Department of Energy
Richland Operations Office
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Richland, Washington 99352

0063179

05-AMCP-0063

NOV 30 2004

Mr. Michael A. Wilson, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton Boulevard
Richland, Washington 99352

Dear Mr. Wilson:

RESPONSE TO COMMENTS ON DRAFT A REMEDIAL INVESTIGATION REPORT FOR THE 200-PW-2 URANIUM-RICH PROCESS WASTE GROUP AND THE 200-PW-4 GENERAL PROCESS WASTE GROUP OPERABLE UNITS

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The U.S. Department of Energy, Richland Operations Office (RL) thanks the State of Washington Department of Ecology (Ecology) for comments received on October 22, 2004, for the subject document.

The attached draft responses to your comments are submitted in accordance with Section 9.0, "Documentation and Records," of the Tri-Party Agreement Action Plan. Ecology has 30 days following receipt of the responses to review and provide RL with a determination as to whether or not the responses are deemed favorable. If there are no major issues with the draft responses, and they are determined to be favorable, RL would expect Fluor Hanford, Inc. to be able to update the document and provide a final version for your approval by January 31, 2005.

If you have questions, please contact me, or your staff may contact Matt McCormick, Assistant Manager for the Central Plateau, on (509) 373-9971.

Sincerely,

Keith A. Klein
Manager

AMCP:BLF

Attachment

cc: See page 2

cc w/attach:
D. Bartus, EPA
C. Cameron, EPA
L. D. Crass, FHI
L. J. Cusack, Ecology
B. H. Ford, FHI
A. Hamar, Ecology
S. Harris, CTUIR
J. S. Hertzel, FHI
R. Jim, YN
M. B. Lackey, FHI
T. Martin, HAB
E. J. Murphy-Fitch, FHI
K. Niles, ODOE
J. Price, Ecology
P. Sobotta, NPT
M. Todd-Robertson, FHI
J. A. Winterhalder, FHI
Administrative Record, H6-08
Environmental Portal

The State of Washington Department of Ecology (Ecology) Comments on Remedial Investigation Report for the 200-PW-2 Uranium-Rich Process Waste Group and the 200-PW-4 General Process Condensate Group Operable Units

Comment #	Page, Paragraph	Comment	Proposed Resolution
1.	General Comment	Ecology reviewed the State of Oregon comments dated September 16, 2004. Ecology is in general agreement with the Oregon comments. USDOE should plan to include the Oregon comments in the resolution of comments with Ecology.	**Accept**. A copy of DOE/RL's final letter to Oregon Department of Energy in response to Oregon's comments will be provided to Ecology. In addition, draft responses to these comments will be informally shared with Ecology.
2.	General Comment	DOE/RL-2001-54 makes the statement: "Toxicity values are not available for some contaminants. A risk management decision will be needed to determine how contaminants without toxicity values will be handled during the risk assessment for each OU." This RI should list which COPCs don't have ecological toxicity values, and will be retained for risk assessment (in FS) for a risk management decision.	**No change.** The RI Report already addresses this. In Chapter 4.0 of the report, radionuclides and chemicals detected above background, and which lack screening levels, are shaded and explicitly identified as Contaminants of Ecological Concern (COECs) in Tables 4-26 through 4-37. The text in Sections 4.5.3 (Screening-Level Risk Calculations) and 4.5.4 (Uncertainty Assessment) also indicates that radionuclides and chemicals without screening levels are retained as COECs. As described in section 4.5.4, other chemicals with general status as plant nutrients (nitrate/nitrite, phosphate, ammonia, and fluoride) were included in the ecological screening but will not be considered further in the FS. The only constituents without screening levels that are not explicitly mentioned in the referenced tables are, as described in sections 4.3.2.2 and 4.5.3 of the text, chemicals with general status as nutrients for plants and animals (calcium, iron, magnesium, potassium, and sodium). In addition, most tentatively identified compounds (TICs) do not have screening levels and were not retained (except TBP) as discussed in Section 4.3.2.1 of the RI Report. See answer to comment 97.
3.	General Comment	DOE/RL-2001-54 makes the statement: There were high numbers of metals presenting an ecological risk requiring closer examination as well as several radionuclides. This RI should state how the FS will address this.	**No change.** The information is already in the RI Report. The purpose of the screening portion of the ecological risk assessment in the RI (Chapter 4.0) is to identify factors presenting ecological risk at this site. A discussion of further risk evaluation in the FS is presented in Section 6.3.2, "Further Ecological Evaluations."

Comment #	Page, Paragraph	Comment	Proposed Resolution
4.	General Comment	When evaluating COPC media concentrations, use of the 95% UCL concentration may be better justified than the maximum concentration. This is especially true when sample sizes are small, since the observed maximum may be smaller than the population mean (OSWER 9285.6-10). Regarding nonradionuclide EPCs, MTCA specifies use of a 95% "one-sided" UCL. It should be noted, however, that nonrandom sampling (targeting localized contaminated areas) may be an offsetting factor to the UCL approach.	**Accept in part.** Laboratory sample sizes for the 200-PW-2 and 200-PW-4 OU sites varied from 1 to 3 for different analytes at each depth. Typically one boring was performed per site; three shallow borings were taken at one site (207-A South Retention Basins). Borings were located in a biased manner (e.g. most likely location for contamination). Based on federal guidance (EPA 2002) these sample sizes are insufficient to generate a valid upper one sided ninety-five percent confidence limit on the true mean soil concentration using Land's method as specified in WAC 173-340-740 (7) (d) (i) (A). Use of the maximum concentration ensures that less than 10% of the samples exceed the soil cleanup value and that no single sample concentration exceeds two times the soil cleanup level as specified in WAC 173-340-740 (7) (e) (i) and (ii). In addition, sampling at the 200-PW-2 and 200-PW-4 OU sites was designed to sample areas at which suspected soil contamination had a probability of occurrence based on knowledge about the sites, and therefore meet the criteria for direct comparison of soil sample concentrations with cleanup levels under WAC 173-340-740 (7) (d) (iii). **Action:** This expanded justification will be added to Section 1.3.1 of the RI Report (also see comment 27.) **Citation in response:** US EPA, 2002. *Calculating Upper Confidence Limits For Exposure Point Concentrations At Hazardous Waste Sites.* OSWER 9285.6-10. Office of Emergency and Remedial Response US EPA Washington, DC.

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5.	General Comment	Because land use cannot be predicted, post-institutional controls (e.g., >500 y), use of MTCA Method B (WAC 173-340-740, unrestricted land use) may be more appropriate, farsighted, and conservative than Method C (WAC 173-340-745, industrial land use) for the post-institutional control period. In this context, the Tri Party response letter to HAB Consensus Advice #132, recommends that "an industrial land use scenario will set cleanup levels on the Central Plateau. Other scenarios (e.g., residential, recreational) may be used for comparison purposes to support decision making especially for the post-institutional control period (>150 y)."	**No change.** The land-use boundary around the 200 East and 200 West Areas has been designated as industrial-exclusive in *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement* (DOE/EIS-0222-F). In addition, the Tri-Parties' response to HAB advice #132 states that "the Core Zone (200 Areas including B Pond [main pond] and S Ponds) will have an industrial scenario for the foreseeable future." Therefore, treating waste sites in the core zone as industrial-use sites is consistent with DOE/EIS-0222-F, the recent Risk Framework workshop and Exposure Scenario Task Force leading to land-use decisions, the HAB advice, and the Tri-Parties' response. **Citations in response:** DOE/EIS-0222-F, 1999, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement*, U.S. Department of Energy, Washington, D.C. Klein, K.A., Einan, D.R., and Wilson, M.A., 2002, "Consensus Advice #132: Exposure Scenarios Task Force on the 200 Area," (letter to Mr. Todd Martin, Hanford Advisory Board, from Keith A. Klein, U.S. Department of Energy; David R. Einan, U.S. Environmental Protection Agency; and Michael A. Wilson, State of Washington, Department of Ecology), Richland, Washington.
6.	General Comment	The requirement to evaluate if treatability studies are needed is not discussed in the RI report. See comment #13 for explanation	**Accept.** Text will be added to the Executive Summary, Chapter 1 and Chapter 6 to address this. Also see responses to comments 13, 26 and 131.

Comment #	Page, Paragraph	Comment	Proposed Resolution
7.	General Comment	Tables A-1 and A-2 in Appendix A contain a tremendous amount of discrepancies for the values listed for maximum and minimum nondetect results, and the values listed for the maximum and minimum reportable results. There were many instances when the nondetect values exceeded the reported results. Typically, nondetect values are less than the reportable values. For the majority of the constituents listed within these tables this trend does apply. However, this discrepancy has been found for over seventy of the test data provided. If these particular instances are accurate as shown, and the nondetect readings should in fact be greater than the reported results, this must be stated within the text, and specifically referenced within the tables. The occurrence of these data discrepancies also caused errors to occur to the Exposure Point Concentration, which appears to always coincide with the Maximum Result in Table A-1. Many of the errors appear to have occurred for the 216-A-36B Crib and the 216-A-37-1 Crib. Unless there is a sound analytical basis for the assumed data errors, this reviewer finds the data suspect, and would encourage a thorough internal check of all data provided within the report.	**No change.** Among the summary information in Appendix A are columns listing the "maximum nondetect" (the highest detection limit recorded for each analyte across all samples in the site) and the "minimum result" (the lowest value recorded for each analyte across all samples in the site in which the analyte was detected). For the analysis of an individual sample, it is true that a reported value must be above the detection limit. However, in a compilation of a number of samples, it would not be surprising if the detection limits for an analyte in some samples were higher than the detected values for that analyte in other samples. This occurs because the achievable detection limits often differ among a group of samples, depending on a number of factors, such as differing levels and types of interfering species, differing analytical methods, different analytical laboratories, and differences in the extent of sample dilution prior to analysis. Samples from a waste site may differ considerably in composition. Thus interferences may be present in one sample, but not in another. Interfering species cause a detector response that is not related to the desired analyte. For instance, in an ICP analysis, a large amount of iron or uranium in the sample can cause an interfering signal in the channel (wavelength) associated with other analytes that are present at lower concentrations. This occurs because iron and uranium, like all transition metals and actinides, have very complex spectra, emitting light at many wavelengths. Similarly, in anion analysis by ion chromatography analysis, a large amount of nitrate can produce a peak with tails that spread over into the retention time normally associated with another analyte. Often interference effects are nonlinear, i.e., the effect of each increment of an interfering species has an incrementally greater effect on the result. This makes it possible to reduce or eliminate the effect of the interference by diluting the sample prior to analysis. Unfortunately, this also increases the detection limits, but to a lesser extent. Some of the detection limit differences were due to analyzing the samples with different methods or at different laboratories. Different methods have different detection limits, and there may be detection limit differences even if the same method is used at different laboratories, due to differences in instrument capabilities and optimization.

Comment #	Page, Paragraph	Comment	Proposed Resolution
8.	Sections 1.4 and 3.3	The information necessary to support closure of TSD units is not "readily identifiable" as required by Section 5.5 of the Hanford Federal Facility Agreement and Compliance Order. Ecology is requesting copies of CP-18666, CP-14682, and CP-14176 that were cited, but that Ecology does not have access to.	**Comment noted.** Copies of the requested documents were provided to Ecology at the October 2004 Unit Managers' Meeting.
9.	General, Sections 3.3.3.1/3.3.4.1/3.3.5.1/3.3.6.1/3.3.7.1	Review & reconcile WP/RI information as necessary for all units. Cs & Cobalt-60 in particular seem to have inaccurate depths/concentration levels (216-A-36B).	**Accept in part.** Historical information presented in the work plan from either soil samples or borehole logging activities in boreholes adjacent to or within the waste site provide historical data for the development of preliminary conceptual models. Data collected during the RI is utilized to refine the conceptual site model which is then used to develop a remedial alternative decision. The purpose of the RI is to provide the current information that has been collected. In any case, logging information from boreholes is subject to large amounts of error (see response, comment 69) and is limited to gamma emitting radionuclides, typically Cs-137 and sometimes Eu-154 and/or Co-60. However, in most specific instances where Ecology has requested further information or clarification from the Work Plan in their comments on the RI Report, the information will be added when possible. For example, see answers to comments 10, 54.
10.	General Comment, Boreholes	Why weren't 299-E17-05, 09, and 55 surveyed for the RI?	**Accept in part.** A number of factors were evaluated during the DQO development (BHI-01411) and led to the selection of primary and secondary logging boreholes identified in the Ecology approved Waste Control Plan (CP-13935). Well 299-E17-05 was on the primary list and was surveyed. Results will be included in the discussions in Section 3.3.3. Well 299-E17-09 was on the secondary list and was not surveyed. It is also located in the 216-A-36A Crib. Due to high contaminant concentrations found at the time borehole 299-E17-55 was constructed there was no logging performed prior to the borehole being decommissioned.
11.	General Comment, ARARs	Potential ARARs are expected to be fully developed in the FS.	**Accept.** Text stating this will be added to the RI Report, Section 6.3.1.

