.

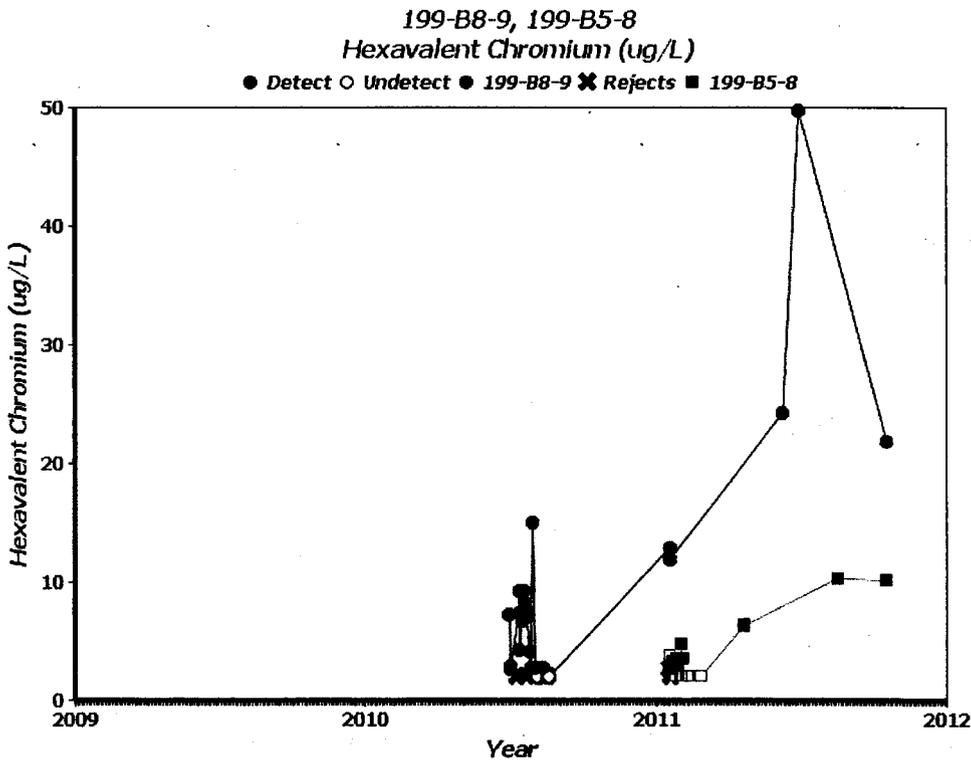
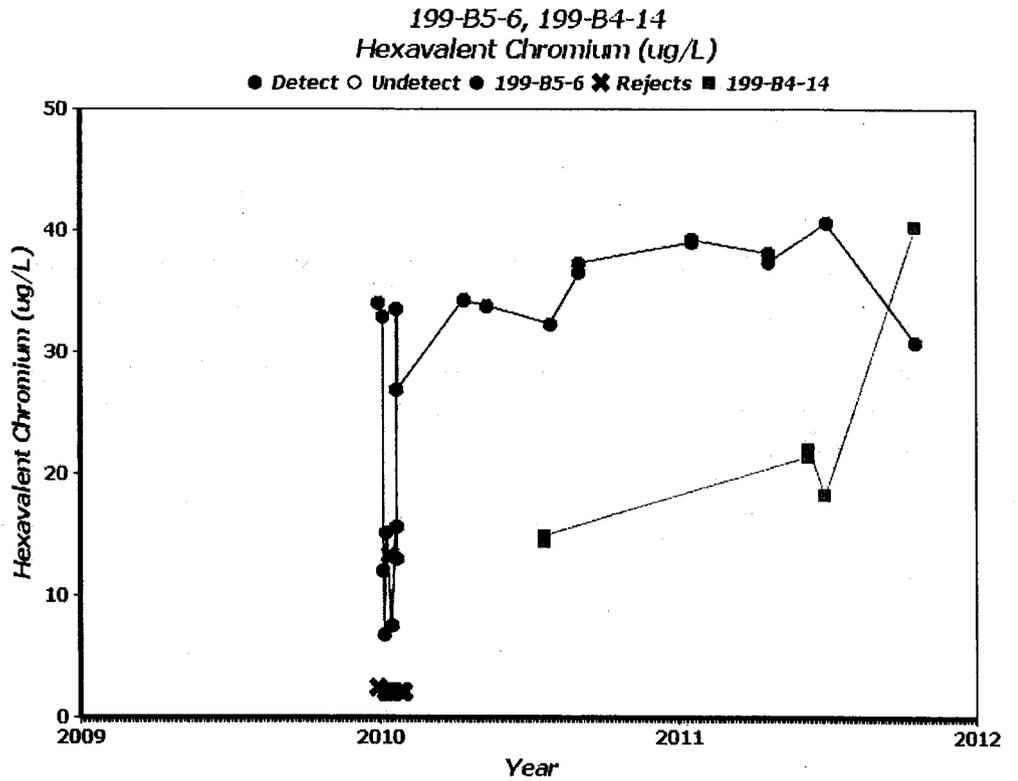
Chromium concentrations remained low in RUM well 199-B2-15, located near the river (its shallow counterpart, 199-B2-14, is shown for comparison; it is now sampled annually). Chromium concentrations increased to >20 µg/L in well 199-B2-16, located near the 100-B water intake.



In central 100-BC, north of the 100-C-7 waste site excavation, chromium concentration increased in the shallow well (199-B4-14) and decreased in the deeper well (199-B5-6). At this location, characterization data from 199-B5-6 (shown in profile below) showed a bimodal chromium distribution, with the highest concentrations at the top and bottom of the unconfined aquifer. The previous concentrations in 199-B4-14 were actually lower than we had expected based on the characterization data; the recent data are as expected.

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In southern 100-BC, the chromium concentration in well 199-B8-9 (near C reactor) declined in October after its peak in late June. The concentration in well 199-B5-8, southeast of 100-BC, remained at approximately 10  $\mu\text{g/L}$ .



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**300-FF-5 Groundwater Operable Unit – Marty Doornbos**

This status report covers the groundwater impacted by releases from waste sites associated with three geographic subregions: 300 Area, 618-11 Burial Ground subregion, and 618-10/316-4 Cribs subregion. Principal controlling documents are the 300-FF-5 operations and maintenance plan (DOE-RL-95-73, Rev. 1, 2002) and the 300-FF-5 sampling and analysis plan (DOE/RL-2002-11, Rev. 2, 2008). The recent RI/FS activities work plan is DOE/RL-2009-30, Rev. 0 (April 2010) and the associated sampling and analysis plan is DOE/RL-2009-45, Rev. 0 (April 2010).

M-015-72-T01 (due 12/31/2011, “Submit CERCLA RI/FS Report and Proposed Plan for the 300-FF-2 and 300-FF-5 Operable Units for groundwater and soil.”)

- On schedule to meet the milestone; all field investigations are complete.
- RI/FS report is DOE/RL-2011-99; Decisional Draft delivered to DOE-RL on October 11, 2011.
- Review comments expected back by November 4, 2011; Draft A scheduled for delivery to DOE-RL on December 16, 2011.

**300 Area Subregion**—Latest comprehensive groundwater sampling event was conducted in June and analytical results are available via HEIS. Most recent sampling was conducted in late October and included most of the new wells constructed as part of the recent RI drilling campaign.

- *Uranium Plume*—Following increased concentrations associated with the unusually high water table conditions in June, uranium concentrations are decreasing toward more typical levels at the uranium plume hotspot areas (Figure A, 399-1-17A). Dilution by river is no longer a major factor at wells near the river, and concentrations have therefore increased during the fall (Figure B, 399-1-16A).
- *Groundwater contamination associated with the 618-7 Burial Ground remedial action*—Some additional contamination was added to this plume during the June 2011 seasonal high water table conditions, as evidenced by the increased concentration in well 399-8-5A (see figure). To date, the plume has not been clearly recognizable along its projected migration path at distances greater than approximately 350 meters, i.e., at 399-8-1 (Figure C, 399-8-5A and 8-1), although some variability in uranium concentrations at downgradient wells, such as 399-3-6, may be associated with migration of the 618-7 plume.
- *Groundwater impacts related to the 324 Building*—Recent groundwater monitoring results for wells in the vicinity of the 324 Building do not show clear evidence of impacts related to the recent discovery of leakage under the B-hot cell. Monitoring is conducted quarterly using gross beta as an indicator for strontium-90, a principal hot cell leak constituent (Figure D, four well panel, gross beta). While strontium-90 has been detected in the past in this area, there are multiple potential sources, with leakage that occurred ~1969 from a former underground pipeline at the 340 complex being one candidate (UPR-300-1). To date, gross alpha and gross beta activities in this area correlate reasonably well with uranium concentrations. The rising gross beta trend at 399-4-14 during 2011 correlates with a rising uranium concentration trend.
- *Groundwater impacts related to 326 pipeline leak on July 17, 2011*—Groundwater monitoring at nearby wells was increased during August to identify potential groundwater impacts because of the release of approximately 100,000 gallons of clean water near the southeast corner of the 326 Building. Results obtained to date do not reveal evidence of groundwater impacts clearly attributable to the water leak (Figure E, four well panel, gross beta). While variability in uranium concentrations (and associated gross alpha and gross beta trends) is present, there are multiple potential causes because of ongoing remedial actions and migration of the plume created at the 618-7 Burial Ground in 2007.

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618-11 Burial Ground Subregion—(No change since October unit manager meeting). The most recent results for tritium concentrations are for samples collected in August, and are consistent with historical trends and expectations.

618-10 Burial Ground/316-4 Cribs Subregion—(No change since October unit manager meeting). Awaiting results for sampling conducted post-startup of excavation activities at the burial ground. Excavations planned for the near future will include the need to remove 699-S6-E4A, which monitors conditions beneath the former 316-4 Cribs, and 699-S6-E4C, which is not in the current monitoring network.

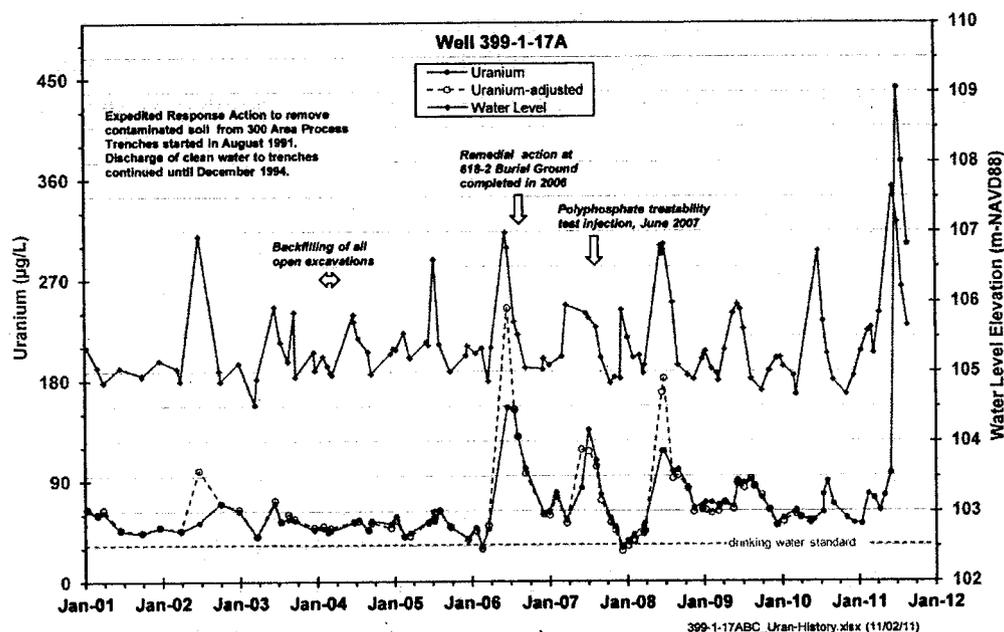


Figure A. Uranium Concentrations at 399-1-17A, Near Seasonal Hotspot Plume. The “Uranium-Adjusted” trend shows concentrations if river water were not present to cause dilution.

