Department of Energy
Richland Operations Office
P.O. Box 550
Richland, Washington 99352

08-AMCP-0235

AUG 12 2008

Ms. J. A. Hedges, Program Manager
Nuclear Waste Program
State of Washington
Department of Ecology
3100 Port of Benton
Richland, Washington 99354

RECEIVED
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EDMC

Dear Ms. Hedges:

200-SW-1 NONRADIOACTIVE LANDFILLS AND DUMPS GROUP OPERABLE UNIT AND 200-SW-2 RADIOACTIVE LANDFILLS AND DUMPS GROUP OPERABLE UNIT REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN, DOE/RL-2004-60, DRAFT B

This letter responds to the State of Washington, Department of Ecology's (Ecology) February 8, 2008, comments and provides a path forward for updating the 200-SW-1 Nonradioactive Landfills and Dumps Group Operable Unit and 200-SW-2 Radioactive Landfills and Dumps Group Operable Unit Remedial Investigation/Feasibility Study Work Plan, DOE/RL-2004-60, Draft B, in accordance with Figure 9-1 of the Hanford Federal Facility Agreement and Consent Order (Tri-Party Agreement) Action Plan Section 9.2.1.

The U.S. Department of Energy, Richland Operations Office (RL) has recently completed a series of comment resolution meetings with Ecology to review Ecology's comments on the work plan and reach agreement on the comment dispositions. The attached Review Comment Record includes RL's responses to the comments. RL plans to provide an updated work plan by September 30, 2008, for Ecology's approval.

If there are any questions, please contact me, or your staff may contact Briant Charboneau, of my staff, on (509) 373-6137.

Sincerely,

Matthew S. McCormick, Assistant Manager
for the Central Plateau

AMCP:FMR

Attachment

cc: See Page 2

cc w/attach:
B. A. Austin, FHI
G. Bohnee, NPT
L. Buck, Wanapum
C. E. Cameron, EPA
N. Ceto, EPA
R. H. Engelmann, EFSH
B. H. Ford, FHI
S. Harris, CTUIR
R. Jim, YN
S. L. Leckband, HAB
K. Niles, ODOE
J. F. Ollero, Ecology
R. E. Piippo, FHI
J. B. Price, Ecology
R. Skinnarland, Ecology
J. G. Vance, FFS
Administrative Record
Environmental Portal

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			Unit and 200-SW-2 Radioactive Landfills Operable Unit Remedial Investigation/Feasibility Study Work Plan.			
6.	Executive Summary, page vii.	The DQO process initiated in 2006 is briefly described. Because considerable progress was made on that DQO (i.e., many agreements), it is recommended that all agreements (actual text, lists of COCs, lists of COPCs, meeting notes, etc.) be included in an appendix. This information would benefit the reader in understanding future (i.e., Phase II) objectives that were agreed to during the DQO initiated in 2006. Even if the objectives generated during the 2006 DQO are not adopted ver batum in the Phase II workplan, there is benefit in including them as they provide justification of performing Phase IB (i.e., they highlight the complexity in scope and issues associated with the 200-SW-1 and 200-SW-2 OUs).	It is recommended that all agreements reached during the DQO that was initiated in 2006 be included in an appendix.	R	The agreements and text developed during the Phase II data quality objectives (DQO) process sessions held between September 2006 and February 2007 have been retained in the 200-SW-2 OU project file and will be evaluated during the follow-on Phase II DQO process.	Closed
7.	Page 4-1, Lines 19-21	The text states: "Key decision makers from DOE, Ecology, and EPA participated in the process to develop the characterization approach outlined in the Phase I-B summary report (SGW-33252)." The DQO process which was attended by the 200-SW-1/2 Ecology technical team from October 2006 to February 2007 was for the work that would be completed in Phase II of the site	Until Ecology has the opportunity to review SGW-33252, it is not possible to provide a complete recommended change for this item. Until further notice, only the following edit is necessary: Please provide clarification on what was done to develop the Phase 1B.	A	The text has been revised to reflect the participation of only DOE and FH personnel in the Phase I-B DQO process. The Phase I-B DQO summary report (SGW-33253) has been provided to Ecology.	Closed

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		investigation. The Phase II work was primarily intended to plan intrusive characterization (i.e.; analysis of soil samples). During the Phase II DQO from October 2006 to February 2007, the Ecology team was under the impression that our DQO efforts were being done to support the upcoming work plan (i.e., DOE/RL-2004-60). It was not brought to the attention of the Ecology team that a Phase I-B DQO was going to occur, and that the next issued work plan would be a product of those efforts.				
8.	xxv/line 24	Glossary: Please include the WAC citation for the definition of "Landfill"	Ensure that the definition used for landfill is consistent with the definition in WAC 173-303-040.	A	The current definition of "landfill" in the RI/FS work plan has been replaced with the definition from WAC 173-303-040, "Definitions."	Closed
9.	Page 1-16, line 8	The text states, "There are no indications that the landfills in the 200-SW-2 OU have impacted groundwater." This statement is premature and lacks support. As noted in Chapter 3, groundwater monitoring for the Low Level Waste Management Areas indicates exceedance of statistical parameters in several cases. At this point, the reason for these exceedances has not been determined. This RI will help to determine whether the SW-2 units have contributed to groundwater contamination. Furthermore, many of the LLWMA's lack sufficient monitoring networks to make statistical comparisons.	Remove this statement from the text.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with the *Resource Conservation and Recovery Act of 1976* [RCRA], *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* [CERCLA], and *Atomic Energy Act of 1954* [AEA] requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
10.	1-16; lines 11 to 15	Conflicting statements in lines 11 through 15. Line 11 states "There are no indications that the landfills in the 200-SW-2 OU have impacted	Provide clarification to the conflicting statements.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA	Closed

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		groundwater." Lines 13-15 state "The RI/FS work plan will focus on determining whether highly mobile contaminants or other contaminants with a potential to reach groundwater have migrated into the vadose zone beneath the buried waste."			requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	
11.	Page 2-4, line 28 and else where	"Reportedly, no bulk liquids or free liquids...." Disagree, free liquids were allowed into the burial grounds until the Waste Acceptance Criteria required absorbent in 1970. However, "sloshers" that were buried as late as the late 1980s have been found during retrieval operations. Often paints, laboratory reagents, laboratory sample solutions, etc. were disposed of.	Strike "or free liquids" from sentence.	A	The text has been revised to remove the words "or free liquids" from the discussion on page 2-4. A subsequent search of the remainder of the document yielded no additional instances of "free liquids."	Closed
12.	Sections 2.1.2 and 2.1.3, Section 3.6.3, Appendix E, Sections 4.2 and 4.3.1.2 and Appendix A.	Several burial grounds were established on various past practice waste sites including ash-pits, ditches, and ponds. However, the mention of, history, and level of detail provided for these past practice waste sites are not consistent.	Provide additional information to the burial ground descriptions in these sections, similar to the description provided for the 216-C-9 Pond associated with the 218-C-8 Burial Ground. Also, carry this information forward to impacts on the Conceptual Models in Section 3 and Appendix E and the potential impacts during Phase I-A and I-B characterization (e.g. ash may impact the clarity of GRR data).	A	Descriptions of past-practice waste sites that have been consolidated with 200-SW-2 OU landfills have been added to the landfill description sections in Chapter 2.0. In addition, the text has been revised to point the reader to Table 3-5, which provides additional detail of each consolidated waste site. A reference to Table 3-5 also has been added to the appropriate CSMs in Appendix E.	Closed
13.	Page 2-6, Section 2.1.2.2	This section does not mention the water inflow that occurred within the 218-E-12A and 218-E-12B burial grounds during the mid-1980's (see document	Please include this information in the text and update the conceptual site models for the 218-E-12A	A	The following or similar text has been added to Section 2.1.2.2, and a summary of this information has been added to the 218-E-12B Burial Ground CSM:	Closed

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		SD-WM-TI-260, "Water Inflow Investigation at the 218-E-12A and 218-E-12B Burial Grounds"). This information provides important historical information on flooding, contamination, and geology.	and 218-E-12B burial grounds accordingly.		"In 1986, water inflow was observed in unfilled burial Trench 36 in the 218-E-12B landfill. The source of water was seepage from the nearby 216-B-2-3 Ditch flowing about 200 ft south of the landfill. The 216-B-2-3 Ditch conveyed water roughly 4,000 ft from the 207-B Retention Basins to a diversion structure capable of routing the water to either B Pond or Gable Mountain Pond at the time. The ditch and pond system has been decommissioned. An investigation into the incident was conducted and documented in 1986 (SD-WM-TI-260, *Water Inflow Investigation at the 218-E-12A and 218-E-12B Burial Grounds*). Interim actions were taken to remove vegetation and debris restricting flow in the ditch, and adding bentonite clay to minimize seepage of water from the ditch. The ditch eventually was replaced with a pipeline and currently is out of service. A number of investigation trenches and wells were used from Trenches 28 to 37 to demonstrate that it is likely that water inflow occurred only in the southern-most portion of Trench 37. Groundwater-monitoring data in the general vicinity of Trench 37 were reviewed and showed no detectable increases in monitored mobile radioactive constituents over the past few years before the 1986 incident and subsequent investigation. The following or similar text has been added to Section 2.1.3.10, and a summary of this information has been added to the	

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					218-E-12A Burial Ground CSM: "In 1986, water inflow was observed in unfilled burial Trench 36 in the 218-E-12B Landfill. The source of water was seepage from the nearby 216-B-2-3 Ditch flowing about 200 ft south of the landfill. The 216-B-2-3 Ditch conveyed water roughly 4,000 ft from the 207-B Retention Basins to a diversion structure capable of routing the water to either B Pond or Gable Mountain Pond at the time. The ditch and pond system has been decommissioned. An investigation into the incident was conducted and documented in 1986 (SD-WM-TI-260, *Water Inflow Investigation at the 218-E-12A and 218-E-12B Burial Grounds*). Interim actions were taken to remove vegetation and debris restricting flow in the ditch, and adding bentonite clay to minimize seepage of water from the ditch. The ditch eventually was replaced with a pipeline and currently is out of service. A number of investigation trenches and wells were used from Trenches 28 to 37 to demonstrate that it is likely that water inflow occurred only in the southern-most portion of Trench 37. Groundwater-monitoring data in the general vicinity of Trench 37 were reviewed and showed no detectable increases in monitored mobile radioactive constituents over the past few years prior to the 1986 incident and subsequent investigation. Potential water inflow from the 216-B-2-3	

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					Ditch into the 218-E-12A Burial Ground also was investigated by excavating trenches and drilling boreholes. The 218-E-12A Burial Ground is topographically higher than the 216-B-2-3 Ditch. Furthermore, the 216-B-2-3 Ditch previously had been treated with bentonite clay adjacent to the 218-E-12A Burial Ground, restricting seepage from the ditch. Finally, no saturated sediments were encountered during the investigation of the 218-E-12A Burial Ground. It was concluded that no water inflow occurred above the bottom of trenches in the 218-E-12A Burial Ground."	
14.	Page 2-11, line 34	"Despite the volume of water observed during the flood, there has been no impact on groundwater….." Sampling has not been conducted to support or refute this statement.	Strike this statement.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
15.	Page 2-11, line 41 and else where	"…including opportunistic sampling, as appropriate."	Define "as appropriate". Provide information regarding how and when sampling by the SW-2 Project will be conducted during M-91 retrieval operations.	A	The two paragraphs beginning on page 2-11, line 37, and page 2-12, line 1 have been deleted because they are remnants from the Draft A RI/FS work plan and are out-of-date. Text in Sections 4.5.1 and 6.0 that includes the wording "opportunistic sampling" has been revised to elaborate on characterization data to be obtained as follows, "Through close coordination with the TRU Waste Retrieval Project, opportunistic characterization data/information has been collected for potential use in the 200-SW-2 OU RI/FS process. Examples of characterization information include summary information regarding containers removed, non-RSW left in the trench,	Closed

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					radiation survey data, post-retrieval information (i.e., steps 1, 2, and 3 SAP results), industrial hygiene survey data, photographs, global positioning system coordinates, as-left/stabilized conditions, and soil moved into/out of trenches."	
16.	Page 2-13	Based on previous discussions during the DQO development in 2006, the 218-C-9 Burial Ground is the best documented burial ground. However, there is no in depth description of the SWITS data or mention of other supporting (D&D) documents for this site.	Add additional information.	A	The following or similar text has been added to this section, "There are a total of 724 burial records for the use of the 218-C-9 Burial Ground. This is believed to encompass all of the burials that took place at the 218-C-9 Burial Ground. Each burial record, at a minimum, contains container weight, container volume, generating company, source facility, total radionuclide activity, a component description, and location (northing and westing coordinates). Additional information may be available in specific records that include such things as a more detailed description of waste form, and specific radionuclide activities."	Closed
17.	Page 2-13 and Appendix A	For the 218-C-9 Burial Ground, no definitive basis for excluding passive gas monitoring in Phase I-B.	Provide a definitive basis or add passive soil gas monitoring for the 218-C-9 Burial Ground.	A	The following or similar text has been added to Section 4.2, "Characterization Approach," "In a review of the records for the 218-C-9 Burial Ground, there were no indications of liquid- bearing waste, or of large containers capable of holding significant quantities of liquid. The geophysical investigation performed for this site (D&D-28379) showed the entire area had a higher-than-normal terrain conductivity (due to fly ash) for most of the site and only identified a few small, shallow pieces of ferrous debris. The site does not appear to contain large, continuous concentrations of buried metallic debris. There is no indicated need to perform passive soil-gas sampling at this time."	Closed

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18.	Page 2-13, line 37	The text mentions "UPR-200-E-37" and "UPR-200-E-98". Previous information provided to Ecology (D&D-27257) indicates contaminated soil from "UN-216-E-37" and "UN-216-E-39".	Please check the numbers for these unplanned releases and clarify in the text.	A	The sites (UN-216-E-37 and UN-216-E-39) listed in D&D-27257, *Data Quality Objectives Summary Report for Nonintrusive Characterization of Bin 3A and Bin 3B Waste Sites in the 200-SW-1 and 200-SW-1 Operable Unit*) were included in error because they do not exist.	Closed
19.	Page 2-17, line 3 and Appendix A	"The location and number of trenches in this landfill are not known." GPR was completed for this site; however, additional surveys are needed to focus the intrusive sampling effort adequately.	Add additional GPR surveys to Phase I-B to better identify the location and number of trenches, or at least the location of burials made for this burial ground.	R	Additional geophysical surveys are not necessary. The sentence "Exact trench locations are not known" is an outdated statement and has been deleted from the text. D&D-28379, Rev. 1, states "Interpretation of the geophysical data for the 218-E-5A Burial Ground indicates that it is an oblong-shape trench or pit containing a significant amount of metallic debris or objects. The location correlates well with the location shown on Hanford Site Drawing H-2-55534." This interpretation was based on GPR as well as EMI and TMF surveys. The geophysical data presented in D&D-28379 can be used to focus future intrusive sampling.	Closed
20.	Page 2-17 and Appendix A	No passive gas monitoring is planned for the 218-E-9 Burial Ground and buried equipment came from the Uranium Recovery Process.	Provide a definitive basis or add passive soil gas monitoring for the 218-E-9 Burial Ground.	A	Text has been added to Section 4.2, "Characterization Approach," to explain that geophysical investigations will be performed on the 218-E-9 Burial Ground during Phase I-B. The need for passive soil-gas monitoring will be evaluated after Phase I-B characterization activities are performed.	Closed
21.	Page 2-18, Section 2.1.3.10	This section does not mention the water inflow that occurred within the 218-E-12A and 218-E-12B burial grounds during the mid-1980's (see document SD-WM-TI-260, "Water Inflow Investigation at the 218-E-12A and 218-E-12B Burial Grounds"). This information provides important historical information on flooding, contamination,	Please include this information in the text and update the conceptual site models for the 218-E-12A and 218-E-12B burial grounds accordingly.	A	This appears to be a duplicate comment. Please see response to Comment #13.	Closed

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		and geology.				
22.	Page 2-18, Section 2.1.3.11	This section does not indicate the "legacy contamination" (i.e. contaminated vegetation, feces, anthills, etc) historically present at the 218-E-12A burial ground as documented in a number of environmental reports (e.g. RL-PHMC-CENTPLAT-205-0013, "Legacy Contamination in Area 218-E-12A Burial Ground).	Please include this information in the text and update the conceptual site model for the 218-E-12A burial ground accordingly.	A	Additional environmental and occurrence reports were located and reviewed. Based on this review, the text and CSM have been revised to add additional legacy contamination events documented in these reports.	Closed
23.	Page 2-22, line 20	"...6 to 8 vertical pipe units or dry wells." Incorrect, dry wells infer disposal of bulk liquids at the Hanford 200 Areas.	Strike "dry wells" and replace with "caissons".	A	The text has been revised as requested.	Closed
24.	Page 2-22	No passive gas monitoring is planned for the 218-W-4A Burial Ground and buried waste came from the PFP Complex, specifically RECUPLEX.	Add passive soil gas monitoring for the 218-W-4A Burial Ground.	A	Text has been added to Section 4.2, "Characterization Approach," to explain that geophysical investigations will be performed on the 218-W-4A Burial Ground during Phase I-B. Passive vapor monitoring will be performed based on geophysical surveys and other process knowledge.	Closed
25.	Page 2-36, line 21	The text states, "There is no evidence to suggest that the LLWMA-3 landfills have contributed to the regional groundwater-contaminant plumes." At this time, there is also insufficient evidence to eliminate the landfills as a contributing source to groundwater contamination. The monitoring network is deficient resulting in the suspension of statistical comparisons.	Eliminate this sentence from the text.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
26.	Page 2-42, line 20	The text states, "There is no evidence to suggest that the LLWMA-2 landfills have contributed to the groundwater-contaminant plumes." At this time, there is also insufficient evidence to eliminate the landfills as a contributing source to groundwater contamination.	Eliminate this sentence from the text.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better	Closed

