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PROJECT MANAGERS' MEETING,
200 AREA GROUNDWATER SOURCE OPERABLE UNITS
January 21, 2010

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Meeting Minutes Transmittal/Approval
Project Managers' Meeting
200 Area Groundwater and Source Operable Units
January 21, 2010

APPROVAL: _____ **DATE:** 01/21/2010
Al Farabee, 200 Area Project Manager, DOE/RL

APPROVAL: _____ **DATE:** 1/21/2010
Briant Charboneau, 200 Area Unit Manager, DOE/RL

APPROVAL: Craig Cameron **DATE:** 1/21/2010
Craig Cameron, 200 Area Project Manager, EPA

APPROVAL: Nina M. Menard **DATE:** 1/21/2010
Nina Menard, 200 Area Project Manager, Ecology

HFFACO Action Plan Section 4.1 requires signature of agreements and commitments made during the Project Manager Meeting. Approval of these minutes documents approval of agreements and commitments documented in Attachment 4 to these minutes. Approval does not apply to any other attachments, which are included in these minutes for informational purposes.

Minutes of the 200 Area Project Managers' Meeting of January 21, 2010 are attached. Minutes are comprised of the following.

Attachment 1	**Attendance Record**
Attachment 2	**Agreements and Issues List**
Attachment 3	**Action Item List**
Attachment 4	**Operable Units and Facilities Status**
Attachment 5	**TPA-CN-295**
Attachment 6	**TPA-CN-296**

Attachment 1
CHPRC-0900225.8

200 Area Project Managers' Status Meeting
January 21, 2010

Please print clearly and use black Ink

PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
Nina Menard	ECY	PM	372-7941
Zelma Jackson	ECY	200 E+W OU	372-7910
Kevin Leary	DOE	200-UW-1 IS-1 /NRDWL	
DL Foss	CHPRC	VP SERP	438-2705
Shelley Cimon	ODOE		(541) 240-0161
John Colmer	WDOH	—	509/946-0890
Craig Cameron	EPA	PM	376-8665
Curt Wacker	CHPRC		373-2218
Doug Chapin	DOE-RL-0040	Acting PM (for Al Farabee)	373-9396
Frank Roddy	DOE/RL	Central Plateau	372-0945
Janice Williams	CHPRC	Facilitator	372 3553
Dottie Norman	CHPRC		373 2027
Arlene Tortoso	DOE-RL	200-Area PM	373-9631
Wade Woolery	DOE RL	PM	372 2889
Naomi Hakle	DOE-RL	PM	376-5527
Greg Sinton	DOE-RL		373-7939
Jim Hanson	DOE RL		376 4648
Ellwood Glastrenner	DOE RL		376 5828

Attachment 1
CHPRC-0900225.8

200 Area Project Managers' Status Meeting
January 21, 2010

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PRINTED NAME	ORGANIZATION	O.U. ROLE	TELEPHONE
JOHN MORSE	DOE-RL		376-0057
Briant C. [illegible]	FL	OU M	373-6137

200 Area Project Managers' Meeting
Agreements and Issues List
January 21, 2010

Agreement: TPA-CN-295

Agreement: TPA-CN-296

Issue: None identified.

Delegations for January 21, 2010 PMM meeting:

EPA	Craig Cameron
Ecology	Nina Menard
DOE/RL	Doug Chapin for Al Farabee

200 Area Project Managers' Meeting
January 21, 2010

OPEN ACTION ITEM TRACKING

Action #	Action/Subject	Assigned To	Owed To	Assigned Date	Original Due Date	Adjusted Due Date	Status
	No Open Action Items						

200 AREA PROJECT JANUARY STATUS UPDATES

January 21, 2010

Central Plateau Geographic Remediation

Key Facility Negotiations (RL: Al Farabee) – (Tina Crane)

- The agreement in principle for negotiation of Central Plateau Facility disposition activities was signed by Tri-Parties August 13, 2008. Technical discussions began October 30, 2008.
- Strategy and TPA change proposals delivered to RL September 28, 2009 and October 19, 2009 respectively.
- HAB workshop held on October 29, 2009.

Schedule Status: Key Facility Negotiations have been rolled into Central Plateau Milestone Negotiations.

Regulator Comments

CP MIS Utilization (RL: Briant Charboneau/Frank Roddy) – (Dave Chojnacki)

- Waste profile samples have been taken and the final analysis has been received. Waste department is reviewing the data so the waste profile can be completed. The loading scaffold has been erected and certified for use. The liner deployment system has been trialed and shows promising results. Modifications are still being addressed. Sampling instructions have been completed and have been distributed for comments for the MIS portion of the project. This week plans are to remove the top 1-2 foot of clean soil off the first of the two ¼ acre sites. This will allow MIS to proceed. MIS cover is being removed the week of January 11, 2010 and MIS sampling will take place the week of January 18, 2010.

Schedule Status: On schedule.

Regulator Comments

U-Zone Remediation

221-U Disposition (RL: Wade Woolery) – (Tina Crane)

- Eight cells (4, 7, 5, 6 12, 18, 11, and 13) have initially been loaded with equipment from the deck. A spreadsheet of the equipment loaded into the cells is maintained and updated as the cells are filled.
- Cell 2 is currently in process.
- Size reduction of some equipment has commenced.
- The access road connecting the railroad tunnel to the main road is over 75% complete. Additional testing of the road bed is required.
- Bids on the grout system are to be evaluated by February 4, 2010, and the procurement RFP is to be issued by March 15, 2010.
- Cells 25 and 26 are planned next.

Schedule Status: Canyon work activities on schedule.

Regulator Comments – EPA stated that the disposition of the U Plant Zone Cell 30 Vessel material (tank contents D-10) must be removed from the building according to the ROD. Ecology concurs with EPA.

U-Ancillary Facilities (RL: Wade Woolery) – (Tina Crane)

- D&D operations are ongoing. Demolition preparation, such as application of fixative, and asbestos removal activities continue in 224-U/UA. Asbestos removal in 224-U Calciner Cells G, H, J, K, L, and M is scheduled to be complete by the end of February 2010. Demolition activities are scheduled to begin in March 2010.

Schedule Status: U Plant Ancillary Facilities work activities on schedule.

Regulator Comments

200-UW-1

- 200-UW-1 is part of the U-Zone remediation and is reported on later in this presentation.

200 North Remediation

212-N, P, R (RL: Wade Woolery) – (Tina Crane)

- Contaminant samples and radiological surveys of the remaining soil beneath the basins were completed by January 10, 2010.
- Analysis results expected back the month of February 2010.
- Backfilling/Contouring/Application of soil fixatives as appropriate is currently planned for late February.

Schedule Status: 212-N, P, R Demolition project on schedule.

Regulator Comments -

200-CW-3 Waste Sites (RL: Frank Roddy) – (Tina Crane)

- Waste site sampling is complete. Verification packages for CS/NFA sites are complete and comments have been incorporated; one of four (Package for 600-285-PL, 600-286-PL, and 600-287-PL pipelines) has been approved by EPA; remaining three are in transmittal process (RL to EPA) with completion anticipated in January 2010. Sampling summary reports for the three RTD sites have been completed and transmitted to RL. Site contouring and backfilling activities for CS/NFA sites are ongoing with project completion expected in January 2010.
- TPA changes notices for RAWP and SAP to incorporate verification sampling at 216-N-1, 216-N-4 and 216-N-6 sites have been reviewed by RL and approved by EPA.

Schedule Status: On schedule.

Regulator Comments

Rail Car Disposition Options Study (RL: Frank Roddy) – (Tina Crane)

- 212-N/-P/-R EE/CA is in revision to incorporate disposition of railcars. Addenda / revision of follow-on regulatory document (Action Memo, work plan, etc.) to follow as applicable.

Schedule Status: TBD.

Regulator Comments

200-BC Control Area (BCCA) *Ecology Lead* (RL: Doug Chapin) – (Bo Wier)

- Shipping to ERDF is ongoing; using four super dump trucks, a cumulative total of ~25,700 tons of soil was deposited at ERDF through the week of January 18, 2010.
- A new fifth truck was received January 20, 2010 and will put into service on January 21, 2010.
- A final report of the September 2009 helicopter aerial survey is being prepared; DOE expects to receive the report by early February 2010.

Schedule Status: On Schedule.

Regulator Comments

Central Plateau Groundwater and Source Operable Units

200-UP-1 *Ecology Lead* (RL: Naomi Hake) – (Curtis Wittreich)
(M-15-17A, 9/30/10, Combined Remedial Investigation/Feasibility Study Report, and Proposed Plan)

- Preparation of the combined RI/FS report and revision of the 200-ZP-1 Proposed Plan to incorporate 200-UP-1 continues on schedule.
- A redline of the 200-UP-1 OU Remedial Design/Remedial Action Work Plan (DOE/RL-97-36, Rev 3) was prepared incorporating Ecology comments and provided to Ecology for a final check. With agreement on the work plan, the remedial design will be able to start, 200-UP-1 interim action pump-and-treat system in the vicinity of U was shutdown October 15, 2009 to accommodate an ETF outage with an expected January restart. A well camera survey and redevelopment activity to enhance extraction well production is being planned.