Comment #	Page, Paragraph	Comment	Proposed Resolution
12.	General Comment, Closure Plans	Elements of Closure Plans are to be fully developed in the FS	**Accept.** Text stating this will be added to the RI, Report Section 6.3.3.
13.	Page ES-1, 1st paragraph	Change first sentence to: "The purpose of the remedial investigation (RI) report is to report the data collected during the RI, and to demonstrate that the data collected is that necessary to adequately characterize the site for the purpose of developing and evaluating effective remedial alternatives. In addition, it is the purpose of the RI to identify the necessary treatability investigations" Note that this is a paraphrase of 40 CFR 300.430(d), and note also that the Hanford Federal Facility Agreement and Consent Order (HFFACO) also describes the requirement to identify needed treatability studies (HFFACO Section 7.3.6).	**Accept.** Text will be edited as noted. Also see response, comment 6.
14.	Page ES-1, 3rd paragraph	Change sentence as follows: "The 216-A-19 Trench and the 216-B-12 Crib ~~are~~ were characterized to develop a Conceptual Site Model (CSM) that is expected to be representative of other sites~~;~~ ~~t~~The ~~remainder~~ sites were sampled because they are *Resource Conservation and Recovery Act of 1976* (RCRA) treatment, storage, and disposal (TSD) sites." Note that the "representative sites approach" has not been introduced at this point in the Executive Summary.	**Accept.** Text will be edited as noted, except the clarification will be added that 216-A-19 and 216-B-12 are not TSDs. Also see response to comment 24.
15.	Page ES-1, 4th paragraph	Change ". . . when this RI was completed." to ". . . when sampling for this RI was completed."	**Accept.** Text will be edited as noted.
16.	Page ES-1, 4th paragraph	Insert new sentence following existing first sentence: "These two sites were transferred to the 200-UW-1 operable unit subsequent to sampling, but the sampling and analysis results have been included in this RI report."	**Accept.** Text will be edited as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
17.	Page ES-2, 1st paragraph	Replace next-to-last sentence ("The 12 affected waste sites . . .") with "The 12 affected waste sites were retained in this RI report in order to document that they have been characterized, and that a site conceptual model was developed for them."	**Accept.** Text will be edited as noted.
18.	Page ES-2, 2nd paragraph	Add statement that the data are evaluated during the RI to determine the need for treatability investigations: per 40 CFR 300.430(d).	**Accept.** See the response to comments 6 and 13. The following text will be added: "...determine if any treatability investigations are required,"
19.	Page ES-3, 3rd paragraph	Replace the last sentence ("See DOE/RL-98-28 . . .") with the following: "The analogous sites approach is a RI streamlining approach. The conceptual site models for sampled sites (representative sites) are applied to unsampled sites that are analogous to the representative sites." This approach is too fundamental to the RI to refer to it in another document.	**Accept in part.** Text will be edited as noted but the last sentence referring to the Implementation Plan will be retained.
20.	Page ES-4, 2nd bulleted paragraph	Revise text to clarify how impacts to groundwater were modeled for non-radioactive contaminants, as it would not be appropriate to use RESRAD to model whether they would potentially reach groundwater. Consider citing WAC 173-340-747 in the text in addition to its citation in Table ES-1.	**Accept.** The bullets in the series will be rewritten as follows: o A human health screening for direct soil contact was performed in accordance with risk assessment guidance from the U. S. Environmental Protection Agency (EPA) (*Risk Assessment Guidance for Superfund (RAGS), Vol. I, Human Health Evaluation Manual*, EPA/540/I-89/002). This was done for nonradionuclides using Hanford Site background levels and defined risk-based concentrations in the *Washington Administrative Code* (WAC) 173-340-745, "Soil cleanup standards for industrial properties." For radionuclide constituents of concern, it was performed using The RESidual RADioactivity dose model (ANL/EAD-4, *Users Manual for RESRAD*, Version 6). The RESRAD model was used to predict potential direct contact doses from radionuclides; the doses then were converted to risk values. o A fate and transport assessment for constituents of concern was performed. Soil concentrations of nonradiological constituents were screened for groundwater

Comment #	Page, Paragraph	Comment	Proposed Resolution
			protection based on the three-phase partition model in WAC 173-340-747, "Deriving soil concentrations for ground water protection." The RESRAD dose model was used to evaluate radionuclide constituents of concern for their potential impact on groundwater and associated risk. The model was used to predict potential doses from radionuclides potentially reaching groundwater; the doses then were converted to risk values. o An ecological risk assessment was performed in accordance with EPA's *Ecological Risk Assessment Guidelines*, EPA/540/R-97-006. For nonradionuclides, preestablished screening levels for soil were obtained from WAC 173-340-900, Table 749-3, "Ecological indicator soil concentrations for protection of plants and animals." For radionuclide constituents, the ecological soil screening levels developed by the EPA for screening soils at contaminated sites were used for comparison to detected concentrations. o In addition to the primary fate and transport assessment described in second bullet above, a qualitative assessment was performed on the nonradionuclide constituents that exceeded criteria for groundwater protection based on WAC 173-340-747, "Deriving soil concentrations for ground water protection." The qualitative evaluation considered factors such as frequency of detections, depth of detections, whether a groundwater plume already exists for the constituent, and quality assurance data associated with the constituent. The purpose of the assessment was to determine if additional mathematical modeling was appropriate for these constituents.
21.	Page 1-1, 3rd paragraph, 1st sentence	Clarify which activities occurred from April to November (i.e. RI field work)	**Accept.** The sentence will be changed to, "The RI field work was conducted from April to November 2003…"
22.	Page 1-1, 4th paragraph	Delete last sentence from this paragraph, and combine with 2nd paragraph on 1-2 (see comment #23 for markup).	**Accept.** Text will be edited as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
23.	Page 1-2, 1st and 2nd paragraphs	Rephrase these paragraphs to read: As part of the Tri-Party Agreement (Ecology et al. 1989) change package M-013-02-01, M-015-02-01, and M-020-02-01, approved in June 2002, the 200-PW-4 OU work scope was consolidated with that of the 200-PW-2 OU. The OUs were consolidated because they received similar waste streams and because the contaminant distribution beneath these waste sites is expected to be analogous for use, waste-site type, inventory, and effluent volume discharged. The initial work plan that included the 200-PW-2 OU was issued in May 2001; the revised work plan including the 200-PW-2 and 200-PW-4 OUs was issued in 2004. Therefore, the 200-PW-2 and 200-PW-4 OUs were combined in a single RI report. Data collected and remedial decisions made under the consolidated 200-PW-2 and 200-PW-4 RI/FS process will be applied to the remaining waste sites in these two OUs. The waste sites in the two OUs are listed in Table 1-1.	**Accept.** Text will be edited as noted.
24.	Page 1-3, 2nd paragraph	Clarify the statement "Two additional RCRA TSD units in the 200-PW-2 OU (the 216-A-10 Crib and 216-A-36B Crib) were characterized to support RCRA closure activities for this OU." Was this data used to make determination and recommendations in the RI report? Or, was this data just collected for closure and not used in the analogous sites approach? In addition, how you address the # of sites characterized for the RI analogous approach is not consistent in this paragraph versus the Executive Summary, paragraph 2. Suggest always listing all 6 sites for both areas (200-PW-2 representative sites), then explaining the differences between the 2 that were already characterized and the additional characterization for RCRA activities.	**Accept.** Text will be edited for clarification. The data from the 216-A-10 Crib and 216-A-36B Crib were used to make determinations and recommendations in the RI report. In this RI, the five TSDs were two waste sites in the 200-PW-2 OU: the 216-A-10 Crib and 216-A-36B Crib; two sites at the 200-PW-4 OU: the 207-A South Retention Basin and the 216-A-37-1 Crib; and one site, the 216-U-12 Crib, which was contained in the 200-PW-2 OU until recently then moved to the 200-UW-1 OU. Three non-TSD units that were characterized as representative sites were: 216-A-19 Trench, 216-B-12 Crib (PW-2) and 216-U-8 Crib (formerly PW-2 moved to UW-1). In addition, a fourth site, the 216-S-7 site in the 200-PW-2 OU, is being characterized and will be reported in the FS along with analogous waste site comparisons. Also see response to comment 14.

Comment #	Page, Paragraph	Comment	Proposed Resolution
25.	Page 1-3, last paragraph 1-4, 1st and 2nd paragraph	This information is background on the OUs. Recommend moving it to the beginning of the introduction, immediately following the current first paragraph on page 1-1.	**Accept.** Text was edited as noted.
26.	Page 1-4 Section 1.1	Identify the purpose of the RI to evaluate if any treatability studies will be needed (see comment #6)	**Accept.** The language to be inserted for the response to comment 18 will be repeated in Section 1.1. See response to comments 6 & 13.
27.	Page 1-6, Section 1.3.1	Maximum contaminant concentrations, instead of 95 percent upper confidence limits, were used for data evaluations. The stated reason, i.e., the limited number of samples, seems a bit arbitrary. Even though this method may be appropriate, please include a more detailed and technical justification for this decision.	**Accept.** See response to comment 4. Justification for maximum concentration rather than 95% UCL will be added to the text of the RI. The language given in the comment 4 response will be inserted after the second sentence of Section 1.3.1.
28.	Page 1-10, Section 1.3.3 2nd paragraph	Provide a reference to the "existing standards for protection of groundwater."	**Accept.** References to standards will be added. The reference for the existing ground water standards includes both those found under WAC 173-340-720(4) "Ground Water Cleanup Standards", Equations 720-1 ("Noncarcinogens") and 720-2 ("Carcinogens") and the EPA Drinking Water MCLs promulgated under CFR Title 40 Chapter 1 Part 141 National Primary Drinking Water Regulations.
29.	Page 1-12, 2nd paragraph	Maximum concentrations were evaluated, see comment #27, and add in 95 percent UCL comparisons if possible.	**No change.** The paragraph is discussing evaluations performed as described in DOE/RL-2001-54; changes to that document are out of scope of the 200-PW-2 and 200-PW-4 RI Report.
30.	Page 1-12, last bullet	A DQO normally would not interpret the ecological significance of observed or predicted effects; it should provide the information to do so in the RI. Suggest deleting this bullet, and adding if appropriate to the next paragraph.	**Accept.** The bullet referencing interpretation of data in the DQO will be deleted.
31.	Page 1-13 Section 1.3.5, 1st paragraph	Revise last sentence or add new sentence to include the reduced characterization time and reduced cost to only fully characterize representative sites.	**Accept.** A sentence will be added to the end of the paragraph as follows: "In addition, the time required to characterize waste sites and the cost of characterization are greatly reduced."