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		Specific conductance has been increasing in these wells for several years and the monitoring network is deficient.			suited for the RI/FS report.	
27.	Page 2-44, line 2	The text states, "There is no evidence to suggest that the LLWMA-2 landfills have contributed to the groundwater-contaminant plumes." At this time, there is also insufficient evidence to eliminate the landfills as a contributing source to groundwater contamination. Specific conductance has been increasing in these wells for several years and the monitoring network is deficient.	Eliminate this sentence from the text.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
28.	Page 2-46, line 7	The text states, "Only the "rejected" sites do not require further documentation." It is not clear why "no action" sites would require further documentation, but "rejected" sites would not. Under the TPA-MP-14 process, a site is reclassified as "no action" if quantitative data exist to support a reclassification. A site is reclassified as "rejected" if qualitative information (i.e. historical) exists to support a reclassification. If a site is classified as either "no-action" or "rejected" it was an "accepted" waste site and therefore both would appear to require further documentation.	Consult the TPA-MP-14 process for guidance and accordingly correct or clarify the text.	A	The following text has been deleted from the document, "Note that although sites may be classified as "No-Action" or "Consolidated," these sites must be carried through completion of the RI/FS process. "No-Action" sites need to be included in the RI/FS documentation with an explanation included as to why the sites do not require action. "Consolidated" sites need to be included in the RI/FS documentation and need to be taken into consideration during the selection of the preferred alternative, remedial decision, or action. Only the "Rejected" sites do not require further documentation."	Closed
29.	Page 2-46, Section 2.2.4.1 and Figure 2-14	Several 200 Area Processes and Operations were excluded from this discussion.	Add additional information for Sr/Cs Recover, Scavenging, URP, X-Plant Complex processes, D&D and tank farm operations.	A	Bullets have been added to this section to capture the additional 200 Area processes listed in the comment.	Closed
30.	Figure 2-14	The U-Plant Bar incorrectly identifies BiPO4/UO3.	Modify the U-Plant Bar to read URP/UO3.	A	The figure has been revised to replace "BiPO4" with "URP."	Closed

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31.	Section 2.2.6, Page 2-53, lines 19-21.	The portion of the sentence stating "while LLW continued to be disposed of in unlined burial trenches" is unclear. It is not understood if LLW continued to be disposed of in unlined portions of TSD-unit landfills or if the words mean that LLW continued to be disposed of in non-TSD-unit landfills.	Please clarify.	A	The text has been revised as follows, "In the mid-1990s disposal of MLLW took place in the lined trenches of the LLBG in the 200 West Area, while LLW continued to be disposed of in unlined burial trenches."	Closed
32.	Page 2-53, Table 2-1	No packaging practices are listed for years pre 1967 and post 1987.	Provide this information.	A	Based on WHC-EP-0845, *Solid Waste Management History of the Hanford Site*, the following text has been added to Table 2-1, "Before the late sixties, there were no state regulations on the packaging of waste for burial at the Hanford Site. Waste was disposed in accordance with Federal requirements (AEA). There were attempts to package waste to minimize personnel exposure and prevent the spread of uncontained radioactivity to the environment; however, these were not set guidelines and were done at the discretion of the generator (WHC-EP-0845). Waste packaging practices during the 1940s, 1950s, and early 1960s depended primarily on the size and type of waste being packaged. Small materials consisting mainly of dry waste generally were placed in small cardboard containers, which then were placed in larger cardboard cartons for burial. Equipment generally was buried in wooden boxes." Post-1987 packaging practices have been added to Table 2-1 based on HNF-EP-0063, *Hanford Site Solid Waste Acceptance Criteria.*	Closed

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33.	Page 2-53 thru page 2-68	Several errors and discrepancies exist regarding disposal practices, scope, schedule, task, activities, interpretation of SWITS data, and outdated information, etc. associated with the M-91 Project.	Route these sections for review and modification to M-91 Project personnel and USDOE counter part.	A	The historical disposal practices sections have been revised and realigned for clarity. In addition, language from the M-091 Project Execution Plan (PEP) and Project Management Plan (PMP) has been incorporated into the appropriate sections of the document. M-091 Program personnel (including DOE) will review new sections.	Closed
34.	Page 2-57, line 37	"This waste did not contain TRU radionuclide and ....." Incorrect statement. Remote handled TRU wastes that have high levels of beta and gamma radiation does exist within the burial grounds.	Delete this statement.	A	The text has been revised as follows, "This waste typically included failed equipment from processing plants, tank farm operations, and other activities."	Closed
35.	Section 2.2.5.2, Page 2-50, 2nd paragraph.	The text needs to describe and differentiate between "pre-1970 suspect TRU waste" and "post-1970 suspect TRU waste". Also, it is recommended that definition of TRU waste in the glossary (page xxvi) include the two terms in context to TRU waste management practices at Hanford.		A	Language from the M-091 Program PEP and PMP has been incorporated into the discussions of suspect-TRU and TRU waste, because these documents represent the latest definitions of these waste types.	Closed
36.	Section 2.2.5.2, Page 2-53, 1st paragraph, lines 5-7.	The paragraph is silent on whether the retrieved wastes were accurately described and/or designated. If this information is available, it is requested that it be added.		A	Information regarding waste form and designation of retrieved suspect TRU waste is being captured by the M-091 Program and will be evaluated by the 200-SW-2 OU Project for applicability and potential incorporation into the 200-SW-2 OU RI report. Please also see response to Comment #15.	Closed
37.	Section 2.2.6.4.2, Page 2-60, lines 7-17.	The section uses the term "class B poison". However, the glossary (page xxv) does not include a definition.	Please include a definition for the term.	A	A definition for Class B Poison has been added to the glossary.	Closed
38.	Section 2.2.11,	The sentence states: "No landfill trenches currently are operating within	It is recommended that the text describe certain landfills	A	The text has been revised as follows, "No landfill trenches within the scope of the	Closed

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	Page 2-68, lines 3-4.	the scope of the 200-SW-1 and 200-SW-2 OU landfills." In context of RCRA, the word "operating" is problematic. The TSD-unit landfills may be described to be "active", "operating", "storing", etc.	in the operable unit as not currently accepting wastes. Alternatively, the TSD-unit landfills (all trenches) may be described as being "active", "where storage is currently conducted", etc.		200-SW-1 and 200-SW-2 OU Project currently are accepting waste for disposal. However, as noted earlier in Section 1.4, and in the following two paragraphs, three trenches within two 200-SW-2 OU landfills currently are available to receive waste for disposal, and these trenches are out of scope for this RI/FS work plan."	
39.	Section 2.2.11, Page 2-68, line 12.	In relation to trenches 31 and 34, the sentence states: "Permitted treatment activities in these two trenches are being considered." As the Part A permit for the LLWMAs defines the units (i.e., boundaries, etc.), "permitted activities" (which includes storage, closure, corrective actions, etc.) are being considered for the entire LLWMA units.	The sentence should be re-written to clarify Ecology's intent to permit the entire units.	A	The sentence has been revised as follows, "Permitted in-trench treatment activities for Trenches 31 and 34 also are being considered."	Closed
40.	Section 2.2.11, Page 2-68, lines 20-22.	The sentence states: "Trench 94 is part of a TSD unit landfill and is out of the scope of this RI/FS work plan, because the trench will be used beyond the timeframe (2024) that the Tri-Party Agreement specifies for remediation of the 200-SW-2 OU." The word "used" is problematic as all trenches in the 200-SW-2 OU, if not remediated, will be "used" for storage or disposal.	It is recommended that the words "continue to accept waste" be used en lieu of "be used".	A	The text has been revised to replace "be used" with "continue to accept waste."	Closed
41.	3-1, lines 26, 28, 31	Missing document titles	Provide document titles	A	The titles for the documents listed have been added to the text and reference section of the RI/FS work plan.	Closed
42.	Page 3-3, Section 3.1.2, last paragraph.	The last paragraph describes landfill maintenance requirements, operations, and practices. Inspection records indicate that prior to landfill cover, containers were exposed to the elements for time periods allowing container and labeling/marking degradation. In addition, after a snow event last year, LLBG containers were	Include additional description of landfill maintenance and operations practices that provides the reader an understanding of full range of operations and practices.	A	A reference to Section 3.4.3, which describes operations and maintenance practices, has been added to Section 3.1.2.	Closed

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		noted to be sitting in standing snow melt. The paragraph's description of landfill maintenance, requirements, operations, and practices doesn't provide a description that allows the reader to understand the full range of maintenance issues, operations, and practices.				
43.	Page 3-13, Lines 15-18.	The text identifies the basis of binning as: "current knowledge and similarity of waste types, locations, and burial configurations." It is noted that the collaborative workshop agreement (March 30, 2005) numbers 2 and 3 identify 4 categories and high stakeholder interest in Bin 3B. From the text, it is unclear if the binning has been changed.	Include sufficient description of collaborative workshop agreement and Phase IB workplan binning approach to allow reader to understand if the binning approach has been changed. If the binning approach has been changed from that which was agreed to during the collaborative workshops, include the basis for the change.	A	The basis for changing the binning approach has been added to the text, as follows, "Because the original Bin 1 and 2 sites have since been reclassified to "Rejected" status in WIDS or transferred to other OUs, the original Bin 3A and 3B sites were re-binned into several new categories to aid in optimizing the characterization approach for each set (bin) of sites." See Table 3-1 for a crosswalk listing all 200-SW-1 and 200-SW-2 OU waste sites.	Closed
44.	Page 3-13, Line 19 and page 3-14, Lines 3 and 4.	On page 3-13, it is indicated that the binning approach provides the basis for remedial investigations. On page 3-14, it is indicated that the binning/grouping is for remediation.	The document should consistently identify the binning approaches used to support characterization and remedial investigation.	A	The text has been revised for consistency. See Table 3-1 for a crosswalk listing all 200-SW-1 and 200-SW-2 OU waste sites.	Closed
45.	Page 3-14, line 1	The text states, "The DQO process for the 200-SW-2 OU established a binning procedure to group the sites into categories for remediation, based on the current state of knowledge for these sites." This text implies the same remedy for sites within a bin. However, these sites were binned based on historical information that remains to be verified during the RI.	Change text, "The DQO process for the 200-SW-2 OU established a binning procedure to group the sites into categories for ~~remediation~~ characterization, based on the current state of knowledge for these sites."	A	The text has been revised as requested.	Closed
46.	Page 3-15, lines 15 to 17	"These are sites for…but some questions remain."	Strike this statement.	A	The text has been revised as requested.	Closed

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		This statement is confusing as not all burial grounds listed contain unused portions.				
47.	Page 3-17, line 5	The text discusses four burial grounds that experienced flooding events. It is unclear which burial grounds are included in this category.	Add text to indicate the four burial grounds that experienced flooding.	A	The four landfills that experienced flooding events, based on historical documentation, have been listed in the text.	Closed
48.	Page 3-17, line 34	The text states that of the anions analyzed by this study, the maximum concentration detected in soil samples was 130 mg/kg for sulfate. The text also states, "All other anions either were not detected or were detected at values below 130 mg/kg." This statement is not meaningful as the soil concentration for protection of groundwater (soil clean-up level) is much lower than 130 mg/kg for several anions (e.g. nitrate, fluoride).	Clarify this information in the text.	A	The current text has been revised as follows, "Of the anions analyzed in soil samples collected during the drilling of LLBG boreholes, the highest value was associated with sulfate. Sulfate was detected at 130 ppm in soil samples collected during the drilling of borehole 299-W7-7 on the north side of LLWMA-3. Based on current soil cleanup levels that are protective of groundwater (i.e., *Ecology's Cleanup Level and Risk Calculation* [CLARC] database), sulfate has a value of 1030 ppm. The highest value for nitrate was 38.5 ppm in soil samples collected during the drilling of borehole 299-W15-21 associated with LLWMA-4. Nitrate has a CLARC value of 40 ppm. The highest value for fluoride was 3.2 ppm in soil samples collected during the drilling of borehole 299-W15-20 at the northwest corner of LLWMA-4. Fluoride has a CLARC value of 24.1 ppm. The highest value for chloride was 23.3 ppm in soil samples collected from the drilling of borehole 299-W7-8 at the northeast corner of LLWMA-3. Chloride has a CLARC value of 1000 ppm. Other anions analyzed (e.g., phosphate, bromide) are either not regulated or were detected in concentrations at or below the detection limits of the analytical method. It is recognized that the requirements and procedures for establishing actual cleanup levels that are protective of	Closed

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					human health and the environment are specified in WAC 173-340, "Model Toxics Control Act -- Cleanup," and the use of CLARC values alone may not be sufficient to establish cleanup levels under the regulation."	
49.	Page 3-42, lines 26-27	Text is out of date.	Please revise to reflect as follows: "Notice of Deficiency workshops have commenced and all Notice of Deficiencies have been closed."	A	The text has been revised to state "Notice of Deficiency workshops have commenced and all Notice of Deficiencies have been closed."	Closed
50.	Page 3.-43, line 31	The text states, "The exceedances are related to a regional nitrate plume and not LLWMA-1." This statement lacks basis. This RI remains to determine whether the burial grounds have contributed to groundwater contamination.	Remove this statement from the text.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
51.	Page 3-49, line 16	The text states, "RCRA monitoring provides no evidence that LLWMA-4 has contaminated the groundwater." This statement lacks basis. This RI remains to determine whether the burial grounds have contributed to groundwater contamination.	Remove this statement from the text.	A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
52.	Page 3-49, Section 3.5.5.3.	Health & Physics technicians collect data from "exhaling" groundwater monitoring wells after barometric pressure changes. It is recommended that this data be obtained and described in the workplan in relation to CCl4 and LLWMAs 3 and 4.		R	Industrial hygiene (IH) data collected for volatile organic compounds (VOC) emanating from groundwater-monitoring wells are nonroutine and primarily are used to address personnel safety concerns during groundwater-sampling operations, and are of limited use due to their lack of specificity. Furthermore, the applicability of VOC data emanating from groundwater-monitoring wells to 200-SW-2 OU landfills is confounded	Closed

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					by the presence of regional VOC groundwater plumes and the current lack of vadose-zone characterization information for 200-SW-2 OU landfills that will be collected in subsequent phases of site characterization. There currently is no requirement for routine IH monitoring and/or sampling of VOCs at groundwater-monitoring wells in the 200 Areas. IH monitoring and/or sampling for VOCs may be performed as an initial exposure determination, as part of non-routine monitoring, in response to employee concerns, or as determined by the IH technician. When it is determined that IH monitoring is appropriate, a photoionization detector (PID) typically is used to provide an indication of VOC concentrations at the wellhead. The PID provides an indication of total VOC concentrations and is not VOC-specific. If a high PID reading occurs at the wellhead, then an air sample may be collected and sent to the laboratory for analysis. However, because the analytical turnaround times can be several weeks, the well normally is allowed to breathe until VOC concentrations at the wellhead (as measured by the PID) are acceptable. Wellhead readings that are below applicable exposure limits suggest that personnel breathing zone exposures, further from the wellhead, will be the same or lower because of mixing and dilution in the atmosphere. Considerations for wellhead monitoring may include any of the following: (1) experience with the patterns of detection of organic vapors (if any) at the groundwater-monitoring well or at other work sites, (2) notice of barometric	