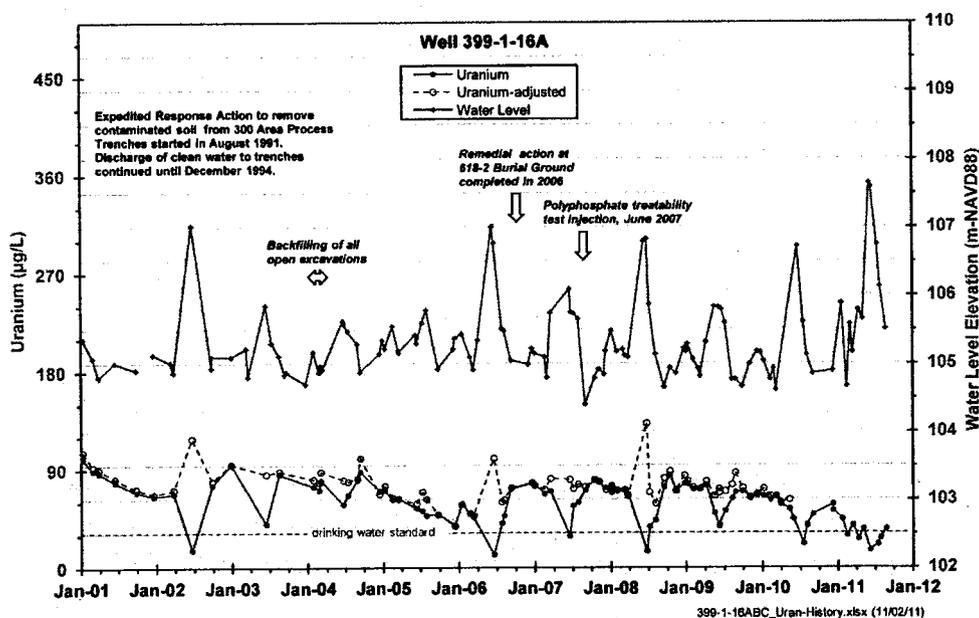


Figure B. Uranium Concentrations at 399-1-16A, A Near-River Well.

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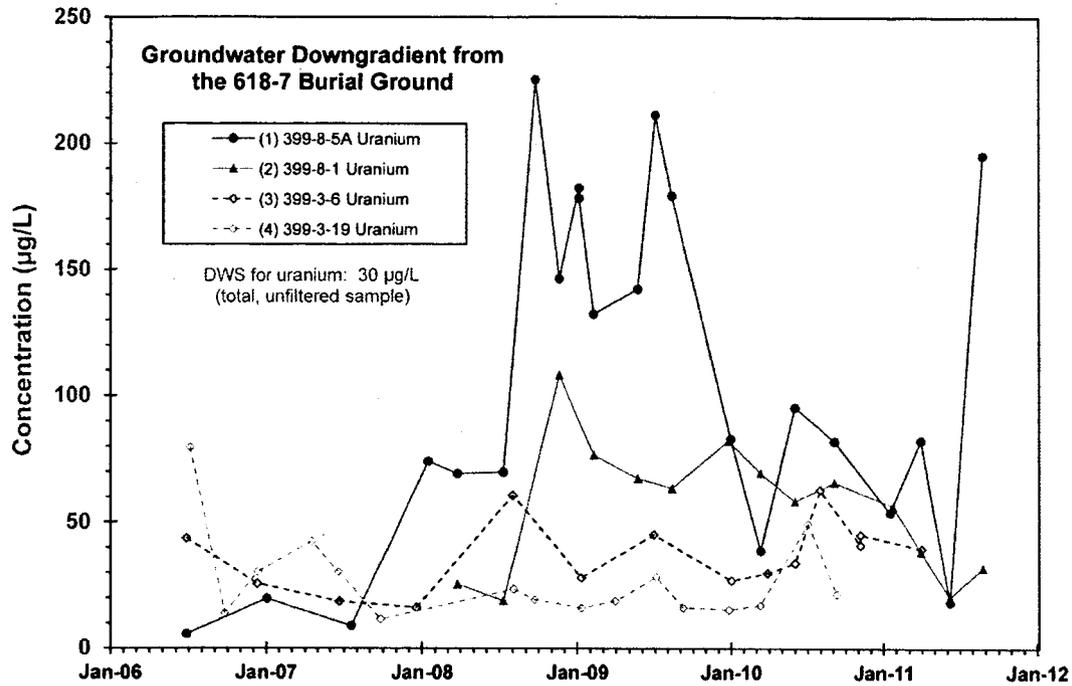


Figure C. Uranium Concentrations at 399-8-5A, Adjacent to the Former 618-7 Burial Ground Remedial Action, and Downgradient Wells.

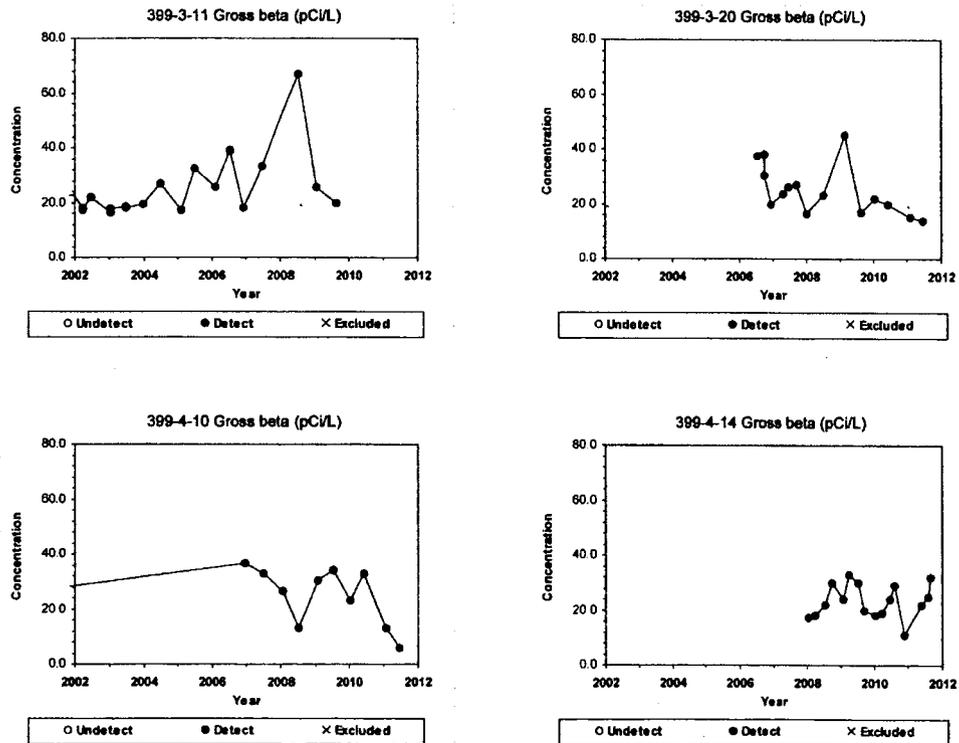


Figure D. Gross Beta Concentrations at Wells Near the 324 Building.

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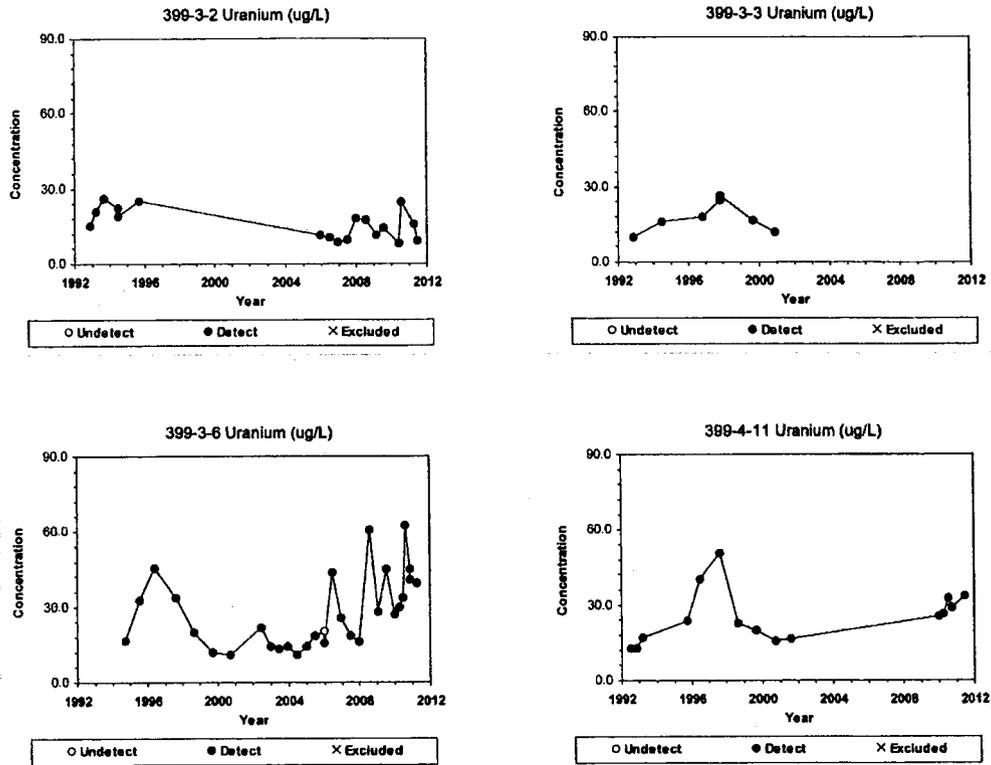


Figure E. Gross Beta Concentrations Near the 326 Building Water Leak Area.