Comment #	Page, Paragraph	Comment	Proposed Resolution
32.	Page 1-13 Section 1.3.5, 2nd paragraph	Data should also be used to see if treatability studies would be required. Revise to include in this paragraph.	**Accept.** See response, comment 6, 13 and 26. The response to comment 26 will resolve this comment.
33.	Page 1-3 Section 1.3.5, 4th paragraph	Add sentence at end of paragraph "If confirmatory sampling indicates the remaining sites are not represented by the analogous conceptual site model, additional characterization of those sites would be required."	**No change.** In section 1.3.5 the last paragraph contains text describing the confirmatory sampling approach in adequate detail.
34.	Page 1-14, 2nd paragraph	Please insert text to indicate that all TSDs will be characterized pre-ROD.	**Accept.** Text will be edited as noted.
35.	Page 1-14, 2nd paragraph	The proposed plan and ROD would exclude the sites that are addressed in the U plant closure ROD, mention this again here.	**Accept.** Text will be edited as noted.
36.	Page 1-14 Section 1.4	Add the additional waste site (216-S-7), whose data will be incorporated into the FS.	**Accept.** Similar Waste Site Description and History information from the Work Plan (DOE/RL-2000-60 Rev. 1) on 216-S-7 will be added.
37.	Section 1.4, General	Add surface elevation in description sections for all units.	**Accept.** The text added to Section 3 in response to comment 60 contains this information.
38.	Section 1.4, General	Please insert construction diagrams for all units (see Chapter 2 of WP DOE/RL-2000-60, Rev. 1)	**Accept.** The diagrams will be added and referenced in the appropriate subsections of Section 1.4.
39.	Page 1-16, 2nd paragraph	There is a typo "(_WHC-IP-0809)	**Accept.** Text will be edited as noted.
40.	Page 1-16	"Records indicate that 180,000 kg of ammonium nitrate was disposed of at the site." Please add the record reference.	**Accept.** The record reference is BHI-00179, *B Plant Aggregate Area Management Study Technical Baseline Report.* However, a typo in the number understates the amount of ammonium nitrate. The correct amount is 1,800,000 kg of ammonium nitrate. The RI Report will be corrected, and the reference added.

Comment #	Page, Paragraph	Comment	Proposed Resolution
41.	Page 1-17	"In 1960 the crib was deactivated when it began to subside." Please add a reference if available.	**Accept.** The record reference is RHO-CD-673, 1979, *Handbook 200 Area Waste Sites*, Volumes I & II, Rockwell Hanford Operations, Richland, Washington. The reference will be cited.
42.	Page 1-17 and 1-18	Identify that these 2 cribs are ones that are being assigned to 200-UW-1.	**Accept.** Text will be added as noted.
43.	Page 1-19 Section 1.4.5 2nd paragraph	Insert following text from the Part A form: "The crib was designed as a percolation unit for the disposal of liquid waste and was capable of receiving 272,550 L (72,000 gal) per day at an average flow rate of 60 gallons (227 Liters) per day."	**Accept in part.** New information from the indicated text will be added as noted, except a correction will be made – the 227 L (60 gal) flow rate is per minute. Some of the requested text is already in the RI Report.
44.	Page 1-19 Section 1.4.5 2nd paragraph	Insert (taken from WIDS data base info): "From November 1961 to January 1978, the site received process condensate from the 202-A Building. From October 1981 to 1986, the site received the process condensate from the 202-A building. The crib received Process Distillate Discharge (PDD), a corrosive/mixed waste, at an average flow rate of 227 liters/minute (60 gallon/minute). The discharge was an acidic waste stream generated from two product concentrators in the Plutonium Uranium Extraction (PUREX) process. The pH of this waste ranged from 1.0 to 2.5 standard units which makes it a corrosive mixed waste. Approximately 62.6 million kilograms (138 million pounds) of waste were disposed of in the crib in 1986."	**Accept in part.** New information from the indicated text will be added. Some of the requested text is already in the RI Report.
45.	Page 1-20, Section 1.4.6, 3rd paragraph	Insert following text from the Part A form: "The process design capacity for the 216-A-36B Crib was 116,000 gallons (440,000 liters) per day."	**Accept.** Text will be added as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
46.	Page 1-20, Section 1.4.6, 4th paragraph	Insert following text from the Part A form: "The ASD waste stream is a basic byproduct waste stream generated by the ammonia scrubbers during decladding operations in the PUREX process. The waste stream came from the coating dissolution stage where ammonium fluoride and ammonium nitrate were used to dissolve zirconium alloy cladding from fuel elements. Ammonia gas was produced as a byproduct during this reaction. The gas stream from the dissolver was scrubbed with water, which absorbed and reacted with most of the ammonia to form ammonium hydroxide. This waste stream was sent to the 216-A-36B Crib for disposal. This waste was determined to be a state-only toxic waste (WTO2) under the Washington State Department of Ecology's waste mixture rule because the concentrations of ammonium hydroxide were in excess of 1% by weight."	**Accept.** Text will be added as noted.
47.	Page 1-20, Section 1.4.6, 3rd and 4th paragraph	Insert (taken from WIDS data base info): "The 216-A-36B portion of the crib is located inside the same light post and chain area as the 216-A-36A Crib. The 216-A-36B is the southern end of the chained area. The large chained area is posted with Underground Radioactive Material signs, but the risers near the center of the cribs are posted with Soil Contamination Area signs. The 216-A-36B portion of the chained area is considerably larger than the 216-A-36A portion. The offgas was scrubbed with water to reduce the amount of water released to the air. Spent ammonia scrubber waste was transferred to a concentrator where the waste was distilled. The Crib received discharge condensate from the waste stream concentrator. During the week of May 21 to May 28, 1970, an abnormally large quantity of radionuclides was discharged to the A36-B crib. A letter from C.W. Malody reports that the volume was 1.6 million liters (420,000 gallons), and the sample analysis showed 9.3 kilograms (20.5 pounds) of uranium; 82.3 grams (2.9 ounces) of plutonium; 15,900 Curies of total beta; 9,050 Curies of 95-zirconium; 4,390 Curies of 106-ruthenium; and 5,800 Curies of 144-cerium.	**Accept in part.** New information from the indicated text will be inserted. Some of the requested text is already in the RI Report. The portions of the requested text that are related to samples indicating contamination will be placed in Chapter 3.3.3. Also, a primary reference will be added regarding the letter from CW Malody: Finally, a note will be inserted indicating that 95-Zr, 106-Ru and 144-Ce have short (2-12 month) half lives and are not likely to be in the crib in significant quantities as a result of the 1970 discharge.

Comment #	Page, Paragraph	Comment	Proposed Resolution
		For 1969, the 12 month total of waste to the total of waste to the crib was 10 kilograms (22 pounds) of uranium; 7.2 grams (2.5 ounces) of plutonium; 1790.8 Curies of beta; 6.6 Curies of cobalt-60; 99.1 Curies of strontium-90, 110.2 Curies of cesium-137, and 454.0 Curies of ruthenium-106 in 17.8 million liters (4.695 gallons) volume of liquid. Radiological surveys of the surface are performed annually. In 1985, groundwater samples from well #299-E17-05 showed the total alpha and total uranium concentrations of two times the allowable concentration limit for uranium-238. However, concentrations of uranium isotopes were below the concentration limits. The tritium levels in the groundwater had an increasing trend in August 1984. The increased nitrate (NO3) trend continued from June 1984 to February 1985. In 1990, the nitrate level fluctuated around two times the drinking water standards (DWS). Well #299-E-17-09 also showed an increasing trend in its tritium contaminations. It fluctuated between two and three times the Drinking Water Standard in August 1986. On May 4, 1985, in well 299-E17-55, sample number 299E175530, taken from the 30 foot depth, cesium-137 analysis showed a level of 3,280,000 picoCuries per gram (pCi/g). The sample immediately above, at the 27 foot depth, showed 0.694 pCi/g, and the sample immediately below showed 355 pCi/g. Well 299-E17-55 is in the center of the crib."	
48.	Page 1-21, Section 1.4.7, General	WIDS references different length & width dimensions. Please verify.	**No change.** WIDS gathers and reports data from a wide variety of sources, some of which conflict. Reconciling WIDS data is outside the scope of this RI effort. Waste site dimensions reported in the literature were checked as part of the development of the Work Plan. The dimensions as stated in the RI report are correct.

Comment #	Page, Paragraph	Comment	Proposed Resolution
49.	Page 1-21, Section 1.4.7, 2nd paragraph	Insert (taken from WIDS data base info): "The 207-A South basin consists of three, unlined concrete cells that are coated with a polyurethane sealant which was added to the basin in 1982. They are surrounded by a chain and posted as a Contamination Area. The cells were fed from the pump pit, located between the 207-A South and 207-A North basins. A 10-centimeter (4-inch) fill line entered each cell inside the basin structure. A 7.6-centimeter (3-inch) drain line exist the bottom of each cell. When operating, the three cells of the 207-a South Basins were filled alternately, sampled, and discharged to the 216-A-37-1 Crib after meeting release specifications. 207-A Retention Basin information was split into two separate waste site units (207-A North and 207-A South) because they received different types of waste. The operation of the 207-A South Basin was discontinued in April 1989, but the 207-A North Basin operation remained active until 1999. The basins were pumped out and radiologically surveyed. The basins remain posted as a Contamination Area due to low levels of fixed contamination in the sump areas. A concern was expressed that oxidizing paint could create removable contamination over time. In 1990, a radiological survey of the insides of the dry basins found 1500 counts per minute."	**Accept in part.** New information from the indicated text will be inserted.
50.	Page 1-21, Section 1.4.8 1st paragraph	Insert (taken from WIDS data base info): "The crib is marked and surrounded with concrete AC-540 markers and Underground Radioactive Material signs. The excavation contains 1.5 meters (5 feet) of gravel fill with a volume of 150 cubic meters (5,300 cubic feet) and has been backfilled over. The side slope is 1:1. A surface radiological survey is performed annually."	**Accept.** Text will be inserted as noted.
51.	Page 1-22, Section 1.4.8, 1st paragraph	Delete "and will be closed under interim status."	**Accept.** Text will be edited as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
52.	Page 1-31, Table 1-1	Add a footnote for the representative sites	**Accept.** Footnote will be inserted as noted.
53.	Page 1-32, Table 1-2	Verify the depth of 216-A-10 unit. Is it 45 ft? Verify the depth of 216-A-36B unit. Is it 7.3 (24ft)? 216-A-36B: the cribs are separated by a grout dam. Please correct & change operational dates to 1966-1988. Verify the annual quantity of dangerous waste for the 216-A-37-1 unit.	**Accept in part.** The as-built crib construction diagrams in the Work Plan (DOE-RL-2000-60, Rev. 1) were cross checked before publication and are accurate. 216-A-10 depth is 45 ft as built as shown in its crib construction diagram (Fig. 2-24 in the Work Plan) The depth of 216-A-36B as built is 24.14 ft as built as shown in its crib construction diagram (Fig. 2-25 in the Work Plan). Section 1.4.6 of the RI Report indicates that the operational dates for the crib are 1965-1988; the dates will be edited in Table 1-2. 216-A-37-1 information is in error and will be changed as follows: The estimated annual quantity of dangerous waste of 108,290,000 lb (4,912,000 kg) represents the maximum annual output of 242-A Evaporator process condensate during operating campaigns (DOE/RL-2000-60, Rev. 1).
54.	Page 2-31 Table 2-8	Data does not appear for the 299-E24-160 borehole (A-10), 299-E17-4,-7, &-9 boreholes (A-36B), 299-E25-17,-18,-19,-20 boreholes, and C3248 (A-36B). **Please insert the geophysical logging, etc. information for these boreholes in Chapter 2 of this RI.**	**Accept.** Logging data from the work plan will be inserted into the appropriate subsections of Section 3.3, a more logical place for it than Chapter 2. Note that C3248 (216-A-36B) is a borehole that met refusal at 26 feet and was replaced in the same location by C4160, as described in the RI Report, Section 3.3.3.1. The text will be edited to make this more clear.
55.	Page 2-31 Table 2-8	None of the "new" boreholes are listed on a figure, please update figures to include them.	**Accept.** The figures will be updated.
56.	Chapter 3	WP DOE/RL-2000-60, Rev. 1 information regarding radionuclide detection concentrations and levels seems to be inconsistent with what is presented in this RI. Please review both documents and clarify. Rewrite the geophysical logging summaries as necessary, adding data from the WP.	See the response to comment 9.
57.	Page 3-4	2nd and 3rd paragraphs are repeats of each other – delete one.	**Accept.** Text will be deleted as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
58.	Page 3-4	Add text from DOE/RL-2000-60, Rev 1, page 2-5: "The depth to the water table varies from about 50 m (164 ft) in the southwest corner near 216-U-10 Pond to greater than 100 m (328ft) in the north. Beneath the 216-U-8 and 216-U-12 Cribs, the only two representative sites located in the 200 West Area, depth to water measures approximately 78 m (255 ft), and groundwater flow is to the southeast. In the northern half of the 200 East Area, the water table is present within the Hanford formation except in areas where basalt or the Ringold lower mud unit extends above the water table. Near the B-BX-BY waste management area, it occurs within the Hanford formation/Plio-Pleistocene unit (?). In the central and southern sections of the 200 East Area, the water table is located near the contact of the Ringold and Hanford Formations. The saturated thickness of the aquifer is predominately within the Ringold Formation."	**No change.** The information is already presented in the RI Report, Section 3.2.2, "Hydrostratigraphy – Unconfined Aquifer." The suggested insertion from the Work Plan is based on slightly older information than that presented in Section 3.2.2 (for example, the Plio-Pleistocene unit is now called the Cold Creek unit). Since the information from the Work Plan does not significantly change or enhance the information, it is appropriate to use the more recent information as presented.
59.	Page 3-5, 1st paragraph	Insert text before last sentence. From WP: "The very gently sloping water table corresponds to a high transmissivity zone that extends through the 200 East Area (PNNL-13116)."	**Accept.** Text will be edited as noted.
60.	Page 3-5	Before Section 3.3, insert complete text from WP-2000-60, page 2-6 thru 2-9. "Summary of Hydrogeologic Conditions at Representative Sites."	**Accept.** Requested text will be added as noted, including similar 216-S-7 description from Appendix D of the Work Plan.
61.	Page 3-5, Section 3.3 last paragraph, last sentence	Unclear, please explain what this result was based upon.	**Accept.** The sentence will be deleted because it was unclear and did not contribute to an understanding of the data results. The intended meaning was that some sample material from the 216-A-36B Crib was analyzed for speciated Sr-90, while other material was analyzed for total radioactive strontium.

