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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
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August 16, 2004

Mr. Larry Romine
Richland Operations Office
United States Department of Energy
P.O. Box 550, MSIN: A6-33
Richland, Washington 99352

Dear Mr. Romine:

Re: 200-UR-1 Unplanned Releases Operable Unit RI/FS Work Plan

The Washington State Department of Ecology (Ecology) has reviewed the Draft A Re-issue Remedial Investigation/Feasibility Study (RI/FS) Work Plan (DOE/RL-2004-39) for the 200-UR-1 Operable Unit. Review comments are attached to this letter.

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Ecology would like to discuss with the United States Department of Energy and the United States Environmental Protection Agency the possible transfer of the West Lake from the 200-CW-1 Cooling Water operable unit, to the 200-UR-1 Unplanned Releases operable unit. That transfer would require Tri-Party agreement. West Lake did not receive cooling water, so contamination there could be called an unplanned release. Also, the physical environment and eco-system at West Lake are unique for Hanford waste sites and deserve a site-specific plan for investigation that may have elements in common with the investigation of the BC Control Area.

If you have any questions, please contact me at (509) 372-7921 or Jennie Stults at (509) 372-7956.

Sincerely,

John B. Price
Project Manager Environmental Restoration
Nuclear Waste Program

cc:
Craig Cameron, EPA
Joel Hebdon, USDOE
Steve Bertness, USDOE
Mary Todd-Robertson, FH
Stuart Harris, CTUIR
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Todd Martin, HAB
Ken Niles, ODOE
Jennie Stults, Ecology
Administrative Record: 200-UR-1
Environmental Portal

200-UR-1 RI/FS Work Plan, Draft A Re-issue
DOE/RL-2004-39

Comment Number	Page	Comment
1.	Title	Delete "and Engineering Evaluation/Cost Analysis" from the title.
2.	Page iii Executive Summary 1st paragraph	Could probably discuss wind-blown contamination as a causal factor in last sentence. I think one of the largest URs, several square miles from a burial ground, was exacerbated by airborne dispersal. /.,m nbj
3.	Page iii 1st paragraph	Change to "The 200-UR-1 OU consists of 148 waste sites" with the addition of West Lake site.
4.	Page iii 2nd paragraph	Delete 2nd paragraph and replace with: "The U.S. Department of Energy, Richland Operations Office and the Washington State Department of Ecology agreed that the nature and extent of environmental contamination at many of the 200-UR-1 waste sites could be characterized using the "Observational Approach." That approach was previously described in the *200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program*, DOE/RL-98-28. It is a method of planning, designing, and implementing a remedial action that uses a limited amount of initial field characterization data to generate an understanding of field conditions. Then, additional information is gathered during remedial actions to make "real time" decisions in the field to guide the direction and scope of actions, based on contingency planning performed before mobilization to the field. Sites identified for the application of the observational approach would be candidates to excavate contaminated soil for disposal at the Environmental Restoration Disposal Facility."
5.	Page iv 2nd paragraph	Change "further actions" to "response actions".
6.	Page iv 2nd paragraph	Insert the following new paragraph: The U.S. Department of Energy, Richland Operations Office and the Washington State Department of Ecology also agreed that the West Lake site, which was previously in the 200-CW-1 operable unit, did not fit the operable unit definition for 200-CW-1. They agreed that it was actually more like an unplanned release. Accordingly, it has been added to this work plan. It is also a candidate for completion of the RI/FS process along with the B/C Controlled Area.
7.	Page iv 3rd paragraph	Delete "unique and"
8.	Page iv 3rd paragraph	In 3rd bullet, change "removal actions" to "response actions".

Comment Number	Page	Comment
9.	Page iv 3rd paragraph	In the 4th bullet, change "RI/FS candidate site" to "RI/FS candidate sites (B/C Control Area and West Lake)".
10.	Page v 1st paragraph	Replace first bullet with: "An evaluation of alternatives and costs for the candidate RTD sites that is the equivalent of an engineering evaluation/cost analysis".
11.	Page V 2nd paragraph	Change "65" sites to include the sites that were not approved for reclassification, and correct this through the document.
12.	Page v 2nd paragraph	Change "Completion of the EE/CA prepared for the 65 candidate RTD sites resulted in selecting the remedy of" to "Evaluation of alternatives for the 52 candidate RTD sites resulted in the recommended response of".
13.	Page v 2nd paragraph	Change "The removal remedy was identified for 52 sites" to "Excavation and disposal was recommended for 52 sites."
14.	Page v 2nd paragraph	Delete the last sentence. There is probably no greater uncertainty about removal costs than there is for maintaining the existing soil cover/institutional controls/and monitored natural attenuation.
15.	Page v 3rd paragraph	Delete "The DQO also addressed waste characterization requirements" This sentence does not add anything to the paragraph that the first sentence had not already stated. If it is implying something different, change sentence to further explain the meaning.
16.	Page vii 1st paragraph	In last full bullet, change "The direct exposure pathway has been eliminated at many of these surface release sites." to "The short-term threat from the direct exposure pathway has been abated at many of these surface release sites." Please note that according to WAC 173-340, it isn't eliminated unless there's 15 feet of clean fill. Also, the pathway is not eliminated; it's being mitigated by ongoing maintenance including application of pesticides.
17.	Page vii 2nd paragraph	Change "The most significant of these exceptions is the BC Controlled Area." to "The largest and most complex of these exceptions is the BC Controlled Area and the West Lake.".
18.	Page vii 4th paragraph	Change "The data collected during the BC Controlled Area RI/FS" to "The data collected during the RI/FS for the BC Controlled Area and the West Lake".
19.	Page 5-5	Change Section 5.3 title to "Response Action Objectives".
20.	Page 5-5	Change Section 5.4 title to "Identification of Response Action Alternatives".
21.	Page 1-1 1st paragraph	Add location of BC controlled area and west lake after the discussion of the site locations. Since these are the candidates for RI/FS studies, they should specifically be noted their location.