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					pressure changes that may influence the presence (if any) of organic vapors, (3) planned or unforeseen changes in the work, or (4) employee requests to evaluate the workspace.	
53.	Page 3-53, line 20	This section indicates that COPC's for phase II are currently under development. It is unclear why these are being developed at this point, since COPC development occurred collaboratively during Ecology's participation in the DQO effort.	Please provide clarity on this issue.	A	The text has been revised to state that the COPCs developed for the Phase I-B DQO can be found in Table 3-7. The COPC lists developed during the collaborative DQO meetings held from September 2006 through February 2007 will be evaluated during the Phase II DQO process for applicability.	Closed
54.	Page 3-53, Section 3.6.2	The COPCs/COCs have been developed.	Strike "is currently under development" and replace with "was developed during the Phase II DQO process in 2006..." Also, add after the last bullet, "However, it is feasible to utilize a method based approach. This approach was also used for Tank Farm investigation efforts."	R	The COPC list developed for the Phase I-B DQO can be found in Table 3-7 of the RI/FS work plan. The COPC lists developed during the collaborative DQO meetings held from September 2006 through February 2007 will be evaluated during the Phase II DQO process for applicability. The fundamental basis used during the collaborative DQO meetings held from September 2006 through February 2007 established a method-based approach for analysis for Phase II. Please also see response to Comment #177.	Closed
55.	Page 3-54, Table 3-6	The text in the table states that the COPCs include gamma-emitting radionuclides that may be detected by rad surveys from within the caissons. The list of COPC's does not appear to include radionuclides that may be detected via the proposed borehole geophysical methods (spectral gamma, passive-neutron).	Please include a comprehensive list of COPC's detectable by spectral-gamma and passive-neutron geophysical methods.	A	The table has been revised to include a comprehensive list of COPC radionuclides that may be detected by radiological surveys within the caissons or geophysical methods within existing monitoring wells or direct push boreholes.	Closed
56.	Page 3-55,	This sentence infers significant difficulty	Strike the first sentence or	A	The first sentence on line 5, page 3-55 has	Closed

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	line 5	to excavate and treat portions of the burial grounds. These comments should be reserved for the FS once the data has been collected and reported.	add "However, leaving highly contaminated wastes could prove significant risks to future generations, even with land restrictions and barriers.		been deleted as requested.	
57.	Page 3-56, line 31	Regarding the development of the CSM's, the text states that "Identification and prioritization of these primary Hanford Site features, events, and processes (FEPs) was generated through a series of meetings held with representatives of the DQO team and other technical experts." Ecology cannot adequately review the CSM's and work plan without understanding the rationale behind the prioritization and analysis of the FEPs.	Please provide this rationale within the text or provide the document that contains the rationale.	A	The requested information can be found in the document referenced in this section (SGW-34462), which was provided to Ecology on December 6, 2007.	Closed
58.	Page 3-56, line 37	"Based on a consensus of professional judgments"… What were the bases of the judgments, who made the determinations and how was this effort documented.	Ecology did not participate in this conceptual site model development process. Provide the data, bases, judgments, documentation, etc. for this effort for review.	A	The requested information can be found in the document referenced in this section (SGW-34462) which was provided to Ecology on December 6, 2007.	Closed
59.	Section 4.0	Ecology is currently developing the WAC 173-303-840(2)(f) statement of basis to permit NRDWL. The statement of basis "will briefly set forth the principal facts and the significant factual, legal, methodological, and policy questions considered in preparing the draft permit." One of those principal facts is the results of the limited scope soil gas survey completed at NRDWL in 1997. That survey identified high concentrations of carbon tetrachloride and chloroform. DOE did not refute the need to collect additional data. Rather, in 1998 DOE deferred	Include a discussion in Section 4.0 regarding the sampling needs for NRDWL (i.e. soil gas survey).	A	The text in Chapter 4.0 has been modified as follows, "This chapter presents an overview of the approach that is planned to conduct additional investigations of the 200-SW-2 OU. ~~The 200-SW-1 OU landfills are not included in this chapter, because no further characterization of these sites is planned at this time. Additional characterization likely will be required in support of the cover design during the post-ROD phase. These landfills are proposed to undergo closure as described in Chapter 5.0 of this RI/FS work plan.~~ The 200-SW-1 OU landfills (i.e., Nonradioactive Dangerous Waste Landfill [NRDWL] and Solid Waste Landfill [SWL])	Closed

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		collection of additional data at that time, citing higher priorities at other 200 Area waste sites. Ecology anticipates that the draft permit conditions for the NRDWL will include a requirement to complete the soil gas survey at NRDWL that DOE deferred from 1998. Therefore, DOE should add the necessary soil gas survey to the scope of this RI/FS work plan.			are not included in this chapter because any needed characterization will be addressed in the respective closure plan(s) as described in Chapter 5.0. In addition, the following text has been added to Section 5.2.1, "In 1997, limited soil-gas surveys were completed at NRDWL (BHI-01115, *Evaluation of the Soil Gas Survey at the Nonradioactive Dangerous Waste Landfill*). These surveys identified elevated levels of carbon tetrachloride and chloroform. The need for any additional soil-gas sampling will not be addressed in this work plan, but rather within the updated closure plans to be developed for NRDWL and SWL."	
60.	Page 4-1, Lines 30-31	The text states that an objective for the 200-SW-2 OU DQO process incorporated into the RI/FS work plan approach includes the following. "Develop preliminary conceptual site models that reflect the physical characteristics of the landfills and the anticipated distribution of contaminants known to date...." The conceptual site models (CSMs) should not only reflect the contaminants known to date. The CSMs should employ a method-based analytical approach that will enable the determination of known contaminants as well as additional contaminants that may not be in the historical site records.	Please correct the text to read as follows: "Develop preliminary conceptual site models that reflect the physical characteristics of the landfills and the anticipated distribution of contaminants ~~known to date~~...."	A	The text has been revised as requested.	Closed
61.	Page 4-1, line 19	The text states, "Key decision makers from DOE, Ecology, and EPA participated in the...Phase I-B DQO	Clarify in the text.	A	The text has been revised to reflect the participation of DOE and Fluor Hanford (FH) personnel in the Phase I-B DQO process.	Closed

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		summary report." This is inaccurate. Ecology did not participate in the Phase I-B DQO. Ecology's participation was for the intrusive phase, Phase II.			Concerns expressed by Ecology, EPA, and the Tribes during previous DQO interviews and collaborative DQO sessions have been considered in the development of the Phase I-B DQO and will be further considered during the Phase II DQO.	
62.	Page 4-1	No data was captured from the Phase II DQO process that occurred in 2006.	Add this information or a placeholder for it.	R	Agreements and text developed during the collaborative DQO sessions held between September 2006 and February 2007 have been retained in the 200-SW-2 OU Project files for future consideration.	Closed
63.	Page 4-2, line 1	The text indicates that the reason for binning waste sites was for characterization and remedial-action decisions. This text implies the same remedy for sites within a bin. However, these sites were binned based on historical information that remains to be verified during the RI.	Please remove text that indicates that binning supports remediation.	A	The text has been revised to remove language that indicates that the binning process supports remediation.	Closed
64.	Page 4-2	There is no mention of the PSQs or DQOs for the Phase I-A or I-B investigation.	Add this information.	A	References to the Phase I-A and I-B DQO summary reports have been added to this section. PSQs and DQOs are addressed in these documents. Please also see response to Comment #88.	Closed
65.	Page 4-2, line 18	The text indicates that the results of the non-intrusive investigation will determine the "need for, and extent of, further intrusive investigation". This statement fails to acknowledge the limitations of the methods used for the non-intrusive investigation. The non-intrusive investigation largely provides qualitative information only and should not be used as a basis to eliminate intrusive characterization. Intrusive characterization will be necessary to verify the results of the non-intrusive	Change text, "The results…will provide a basis for determining the ~~need for, and extent of, further~~ focus of intrusive investigation."	A	The text has been revised as requested.	Closed

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		surveys. The only case that might be made for eliminating intrusive investigation based on the non-intrusive investigation is very good historical information indicating that a trench is unused, supported by high-quality surface geophysical evidence.				
66.	Page 4-3, Lines 19-20	The text states the following: "The 200-SW-2 OU landfills may contain many different radioactive and hazardous chemical constituents; therefore, it is important to screen COPCs for risk assessments" This statement is inaccurate. Contaminants of potential concern are not screened for risk assessments. Instead, COPCs are screened during the risk assessment process. Therefore, testing should be done for all possible contaminants, and when the data enters the risk assessment process, specific contaminants may be screened out from further consideration based on a variety of criteria.	Please correct the text to read as follows: "The 200-SW-2 OU landfills may contain many different radioactive and hazardous chemical constituents.~~;~~ ~~therefore, it is important to screen COPCs for risk assessments~~ Specific COPCs may be screened during the risk assessment process."	A	The text has been revised as requested.	Closed
67.	Pages 4-3, Lines 4-5	The logic that primary COPCs will be identified, a subset chosen and further screening before any risk assessments are completed is not appropriate and limits the type of data that will be collected in Phase II.	Remove this logic from the bullets listed and strike the paragraph that begins on line 9.	A	The logic has been removed from the bullets, and the paragraph deleted as requested.	Closed
68.	Page 4-3	It is not clearly defined how the data collected in Phase I-A and I-B will be utilized to focus the efforts for Phase II investigation efforts.	Add more information to resolve.	A	Additional information has been added to Section 4.1.1 to explain how Phase I-A and Phase I-B characterization results will be used to more accurately position intrusive characterization methods to be used in Phases II and III, as follows: "The	Closed

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					geophysical methods (i.e., EMI, total magnetic field, and GPR) used during Phase I-A and planned in Phase I-B investigations are recognized industry standards and provide necessary levels of site interrogation to approximate the surface area and depth of buried wastes. Additionally, the geophysical methods can differentiate between metallic and nonmetallic materials, giving some indication of the type of waste buried at a location and the potential for containers that may hold organic liquids. Passive soil-gas samplers can provide information to aid in focusing future-phase active or intrusive soil-gas samples. Direct pushes can provide data regarding site stratigraphy that can be used to focus soil samples on areas of potential contaminant holdup. Data collected from geophysical investigations, passive soil-gas surveys, and direct pushes will be used to guide future intrusive characterization activities to understand the physical, chemical, and radiological nature of the waste and the extent of subsurface contamination."	
69.	Page 4-4	No basis is provided to determine the "adequate number of survey points…to ensure that the site is characterized sufficiently to support a basis for decisions (relating to Phase II investigations).	Provide this basis.	A	The text has been revised to delete the following sentence, "An adequate number of survey points will be established based on an evaluation of site-specific conditions to ensure that the site is characterized sufficiently to support a basis for decisions." As discussed in Section 4.1.4, Phase I-B activities will collect screening data to provide an overview of site conditions and direction for future-phase site characterization activities. A biased characterization approach is being used during Phase I-B based on existing	Closed

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					information (i.e., process knowledge, existing characterization data, and expected behavior of contaminants). The number and location of data collection points during Phase I-B are presented in the SAP (Appendix A). This comment appears to be in reference to page 4-6, rather than page 4-4.	
70.	Page 4-4, line 29	The text states that the results of the non-intrusive investigation will be used to "refine current information associated with the nature and extent of radiological and non-radiological contamination, support an initial evaluation of potential human-health risks, assist in the evaluation and selection of a remedial alternative(s), and help focus future intrusive site-investigation activities during the subsequent phase". Due to the limitations of the non-intrusive survey equipment, even a preliminary evaluation of the potential human health risks will be difficult after Phase I-B. Similarly, the non-intrusive investigation results should not be used to narrow down the selection of remedial alternatives, with very limited exceptions.	Change text, "These data will be used refine current information associated with the nature and extent of radiological and non-radiological contamination ~~support an initial evaluation of potential human-health risks, assist in the evaluation and selection of a remedial alternative(s),~~ and help focus future intrusive site-investigation activities during the subsequent phase".	A	The text has been revised as requested.	Closed
71.	Page 4-4, line 38	The list of the intrusive investigations in the text includes a variety of geophysical techniques, but does not include soil sampling, which may be achieved using direct push technologies or through test pitting.	Add soil sampling to the list of activities for the intrusive investigation.	A	Soil sampling has been added to the discussion of future-phase intrusive characterization techniques.	Closed
72.	Page 4-5, line 34	Editorial: The word "couples" is incorrectly used in the sentence.	Replace the word "couples" with "coupled".	A	The editorial error has been corrected.	Closed

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73.	Page 4-6, line 8	Since the summary report for the DQO is not attached as an appendix, it is unclear what ARARs and PRGs were developed for this effort. Ecology cannot move forward without evaluating this information.	Consider adding the DQO summary report as an appendix to this document, or include the ARARs and PRGs in the text with an explanation of how they were developed.	A	The Phase I-B DQO summary report was provided to Ecology on December 12, 2007. However, because Phase I-B characterization does not include soil sampling, ARARs and PRGs were not developed at that time. ARARs and PRGs are anticipated to be developed during the Phase II DQO process. The paragraph has been deleted.	Closed
74.	Page 4-6, Lines 35-37	The text states the following: "Because radioactive contamination survey and other field-screening results at the 200-SW-2 OU landfills will provide a significant amount of onsite data, the number of samples needed for laboratory analysis can be reduced." This is not necessarily accurate. The non-radioactive field screening may not reduce the number of samples needed for laboratory analysis due to the limitations of the field screening devices. The detection limits of the field screening methods are often very high, and therefore the field data can not be used to eliminate further laboratory analysis of contaminants.	Please correct the text as follows: "~~Because r~~Radioactive contamination survey and other field-screening results at the 200-SW-2 OU landfills ~~will~~ are anticipated to provide a significant amount of onsite data. Based on this, the number of samples needed for radiochemical laboratory analysis ~~can~~ may be reduced. Field screening data for nonradionuclide chemicals may not be able to be used to eliminate further laboratory analysis due to the inherent limitations of the field screening methods."	A	The text has been revised as requested.	Closed
75.	Page 4-7 and Appendix A	No GPR planned for the 218-W-3AE Burial Ground.	Provide a definitive basis or add GPR for the 218-W-3AE Burial Ground for Phase I-B.	A	Surface geophysical investigations on the treatment, storage, and/or disposal (TSD) landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and	Closed

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					quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a "focused investigation" according to SGW-34463.	
76.	Page 4-9 and Appendix A	No GPR or passive soil gas monitoring planned for the 218-E-10 Burial Ground.	Provide a definitive basis or add passive soil gas monitoring and GPR for the 218-E-10 Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a "focused investigation" according to SGW-34463. Text has been added to Section 4.2 to outline the basis for performing passive soil-gas surveys in the landfills during Phase I-B characterization activities. The basis will explain that a review of historical records was performed as part of Phase I-A characterization activities to determine locations in the landfills that had any indication that liquids may be present. Passive soil-gas samplers were placed at these areas and the results recorded. Those areas that had detectable (greater than	Closed

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					25 ng/sample) results will be further investigated with passive soil-gas surveys as part of Phase I-B characterization activities. Phase I-B passive soil-gas surveys also will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics). These areas have the potential to contain drums or other vessels that potentially could have held organic liquids.	
77.	Page 4-9 and Appendix A	No GPR or passive soil gas monitoring planned for the 218-E-12B Burial Ground.	Provide a definitive basis or add passive soil gas monitoring and GPR for the 218-E-12B Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463. Text has been added to Section 4.2 to outline the basis for performing passive soil-gas surveys in the landfills during Phase I-B characterization activities. The basis will explain that a review of historical records was performed as part of Phase I-A characterization activities to determine locations in the landfills that had any indication that liquids may be present. Passive soil-gas samplers were placed at these areas and the results recorded. Those	Closed

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					areas that had detectable (greater than 25 ng/sample) results will be further investigated with passive soil-gas surveys as part of Phase I-B characterization activities. Phase I-B passive soil-gas surveys also will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics). These areas have the potential to contain drums or other vessels that potentially could have held organic liquids.	
78.	Page 4-7, line 4	The text discusses the use of biased sampling for Phase I-B and states that "using this approach, sampling locations can be selected that increase the chance of encountering worst case areas of contamination." This may be true when reliable historical and physical knowledge exist about a site. It is not true for many of the sites in SW-2. Furthermore, biased sampling does not allow for any extrapolation of data to points other than the sampling point or for any estimate of confidence.	Include a discussion of the limitations of biased sampling in the text.	A	A discussion of the limitations of biased sampling has been added to the text based on information from Ecology Publication 94-49, *Guidance on Sampling and Data Analysis Methods.*	Closed
79.	Page 4-7, lines 16-17	The text states the following: "This section provides an overview of the phased characterization approach planned to meet the data needs for the 200-SW-2 OU landfills, as determined during the DQO process." The correct phase of the DQO needs to be specified.	Please correct the text as follows: "This section provides an overview of the phased characterization approach planned to meet the data needs for the 200-SW-2 OU landfills, as determined during the Phase I-B DQO process."	A	The text has been revised as requested.	Closed