Comment #	Page, Paragraph	Comment	Proposed Resolution
62.	Page 3-5, Section 3.3 paragraph 3, and text that follows in pages 3-6 through 3-33	Clarify what type of data constitutes geophysical logging data and laboratory characterization data. For example, the words "laboratory characterization data", "samples", "laboratory data", and "soil samples" are all used for what we suspect are the same thing. It might be clearer to consistently refer to the different types of data as spectral logging data and soil sample data.	**Accept.** The text will be extensively reworked for clarification in accordance with the suggestions in the comment.
63.	Page 3-6, Section 3.3.1.1, 1st sentence	Rewrite sentence: "The borehole (#) was …"	**Accept.** Text was edited as noted.
64.	Page 3-6 through 3-33	The text describing the nature and extent of contamination for the various waste sites is cumbersome to follow. For example, consider paragraph 2 on page 3-7. Why not simply say "The maximum U-238 concentration in the shallow zone was 51 pCi/g at a depth of 14.5 feet, and below the shallow zone was 7.4 pCi/g at a depth of X feet.", and then follow this same formula for all contaminants at all sites. It would also be helpful in these sections to mention that the data are summarized in Table 4-12.	**Accept.** The text will be extensively reworked for clarification in accordance with the suggestions in the comment.
65.	Page 3-6 through 3-33	Each waste site has sections for Geophysical Logging and Laboratory data, yet the two types of data seem to be mixed in any one section. For example, section 3.3.1.1 on page 3-6, Geophysical Logging Summary, discusses both geophysical logging results and "sample" results. Should not these "sample" results be discussed in the Laboratory Data section 3.3.1.2? This adds to the cumbersomeness of following the text discussed above.	**Accept.** The text will be extensively reworked for clarification in accordance with the suggestions in the comment.

Comment #	Page, Paragraph	Comment	Proposed Resolution
66.	Page 3-6 through 3-33	Under the Laboratory Data sections for each waste site, radionuclides are listed if their concentrations are greater than some specified value. However, the specified value varies from one site to another, and the significance of the value is never explained. For example, page 3-8 lists contaminants with concentrations greater than 1 pCi/g, while page 3-15 lists contaminants with concentrations greater than 3 pCi/g. What is the significance of these values?	**Accept.** The values that radionuclides were compared with represent natural breaks in the data. This allowed the comparisons to be written in a more concise way than if the value remained constant for all waste sites. The clarifications proposed in comment 64 will also resolve this comment.
67.	Page 3-8, Section 3.3.1.5	Statement made that while uranium species were identified (for the 216-A-10 Crib), it could be present near the bottom of the crib and masked by the activity of Cs-137. This RI should explain what was done to address this concern.	**Accept**. See response to comment 69 for pertinent information on the reliability of geophysical logging. The following explanation will be added to the RI Report: The Cs-137 logging detects start just below 45 ft (the bottom of the crib) and decrease until about 57 ft before starting to rise. The lab sample data show no Cs-137 and very low uranium concentrations at 45 ft. Concentrations of Cs-137 increase at the next sample point (52 ft), peaking at 2,950 pCi/g at 62.5 ft. In that region (45 to 62 ft), the U-238 concentrations were about 1 to 1.5 pCi/g with a lot of variability in the logging data. The laboratory data in the same region ran 0.65-1.7 pCi/g U-238. These numbers are in good agreement and indicate natural levels of uranium throughout the entire soil column.
68.	Page 3-9, Section 3.3.2, C4109	Indicate how/when Ecology's approval was given to allow non-installation.	**No change.** Jeff Ayres and Alicia Hamar of Ecology gave a verbal opinion during a walkdown of the 216-A-10 Crib on 1/7/2003 that the logic to allow non-installation was acceptable to Ecology.

Comment #	Page, Paragraph	Comment	Proposed Resolution
69.	Page 3-11, Section 3.3.2.1 2nd and 3rd paragraphs	Statements regarding Eu contamination levels appear contradictory. Revise text.	**Accept.** The text will be revised to include an explanation of the lack of consistency. In general, logging data give a general picture of contamination but are more prone to error than are laboratory data and are considered less reliable. Logging results are subject to the judgment of the personnel involved in taking and interpreting results, and are dependent on many assumptions such as moisture level, distance from surface, thickness of casings, and homogeneity of soil. The Eu-154 found during logging is at low levels (0.4 to 1.5 pCi/g). Given the uncertainties in the logging data (there are a number of correction factors applied and each has an error associated with it), 0.5 to 1.5 pCi/g does not conflict with the results < 0.4 to 0.6 pCi/g with a UJ qualifier as presented in the lab data. In addition, uranium was found in the borehole samples and the Eu-154 reading could have been a false positive from uranium daughters or from other natural emitters such as K-40 and radon daughters. Since logging is continuous with depth, whereas sampling occurs at discrete depths, one cannot rule out completely the possibility that a low level, extremely narrow band of Eu-154 may have been missed by the sampling effort. However, professional judgment of the logging interpreter is that the Eu-154 logging data are probably spurious. To establish that quantitatively requires extensive analysis of uncertainty of both logging and lab measurements and the actual propagated uncertainty. However, other qualitative considerations indicate that the Eu-154 is not present. It is unusual to find Eu-154 and not Eu-152. It also is unlikely that Eu-154, if genuinely present, would move ahead of the Cs-137 peak as indicated.
70.	Page 3-12, Section 3.3.2.2 1st paragraph	Add note: "...depth of 96.1 m (317 ft) bgs (2 ft from groundwater)...etc."	**Accept.** Text will be edited as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
71.	Page 3-12, list of radionuclides	Update and change to reflect data at both these levels: 52-62.5 ft and 52-72.5 ft. Was Tc detected at any levels?	**Accept in part.** The data will be updated per response to comment 64. Tc-99 was found at low levels (<1 pCi/g) at 52-62.5 ft bgs. All detected levels were qualified with JB, indicating the value was below the detection limit, estimated, and found in the method blank. Tc-99 contamination is unlikely to be present at this site.
72.	Page 3-12, Section 3.3.2.2, 4th paragraph, 1st sentence	Please review and clarify; the WP-2000-60, Rev 1 seems to indicate that concentrations were greater than 2.0 pCi/g at depths greater than 62.5 ft.	**Accept.** The Work Plan's (DOE/RL-2000-60, Rev. 1) indications of contamination were based on logging data. As indicated in the comment 69 response, logging data is subject to wide error ranges and is considered an indicator rather than being definitive. The Work Plan indicates that Cs-137, Co-60 and Eu-154 were detected by geophysical logging beneath the 216-A-10 Crib. Lab data indicate that, at depths below 62.5 ft none of these constituents were found, and that the maximum Cs-137 concentration of 2,950 pCi/g was found at 62.5 ft. The logging data have the advantage of continuous readings throughout the length of the borehole, as opposed to discrete intervals for lab samples. It is therefore possible that a thin layer of increased concentrations of the analytes in question exists. It is also possible that the borehole that was logged and reported in the Work Plan, Borehole 299-E24-59, on the east side of the 216-A-10 Crib, had more elevated concentrations of these radionuclides than the borehole in which lab samples were taken, Borehole C3247. However, the results are within an order of magnitude, which is a normal amount of error in data of this type. A discussion of this will be added to the RI Report.
73.	Page 3-12, Section 3.3.2.2, 5th paragraph	Please review and clarify. The WP-2000-60, Rev 1, page 3-9, indicates that nitrate concentrations exceeded screening levels.	**Accept in part.** Information on groundwater impact is already in the RI Report. It has been updated in accordance with the latest PNNL report (PNNL-14187, the 2003 report) and is presented in Section 3.3.8.1.

Comment #	Page, Paragraph	Comment	Proposed Resolution
74.	Page 3-13, Section 3.3.2.2	Insert following text from WP p 3-9, just prior to the last paragraph of Section 3.3.2.2: "The effluent volume (3,210,096) discharged at this site is 104 times greater than the soil pore volume (28,072m^3) as indicated in Table 3-1.(cite WP). These data indicate there has been impact to the groundwater at this site. The current status of the groundwater contamination in the vicinity of the 216-A-10 Crib is analogous to the 216-A-36B Crib. The cribs are close to each other and have the same general source for the wastewater. Groundwater contamination in the areas of these cribs is described in PNNL-13788 and is partially attributed to these two waste sites. The report indicates that tritium, nitrate (nitrogen in nitrate), I-129, Sr-90 and gross beta exceed the groundwater protection standards/guidelines in the vicinity of the crib. Major groundwater volumes in the vicinity of the 216-A-10 Crib are shown in Figures 3-2/3-3." Add figures from WP-2000-60, Rev 1.	**Accept in part.** This information is already in the RI Report, Section 3.3.8.1. The groundwater impact summary is from a more recent PNNL report (PNNL-14187, the 2003 report) than the one cited in this comment. The groundwater figures noted in the comment are already included in the RI Report as Figures 3-20 and 3-21.
75.	Page 3-14, Section 3.3.3.1, 2nd paragraph	Insert text from WP, page 3-9: "However, the vertical profile of gamma activity suggests that contamination may extend to 73 m 9240 ft) in the 216-A-36A section of the crib."	**Accept.** Text will be edited as noted.
76.	Page 3-15 & 16 Section 3.3.3.2	What happened to Sb-125?	**Accept.** Antimony-125 was found only at 53.5 and 89.5 ft bgs, at levels of .088 to .308 pCi/g, and so it is included in the list of low-concentration radionuclides in the referenced paragraph. However, antimony-125 is mistakenly rendered as Sn-125 (instead of Sb-125) in the RI Report. The typo will be corrected.