Comment Number	Page	Comment
22.	Page 1-2, 1st paragraph	Change "unique" to "additional".
23.	Page 1-2 2nd bullet	Change "EE/CA" to "equivalent of an EE/CA".
24.	Page 1-3 1st paragraph	Change 147 to 148.
25.	Page 1-3 4th bullet	Change "Presents an EE/CA" to "Presents the equivalent of an EE/CA".
26.	Page 1-4	In #3, change "removal" to "response" – each occurrence.
27.	Page 1-4 Section 1.2.2	Delete this section. We can proceed on this pathway w/o callout in this work plan.
28.	Page 2-7 3rd paragraph	Tank farms in 200 West Area also include S, SX, and SY.
29.	Page 2-13 1st paragraph	Change 147 to 148 waste sites(2 sentences in paragraph).
30.	Page 2-13 4th paragraph	Change "candidate RI/FS site" to "candidate RI/FS sites".
31.	Page 2-14	Is "radiolometric" a typographic error? If not, it should be defined in a parenthetical.
32.	Page 2-14 Section 2.2.3.2	Add characteristics of west lake site as well, or alternatively add a section 2.2.3.3. Waste Site Characteristics of the West Lake area.
33.	Page 2-20 and other site tables	The order of the sites listed does not make sense—it does not appear to be numerical, as 200-E-26 is down near the end of the list instead of before 200-E-29, and so on. A listing strategy should be applied to this table and all other tables (including tables 5-6 and 5-7) so that site code numbers are easier to look up.
34.	Page 2-20	Add west lake WIDS site code.
35.	Page 3-3	4th sentence in §3.2.3, please delete sentence "As a result . . . and the environment." and replace with "Although sampling and long-term monitoring of sites in the 200 Areas has generally focused on larger and more contaminated waste sites, there is substantial data related to many of the small UPRs because of the mode of contaminant release (often through biological transport)."
36.	Page 3-3 Section 3.2.3	The unplanned releases are relatively important in the Hanford environment: e.g., contamination is relatively more bio-available if relatively less concentrated/radioactive: but that sense doesn't come through in this discussion. Also, given there importance, I suspect that there is relatively more bio-monitoring data for these sites than for any other OU, but that sense doesn't come through either. Add some text to emphasis these points.

Comment Number	Page	Comment
37.	Page 3-3 Section 3.2.3	Add west lake information to section (specifically 1st paragraph section).
38.	Page 3-7 Section 3.4 paragraph	The thin stabilization cover is an important part of the physical conceptual model for many of these sites. Also, the shallow depth of the contamination is an important aspect of the "nature" of contamination. Add supporting text to that effect.
39.	Page 3-7	Change "**Point of release:** surface or subsurface release." to "**Point of release:** surface or subsurface release, and thickness of interim stabilization cover compared to 15 foot standard point of compliance in WAC 173-340."
40.	Page 3-9	Change last bullet from "Approximately one-half of the sites identified for a removal action have been stabilized and covered with clean soil/material reducing the potential for direct exposure." to "Approximately one-half of the sites identified for a response action have been stabilized and covered with a thin (compared to 15 ft thick) clean soil/material reducing the short-term potential for direct exposure."
41.	Page 3-10	Add to the bullets another one that says: • Plant and animal uptake and transport to other biological receptors or humans.
42.	Page 3-10 Section 3.5.2 and page 3-17 Figure 3-5	The leaching pathway to groundwater has been dismissed for contamination at depths less than 15 feet. The regulations in WAC 173-340 require consideration of this pathway, regardless of depth. It is extremely important that if there is justification for dismissing this pathway that it be provided in detail using a quantitative basis. Prepare one or more paragraphs that describe in detail why this pathway was dismissed. Also provide appropriate calculations that support dismissing this pathway. Insert the paragraphs and calculations in section 3.5.2. Ecology must approve dismissal of this pathway and cannot do so without complete and accurate justification.
43.	Page 3-13 Section 3.6, general	In this section insert a table of all contaminants on the initial list, the facility that generated each contaminant, and the reason for elimination of each contaminant, instead of the bullets on p. 3-12. In the table define words such as "minor quantities" and "mobility".
44.	Page 3-15, 3-16 Figures 3-3 and 3-4	The figure is misleading because it does not depict the lateral spreading that occurs at textural change boundaries in the subsurface. The spreading must be considered in the conceptual model. Please revise the figures to indicate lateral spreading.