Schedule Status: The Draft A combined RI/FS report and Proposed Plan revision is scheduled to be completed by August 2010.

Regulator Comments:

200-ZP-1 *EPA Lead* (RL: Arlene Tortoso) – (Mark Byrnes)
(M-16, -124, 8/31/10, Submit 200 ZP-1 Remedial Design Report)

Remediation Treatment Status:

- 12 of the 14 groundwater extraction wells are on line pumping water at a rate of approximately 260 gpm. Extraction well 299-W15-34 is offline due to electrical problems. Extraction well 299-W15-36 will be kept offline due to very low flow rates.
- Extraction wells 299-W11-45 and 299-W11-46 are currently off line due to the drier breakdown at ETF. These two wells will remain off line until January 15, 2010 when ETF is scheduled to be put back on line.
- Held a pre-90% design review meeting with RL on December 15 and 16, 2009.
- Drilling and sampling of eight permanent extraction/injection wells is complete. A swedge is currently being installed in the ninth extraction well (EW-15, C7494) to repair a break in the screen that occurred during installation.
- Comments received by RL on the Performance Monitoring Plan have now been addressed. The document will soon be released for EPA review.

- Continuing to preparing sample authorization forms, other sampling paperwork, and running analytical tests in support of ARRA drilling.
- Engineering design has been completed for both connecting extraction well 299-W15-225 (EW-1) to the ZP-1 interim treatment facility and installing a new heater/chiller unit in the interim treatment facility. Materials are on order.
- Resin testing is ongoing at the Corvallis laboratory to determine the amount of carbon tetrachloride that the Purolite A530E and SIR 1200 resins will uptake.
- The Operations and Maintenance Plan for the 200-West Area Groundwater Treatment Facility is out for internal review.
- A literature search was recently completed on using GAC to remove Tc-99 from groundwater. Treatability testing may follow.

Schedule Status: On schedule.

Regulator Comments

200-PW-1, 200-PW-3, & 200-PW-6 *EPA Lead* (RL: Arlene Tortoso) – (Kathy Davis, Mark Byrnes, Virginia Rohay PW-1 SVE)

- EPA has sent a letter to RL requesting additional actions specified in the letter to resolve remaining comments on the 200-PW-1/3/6 FS, and inclusion of the pipelines in the FS. DOE is preparing responses to these comments and will update the schedule for completing the FS and the Z Area Liquids Discharge Sites Proposed Plan. The PP will address both the PW-1/3/6 OU and the 200-CW-5 OU.

Soil Vapor Extraction System (SVE):

- Monthly monitoring results for December 2009 for the soil vapor probes and wells were consistent with the results from previous monitoring.
- The two new SVE units have been shut down for the winter, as scheduled.
- A draft plan is in preparation, to run the SVE units from March through October. The plan will be provided to EPA for review and comment in January 2010.

Schedule Status: A revised schedule is under development to resolve new comments in the PW-1/3/6 Feasibility Study and a combined Proposed Plan (combined with 200-CW-5).

Regulator Comments

Deep Vadose Treatability Test M-15-53 (RL: John Morse) – (Glen Chronister)

(M-15-54, 1/31/2010, Submit report on Reactive Gas testing for sequestration of Uranium that will support remedial action decision making)

- Desiccation Pilot Test:
    - An RFP for procurement of the dry air injection system has been drafted and is now being prepared for transmittal by the procurement organization. Engineering for the instrumentation and monitoring systems, as well as power distribution continue and procurement of instrument monitoring is continuing. An RFP was issued in December and awarded in early January for the drilling and instrumenting of 20 additional boreholes at the BC Cribs and Trenches site to support the Desiccation Pilot Test.
- Characterization Testing:
    - The test report on soil characterization and permeability was reviewed by DOE-RL in December and is now it tech editing. This report compiles the results of the borehole analysis, permeameter results, laboratory desiccation tests and modeling, and characterization field test results. Following tech editing the report will undergo CHPRC review and approval, and then be transmitted to DOE-RL as a Test Report for their approval before the associated PI due date of March 15, 2010 (anticipated completion date to send the final report to DOE is February15, 2010).
- Desiccation Lab Testing (PNNL):
    - Additional lab desiccation testing is being performed by PNNL this fiscal year that will investigate re-wetting as a result of recharge and water vapor transport that will support the overall modeling to evaluate recharge rates following desiccation work.
- Uranium Sequestration Testing (PNNL):
    - PNNL has initiated testing on large scale soil test columns that will be used as the basis for adaptation to a field scale test scheduled for FY11 supporting uranium sequestration. Additionally, the test report on uranium sequestration is now in tech editing and should be complete by January 7, 2010. Upon completion of tech editing, CHPRC will formally transmit this document to DOE-RL to satisfy TPA-015-54 due January 31, 2010. The document was handed out to Regulators at the meeting (Remediation of Uranium in the Hanford Vadose Zone Using Gas-Transported Reactants: Laboratory-Scale Experiments, PNNL-18879).
- Soil Flushing (PNNL):
    - PNNL has initiated testing on soil flushing as a mechanism to contact targeted contamination in the vadose zone with a leaching solution. These tests will evaluate kinetics and stability of solubilization of Tc-99 and uranium, transport

properties of the solubilized Tc-99 and uranium, and impact of vadose zone sediment properties on leaching solution processes. Additional modeling will also be performed to assess distribution, location, and stratigraphic factors that control the distribution of vadose contaminants and movement of injected fluids.

- Grouting (PNNL):
    - PNNL has initiated testing on grouting as a mechanism to contact targeted contamination in the vadose zone to react, stabilize, or isolate the contaminants. These results to model the grouting lab work to assess the distribution, location, and stratigraphic factors that control the distribution of vadose zone contaminants.

Schedule Status: On schedule to meet TPA milestone.

Regulator comments:

200-CS-1 *Ecology Lead* (RL: Greg Sinton) – (Ron Brunke)

Discussions are on-going concerning incorporation of most of the CS-1 waste sites into an outer area Operable Unit (all except 216-B-63 and 216-A-29).

Schedule Status: No near term milestone, other than for M-16-00.

Regulator Comments

200-CW-5 *EPA Lead* (RL: Greg Sinton) – (Kathy Davis)

- DOE and EPA have agreed on a path forward to issue a combined Proposed Plan with the PW-1/3/6 Operable Unit, the Z Area Liquid Discharge Sites PP. The CW-5 Feasibility Study will be updated to increase comparability with the PW-1/3/6 Feasibility Study to better support public meetings.

Schedule Status: A revised schedule is under development to support the production of a revised Feasibility Study for CW-5 and a combined Proposed Plan (combined with 200-PW 1/3/6).

Regulator Comments

200-CW-1 *Ecology Lead* (RL: Greg Sinton) – (Ron Brunke)
(M-015-38B, 11/30/2010, Feasibility Study/Proposed Plan)

- Discussions are on-going about whether to retain the outer area Ponds in a 200-CW-1 OU or to include those ponds in a new "Outer Area" Operable Unit. Either way a single Outer Area RI/FS document set is planned.
- Remaining CW-1 supplemental characterization sampling is now anticipated to be accomplished in March 2010.

Schedule Status: The M-15-08-07 TPA change package was signed August 11, 2009 and maintains the M-15-38B FS/PP due date of November 30, 2010. The change package that had been issued for public comment had a proposed due date of September 30, 2011, but this was changed back to the original milestone date in the final version (November 30, 2010), with a scope change to limit the scope to the outer area waste sites. The current Outer Area change package under discussion would include CW-1 and propose a later Outer Area FS/PP date

Regulator Comments

200-BC-1 *EPA Lead* (RL: Greg Sinton) - (Mike Hickey)
(M-15-51, 9/30/10, Feasibility Study/Proposed Plan)

- Incorporated Agency comments on the Excavation Based Treatability Test Report (TTR). The final TTR was issued in January 2010.
- The feasibility study Site Conceptual models are complete

Schedule Status: On schedule.

Regulator Comments

200-SC-1 *EPA Lead* (RL: Greg Sinton) – (Mike Hickey)
(TPA schedule to be established through M-15-40E)

- The project safe store report was finalized and this project is in safe store.

Schedule Status: The project activities funded for this OU in FY09 are related to completing FY08 field activities and consolidating project information and actions to date. A change package that addresses the 200 SC-1 schedule is planned to be prepared by February 25, 2010, as specified in the M-15-40E interim milestone.