Comment #	Page, Paragraph	Comment	Proposed Resolution
77.	Page 3-16, Section 3.3.3.2	Insert following text from WP page 3-11, just prior to the last paragraph of Section 3.3.3.2 (216-A-36B): "The effluent volume (318,080m^3) discharged at this site is greater than 20 times the soil poor volume (16,327m^3). This data indicates that there has been impact to groundwater at this site. The current status of groundwater contamination in the vicinity of the 216-A-36B Crib is described in PNNL-13788, which attributes some of the contamination to the discharges to this crib. The report indicates that tritium, nitrate (nitrogen in nitrate), I-129, Sr-90, and gross beta exceed the groundwater protection standards/guidelines in the vicinity of the crib. Major groundwater plumes in the vicinity of the 216-A-36B Crib are shown in figures XXX." Add figures 3-2/3-3 from WP.	**Accept in part.** This information is already in the RI Report, Section 3.3.8.1. The groundwater impact summary is from a more recent PNNL report (PNNL-14187, the 2003 report) than the one cited in this comment. The groundwater figures noted in the comment are already included in the RI Report as Figures 3-20 and 3-21.
78.	Page 3-19, Section 3.3.4.2 4th paragraph	Insert following text after paragraph ending "...this model." "The effluent volume discharged (377,011 m^3) at the 216-A-37-1- Crib is greater than 24 times the soil column pore volume (15,879 m^3) beneath the crib. These data indicate that there may have been groundwater contamination at the crib as described in PNNL-13788. The report indicates that there are two plumes (I-129 and tritium) near the crib. Groundwater plumes near the crib are shown in figures XXX." Add figures from WP-2000-60, Rev. 1.	**Accept in part.** This information is already in the RI Report, Section 3.3.8.1. The groundwater impact summary is from a more recent PNNL report (PNNL-14187, the 2003 report) than the one cited in this comment. The groundwater figures noted in the comment are already included in the RI Report as Figures 3-20 and 3-21.
79.	Page 3-23, Section 3.3.6.2	What is the level of Ag?	**Accept.** Silver was detected at a maximum of 5.01 mg/kg in the soil borings as shown in Table B6-2, Appendix B. Resolution of comment 64 will resolve the issue of lack of metals discussion.

Comment #	Page, Paragraph	Comment	Proposed Resolution
80.	Page 3-24, Section 3.3.6.4, last sentence	Please clarify sentence.	**Accept.** The sentence reads, "None of the other measurements seemed elevated above normal levels." The purpose of the sentence was to indicate that no samples indicated highly elevated concentrations of any other constituent in the limited suite of analyses performed. However, it is confusing because, as is stated in the previous paragraph, the purpose of the sample was not for risk-based screening but for investigation derived waste. The sentence will be deleted.
81.	Page 3-33	Table 3-1 reference appears to be incorrect, change to table 3-2 for constituents of 216-U-12 Crib.	**Accept.** Table reference will be edited as noted.
82.	Page 3-43, figure 3-7, and similar figures for the other waste sites	The print on these figures is so small and fuzzy that the graphs are difficult to read. Also, clarify which graphs are from soil samples and which are from spectral gamma logging.	**Accept.** Every effort will be made to improve the printing and duplicating process when the document is finalized. The figures are already as large as they can be and still fit in the report without use of special inserts. The graphs indicated by RLS (Radiological Logging System) are gamma logging plots, while the others are from soil samples. A legend will be placed on the appropriate figures to indicate this.
83.	Page 3-57, Figure 3-16	The contaminants profile for Co seems contrary to the kD value of 1200 listed in Table 4-6. Manganese has a similar profile with a kD of 50. This anomaly of Co needs to be explained in sections 3.3.4	**Accept.** Historically, many 200-PW-2/4 waste sites had large quantities of water discharged to them. Under these past conditions it is highly likely that a combination of high infiltration rates and high concentrations of dissolved contaminants overwhelmed the sorptive properties of the soils. Under such conditions, the Kd models may not be accurate. However, in the 200-PW-2/4 RI report, Kd values are applied to predict possible future migration under existing conditions of low infiltration where the Kd model should be applicable. This explanation will be added to Section 3.3.4. Also see responses to Ecology comment 126.

Comment #	Page, Paragraph	Comment	Proposed Resolution
84.	Page 4-5, paragraph 5	Re Figure 4-1, the following identifies several omissions in this figure which may not be justified. Human receptors exclude a resident, a Native American, and an intruder. Ingestion of biota (e.g., plants and animals) and exposure to groundwater (e.g., via a well) by human receptors are excluded. Air and surface water are excluded as potentially contaminated media. Also, the figure is entitled, "Conceptual Site Model for Human Health," yet lists "terrestrial biota" as a receptor. Why? There should be a separate figure of a conceptual model for ecological risk which shows pathways for various terrestrial and aquatic receptors.	**Accept in part.** The receptors in the figure (which is standard in Central Plateau RI Reports) do not include those indicated in the comments because the waste sites are all designated as industrial-exclusive in DOE/EIS-0222-F as discussed in Section 1.3.2. The screening assessment was conducted using WAC 173-340 screening values for industrial workers and protection of groundwater. The emphasis on conservative bias in the screening values is appropriate in the context of their application to these particular sites. See answer, comment 86 for proposed resolution of air exposure. See answer, comment 85 for proposed resolution of surface water issue. The title of the figure will be changed to indicate that it contains biota as well as human health receptors. This figure is standardized across RI Reports for the Central Plateau. To maintain consistency, it should not be broken into two separate figures. Also see answer to comment 113.
85.	Page 4-6, Section 4.2.4.2 2nd bullet	COPCs may be transported to surface water via groundwater (not shown in Figure 4-1).	**No change.** As documented in the DQO summary reports (BHI-01411 and CP-14176) and subsequently approved in the work plan the conceptual exposure model for the 200-PW-2 and 200-PW-4 OUs does not extend to surface water. This is addressed within the groundwater operable units. For more information about what is planned as part of the groundwater program scope in the 200 West Area please refer to DOE/RL-2003-55, Rev. 0, *RI/FS Work Plan for the 200-ZP-1 Groundwater Operable Unit*, and DOE/RL-92-76, Rev. 1, Draft B, *RI/FS Work Plan for the 200-UP-1 Groundwater Operable Unit.* Similar approaches are being planned for the 200 East area groundwater plumes (200-BP-5 and 200-PO-1).

Comment #	Page, Paragraph	Comment	Proposed Resolution
86.	Page 4-6, Section 4.2.4.2 4th bullet	VOCs may contribute to an inhalation pathway via air (not shown in Figure 4-1).	**Accept in part.** The following explanation will be added to the text: Air is a minimal component of the exposure pathway for these sites. The figure will remain unchanged, as adding VOCs to the figure would inappropriately draw attention away from the significant pathways that are identified.
87.	Page 4-7, Section 4.2.4.4 2nd paragraph	What is the rationale for assuming an industrial land use? This assumption will likely be false far into the future (e.g., >500 y). The industrial land use assumption is non-conservative.	See response to comment 5.
88.	Page 4-7, Section 4.2.4.5	Why is the maximum soil concentration used to evaluate soils for groundwater protection rather than the 95 percent UCL soil concentration?	See response to comment 4.
89.	Page 4-7, Section 4.2.4.6	Was this section site specific?	**No change.** The section is not site-specific.
90.	Page 4-7, Section 4.2.4.6	Clarify that "direct contact" includes ingestion, dermal contact, inhalation, and external radiation exposure (consistent with Figure 4-1). Also, these bullets should indicate that both surface and subsurface soils are potentially contaminated media. Finally, note that if contaminants are transported to the Columbia River via groundwater, aquatic receptors could be exposed.	**Accept in part.** Additions will be made as noted except aquatic receptors. See the response to comment 85 on this subject.
91.	Page 4-8, paragraph 3	Again, use of the 95% UCL soil concentration may be better justified than the maximum concentration.	**No change.** See answer to comment 4. Justification for maximum concentration rather than 95% UCL will be added to the text of the RI.
92.	Page 4-9, paragraph 1	The date for OSWER Directive 9285.6-10 is 2002 (not 1992).	**Accept.** Text will be edited as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
93.	Page 4-9, Section 4.3	It is stated here that "This human health risk evaluation is limited to identifying COPCs ...." and that "Exposure pathways associated with toxicity-based screening criteria were described in Section 4.2.4 ...." Thus, the presentation of the risk evaluation is non-linear and awkward, rather than proceeding sequentially with the four cited steps.	**No change.** Comment noted; however, other elements of the text will be pulled out of alignment if the text order is changed. This is an issue that was given a great deal of consideration during writing.
94.	Page 4-10, Section 4.3.2	Re Figure 4-2: please describe methods for establishing COPC detection limits, since high detection limits would be inappropriate.	**No change.** All laboratories used to analyze Hanford CERCLA/RCRA samples are required to use SW846, including SW846 Chapter 1 requirements for calculating the detection limits. The actual detection limits vary by sample as described in the response to comment 7.
95.	Page 4-10, Section 4.3.2.1, 3rd paragraph	Statement: "Samples collected using the fixed-parameter three-phase partition model." Was this calculated using Method C or B? It should have been Method B. Please verify.	**No change.** Method C used. See response, comment 5.
96.	Page 4-10, Section 4.3.2.1	Organizationally, Section 4.3 is concerned with nonrad COPCs, yet both rad and nonrad COPCs are listed here for shallow and deep soils. Please clarify.	**Accept.** Text will be edited for clarity.

Comment #	Page, Paragraph	Comment	Proposed Resolution
97.	Page 4-11, paragraph 2, 3rd bullet	These other TICs listed should be checked for risk values or cleanup levels against more than only CLARC 3.1. Please consult IRIS (http://www.epa.gov/iris/), HEAST (EPA-540-R-97-036), PPRTV (http://hhpprtv.ornl.gov/), RAIS (http://risk.lsd.ornl.gov/), ATSDR (http://www.atsdr.cdc.gov/mrls.html), and EPA Region 9 PRGs (http://www.epa.gov/region09/waste/sfund/prg/index.htm) .	**No change.** EPA Risk Assessment Guidance, Volume 1 (EPA/540/R-92/003, 1991) indicates in section 5.6.1 that: "When only a few TICS are present compared to the TAL and TCL chemicals and no historical or other site information indicates that either a particular TIC may indeed be present at the site or that the estimated concentration may be very high (i.e., the risk would be dominated by the TIC), they then generally do not include the TICS in the risk assessment." TAL is the target analyte list and TCL is the target compound list. In EPA terms these are the analytes quantified by the analytical methods. In this case only a few TICs are present as compared to the analytes actually quantified. TICs are neither identified by comparison to a calibration standard nor are they quantified and that is why these are estimated. Thus no risk evaluation for these TICs are needed per the EPA RAGs.
98.	Page 4-12, 1st paragraph	Note the PPRTV database lists a chronic RfD and two oral slope factors for tributyl phosphate (http://hhpprtv.ornl.gov/TributylPhosphate.shtml).	**Accept.** Tributyl phosphate did not appear in Table 4-7 because no toxicity data were found for this compound at the time the RI Report was written. In subsequent Chapter 4.0 tables, tributyl phosphate is listed as having no screening level and is retained for further evaluation in the FS. Table 4-7 will be revised to include tributyl phosphate. Other Chapter 4.0 tables will be edited as appropriate. See response to comments 104 & 107 also.
99.	Page 4-12, Section 4.3.2.3 1st bullet	The reference for cadmium should be Ecology Publication 94-115 (not 94-145).	**Accept.** Text and references will be edited as appropriate.
100.	Page 4-12, Section 4.3.2.3 2nd bullet	The background value of 20 ppm for arsenic is not accurate. This is not appropriate use of Tables 740-1 and 745-1. Use the Hanford background for the arsenic (6.5 ppm) clean-up value.	**Accept.** Arsenic will be re-screened in the RI Report to use the 6.5 ppm value indicated in DOE/RL-92-24, Rev. 3 rather than the 20 mg/kg background value for arsenic as identified in WAC 173-340-900.