Comment Number	Page	Comment
45.	Page 3-18 Table 3-1	Dermal absorption for semi-volatile organic compounds should be evaluated. Dermal absorption fractions are relatively high for these compounds – refer to WAC 173-340 equations 740-4 and 740-5 to determine soil cleanup levels based on direct contact including dermal contact for semi-volatile organic compounds.
46.	Page 4-1 Section 4.0	Replace 1st paragraph with the replacement paragraph provided for the Executive Summary: "The U.S. Department of Energy, Richland Operations Office and the Washington State Department of Ecology agreed that the nature and extent of environmental contamination at many of the 200-UR-1 waste sites could be characterized using the "Observational Approach." That approach was previously described in the *200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program*, DOE/RL-98-28. It is a method of planning, designing, and implementing a remedial action that uses a limited amount of initial field characterization data to generate an understanding of field conditions. Then, additional information is gathered during remedial actions to make "real time" decisions in the field to guide the direction and scope of actions, based on contingency planning performed before mobilization to the field. Sites identified for the application of the observational approach would be candidates to excavate contaminated soil for disposal at the Environmental Restoration Disposal Facility."
47.	Page 4-1 Section 4.0	The text states that during the DQO process the 200-UR-1 waste sites were identified for four proposed future actions: □ Rejection or no action □ Reassignment to another OU….. □ Use of the observational approach to conduct RTD □ Completion of an RI/FS Later in the text monitored natural attenuation is listed as the proposed remedy for some of the waste sites. Where did this option come from? Please document the source in the text in the appropriate places.
48.	Page 4-1 2nd paragraph	Change "streamlined removal action" to "streamlined response action." Note that the observational approach is a streamlining approach.
49.	Page 4-1 3rd paragraph	Change "one 200-UR-1 site (BC Controlled Area)" to "two 200-UR-1 sites (BC Controlled Area and West Lake)".

Comment Number	Page	Comment
50.	Page 4-1 Last paragraph	Change • "The EE/CA was prepared" to "The alternatives evaluation and cost analysis was prepared" and • "The EE/CA identifies" to "The evaluation identifies" and • "Thus the EE/CA serves as" to "Thus the evaluation, which is the equivalent of an EE/CA, serves as".
51.	Page 4-1	Delete last 2 sentences on page and replace with "Section 5.0 recommends the preferred response for the candidate sites."
52.	Page 4-2 to 4-5 Section 4.1.1 to 4.1.4	No section is included for criteria for selection sites for MESC/IC/MNA. Add a section to discuss this, separate from the RTD section.
53.	Page 4-2 Section 4.1	Provide a reference for the DQO document. It is difficult to review this document without the DQO.
54.	Page 4-2 Section 4.1	The text references "the characterization approach outlined in WMP-19920 (pending)." Ecology has not reviewed or approved of this WMP. Therefore, it is impossible for Ecology to determine if the 'characterization approach' developed in the DQO process was adequately captured in the WMP since Ecology has seen neither document.
55.	Page 4-2 3rd paragraph	Add west lake for completion of RI.
56.	Page 4-3	Delete last paragraph on page.
57.	Page 4-4 Section 4.1.2	The text states that "As appropriate, radiometric surveys and/or samples were collected to verify the completeness of the cleanup. For releases containing radiological constituents, no radiation warning signs or postings were required following the cleanup because the actions taken resulted in acceptable exposure levels....The sites should not be considered waste management units because there is not longer evidence of an actual or potential hazardous substance release." The text provides no discussion of non-rad hazardous substances at the waste sites. Please add text to address non-rad hazardous substances.
58.	Page 4-5 Section 4.1.3	Insert text addressing how the movement of waste sites from one OU to another will be documented. The text is contradictory, in one place it discusses the 34 waste sites "inclusion with another OU for conducting remedial action" and in another place it discusses "designation of the new OU associated with the site" please clarify.
59.	Page 4-5 Section 4.1.4	Please change the 3rd bullet to read "Radiological surveys and~~/or other~~ non-radiological field-screening characterization techniques ~~could~~ will be used to determine the level and extent of contamination during the removal action."

Comment Number	Page	Comment
60.	Page 4-6 Last paragraph	Add West Lake for completion of an RI/FS.
61.	Page 4-7 Section 4.1.8 and Page B-3 Section B1.4.1 1st sentence of section	These sections state that contamination located in the upper 15 ft of soil is not a threat to groundwater. Delete these sentences and replace with a reference back to Section 3.5.2, which will be amended in accordance with a comment above.
62.	Page 4-7 Section 4.1.8	Include evidence proving the "Chemical and radionuclide contaminants from UPRs in the 200-UR-1OU…..are not a threat to groundwater."
63.	Page 4-7 2nd and 5th paragraph	Add West lake site to completion of RI/FS.
64.	Page 4-8 Section 4.1.9	Modify text to include the use of VSP to determine the statistically adequate number of verification samples and locations. Also include text stating that verification samples will comply with requirements specified in WAC 173-340-740(7).
65.	Page 4-8 Sections 4.1.9 and 4.2	Add west lake to discussion. Need to add a characterization approach for west lake.
66.	Page 4-9 Section 4.2.1	Modify the 4th and 6th bullets to read: □ "Sampling and analysis for all potential COCs ~~of soils~~ at ~~the~~ soil location with the highest level of contamination for waste characterization and disposal decisions. A verification radiological survey and subsequent verification of soil sampling and laboratory analysis for all COCs to document the successful removal of contaminated media to levels below PRGs."
67.	Page 4-10 Section 4.2.2	The first sentence should include a reference to Figure 2-4.
68.	Page 4-10 Section 4.2.2	The text states "In Phase I, the initial site evaluation characterization objectives are developed and focus on determination of current contaminant levels, development of the preliminary CSM, and determination of initial sampling and radiological survey specifications for a limited field investigation." This should have been completed through the DQO process and should be documented in the attached SAP. Please revise the document accordingly.
69.	Page 4-10	Delete "a unique," in last paragraph.
70.	Page 4-11 Section 4.2.2.1	The text references "a Historical Site Assessment (HAS)." Provide a reference to this document or attach it as an appendix to this work plan.