Regulator Comments

200-UW-1 *Ecology Lead* (RL: Kevin Leary) – (Mike Hickey)

- Prepared responses to review comments on 200-UW-1 OU remedial action goals (RAGs) modeling methodology documents DOE/RL-2007-34, Rev. 0. The document is in internal review.
- The Draft DQO and Draft SAP to support future field characterization work at the 216-U-8 and 216-U-12 Cribs have been completed and are currently undergoing review by DOE. The TPA milestone date for submitting the 200-UW-1 Proposed Plan has been changed to June 30, 2010.
- The revision of the Draft On-Scene Coordinator Report for the Time-Critical Removal Action at 200-W-42 is nearing completion and expected mid-January 2010.

Schedule Status: Preparation of the revised 200-UW-1 Proposed Plan is on schedule to be delivered to Ecology by June 30, 2010. This date is correct if the Proposed Plan does not include the boreholes/drilling.

Regulator Comments – Ecology believes the borehole data should be included in the Proposed Plan.

200-IS-1 *Ecology Lead* (RL: Kevin Leary) – (Greg Berlin)
(M-13-27, 6/30/07, RI/FS Work Plan)

- 241-CX Tank System Closure Plan, Rev 0 was approved by DOE on October 1, 2009 and by Ecology on October 13, 2009.

Schedule Status: Updates for the Hexone Tanks Closure Plan are underway. A revision to the 200-IS-1 RI/FS work plan is also underway.

Regulator Comments:

200-PW-2 & 200-PW-4 *Ecology Lead* (RL: Doug Hildebrand) – (Mike Hickey)
(M-15-43D, 12/31/10, Feasibility Study and Revised Recommended Remedy(ies))

216-B-12 and 216-C-1 Boreholes: Vadose portion of the 216-C-1borehole is complete. Borehole 216-B-6 (aka K-well) is at a depth of 288 feet. Borehole 216-B-12 is scheduled to start late January 2010.

Schedule Status: Field work is on schedule. A change package that addresses the 200-PW-2/4 schedule is planned to be prepared by February 28, 2010 as specified in the proposed M-15-42E interim milestone.

Regulator Comments

200-BP-5 *EPA Lead* (RL: Doug Hildebrand) – (Curtis Wittreich)
(M-15-82, 12/31/10, Treatability Test Plan; M-15-21A, 12/31/2012, Feasibility Study/Proposed Plan)

- Remedial Investigation:
  - L Well (adjacent C-1 Crib) and K Well (adjacent B-6 Reverse well) were drilled/sampled to depths of 343 and 288 ft bgs, respectively. Both wells will be drilled to top of basalt expected at ~380 ft bgs.
  - Completed 2 of 14 wells scheduled for depth discrete groundwater sampling in the B Complex Area.
  - Continued work on the Remedial Investigation (RI) Report that includes a data quality assessment (DQA) of groundwater data within the operable unit.

Schedule Status: The 200-BP-5 Conceptual Transport Model Report is expected to be finalized by February FY10. Drilling of the K, L and M wells was is expected to be completed by July 2010. The Draft A RI Report is scheduled to be completed by December 2010. Milestone M-15-82 requires submittal of a treatability test plan for the U/Tc plume near WMA B/BX/BY by December 31, 2010 and is on schedule. Milestone M-15-21A requires submittal of the Draft A Feasibility Study and Proposed Plan by December 31, 2012.

Regulator Comments

200-PO-1 *Ecology Lead* (RL: Doug Hildebrand) – (Curtis Wittreich)
(M-15-73, 12/31/2011, Submit FS Report and PP for 200-PO-1)

- Preparation of the 200-PO-1 Remedial Investigation (RI) Report continued

Schedule Status: The Draft A RI Report is scheduled to be completed by May 2010. Milestone M-15-73 requires submittal of the Draft A Feasibility Study and Proposed Plan by December 31, 2011.

Regulator Comments – Ecology requests a meeting on the Upwelling data regarding tritium near the old Hanford Townsite.

200-SW-1 *Ecology Lead* (RL: Kevin Leary) – (Ron Brunke)

- The NRDWL and SWL closure plans were submitted to Ecology on November 2, 2009. Ecology and RL are working together to expedite the review and approval cycle for the closure plans. Working groups are addressing resolving document content regarding soil cap design and groundwater monitoring plan, as well as regulatory path forward and public involvement preparation. The expedited effort is intended to make use of available American Recovery and Reinvestment Act funding prior to October 2011towards the closure of these landfills.

200-SW-2 *Ecology Lead* (RL: Frank Roddy) – (Greg Berlin)

- RI/FS Work Plan (Rev 0) was approved by RL and Ecology on December 22, 2008.
- Geophysical investigations were performed at the 218-E-2, 218-E-4, 218-E-9 and 218-W-4A Burial Grounds; the investigation summary report (SGW-43771) was finalized in December 2009 and will be entered into the Administrative Record.
- Passive organic vapor samplers (~350 total) were installed in 200 East and West Area landfills during the month of September 2009, removed and shipped for lab analyses; the investigations summary report (SGW-42563) was finalized in December 2009 and will be entered into the Administrative Record.

Schedule Status: Non-intrusive characterization tasks (i.e., surface geophysics and passive organic vapor sampling) were funded using ARRA support. Field activities began in August 2009 and were completed in December 2009.

Regulator Comments

200-MW-1 *EPA Lead* (RL: Frank Roddy) – (Mike Hickey)
(M-15-44B, 2/28/2010, Feasibility Study, M-015-44C, 02/28/2011, Submit Proposed Plan)

- Incorporating RL comments and Preparing Draft A Feasibility Study report. Draft A due to RL on January 26, 2010.

Schedule Status: On schedule to meet TPA interim milestone M-015-44B, February 28, 2010.

Regulator Comments

200-MG-1/200-MG-2 Model Group 1 Sites (RL: Frank Roddy) – (Greg Berlin)
(M-15-49a, 12/31/08, MG-1 EE/CA) *Ecology Lead*
(M-15-49B, 12/31/08, MG-2 EE/CA) *EPA Lead*

- The 200-MG-1 EE/CA (Rev. 0, 194 waste sites) was published in June 2009.
- The 200-MG-1 AM (Rev. 0, 11 Outer Zone waste sites) was approved and published in July 2009.
- The 200-MG-1 SAP (Rev. 0, 11 Outer Zone waste sites) was published in September 2009.
- The 200-MG-1 RAWP (11 Outer Zone waste sites) was published in December 2009.
- The 200-MG-2 EE/CA (Rev. 0, 34 waste sites) was published in May 2009.
- The 200-MG-2 AM (Rev 0, 34 waste sites) was published in December 2009.
- The 200-MG-1 AM (Draft A, 37 waste sites) was been forwarded to RL for approval and transmitted to Ecology on December 10, 2009 for review. Ecology review in process.

Schedule Status: On schedule.

Regulator Comments

200-LW-1/200-LW-2 *Ecology Lead* (RL: Frank Roddy) – (Mike Hickey)
(M-15-46B, 12/31/11, Feasibility Study/Recommended Remedy) Ecology

216-B-6 Borehole C5860:

- Borehole C5860 is at 288 feet. The anticipated water table is 305 feet

Schedule Status: Other than the C5860 borehole (above), the project activities funded for this OU in FY09 are related to completing FY08 field activities and consolidating project information and actions to date. A change package that addresses the 200-LW-1/2 schedule is planned to be prepared by February 28, 2010 as specified in the proposed M-15-446B interim milestone. Obtain samples at the 216-B-6 ("K-well") borehole November 2009-January 2010.

Regulator Comments

Ecological Risk Assessment (RL: James Hansen) – (John Lowe)

Work continues on the revisions to the Central Plateau Ecological Risk Assessment Report. Work has begun to more fully document and improve the transparency of the ecological risk assessment data, with the assistance of Neptune and Company. Key areas being addressed in the revision of the CP ERA report include:
1) A more detailed presentation of sampling and analytical data showing how the data link to the various investigation phases;
2) A more transparent presentation of the methods used in the CP ERA, especially the use of MIS and reference areas;
3) A more detailed description of the process for identifying waste sites where ecological exposure pathways were analyzed;
4) A more detailed description of the selection process for contaminants of potential ecological concern (COPECs);
5) A discussion of the potential for exposure from biointrusion; and
6) A more detailed discussion of the uncertainties associated with various analysis methods, including identification of potential data needs to address those uncertainties.
Activities associated with the CP ERA are being coordinated with the RI/FS for sites in OUs that are located in the proposed "Outer Area" of the Central Plateau. Ecological risk conclusions will not be presented in the revised CP ERA report, but will be incorporated into the risk assessments supporting the Outer and Inner Area decision documents

Schedule Status: The schedule for the ecological risk assessment will support proposed plans for the Outer and Inner Areas. A revised draft report is scheduled to be provided to DOE in March 2010, and provided to the agencies in June 2010.

Regulator Comments

Well Decommissioning Status: (RL: Frank Roddy) - (Chris Wright)

- Initial screening of candidates for decommissioning being performed with groundwater and source OU leads, DOE, and Ecology.
- 32 wells approved, 25 wells require minimal additional review, and 11 more currently in SHPO review. Decommissioning staff indentifying additional candidates.