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**Wells sampled in October 2011**

<b>Summary of Wells Sampled in the River Corridor Areas During October 2011</b>						
<b>Week</b>	<b>100-BC</b>	<b>100-K</b>	<b>100-N</b>	<b>100-D/H</b>	<b>100-F</b>	<b>300 Area</b>
<b>1-7 Oct 11</b>		199-K-107A 199-K-108A 199-K-110A 199-K-111A				
<b>8-14 Oct 11</b>		199-K-20 199-K-21 199-K-23 199-K-23B 199-K-32A 199-K-34 199-K-37 199-K-106A 199-K-189 199-K-200 199-K-201	199-N-16	199-D4-6 199-D4-23 199-D5-14 199-D5-17 199-D5-19 199-D5-37 199-D5-93 199-D5-102 199-D5-119 199-D5-121 199-D5-123 199-D5-125 199-D5-126 199-D5-141 199-D8-4 199-D8-5 199-H4-3 199-H4-6 199-H4-9		
<b>15-21 Oct 11</b>	199-B2-15 199-B2-16 199-B3-47 199-B4-14 199-B5-6 199-B5-8 199-B8-9		199-N-147	199-D4-5 199-D4-7 199-D4-78 199-D4-86 199-H4-15CR 199-H4-15CP		399-1-54 399-1-55 399-1-56 399-1-57 399-1-58 399-1-61 399-1-62 399-1-63 399-1-64 399-2-32 399-3-33 399-4-12 399-4-15
<b>21-28 Oct 11</b>	199-B3-51	199-K-18 199-K-19 199-K-124A 199-K-151 199-K-183 199-K-187 199-K-190 199-K-192 199-K-194		199-D4-14 199-D4-15 199-D4-19 199-D4-20 199-D4-32 199-D5-36 199-D5-38		399-1-59 399-6-3 399-6-5
<b>29-31 Oct 11</b>		199-K-115A 199-K-116A 199-K-131 199-K-132 199-K-137 199-K-138 199-K-139				

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<b>Summary of Wells Sampled in the Central Plateau Areas During October 2011</b>			
<b>Week</b>	<b>200 East</b>	<b>200 West</b>	<b>600 Area</b>
<b>1-7 Oct 11</b>	299-E17-19 299-E25-28 299-E-25-35 299-E25-47 299-E26-5 299-E-26-13 299-E27-10 299-E27-11 299-E27-16 299-E27-17 299-E27-18 299-E27-19 299-E33-33 299-E33-37 299-E33-40 299-E33-344 299-E34-10 299-E34-12	299-W19-12 299-W19-42 299-W18-30 299-W19-41 299-W19-44 299-W19-45 299-W19-47	
<b>8-14 Oct 11</b>	299-E24-2		
<b>15-21 Oct 11</b>			
<b>21-28 Oct 11</b>			
<b>29-31 Oct 11</b>			

# Attachment 2

November 10, 2011 Unit Manager's Meeting  
Field Remediation Status

**100-B/C**

- Continued remediation efforts at 100-C-7 & 100-C-7:1
  - 100-C-7, 265,000 bank cubic meters removed, excavation depth 72 feet
  - 100-C-7:1, 438,000 bank cubic meters removed, excavation depth 75 feet
- Continued load-out activities
  - Truck and pup, 114,000 tons
  - ERDF cans, 37,900 tons
  - LDR material, 23,200 tons

**100-D**

- Completed remediation of 100-D-8 below ordinary high water mark
- Continued demolition, processing and load-out at 100-D-50:6, 100-D-100 and 100-D-104
- Continued preparation for anomaly processing final anomalies at 118-D-3
- Continued preparation for remediation of 100-D-65 and 100-D-66 below ordinary high water mark
- Began backfill of 116-DR-8 and 100-D-1, continued backfill of 100-D-31:8 and 100-D-31:9
- Completed backfill of 600-30, 628-3, 100-D-7, 100-D-13, 100-D-15, 100-D-29, 100-D-31:1, 100-D-31:2, 100-D-31:3, 100-D-31:4, 100-D-31:5, 100-D-31:6, 100-D-31:7, 100-D-31:10, 100-D-32, 100-D-42, 100-D-43, 100-D-45, 100-D-47, 100-D-61, 116-D-8, 116-D-10, 116-DR-10, 118-D-1, 118-DR-1, 118-D-4, 118-D-5, 126-D-2, 128-D-2, 130-D-1, 1607-D-2:2 and UPR-100-D-5 in accordance with Section 3.1.2 and Section H.6 of Appendix H of the 100 Area RDR (DOE/RL-96-17, Rev. 6)

**100-F**

- Completed concrete breaking at northeast portion of northwest excavation of 100-F-57
- Continued excavation and stockpiling 100-F-57 plume to groundwater in northeast portion of northwest excavation.
- Awarded 100-F backfill subcontract

**100-H**

- Began ACL and pipe removal at 100-H-28:2
- Preparing for demolition and load-out of 100-H excess trailers
- Continued miscellaneous restoration activities

- Continued backfill of 118-H-1:1 (30% complete) and 118-H-6:4 (60% complete, remainder to be backfilled with 132-H-3)
- Completed backfill at 100-H-3, 100-H-4, 116-H-9, 118-H-2, 118-H-3, 118-H-5, 118-H-6:5 and 1607-H3 in accordance with Section 3.1.2 and Section H.6 of Appendix H of the 100 Area RDR (DOE/RL-96-17, Rev. 6)

#### 100-K

- Continued excavation and load-out at trench I
- Conducting final cleanup activities (downposting/surveying/sampling/spot removal) at trenches N and J/L
- Preparing for SSNF characterization campaign
- Civil surveys completed on trenches D/E/P/G, C/F, K and O in support of closure activities
- Remediation of trench A complete, conducting GPERS surveys in support of closure activities
- Continued orphan site cleanup work at 600-29

#### 100-N

- Continued excavation, processing and load-out of 100-N-60, 100-N-61, 100-N-63 and 100-N-64, UPR-100-N-11 and UPR-100-N-20
- Continued load-out of miscellaneous debris at UPR-100-N-36
- Completed excavation and load-out of 100-N-26

#### 618-10 Trench Remediation

- Continued Excavation of East Trench
- Completed acceptance testing on Drum Punch #2
- Processed drums from excavation to Interim Storage Area
- Continued development of the "in trench" bottle processing
- Excavation will slow due to encountering drums in all 3 excavation trenches

#### 100-IU-2/6

##### Milestone Sites

- 600-149:1 (Small Arms Range UXO) continued the closure process
- 600-186 (Hanford Construction Camp Septic and Pipelines) continued the closure process.
- 600-3 backfill complete, awaiting construction of a snake pit and revegetation

- 600-108, 600-109, 600-120, 600-124, 600-127, 600-176, 600-178, 600-182, 600-188, 600-202, 600-205, 600-280 backfill and/or recon touring complete, awaiting revegetation.
- 600-186 and 600-3 completed all closure documents.
- 600-5, 600-100, 600-125, 600-146 backfilled and revegetated. All work completed.

#### Non-Milestone Sites

- Waiting for completion of cultural review prior to remediation at the IU farmstead sites.
- Waiting for completion of cultural review prior to remediation at the IU White bluffs sites.
- Waiting for completion of cultural review prior to remediation at the IU shoreline sites.

# Attachment 3

162284

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Tuesday, November 08, 2011 10:53 AM  
**To:** ^WCH Document Control  
**Subject:** FW: 100-f-57 update

Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig  
FR Environmental Project Lead  
Washington Closure Hanford  
521-5326

-----Original Message-----

**From:** Guzzetti.Christopher@epamail.epa.gov [mailto:Guzzetti.Christopher@epamail.epa.gov]  
**Sent:** Tuesday, November 08, 2011 10:48 AM  
**To:** Post, Thomas C  
**Cc:** Saueressig, Daniel G; Fancher, Jonathan D (Jon); Jakubek, Joshua E  
**Subject:** RE: 100-f-57 update

I concur as well.

Christopher J. Guzzetti  
U.S. EPA Region 10  
Hanford Project Office  
Phone: (509) 376-9529  
Fax: (509) 376-2396  
Email: guzzetti.christopher@epa.gov

**From:** "Post, Thomas" <Thomas.Post@rl.doe.gov>  
**To:** "Fancher, Jonathan D (Jon)" <jdfanche@wch-rcc.com>, Christopher Guzzetti/R10/USEPA/US@EPA  
**Cc:** "Jakubek, Joshua E" <jejakube@wch-rcc.com>, "Saueressig, Daniel G" <dgsauere@wch-rcc.com>  
**Date:** 11/08/2011 10:27 AM  
**Subject:** RE: 100-f-57 update

Jon,

Thanks for the update. I concur.

Tom

---

**From:** Fancher, Jonathan D (Jon)  
**Sent:** Tuesday, November 08, 2011 10:24 AM  
**To:** Post, Thomas; Guzzetti.Christopher@epamail.epa.gov  
**Cc:** Jakubek, Joshua E; Saueressig, Daniel G  
**Subject:** 100-f-57 update

Tom and Chris

We are nearly done removing the current plume in the northeast portion of the 100-f-57

deep excavation. Once we complete this plume we will resample.

We have also identified about 3 small stained areas on the south of the 100-F-57 excavation at the -15 ft level. We sampled one of these stained area had had a Cr6 detection at 15 mg/kg. we would like to remove these stained areas 1-2 ft deep and then resample them do you agree with this approach?

Thanks

Jon Fancher, PE

100F Area

Field Remediation Closure

(509) 521-1700

: jon.fancher@wch-rcc.com

# Attachment 4

162313
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**^WCH Document Control**

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**From:** Saueressig, Daniel G  
**Sent:** Thursday, November 10, 2011 6:27 AM  
**To:** ^WCH Document Control  
**Subject:** FW: REQUEST FOR RELOCATION OF 100H AIR MONITOR N510  
Please provide a chron number. This email documents a regulatory agreement.

Thanks,

Dan Saueressig  
FR Environmental Project Lead  
Washington Closure Hanford  
521-5326

---

**From:** Kapell, Arthur (ECY) [mailto:akap461@ECY.WA.GOV]  
**Sent:** Wednesday, November 02, 2011 2:05 PM  
**To:** Saueressig, Daniel G  
**Cc:** Buelow.Laura@epamail.epa.gov; Chance, Joanne C; Landon, Roger J; Wilkinson, Stephen G; Boyd, Alicia; Martell, John  
**Subject:** RE: REQUEST FOR RELOCATION OF 100H AIR MONITOR N510

Dan,

This is to document Ecology's approval for relocation of air monitor N510 from its present location to approximately 150 feet north. Please notify Ecology of the dates that the monitor is removed from service and subsequently reinstalled.

Artie Kapell  
Nuclear Waste Program  
Washington State Department of Ecology  
(509) 372-7972  
(509) 372-7971 Fax

---

**From:** Saueressig, Daniel G [mailto:dgsauere@wch-rcc.com]  
**Sent:** Tuesday, November 01, 2011 2:46 PM  
**To:** Kapell, Arthur (ECY)  
**Cc:** Buelow.Laura@epamail.epa.gov; Chance, Joanne C; Landon, Roger J; Wilkinson, Stephen G; Boyd, Alicia (ECY)  
**Subject:** REQUEST FOR RELOCATION OF 100H AIR MONITOR N510

Artie, we are discontinuing use of the 100-H Container Transfer Area (CTA) due to expansion of the 100-H borrow pit to the west that will effectively remove the CTA. I've talked with the EPA related to utilizing the 100-D CTA for waste coming from 100-H and they believe that the 100-D CTA is sufficiently close to be considered onsite (EPA retains the authority to approve offsite facilities for waste acceptance and for non-contiguous onsite determinations).