Comment Number	Page	Comment
71.	Page 4-11 Section 4.2.2.1	What are "Derived Concentration Guideline Levels" and where do they come from. Please provide explanation in the text.
72.	Page 4-11 Section 4.2.2.1	The second bullet is "Development of initial scoping sampling and radiological survey specifications for a limited field investigation." This should have been completed through the DQO process and should be documented in the attached SAP. Please revise the document accordingly.
73.	Page 4-8 Section 4.2	Add West Lake to Section 4.2, and propose a characterization approach.
74.	Page 4-12 Section 4.2.2.2	Part 2, 1st bullet: Define the term "key" in the bullet or replace it with a more detailed description of where samples are to be collected.
75.	Page 4-12 Section 4.2.2.2 Part 2	Please define "key areas" and explain how they are identified.
76.	Page 4-12 Part 3 Section 4.2.2.2	Change the second bullet to read "Determine if sufficient data is available to ~~estimate maximum and average~~ calculate a 95% UCL for surface ~~radiation~~ COC levels in each zone."
77.	Page 4-13 Section 4.2.2.4	In the first bullet, include non-rad COCs for verification purposes.
78.	Page 4-13 Section 4.2.2.5	In several places the text refers to a "treatability test" but it is not clear what the purpose of this text might be. Please add text explaining what the treatability test might be testing and how it will be used.
79.	Page 4-14 Section 4.2.3.2	The text states that the "Survey criteria will meet the agreed-to Derived Concentration Guideline Level set for the BC Control Area." Please provide a reference indicating where the "agreement" is documented.
80.	Page 4-14 Section 4.2.3.4	Change the last sentence to read "A list of the screening techniques and detection capabilities of the equipment, identified for use at UPR sites is presented in the SAP in Appendix B."
81.	Page 4-15 Section 4.2.3.5	The text states that "Verification analysis will provide the data needed to complete site closure documentation." Ecology would like to point out that the analytical detection levels used for the verification analysis must be low enough to document compliance with groundwater protection values established in WAC 173-340-747. In addition, the analytical results must be documented for all COPCs.
82.	Page 4-15 Section 4.2.4	In the third sentence there is a double "that" please delete one.
83.	Page 4-17 Figure 4-1	The bottom left box needs to be modified to indicate what happens if a waste site is NOT rejected by the regulators.
84.	Page 4-18 Figure 4-2	This figure needs to be modified to include evaluation of non-rad PRGs.

Comment Number	Page	Comment
85.	Page 5-1	Change Section 5.1 and 5.1.1 Titles from ". . . Justify Removal Actions" to ". . . Justify Response Actions".
86.	Page 5-4	In 3rd bullet, change "Bioaccumulation" to "Bioaccumulation and bio-magnification"
87.	Page 5-4	In last paragraph of Section 5.1.2.3, insert a new sentence between the existing first and second sentences: "US EPA guidance does not have a corresponding limitation."
88.	Page 5-4 Section 5.1.2.3	The text states that "most of the sites have been stabilized, thereby limiting ecological access." However, Table A-4 indicates that several of the waste sites have no stabilization cover, or a shallow cover. Please revise text to accurately reflect the potential for ecological exposure.
89.	Page 5-4 Section 5.1.2.3	The first bullet should include "inhalation" as an exposure pathway for invertebrates and burrowing mammals.
90.	Page 5-5 Section 5.3	Modify the 1st, 5th, 6th, and 7th bullets to read: □ Prevent or ~~reduce negative impact~~ mitigate risk to human health, ecological receptors, and natural resources associated with exposure to soil or wastes contaminated above ARARs or risk-based criteria ~~by removing the source or eliminating the pathway~~. □ Prevent or ~~reduce~~ mitigate occupational health risks associated with physical, chemical, and radiological hazards to workers performing removal actions. □ Minimize the ~~general~~ disruption of ecological and cultural resources caused by remediation and prevent adverse impacts to cultural resources and threatened or engendered species. □ Provide conditions suitable for future industrial land use inside the Central Plateau Core Zone boundary and ~~residential~~ unrestricted land use outside the Core Zone. Delete the last RAO. It implies removal and cleanup will be minimized to reduce the amount of waste generated.
91.	Page 5-6	Change "WAC 173-340 also specifies a . . ." to "WAC 173-340 specifies a standard point of compliance of 15 feet and a . . ."
92.	Page 5-6 Section 5.4.1.2	The text only addresses the decay of radioactive contaminants. Add text addressing the remaining non-rad COCs which will NOT decay but may experience natural attenuation
93.	Page 5-7	3rd paragraph in Section 5.4.1.3, change "Removal technologies do not" to "The observational approach does not".

Comment Number	Page	Comment
94.	Page 5-8 and 5-9	A traditional sampling DQO would consider the consequences of making a bad decision. For remediation, a decision to continue MNA and maintain existing soil cover could result in bio-intrusion and re-release of contamination. That's consistent with the history of the URs, and should be considered in "implementability" and "effectiveness" – please revise the text accordingly.
95.	Page 5-8 Section 5.5.2.1	Add a sentence that states that the risk reduction for this is low (as compared to the 5.5.3.1 RTD where the removal causes the risk reduction to be high). Also had that there is greater failure possibility of this option as compared to alternative 3.
96.	Page 5-8 Section 5.5.2.1	The text states that soil covers will be maintained "until contaminant concentrations beneath the existing soil cover reach acceptable levels." If non-rad COCs are present above PRGs they will not decay, please add text addressing natural attenuation of non-rad COCs.
97.	Page 5-9 Section 5.5.2.1	The text states that "Confirmatory sampling would be used to determine the appropriate timeframe for decay of the constituents to acceptable levels." Non-rad COCs will not decay, please add text addressing the natural attenuation of non-rad COCs.
98.	Page 5-9 Section 5.5.2.1 3rd paragraph	Detail what the risks would be long-term if the controls were to fail, including dispersion of contamination through animals, wind-blown contamination, etc.
99.	Page 5-9 Section 5.5.2.1 4th paragraph	The majority of the UPR sites resulted in contamination from sites in the Hanford site boundaries, so controls and access are irrelevant in this discussion. Also, annual surface radiation surveys of specific waste sites do not detect radiation that may have migrated out of boundaries if the soil cover were to fail. Delete this paragraph completely, or re-word to address these concerns.
100.	Page 5-9 Section 5.5.2.1 2nd paragraph	Would sampling alone be enough to determine the possibility of mobility of contaminants through the soil during the period of natural attenuation? Address this concern in this section.
101.	Page 5-10 Section 5.5.3.1	Please add to your discussion that alternative 3 would best address one of the main causes of the UPR's of animal intrusion and wind-blown contamination (that is, removal of the contaminated soil completely would delete this possibility of occurring again, compared to alternative 2)
102.	Page 5-9 Section 5.5.2.2	Please clarify what "technical difficulties may arise with equipment failure" and what equipment you are referring to.