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80.	Page 4-7, lines 24-28	The text states the following: "Results from these studies will be used to provide a basis for the next steps in the characterization (e.g., determination of locations requiring special attention, whether additional field screening or surveys are required, and/or whether samples should be collected). Additional characterization needs will be defined on a site-specific basis." The text fails to state that the additional characterization needs have been discussed and outlined in the Phase II DQO, which was attended by Ecology, DOE and Fluor from October 2006 to February 2007.	Please correct the text as follows: "...Additional characterization needs will be defined on a site-specific basis. However, the direction of how to obtain the intrusive characterization will be outlined in the Phase II DQO summary report (reference document). Insert the Phase II DQO Summary Report document.	R	Agreements and text developed during the collaborative DQO sessions held between September 2006 and February 2007 have been retained in the 200-SW-2 OU Project files for future consideration.	Closed
81.	Page 4-8, lines 30-31	The text states the following: "Phase II and III activities will be conducted under a separate DQO and a revision to this RI/FS work plan and SAP." This statement needs to acknowledge that the basis for the Phase II DQO has been completed. And that the information obtained from the Phase I-B work plan will be used to focus the locations of the intrusive characterization, which was defined in the previously started Phase II DQO process.	Please correct the text as follows: "Phase II and III activities will be conducted under a separate DQO and a revision to this RI/FS work plan and SAP. The information obtained from the Phase I-B work plan will be used to focus the locations of the intrusive characterization. However, the fundamental needs for intrusive characterization of the 200-SW-2 landfills were already identified in the Phase II DQO process which was developed in 2006. These objectives may be	AP	Comment accepted with the following modification: "Phase II and III activities will be conducted under a separate DQO and a revision to the RI/FS work plan and SAP. The information obtained from the Phase I-B work plan will be used to focus the locations of the characterization." The objectives that were drafted during the collaborative DQO sessions held between September 2006 and February 2007 will be re-visited and be further refined in the follow-up Phase II DQO.	Closed

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			further defined in the follow-up Phase II DQO, which is expected to occur in 2009."			
82.	Pages 4-9-4-10; lines 40-2	The text states the following under the "Visual Inspection" bullet: "After field surveys are completed, and if determined to be free of buried waste, these areas of unused landfills may be administratively reclassified in the WIDS database, and permit changes will be initiated." The text does not state what the sites would be reclassified to. Assumedly, the intent of Fluor and DOE would be to reclassify them as "No Action". If this is the intent, confirmatory sampling will still need to be done in order to reclassify these sites to 'No Action", even if the field surveys determine the landfills to be free of buried waste.	Please include within the text what specific WIDS classification is being referred to (i.e.; No Action, rejected, Interim closed Out, etc.) Also, state that confirmatory sampling will be required in order to complete the WIDS reclassification process.	A	The text has been revised to state that the unused portions of landfills will be administratively reclassified to "Rejected," following a qualitative review of each site.	Closed
83.	Page 4-11, lines 29-30	The text states the following: "The data (passive soil-vapor) can provide information that can be used to focus intrusive sampling and provide a list of expected volatile organic compounds." It is important to state that when it is time to conduct the intrusive characterization for volatile organic compounds, the COPC list will not be limited to the list of expected contaminants, which have resulted from	Pleased edit the text as follows: "The data (passive soil-vapor) can provide information that can be used to focus intrusive sampling and provide a list of expected volatile organic compounds. However, the list of VOCs to be intrusively investigated will not be limited to the list of expected VOCs, which resulted from	AP	Comment accepted with the following modification, "The data (passive soil-gas) can provide information that can be used to focus intrusive sampling and provide a list of expected VOCs. The list of VOCs to be intrusively investigated in Phase II will not be limited by the results from the passive soil-gas sampling, but will be established through the DQO process."	Closed

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		the passive soil-vapor sampling. This is because the passive soil-vapor method is only capable of testing a limited amount of contaminants, and detection limit issues may also inhibit the usability of the data.	the passive soil-vapor sampling. Instrusive characterization of VOCs will be analyzed per SW-846 Method 8260, and TICs (tentatively identified compounds) will be report per the guidance in the HASQARD (Hanford Analytical Services Quality Assurance Required Document."			
84.	Page 5-5 and associated text	There are several statements made in Table 5-1 and associated text that are not key regulatory and Tri-Party Agreements including: -The closure standards for landfills do not require or address removal of wastes or soils. -The closure standard for landfills does not include removal or decontamination. - Sampling and analysis for the TSD-unit landfill closure should be for purposes of the cover. The way the table is worded, it is implied that these closure activities are not required.	RCRA Corrective Action may apply during operation and maintenance of these sites including removal of wastes or soils. Revise section 5.0 to include a discussion of the TSD units with respect to the Past Practice Units. Specifically, Section 5.5 of the TPA states that those TSD units that are closely associated with the past practice units may be coordinated into the past-practice investigation (this Work Plan) to avoid overlap. TSD Closures per the TPA Action Plan require that a SAP be prepared and that the Work Plan outline how the closure/postclosure plan requirements will be met.	AP	Table 5-1 has been deleted.	Closed
85.	Page 5-5; Table 5-1	Table is confusing. All TSD Units are required to be closed in accordance	Suggest deleting Table 5-1 and replacing with a TSD	A	Table 5-1 has been deleted as requested. A TSD closure crosswalk is provided in	Closed

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		with WAC 173-303-610 (see TPA Action Plan, Section 5.3). Additionally, the unlined trenches do not meet the requirement for a landfill closure under 173-303-665, as no liner has been installed into the unlined trenches.	closure cross-walk.		Chapter 5.0 of the RI/FS work plan as Table 5-6.	
86.	Section 5.0	General Comment: Ensure that Section 5 is consistent with the approach and guidance provided in DOE/RL-98-28 and the TPA Action Plan. The Work Plan confuses the application of Corrective Action, as well as closure under 173-303-665, and -610.	Revise section 5.0 for clarity and consistency with the requirements of the TPA, DOE/RL-98-28; and the WAC.	A	Every effort has been made to ensure consistency of Chapter 5.0 with WAC 173-303, "Dangerous Waste Regulations," and associated closure guidance. The approach also is intended to be consistent with the TPA; DOE/RL-98-28, *200 Areas Remedial Investigation/Feasibility Study Implementation Plan – Environmental Restoration Program*; and WA7890008967, *Hanford Facility Resource Conservation and Recovery Act Permit, Dangerous Waste Portion, Revision 8, for the Treatment, Storage, and Disposal of Dangerous Waste*. DOE is seeking to meet or exceed applicable TSD closure standards, and implement actions that will meet the technical requirements of both CERCLA and RCRA corrective action in a manner that also meets applicable regulations and agreements efficiently. Please see the recent DOE response to Ecology questions regarding the intended approach for the 200-CS-1 OU (Email, Bryan Foley to John Price). The intent is that the 200-SW-2 OU approach will be consistent with the 200-CS-1 OU regarding TSD unit closures. The 200-CS-1 OU documentation is consistent with the TPA, DOE/RL-98-28, WAC 173-303, and Hanford Facility RCRA Permit Condition II.Y.	Closed
87.	Page 6-2, Figure 6-1,	The figure indicates that the DQO Phase I-B (Collaborative) process has a	Provide the accurate dates for the DQO Phase I-B	A	The text in Chapter 6.0 has been revised to clarify that the Phase I-B DQO process	Closed

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	ID 9: DQO Phase I-B (Collaborative)	start date of 10/1/2007, and a finish date of 12/31/2007. If this is accurate, it means that the Phase I-B DQO process would be occurring at this present time. Ecology is not currently participating in the Phase I-B Collaborative DQO, and therefore the process is not collaborative; if it is indeed occurring. Furthermore, it is not understood as to how the Phase I-B DQO could still be underway, if in fact this document (DOE/RL-2004-60) will be prepared as a result of the Phase I-B DQO process. Also, based on previous statements in this document, SGW-33252 is the summary report for the Phase I-B DQO. If the summary report is already prepared, then the DQO process dates of 10/1/2007 to 12/31/2007 are not possible.	process. Also, see comment #7 to ensure completeness—need to define how Phase 1B was developed.		occurred independent of the collaborative process and that the Phase II collaborative DQO process occurred, but was not completed, from September 2006 through February 2007. Please also see response to Comment #88.	
88.	Page 6-2, Figure 6-1, ID 10: DQO Phase II	The figure indicates that the DQO Phase II process has a start date of 1/1/2009, and a finish date of 6/30/2009. It is important to acknowledge that this Phase II DQO will be a follow-up to the Phase II DQO process that already occurred from October 2006 to February 2007. A tremendous amount of work was done by the participants of the first Phase II DQO, and the information that was accumulated and agreements that were made need to be documented, and carried forward to the upcoming Phase II DQO, along with the data that will be obtained from the Phase I-B DQO guided work. Phase I-B data should enable the next Phase II DQO to be more focused, however, the	Add a footnote that states the 1/1/2009 to 6/30/2009 Phase II DQO will be a follow-up to the Phase II DQO process that already occurred from October 2006 to February 2007. Reference the document that includes a comprehensive account of what occurred in the previous Phase II DQO (i.e., accumulated information and agreements that were made).	A	Text has been added to Chapter 6.0 stating that the Phase II DQO process was initiated in September 2006 and continued through February 2007; however, the process and summary report were not completed. In addition, the text states that information and agreements that were made during this timeframe have been retained in the 200-SW-1/2 OU Project files and will be reviewed for applicability when the Phase II DQO process is completed.	Closed

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		fundamental requirements that were stated in the first Phase II DQO should be maintained.				
89.	Page 7-17	Several documents are needed to complete the review of this document including: -SGW-33253 -SGW-34462 -SGW-34463 -SGW-35016	Provide these documents to Ecology to complete review of the Draft B Work Plan.	A	These documents have been provided to Ecology.	Closed
90.	Appendix A, General	It is difficult to discern the locations of the direct pushes and soil gas samples with only coordinates given. The figures in Appendix B show only the locations of existing wells, but do not indicate the locations of the soil gas samples or direct pushes.	Please include the locations of the soil gas samples and direct pushes on the figures in Appendix B.	A	The color figures provided in Appendix B of the RI/FS work plan have been modified to include locations of the proposed passive soil-gas samples and direct pushes. These modified figures have been added to Appendix A.	Closed
91.	Appendix A	No passive gas monitoring is planned for the 218-E-4 Burial Ground.	Provide a definitive basis or add passive soil gas monitoring for the 218-E-4 Burial Ground.	A	Text has been added to Section 4.2 to outline the basis for performing passive soil-gas surveys in the landfills during Phase I-B characterization activities. The basis will explain that a review of historical records was performed as part of Phase I-A characterization activities to determine locations in the landfills that had any indication that liquids may be present. Passive soil-gas samplers were placed at these areas and the results recorded. Those areas that had detectable (greater than 25 ng/sample) results will be further investigated with passive soil-gas surveys as part of Phase I-B characterization activities. Phase I-B passive soil-gas surveys also will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics. These areas have the potential	Closed

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					to contain drums or other vessels that potentially could have held organic liquids).	
92.	Appendix A; A3.1.2	Page 4-8, lines 8 through 13 describe the use of GPR and radiological surveys prior to any intrusive work. The SAP does not mention the use of GPR or rad surveys.	Please include a discussion of the use of GPR and rad surveys to the Intrusive Data Collection techniques.	A	A discussion of the use of total magnetic field, GPR, and/or EMI, as well as radiological surveys, before performing direct pushes, has been added to the SAP. The use of surface geophysics and radiological surveys before installing a direct push is necessary from a worker safety standpoint, to ensure that the direct push will be between the burial trenches, and not directly through the waste.	Closed
93.	**New Comments: 1/30/2008**					
94.	General	Focused/biased sampling designs are only recommended when reliable physical and historical information are known about a site. Area-wide sampling is recommended when the spatial distribution of contaminants over the study area is uncertain (see Ecology Guidance on Sampling and Data Analysis Methods, Publication No. 94-49). Surface geophysical surveys and topographical surveys provide continuous data and are relatively inexpensive. Soil vapor surveys also provide a relatively inexpensive way to sample local areas and provide data from a larger area than with soil sampling. Borehole geophysical logging of existing wells and direct push holes will provide useful data, but will only provide information from a small (<1 ft) radius around the detector. If a focused sample design will be	1) Expand scope to include surface geophysical surveys of all burial grounds, including the TSDs. 2) Expand the scope of the soil vapor sampling to include widespread coverage of all trenches. 3) Conduct surface topographic surveys of all burial grounds (e.g. drive transects with Real Time Kinematic GPS) to identify potential locations for ponding of water. 4) Add direct push locations for a more systematic approach (see specific	AP	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation' according to SGW-34463. Widespread coverage for passive soil-gas surveys is not expected to result in data that will provide added value to the characterization effort. Rather, the Phase I-B passive soil-gas surveys primarily will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a	Closed

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		employed for future phases, it is necessary to have information by which to focus sampling; therefore, full advantage should be taken of inexpensive survey methods such as soil vapor, topographic, and surface geophysical methods. For the borehole geophysical methods to provide locations of focus, they must be applied at many more locations.	comment). See general comments below for further justification.		metallic signature based on surface geophysics. These areas have the potential to contain drums or other vessels that potentially could have held organic liquids). However, 56 additional locations over areas containing soft (non-metallic) waste will be sampled for organic vapors. These locations were chosen based on a review of process history, focusing on those facilities/processes that are known to have used organic liquids, and have the potential to have generated waste containing sorbed organic liquids. Section 4.2 has been modified to further clarify the rationale for passive vapor sampling in Phase I-B. LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463. Additional direct-push locations will be established during the Phase II DQO process, and as possible will be based on information gathered from the Phase I-B characterization effort. Future-phase sampling will be performed with consideration of Ecology and EPA sampling guidance.	
95.	General	At the conclusion of the Phase IB non-intrusive sampling events, please conduct a workshop to discuss/present results.	Add a commitment to Section 1.0 of the Work Plan.	A	A commitment to conduct a workshop to discuss Phase I-B sampling results has been added to Chapter 1.0 of the RI/FS work plan.	Closed

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96.	General and Page 3-18, Section 3.3.1	"200-SW-1 OU..." No data is presented in Appendix D, no sampling in Appendix A, no influences of parameters of the Conceptual Site Models (CSMs), no CSMs, etc.	It is evident that the 200-SW-1 and 200-SW-2 are on different RI/FS paths. Either completely incorporate all 200-SW-1 data and information into this RI/FS work plan and future revisions; or remove all 200-SW-1 OU information from this RI/FS Workplan and complete a TPA Change Package to split the 200-SW-1 and 200-SW-2 RI/FS documentation. Should DOE keep these Operable Units together, revise Work Plan to include non-intrusive sampling (e.g. GPR) for NRDWL and 600 CL.	AP	DOE agrees that these OUs are on separate paths for final disposition. Ultimately, the RI/FS work plan only will include the 200-SW-2 OU. A description of the path forward for disposition of the 200-SW-1 OU landfills will remain in the RI/FS work plan until a TPA change request is submitted and approved for splitting the 200-SW-1 and 200-SW-2 OUs documentation.	Closed
97.	General	The technical basis (i.e. metallic anomalies) for the locations of the soil vapor sampling is unclear. Due to acknowledged shortages of containers, it is likely that containers made from less durable, non-metallic materials were also used to dispose of packages containing liquids. The burial grounds also likely contain significant areas of metallic debris that are not associated with liquids. When available, historical information should be used to support sampling locations. Several landfills that are not receiving vapor surveys have "potential organic waste" identified as an Ecology Item of Interest (e.g. 218-E-12B). The passive gas surveys should be viewed as a relatively	Expand the scope of the soil vapor sampling to include widespread coverage of all the trenches.	AP	Widespread coverage for passive soil-gas surveys is not expected to result in data that will provide added value to the characterization effort. Rather, the Phase I-B passive soil-gas surveys primarily will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics. These areas have the potential to contain drums or other vessels that potentially could have held organic liquids). However, 56 additional locations over areas containing soft (non-metallic) waste will be sampled for organic vapors. These locations were chosen based on a review of process history, focusing on those facilities/processes that are known to have used organic liquids,	Closed

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		inexpensive way to collect data compared with the alternative (i.e. soil sampling).			and have the potential to have generated waste containing sorbed organic liquids. Section 4.2 has been modified to further clarify the rationale for passive vapor sampling in Phase I-B.	
98.	General	Surface geophysical surveys should be performed for all the landfills, including the TSDs. These surveys represent the only continuous data set that can be collected, and will support the basis for focusing sampling in future phases.	Add surface geophysical surveys for all Bin 1 landfills (TSDs).	R	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463.	Closed
99.	General	As the text recognizes (pg. 4-7), direct push technologies can be used to collect samples with minimal waste generation. Since direct push technologies are being used for geophysical logging, it makes sense to obtain opportunistic soil samples in the process. Soil samples should be collected, unless technical justification can be provided. The text also recognizes that organic vapor monitoring can be performed via direct push. Opportunistic vapor sampling should be done at all push locations.	Include soil and vapor sampling via direct push at all locations where direct pushes will be performed.	R	In accordance with the May 15, 2007, agreement between RL and Ecology (CCN 0073214, "Path Forward – 200-SW-1/2 RI/FS Work Plan Development, May 15, 2007"), a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. Soil and active soil-gas samples are proposed for future phase characterization. Phase I-B will consist of the use of primarily nonintrusive geophysical and soil-gas characterization activities to target areas that may contain either organic vapors or buried masses of metal that may contain liquid organics or areas that contain both. Limited intrusive activities will be conducted during	Closed