11/10/2011

With that said, air monitor N510 is located on the northeastern portion of the CTA. I'd like to request your concurrence to move the monitor approximately 150 feet to the north to allowed access to the borrow pit. The access ramp to the borrow pit is located near this air monitor and access to and from the borrow pit will be impacted if the air monitor remains in it's current location.

I've attached a map from the approved air monitoring plan, I believe that moving the monitor 150 feet to the north will still provide adequate coverage for remediation activities at 100-H.

Let me know if you approve of relocating the air monitor and I can document the agreement at the next UMM.

Thanks and give me a call if you have any questions.

Dan Saueressig  
FR Environmental Project Lead  
Washington Closure Hanford  
521-5326

<<mjd\_20111101144035.PDF>>

# Attachment 5

# 100 Area D4/ISS Status

November 10, 2011

## D4 (WCH)

### **100-N River Structures (181-N, 181-NE, 1908-NE):**

- Filling of structures with ERDF sand complete.
- All river structure subcontractors have demobilized from 100-N.
- One of two large rental excavators (to be used to demolish the structures) is currently on site and being assembled.
- Demolition scheduled to begin in two weeks with toppling the 181-NA Guard Tower.

**182-N High Lift Pumphouse:** Asbestos abatement complete. Plans for demolition are finalized and final characterization activities are being completed this week. Demolition of above-grade structure is scheduled to begin next week.

**105-N Fuel Storage Basin (FSB):** Floor of examination pit (area closest to SSE) has been scored and the surface removed. Following complete removal of examination pit floor, another two-foot layer of grout will be removed from FSB floor. Removal of FSB floor currently scheduled to begin in approximately three weeks. To date, radiological controls in place have kept dose levels ALARA.

**117-N Exhaust Air Filter House:** Load out of 117-N debris complete. Tunnels (between 117-N and 105-NE Fission Product Trap) and temporary road over tunnels being demolished and loaded out as part of excavation around Fission Products Trap.

**105-NE Fission Products Trap (FPT):** Areas around the facility being excavated and loaded out to facilitate demolition. Actual demolition of the facility scheduled to begin before end of month.

**105-N/109-N Reactor/Heat Exchanger Buildings (ISS):** Pending below-grade work (pour back and plate installations) on the west side of buildings, work on the ISS, including C elevator, is complete, and the subcontractors (Dickson/Intermech) have demobilized from 100-N. Installation of permanent power to the facilities (for lighting and moisture/temperature sensors) has been completed. The initial walk-down for the 5-year surveillance inspection of the interior of the facilities was conducted with DOE and Ecology last week.

## Other Areas

**400 Area:** Twelve (12) of the fourteen (14) buildings scheduled for demolition this year are complete. Demolition of building 4790 is scheduled for demolition on Friday, November 11, 2011. Demolition of building 4702 is pending completion of hazmat removal. Removal of cement asbestos tiles from 4702 exterior is approximately 70% complete.

# Attachment 6

162100

**^WCH Document Control**

**From:** Saueressig, Daniel G  
**Sent:** Thursday, October 20, 2011 4:00 PM  
**To:** ^WCH Document Control  
**Subject:** FW: 100-N Bioremediation Ex-situ Phase 1 Plan update  
**Attachments:** PHASE 1 BIO PLAN rev 1 10-11-2011.doc

Please provide a chron number (and include the attachment). This email documents a regulatory agreement.

Thanks,

Dan Saueressig  
FR Environmental Project Lead  
Washington Closure Hanford  
521-5326

---

**From:** Varljen, Robin (ECY) [mailto:RVAR461@ecy.wa.gov]  
**Sent:** Thursday, October 20, 2011 2:00 PM  
**To:** Faust, Toni L  
**Cc:** Walker, Jeffrey L; Saueressig, Daniel G; Chance, Joanne C; Boyd, Alicia; Menard, Nina  
**Subject:** RE: 100-N Bioremediation Ex-situ Phase 1 Plan update

Toni,

We concur with the change. Please submit this e-mail to the next UMM for recordkeeping of this decision.

Robin Varljen

---

**From:** Faust, Toni L [mailto:tifaust@wch-rcc.com]  
**Sent:** Wednesday, October 12, 2011 5:03 PM  
**To:** Varljen, Robin (ECY)  
**Cc:** Walker, Jeffrey L; Saueressig, Daniel G; Chance, Joanne C; Boyd, Alicia (ECY)  
**Subject:** 100-N Bioremediation Ex-situ Phase 1 Plan update

Robin

Please review and provide concurrence to the update of the 100-N bioremediation Ex-Situ Phase 1 Plan which we discussed to a 4th decision (outcome) statement to clarify if concrete /debris is present and can not be segregated the material excavated will go to ERDF (see redline on page 2). This is the only change to the document. If possible please provide this concurrence in the next week.

10/20/2011

<< File: PHASE 1 BIO PLAN rev 1 10-11-2011.doc >>

Thanks Toni Faust  
100N D4/FR Integration

**PHASE 1 EX-SITU BIOREMEDIATION PLAN**

**FOR**

**SHALLOW PETROLEUM WASTE SITES  
AT 100-N**

**October 2011**

## 1.0 PURPOSE

Fourteen waste sites are identified in the *Interim Action Record of Decision for the 100-NR-1 and 100-NR-2 Operable Units, Hanford Site, Benton County, Washington* (100-N ROD) (EPA 1999) for remove/ex-situ bioremediation/dispose. Based on the *Remedial Design Report/Remedial Action Work Plan for the 100-N Area* (100-N Area RDR/RAWP) (DOE-RL 2006) and historical information it has been determined that ex-situ bioremediation is not the best remove, treat and dispose (RTD) option for 4 of these waste sites. Section 3 provides the rationale for the RTD of the 14 waste sites identified in the 100-N ROD (EPA 1999) for remove/ex-situ bioremediation/dispose, including the exclusion of the 4 waste sites identified for disposal at the Environmental Restoration Disposal Facility (ERDF) without ex-situ bioremediation.

This phase 1 ex-situ bioremediation plan provides a description of the overall 100-N Area ex-situ bioremediation strategy and details of the phase 1 specific activities for 10 petroleum contaminated waste sites which are possible candidates for remove/ex-situ bioremediation/dispose. In-process sample results, visual inspection, and radiological and/or industrial hygiene field survey results describe in this plan will be used to determine if ex-situ bioremediation is the appropriate treatment method, or if due to the presence of co-contaminants the waste site soil should be disposed at the ERDF.

The 100-N Area ex-situ bioremediation strategy has been divided into two phases. Phase 1 includes excavation, visual inspection, radiological field and/or industrial hygiene field surveys, and in-process sampling of soil in the identified the 10 waste sites to a depth of up to 4.6 m (15 ft), disposal of debris, and relocation of excavated soil. Phase 2 of the ex-situ bioremediation (if required) will be covered in a comprehensive phase 2 ex-situ bioremediation treatment plan describing the design and operation of the ex-situ bioremediation treatment facility.

Phase 1 in-process sample results used to make the determination if ex-situ bioremediation is the appropriate treatment method for the 10 waste sites excavated soil, may result in four outcomes are possible.

1. If in-process sample results indicate chemical or radiological contamination other than total petroleum hydrocarbons (TPH) above remedial action goals (RAGs) is present, the material (and approximately 1 foot of soil below the potentially contaminated soil) will be disposed of at the ERDF.
2. If in-process sample results indicate that there is no chemical or radiological contamination exceeding RAGs and TPH levels are also below RAGs, the material will be considered potentially clean and will be statistically sampled for verification purposes. Statistical verification sampling of potentially clean (overburden) soil is outside the scope of this plan and will be covered in a waste site specific verification work instruction.
3. If in-process sample results for the staged soil indicate only the TPH levels remain above the RAGs, the staged soil will be identified for ex-situ bioremediation and a Phase 2 treatment plan will be initiated for the staged soil.
4. If concrete/debris not amenable to bio-remediation is present and which can not be feasibly sorted from the excavated soil, the material (and approximately 1 foot of soil below the concrete/debris) will be disposed of at the ERDF.

The phase 2 ex-situ bioremediation plan (if required) will be developed concurrently with the implementation of the Phase 1 field activities. The phase 2 ex-situ bioremediation plan will require U.S. Department of Energy (DOE) and Washington State Department of Ecology (Ecology) approval prior to treatment of any staged soil determined in phase 1 to effectively be treatable by ex-situ bioremediation.

The phase 2 ex-situ bioremediation activities will include placement of soil from individual waste sites identified in phase 1 as having only petroleum contaminated soil (TPH in-process sample results above the RAGs), which can be treated by bioremediation on a remediation pad located within the 100-N Area, treatment using bioremediation methods (e.g., mixing oxygen, bacteria, and nutrients with the petroleum contaminated soils), transportation, and backfilling in accordance with the 100-N Area RDR/RAWP (DOE-RL 2006).

The phase 2 plan will describe removing the material from the waste site or original staging area to a prescribed depth, ex-situ bioremediation, disposal, leachate collection and disposal, backfilling to grade, re-vegetating, maintaining institutional controls and verification of the area used for ex-situ bioremediation once treated soil has been removed.

Should any deviation to this Phase 1 plan be undertaken or anticipated, including performing additional remediation or revisions to the sampling approach, the Field Remediation project will notify the DOE, Richland Operations Office and Ecology for concurrence.

## 2.0 SCHEDULE

Phase 1 ex-situ bioremediation activities are scheduled to start in early 2011 followed by phase 2 ex-situ bioremediation treatment (if required). The phase 2 ex-situ bioremediation plan (if required) will be developed concurrently with the implementation of the phase 1 field activities.

Interim closure of the waste sites is described in Section 6.0.

## 3.0 WASTE SITES DESCRIPTION

The 100-N ROD (EPA 1999) identifies 14 waste sites with petroleum contamination for remove/ex-situ bioremediation/dispose. The 14 waste sites have been divided into 5 groups based on the 100-N Area ROD (EPA 1999), 100-N Area RDR/RAWP (DOE-RL 2006) and historical information. Although only one of the groups is within the scope of this plan, each is listed for completeness:

- Ten waste sites listed in Appendix A require excavation and determination if ex-situ bioremediation is the appropriate treatment method of near surface soils (4 m, 15 ft depth).
- One waste site (100-N-36) the 107-N Oil Stained Pad identified for ex-situ bioremediation consists of lube oil stained concrete pad and adjacent asphalt. February 1997 water sample results from the 100-N-36 waste site indicate radiological contamination presence [Sr-90 (3.26E+6 pCi/L) and cesium-137 (5.93E+5 pCi/L)]. The presence of radiological contamination in the 100-N-36 waste site, make bioremediation of this waste site an inappropriate treatment option. The 100-N-36 concrete pad's is collocation with the 107-N Basin Recirculation Facility, Recirculation Cooling building, 100-N-64 and 100-N-84:2 waste sites. The 100-N-36 waste site

lays within the Deactivation, Decommission, Decontamination, and Demolition (D4) Project layback for removal of the 107-N Building, and Fuel Storage Basin, will be disposed at ERDF.