Comment Number	Page	Comment
103.	Page 5-9	Under Section 5.5.2.2 change add additional text after the existing paragraph: "Conversely, there is substantial, site-specific experience that demonstrates the difficulty of isolating shallow contamination from plants and animals. Also, the cost of failure is relatively high. The BC Controlled Area is Hanford's largest waste site and it resulted from biological intrusion into shallow waste sites."
104.	Page 5-9 Section 5.5.2.3	Add to the costs the possibility that if controls were to fail, additional waste sites could be created that would need to be cleaned up in the future.
105.	Page 5-10	For 1st paragraph Section 5.5.3.1, replace last sentence with "Contaminated soil would be disposed of at the ERDF. Clean excavated soil would be used as backfill, or in some cases the excavation site would simply be recontoured without adding additional backfill."
106.	Page 5-10 Section 5.5.3.1	Modify text to read: "Confirmation sampling will be used to verify that residual contamination levels ~~do not pose unacceptable risks~~ comply with potential ARARs."
107.	Page 5-10 Section 5.5.3.1	Leaving contaminants in place below 4.6 m (15 ft) bgs, at concentrations that exceed the groundwater protection values specified in WAC 173-340-747, is not compliant with ARARs. The remediation of the 200-UR-1 OU Waste Sites should incorporate the requirements specified in WAC 173-340-350(9), WAC 173-340-360(2), and WAC 173-340-370(2).
108.	Page 5-11 1st paragraph	Re-consider that movement of waste to ERDF would result in a "minor" reduction in mobility, given the importance of animal & plant intrusion as secondary release mechanisms for the URs. Revise your text accordingly.
109.	Page 5-11 5th paragraph	Other than BC Controlled Area, which sites are "larger, more complicated" and could require years to remediate?
110.	Page 5-12	Delete 2nd paragraph. It doesn't apply because "this condition is not expected in the 200-UR-1 waste sites."
111.	Page 5-13 Section 5.6	Please revise the text to read: "For some sites, final cleanup ~~requirements~~ activities may be ~~limited~~ minimal, with removal costs reduced…."
112.	Page 5-14 Section 5.8	Provide documentation supporting the statement "The UPR sites are not a threat to groundwater and mainly consist of surface radioactive contamination….."
113.	Page 5-14 Section 5.8	Is the statement "Generally placement of a soil stabilization cover was followed a decontamination or cleanup action" correct, or were the soil stabilization covers preceded by decontamination or cleanup actions?

Comment Number	Page	Comment
114.	Page 5-27 Table 5-6	Include sites that were not approved for reclassification. For sites where ecology is just requesting "confirmatory sampling", ecology requests creating a new category of just "samples" versus classifying them as RTD or MESC/IC/MNA.
115.	Page 5-27 Table 5-6	Why does RTD have an asterisk following it? The asterisk is not included in footnotes. Delete if not used to signify something.
116.	Page 5-27 Table 5-6	2 waste sites are listed as **220**-E-110 and **220**-E-115, correct to 200.
117.	Page 5-27 Table 5-6	Site UPR-200-W-166 is listed for both preferred remedies. Therefore, instead of 52 waste sites for RTD (listed in introduction pg. V) there are 53 listed in table. If it is because both alternatives are identified, then treat all sites where both alternatives are identified as the same, and make note in the table.
118.	Page 5-32 Table 5-7	200-W-106 facility area is labeled 200-W Pond, but it appears from your maps and description to be in T-farm zone.
119.	Table 5-7 and Appendix A tables	"Facility area" column—should this be called this, as your maps have it referred to as closure zones? If they are "closure zones" change the name of the column to match, or change map label.
120.	Table 5-7	For sites that are MESC/IC/MNA, more clarification is needed as to why that approach is being taken versus RTD. Add specific justifications for each site identified
121.	Table 5-7	Several waste sties have the preferred remedial alternative as both MESC/IC/MNA and RTD (including UPR-200-W-116 and UPR-200-W-166). The clarification as to why these are checked for both is not sufficient to understand—add additional explanations for these unusual sites.
122.	Page A-1 Table A-1	Add West lake area to listing of the 200-UR-1 Operable Unit Waste Sites.
123.	Page 6-2 Section 6.1.1	Revise the text to read: "….ACTION MEMORANDUM ~~(or in other terms, an interim action ROD)~~ will be issued….."
124.	Page 6-2 Section 6.1.2	The paragraph that discusses CERCLA closure options does not address how these cleanup standards will be used in the 200-UR-1 OU. Please add a detailed explanation of how Method B and Method C cleanup standards will be used in each media and the regulatory path for each. Discuss how clean closure will be used at the 200-UR-1 OU waste sites.
125.	Page 6-3 Section 6.1.2	Revise the text to read: "Public involvement, including public notices and an opportunity to comment, will ~~be enhanced, as necessary, to~~ satisfy CERCLA requirements. The public also will be able to review and comment on the FS and any ~~proposed~~ draft conditions that will be contained…."