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					Phase I-B to gain experience operating the hydraulic hammer rig around 200-SW-2 OU landfills. Direct -push locations will be logged with gross/spectral gamma, active neutron moisture, and passive neutron detectors to determine the presence of radioactivity and moisture at the push locations. Soil-gas samples could be extracted at direct- push locations following radionuclide and moisture logging using a "knock-off" tip push rod and the hydraulic hammer rig. However, the data could be of questionable integrity due to the inability to properly seal the bottom sediments as the push rod is extracted to isolate the depth from which the soil-gas sample is obtained. Although wetted bentonite could be used to seal the bottom sediments, the moisture could compromise soil-gas sample quality and subsequent field or laboratory analyses. Soil-gas sampling during Phase II allows an appropriate sampling design to be determined through the DQO process with full consideration of existing soil-gas information from landfill vent risers, M-091 Program post-retrieval sampling, ecological assessments, and other sources. Furthermore, a focused investigation is planned to evaluate innovative direct-push techniques capable of conducting soil-gas sampling, soil-moisture sampling, and radionuclide logging at a single direct-push location. Such information will result in more cost-effective soil sampling and analysis during Phase II and Phase III intrusive characterization using the hydraulic hammer	

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					rig's dual-wall soil sampler.	
100.	General	Records research might indicate landfills that were affected by massive flooding events, but will not indicate ponding during normal rain or snow events. Topographical surveys should be conducted to identify areas that may have been subject to repeated infiltration during normal rain or snow events. Topographical surveys will be useful to focus sampling on these locations and to identify potential subsidence issues related to worker safety.	Conduct high resolution surface topographic surveys of all burial grounds (e.g. drive transects with Real Time Kinematic GPS) to identify potential locations for ponding of water.	A	LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463. Please also see response to Comment #3.	Closed
101.	Work Plan Section 1 and 2	According to the Signed Collaborative Agreement for the 200-SW-2 OU a Table "Key Assumptions" that were to be developed jointly by Ecology and USDOE should have been included in either Section 1 or 2 or the work plan. This Table was to list the assumptions that drive scope, schedule, and costs. Ecology understands that since the Signed Collaborative Agreement for the 200-SW-2 OU will be approved, the May 15, 2007 Path Forward agreement between Ecology and USDOE has also been signed noting that additional Phase I work will be needed before Phase II and Phase III sampling commences.	Provide information and a frame work in the Work Plan that will develop into working sessions to jointly develop these scope, schedule and cost assumptions, information, and Table once the Phase I efforts are completed.	A	The following statement has been added to Section 1.5 of the RI/FS work plan, "Based on the results of Phase I-A and I-B characterization activities, a table that includes scope, schedule, and cost assumptions will be jointly developed by RL and Ecology and included in a future revision of this RI/FS work plan (i.e., after the Phase II DQO)." In addition, a review of past documents was performed. Those assumptions that were applicable to the RI/FS work plan have been added to Section 1.5. These assumptions include the following: • Because of the nature of nonintrusive sampling techniques, the contaminants of potential concern (COPC) list should be limited to radionuclides and organic constituents that are readily	Closed

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					detectable via nonintrusive survey techniques. • A key assumption is that targeting limited waste items/areas for potential excavation will center on determining whether a current or future threat to groundwater, human health, or environment exists. • Phase I-B will consist of the use of primarily nonintrusive geophysical and soil-gas characterization activities to target areas that may contain either organic vapors or buried masses of metal that may contain liquid organics or areas that contain both. • It is assumed that additional characterization beyond Phase II will be required (i.e., Phase III), stemming from the information and data as well as the results of modeling that will evaluate the human health and ecological risk and migration to groundwater following the CERCLA RI/FS process. Scope within Phase III also may be needed to address areas that require particular caution due to worker safety concerns (e.g., landfills containing elevated levels of plutonium).	
102.	Work Plan Sections 4 and 5	According to the Signed Collaborative Agreement for the 200-SW-2 OU Sections 4 and 5 were to contain information including (but not limited to): the development of logic for vadose zone soil sampling to confirm the CSMs; include all of the Phase I Non-	Provide information and a frame work in the Work Plan that will develop into working sessions to jointly develop the data listed in the "200-SW-1 and 200-SW-2 RI/FS Work Plan Agreements"	A	The following statement has been added to Section 1.5 of the RI/FS work plan, "Based on the results of Phase I-A and I-B characterization activities, a table that includes scope, schedule, and cost assumptions will be jointly developed by RL and Ecology and included in a future revision	Closed

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		intrusive data; identify data uses for treatability investigations; how data will be evaluated for likely response scenarios; incorporate M-91 investigation data and costs; etc. Ecology understands that since the Signed Collaborative Agreement for the 200-SW-2 OU has been approved, the May 15, 2007 Path Forward agreement between Ecology and USDOE has also been signed noting that additional Phase I work will be needed before Phase II and Phase III sampling commences.	Table (in the Collaborative Agreement) once the Phase I efforts are completed.		of this RI/FS work plan (i.e., after the Phase II DQO)." See also response to Comment #101.	
103.	Section 1.0, 1-1, 20	Recommended text: "Some OUs include RCRA treatment, storage, and/or disposal (TSD) units that will be operated, remediated, and/or closed in conjunction with OU activities."		A	The text has been revised as requested.	Closed
104.	Figures 1-2 and 1-3, Pages 1-3, and 1-4, respectively	Recommended key wording for yellow colored wastes: "Radioactive Waste & Potential Mixed Waste".		R	Potential mixed waste is a term used only in the Land Disposal Restrictions report under TPA Milestone M-26; it is not a regulatory term and should have no significance for permitting purposes. The color yellow represents low-level radioactive waste, while the color green represents mixed waste. Suspect TRU and TRU mixed waste (TRUM) are represented by the color red. The figures are accurate as depicted. The chart shows mixed waste, not potential mixed waste, as green.	Closed
105.	Figures 1-2 and 1-3, Pages 1-3 and 1-4,	Recommended key wording for green colored wastes: "Mixed Waste".		AP	To be consistent with the LLBG Part A maps, the legend has been revised for the green color to state "Post-August 19, 1987, Mixed Waste."	Closed

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	respectively					
106.	Figure 1-4, Page 1-5	The yellow color coding indicates "radioactive waste". Elsewhere, the text states otherwise.		A	The legend has been revised to indicate that the yellow color coding in this figure represents nonradioactive waste disposal areas.	Closed
107.	Section 1.1.2, Page 1-7, Line 19.	It is recommended the words "are inactive" be deleted. Dangerous waste regulations (WAC 173-303-040) define "active life" and "active portion" in relation to RCRA TSDs. As such, the use of the word "inactive" is unclear and confusing. It is recommended the word not be used.	Suggest rewording: "Most of the 200 Area landfills are no longer receiving waste and are known as "inactive" in the WIDS database."	A	The text has been revised as requested.	Closed
108.	Section 1.1.2, Page 1-7, line 25.	The text describes four bins with four bullets but states: "A discussion of the six bins..." Typographical error.		A	The text has been re-ordered to clarify the fact that there are four types of landfills (industrial, dry waste, construction, and caissons). These categories were further broken down into the six bins that are presented in Section 3.2.2.1.	Closed
109.	Section 1.1.2, Page 1-8, Line 31.	The text states: "....for completion of the 200-SW-2 OU RI/FS process (including TSD closure/postclosure care), as well as..." From review of Section 6, the schedule does not appear to address/include TSD closure/postclosure care activities associated with 200-SW-2 OU. It is recommended that "(including TSD closure/postclosure care)" be deleted.		A	The bullet has been revised to delete reference to closure/postclosure as requested.	Closed
110.	Section 1.2, Page 1-10, lines 1-3.	The text states: "The FS will use the existing and newly collected data to evaluate a range of remedial actions for the sites evaluated in the RI and for the remaining sites in the OUs that fall within the contaminant distribution model." The meaning of this sentence is unclear. Clarification of meaning		A	The text has been revised as follows, "The FS will use the existing and newly collected data to evaluate likely response scenarios listed in Section 1.5."	Closed

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		(including description of process or reference of description of process) is requested.				
111.	Section 1.2.3, Page 1-11, between 2nd and 3rd paragraphs.	The section should include a description of Phase II DQO efforts which occurred during 2007. It is recommended that the description identify that due to the scope, the complexities of characterizing releases and potential releases, and the significant information needed to support development of conceptual models for the units, it was agreed that an additional characterization effort would occur as Phase I (i.e., Phase I-B).		AP	The comment is accepted with the following modification, "Due to the scope, the complexities of characterizing releases and potential releases, and the significant information needed to support ~~development~~ further refinement of conceptual models for the units, it was agreed that an additional characterization effort would occur as Phase I (i.e., Phase I-B)."	Closed
112.	Section 1.3.1.	The section needs to identify that non-intrusive characterization of trenches containing exempted waste may occur. The section does acknowledge the potential use of substrate sampling information obtained by another project during retrieval of exempted wastes. Likewise, the section should identify that non-intrusive characterization (i.e., geophysical surveys, topographical surveys, vapor monitoring, etc.) may be generated during Phase I-B and later used to support the RI/FS.		A	The following or similar text has been added to Section 1.3.1, "Sampling to be performed to support waste retrieval activities will be performed by the M-091 Program before and after retrieval. Data collected from these characterization efforts will be integrated with the 200-SW-2 OU Project characterization data in the RI Report." "Characterization also may be generated by the M-091 Program during Phase I-B and future phases. If so, the information will be integrated with the 200-SW-2 OU Project characterization data to support the RI/FS."	Closed
113.	Section 1.5, Page 1-14, 2nd bullet.	The text states: "The contaminants in the 200-SW-2 OU are expected to be located within 3 to 10 m (10 to 33 ft) of the ground surface, and at or near the bottom of the disposal unit (trench)." At this time, it is unknown how routine precipitation infiltration affects contaminant transport. The assumption clearly identifies "flooded" conditions as	It is recommended the first two sentences of the bullet be replaced with: "Contaminants in some of the 200-SW-2 OU units are expected to be located within 3 to 10 m (10 to 33 ft) of the ground surface, and at or near the bottom of the	AP	The comment is accepted with the following modification, "Contaminants in some of the 200-SW-2 OU units are expected to be located within 1 to 10 m (3 to 33 ft) of the ground surface, and at or near the bottom of the disposal unit (trench). However, because of uncertainty associated with individual/combined conceptual site model variables, and certain indications of	Closed

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		an exception. However, at this time, it is unknown if routine precipitation infiltration conditions are an exception. Also, releases and transport of carbon tetrachloride (and decomposition products) have already been shown to be an exception to this assumption. It is recommended that this assumption either be deleted or significantly revised. *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0) provides conceptual models for contaminant migration under operational and post-closure conditions as Figure 2.3. On page 2.8, the assessment states: "Infiltration and the drainage of moisture through the vadose zone beneath the burial grounds are expected to be much greater during operations than after closure. During the operational period, runoff can accumulate in depressions and open trenches. Although unlikely, under unfavorable conditions (e.g., unusual precipitation event), migration to groundwater could occur in a relatively short time (estimated at 50 to 100 years in Wood et al. 1995, 1996). This is more likely in the 200 East Area burial grounds where the vadose zone is in the Hanford formation (course sands and gravel). If breatkthrough occurs during the operational period, it could indicate possible weak points in the waste management system that might need special attention for	disposal unit (trench). However, due to certain conceptual site model variables, certain combinations of conceptual site model variables, and certain indications of contaminant transport available to-date, characterization is necessary to further develop conceptual site models." In addition, it is requested that the conceptual models of contaminant migration under operational and post-closure conditions be incorporated into this workplan (see DOE/RL-200-72, Rev. 0).		contaminant transport available to-date, additional characterization is necessary to further develop/refine the preliminary conceptual site models." Agreed. It is important to distinguish the potential differences in infiltration rates during pre- versus post-closure. Discussion of CSMs for operational periods versus post-closure periods has been acknowledged in Section 3.6.3, "Conceptual Site Models." DOE/RL-2000-72 has been cited in Sections 3.4 and 3.6.3.	

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		closure." On page 2.9, the text states: "Possible weak points noted include structural failures. For example, collapse of boxes and containers that have large void spaces could create depressions and openings for collection of snow melt. Such depressions and/or openings would result in enhanced infiltration that could shorten the travel time to groundwater considerably from the estimated rate of 50 to 100 years (based on a uniform infiltration rate of 5 cm/yr)." The below photos (taken on 12-27-06) represent conditions that represent examples of "possible weak points" associated with operational as well as "post-closure" conditions.				

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		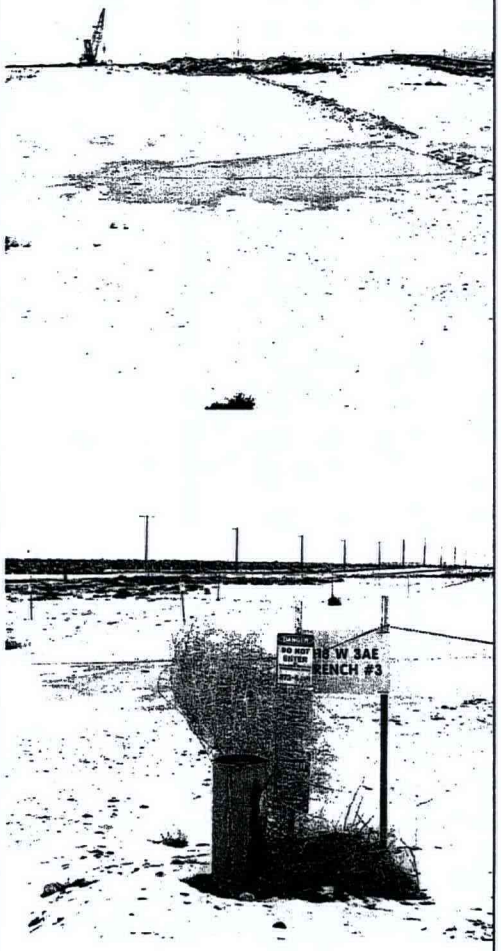				

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114.	Section 1.5, Page 1-15, lines 3-7.	The text states: "Potential contamination originating from the 216-C-9 Pond is being examined under the 200-MG-1 OU. Potential contamination originating from the 216-T-4 Pond system (....) will be investigated by the 200-CW-1 and 200-MG-2 OUs". Considering the potential conceptual models associated with contaminant transport from these units, it is not understood how contamination from the burial ground can be differentiated from "potential contamination" from the ponds. It is requested that a description be included of how characterization of the burial grounds and ponds will be coordinated so that the stated assumption may be supported.		A	A reference to the 200-CW-1 OU RI/FS work plan has been added to the document. The 200-CW-1 OU work plan addresses characterization of the 216-T-4B Pond and a portion of the 216-T-4-2 Ditch. The 216-T-4A Pond and the 216-T-4 Ditches (216-T-4-1D and 216-T-4-2) will be addressed by the 200-MG-1 and 200-MG-2 OUs, respectively. Remedial-action decisions associated with the 218-W-2A, 218-W-3AE. and the T Pond system will be coordinated between the OUs and addressed in their respective feasibility studies. The 216-C-9 Pond is in the 200-MG-1 OU and the characterization of that site will be carried out by the 200-MG-1 OU. Final remedial decisions will be coordinated between the two OUs. This additional detail/clarification (as generally described above) has been added to Section 1.5.	Closed

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115.	Section 1.5, Page 1-15, lines 13-16.	The text states: "Therefore, based on the land-use decision for the 200 Areas, potential impacts from the landfill contaminants within the 200 Areas would be to current and future site workers and to terrestrial biota using the sites." The text does not acknowledge the potential impact to groundwater quality. This impact could be significant and should be addressed.		A	The bullet on page 1-15, Section 1.5 has been revised as follows, "The land use for the 200 Areas selected by the DOE through the NEPA process (DOE/EIS-0222-F, *Final Hanford Comprehensive Land-Use Plan Environmental Impact Statement*) and documented in 64 FR 61615, 'Record of Decision: Hanford Comprehensive Land-Use Plan Environmental Impact Statement (CLUP EIS)' is industrial (exclusive). Most of the 200-SW-1 and 200-SW-2 OU landfills are located within the 200 Areas Central Plateau Core Zone boundary. ~~Therefore, based on the land-use decision for the 200 Areas, potential impacts from the landfill contaminants within the 200 Areas would be to current and future site workers and to terrestrial biota using the sites. The land use for the sites outside the Core Zone boundary focuses on preservation, recreation, conservation, fill material, grazing, or industrial uses, depending on the location (DOE/EIS-0222-F).~~" Figure E-1 has been revised as discussed in the May 5, 2008, meeting with Ecology.	Closed
116.	Section 1.5, Page 1-15, lines 19-23.	The text states: "This RI/FS work plan will address likely response scenarios…." Given that response decisions will not be made in the near future and will be based on information not yet available, it is recommended that the sentence be re-written as: "The RI/FS work plan will ultimately address likely response scenarios…."		A	The text has been revised as follows: The RI/FS ultimately will address likely response scenarios, including no action; removal, treatment, and disposal (RTD) of waste from within portions of individual landfills; capping of individual landfills; in situ treatment/ stabilization (e.g., vitrification/grouting) of portions of individual landfills; maintain existing soil cover, monitored natural attenuation; or some combination of the above.	Closed