Schedule Status: Decommissioning field work planned to begin January 19, 2010.

Regulator Comments

200-TW-1 & 200-PW-5 *EPA Lead* (RL: Arlene Tortoso) – (Mike Hickey)
M-15-42D, 12/31/11, Feasibility Study/Proposed Plan for TW-1 & PW-5)

Schedule Status: No FY09 activities are scheduled for this OU. A change package that addresses the 200-TW-1 & PW-5 schedule is planned to be prepared by February 28, 2010 as specified in the proposed M-15-42D interim milestone.

Regulator Comments

200-TW-2 *Ecology Lead* (RL: Arlene Tortoso) – (Mike Hickey)
(M-15-42E, 12/31/11, Feasibility Study/Revised Recommended Remedy(ies) for TW-2)

Schedule Status: No FY2009 activities are scheduled for this OU. A change package that addresses the 200-TW-2 schedule is planned to be prepared by February 28, 2010 as specified in the proposed M-15-42E interim milestone.

Regulator Comments

200-UR-1 *Ecology Lead* (RL: Frank Roddy) – (Ron Brunke)

- The DQO process identified additional data collection to support refinement of the conceptual site model (CSM), to determine distribution of chemical and radionuclide constituents in soil, salts, and water, and to determine if constituents above background are naturally concentrated by the evaporative process or due to past disposal activities.
- The West Lake SAP includes sampling of salt, salt-soil mixtures, sediment, surface water, and groundwater with testing for radionuclides, metals, polychlorinated biphenyls (PCBs) (solid matrices only), and general chemistry parameters.
- Draft aerial survey report being reviewed.

Scheduled Status: RL Review of Decisional Draft: January 2010; Transmit Draft A/SAP to Ecology: Early March.

Ecology Review: March-April 2010; SAP Approved: July 2010; Field Sampling: July 2010; FSR / DQA Reports: October 2010.

Regulator comments

Tri-Party Agreement

Change Notice for Modifying Approved Documents/ Work Plans In Accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*

Change Number	Document Submitted Under Tri-Party Agreement Milestone	Date:
TPA-CN-295	N/A	January 13, 2010

Document Number and Title: DOE/RL-2007-54, Rev. 0, *Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit*	**Date Document Last Issued:** July 2008
Originator: Oliver A. Farabee, RL	**Phone:** 509-376-8089

Description of Change: Adding language to include development of verification sampling Work Instructions for the RTD Sites.

This change modifies an approved work plan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*, and not Chapter 12.0, *Changes to the Agreement.*

Sections 1.0, 1.1, 1.5.1, 1.5.2 (Table 1-2), 1.6.1, and 3.1 (Table 3-1) were amended to include verification sampling activities and Work Instructions into the sampling and analysis plan.

The attachment shows the redline additions for each section.

Justification and Impacts of Change: Initial sampling results indicated that 216-N-1, 216-N-4 and 216-N-6 waste sites each needed some amount of remediation and verification sampling for close out of each waste site after remediation.

Approvals:

for O. A. Farabee RL Unit Manager	01/13/10 Date	X Approved	___ Disapproved
for CE Cameron EPA Unit Manager	1/14/10 Date	X Approved	___ Disapproved
Ecology Unit Manager	Date	Approved	Disapproved

SAMPLING AND ANALYSIS PLAN FOR REMEDIATION OF 200 NORTH AREA WASTE SITES LOCATED IN THE 200-CW-3 OPERABLE UNIT

1.0 INTRODUCTION

The Hanford Site (Figure 1-1) is a 1,517 km^2 (586 mi^2) Federal facility located in southeastern Washington State along the Columbia River. From 1943 to 1990, the primary mission of the Hanford Site was the production of nuclear materials for national defense. In July 1989, the 100, 200, 300, and 1100 Areas of the Hanford Site were placed on the National Priorities List (40 *Code of Federal Regulations* [CFR] 300, "National Oil and Hazardous Substances Pollution Contingency Plan," Appendix B, "National Priorities List") pursuant to the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA) *of 1980.*

The Central Plateau is located in the central portion of the Hanford Site and is divided into three areas: 200 East Area, 200 West Area, and 200 North Area. Operations in the 200 East and 200 West Areas were related to chemical separation, plutonium and uranium recovery, processing of fission products, and waste partitioning. Major chemical processes in the Central Plateau resulted in delivery of high-activity waste streams to systems of large underground tanks called "tank farms." The liquid wastes often were neutralized before being sent to the tanks and later evaporated (concentrated). The storage tanks were used to allow the heavier constituents to settle from the liquid effluents, forming sludge. Low-activity liquid wastes were discharged to trenches, cribs, drains, and ponds, most of which were unlined. The 200 North Area formerly was used for the interim storage and staging of irradiated fuel.

The 200 North Area located within the 200-CW-3 Operable Unit (OU) (Figure 1-2) includes 12 waste sites, 9 of which will require sampling and analysis:

- 216-N-1, 216-N-4, and 216-N-6 waste site ponds are each located 274 meters (900 feet) south, southeast of the 212-N, 212-P and 212-R Buildings, respectively and received basin overflow cooling water from the storage of fuel in each building. The ponds range in size from approximately 152 meters (500 feet) in length with a maximum width of 61 meters (200 feet) and depths ranging from 1.83 meters (6 feet) to 2.74 meters (9 feet), including backfill material. Each pond consisted of a natural depression in the terrain during operation with the discharged water dispersed by evaporation and percolation into the ground.

- 200-N-3 solid waste site was identified as a series of electrical ballast pits located southwest of the 212-P Building and northwest of the intersection of two gravel roads, one road leading north toward 212-P Building and the other leading west toward the 212-N Building. The pits were originally used as a source of rock for the railroad track beds and now contain a large amount of gravel-sized rock with some metal pipes, wood, electrical insulators, metal cans and rusted drums.

- UPR-200-N-1 and UPR-200-N-2 are unplanned release waste sites. UPR-200-N-1 site is a 300-foot (91-meter) leg of the railroad track extending south from the 212-R Building. From 1944 to 1952, irradiated fuel rods were transported to the 212-R Building from the 100 Area reactors by train in water-filled cask cars. The fuel rods were transferred from the railcars to water-filled storage basins inside the building, where the short-lived radionuclides were allowed to decay before transporting the fuel rods to the 200 Areas for processing. From 1982 to 1986, the 212-R Building was used as a maintenance facility for radiologically contaminated railcars in need of brake and wheel maintenance. Over time, movement and repair of the contaminated railcars caused the track and soil to become contaminated. Presently, two locomotives are staged over the top of the waste site.

The UPR-200-N-2 unplanned release waste site is an area with approximate dimensions of 20 feet by 20 feet (6.1 meters by 6.1 meters). There are two open wood-lined holes with valves inside the radiologically posted area. The holes measure approximately 1 meter square and are approximately 1 meter in depth. The waste site is adjacent to the northern Well Pump House (referred to as Well House No. 2) foundation located east of the 212-R Building. The Well Pump House was demolished in September of 2004. The two valve boxes are associated with the old well water supply system. However, there is no information to explain the exact nature or cause of the radiological contamination.

- 600-285-PL, 600-286-PL, and 600-287-PL pipeline waste sites are 18-inch (46-centimeter) diameter vitrified clay pipe. Each underground pipeline serviced one 212 Building and extended to one of the 216-N Ponds for gravity-fed discharge of basin liquids, specifically:
  - 212-N Building discharged through 600-285-PL to 216-N-1 Pond
  - 212-P Building discharged through 600-286-PL to 216-N-4 Pond
  - 212-R Building discharged through 600-287-PL to 216-N-6 Pond.

- 2607-N, 2607-P, and 2607-R septic tank waste sites each consist of a rectangular concrete reinforced tank, buried to grade-level, and now filled with soil. The original tank systems consisted of a tank that was 4 feet (1.2 meters) long, 2 feet (0.6 meters wide and 8.25 feet (2.5 meters) deep (inner dimensions) with a capacity of between 210 gallons (795 liters) and 240 gallons (910 liters) based on a user capacity for 6 people. Each tank was connected to a drain field that extends south of the septic tank. Each tank was tied to a Guard House, specifically:
  - 2743-N Guard House was serviced by the 2607-N Septic System
  - 2743-P Guard House was serviced by the 2607-P Septic System
  - 2743-R Guard House was serviced by the 2607-R Septic System.

  All three guard houses have been demolished. The Septic Systems were taken out of service in the early 1950s. NOTE: No sampling or analysis is necessary for the three septic systems.

The map of the Hanford Site provided in Figure 1-1 depicts the 200 North Area. Figure 1-2 identifies the 12 specific waste sites within the 200-CW-3 OU.