Comment #	Page, Paragraph	Comment	Proposed Resolution
101.	Page 4-12, Section 4.3.2.3 3rd paragraph	Re Table 4-1, all COPCs tagged with footnote #1 appear to have several exceedances of background concentration (marked by X), yet footnote #1 indicates no available background concentration. So, it looks like footnote #1 should specify "COPC detected but no background concentration available." Please clarify.	**Accept.** Footnote will be edited as noted.
102.	Page 4-12, Section 4.3.2.3, last paragraph	Where are all the inorganic constituents listed?	**No change.** Section 4.3.2.3, last paragraph on page 4-12 refers to Table 4-1, which lists inorganic constituents.
103.	Page 4-13, 1st paragraph	Re Tables 4-2 and 4-3, the text notes that shading indicates that the maximum detected COPC concentration exceeds background. Text should note that shading also indicates that the COPC is detected but no background is available (see table footnotes).	**Accept.** Table footnotes will be edited as noted.
104.	Page 4-14, paragraph 2	Re Table 4-6, footnotes appear to be missing in the body of the table. Also in Table 4-6, the "Groundwater RBC" column for nitrate-N should read "10000" ug/L (not 1600) and specify "MCL" as the basis (same is true for nitrate/nitrite-N). Re Table 4-7, where is tributyl phosphate? See comment for page 4-12, 1st paragraph (Comment #98).	**Accept in part.** The footnotes on Table 4-6 will be reviewed and corrected as appropriate. The groundwater RBC value for nitrate of 1,600 is from the WAC 173-340-720(4) non-carcinogen standard formula value for groundwater. This is the appropriate value for the groundwater RBC, which is the water screening value used to calculate a soil screening value protective of groundwater as indicated in WAC 173-340-747, Equation 747-1. Tributyl phosphate did not appear in Table 4-7 because no toxicity data were found for this compound at the time the RI Report was written. In subsequent Chapter 4.0 tables, tributyl phosphate is listed as having no screening level and is retained for further evaluation in the FS. Table 4-7 will be revised to include tributyl phosphate. Other Chapter 4.0 tables will be edited as appropriate. With regard to TBP, see response to comments 98 & 107 also.

Comment #	Page, Paragraph	Comment	Proposed Resolution
105.	Page 4-14, Section 4.3.2.4 2nd paragraph	Do you really mean WAC 173-340-740 (unrestricted land use)? See General Comment #5. Re Table 4-8, a footnote indicates that organics are not included. However, several organics are. Please clarify.	**Accept in part.** See response, comment #5. With regard to Table 4-8, this portion of comment accepted, footnote will be edited for clarity. The footnote says that the table does not include organics that are retained only because no screening level is available; it does not say organics are not included.
106.	Page 4-14, Section 4.3.2.4 3rd paragraph	Re Table 4-9, the table title should also indicate WAC 173-340-745 for shallow soils (but see General Comment #5).	**Accept.** Table will be edited as noted.
107.	Page 4-15, 1st paragraph	Regarding tributyl phosphate, see comment for page 4-12, 1st paragraph (Comment #98).	**Accept.** Tributyl phosphate did not appear in Table 4-7 because no toxicity data were found for this compound at the time the RI Report was written. In subsequent Chapter 4.0 tables, tributyl phosphate is listed as having no screening level and is retained for further evaluation in the FS. Table 4-7 will be revised to include tributyl phosphate. Other Chapter 4.0 tables will be edited as appropriate. See response to comments 98 & 104 also.
108.	Page 4-15, 1st paragraph	Use the Drinking Water Standard of 0.07 ppm 2,4D for screening level.	**No change.** 2,4-dichlorophenoxyacetic acid is identified as a COPC in soil because no soil concentration for protection of groundwater is available. The suggested comparison is inappropriate for deep zone soils because it would assume that the concentration in soil is equal to the concentration in water. The basis of all the protection of groundwater screening numbers is a model that does not incorporate that assumption. The suggested comparison would be inappropriate for shallow zone soils because there is a direct exposure screening value available.

Comment #	Page, Paragraph	Comment	Proposed Resolution
109.	Page 4-15,	Use the Drinking Water Std. of 250 ppm as a screening level for sulfate.	**No change.** The referenced text and the values in Table 4-10 refer to concentrations in shallow zone soil, not in water. No direct exposure screening value was available; the information on the basis of the secondary MCL for sulfate (which is not considered an enforceable standard by EPA) was included in the text as ancillary information to illustrate that even the criteria that are available for sulfate are not toxicity-based. In addition, the amount of soil assumed to be ingested per day in the development of screening levels is not equivalent to the amount of water assumed ingested per day in the development of water screening levels. Therefore there is no scientific or regulatory basis for use of a drinking water concentration to evaluate a soil concentration for potential risk to human health. The same maximum concentration of sulfate is compared in Table 4-11 to the soil concentration of 1,000 mg/kg expected to protect groundwater from exceeding the drinking water secondary MCL, which is the appropriate comparison for this value.
110.	Page 4-15, 3rd paragraph	Thorium should be evaluated as a radionuclide. For example, Th-232 dioxide (Thorotrast) has been linked to liver tumors due to its alpha emission, long radiological half-life (1.4E10 y), and long biological half-life (400 y). Therefore, thorium should be retained as a radionuclide COPC.	**Accept.** Radioisotopes of thorium, including thorium-228, thorium-230, and thorium-232 were evaluated in the RESRAD dose assessment presented in Section 4.4. However, the paragraph in question is part of the human health assessment for nonradiological constituents. There is a statement in the referenced paragraph that says, "Thorium has no nonradioactive isotopes, and thus does not have a steady state for presenting any toxicity." This statement is false in that it implies that radioisotopes do not present any health risk outside of ionizing radiation. For example, uranium has well-known kidney toxicity although it has no stable ground state. More generally, chemical toxicity is largely independent of isotope for any metal. Therefore, this rationale for eliminating thorium as a nonradiogical COPC will be deleted and the RI Report will be updated so that thorium is evaluated as a nonradionuclide. See also response to comment 123.

Comment #	Page, Paragraph	Comment	Proposed Resolution
111.	Page 4-16, 2nd paragraph and bullets	Since the fixed parameter three-phase partitioning model in MTCA (WAC 173-340-747) already incorporates Kd, it is unclear what additional benefit the outlined Kd analysis provides. Please cite the source for grouping COPCs by Kd. It is stated that U has Kd between 1 and 40. Note, however, that U has been assigned a Kd=0.6 mL/g in the SST Closure Plan (RPP-13774, Rev 2, p. C1-27), indicating greater than mobility. Note that COPCs with relatively high Kd values (e.g., >40 mL/g) may pose a greater risk via soil pathways (e.g., soil ingestion).	**Accept in part.** Text clarifying the purpose of the Kd grouping and analysis will be added to the referenced section. The section is meant to provide a general overview of which analytes are believed to pose the greatest risk to groundwater, and to note that more sophisticated modeling is planned for the FS. The sources for the Kds are listed, by analyte, in Table 4-6. The basis for Kd modeling has been established by Pacific Northwest National Laboratory (PNNL-11800). Extensive modeling in addition to the WAC 173-340-747 model has been undertaken at other 200 Areas operable units. The Kd analysis, in essence, points out that the behavior of the listed analytes is understood based on this previous modeling which is more specific to this area than the model used to develop the WAC 173-340-747 screening levels . Further modeling will not benefit the 200-PW-2 and 200-PW-4 OU RI in the sense of providing information of value to decision makers, and would be costly in terms of time and money. The Kd analysis also evaluates some COPCs for which screening levels protective of groundwater are not available. It is agreed that uranium has a Kd of 0.6 L/kg as shown in Table 5.3 of the Draft A RI Report. The document will be edited to place uranium in the correct Kd grouping. (Note: total uranium will be treated as a non-radionuclide.) In any event, previous modeling (PNNL-11800) as described above shows that COC with Kds of less than 40 will migrate to groundwater as is stated in several paragraphs of Section 5.4.1 (for example, see the paragraph regarding manganese at the 216-A-19 Trench.) The comment about COPCs with high Kd values posing a greater risk via soil pathways is noted. Direct soil exposure pathways were evaluated in Table 4-10. **Citation in response:** PNNL-11800, 1998, *Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington.

<table>
<tr><th>Comment #</th><th>Page, Paragraph</th><th>Comment</th><th>Proposed Resolution</th></tr>
<tr><td>112.</td><td>Page 4-17 through 4-37, Section 4.4 RESRAD Modeling and Section 4.5 Ecological Risk Screening</td><td>A lot of information is contained in these sections, and it is difficult to come away with a sense of the important risk assessment results. We suggest a summary table summarizing the risk assessment results. Something like below:
<table>
<tr><td>analysis</td><td>216-A-19</td><td>216-A-10</td><td>etc ...</td></tr>
<tr><td>Industrial Cover</td><td>pass</td><td>NA</td><td></td></tr>
<tr><td>Industrial No Cover</td><td>pass</td><td>pass</td><td></td></tr>
<tr><td>Groundwater</td><td>pass</td><td>fail
I-129 at 10,000 times MCL</td><td></td></tr>
<tr><td>Ecological</td><td>pass*</td><td>pass*</td><td></td></tr>
</table>
Pass means the results are below the human health dose criteria, below the groundwater protection criteria, and below the BCG sum of fractions criteria. Pass* means BCGs need to be developed for some of the retained COPECs.</td><td>Accept. A summary section will be added to the end of Chapter 4 that will include a table similar to the one suggested in the comment. Note that a similar table is already found in the Executive Summary, and the new Chapter 4 table will be based on the existing Table ES-1, "Contaminants of Potential Concern Exceeding Risk Screening Values."</td></tr>
<tr><td>113.</td><td>Page 4-17, Section 4.3.3</td><td>The uncertainty analysis emphasizes conservative assumptions and neglects potentially nonconservative assumptions.
Depending on how the intruder scenario is defined (e.g., well driller vs. post-intrusion gardener, see HNF-SD-WM-TI-707, Rev 4), an intruder may actually be more exposed than the worker. Furthermore, a bounding scenario (e.g., Native American) is omitted altogether.</td><td>See response to comment 84.</td></tr>
</table>

Comment #	Page, Paragraph	Comment	Proposed Resolution
114.	Page 4-17, Section 4.3.3 2nd paragraph	As noted, several COPC soil concentrations (B, Mn, NO2, NO3, U, Al, Th) exceed soil levels for groundwater protection (Table 4-11), calculated via the MTCA three-phase model which incorporates Kd. The argument that groundwater impacts are implausible is unconvincing, since given enough time, migration of these COPCs to groundwater appears plausible (especially for B, NO2, NO3, U with Kd<1). It is interesting too that, within this same paragraph, equilibrium models are both criticized (MTCA three-phase partitioning model) and supported (PNNL Kd criterion for immobility), depending on the perspective desired.	**No change.** See answers to comments 83 and 126 for an explanation of why some COPCs with high Kds have historically migrated downward through the vadose zone, but are not expected to significantly migrate in the future. It is agreed that constituents with a low Kd, such as B, NO2, NO3, and U may migrate to groundwater. However, the limitations of the model used to develop the WAC 173-340-747 screening levels also need to be considered. The fixed-parameter three-phase partitioning model was criticized not for its use of Kd, but for its assumption that soil is uniformly contaminated on top of the aquifer, whereas in reality, most constituents would need to transport through an uncontaminated vadose zone, such as exists at the sites under consideration, in order for groundwater to be reached. Boron is not a constituent of concern. Nitrate, nitrite and uranium have all been carried forward to the FS for confirmatory sampling. Manganese (50 L/kg), Aluminum (45 L/kg) and Thorium (150,000 L/kg) all have Kds greater than 40; PNNL-11800 concluded that constituents with Kd greater than 40 are considered immobile based on the results of previous modeling using the STOMP model. **Citation in response:** PNNL-11800, 1998, *Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington.
115.	Page 4-19, Section 4.4.1.2 paragraph 5 and bullets	Contaminants are listed for risk assessment evaluation that are not discussed in the text in section 3.3 (Nature and Extent of Contamination) or shown in the Vertical Profile Plots of Contaminants figures in section 3. For example, Am-241 and Eu-155 in the 216-A-19 Trench are not discussed in section 3.3.1, and the data for Eu-155 is not shown in Figure 3.7. It seems that all contaminants evaluated in the risk assessment should be discussed in the sections describing the nature of contamination.	**Accept.** The proposed resolution to comment 64 will also resolve this comment.
116.	Page 4-26, top of page	Units should be included for all values where appropriate throughout the document. For example, on this page, the sentence should read "Dose estimates were below 1E-20 mrem/year and cancer risk estimates were below 1E-20."	**Accept.** The report will be edited to include units as appropriate.