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117.	Section 1.5, Page 1-16, lines 13-15.	The text indicates that the work plan will focus on highly mobile contaminants or other contaminants with a potential to reach groundwater. It can be argued that all contaminants have "a potential to reach groundwater". Similar to the saying "the poison is the dose", it can be said that that "the impact is the driver". It is recommended that the sentence be re-written as: "The RI/FS work plan will focus on determining whether contaminants have migrated into the vadose zone beneath the buried waste."		A	The text has been revised as requested.	Closed
118.	Section 1.5, Page 1-16, line 22.	The term "solid waste" is used. It is recommended that a definition of the term be added to the glossary.		A	The definition of "solid waste" has been added to the glossary as requested.	Closed
119.	Section 2.1.1, Page 2-1, line 35.	As the word "inactive" has no RCRA regulatory definition (and thus no meaning), it is recommended the word "inactive" not be used in context to RCRA TSD units. The use of this word is confusing and shouldn't be used in the workplan in context to RCRA TSD units.		AP	DOE agrees that the term "inactive" should be deleted in this case. Both terms "active portion" and "inactive portion" are defined in WAC 173-303-040 and are specifically for TSD unit purposes. However, because the NRDWL does not meet the regulatory definition for "inactive portion," the text has been deleted.	Closed
120.	Section 2.1.2, Page 2-4, line 34.	The RCRA TSD unit is described as consisting of seven "radioactive landfills and one unused landfill". It is recommended that the seven landfills be described as "mixed waste landfills". This term is consistent with RCRA terminology (definition provided by WAC 173-303-040), and the RCRA Part A for the unit.		R	The suggested term is not consistent with the RCRA Part A for the unit. The term "mixed waste landfill" is not found in WAC 173-303-040 and has no RCRA meaning beyond the term "landfill." The text has been modified to state, "The LLBG comprises a landfill disposal unit and covers a total area of approximately 225 ha (556 a). The landfill is divided into eight burial grounds. Six burial grounds are located in the 200 West Area and two are in the 200 East Area, as depicted in Figures 1-3	Closed

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					and 1-4."	
121.	Section 2.1.2.1, Page 2-5, lines 40-42.	It is recommended that the paragraph describe all surveillance activities associated with the unit. For example, routine RCRA inspections are performed and the text should identify this as an on-going operational function.		A	A description of surveillance activities performed on the landfill has been provided. However, this information has been included in Section 3.4.3 to generically describe inspection activities associated with 200-SW-2 OU landfills.	Closed
122.	Section 2.1.2.2, Page 2-6.	It is recommended that the paragraph describe all surveillance activities associated with the unit (stabilized and non-stabilized portions). For example, routine RCRA inspections are performed and the text should identify this as an on-going operational function.		A	A description of surveillance activities performed on the landfill has been provided. However, this information has been included in Section 3.4.3 to generically describe inspection activities associated with 200-SW-2 OU landfills.	Closed
123.	Section 2.1.2.1, Page 2-6, lines 32-36.	Where possible throughout the work plan, it is recommended that occurrence reports be referenced by number. The text describes the removal of contaminated tumbleweeds for which an occurrence report was very likely generated.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies. All occurrence reports currently described in the RI/FS work plan have been referenced by number, if available.	Closed
124.	Section 2.1.2.3, Page 2-7, lines 31-34.	The text describes a flood event. If an occurrence report was generated, it is requested that the report be referenced. Also, it is requested that the text identify which trenches (or portions of trenches) were covered by flood water. The trenches should be identified by number. If portions of trenches were covered, it is recommended that those portions flooded be described using survey coordinates or a drawing/figure. These flooded areas are important to describe as accurately as possible.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies. All occurrence reports currently described in the RI/FS work plan have been referenced by number, if available.	Closed

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125.	Section 2.1.2.4, Page 2-8, lines 30-32.	The text describes the discovery of contaminated tumbleweeds. If available, it is recommended that an occurrence report be referenced. Also, it is recommended that either a detailed description or drawing be included which depicts the 216-T-4B seepage pond area in relation to or within the 218-W-3AE landfill.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies. All occurrence reports currently described in the RI/FS work plan have been referenced by number, if available. An improved depiction of the 216-T-4B Pond has been added to Figures 1-4 and B-13.	Closed
126.	Section 2.1.2.5, Page 2-9, lines 20-21.	The text states: "No trenches in this landfill contain MLLW or TRUM that was disposed of after the effective date of mixed-waste regulation at the Hanford Site (August 19, 1987)". Either site the basis for the statement or delete it. The landfill is a RCRA TSD unit and the statement adds no value to the workplan.		A	The text has been revised to state, "Based on SWITS burial records, this landfill does not contain MLLW or TRUM disposed after the effective date of mixed waste regulation (August 19, 1987)."	Closed
127.	Section 2.1.2.5, Page 2-10, lines 7-8.	The text describes a flood event. It is requested that the text identify which trenches (or portions of trenches) were covered by flood water. The trenches should be identified by number. If portions of trenches were covered, it is recommended that those portions flooded be described using survey coordinates or a drawing/figure. These flooded areas are important to describe as accurately as possible.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies. All occurrence reports currently described in the RI/FS work plan have been referenced by number, if available.	Closed
128.	Section 2.1.2.5, Page 2-10, lines 16-17.	It is recommended that the paragraph describe all surveillance activities associated with the unit (stabilized and non-stabilized portions). For example, routine RCRA inspections are performed and the text should identify		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed

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		this as an on-going operational function.			A description of surveillance activities performed on the landfill has been provided. However, this information has been included in Section 3.4.3 to generically describe inspection activities associated with 200-SW-2 OU landfills.	
129.	Section 2.1.2.5, Page 2-10, line 18.	The text describes a "fenced field". It is requested that more information be provided. In particular, if the fence prevents access by a lock, access prevention should be described. Also, if there are postings on the fence to prevent unauthorized personnel entry, it is requested that these be described/identified.		R	Reference to fencing and site access controls has been removed from the document due to Official Use Only procedures.	Closed
130.	Section 2.1.2.6, Page 2-11, lines 29-35.	The text describes a flood event. It is requested that the text identify which trenches (or portions of trenches) were covered by flood water. The trenches should be identified by number. If portions of trenches were covered, it is recommended that those portions flooded be described using survey coordinates or a drawing/figure. These flooded areas are important to describe as accurately as possible.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed
131.	Section 2.1.2.6, Page 2-11, lines 33-35.	The text states: "Despite the volume of water observed during the flood, there will be no impact on groundwater, as shown in the groundwater monitoring data presented in Section 3.4.4.4." Unless the groundwater monitoring program is adequate to reflect impact, the statement is unsubstantiated. Either identify that the statement of no impact is an interpretation of available groundwater monitoring data that		A	The text has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed

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		Ecology cannot confirm (thus agree with), or delete the statement.				
132.	Section 2.1.2.6, Page 2-11, lines 35-36.	Provide references for the presence of perched water beneath the 218-W-4C landfill in 1991 and the absence of the perched water in 1994.		A	The following reference has been included in DOE/RL-92-03;"*Annual Report for RCRA Groundwater Monitoring Projects at Hanford Site Facilities for 1991*. The following information has been added to the work plan: "The well that detected this zone is 299-W18-29, which has been sample dry since 1994 and was decommissioned in 2003. WHC-SD-EN-DP-044, *1991 Borehole Completion Data Package for the Low-Level Burial Grounds*, provides detailed information on the drilling and construction. The well was located near the southeast corner of LLWMA-4 and was completed at a depth of ~136 ft bgs."	Closed
133.	Section 2.1.2.7, Page 2-12, lines 30-31.	It is recommended that the paragraph describe all surveillance activities associated with the unit (stabilized and non-stabilized portions). For example, routine RCRA inspections are performed and the text should identify this as an on-going operational function.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies. A description of surveillance activities performed on the landfill has been provided. However, this information has been included in Section 3.4.3 to generically describe inspection activities associated with 200-SW-2 OU landfills.	Closed
134.	Section 2.1.3.1, Page 2-13, lines 24-25.	The two sentences appear to be misplaced. Also, provide a waste volume for the 218-C-9 landfill.		A	The two sentences have been moved to the correct section in Chapter 2.0. The waste volume for the 218-C-9 Burial Ground has been added to this section.	Closed
135.	Section 2.1.3.1, Page 2-13,	The landfill also contains ~100 drums which is not described.		A	The text will be revised to state, "Although the majority of the waste in the 218-C-9 Burial Ground consists of uncontainerized	Closed

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	3rd paragraph.				demolition rubble, the landfill also contains approximately 270 55-gal drums of low-level waste."	
136.	Section 2.1.3.1, Page 2-13, 3rd paragraph.	The text states: "If vadose-zone contamination exists, it likely will be as a result of pond operations over 3 decades." It is recommended that the following statement be added to the text: "Further complicating characterization of the landfill, the vadose zone moisture from pond operations could expedite transport of contaminants from the landfill."		AP	The comment is accepted with the following modification, "~~Further complicating characterization of the landfill,~~ The vadose-zone moisture from pond operations could expedite transport of contaminants from the landfill."	Closed
137.	Section 2.1.3.1, Page 2-14, lines 5-8.	It is recommended that the text explain why fly ash is an effective medium to control plant intrusion and identify that it may be necessary to characterize the fly ash.		AP	The text has been revised to explain why fly ash does not support plant growth. According to the Washington State Department of Health, technologically-enhanced, naturally-occurring radioactive materials (TENORM) and naturally occurring radioactive materials (NORM) are not regulated in Washington State and therefore are not required to be characterized as waste. However, through the RI/FS process, it may be necessary to characterize the fly ash.	Closed
138.	Section 2.1.3.4, Page 2-15, lines 20-21.	The text describes a sink hole. It is recommended that either a description of the location of the sink hole or a figure be included so that the sink hole may be located.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed
139.	Section 2.1.3.9, Page 2-17, lines 34-35.	The text describes a sink hole. It is recommended that either a description of the location of the sink hole or a figure be included so that the sink hole may be located.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed
140.	Section 2.1.3.12,	The text describes sink holes. It is recommended that either descriptions		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate,	Closed

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	Page 2-19, lines 23-25.	of the locations of the sink holes or a figure be included so that the sink holes may be located.			review, and compile past occurrences of subsidence and other documented anomalies.	
141.	Section 2.1.3.13, Page 2-20, lines 16-17.	The text indicates that sink holes were filled. It is recommended that either descriptions of the locations of the sink holes or a figure be included so that the sink holes may be located.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed
142.	Page 2-8, lines 27-29	The 216-T-4B pond and 216-T-4-2 ditch are noted. However, no information is provided how this site will be investigated or remediated either with the 218-W-3AE or as part of the 200-CW-1 OU RI/FS efforts.	Provide this information.	A	A reference to the supplemental 200-CW-1 OU RI/FS work plan has been added to the document. The 200-CW-1 OU work plan addresses characterization of the 216-T-4B Pond and a portion of the 216-T-4-2 Ditch. The 216-T-4A Pond and the 216-T-4 Ditches (216-T-4-1D and 216-T-4-2) will be addressed by the 200-MG-1 and 200-MG-2 OUs, respectively. It is Ecology's expectation that the 200-MG-5 OU will characterize the 216-T-4B and 216-T-4-2 waste sites, but the 200-SW-2 OU remedy will address the remedy for those sites (ref. 200 Area Unit Manager's Meeting, February 21, 2008). The 216-C-9 Pond is in the 200-MG-1 OU and the characterization of that site will be carried out by the 200-MG-1 OU. Final remedial decisions will be coordinated between the two OUs.	Closed
143.	Page 2-13, line 8	"...it was moved to the 200-MG-1 OU..." Why was this site moved to a "No Action" OU rather than simply closed procedurally or rejected through the WIDS process as other sites are	"No Action" is not a regulatory term and is being strongly objected to by both EPA and Ecology. Suggest a TPA Change Package to move this site back into SW-2 and completing the approval for a WIDS	A	The 218-W-6 Burial Ground was moved back into the 200-SW-2 OU. Procedural closure of this landfill has been addressed in the RI/FS work plan.	Closed

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			rejection and then procedurally closing this burial ground.			
144.	Page 2-17, line 3 and globally	"Exact trench locations are not known…" Even though GPR was completed at this site, the work plan still indicates that the locations of the trenches are not known	Additional field work needs to be completed for this and other burial grounds where locations of the trenches remain unknown. Characterization and remediation can not be planned if surveys and record reviews are not adequate in Phase I to make decisions for Phase II sampling and ultimately remediation.	A	This statement is a remnant of Draft A of the RI/FS work plan and is no longer accurate. The statement will be deleted. Geophysical surveys performed in 2005 (D&D-28379) show specific burial locations in the single pit/trench.	Closed
145.	Page 2-20, lines 34-35	"…is contaminated soil from remediation of the 216-T-4 Ditch and Pond (Trench 27)…. This statement is a bit confusing as the northern portion of the burial ground was the ditch and pond.	Clarify the location of the ditch and pond and the location the contamination from the ditch and pond were placed. Do these records include soil samples to ensure contamination was completely removed? Is the sampling and analysis data of quality that no additional sampling of the buried soils is needed to plan a remedial action?	A	Section 2.1.4.14 has been revised to detail the history surrounding historical use of the landfill footprint that was at one time a liquid disposal site. Figures 1-3 and 1-4 in the RI/FS work plan have been updated to more clearly delineate the difference between past pond usage areas and landfills. Language in Section 2.1.4.14 has been revised to change "remediation" to "stabilization."	Closed
146.	Section 2.1.3.15, Page 2-21, lines 23-24.	The text indicates that sink holes were noted during stabilization. It is recommended that either descriptions of the locations of the sink holes or a figure be included so that the sink holes may be located.		A	A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed
147.	Section 2.2.3.1.	The section text provides information that should be supported with		A	The following reference has been included in the document, "DOE/RL-2008-01, *Hanford*	Closed

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		references. It is requested that references be included (eg, interim ROD, annual groundwater monitoring reports, remediation assessment reports, etc.).			*Site Groundwater Monitoring for Fiscal Year 2007."*	
148.	Section 2.2.3.2.	Four strontium-90 plumes exist in the 200 East Area and there are other contaminants of concern not acknowledged. It is recommended that the annual groundwater monitoring reports be used (and referenced) to describe 200 East groundwater contaminants.		A	A reference to the annual groundwater report has been added to Section 2.2.3.2 and a statement has been added to indicate that the annual groundwater report also includes a discussion of other detected contaminants.	Closed
149.	Page 2-56, line 31	"…favorable hydrogeological conditions…"	Clarify what is meant by "favorable hydrogeological conditions".	A	The following or similar text has been added to the document, "Favorable hydrogeological/geochemical conditions include low annual precipitation, distance to groundwater, recharge rate, ion-exchange capacity of the soil, buffer capacity, low organic content of the soil, etc."	Closed
150.	Section 2.2.6.2 Pages 2-57 and 2-58	"Containment Barriers" This section describes the various types of containment barriers used at Hanford from 1968 to 1993. However, no references are provided and explanation is given to stipulate if the bullets describe standard practices, Hanford site requirements (supported by waste management procedures and applicable AEA regulations, etc.)	Provide references for the bulleted statements and describe how and why these requirements were instituted and to what level during field operations.	A	References to these sections, if available, have been added to the text and reference section in Chapter 7.0. The bullets will be expanded upon if additional information can be located.	Closed
151.	Section 2.2.6.3 Pages 2-58 and 2-59	"Filler Materials" This section describes the various types of filler materials used at Hanford from 1968 to 1993. However, no references are provided and explanation is given to stipulate if the bullets describe standard practices, Hanford site requirements (supported by waste management	Provide references for the bulleted statements and describe how and why these requirements were instituted and to what level during field operations.	A	References to these sections, if available, have been added to the text and reference section in Chapter 7.0. The bullets will be expanded upon if additional information can be located.	Closed

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		procedures and applicable AEA regulations, etc.)				
152.	All Sections in 2.2.6, page 2-59 to 2-61	All sections are missing references. These sections note waste compatibility issues and associated packaging of the waste. It is important to document the references used. Also, no occurrences as a result of packaging incompatible materials together in burial grounds such as fires, etc. have been included in this history.	Provide references for these sections. Add information regarding occurrences in burial grounds due to packaging and disposing of incompatible materials together, before proper segregation procedures were employed.	A	References to these sections, if available, have been added to the text and reference section in Chapter 7.0.	Closed
153.	Section 3.2.2, Page 3-14, lines 29-31.	The following portion of the statement is unsupported and should be deleted: "although there is no indication that solid-waste landfills have impacted the groundwater". This portion of the statement is premature and lacks support. As noted in Section 3, groundwater monitoring for the Low Level Waste Management Areas indicates exceedance of statistical parameters in several cases. At this point, the reason for these exceedances has not been determined. This RI will help to determine whether the SW-2 units have contributed to groundwater contamination. Furthermore, many of the SW-2 units lack sufficient monitoring networks to make statistical comparisons.		A	The text has been revised as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
154.	Section 3.3, Page 3-17, lines 17-18.	The text states: "Most of the more recent well installations were for monitoring conditions beneath tank farms, not landfills." It is recommended that the text include an acknowledgement of Milestone M-24 and the identification of well needs		A	The following or similar text has been added to Section 3.3, "Groundwater well installation priorities for the LLBG are established and agreed to annually under TPA Milestone M-024."	Closed