This sampling and analysis plan (SAP) defines the approach to conduct characterization.~~ and~~ It includes conceptual model Removal, Treatment and Disposal (RTD) confirmation sampling and verification sampling at nine of the 200 North waste sites in the 200-CW-3 OU as part of the Waste Site Remediation project. Chapter 2.0 is the activity-specific quality assurance project plan. The sampling strategy for the project is presented in Chapter 3.0 of this SAP, including the verification sampling, which will be conducted in accordance with Section 3.0 of this SAP~~addressed through approved Work Instructions~~.

The overall goals of the sampling identified in this SAP are to provide the data needed to support waste disposal from excavating the waste sites,~~ and~~ confirm the Removal, Treatment and Disposal remedial action and for verification sampling for the nine waste sites. If the Removal, Treatment and Disposal remedy is not selected, the overall goal is to provide the preliminary investigation analytical information, which will be used to develop a Work Instruction to confirm a No Acton remedy or to conduct further sampling and analysis in support of remedy selection.~~ or for verification sampling after remediation~~. If the Removal, Treatment and Disposal remedy is selected, the overall goal is to provide the methodology to be used for the verification sampling to confirm the adequacy of the RTD remedy.

The scope of this project includes the data quality objective (DQO) process and development of this SAP for the 200-CW-3 OU Waste Site Remediation project to confirm the Removal, Treatment and Disposal remedial action for the 216-N-1, 216-N-4, and 216-N-6 waste site ponds; the 200-N-3 solid waste site; the UPR-200-N-1 and UPR-200-N-2 unplanned release waste sites; and the 600-285-PL, 600-286-PL, and 600-287-PL pipeline waste sites, and provide characterization data for waste disposal and for verification sampling after remediation of each waste site. Overall sampling efforts for the 200-CW-3 OU Waste Site Remediation project include the following:

- Waste characterization sampling. Data collection for waste materials (i.e., soil) to ensure compliance with the Environmental Restoration Disposal Facility (ERDF) waste acceptance criteria (WCH-191, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*).

- Remedy confirmation sampling. Data collection to confirm that the site conceptual model for the 200-CW-3 OU waste sites agrees with the site conceptual model used to recommend the preferred remedial alternative of Removal, Treatment and Disposal.

- Evaluation of the No Action remedy. Data collection documented in a Work Instruction providing preliminary investigation analytical and field screening information, which will be used to either confirm the No Action remedy or to support further sampling and analysis in support of remedy selection. The Work Instruction will include any waste site-specific historical data, geophysical survey information, a summary of field screening information and analytical results from the preliminary investigation sampling and analysis, conducted under this sampling and analysis plan, which will be used to support the decision of No Action or confirm additional sampling required. The Work Instruction will also include a sampling design and a list of contaminants of concern.

- Verification sampling. Data collected~~ion~~ during ~~documented in a Work Instruction providing~~ both preliminary investigation and implementation of the RTD rememdy (-including analytical and field screening information)~~,~~ will be used to support ~~development of the Work Instruction for~~ verification sampling after RTD. The verification sampling design ~~work instruction~~ will be completed in accordance with Section 3.0 of this SAP and include any waste site-specific geophysical survey information, a summary of field screening information and analytical results from the preliminary investigation sampling and analysis. ~~The v~~Verification sampling ~~Work Instruction~~ would include field screening technology, ~~and if COPCs are potentially present as identified by the field screening information, it would include~~ a sampling design, and a list of contaminants of concern commensurate with actual field conditions.~~.~~

1.2 PROJECT GOALS

The goals of this project are: (1) Use historical and process knowledge to the maximum extent practicable to identify the chemical and radiological hazards that comprise the 200-CW-3 OU waste sites; (2) Identify the waste streams that will be generated during the remedial action, including the soil and any debris found; (3) Establish sampling and analytical requirements for any materials needing additional characterization; and (4) Perform all activities in a manner that is protective of human health and the environment.

1.3 PROJECT ASSUMPTIONS

The following project assumptions are based on project team discussions from regular team meetings and input received during the DQO scoping checklist review. In addition, interviews with the key decision makers were held to provide a forum for eliciting ideas and issues for inclusion in the DQO process.

1.5 DATA QUALITY OBJECTIVES

EPA/600/R-96/055, *Guidance for the Data Quality Objectives Process*, EPA QA/G-4 (EPA 2000a), was used to support the development of this SAP. The DQO process is a strategic planning approach that provides a systematic process for defining the criteria that a data collection design should satisfy. Using the DQO process ensures that the type, quantity, and quality of environmental data used in decision making will be appropriate for the intended application.

This section summarizes the key outputs resulting from the implementation of the seven-step DQO process. For additional details, refer to BHI-01249.

1.5.1 Statement of the Problem

This SAP supports the collection of data for four~~three~~ purposes: 1) waste designation for disposal of excavated soil; 2) confirmation of conceptual model and Removal, Treatment and Disposal remedy; ~~and~~ 3) preliminary investigation for No Action remedy confirmation; and 4) verification sampling of waste sites after completion of the Removal, Treatment and Disposal remedy.

To designate waste, process knowledge, as well as field sampling and laboratory analytical data are needed to complete the waste profile. Where needed for completeness, the existing knowledge pertaining to radionuclides and chemical contaminants will be supplemented with data from additional characterization to ensure compliance with the disposal facilities' waste acceptance criteria.

Field screening and sampling and laboratory analyses will provide confirmation that the remedy for the waste sites of Removal, Treatment and Disposal is correct. If the Removal, Treatment and Disposal remedy is not confirmed for a waste site, then the preliminary field and analytical information will be compiled in a Work Instruction to confirm a No Action remedy or to conduct further sampling and analysis in support of remedy selection. Additionally, if the Removal, Treatment and Disposal remedy is selected, the overall goal is to provide the methodology to be used for the verification sampling to confirm the adequacy of the RTD remedy. ~~or verification of Removal, Treatment and Disposal remedy completion.~~

1.5.2 Decision Rules

Decision rules are developed during the DQO process and generally are structured as "IF…THEN" statements that indicate the action that would be taken when a prescribed waste site condition is met. Decision rules incorporate the parameters of interest (e.g., COPCs), the scale of the decision (waste site boundaries), the action level (risk-based criteria), and the resulting action (remediation needs). The decision rules are summarized in Table 1-2.

Table 1-2. Decision Rules.

DR #	Decision Rules
1	**If** process knowledge or the maximum sample concentration for contaminated materials is determined to exceed the ERDF waste acceptance criteria, **then** the materials will be evaluated for storage at the CWC in accordance with DR #2 through DR #8, as applicable. **If** process knowledge or the maximum sample concentration for contaminated materials is determined to not exceed the final action levels, **then** the materials will be evaluated for disposal at the ERDF in accordance with DR #2 through DR #8, as applicable.
2 – 8*	**If** process knowledge or the maximum sample concentration for contaminated materials indicates that the materials are to be designated as listed, characteristic, toxic, persistent, PCB, or asbestos-containing material, **then** materials will be evaluated for treatment or disposal at the ERDF, or storage at the CWC in accordance with DR #9. **If** process knowledge or the maximum sample concentration for contaminated materials indicates that the materials are not to be designated as listed, characteristic, toxic, persistent, PCB, or asbestos-containing material, **then** materials will be evaluated for being sent to a solid waste landfill in accordance with DR #9.
9	**If** process knowledge or the maximum sample concentration dictate land disposal restriction-imposed treatment, **then** the materials will be treated and disposed of at the ERDF or stored at the CWC pending future treatment and final disposal. **If** process knowledge or the maximum sample concentration does not dictate land disposal restriction-imposed treatment of the materials, **then** the materials will be disposed of at the ERDF.
10	**If** the maximum sample concentration for soil in the excavations indicates that the soil exceeds the action levels, **then** soil remediation will be performed and a verification sampling ~~and analysis~~ plan ~~or Work Instruction~~ will be developed in accordance with Section 3.0 of this SAP~~, approved~~, and implemented. Data will be evaluated against the remedial action goals and objectives. **If** the maximum sample concentration for soil in the excavation indicates that the soil does not exceed the action levels, **then** the results will be documented in a Work Instruction to confirm that no further remedial action will be required or to conduct further sampling and analysis in support of remedy selection.

*DR #2 through DR #8 support waste designation.
CWC = Central Waste Complex.
DR = decision rule.
ERDF = Environmental Restoration Disposal Facility.
PCB = polychlorinated biphenyl.

1.6 GENERAL SAMPLE DESIGN CONCEPTS

The nature of the 200-CW-3 OU waste sites supports the use of judgment/focused sampling for the waste site investigations, as identified in EPA/240/R-02/005, *Guidance on Choosing a Sampling Design for Environmental Data Collection* (EPA 2002). This guidance document defines "focused sampling" as selective sampling of areas where potential or suspected soil contamination can reliably be expected to be found if a release of a hazardous substance has occurred.

These waste sites have attributes such as visible surface debris, known discharge release points in engineered structures such as ponds, or subsurface debris that can be identified by surface geophysics techniques, or have a primary constituent which has a gamma and/or beta emitter that can be identified by

surface/near surface radiological surveys. Therefore, sampling in a focused manner will ensure data collection of the area of greatest impact associated with the release for waste characterization purposes. Additional efforts may be needed to determine the worst-case location for the sample collection within these sites, such as driven soil probes and gamma logging, which will provide additional data on gamma-emitting radionuclides to support the focused sampling regime.