Comment #	Page, Paragraph	Comment	Proposed Resolution
117.	Page 4-33, Section 4.5.3 continuing to page 4-34	It should be noted that no radionuclide COPECs exceeded screening BCGs, and that the only retained radionuclides (those shaded in the tables) were ones with no BCG. It would also be appropriate to note that for all sites, the dose sum of fractions for radionuclides with BCGs is below unity (although the sum of fractions calculations is not complete until BCGs are developed for all COPECs).	**Accept.** The section will be revised as follows: For radionuclides, the results for both detected and nondetected compounds are included in these tables. Each radionuclide is screened against its individual dose guideline, therefore no comparisons were made to gross alpha and beta measurements. Tables 4-26 through 4-31 provide the screening results for radionuclide COPECs at all six of the characterized sites. Rows in the tables that are shaded designate COPECs detected at a maximum concentration that exceeded its screening level or for which no screening level was available. Radionuclides and chemicals whose maximum detected concentration was less than their background concentration were not retained (and do not have shading). However, the dose fraction was calculated for any radionuclide for which a BCG was available, even if the radionuclide concentration was at or below the background concentration in accordance with guidance in DOE standard DOE-STD-1153-2002. Section 6.2 of this standard states that the sum of fractions should include all sources of exposure. Section 6.2.1 of this standard states that for sites where that sum of fractions exceeds one, a sum of fractions of the background contribution can be generated for comparative purposes. The designation "NA" indicates that a value is not available or not applicable; "ND" designates a nondetected radionuclide. The radionuclide COPECs at each site are summarized as follows: ▪ **207-A South Retention Basin.** ^{228}Ac, ^{212}Bi, ^{214}Bi, ^{212}Pb, ^{214}Pb, ^{94}Nb, ^{208}Tl, ^{230}Th, ^{234}Th ▪ **216-A-10 Crib.** ^{237}Np, ^{40}K ▪ **216-A-19 Trench.** ^{228}Ac, ^{212}Bi, ^{214}Bi, ^{212}Pb, ^{214}Pb, ^{63}Ni, ^{208}Tl, ^{234}Th ▪ **216-A-36-B Crib.** ^{228}Ac, ^{212}Bi, ^{214}Bi, ^{212}Pb, ^{214}Pb, ^{208}Tl ▪ **216-A-37-1 Crib.** ^{228}Ac, ^{212}Bi, ^{214}Bi, ^{212}Pb, ^{214}Pb, ^{208}Tl ▪ **216-B-12 Crib.** ^{230}Th, ^{126}Sn. All radionuclides retained as COPECs were retained because they were detected above background levels or had no background value and no DOE dose biota guideline was available. Dose biota

Comment #	Page, Paragraph	Comment	Proposed Resolution
			guidelines will be developed for these radionuclides in the FS. For all sites, the sum of dose fractions was below one, but a dose fraction could not be calculated for all radionuclides detected above background. Therefore, any further discussion of the dose sum of fractions is not warranted until BCGs are available for the other radionuclide COPECs.
118.	Page 4-34, top of page	Justify why radionuclides with concentrations less than background were included in the sum of fractions calculations.	See comment 117 response.
119.	Page 4-39, Figure 4-2	State that all the waste sites are within the boundaries (core zone) for the direct contact - Method C.	**Accept.** The figure will be edited with a footnote to this effect.
120.	Page 4-48, Figure 4-11	Figure 4-11 (analysis with no cover) appears to have the wrong RESRAD graphs. The graphs appear to be identical to Figure 4-10 (analysis with cover), and do not correspond to the text on page 4-26.	**Accept.** The "with cover" RESRAD graphics for the 216-A-19 Trench were mistakenly duplicated in Figure 4-11. They will be replaced with the appropriate graphics for the "no cover" alternative. An error was also discovered in the supporting text of Section 4.4.3.3. The following edit will be made: Section 4.4.3.3, 2nd par., last sentence: Both "cover" and "no-cover" alternatives were evaluated for the 216-A-19 Trench, where the cover depth was considered to be 4.3 m (14 ft) thick.
121.	Page 4-59, Table 4-2 & 4-3	Change the background concentration for Arsenic the Hanford Background of 6.47 ppm.	See response, comment 100.
122.	Page 4-59, Table 4-2 & 4-3	DOE.RL-92-24 Rev. 2 shows that the 90% background for nitrate is 44.4 ppm However, I cannot tell from the DOE's document on background concentrations how the nitrate is being expressed. Clarify nitrate as NO^3/N or NO^3 when included in Table. Correct table for accuracy.	**No change.** Tables 4-2 and 4-3 both indicate clearly that nitrate, nitrite, ammonia and ammonium are expressed as N. DOE/RL-92-24 Rev. 3 indicates 90% background for nitrate is 52 (as NO3). This more recent value (than 44.4) has been converted to 12 (as N).
123.	Page 4-75 Table 4-6	Thorium, ammonia, ammonium ion are not included in the summary table.	**Accept in part.** Ammonia and ammonium are not included in Table 4-6 because they are not regulated under WAC and no screening levels are included for them in the risk assessment. Thorium is included in the revised Table 4-6 but no groundwater RBC is available and no protection of groundwater value can be developed. See also response to comment 110.

Comment #	Page, Paragraph	Comment	Proposed Resolution
124.	Page 4-83, Table 4-9	Error on 216-A-19 Crib – Diethylphthalate Protection of GW screening level is off by a factor of 10, should be 72,000 ppb.	**Accept.** Table 4-9 will be corrected as noted in the revised RI document.
125.	Page 4-131 through 4-134, Tables 4-34 and 4-35	These two tables are identical, both for 216-A-19 Trench. The data for the 216-A-36-B Crib is missing from the tables, and should be in Table 4-35.	**Accept.** Table 4-35, which should include the data for the 216-A-36-B Crib, has been corrected and will be included in the revised RI document. Minor corrections (repeated lines, etc.) to Chapter 4 tables will also be made.
126.	Page 5-8, last 2 bullets	Aluminum and Cobalt have higher kD; yet the soil profiles show them at depths approximately 25 feet. The kD are not matching the results; therefore, an assumed risk to groundwater might be required. Because of the problems of these 2, all other components with high kD should be evaluated to their groundwater threat.	**Accept.** Additional discussion will be added in Sections 3 and 5. The aluminum and cobalt results from the 216-A-37-1 Crib at below-surface depths were fully expected because of the large volumes of effluent that once were disposed to the waste site. It is estimated that 377 million liters (~100 million gal) of process condensate were disposed to this site, exceeding the soil column pore volume (15,879 m^3) by a factor of greater than 24. The effluent will therefore have found a path through the soil column due to the volume of water and hydraulic head, and will have deposited COCs to the locations it reached. When disposal to this site ceased, the chemical affinity to the soil becomes the controlling factor, not physical fluid flow pathways. In the absence of any more liquid to drive them down, associated COCs with high Kds (such as aluminum and cobalt) would remain in place at the depth at which physical flow stopped movement. The weather conditions at Hanford are dry (<10 inches rain per year) and will not affect movement of COCs with high Kds. Cobalt (1,200 L/kg) and Aluminum (45 L/kg) have higher Kds than the 40 L/kg at which COCs are considered immobile (PNNL-11800). **Citation in response:** PNNL-11800, 1998, *Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford Site*, Pacific Northwest National Laboratory, Richland, Washington.

Comment #	Page, Paragraph	Comment	Proposed Resolution
127.	Page 6-1, Section 6.0	Change the second sentence to read: "...therefore, ~~while the CERCLA process will be used to fulfill the RCRA corrective action requirements~~ RCRA compliance will be documented and achieved through completion of the CERCLA process, additional documentation to support the Hanford Facility RCRA Permit (WA 7890008967) will be ~~required in accordance with~~ completed as described in the Implementation Plan (DOE/RL-98-28)."	**Accept.** Text will be edited as noted.
128.	Page 6-3, Section 6.2.3	Fate and transport screening of nonradioactive contaminants should be conducted in accordance with WAC 173-340-747. If an alternative fate and transport model is used, compliance with WAC 173-340-747(8) requirements must be documented in the RI report. Revise RI Report accordingly.	**Accept in part.** The secondary evaluation (Section 5.4) was performed to determine whether further mathematical/computer modeling was appropriate for constituents. It was not intended as a substitute for the fixed-parameter 3-phase model described in WAC 173-340-747(4), which was used to develop the soil concentrations protective of ground water presented in the RI Report. An alternative model that would be required to demonstrate that these requirements are met was therefore not used. WAC 173-340-747(8) includes requirements for using vadose infiltration transport models other than the partitioning models described in the WAC (i.e., values for sorption, vapor partitioning, biodegradation, dispersion, and decay must be site-specific or be derived in accord with WAC instruction). Text will be modified as indicated in response to comment 129 to clarify the purpose of the screening.
129.	Page 6-3, Section 6.2.3	This section refers to a "second evaluation" that was conducted. Add a detailed description of the secondary evaluation; a flow chart would be very helpful.	**Accept in part.** The secondary evaluation is the one performed in Section 5.4. The referenced text in Chapter 6 will be edited to indicate this. A flow chart is not necessary since the evaluation was qualitative. Text also will be added to Section 5.4 to clarify that the purpose of the evaluation was solely to determine whether further mathematical/computer modeling was appropriate for constituents.

Comment #	Page, Paragraph	Comment	Proposed Resolution
130.	Page 6-3, Section 6.2.3, Second Paragraph	Add a table listing all COCs, indicate if they were screened out during the initial fate and transport modeling, or during the second evaluation (include rationale), or are they being carried forward because the pose a threat to groundwater quality.	**No change.** The extensive tables in Chapters 4 and 5 already contain this information. The requested information must be presented site by site and analyte by analyte. Such a table would be large, cumbersome and repetitive. Concise summary tables appear in the Executive Summary and Chapter 6. No analytes were "screened out" during the second evaluation, whose purpose was solely to determine whether further mathematical/computer modeling was appropriate for constituents.
131.	Page 6-4, Section 6.3.1	The feasibility study should include any treatability studies that may need to be performed.	Proposed resolution of comment 6 will also resolve this comment.
132.	Page 6-5, Section 6.3.3	Rewrite the second and third sentences to read: "The proposed plan will ~~include~~ be developed in conjunction with a draft permit modification…RCRA Permit (WA 890008967) will ~~be used to~~ incorporate the decision in the permit for these sites."	**Accept.** Text will be edited as noted.
133.	Page 6-6, Section 6.3.3, last paragraph	Revise the text to read: "The proposed plan ~~also~~ will ~~include~~ be developed in conjunction with a draft permit modification…"	**Accept.** Text will be edited as noted.
134.	Page 6-7, Section 6.3.3, first paragraph	Revise the text to read: "The Hanford Facility RCRA Permit subsequently will be modified by Ecology to incorporate ~~the ROD (and subsequent amendments) by reference, authorizing the RCRA actions~~ RCRA closure requirements from the CERCLA documentation to fulfill RCRA requirements."	**Accept.** Text will be edited as noted.
135.	Table A-1, last column	Please define that "bgs" refers to "below ground surface" within the table.	**Accept.** Table will be edited as noted.
136.	Table A-1, last column	Many of the constituents with a "Maximum Result" do not provide the depth of the maximum concentration. Please provide the below ground surface (bgs) footage for these concentrations	**Accept.** In some cases, data were taken from only one depth (i.e, some 207-A South Retention Basin samples) so all data will repeat the same depth information. Depth will be entered (repeated) in the table.