Comment Number	Page	Comment
126.	Page 6-4 Section 6.2.2	Add the following bullet: Soil sampling and analysis for non-rad COCs.
127.	Page 6-4 Section 6.2.2.2	Revise the text to read: "….Hanford Environmental Information System numbers, an inventory of investigation-derived waste containers, available waste designation information for radiological and non-rad COCs, and any chemical field-screening results."
128.	Page 6-4 Section 6.2.3	Please elaborate on the statements: □ "During development of WMP-19920 (pending), listed waste issues were resolved." and □ "Sampling and analytical requirements or specific analytes needed to support designation activities were identified and the requirements noted in WMP-19920." Ecology has not reviewed or approved of WMP-19920. It is impossible for Ecology to determine if waste is being managed in accordance with ARARs.
129.	Page 6-5 Section 6.2.5	Revise the text to read: "…based on radiological field screening and COC sampling results; documenting the extent of contaminated soils removed from the site and disposed of at ERDF; documentation of the verification radiological survey and COC sampling results: and…."
130.	Page 6-5 Section 6.2.5.1	Ecology has not reviewed an official released DQO and can not determine if the "analytical quality criteria outlined in the DQO" comply with ARARs. Provide additional explanation.
131.	Page 6-5 Section 6.2.5.1	Revise text to read: "….or risk-based levels if ~~exposure data are available~~ regulatory standards are not available and existing process knowledge….."
132.	Page 6-6 Section 6.2.5.2	Revise the 3rd and 4th bullets to read: □ "A site map showing the grid for the initial and verification ~~radiological~~ COC survey and the surface contamination delineated during the initial ~~radiological~~ COC survey" A discussion of removal action including hot-spot sampling, excavation, field screening the excavation surfaces for continued presence of ~~radiological~~ COC contamination, soil screening, verification radiological surveys and COC sampling results, waste characterization, management and disposition, excavation backfill, compaction, and final grading".
133.	Page 6-6 Section 6.2.6	Suggest changing the title of this Section to "Remedial Investigation Report for BC Cribs Area" (and add Westlake site if reclassified into this operable unit).

Comment Number	Page	Comment
134.	Page 6-6 Section 6.2.6	Revise text to read: "….and concentration of contaminants based on sampling results; evaluating the concentration of COCs against regulatory limits, assessing contaminant fate and transport;...."
135.	Page 6-7 Section 6.2.6.2	Revise the text to read: "….by using a simple comparison of ~~an~~ the mean as estimated from the 95% upper confidence limit ~~bound~~ of the data to background concentrations, PQLs, and with appropriate cleanup levels."
136.	Page 6-7 Section 6.2.6.2	Revise text to read: "….against regulatory standards or risk-based levels if ~~exposure data are available~~ regulatory standards are not available and existing process knowledge….."
137.	Page 6-9 Section 6.2.6.3.1	Revise text to read: "Risks initially will be evaluated by comparison to risk-based standards such as WAC 173-340-~~745~~740, "Unrestricted Land Use Soil Cleanup Standards ~~for Industrial Properties~~."
138.	Page 6-9 Section 6.2.6.3.1	Revise text to read: "Additional analysis will be performed using WAC 173-340-747(3) or (4), or an ~~appropriate~~ alternate fate and transport model (e.g., STOMP [PNNL-11216, STOMP – Subsurface Transport Over Multiple Phase: Application Guide]) will be established in accordance with WAC 173-340-747(8) to assess impact to the groundwater……"
139.	Page 6-10 Section 6.2.6.3.2	Ecology has not reviewed the most recent versions of DOE/RL-2001-54 and can not determine if the "screening-level ecological risk assessment" is in compliance with ARARs. However, the ecological risk assessment will need to comply with requirements provided in WAC 173-340-7490 "Terrestrial Ecological Evaluation Process." Please revise text accordingly.
140.	Page 6-10 Section 6.2.6.3.2	In the first bullet, include "inhalation" as an exposure pathway for invertebrates and burrowing mammals.
141.	Page 6-10 Section 6.2.6.3.2	The text states that "A risk management decision will be needed to determine how contaminants that do not have toxicity values will be handled during the risk assessment for each OU." Please insert text to clarify who will make that decision and when.
142.	Page 6-12 Section 6.2.6.3.2	The Ecological risk needs to be evaluated against WAC 173-340 requirements as well as the eight-step EPA process. Please include this evaluation in the text.
143.	Page 6-12 Section 6.2.6.3.2	The statement "Because most of the waste sites in this OU are within the core zone, generally only terrestrial wildlife risks will need to be evaluated……" is misleading. Numerous waste sites in this OU are in the core zone, but the BC Control Area encompasses a huge amount of land that is outside the core zone and is NOT considered industrial-exclusive land use. Please revise the text to include evaluation of waste sites within the core zone and waste sites outside the core zone.