Sampling locations will be selected during site walk downs by prime contractor technical staff familiar with the 200-CW-3 OU and the waste sites in question. The primary judgment used in selecting sample locations/materials is field-screening results (e.g., detectable radioactive contamination as defined with field instruments) or suspicious locations/materials based on visual inspection (e.g., stained soil areas or debris known to represent hazardous/dangerous/ radioactive waste in the past).

1.6.1 Focused Sampling

Focused sampling designs are appropriate for waste characterization to ensure compliance with the receiving facilities' waste acceptance criteria, for confirmation of a conceptual model or remedy, and for evaluation of preliminary data to determine the need for further sampling and analysis. Statistical sampling designs may ~~will not~~ be implemented for the verification ~~this~~ portion of the sampling effort in accordance with Section 3.0 of this SAP ~~under an approved Work Instruction~~. Samples will be collected from site locations where existing analytical data, process knowledge, and field radiological surveys indicate maximum contamination, or "worst case," concentrations are expected to establish the maximum concentrations of the contamination. The number of samples, the depth of sampling, the types of samples, and their locations would be developed judgmentally based on site knowledge. Details of the focused sampling design are presented in Chapter 3.0 for field investigation and ~~in approved Work Instructions for~~ verification sampling.

1.6.2 Radiological Field Screening

For the sampling effort, field screening will be used to establish site radiological contamination levels. In addition, field screening for radiological contamination (Cs-137) may be used as an "indicator" to locate areas of chemical contamination. If field-screening results indicate the presence of radiological contamination, the areas can be further characterized with laboratory analytical samples. Further details regarding field screening are presented in Chapter 3.0.

1.7 WASTE DISPOSITION OPTIONS

Project activities will result in generation of waste. The majority of the contaminated media likely will be designated as low-level waste; however, quantities of mixed waste, dangerous waste, and solid waste not contaminated with hazardous substances may be generated.

Waste generated will be disposed at an appropriate disposal site, most likely the ERDF. Recycling and/or reuse options will be evaluated and implemented where possible to reduce the volume of material disposed.

Contaminated waste for which no reuse, recycle, or decontamination option is identified will be assigned an appropriate waste designation (e.g., solid, asbestos, polychlorinated biphenyl, radioactive, dangerous, or mixed) and disposed at an approved disposal location. For the purposes of this project, most of the contaminated waste generated during implementation of this project is assumed to be disposed onsite at the ERDF in accordance with the CERCLA onsite identification. Alternate potential disposal locations may be considered during the project if a suitable and cost-effective location is identified. Alternate potential disposal locations will be evaluated using appropriate performance standards to ensure that they are adequately protective of human health and the environment.

Table 3-1. 200-CW-3 Operable Unit Waste Site Remediation Sampling Plan.

Waste Site(s)	Data Needs	Recommended Sampling Approach	Location and Number of Samples	COPCs
216-N-1, 216-N-4, and 216-N-6	Radiological and chemical data for characterization for waste disposal, for confirmation of the conceptual model/remedy, for verification samples or for preliminary investigation to determine the need for further sampling and analysis for these waste sites.	• Utilize a GPS system to document coordinates for each sample location. • Perform geoprobe (i.e. direct push technique), test pits, or another comparable sampling technique, sampling down to a depth of 15 feet. • Perform field radiological survey(s) of sample(s) collected from each test pit or direct push at every foot in depth (or other sampling technique); document results, including depth of sample collection. • Using Cs-137 or Sr-90 (as appropriate) as an indicator, collect soil samples as specified under the **Location and Number of Samples** column. • Excavate and use radiological field screening techniques to determine the extent of contamination spread within each waste site in support of future remedial actions. Conduct screening using the same techniques and documentation as for the focused samples collected, including GPS coordinates. • Upon completion of RTD remedy (if appropriate), collect verification samples as specified under the **Location and Number of Samples** column of this table. • Photographs of the sampling activities may be used for documentation purposes. • A radiological survey report will be prepared to document the field information gathered.	Collect ten focused soil samples. Collect five of the samples at highest field radiological survey reading from each waste site and collect the other five samples at the 15-foot level starting at the outfall for the discharge point. Verification samples for RTD remedy completion: Using a MARSSIM (or equavilent) statistical sampling plan with a 95% upper confidence limit (UCL), collect the designated number of samples at the determined coordinates in the area remaining upon completion of excavation activities. Note: The configuration and number of samples at each site shall be approved by RL and EPA. QC Samples: Collect one duplicate sample for each of the three waste sites plus one field blank and one trip blank for laboratory analysis from the combination of all three waste sites. In addition, collect 1 equipment blank for each waste site for laboratory analysis.	All radiological and chemical constituents listed in Table 1-1, unless otherwise specified. NOTE: For the trip blank, only analyze for tritium.

Tri-Party Agreement

Change Notice for Modifying Approved Documents/ Work Plans In Accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*

Change Number	Document Submitted Under Tri-Party Agreement Milestone	Date:
TPA-CN-296	N/A	January 13, 2010

Document Number and Title: DOE/RL-2007-55, Rev. 0, *Remedial Design/Remedial Action Work Plan for 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit*	**Date Document Last Issued:** October 2008
Originator: Oliver A. Farabee, RL	**Phone:** 509-376-8089

Description of Change: Adding language to include verification sampling and offsite dose calculations for the RTD sites.

This change modifies an approved work plan/document and will be processed in accordance with the Tri-Party Agreement Action Plan, Section 9.0, *Documentation and Records*, and not Chapter 12.0, *Changes to the Agreement.*

Sections 1.2, 3.1.5, 3.2, 3.5.2, 3.6.2, 4.2.2, and 4.2.3 (and Tables 4-1 and 4-2) were amended to include RTD of waste sites 216-N-1, 216-N-4 and 216-N-6, including verification sampling activities in accordance with the DOE/RL-2007-54, *Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit*, and through development and implementation of approved Work Instructions.

The attachment shows the redline additions for each section.

Justification and Impacts of Change: A portion of 216-N-1, 216-N-4 and 216-N-6 must be remediated based on results of the investigative sampling and analysis activity for 200-CW-3 Operable Unit. This change allows a streamlined approach to allow field work to proceed.

Approvals:

A Louie for O.A. Farabee RL Unit Manager	01/13/10 Date	X Approved	___ Disapproved
[illegible] for CE Cammon EPA Unit Manager	1/14/10 Date	X Approved	___ Disapproved
Ecology Unit Manager	Date	___ Approved	___ Disapproved

1.1 PURPOSE

A remedial design/remedial action work plan (RD/RAWP) is used to describe the design and the implementation of the remedial action processes required by the Remaining Sites ROD. The remedial design element of a RD/RAWP discusses the requirements for backfilling or contouring or some combination of backfilling and contouring each waste site after excavation and removal of the contaminated soils, and revegetation of the disturbed areas. The remedial-action element of a RD/RAWP addresses the field-implementation process including: the initial remedy confirmation sampling and analysis; the determination of the correct remedy [e.g., No Action or Removal, Treatment, and Disposal (RTD)]; the execution of the RTD remedy (if chosen); waste sampling, analysis, treatment (as needed), packaging and disposal; waste site closeout sampling and analysis; data quality assessment evaluation to cleanup standards; and backfilling/contouring and revegetation of each remediated waste site.

1.2 SCOPE

The 200-CW-3 OU is made up of the 216-N-2, 216-N-3, 216-N-5 and 216-N-7 waste site trenches that were remediated in calendar year 2007; the 216-N-1, 216-N-4, and 216-N-6 waste site ponds; the 200-N-3 solid waste site; the UPR-200-N-1 and UPR-200-N-2 unplanned release waste sites; the 2607-N, 2607-P and 2607-R septic tanks, and the 600-285-PL. 600-286-PL and 600-287-PL pipeline waste sites The scope of the remediation of the remaining twelve waste sites will be conducted in two phases.

Phase 1 will include sampling and analysis for characterization and confirmation of the RTD remedy, excluding the three septic tanks. The septic tanks will be addressed through the Tri-Party Agreement process, since no sampling and analysis will be required. If the RTD remedy is appropriate for the nine remaining waste sites, then under Phase 2, the RTD action including verification sampling will be implemented as described in this RD/RAWP.

For evaluation of each waste site that does not meet the RTD remedy, a Work Instruction will be developed for each waste site and approved by the DOE-RL, and the EPA. The Work Instruction will include any waste site-specific historical data, geophysical survey information, a summary of field screening information and analytical results from the preliminary investigation sampling and analysis, conducted under the *Sampling and Analysis Plan for Remediation of 200 North Area Waste Sites Located in the 200-CW-3 Operable Unit* (SAP) (DOE/RL-2007-54), which will be used to support the decision of No Action or confirm additional sampling required. The Work Instruction will also include a sampling design and a list of contaminants of concern.