- One waste site (100-N-12) identified as petroleum contaminated was a leak of fuel oil found contained in a drain trench inside the 184-N Facility. The oil was absorbed and the trench cleaned up immediately. The 100-N-12 waste site was later removed by the D4 Project during the removal of the 184-N and 184-NA buildings in 2008. Contaminated soil and debris were sent to ERDF.
- One waste site; the 100-N-35, BPA Hanford Substation, Hanford Generating Plant (HGP) Substation waste site is located within the boundaries of the active electrical substation. The HGP substation is known to have polychlorinated biphenyls (PCBs) in the hydraulic oil (EPA 1992). The presence of PCBs in soil contaminated with oils at the 100-N-35 waste site make bioremediation of this site an inappropriate treatment option. Additionally, remediation of this site may be deferred until the substation is no longer active. Further discussion will be required with Ecology to formalize the path forward for this site.
- One waste site (100-N-3) is listed in the 100-N Area ROD and has been approved by Ecology as “Interim Closed” based on sampling and process knowledge. The 100-N Area RAWP/RDR list 100-N-3, Solid Waste Management Unit 9, Hanford Generating Plant Maintenance Garage Septic System (French Drain) as “Interim Closed”

A description of each of the 10 waste sites covered by this plan and collocated waste sites are described in Appendix A. Collocated waste sites are defined as waste sites that are within 15.2 m (50 ft) of the waste site of interest. The 100-N Area ROD also identifies 124-N-3 in Table 5 for ex-situ bioremediation. The 124-N-2 septic system supported the 182-N Building which housed two diesel pumps. These pumps are the likely source of petroleum contamination in the 124-N-2 waste site. The 124-N-3 waste site supported the 107-N Building, and is believed to be misidentified in Table 5 and is listed in Appendix B of the 100-N Area ROD as a radiological site. Therefore only the 124-N-2 is covered in this plan.

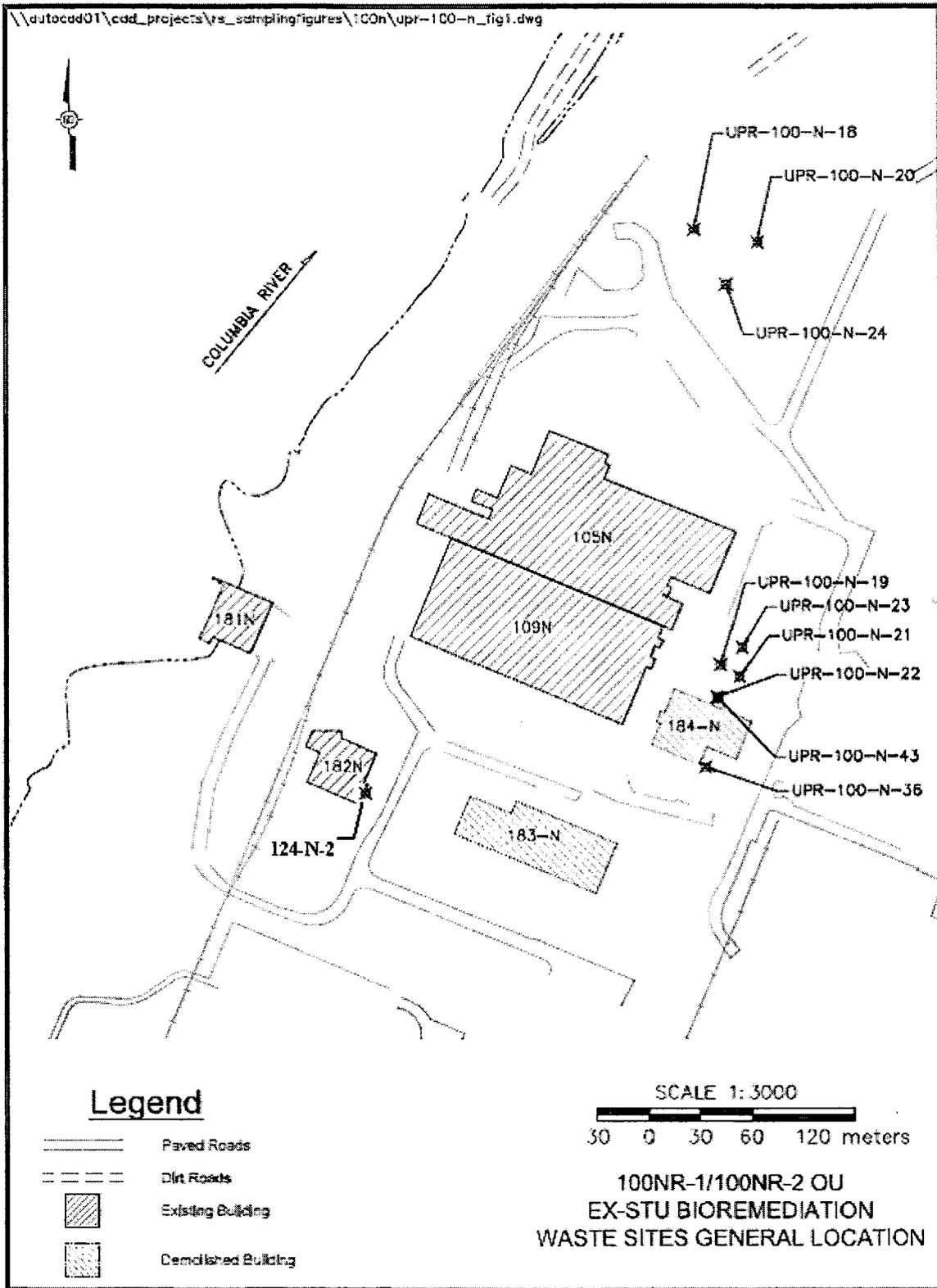
### 3.1 Location

The 10 petroleum contaminated waste sites covered by this phase 1 ex-situ bioremediation plan are located at various locations within the 100-NR-1/100-NR-2 Operating Unit (OU). Figure 1 shows the general location of these waste sites. Appendix B, Figures B-1 through B-5, show planned excavation designs approved by Ecology for the 10 petroleum contaminated waste sites and collocated waste sites.

### 4.0 STRATEGY

The phase 1 ex-situ bioremediation plan will be completed in 2 steps. The first step includes excavation, field inspection and staging of material from each petroleum contaminated waste site. The second step includes treatment determination. In-process soil sampling, visual inspection and radiological and/or industrial hygiene field surveys may occur in steps 1 and/or 2.

Figure 1. The 100-N Area Ex-Situ Bioremediation Waste Sites Location Map.



## 5.0 EXCAVATION, INSPECTION, AND SEGREGATION

Each contaminated waste site identified in Table A-1 will be excavated following Ecology approved remediation design drawings. The excavated soil from each waste site will be relocated to the staging areas and segregated into two possible piles based on visual inspections, field radiological and/or industrial hygiene surveys, and in-process sampling results. The Ecology approved staging area is depicted in Appendix C. Soil excavated from each waste site will be isolated from soil excavated from other waste sites unless the waste sites are collocated.

Soil staging will be designed and constructed in accordance with the *Remedial Design Report/Remedial Action Work Plan for the 100-N Area*, (RDR/RAWP) (DOE/RL 2006). Berms, pathways, T-post and tape, or other means will be used to designate the division between individual waste site stage soil piles.

Visibly clean soil will be segregated from visibly contaminated soil. Stained or potentially contaminated soil based on visual inspection will be segregated and staged in an Ecology approved staging area for characterization. Characterization of the stained or potentially contaminated soil will be based on in-process sampling described in Section 6 of this phase 1 plan. Debris removed from the waste sites will be treated, stored and/or disposed in accordance with RDR/RAWP (DOE/RL 2006).

Visibly clean soil will be relocated to the Ecology approved staging area consistent with the requirements detailed in the RDR/RAWP (DOE/RL 2006) and analyzed for the same contaminants of potential concerns (COPCs) as the visibly contaminated soil from the same waste site. A verification work instruction will be prepared for Ecology approval prior to sampling to ensure that the sample results are defensible and can be used to guide disposition of the material.

## 6.0 IN-PROCESS SAMPLING

Discrete focused sample location in-process sampling may occur at any time the Field Remediation Project Resident Engineer (RE) and Project Analytical Lead (PAL) determine necessary based on visual inspection, radiological and/or industrial hygiene field surveys. In-process sampling includes sampling of material (soil or debris) collected during excavation from the open excavation, backhoe buckets, or once the stained soil is staged in an Ecology approved staging area.

The number of samples and locations will be determined by the RE and PAL, based on the area, field instruments and observations, and documented in a field logbook. A minimum of 4 samples will be collected for each waste site. These samples may be used for waste characterization profiles and to determine what contaminants of concern (COCs) are associated with each waste site. Interim closure of each waste site will be handled through verification sampling and analysis, and documented in a site specific verification package. Statistical verification sampling of potentially clean (overburden) soil, excavated waste sites and staging areas after contaminated soil is removed are outside the scope of this plan and will be covered in waste site specific verification work instructions.

### 6.1 Contaminants of Potential Concern

Petroleum contamination including TPH-diesel range, TPH-gasoline range, and TPH-oil & grease are expected to be treatable by Ex-situ bioremediation.

The COPCs for the petroleum contaminated waste sites are: TPH-diesel range, TPH-gasoline range, TPH-oil & grease, PAH, PCBs, and lead.

Due to collocation of other waste sites and historical activities within 100NR-1/100NR-2 OU, additional COPCs may exist in the soil identified for ex-situ bioremediation which would result in only partial treatment of the waste. These COPCs are based on those listed in *the Remedial Design Report/Remedial Action Work Plan for the 100-N Area* (DOE-RL 2006b) for the collocated wastes sites. These additional COPCs include: radionuclides, metals, semi-volatile organic compounds (SVOCs), volatile organic compounds (VOCs), polycyclic aromatic hydrocarbons (PAHs), pesticides, and polychlorinated biphenyls (PCBs).

Metals include the expanded list of inductively coupled plasma (ICP) metals: antimony, arsenic, barium, beryllium, boron, cadmium, chromium (total), cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc.

## 6.2 Field Sampling and Analysis

All in-process sampling will be performed in accordance with ENV-1, *Environmental Monitoring & Management* procedures consistent with the 100-N Area SAP (DOE-RL 2006a) requirements. The discrete surface soil in-process samples will be collected at each sample point at a depth of (0 to 0.15 m [0 to 6 in.] below grade surface). The in-process samples will be analyzed for the COPCs identified in Table 1 using the appropriate analytical method also listed in Table 1.