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		associated with LLWMAs 1-4.				
155.	Table 3-1, pages 3-4 to 3-7	The SW-1 OU and the SW-2 OU sites are listed together.	To clarify this table and the change in OUs, split the table into two tables (one for original SW-1 OU sites and one for original SW-2 OU sites).	A	The table has been revised as requested.	Closed
156.	Page 3-7line 12 and Table 3-2 and page 3-13, lines 10-14, and page 3-15, line 2	"...have migrated..." Waste site do not migrate.	Change text and table heading to reflect that the waste sites "were transferred" from one OU to the other. Also, list the TPA Change Form Packages that accomplished the transfer of these sites (e.g. C-07-X).	A	The text and table heading have been revised as requested.	Closed
157.	Table 3-3. page 3-9 to 3-10	"No Action..." It is acceptable to list the APPROVED Rejected and Consolidated Sites and then the sites that are pending regulatory approval for rejection and consolidation per the WIDS/TPA process.	Remove the "No Action" waste sites from this table. And modify the table to reflect if the Rejected and Consolidated sites have been approved by the Regulatory Agencies.	AP	The table has been revised to separate the "No Action" waste sites from the "Rejected" and "Consolidated" sites. There are currently no sites that are awaiting regulatory agency approval.	Closed
158.	Page 3-18, Section 3.3.1 and globally	"200-SW-1 OU..." No data is presented in Appendix D, no sampling in Appendix A, no influences of parameters of the Conceptual Site Models (CSMs), no CSMs, etc.	It is evident that the 200-SW-1 and 200-SW-2 are on different RI/FS paths. Either completely incorporate all 200-SW-1 data and information into this RI/FS work plan and future revisions; or remove all 200-SW-1 OU information from this RI/FS Workplan and complete a TPA Change Package to split the 200-SW-1 and 200-SW-2 RI/FS documentation.	A	DOE agrees that these OUs are on separate paths for final disposition. Ultimately, the RI/FS work plan only will include the 200-SW-2 OU. A description of the path forward for disposition of the 200-SW-1 OU landfills will remain in the RI/FS work plan until a TPA change request is submitted and approved for splitting the documentation for the 200-SW-1 and 200-SW-2 OUs.	Closed

REVIEW COMMENT RECORD (RCR)

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159.	Page 3-25, D-22-23 and E-12 and E-15 and globally	Only a Table (D-12) is presented for MSCM (rad survey data). No maps are provided indicating the location of the hot spots. No dates are presented indicating when additional sampling will be conducted at these sites (as stated on the CSMs) and when other burial grounds will be surveyed.	Add maps indicating the hot spots discovered. Update the CSMs on pages E-12 and E-15. Also note when additional MSCM surveys will be completed for the 218-E-2 and 218-E-5 Burial Grounds and for the remaining burial grounds in the 200-SW-2 OU.	A	Annual radiological surveys are performed and mapped for the past-practice landfills. Current year survey maps have been included in Appendix D of the RI/FS work plan and the CSMs have been updated accordingly.	Closed
160.	Section 3.4	This section needs to acknowledge environmental monitoring associated with (and as a result of) *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0). The document assesses Low Level Burial Ground inventories and constituents of concern. The performance assessment establishes an assessment baseline for monitoring for future required assessments.		A	The performance assessment monitoring plan and associated monitoring have been mentioned in this section as requested.	Closed
161.	Section 3.4.2, Page 3-40, lines 26-35.	The text describes the potential for plant species to be exposed by contamination and to spread contamination. It is recommended that the text describe herbicide applications to deter plant growth.		A	The text has been revised to describe herbicide applications to deter plant growth. A focused investigation will be performed, as outlined in SGW-34463, to investigate the history of pesticide usage in the 200-SW-2 OU.	Closed
162.	Section 3.4.2, Page 3-41	The text describes radioactive contamination and survey findings. It is recommended that the workplan include a list of topographic radiation surveys and map radiation readings. This information may be useful for locating spots that have inadequate cover. This information may also be useful for safety considerations for future field work (i.e., topographic surveys, geophysical surveys, etc.).		AP	A web link has been added to the text to provide a path to all of the environmental monitoring reports dating back nearly five decades. This link is as follows: http://hanford-site.pnl.gov/envreport/ The 200-SW-2 OU has captured the annual radiation survey maps and will continue to do so on an annual basis. This information is being archived as part of the project files to	Closed

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					support future evaluation and decision making.	
163.	Section 3.5.1, Page 3-42, lines 6-10.	It is recommended that the text identify that even though interim status will be terminated for the entire Hanford Site, interim status standards are currently applied to certain RCRA TSD units such as the RCRA low level burial grounds.		R	To our knowledge, interim status has not yet been terminated at the Hanford Facility. For each TSD unit, the procedures of WAC 173-303-840, "Procedures for Decision Making," must be followed, which require submittal of complete permit applications and notification by Ecology in writing that the applications are complete. Please note the text of WAC 173-303-840(8)(a), which says "…the department will issue a final permit decision (or decision to deny a permit for the active life of a RCRA dangerous waste facility or unit under WAC 173-303-840)." (underlining added) See also the *Hanford Federal Facility Agreement and Consent Order Action Plan*, Section 6.2, which acknowledges the authority for unit-by-unit permitting as clarified in Federal regulations. Ecology also has such authority by virtue of adopting the Federal permitting authority. This authority is clarified in state regulation through WAC 173-303-840(8)(a). Issuance of a final status RCRA permit without receipt of complete applications for each TSD unit would be less, not more, stringent than the Federal program.	Closed
164.	Section 3.5.1, Page 3-42, Lines 23-29.	The text should acknowledge TPA Milestone M-24. Although M-24 is integrated with AEA, CERCLA, and RCRA needs (thus reflecting RCRA groundwater monitoring well needs), the fact that so many LLWMA 1-4 wells have been identified as needed is a clear indication of the significance of the deficiencies associated with the current		A	The following or similar text has been added to Section 3.5.1, "Groundwater well installation priorities for the LLBG are established and agreed to annually under TPA Milestone M-024."	Closed

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		groundwater monitoring networks.				
165.	Section 3.5.1, Page 3-42, line 23.	The text states: "The monitoring well network in 2007 includes 7 upgradient wells and 10 downgradient wells." If previous groundwater flow maps are considered, the numbers of up- and down-gradient wells would be different. Also, via the RCRA TSD permit application, Ecology has communicated that groundwater flow direction for this unit is uncertain. In fact, considering static water level measurements, Ecology has communicated that a near-radial flow can be mapped for this unit. Further complicating this issue is the near-flat water table. Therefore, groundwater flow direction is, at best, difficult to determine and may even be different at different time. Also, for a RCRA TSD unit, it is highly unusual for there to be almost as many upgradient as downgradient wells. The high number of upgradient wells at this unit is not by design. Therefore, the sentence/text should reflect that uncertainty associated with groundwater flow direction.	Recommended re-write: "The monitoring well network in 2007 includes what are believed to currently be 7 upgradient wells and 10 downgradient wells".	AP	The comment is accepted with the following modification, "The monitoring well network in 2007 includes what are believed to currently be 7 upgradient wells and 10 downgradient wells. However, the number of downgradient versus upgradient wells is indeterminate. The FY 2007 annual groundwater report indicates that the groundwater gradient in this part of the 200 East Area is almost flat, making determination of groundwater flow direction difficult."	Closed
166.	Section 3.5.1, Page 3-43, lines24-25	The text states: "No new wells for LLWMA-1 are included in recent versions of Tri-Party Agreement Milestone M-024." Although this may be true, well needs for LLWMA-1 have been identified for this unit. Due to the milestone's process for prioritization, no LLWMA-1 wells have been identified for construction within the milestone's near-term compliance period. Also, M-24 includes an annual process for		AP	The following statement has been added to the text, "Future TPA Milestone M-024 negotiations and agreements will address groundwater monitoring well needs for LLWMA-1."	Closed

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		identification of well needs. Consistently, Ecology has identified the need for additional LLWMA-1 wells. If the text is going to identify that no new wells are specified for compliance during the near-term, the text should also acknowledge Ecology's administrative acknowledgement of well needs associated with LLWMA-1.				
167.	Section 3.5.2.3, Page 3-43, lines 31-32.	The text states: "The exceedances are related to a regional nitrate plume and not LLWMA-1." Considering that groundwater flow direction has changed and is so difficult to determine combined with the fact that there are significant deficiencies associated with the groundwater monitoring network and program, the statement should be re-written to reflect uncertainty associated with the conclusion.	Recommended re-write: "The exceedances are believed to be related to a regional nitrate plume and not LLWMA-1."	A	The text has been rewritten as requested.	Closed
168.	Section 3.5.3.2, Page 3-45, lines 14-15.	The text states: "Deeper aquifers are isolated from this landfill by the low-permeability basalts." The possibility of inter-connection between the unconfined and "confined" basalt-aquifer(s) is unknown. Recent evaluations of groundwater levels and barometric pressure affects of near-by wells indicates a "leaky aquifer" (top-of-basalt rubbly surface may allow communication). Also, associated with LERF, USDOE and contractors are planning on constructing new wells at the base of the Ringold where there are currently indications of groundwater (unconfined). Therefore, at this time, it is unknown if the statement is accurate. In fact, there are more indications that the statement is inaccurate.	Either delete the statement or re-write it. Possible re-write wording: "At this time, it is unknown whether deeper aquifers are in communication or are isolated from this landfill by the basalts."	A	The statement has been deleted as requested.	Closed

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169.	Section 3.5.3.3, Page 3-45, lines 27-28.	The text states: "Because these constituents also were elevated in the former upgradient well, the source does not appear to be LLWMA-2." Due to the changing hydrogeologic regime (water table elevation, groundwater flow direction, etc.) and the numerous groundwater monitoring network and program deficiencies (as identified by the RCRA Part B permit application NOD), the cause for observations of elevated constituents in the "former upgradient well" are unknown. It is recommended that the unknown cause be acknowledged.	Either delete the statement or re-write it. Possible re-write: "Although these constituents were also elevated in the former upgradient well, the source is currently unknown."	A	The text has been revised as requested.	Closed
170.	Section 3.5.5.3, Page 3-49, line 16.	The sentence stating there is no evidence that LLWMA-4 has contaminated groundwater is without technical and regulatory basis. To the contrary, there is a regulatory basis (exceedances) that there will be a release. In addition, there is a technical vadose zone and riser pipe characterization and monitoring basis indicating that there have been releases from the unit.	Delete the sentence.	A	The sentence has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed
171.	Section 3.5.5.3, Page 3-49, lines 22-23.	The text does not identify the results of vadose zone characterization which have indicated CCl4 and CCl4 degradation product contamination.	Recommended re-write: "Subsequent characterization was performed which determined that CCL4 and CCl4 degradation product contamination is present in the vadose zone."	AP	The comment is accepted with the following modification, "Subsequent characterization was performed which determined that CCl_4 and CCl_4 degradation product contamination is present in the vadose zone. Although the CCl_4 and CCl_4 degradation products exist as a regional groundwater plume beneath LLWMA-3,4 (as depicted in Figure 2-6), the extent of any LLWMA-3,4 releases through the vadose zone is unknown. Additional vadose-zone characterization associated with LLWMA-3,4 releases is needed to determine whether the releases have	Closed

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					negatively impacted groundwater quality."	
172.	Section 3.5.6.3, Page 3-51	Even though there will be over 20 years of monitoring, the section only describes monitoring results of 2006. Include a comprehensive description and identify past releases. In addition, identify that Ecology requested a corrective action plan for this unit.		AP	A discussion of the NRDWL and associated groundwater-monitoring results is beyond the scope of this work plan. Information regarding the 200-SW-1 OU landfills (NRDWL and SWL) is provided for information purposes only. However, the following information has been added to Section 3.5.6.3 to expand the historical perspective regarding groundwater monitoring results for the NRDWL: "WHC-EP-0021, *Interim Hydrogeologic Characterization Report and Groundwater Monitoring System for the Nonradioactive Dangerous Waste Landfill, Hanford Site, Washington,* was issued in October 1987 to document groundwater-monitoring network upgrades at the NRDWL and provide groundwater-sampling results. Nine wells were installed in 1986 to provide a detection-level groundwater-monitoring system that met the requirements for interim status groundwater monitoring under 40 CFR 265, Subpart F, "Ground Water Monitoring." Results from water samples collected from shallow and deep groundwater-monitoring wells were analyzed against primary drinking water standards and no constituents were found to exceed the standards. In December 1993 and September 1997, soil-gas surveys were conducted in the vadose zone at the NRDWL. The 1993 surveys (WHC-SD-EN-TI-199, *Nonradioactive Dangerous Waste Landfill Soil Gas Survey: Final Data Report*)	Closed

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					sampled soil-gas from a maximum depth of 4.5 m. Several VOCs were identified in samples collected from the vadose-zone soil-gas network including acetone; trichloroethylene (TCE); perchloroethylene (PCE); chloroform; carbon tetrachloride; 1,1,1-trichloroethane (TCA); 1,1,2-trichloroethane; and cis-1,2-dichloroethylene. The 1997 surveys (BHI-01115, *Evaluation of Soil Gas Survey at the Nonradioactive Dangerous Waste Landfill*) sampled soil -gas from a maximum depth of 29.7 m. The 1997 soil-gas survey detected the same VOCs found in the 1993 survey with the addition of 1,1-dichloroethane (DCA). Of all the VOCs detected, TCA was the most widespread and was detected in all but one of the deep vadose-zone probes at concentrations less than 1 ppmv. In August 1999, PNNL-12227, *Groundwater Monitoring Plan for the Nonradioactive Dangerous Waste Landfill,* was issued describing, among other things, groundwater monitoring results since 1987. This report indicates that concentrations of RCRA indicator parameters (specific conductance, pH, total organic carbon, and total organic halogens) have not significantly increased over background. Some chlorinated VOCs were detected in NRDWL groundwater monitoring wells, but below their maximum contaminant levels (MCL). For example, PCE, TCA, carbon tetrachloride, and chloroform were all detected in downgradient wells, but in concentrations below the primary drinking water standards. The groundwater beneath the NRDWL contains tritium, I-129, and nitrate due to regional	

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					plumes emanating from the 200 Areas. Since 1999, groundwater monitoring at the NRDWL continues to focus on RCRA interim status indicator parameters. Furthermore, VOCs are monitored because they may represent groundwater contamination originating from the NRDWL. The groundwater quality parameters (chloride, iron, manganese, phenols, sodium, and sulfate) are required analytes, but they are either not detected or are reported in concentrations below their respective drinking water standards. Three of the four RCRA interim status indicator parameters (pH, total organic carbon, and total organic halides) have not exceeded their critical means in downgradient wells where valid upgradient/downgradient comparisons can be made. However, the critical mean for specific conductance has been exceeded and reported to Ecology. Exceedances of the specific conductance critical mean have been attributed to increases in the concentrations of nonhazardous constituents (bicarbonate, sulfate, and magnesium) at the Solid Waste Landfill to the south. Although VOCs continue to be detected in groundwater beneath the NRDWL, several of the constituents are below their practical quantitation limit and all are below applicable primary drinking water standards. Concentrations of VOCs have been and continue to decline over time."	
173.	Section 3.6.1, Page 3-53, line13.	The parenthetical does not acknowledge the driving force of ruptured pipelines. It is recommended that ruptured pipelines and dust suppression be added to rain and	Recommended re-write: ("leaching (contaminant release from rain, snowmelt, ruptured pipeline/leak, water application during dust	AP	The comment is accepted with the following modification. The term "leaching" has been used without listing potential sources.	Closed

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		snowmelt variables.	suppression, etc.)".			
174.	Section 3.6.1, Page 3-53.	Consider adding fire as a release mechanism.		A	The text has been revised to add fire as a release mechanism.	Closed
175.	Section 3.6.1, Page 3-53, line17.	The text states: "It is not likely that groundwater will be impacted from these landfills". *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0) provides conceptual models for contaminant migration under operational and post-closure conditions as Figure 2.3. On page 2.8, the assessment states: "Infiltration and the drainage of moisture through the vadose zone beneath the burial grounds are expected to be much greater during operations than after closure. During the operational period, runoff can accumulate in depressions and open trenches. Although unlikely, under unfavorable conditions (e.g., unusual precipitation event), migration to groundwater could occur in a relatively short time (estimated at 50 to 100 years in Wood et al. 1995, 1996). This is more likely in the 200 East Area burial grounds where the vadose zone is in the Hanford formation (course sands and gravel). If breatkthrough occurs during the operational period, it could indicate possible weak points in the waste management system that might need special attention for closure." On page 2.9, the text states: "Possible	Delete or re-write the sentence. Possible wording: "Because operational and environmental conditions are unknown, it is not known if groundwater will be impacted by these landfills."	A	The sentence has been deleted as requested. However, based on groundwater monitoring to date (which DOE believes is compliant with RCRA, CERCLA, and AEA requirements), this statement is correct. DOE agrees to remove it from the work plan because we agree this conclusion is better suited for the RI/FS report.	Closed