Remediation of the remaining 200-CW-3 OU waste sites is a source control action that addresses contaminated soil associated with discharges either as spills or to ditches or ponds or solid waste placed in a landfill. The scope does not include remediation of groundwater that may be beneath these waste sites

1.3 BRIEF DESCRIPTION OF THE REMAINING SITES ROD

The Remaining Sites ROD (EPA 1999) contains provisions for removal, treatment, and disposal of miscellaneous sites not covered under prior RODs. The Remaining Sites ROD contains provisions for confirmatory sampling at sites identified as candidates for no action. This designation is based on an evaluation of the sites that determined that there is a high level of confidence that these sites comply with remedial action objectives (RAOs) (DOE/RL-94-61). Furthermore, the Remaining Sites ROD provides the guidelines by which newly discovered sites may be designated for RTD or categorized as candidates for no action. This last provision supports the actions, which will be described in this RD/RAWP.

screening information and analytical results from the preliminary investigation sampling and analysis, conducted under the SAP (DOE/RL-2007-54), which will be used to support the decision of No Action or confirm additional sampling required. The Work Instruction will also include a sampling design and a list of contaminants of concern.

As part of the Phase 2 RTD remedy implementation, a verification sampling Work Instruction will be developed in accordance with the EPA approved sampling and analysis plan for use in closeout of each waste site. If the analytical results identify that all contaminants are below the RAGs and meet the RAOs, then the site has been cleaned and may be backfilled or contoured ~~according to the remedial design~~, once authorization is received from DOE-RL and the EPA.

3.1.6 Decontamination

Decontamination at the completion of a given excavation will generally be performed using dry methods (such as wiping) to the extent possible. When the use of wet methods (for example, pressure washers and steam cleaners) is required to achieve decontamination objectives, the associated water will be collected, and work will be conducted by trained site workers in accordance with the following best management practices:

- Decontamination activities will be performed within the CERCLA Remedial Action Area
- The amount of water used to clean equipment will be minimized
- Only raw or potable water will be used
- Regulated soaps, detergents, or other cleaning agents will not be added to wash water
- Pressure washing will normally use cold water.

When excavation operations are completed at a given site, equipment will generally be relocated to a nearby site that will undergo remedial action, and decontamination will be performed at the new site in accordance with the best management practices. If it is not practical or efficient to relocate the equipment to a new site, equipment decontamination may be performed within the initial CERCLA Remedial Action Area. In such cases, a pre- and post-survey will be performed on the washing/decontamination area to determine whether any supplemental remediation of the area is needed as a result of the process. The project may also opt to perform other methods of equipment washing and/or decontamination for a completed site (e.g., wrap the equipment for transfer to a decontamination pad, provide for a temporary facility at the site to collect wash water, or fix the contamination to the equipment). Decontamination fluid/wash water that is collected will be managed in accordance with Section 4.1, "Waste Management".

3.1.7 Waste Disposal

All waste management activities will be performed in accordance with waste management ARARs identified in the Remaining Sites ROD and as discussed in Section 2.1.6 of this RD/RAWP. Certain materials are eligible for salvage and recycling, which is encouraged if the appropriate regulatory and project requirements are met and it is economically feasible for the project to do so. The radiologically contaminated CERCLA waste from the remedial action will either be disposed of at ERDF, or temporarily stored offsite at the Central Waste Complex (CWC) prior to treatment and disposal, or disposed of offsite at the 200 Areas Effluent Treatment Facility (ETF), if liquid. The movement and treatment, storage, and/or disposal of waste at the CWC or the ETF (both considered 'offsite' under CERCLA), or another offsite facility requires an offsite determination approval in accordance with 40 CFR 300.400.

Treatment of waste could be necessary before disposal at ERDF, and containerized waste could be stored at ERDF with the appropriate concurrence(s) while the waste is awaiting treatment. Liquid waste sent to the ETF will be treated separately from other non-CERCLA sources, and any treatment residues that meet

ERDF waste acceptance criteria (WCH-191) could be disposed of at ERDF. Section 4.1 discusses waste management in further detail.

3.1.8 Site Verification and Closeout

Site verification and closeout includes sample collection, demonstration of attainment of RAOs, cleanup documentation, site closure, and site release, as summarized in Sections 3.6 and 3.7. These actions will be conducted under Phase 1 for the No Action remedy and under Phase 2 for the RTD remedy.

3.2 PROJECT SCHEDULE AND COST ESTIMATE

The 200-CW-3 OU has been scheduled and estimated and final remediation is scheduled to be complete by 2024.

Phase 1 of the remedial action for the remaining 12 waste sites in the 200-CW-3 OU is anticipated to begin in fiscal year 2009. Detailed planning of individual activities including resource loading for personnel, equipment costs, analytical costs, material costs, and waste disposal costs and schedules for performance tracking will be developed before work is initiated and will be provided to the DOE-RL and the EPA, upon request.

Phase 2 waste site remediation ~~is estimated to begin~~began in October 2009, for 216-N-1, 216-N-4, and 216-N-6 waste sites, with completion estimated in 2010.

Project Cost and Schedule Tracking

Performance measurement and analysis is performed by the Remediation Contractor. Project cost and schedule will be controlled and updated using the Remediation Contractor's project management system.

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

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

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

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

forums, as agreed. Issues will be identified and resolved in a timely manner to prevent or minimize impacts to schedules, including those for procurement.

3.5.1 Field Procedures

Field procedures (for example, sampling and industrial hygiene) provide guidance to site workers during field work execution. The procedures define the scope, operations, progression of field work, personnel control requirements, radiological posting requirements, and analytical system guidance. The procedures also provide contingency plans should unexpected conditions arise. The field construction manager must execute field operations in compliance with these field procedures.

3.5.2 Sampling and Analysis Plans

The Phase 1 SAP (DOE/RL-2007-54) will provide direction for sampling efforts to support remedy confirmation, extent of contamination, waste characterization, preliminary investigation data for further sampling and analysis, if needed, and worker health and safety. The 200-CW-3 OU SAP includes a quality assurance project plan that defines the strategy to control the quality and reliability of the analytical data and establish associated protocols for data management. The field analytical team must perform all sampling and analysis efforts in strict compliance with the SAP (DOE/RL-2007-54), which is prepared by project staff and provided to the DOE-RL and the EPA for review and approval.

As part of the Phase 2 RTD remedy implementation, a verification sampling Work Instruction will be developed in accordance with the EPA approved sampling and analysis plan for use in closeout of each waste site. If the analytical results identify that all contaminants are below the RAGs and meet the RAOs, then the site has been cleaned and ~~may~~ will be backfilled or contoured according to the remedial design, once authorization is received from DOE-RL and the EPA.

3.5.3 Health and Safety Plan

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

A site-specific health and safety plan (HASP) will be developed that defines the chemical, radiological, and physical hazards and specifies the controls and requirements for work activities. Access and work activities are controlled in accordance with approved work packages, as required by established internal work requirements and processes. The HASP addresses the health and safety hazards of each phase of site operation and includes the requirements for hazardous waste operations and/or construction activities, as specified in 29 CFR 1910.120. As part of work package development, a job or activity hazards analysis will be written to identify the hazards associated with specific tasks already not covered under a HASP. The elements included in a HASP are as follows:

- General overview of the hazards associated with the area
- List of employee training assignments
- List of personal protective equipment (PPE) to be used at the work site
- Medical surveillance requirements
- Work site control measures
- Emergency response

CERCLA Response Actions (DOE/RL-2001-41). The institutional controls defined in the plan will be enforced during and after remediation, as appropriate. The Remaining Sites ROD (EPA 1999) describes the institutional controls, such as: warning notices, entry restrictions, land-use management, groundwater-use management, and waste site information management. Implementation of the Remaining Sites ROD (EPA 1999) requirements to post and maintain warning signs along access roads is required.

3.6 ATTAINMENT OF REMEDIAL ACTION OBJECTIVES AND RELEASE OF SITE

3.6.1 No Action

Waste sites selected as No Action shall demonstrate attainment of the RAOs when the combination of initial (Phase 1) sampling results and work instruction sampling results are evaluated and determined to be below RAGs. If sampling results exceed RAGs, the RTD remedy will be implemented.

Once the No Action remedy is verified for a waste site, the site will be reclassified as "no action".

3.6.2 Removal, Treatment, and Disposal

The general approach for verifying attainment of RAOs identified in the Remaining Sites ROD (EPA 1999) for RTD waste sites involves the following steps:

- Evaluating summary analytical data against the appropriate RAGS
- Modeling exposure and risk to future site inhabitants (human and ecological)
- Modeling future impacts to groundwater.