Comment Number	Page	Comment
144.	Page 6-13 Section 6.3	This section reiterates the steps and remedial action alternatives for the FS process, as taken from Appendix D of DOE/RL-98-28. The document DOE/RL-98-28 was based on information and technologies available in 1997. A supplemental evaluation of technological developments should be provided in the forthcoming 200-UR-1 FS. Add text to section 6.3 indicating that the forthcoming FS will include information to update Appendix D in DOE/RL-98-28. Specifically: □ Identify potential technologies and process options associated with each GRA □ Screen process options to select a representative process for each type of technology based on their effectiveness, implementability, and cost Assemble viable technologies or process options into alternatives representing a range or treatment and containment plus a no- action alternative.
145.	Page 6-15 Section 6.4	The last paragraph of section 6.4 "Three alternatives to the OU-by-OU remediation….." and the next three sections (6.4.1, 6.4.2, and 6.4.3) do not add any value to this section. Ecology suggests deleting this text.
146.	Page 6-16 Section 6.5	The text "Additional guidance for confirmatory and verification sampling is provided in Section 6.2 of the Implementation Plan (DOE/RL-98-28)" should be deleted. The guidance in Section 6.2 of the Implementation Plan is for characterization sampling, instead use WAC 173-340-740(7) "Compliance Monitoring."
147.	Page 7-2 Figure 7-1	The Project Schedule doe not include any schedule for the RTD sites. Please include work covered by the proposed action memorandum.
148.	Page a-1 Appendix A Table A-1	Add a column indicating the remedy for the waste site (e.g., rejected, MNA, RTD, RI/FS, Reassignment).
149.	Table A-2	Sites rejected or no action: Please update list to include areas that were actually reclassified. If including these areas, please provide the official rationale comment that is included in the letter that ecology has signed.
150.	Page A-77 Table A-4	In site sorting information, there is a typo "980" instead of "1980".
151.	Page B-3 Section B.1.4.1 1st paragraph of section	Modify the first sentence of this paragraph as follows: "The chemical and radionuclide contaminants from UPRs…within 4.6 m (15 ft) of the ground surface ~~and are not considered a threat to groundwater."~~

Comment Number	Page	Comment
152.	Page B-5 Section B1.5.3	Please modify the 1st sentence of the section as follows: "According to the guidance in Table 6-5 …are not significant because of the ~~combination of low severity and~~ continued accessibility of the sites …"
153.	Page B-5 Section B1.5.4 1st paragraph	Either here or in section 4.2.1 add details about the sampling plans for "no action" sites. Include the sample design for non-radioactive COCs. The MARSSIM approach (section 4.2) planned for the rad COCs would be acceptable.
154.	Page B-14 Section B2.7.1	In this section reference the section of this document that gives the sample design to be used for nonradioactive contaminants and radionuclides.
155.	Page B-18 Section B3.1.1.2 2nd paragraph	This paragraph is highly speculative and unsupported; it is not useful. Delete this paragraph.
156.	Page B-20 Section B3.4 1st sentence of paragraph	Insert a new sentence after the first sentence: "Contaminated soils are not expected to exceed 2 m (6.6 ft) in depth for the sites associated with the 200-UR-1 moderate scale spill/leak CSM (Figure B-17). If field observations or measurements, or analytical data indicate a depth of contamination greater than 2 m, a site would be sampled in accordance with the larger scale spill/leak site CSM (Figure B-18).".
157.	Page B-21 and B-22 Section B3.5 and B3.6.1.1	Provide in both of these sections the sample design that will be used for nonradioactive contaminants, or provide a reference to the proper section of the document.
158.	Page B-25 Section B3.9	Correct "Figure B-18" to "Figure B-19" in the 5th sentence.
159.	Page B-26 to B-27 Section B3.14 general	Add an explanation of how the number of survey and sampling locations were determined, and explain how the sampling design follows guidance from MARSSIM, or a similarly recognized document, for the type of survey and type of contamination.
160.	Page B-28 Section B3.14.2	Provide in this section a statement about the sample design for non-radioactive contaminants. Depths of greater than 1 foot for sampling are probably required.
161.	Page B-59 Figure B-19	Change the arrow from the box "Verify presence or absence of .. . " to point directly to the box "Stake site boundaries to encompass potentially contaminated area".
162.	Page B-59 Figure B-19	From the box "Conduct screening of excavated material to determine if radiologically contaminated", add labels on the area to say "removed material" and "remaining material", to clarify the different directions from that box.

Comment Number	Page	Comment
163.	Page B-59 Figure B-19	Insert a box that explains that samples will be collected to test for non-radioactive contaminants. This box should be added on the right of the diagram after the "No" arrow, after the box "Any radiological survey readings above background?" Only if there are no nonradioactive and no radioactive contaminants above regulatory levels should the documentation be submitted for regulatory concurrence.
164.	Page B-61 Figure B-21	The first box has a bullet for "IH survey". Add IH to the list of acronyms in the front of the document.
165.	Page B-68 to B-69 Table B-5	The chromium (VI) soil cleanup level for direct contact is set by the inhalation pathway because Cr (VI) is carcinogenic via inhalation. Use 2 mg/kg as a soil cleanup level, which applies to the inhalation pathway and accounts for dust resuspension.
166.	Page B-68 to B-69 Table B-5	There is a limit on the PRG for lead for the industrial scenario. Please correct table B-5: ~~No limit~~ 1000 mg/kg. This is the Method A value.
167.	Page B-68 to B-69 Table B-5	The following contaminants have industrial direct contact PRGs given as "No limit". Replace the "No limit"s with the following values: methyl ethyl ketone, 2.1E06 mg/kg; phenol, 2E05 mg/kg (considers dermal absorption); 1,1,1 trichloroethane, 3.15E06 mg/kg.
168.	Page B-68 to B-69 Table B-5	The PRG for residential direct contact for phenol is 1.67E04 mg/kg; this value accounts for dermal absorption. Replace the 24,000 mg/kg with 1.67E04 mg/kg.
169.	Page B-68 to B-69 Table B-5	List the PRGs for each PAH of interest and for each pesticide of interest.