Since these are in-process samples no field equipment blank, trip blanks or other field quality assurance samples are required to be collected.

**Table 1. 100NR-1/100NR-2 Ex-Situ Bioremediation Waste Sites Contaminants of Potential Concern and Laboratory Analytical Methods.**

Analytical Method	Contaminants of Potential Concern
ICP metals <sup>a</sup> – EPA Method 6010	Metals
Mercury – EPA Method 7471	Mercury
Hexavalent chromium – EPA Method 7196	Hexavalent chromium
SVOA <sup>b</sup> – EPA Method 8270	Semivolatile organic compounds
VOA – EPA Method 8260	Volatile organic compounds
PAH <sup>b</sup> – EPA Method 8310	Polycyclic aromatic hydrocarbons
PCB – EPA Method 8082	Polychlorinated biphenyls
TPH – EPA Method 418.1	Petroleum hydrocarbons
Pesticides – EPA Method 8081	Pesticides
NWTPH-Dx +	Total petroleum hydrocarbons (diesel and motor oil)
Strontium-90 (total Strontium) – gas proportional counting	Strontium-90
GEA – gamma spectroscopy	Cobalt-60, cesium-137, europium-152, europium-154, europium-155
Isotopic uranium	Uranium-235, uranium-238

<sup>a</sup> Analysis for the expanded list of ICP metals will also include antimony, arsenic, barium, beryllium, boron, cadmium, chromium (total), cobalt, copper, lead, manganese, molybdenum, nickel, selenium, silver, vanadium, and zinc.

<sup>b</sup> Because Method 8310 is specifically meant to analyze for PAH, data from this method will be used preferentially over the Method 8270 data for site evaluation of the PAH analytes.

**Table 1. 100NR-1/100NR-2 Ex-Situ Bioremediation Waste Sites Contaminants of Potential Concern and Laboratory Analytical Methods.**

Analytical Method		Contaminants of Potential Concern	
EPA	= U.S. Environmental Protection Agency	PAH	= polycyclic aromatic hydrocarbons
GEA	= gamma energy analysis	PCB	= polychlorinated biphenyl
IC	= ion chromatography	SVOA	= semivolatile organic analysis
ICP	= inductively coupled plasma	VOA	= volatile organic analysis
NWTPH-Dx	= Northwest total petroleum hydrocarbons – diesel range organics		

## 7.0 DATA EVALUATION DECISIONS

The phase 1 waste site in-process sample results will be compared directly to the RAGs listed in the 100-N Area RDR/RAWP (DOE-RL 2006) to determine if COPCs other than TPH are above the RAGs. Based on the conclusion of the phase 1 characterization, one of three actions will result.

1. If in-process sample results indicate COPCs other than total TPH above RAGs are present, the material (and approximately 1 foot of soil below the waste) will be loaded out for disposal at the ERDF.
2. If in-process sample results indicate that there is no chemical or radiological contamination exceeding RAGs and TPH levels are also below RAGs, the material will be considered potentially clean and will be statistically sampled for verification purposes. Verification sampling of potentially clean (overburden) soil is outside the scope of this plan.
3. If in-process sample results indicate only the TPH levels remain above the RAGs, then the soil will be identified for ex-situ bioremediation and a Phase 2 treatment plan will be initiated for those waste sites.

## 8.0 DOCUMENTATION

All in-process sample result comparisons to the RAGs for each of the identified 10 waste will be provided to Ecology in the form of an email. No site specific concurrence for the disposal of stained or contaminated soil with COCs other than TPH above the RAGs is required. The phase 2 (if required) ex-situ bioremediation treatment plan will include the data used to make the treatment option determination. The phase 2 ex-situ bioremediation treatment plan will require DOE and Ecology approval prior to the start of ex-situ bioremediation treatment.

## 9.0 REFERENCES

- DOE-RL, 2006a, *100-N Area Sampling and Analysis Plan for CERCLA Waste Sites*, DOE/RL-2005-92, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.
- DOE-RL, 2006b, *Remedial Design Report/Remedial Action Work Plan for the 100-N Area*, DOE/RL-2005-93, Rev. 0, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

ENV-1, *Environmental Monitoring & Management*, Washington Closure Hanford, Richland, Washington.

EPA, 1992, "Resource Conservation and Recovery Act (RCRA) Facility Assessment: Bonneville Power Administration and Washington Public Power Supply System Hanford Generating Station," letter to C. Clark (U.S. Department of Energy) from C. Sikorsaki, U.S. Environmental Protection Agency, September 18, 1992.

EPA, 1999, *Interim Action Record of Decision for the 100-NR-1 and 100-NR-2 Operable Units, Hanford Site, Benton County, Washington*, U. S. Environmental Protection Agency, Region 10, Seattle, Washington.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

**APPENDIX A**

**PETROLEUM CONTAMINATED WASTE SITES FOR EX-SITU  
BIOREMEDIATION PHASE 1 INVESTIGATION**

**Table A-1. 100-N Area Ex-Situ Bioremediation Waste Site Summary (2 Pages)**

Waste Site	Title	Date	Qty (liters)	Estimated Volume (bank cubic meters)	COPCs	Description/Status	WIDS Collocated Sites	COPCs for Collocated Waste Sites
124-N-2	124-N-2 Septic Tank, 100-N Sanitary Sewer System No. 2	1963-1987	8,700	68	TPH, diesel	124-N-2 Septic tank removed by D4 in 2009, cesspit remains.	100-N-84:3, 100-N-84:4, and 100-N-84:5	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-18	166-N Four-inch Diesel Oil Supply Line to 184-N Leak, UN-100-N-18	08-1973	757	6	TPH, diesel	Diesel oil leak from transfer line between 166-N and 184-N. Included in the scope of this plan.	100-N-84:2, 100-N-84:4, and 100-N-102	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-19	184-N Day Tank Fuel Oil Spill, UN-116-N-19, UN-100-N-19	04-1984	7,570	1,946	TPH No 6 fuel oil	No. 6 fuel oil leak at 184-N Day Tank Storage Facility. All fuel oil reportedly contained, removed, and disposed. Included in the scope of this plan.	UPR-100-N-42, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, 100-N-84:2, 100-N-84:4, and 100-N-103	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-20	166-N Two-inch Diesel Oil Return Line Leak, UN-116-N-20, UN-100-N-20	06-1985	757	1,840	TPH No 2 diesel oil	Diesel oil leak from transfer line near Tank 1 in 166-N Facility. Included in the scope of this plan.	100-N-84:2 and UPR-100-N-17	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-21	184-N Diesel Oil Day Tank Overflow, UN-116-N-21, UN-100-N-21	04-25-1986	3,028	1,946	TPH No 2 diesel oil	Diesel oil spill into area surrounding a day tank at 184-N Facility. 650 gallons reportedly pumped as part of cleanup. Included in the scope of this plan.	UPR-100-N-42, UPR-100-N-19, UPR-100-N-22, UPR-100-N-23, 100-N-84:2, 100-N-84:4, and 100-N-103	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-22	184-N Diesel Oil Supply Line Leak No. 1, UN-100-N-22, UN-116-N-22	06-23-1986	3,785	1,946	TPH No 2 diesel oil	Diesel oil leak from a transfer line. Petroleum product noted in well 199-N-16; subsequently pumped from well. Included in the scope of this plan.	UPR-100-N-19, UPR-100-N-21, UPR-100-N-23, UPR-100-N-42, 100-N-84:2, 100-N-84:4, and 100-N-103	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-23	184-N Diesel Oil Supply Line Leak No. 2, UN-100-N-23, UN-116-N-23	01-10-1987	757	1,946	TPH No 2 diesel oil	Diesel oil leak from a transfer line. Petroleum product noted in well 199-N-16; subsequently pumped from well. Included in the scope of this plan.	UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-42, 100-N-84:2, 100-N-84:4, and 100-N-103	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons
UPR-100-N-24	166-N Fuel Oil Supply Line Leak, UN-116-N-24, UN-100-N-24	02-01-1987	unknown	14	TPH No 6 fuel oil	Line leak reported; petroleum type and quantity unknown. Included in the scope of this plan.	100-N-84:2, 100-N-84:4	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons

**Table A-1. 100-N Area Ex-Situ Bioremediation Waste Site Summary (2 Pages)**

Waste Site	Title	Date	Qty (liters)	Estimated Volume (bank cubic meters)	COPCs	Description/Status	WIDS Collocated Sites	COPCs for Collocated Waste Sites
UPR-100-N-36	184-N Annex, 184N, Diesel Generator Area	unknown	unknown	3,333	TPH, diesel fuel and motor oil	During excavation between 184-N and 153-N, strong smell of petroleum was noted. Included in the scope of this plan.	100-N-84:1, 100-N-55, and 100-N-103	Metals and radionuclides
UPR-100-N-43	166-N / 184-N Pipelines Liquid Unplanned Release 2 (4/26/89, Cleaned Up)	04-26-1989	1,100	9	TPH, diesel	Diesel oil leak at three flange joint locations along pipeline between 166-N and 184-N. A total of 46 drums and 8 dump trucks of soil removed. Included in the scope of this plan.	UPR-100-N-19, UPR-100-N-21, UPR-100-N-22, UPR-100-N-23, UPR-100-N-42, 100-N-84:2, 100-N-84:4, and 100-N-103	Metals, total petroleum hydrocarbons, polycyclic aromatic hydrocarbons

COPCs = Contaminants of Potential Concern

TPH = total petroleum hydrocarbons

WIDS = Waste Information Data System

**APPENDIX B**  
**WASTE SITE EXCAVATION DESIGNS**

Figure B-1. 124-N-2 Waste Site Excavation Civil Plot (drawing: 0100N-DD-C0246)