Comment #	Page, Paragraph	Comment	Proposed Resolution
137.	Page AT-2, Table A-2, 2,4-dichlorophenoxyacetric acid	The minimum and maximum nondetect values are larger than the minimum and maximum results. Please provide accurate data or explain discrepancy.	See answer, comment 7.
138.	Page AT-2, Table A-2, 2-(2,4,5-trichlorophenoxy) propionic acid	The minimum and maximum nondetect values are larger than the minimum and maximum results. Please provide accurate data or explain discrepancy.	See answer, comment 7.
139.	Page AT-5, Table A-1, Diethylphthalate	The "Maximum Nondetect" value for Diethylphthalate is also shown as the "Minimum Result". This is the only instance when a "nondetect" value is also classified as a "result". Please explain	See answer, comment 7.
140.	Page AT-18, Table A-1, Nickel-63	Zero should be entered for the "Maximum Nondetect" value since this appears to have been the case.	**Accept.** Some radiological constituents for 216-A-36B did not get entered properly, including Nickel-63. All radiological data for 216-A-36B will be reviewed and re-entered as appropriate into Table A-1. The data shown in Table B3-1 is correct. Data used to form conclusions in the report text are also correct.
141.	Table A-2, last column	The unit of measurement is missing for the Overall Maximum Depth column?	**Accept.** The unit of measurement (ft) will be added.
142.	Table A-2, last column	Why do some constituents that do have detected levels not have overall maximum depth information?	See answer, comment 136
143.	Page AT-33, Table A-2, 2,4-dichlorophenoxyacetric acid	The minimum and maximum nondetect values are larger than the minimum and maximum results. Please provide accurate data or explain discrepancy.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
144.	Page AT-33, Table A-2, 2-(2,4, 5-trichlorophenoxy) propionic acid	The minimum and maximum nondetect values are larger than the minimum and maximum results. Please provide accurate data or explain discrepancy.	See answer, comment 7.
145.	Page AT-45, Table A-2, Eicosane	The minimum nondetect value is missing from the table.	**Accept.** All eicosane values were positive detects because eicosane is a tentatively identified compound (TIC). A maximum nondetect value was inadvertently entered in the table. It will be deleted.
146.	Page AT-47, Table A-2, Silver	The maximum nondetect value is greater than the minimum and maximum result. Please enter the correct data for this constituent.	See answer, comment 7.
147.	Page AT-48, Table A-2, Thallium	The minimum and maximum nondetect values are greater than the minimum result. Please provide accurate data or explain discrepancy.	See answer, comment 7.
148.	Page AT-51, Table A-2, Actinium-228	The minimum and maximum nondetect values are greater than the minimum result. Please provide accurate data or explain discrepancy.	See answer, comment 7.
149.	Page AT-52, Table A-2, Uranium-235	The minimum and maximum nondetect values are greater than the minimum result. Please provide accurate data or explain discrepancy.	See answer, comment 7.
150.	Page AT-52, Table A-2, Antimony	The minimum and maximum nondetect values are greater than the minimum result. Please provide accurate data or explain discrepancy.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
151.	Page AT-52, Table A-2, Arsenic	Major discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
152.	Page AT-52, Table A-2, Beryllium	The minimum and maximum nondetect values are greater than the minimum result. Please provide accurate data or explain discrepancy.	See answer, comment 7.
153.	Page AT-52, Table A-2, Boron	The minimum nondetect value is greater than the minimum and maximum results. Please enter the correct data for this constituent.	See answer, comment 7.
154.	Page AT-52, Table A-2, Cadmium	The maximum nondetect value is greater than the minimum and maximum results. Please enter the correct data for this constituent.	See answer, comment 7.
155.	Page AT-52, Table A-2, Lead	Major discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
156.	Page AT-52, Table A-2, Mercury	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
157.	Page AT-52, Table A-2, Selenium	The minimum and maximum nondetect values are greater than the minimum and maximum results. Please enter the correct data for this constituent.	See answer, comment 7.
158.	Page AT-52, Table A-2, Silver	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
159.	Page AT-52, Table A-2, Ammonium ion as N	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
160.	Page AT-53, Table A-2, Chloride	Major discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
161.	Page AT-53, Table A-2, Fluoride	Major discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
162.	Page AT-53, Table A-2, Sulfate	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
163.	Page AT-53, Table A-2, Oil and grease	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
164.	Page AT-56, Table A-2, Diethylphthalate	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
165.	Page AT-57, Table A-2, Europium-155	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
166.	Page AT-57, Table A-2, Thorium-228	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
167.	Page AT-57, Table A-2, Thorium-234	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
168.	Page AT-57, Table A-2, Uranium (mg/kg)	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
169.	Page AT-57, Table A-2, Uranium-235	The maximum nondetect value is greater than the maximum and minimum results. Please enter the correct data for this constituent.	See answer, comment 7.
170.	Page AT-57, Table A-2, Arsenic	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
171.	Page AT-57, Table A-2, Beryllium	The maximum nondetect value is greater than the maximum and minimum results. Please enter the correct data for this constituent.	See answer, comment 7.
172.	Page AT-57, Table A-2, Boron	Major discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
173.	Page AT-57, Table A-2, Cadmium	The maximum nondetect value is greater than the maximum and minimum results. Please enter the correct data for this constituent.	See answer, comment 7.
174.	Page AT-57, Table A-2, Lead	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
175.	Page AT-57, Table A-2, Mercury	The maximum nondetect value is greater than the maximum and minimum results. Please enter the correct data for this constituent.	See answer, comment 7.
176.	Page AT-57, Table A-2, Mercury	Mercury has 72.5 bgs and 147.5 bgs listed for the overall maximum depth. Which value is accurate?	**Accept.** The maximum was found at both depths. The word "and" will be inserted between the two results to indicate this.
177.	Page AT-58, Table A-2, Ammonium as N	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
178.	Page AT-58, Table A-2, Fluoride	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
179.	Page AT-59, Table A-2, Acetone	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
180.	Page AT-59, Table A-2, Methylene chloride	The maximum nondetect value is greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
181.	Page AT-60, Table A-2, Bis(2-ethylhexyl) phthalate	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
182.	Page AT-60, Table A-2, Di-n-butylphthalate	The minimum and maximum nondetect values are greater than the minimum result. Please enter the correct data for this constituent.	See answer, comment 7.
183.	Page AT-61, Table A-2, Tributyl phosphate	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
184.	Page AT-61, Table A-2, Actinium-228	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
185.	Page AT-61, Table A-2, Bismuth-212	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
186.	Page AT-61, Table A-2, Bismuth-214	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
187.	Page AT-62, Table A-2, Lead-212	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
188.	Page AT-62, Table A-2, Lead-214	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
189.	Page AT-62, Table A-2, Neptunium-237	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
190.	Page AT-62, Table A-2, Radium-226	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
191.	Page AT-62, Table A-2, Radium-228	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
192.	Page AT-62, Table A-2, Technetium-99	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
193.	Page AT-62, Table A-2, Thorium-230	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
194.	Page AT-62, Table A-2, Thorium-232	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
195.	Page AT-62, Table A-2, Tin-126	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
196.	Page AT-62, Table A-2, Uranium-235	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
197.	Page AT-62, Table A-2, Antimony	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
198.	Page AT-62, Table A-2, Beryllium	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
199.	Page AT-62, Table A-2, Boron	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
200.	Page AT-62, Table A-2, Lead	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
201.	Page AT-62, Table A-2, Mercury	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
202.	Page AT-63, Table A-2, Chloride	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
203.	Page AT-63, Table A-2, Sulfate	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
204.	Page AT-65, Table A-2, Di-n-butylphthalate	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.
205.	Page AT-66, Table A-2, Total petroleum hydrocarbons-gasoline range	Discrepancies are shown in the nondetect values and results provided for this constituent. Please enter the correct data.	See answer, comment 7.

Comment #	Page, Paragraph	Comment	Proposed Resolution
206.	Appendix B, Page B-5, Section B1.2, 2nd paragraph	Explain the missing sampling and analysis data and how modeling at greater depths was not problematic for hexavalent chromium just because it was below detection limits in the upper samples of 216-A-10 Crib. Discuss solubility of Cr^{+6} and how the modeling took into account how Cr^{+6} moves through the vadose zone.	**Accept.** The text in Section 3.3.2.2 will be edited to include the following information: Through a laboratory error, results for hexavalent chromium were inadvertently omitted for deeper samples from the 216-A-10 Crib. Hexavalent chromium was analyzed for at all other representative 200-PW-2 and 200-PW-4 OU waste sites, at all sampled depths, and was never detected. It was sampled and analyzed for in the 216-A-10 Crib at levels above 197.5 ft and was not detected, with detection limits in the range of 410-468 ug/kg. In the 216-A-10 Crib, total chromium was analyzed at all depths, was fairly uniformly distributed throughout the borehole and was found at a maximum concentration of 13,000 ug/kg. By comparison, the soil concentration of hexavalent chromium protective of groundwater is 18,400 ug/kg. Even if all the total chromium is ascribed to hexavalent chromium, the regulatory limit for protection of groundwater is not exceeded. Although hexavalent chromium is soluble and has a relatively low Kd of 19, the preponderance of evidence is that it is not to be found in any of the representative 200-PW-2 and 200-PW-4 OU waste sites, including deeper levels beneath the 216-A-10 Crib.
207.	Appendix B, Page B-5, Section B1.2, 4th paragraph	Correct PQL from preliminary quantitation limit to **practical** quantitation limit.	Accepted, text will be edited as noted.
208.	Page BT2-12, Interval	List the unit of measurement that is used for bgs. This should be done for all tables in Appendix B.	Accepted, tables will be edited as noted.

Comment #	Page, Paragraph	Comment	Proposed Resolution
209.	Page BT2-30, footnote	List what "JN" represents.	**Accept.** All flags are defined in EPA Contract Laboratory Protocol (CLP) for EPA Functional Data Validation as proceduralized in BHI-01435, *Data Validation Procedure for Chemical Analysis*, Rev. 0, Bechtel Hanford, Inc., Richland, Washington, 2000. The document was recently revised as a HNF procedure. JN is used by the laboratory to flag Tentatively Identified Compounds (TICs) as estimated and indicate that identification is based only on a mass spectral library match as opposed to running calibration curves. This is used because given the thousands of organics, not all compounds can be obtained as standards. The footnote will be edited to indicate: JN - Used by the laboratory to flag Tentatively Identified Compounds (TICs) as estimated.
210.	Page BT3-9, footnote	List what "UE" represents.	**Accept.** See response to 209. The footnote will be edited to indicate: UE – Result was undetected, the given detection limit is estimated because the sample concentration exceeded the highest calibration standard.
211.	Page BT4-29, footnote	List what "JN" represents.	**Accept.** See response to 209.
212.	Page BT4-35 footnote	List what "UR" represents.	**Accept.** See response to 209. UR was applied in one case in which a validation flag was added for hold times that exceeded the requirement by more than a factor of two. In these cases, the sample results are flagged with a "J" if the analyte is detected in the sample. For non-detects, the result is flagged "UR," indicating that the analyte is undetected, and the result should be rejected for use in decision-making. This only applied to SDG H2195 sample B16W84 and was noted in the DQA report. The footnote will be edited to indicate: UR - Hold times exceeded the requirement by more than a factor of two.