Comment Number	Page	Comment
170.	Page B-68 to B-69 Table B-5 Page B-71 to B-78 Table B-7	The PRGs for soil for the protection of groundwater, using default values for variables, are as follows in units of mg/kg: antimony 5.4; arsenic 2.92; barium 923; beryllium 63.2; cadmium 0.69; chromium (III) 2000; copper 0.8; lead 3000; mercury 2.1; molybdenum 32.3; nickel 130; silver 5.2; selenium 13.6; thallium 1.59; vanadium 2.24E03; zinc 5.97E03; nitrate-N/nitrite-N 40; cyanide 0.8; acetone 3.2; acetonitrile 0.282; benzene 0.028; benzyl alcohol 19.2; bromodichloromethane 3.68E-03; butanol 6.62; carbon tetrachloride 3.1E-03; chlorobenzene 0.87; dichloroethylene 0.36; 1,1-dichloroethane 4.37; 1,2-dichloroethane 2.32E-03; 1,1 dichloroethylene 5.22E-04; dichloromethane 0.022; p-dichlorobenzene 0.03; ethyl benzene 6.05; ethyl ether 9.09; hexane 96.2; MIBK 310; methyl ethyl ketone 21.8; tetrachloroethene 9.1E-03; phenol 44; toluene 7.3; 1,1,1-trichloroethane 1.58; 1,1,2-trichloroethane 4.27E-03; trichloroethylene 0.026; vinyl chloride 1.84E-04; xylenes 9.14; TPH 30; PCBs 0.21. Unless proper justification can be added to use other values for groundwater protection , add these values to tables B-5 and B-7.
171.	Page B-68 to B-69 Table B-5 Page B-71 to B-78 Table B-7	Because the contamination in the BC control area came from the BC cribs the COC list for BC cribs should be used to complete the COC list for the BC control area. Isophorone, pentachlorophenol, and styrene are on the COC list for BC cribs. Add them to Table B-5 and B-7.
172.	Page B-68 to B-69 Table B-5	Provide the rationale that allowed qualification for a simplified terrestrial ecological evaluation according to WAC 173-340 Table 749-1. Add a footnote in the table to tell the reader where to find this information in the document.
173.	Page B-68 to B-69 Table B-5	The molybdenum concentration for a simplified terrestrial ecological evaluation at industrial sites is 71 mg/kg. Please insert this in Table B-5 if these sites qualify for a simplified evaluation.
174.	Page B-68 to B-69 Table B-5	After correcting this table with proper values and pathways, indicate in the table, using shading or any other suitable notation, the PRG that dictates cleanup for each contaminant. This will be the lowest value in each row of the table, or background.
175.	Page B-71 to B-78 Table B-7	Cyclohexanone is not on the list of compounds for method 8260. Please check to see that the correct method is provided on Table B-7 for cyclohexanone.
176.	Page B-79 Table B-8	Ecology requests that you use plastic as a sample container for Cr (VI). Hexavalent chromium can adsorb to glass containers.

Comment Number	Page	Comment
177.	Page B-81 to B-82 Table B-11	Use of field instrumentation for non-radioactive contaminants is encouraged when detection limits are adequate, but for many contaminants these methods cannot detect contaminants at the cleanup levels for protection of groundwater. Physical samples of soil will be needed for verification to address contaminants with cleanup levels below the detection limits of the field instruments.
178.	Page B-83 to B-87 Table B-13, B-14, B-15	The sampling scheme is too sparse for making decisions about cleanup. For instance, two samples are way too few to represent areas as large as 500 m^2. Soil variability generally increases with area. Contaminant concentration variability should be used as a basis for choosing sampling densities – the software package Visual Sample Plan should be used to determine the number of samples needed for verification.
179.	Page B-81 Table B-16	Add to this table the physical samples that will be taken in the BC Control Area to test for hazardous metals and PCBs. If radionuclides were dispersed by animal droppings in the BC Control area, metals from the BC cribs would accompany those radionuclides. Physical samples from the BC Control Area must be taken to demonstrate that there are no hazardous metals dispersed in the area.
180.	Page C-16 Table C-4	Please add sufficient detail to the description of the cost estimating assumptions to explain the apparent discrepancies in unit costs between different sites. For example, the level of detail in the "C3.1 Trench Template" is insufficient for the reviewer to understand the difference in ERDF Disposal Costs in Table C-4. For example, the difference in ERDF disposal cost for Sites 200-E-29 and 200-E-53 is >50%, the difference between $3.79 per cubic foot disposed and $2.37 per cubic foot disposed.
181.	Appendix D	Revise the text to read: "In general, this CERCLA permitting exemption will be extended to all response action activities conducted at the 200-UR-1 OU waste sites~~, with the exception of the Resource Conservation and Recovery Act of 17=976 units, which will be incorporated into WA7890008967m Hanford Facility RCRA Permit~~." Ecology was not able to identify any RCRA TSDs assigned to the 200-UR-1 OU.
182.	Page D-3 Appendix D Section D1.2	Revise the text to read: "....specifically associated with developing risk-based concentrations for cleanup (WAC 173-340-740, "Unrestricted land use soil cleanup standards," WAC 173-340-745, "Soil Cleanup Standards for Industrial Properties," and WAC 173-340-747 "Deriving soil concentrations for ground water protection")." Update Table D-2 accordingly.

Comment Number	Page	Comment
183.	Appendix D, Table D-2	Chapter 4 "Potential Applicable or Relevant and Appropriate Requirements" of DOE/RL-98-28 lists multiple ARARs that should be include in Table D-2. Please re-evaluate potential ARARs and update Table D-2.
END		