Details regarding verification sampling and analysis will be established through development and approval of Work Instructions in accordance with the approved ~~. provided in a future 200-CW-3 OU~~ sampling and analysis plan~~.~~ Once Phase 2 sampling and analysis is completed and the bulleted steps have been addressed, and the RAOs have been attained, then the site will be reclassified as "interim closed out" in accordance with TPA-MP-14, *Maintenance of the Waste Information Data System* (WIDS).

3.7 CERCLA CLEANUP DOCUMENTATION

At the completion of each waste site's remedial action, a remedial action report or verification plan will be prepared for each site. The report or plan will provide the needed documentation for verification of the remedial action at each site and will be used to support the eventual deletion of the waste site from the NPL. At a minimum, the following documentation is required for each waste site:

- Description of current waste site condition
- Basis for reclassification
- Analytic data or data references (if applicable).

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 address the substantive aspect of these requirements, best or reasonably achieved control technology will be addressed 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.

4.2.2 Toxic/Criteria Air Pollutant Information

The nonradiological contaminants of Table 2-1 were compared against those listed in ~~WAC 173-460-150 Class A and~~ WAC 173-460-160 ~~Class B~~ toxic air pollutants (TAPs). All of the nonradiological contaminants are identified TAPs. Based on investigative sampling performed in 2009, ~~A~~arsenic, cadmium, chromium (VI), lead and polychlorinated biphenyls do not ~~are not expected to~~ exceed the acceptable source impact level (ASIL) quantity for ~~Class A or~~ the Small Quantity Emission Rates (SQER) levels. Antimony, barium, chromium (III), manganese, mercury and zinc do not ~~are not expected to~~ exceed the ASIL quantity for ~~Class B or~~ the SQER levels. In addition, within the 200-CW-3 OU, access will be restricted, not only to the public, but also to workers from other Hanford Site areas. ~~Until the initial sampling and analysis activity is completed, soil contamination levels of the nonradiological contaminants will not be known. Emission controls (Section 4.2.4) will be in place, however, to greatly limit the emission of TAPs below the SQER levels.~~ Based on the potential emission levels, the restricted public access, and the use of emission controls, there is no adverse impact from this activity to the environment from toxic air pollutants.

4.2.3 Airborne Radionuclide Source Information

The total potential fugitive emissions were calculated for the remedial action activities identified Sections 1.2 and 3.1 for Phase 1 remedy confirmation and waste characterization (Table 4-1) and Phase 2 remediation. RTD excavation activities ~~will be addressed in a revision to this RD/RAWP~~are addressed in Table 4-2 for RTD of waste sites 216-N-1, 216-N-4 and 216-N-6.

There is a potential for particulate radioactive airborne emissions to result from the Phase 1 remedial action activities. The primary radionuclides within the 200-CW-3 OU for the remaining waste sites, include americium-241, cesium-137, cobalt-60, europium-152, europium-154, europium-155, nickel-63, plutonium-238, plutonium-239/240, strontium-90, technitium-99, thorium-232, tritium, uranium-233/234, uranium-235, and uranium 238. Other radionuclides may also be encountered during the remedial action activities, but are not anticipated at this time in other than negligible quantities.

The distance to the Laser Interferometer Gravitational Wave Observatory (LIGO) receptor is 16,630 meters East-Southeast of the 200 East Area. This location represents the nearest unrestricted public access and therefore the maximally exposed individual (MEI) for purposes of assessing potential public exposure due to airborne releases. The total unabated emissions in terms of potential-to-emit (PTE) assumed to represent the total abated emissions to the receptor from the remedial action activities could result in up to 1.3E-03 mrem/year (see footnote b in Table 4-1) total effective dose equivalent (TEDE) to the MEI (DOE/RL-2006-29).

Table 4-1. 200-CW-3 Operable Unit Waste Sites Remediation Potential to Emit Calculations.

Isotopes	Soil Contaminant Concentration pCi/g	Curies released	Dose Factor mrem/Ci [a]	Unabated Offsite Dose mrem/year TEDE to MEI [b]
Americium-241	31.1	3.6E-05	1.5E+01	5.4E-04
Cesium-137	6.2	7.1E-06	2.0E-03	1.4E-08
Cobalt-60	1.4	1.6E-06	3.0E-01	4.8E-07
Europium-152	3.3	3.8E-06	3.1E-01	1.2E-06
Europium-154	3.0	3.5E-06	2.5E-01	8.8E-07
Europium-155	125	1.4E-04	9.8E-03	1.4E-06
Nickel-63	4,026	4.6E-03	6.9E-05	3.2E-07
Plutonium-238	37.4	4.3E-05	8.9E+00	3.8E-04
Plutonium-239/240	33.9	3.9E-05	9.5E+00	3.7E-04
Strontium-90	4.5	5.2E-06	9.5E-03	4.9E-08
Technitium-99	15	1.7E-02	1.4E-03	2.4E-05
Tritium	510	5.9E-01	7.1E-06	4.2E-06
Uranium-233/234	1.1	1.3E-06	3.7E+00	4.8E-06
Uranium-235	1.0	1.2E-06	3.5E+00	4.2E-06
Uranium 238	1.1	1.3E-06	3.3E+00	4.3E-06
Total TEDE				1.3E-03 mrem/year [b]
Soil Density: 1,570 kg/m^3 (98 lb/ft^3)	Total Soil Volume for 69 pits, nine Waste Sites: 733 m^3 (25,875 ft^3)	Release Fractions: 1.00E-03, except for Tc-99 and H-3 which are 1.0		

a. DOE/RL-2006-29, latest revision
b. Phase 2 RTD activities are anticipated to last less than a period of one year.

NOTE: The RAG values for radionuclides listed in Table 2-1 were used as a bounding factor. The pCi/g values are assumed to be 10% of the inventory available for emission due to the expected use of bulk soil excavation techniques. The values are listed in the Soil Contaminant Concentrations column of this table.

As determined through data collected in the Phase 1 investigative sampling evolution, ~~T~~there is a potential for particulate radioactive airborne emissions to result from the Phase 2 RTD activities. The primary radionuclides found ~~within~~during investigative sampling of ~~the 200-CW-3 OU for the three RTD waste sites (~~216-N-1, 216-N-4, and 216-N-6 waste sites~~) during investigative sampling, include~~ were cesium-137, europium-152, and strontium-90.

Based on historic and process knowledge and recent data, it is anticipated that the PTE calculations provided in Table 4-2 conservatively bound the~~Other radionuclides~~ Phase 2 ~~may also be encountered during the~~ remedial action activities~~, but are not anticipated at this time in other than negligible quantities~~.

The distance to the Laser Interferometer Gravitational Wave Observatory (LIGO) receptor is 16,630 meters East-Southeast of the 200 East Area. This location represents the nearest unrestricted public access and therefore the maximally exposed individual (MEI) for purposes of assessing potential public exposure due to airborne releases. The total unabated emissions in terms of potential-to-emit (PTE) assumed to represent the total abated emissions to the receptor from the 216-N-1, -4 and -6 remediation activities could result in up to 7.3E-04 mrem/year (see footnote c in Table 4-2) total effective dose equivalent (TEDE) to the MEI (DOE/RL-2006-29).

Table 4-2. 200-CW-3 Operable Unit 216-N-1, -4 and -6 Waste Sites Remediation Potential to Emit Calculations.

Isotopes	Soil Contaminant Concentration pCi/g [a]	Curies released	Dose Factor mrem/Ci [b]	Unabated Offsite Dose mrem/year TEDE to MEI [c]
Cesium-137	153	1.84E-02	2.0E-03	3.68E-05
Europium-152	18	2.16E-03	3.1E-01	6.70E-04
Strontium-90	22.5	2.71E-03	9.5E-03	2.57E-05
Total TEDE to the MEI				7.3E-04 mrem/year [c]
Soil Density: 1,570 kg/m^3 (98 lb/ft^3)				
Total Soil Volume for 3 waste sites: 1.0E +05 y^3 or 76,455 m^3 (2.7E+06 ft^3)				
Release Fractions: 1.00E-03				

a. Soil Contaminant Concentration values listed are based on the maximum concentrations of contaminants found during the investigative sampling.
b. DOE/RL-2006-29, latest revision.
c. Phase 2 RTD activities are anticipated to last less than a period of one year.

4.2.4 Emission Controls

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

- Water will be applied, as needed, during any excavation and backfilling activities, for suppression of fugitive emissions and dust.

- 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.

- Fixatives or cover material (e.g., soil, gravel, plastic, etc.) will be applied to disturbed contaminated soils, associated with the remedial action, when field activities will be inactive more than 24 hours.

- 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 during the remediation activities. The fixatives or other controls will not be applied when the contaminated items are frozen, or it is raining, snowing, or other freezing precipitation is falling at the end of work operations.

- The waste packages will remain closed, except during packaging and waste inspection activities, once they are staged in the CERCLA Waste Management Area, which is within the CERCLA Remedial Action Area.

- Field activities should be temporarily ceased and the area should be placed in a safe configuration if contamination control measures are not adequate, based on site conditions (e.g., excessive wind).