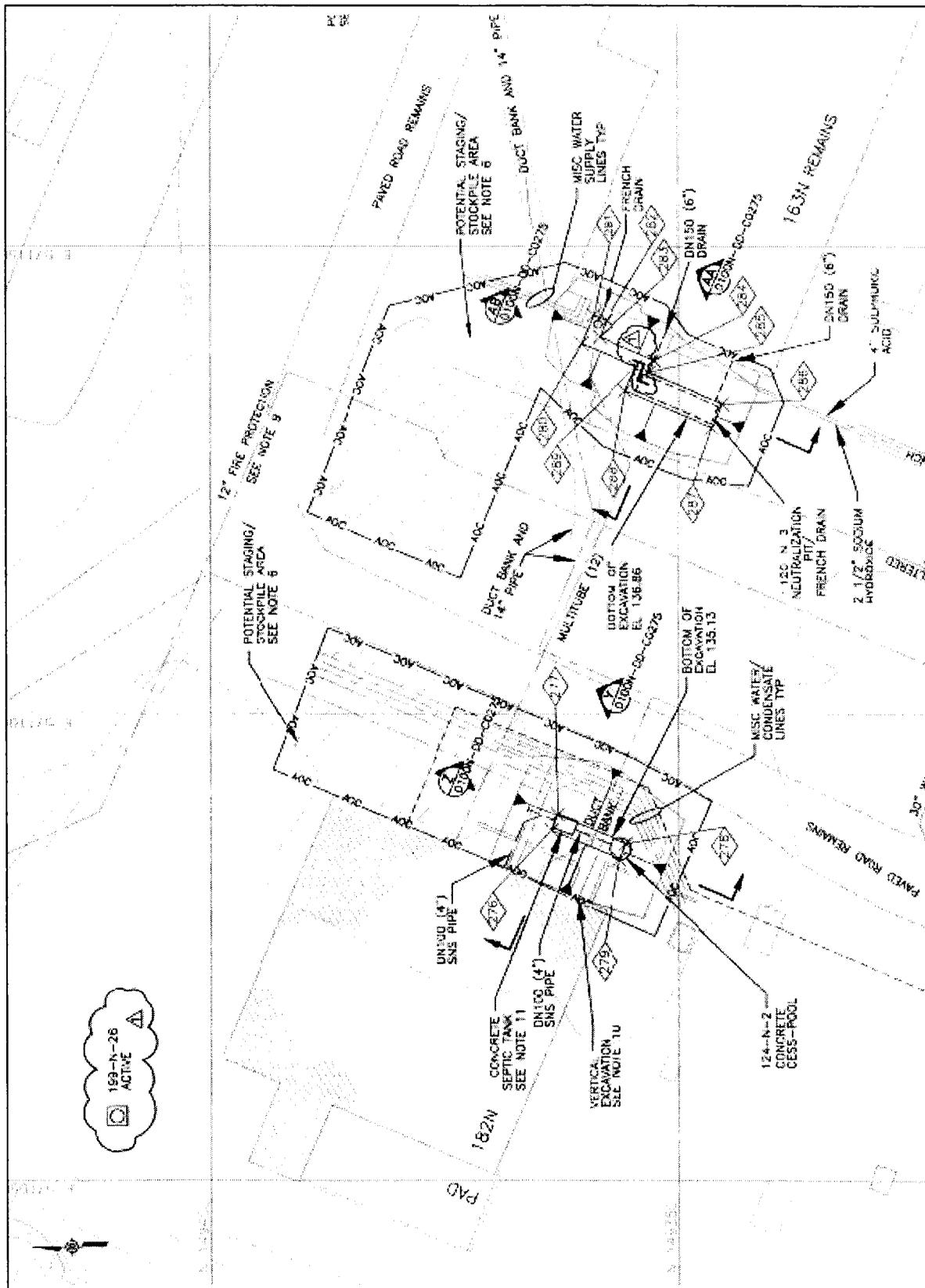


Figure B-2. UPR-100-N-18 Excavation Civil Plot (drawing: 0100N-DD-C0254)

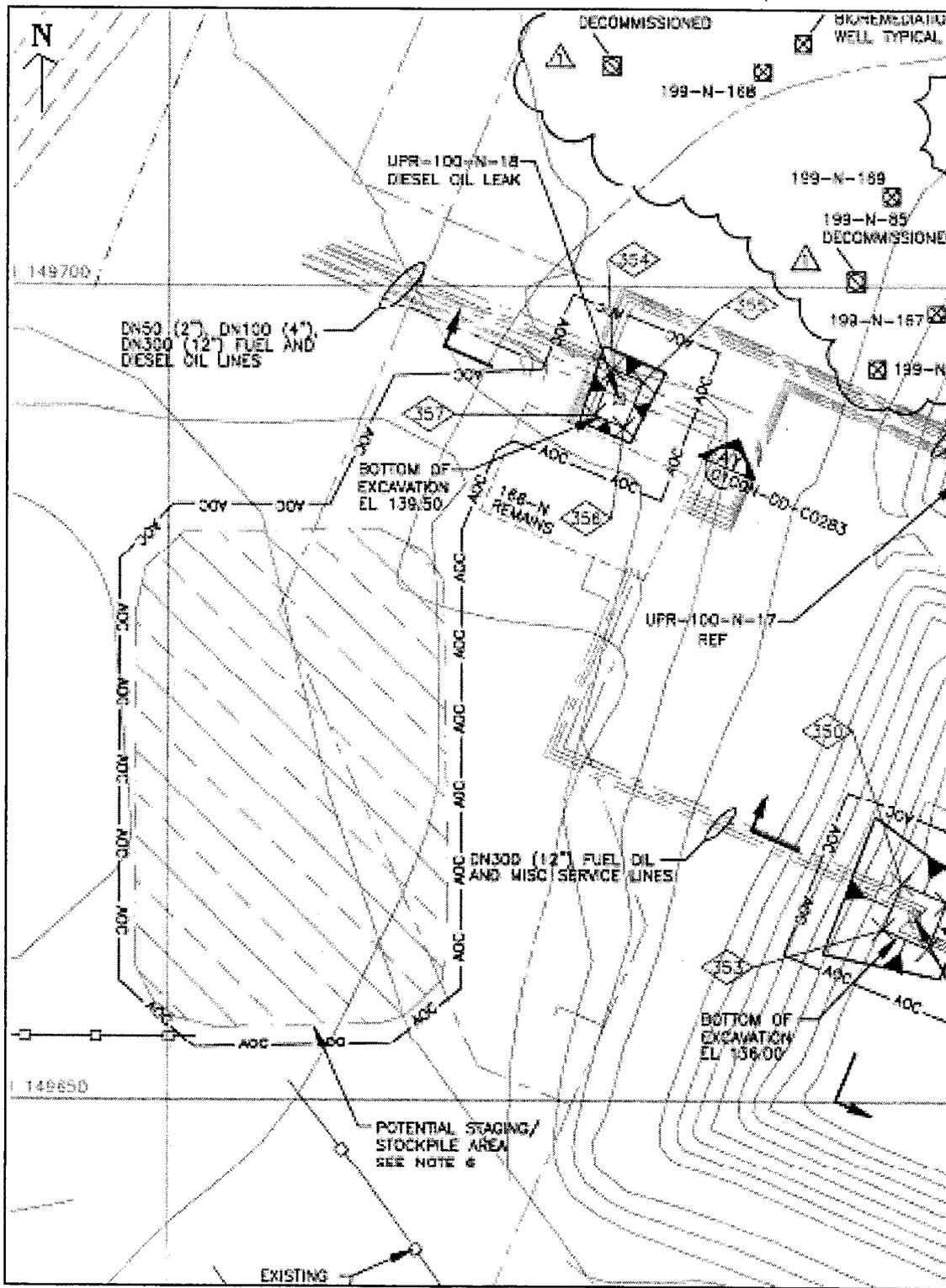




Figure B-4. UPR-100-N-20 Waste Site Excavation Civil Plot (drawing: 0100N-DD-C0254)

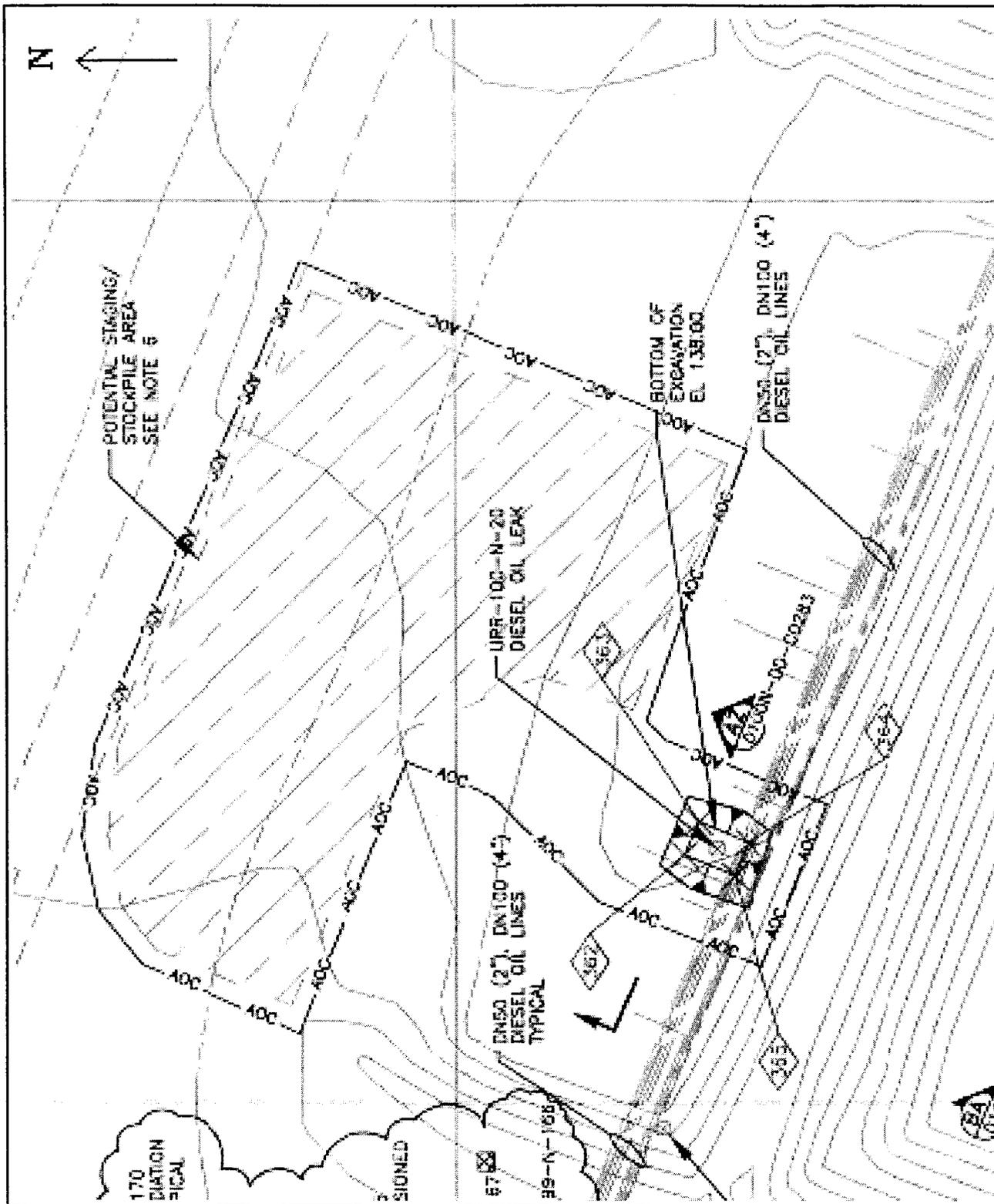


Figure B-5. UPR-100-N-24 Waste Site Excavation Civil Plot (drawing: 0100N-DD-C0254)

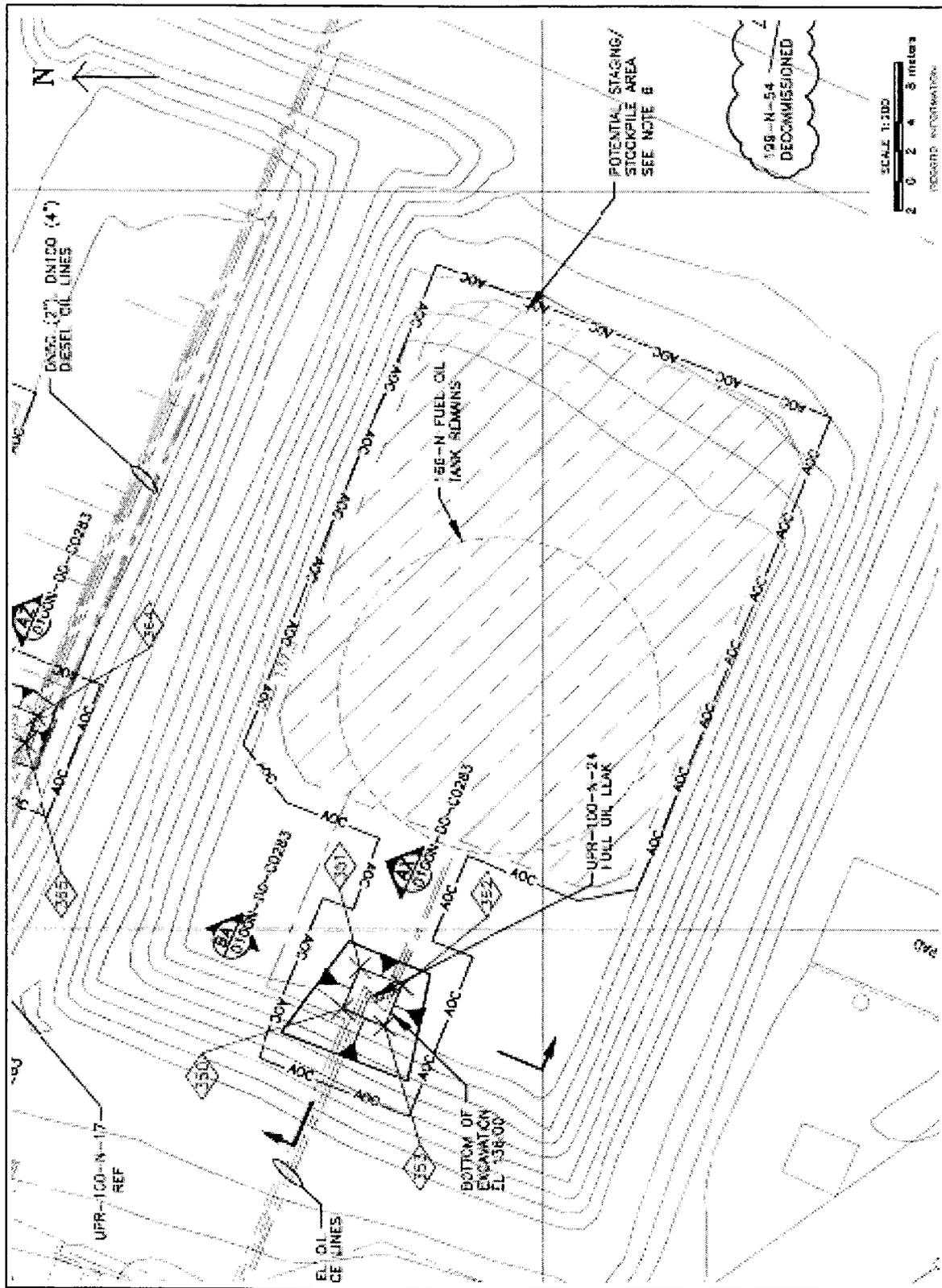
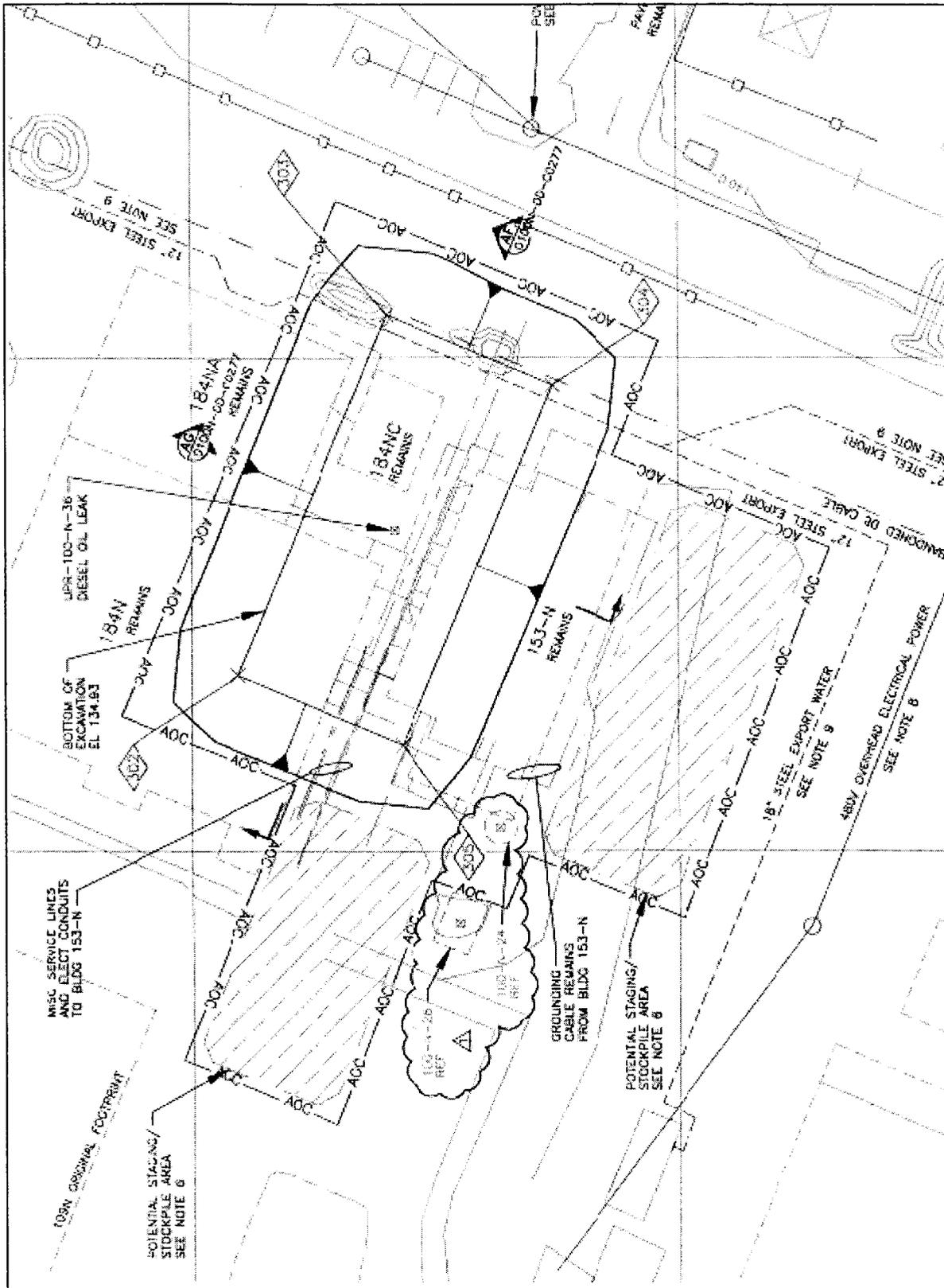


Figure B-6. UPR-100-N-36 Waste Site Excavation Civil Plot (drawing: 0100N-DD-C0248)



**APPENDIX C**  
**WASTE STAGING AREA MAP**



# Attachment 7

300 Area Closure Project Status  
November 10, 2011  
100/300 Area Combined Unit Manager Meeting

**Ongoing Activities**

- 324 – Finalizing short-list evaluation of 300-296 remediation options and technologies.
- 309 – Removed remainder of containment structure to grade, completed above-grade demolition south and west. Load out and east wing demolition remains.
- 308 – Completing final demolition preparations.
- 340 – Completed above-grade demolition of 340-B, 340-A, 3707-F and 340 Buildings.
- Completed above-grade demolition and initiated below-grade demolition of the 320 Building.
- Removed CRCTA vessel from 337-B basement, final asbestos abatement in caisson remains.
- Field Remediation resumed on 321/323 and 3706 waste site areas.
- Resumed 327 below-grade demolition.
- Completing 338 below-grade demolition and backfill.

**Current Demolition Preparations & Activities**

- Finalize 308 demolition preparations.
- Continue preparations for 309 reactor core removal.
- Complete 320 building demolition.
- Complete load out of above-grade demolition debris for 340 Complex buildings and turn over to subcontractor to initiate waste site remediation and vault removal.
- Complete 337-B caisson asbestos abatement and backfill site.
- Prepare and mobilize subcontractor for waste site remediation south of Apple St.

**60-Day Project Look Ahead**

- Continue evaluation/characterization of source-term beneath 324 Building, evaluation of remediation technique and technologies.
- Initiate 340 waste site remediation and finalize engineering for vault removal.
- Initiate demolition of 308. Finalize engineering for TRIGA reactor removal.
- Complete below-grade demolition and backfill of 320 Building.
- Complete 327 below-grade demolition.
- Complete work at the 337 Complex, backfill and close area.

# Attachment 8

## Environmental Protection Mission Completion Project

November 10, 2011

### Orphan Sites Evaluations

- The 100-F/IU-2/IU-6 Area – Segment 4 Orphan Sites Evaluation Report was transmitted by RL for review on 8/31/11. Comments have been received from EPA and are still pending from Ecology.
- The 100-F/IU-2/IU-6 Area – Segment 5 Orphan Sites Evaluation report was transmitted to RL for review and subsequent transmittal to EPA on 10/18/11.

### Long-Term Stewardship

- The consolidated Draft, 100-F/IU-2/IU-6 - Segment 2 turnover and transition package is currently undergoing contractor review.

### River Corridor Baseline Risk Assessment

- The Draft C Ecological Risk Assessment report (Volume I) has been issued for regulator and stakeholder review.

### Remedial Investigation of Hanford Site Releases to the Columbia River

- The Draft A screening level ecological risk assessment was distributed by RL to the regulators for review on October 13, 2011.
- The Draft A human health risk assessment is being developed to reflect RL comments.

### Document Review Look-Ahead

Document	Regulator Review Start	Duration
100-F/IU-2/IU-6 - Segment 5 Orphan Sites Evaluation Report	October 18, 2011	30 days
River Corridor Baseline Risk Assessment – Ecological Risk Assessment Report (DOE/RL-2007-21, Draft C, Volume I)	October 3, 2011	45 days
Columbia River Component Risk Assessment – Screening Level Ecological Risk Assessment Report (DOE/RL-2010-117, Draft A, Volume I)	October 17, 2011	45 days
Columbia River Component Risk Assessment – Baseline Human Health Risk Assessment Report (DOE/RL-2010-117, Volume II)	December 2011	45 days