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		weak points noted include structural failures. For example, collapse of boxes and containers that have large void spaces could create depressions and openings for collection of snow melt. Such depressions and/or openings would result in enhanced infiltration that could shorten the travel time to groundwater considerably from the estimated rate of 50 to 100 years (based on a uniform infiltration rate of 5 cm/yr)."				
175a.	Section 3.6.3.1 on Page 3-56 to 3-57 and globally	Much of the 200-SW-2 OU Project Assumptions, CSMs, and information used to design the sampling analysis plan and discuss remedial decisions are based on the *Historical Information Associated with Burial Grounds in the 200-SW-2 OU* (D&D-31260). Ecology has requested this document to review the information to verify the information being cited is applicable and correct.	Provide this document to Ecology and describe what "technical information" compiled in this document was used for the assumptions, CSMs, and information used to design the sampling analysis plan and discuss remedial decisions.	A	Ecology was provided the document. No further action required.	Closed
176.	Section 3.6.3.1 on Page 3-56 and 3-57	"Hanford Site Feature, Event, and Process Methodology" Ecology did not participate in this technical effort. Ecology has reviewed the "FEPs" document (SGW-34462, Rev.0) and does not completely agree with the assumptions, results and conclusions of this process as stated in the FEPS document and stated in the work plan.	Make a commitment to re-run the Hanford Site-Specific Features, Events, and Processes methodology when all of the Phase I (A and B both) survey data is collected, including Ecology participation at that time. Specifics to be addressed during this process include, but are not limited to: • Review of the specific HFEP categories	AP	When all of the Phase I (A and B both) survey data are collected, Ecology will be included in discussions to refine the CSMs. The need to perform additional Hanford Site-specific features, events, and processes (HFEP) analyses will be evaluated during the Phase II DQO process.	Closed

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			• Discussion and clarification on the dominant vs subordinate rankings for different parameters (e.g. Composition of Waste Form, Chemical Conditions of the Waste, Human Risk Factors,			
177.	Section 3.6.2, Page 3-53, lines 20-22.	The text indicates that COPC's for phase II are under development. In addition, the text provides a basis for developing COPC's for phase I-B. Understanding that the COPC's had been agreed upon for phase II, it is not understood why phase I-B wouldn't simply start with the COPC's (which have already been developed for Phase II) and exclude those contaminants that are not "readily detectable via nonintrusive survey techniques". Clarification of basis and logic is requested.		A	The following text has been added to Section 3.6.2, "In accordance with the May 2007 agreement (RL and Ecology, 2007), Phase I-B characterization primarily is focused on nonintrusive characterization techniques with limited intrusive techniques. This includes the application of historical records, borehole logging (direct pushes and groundwater wells), unused caisson visual and radiological surveys, and nonintrusive soil-vapor and geophysical survey techniques (no soil samples will be collected during Phase I-B). As a result of the May 2007 agreement, the standard COPC development process and exclusion rationale in the DQO did not apply for this phase of characterization. Instead, the COPC list generated in the Phase I-B DQO process was limited to contaminants that are readily detectable via nonintrusive soil-gas survey or	Closed

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					gross/spectral gamma ray logging techniques. These COPCs are listed in Table 3-7."	
178.	Table 3-6, Page 3-54.	The text in the table states that the COPCs include gamma-emitting radionuclides that may be detected by radionuclide surveys from within the caissons. The table does not identify radioactive constituents that may be detected during normal routine health physics technician surveys that are routinely performed prior and/or during entry/access to the burial grounds.	Please include a comprehensive list of COPCs detectable by health physics technicians during routine safety-related surveys.	R	Table 3-7 (COPCs) has been revised, in accordance with discussions with Stoller, Inc., to include those gamma-emitting radionuclides that may be detected during logging of existing wells, or logging of direct pushes.	Closed
179.	Section 3.6.2.1	For completeness, the section should acknowledge exposure to contaminated groundwater in the event that it is confirmed or determined that the burial grounds have contaminated groundwater.		A	Exposure to potentially contaminated groundwater has been acknowledged in Section 3.6.2.1. A bullet has been added to Section 3.6.2.1 that reads as follows, "Address impacts of current concentrations of contaminants in soil on groundwater." In addition, the following text has been added to Section 3.6.2.1, after Table 3-8, "The first step in achieving surface water protection will be through protecting the groundwater pathway. However, where surface water protection standards (including standards described in WAC 173-340-730, "Surface Water Cleanup Standards") are more stringent than the groundwater standards, protection of the Columbia River will be achieved by meeting the surface water standards at either a standard or conditional point of compliance for groundwater, as defined in WAC 173-340-720(8), "Point of Compliance." It is anticipated that current uses of the Columbia River will continue in the future.	Closed

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					DOE-RL believes its groundwater monitoring program is compliant with RCRA, CERCLA, and AEA requirements.. Please also see response to Comment #115.	
180.	Section 3.6.2.1	None of the initial CSMs provided/depicted in Appendix E appear to address the operational CSM provided in *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0). The performance assessment provides conceptual models for contaminant migration under operational and post-closure conditions as Figure 2.3. Considering that none of the burial grounds have been capped to satisfy post-closure performance standards, the omission of this conceptual model renders the HFEP (as evaluated in Phase I-B) significantly deficient.	Include an operational CSM similar to that described and provided by: *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0). Also, identify in Section 3.6.3.1 text that the "meetings held with representatives of the DQO team and other technical experts" omitted this particular CSM.	AP	The operational CSM, as described in DOE/RL-2000-72, has been acknowledged in Section 3.6.3. The preliminary CSMs as described and depicted in Appendix E reflect basic landfill conditions (as currently understood) and will be refined as appropriate after each successive phase (I-B, II, and III) of field characterization is completed. Modifications to the CSM graphics have been made to more clearly depict the potential for contaminant migration under operational (pre-closure) conditions.	Closed
181.	Section 4.1.1, Pages 4-4 and 4-5.	The text states: "The geophysical logging, limited direct pushes, and vapor surveys conducted during Phase 1-B will aid in identifying target locations for intrusive sampling and analysis during future phases of site investigation." Topographical surveys are necessary to identify where precipitation may infiltrate. Topographical surveys should be conducted to identify areas that may have been subject to repeated infiltration during normal rain or snow events. Topographical surveys will be useful to focus sampling on these locations and to identify potential subsidence issues related to worker safety.	Recommended sentence re-write: "The geophysical logging, topographical surveys, limited direct pushes, and vapor surveys conducted during Phase 1-B will aid in identifying target locations for intrusive sampling and analysis during future phases of site investigation."	A	The sentence has been revised as requested.	Closed

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182.	Section 4.1.1, Page 4-5, lines 9-11	The text communicates the assumption that mobile contaminants will "tend to concentrate in fine-grained sediment layers beneath the burial trenches (~10 to 30 m or 50 to 100 ft)". This identified depth does not agree with the CSM provided/depicted in *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0). In addition, if there is sufficient water (i.e, during repeated and/or large precipitation events), mobile contaminants may behave differently than described.	Recommended re-write: "For conceptual site models without certain liquid conditions, mobile contaminants...beneath the burial trenches. For conceptual site models including certain liquid conditions, mobile contaminants....may be transported significant distances vertically and/or laterally."	AP	The comment is accepted with the following modification, "Mobile contaminants (radiological and chemical) can be transported vertically and/or laterally, and may tend to concentrate in fine-grained sediment layers beneath the burial trenches. The primary objective of sampling during the RI/FS process is to determine the nature and extent of contamination."	Closed
183.	General and Section 4.1.1, Page 4-5, lines 9-11.	Depending on the CSM, mobile contaminants may or may not occur with moisture. It is recommended that vapor sampling also be performed during direct-push characterization activities.		R	In accordance with the May 15, 2007, agreement between RL and Ecology, a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. Soil and active soil-gas samples are proposed for future-phase characterization. Phase I-B will consist of the use of primarily nonintrusive geophysical and soil-gas characterization activities to target areas that may contain either organic vapors or buried masses of metal that may contain liquid organics or areas that contain both. Limited intrusive activities will be conducted during Phase I-B to gain experience operating the hydraulic hammer rig around 200-SW-2 OU landfills. Direct-push locations will be logged with gross/spectral gamma, active neutron moisture, and passive neutron detectors to determine the presence of radioactivity and moisture at the push locations.	Closed

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					Soil-gas samples could be extracted at direct- push locations following radionuclide and moisture logging using a "knock-off" tip push rod and the hydraulic hammer rig. However, the data could be of questionable integrity due to the inability to properly seal the bottom sediments as the push rod is extracted to isolate the depth from which the soil-gas sample is obtained. Although wetted bentonite could be used to seal the bottom sediments, the moisture could compromise soil-gas sample quality and subsequent field or laboratory analyses. Soil-gas sampling during Phase II allows an appropriate sampling design to be determined through the DQO process with full consideration of existing soil-gas information from landfill vent risers, M-091 Program post-retrieval sampling, ecological assessments, and other sources. Furthermore, a focused investigation is planned to evaluate innovative direct-push techniques capable of conducting soil-gas sampling, soil-moisture sampling, and radionuclide logging at a single direct-push location. Such information will result in more cost-effective soil sampling and analysis during Phase II and Phase III intrusive characterization using the hydraulic hammer rig's dual-wall soil sampler. Please also see response to Comment #182.	
184.	pg. 4-7, line 29	The text indicates that geophysical surveys, including gross-gamma, will be performed. This is not consistent with what is presented in the SAP (Appendix A). The SAP indicates that spectral	Change text to indicate that spectral gamma logging will be performed.	A	The text has been revised to state that both gross gamma and spectral gamma logging will be performed, assuming gamma is detected during the gross gamma logging.	Closed

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		gamma logging will be performed.				
185.	Pg. 4-7, line 36	The text states that existing wells will be logged to determine regions of high moisture, which will then be surveyed using gross-gamma, spectral gamma, and passive-neutron instrumentation. It is not sufficient to log only the areas detected as high moisture zones. One of the stated purposes of geophysical logging in this work plan is to gain information on geology and contamination. Gross-gamma surveys will provide information on stratigraphy; however the entire well must be logged in order to gain this information. Spectral-gamma and passive-neutron measurements will determine the presence of contamination. Contamination does not always coincide with high moisture zones, and therefore the entire well should be logged using these methods as well.	Change work plan to include geophysical logging of the entire well casing, not just high moisture zones as indicated by the neutron log.	A	The text has been revised as requested to indicate the geophysical logging of the entire well casing that is in the vadose zone.	Closed
186.	pg. 4-7, line 38	The text states, "Dual string casing will be driven into high moisture zones to collect samples for analysis." The SAP does not include the collection of soil samples. However, collection of soil samples is feasible with direct push technologies. See general comment.	Include in the SAP, the collection of soil and vapor samples, via direct push technologies, for all planned pushes.	R	Soil and vapor samples associated with the direct pushes will be performed beginning in Phase II. However, the current text has been modified as follows, "Dual string casing or other appropriate methods will be deployed into high moisture zones to collect samples for analysis during Phase II characterization, as determined by the Phase II DQO process." See also response to Comment #99.	Closed
187.	Pg. 4-8, line 19	The text states, "Evaluation of the Phase I-B sampling data will be used to determine the current conditions inside the landfills and in adjacent soils at	Change text, "Evaluation of the Phase I-B sampling data will be used to enhance knowledge of contaminant	AP	The comment is accepted with the following modification, "Evaluation of the Phase I-B ~~sampling~~ survey data will be used to enhance knowledge of contaminant	Closed

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		direct push locations." This statement fails to recognize the limitations of the non-intrusive technologies and of a biased sampling approach. The results of all of the technologies that will be used to indicate contamination, including the borehole geophysical and soil vapor technologies, are dependent on their location relative to the contamination. For example, the borehole geophysical technologies receive 90% of their signal within 6 inches to 1 ft of the detector. Similarly, the soil vapor surveys detections depend on proximity and flow pathways from the source.	conditions ~~determine the current conditions~~ inside the landfills and in adjacent soils at direct push locations."		conditions ~~determine the current conditions~~ inside the landfills and in adjacent soils at direct-push locations."	
188.	Pg. 4-8, line 23	The text states, "The Phase II and III investigations will be initiated in the out-years if Phase I-B results show COPC concentration values exceeding preliminary cleanup levels, or if data are inconclusive and cannot provide enough detail to support refinement of the conceptual site models and baseline risk assessment." 1) It is unclear what values are being used as preliminary clean-up levels. 2) This statement fails to recognize the limitations of the non-intrusive technologies. The results of the Phase I-B investigation are qualitative and should be used as nothing more than to support refinement of the CSM.	Change text, "Based on knowledge gained from the Phase I-B investigation, the Phase II and III investigations will be initiated in the out-years ~~if Phase I-B results show COPC concentration values exceeding preliminary cleanup levels, or if data are inconclusive and cannot provide enough detail~~ to support refinement of the conceptual site models and baseline risk assessment."	A	The text has been revised as requested.	Closed
189.	Section 4.2, Pages 4-8 – 4-10.	Topographical surveys should be performed to focus phase I-B and phase II characterization efforts on areas of potential infiltration and to identify areas of subsidence. The section should describe the		A	LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463.	Closed

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		conductance of high resolution surface topographic surveys of all burial grounds (e.g., drive transects with Real Time Kinematic GPS). Furthermore, topographical surveys should be performed prior to selection of direct-push locations.				
190.	Section 4.2, Page 4-8, lines 34-36.	The statement is inaccurate as geophysical surveys have not been performed for 218-E-10, 218-E-12B, 218-E-3A, 218-E-3AE, 218-W-4B, 218-W-4C, and 218-W-5. Surface geophysical surveys should be performed for all the landfills, including the TSDs (excluding the submarine reactor cores and open/operational trenches). These surveys represent the only continuous data set that can be collected, and will support the basis for focusing sampling in future phases.	Add surface geophysical surveys for all Bin 1 landfills (TSDs).	R	The sentence was incorrectly stated in Draft B. "Past-practice" has been added to the sentence to make it accurate. Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records, including drawings, burial records, etc. However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463.	Closed
191.	Section 4.2, Page 4-9, line 3.	During Phase II DQO meetings, participants were informed of container shortages. Therefore, it is concluded that wastes containing organics may have been disposed in non-metallic containers or even included with bulk wastes.	Expand the scope of the soil vapor surveys to include widespread coverage of all the trenches with little documentation or with potential for organic-laden waste disposals.	AP	Widespread coverage for passive soil-gas surveys is not expected to result in data that will provide added value to the characterization effort. Rather, the Phase I-B passive soil-gas surveys will be primarily focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics. These areas have the potential to contain drums or other vessels that potentially could have held organic liquids).	Closed

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					However, 56 additional locations over areas containing soft (non-metallic) waste will be sampled for organic vapors. These locations were chosen based on a review of process history, focusing on those facilities/processes that are known to have used organic liquids, and have the potential to have generated waste containing sorbed organic liquids. Section 4.2 has been modified to further clarify the rationale for passive vapor sampling in Phase I-B.	
192.	pg. 4-9, line 3	The text states, "Organic surveys will be focused on those areas that show a strong metallic signature." The technical basis for this is unclear. See general comment.	Expand the scope of the soil vapor sampling to include widespread coverage of all the trenches.	AP	Widespread coverage for passive soil-gas surveys is not expected to result in data that will provide added value to the characterization effort. Rather, the Phase I-B passive soil-gas surveys primarily will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics. These areas have the potential to contain drums or other vessels that potentially could have held organic liquids). However, 56 additional locations over areas containing soft (non-metallic) waste will be sampled for organic vapors. These locations were chosen based on a review of process history, focusing on those facilities/processes that are known to have used organic liquids, and have the potential to have generated waste containing sorbed organic liquids. Section 4.2 has been modified to further clarify the rationale for passive vapor sampling in Phase I-B.	Closed
193.	Section 4.2, Page 4-9,	The text should specify that direct-push techniques will be performed after		A	LIDAR surveys will be performed and analyzed in support of Phase II	Closed

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	lines 14-20.	topographical surveys are performed.			characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463.	
194.	pg. 4-9, line 15	The text does not indicate which landfills will receive direct pushes due to flooding.	State in the text which landfills will receive direct pushes because they were flooded.	A	The text has been revised to state the landfills that had documented historical occurrences of standing water based on rapid snowmelt or seepage from a nearby liquid waste trench.	Closed
195.	pg. 4-9, line 19	The text states that direct pushes will employ gamma logging and moisture logging. Please specify the type of gamma logging and include passive neutron logging and soil sampling.	Please specify the type of gamma logging (gross, spectral) and include passive neutron logging and soil sampling.	AP	The text has been revised to indicate that direct-push locations will be logged with gross/spectral gamma, active neutron (moisture), and passive neutron detectors to determine the presence of radioactivity and moisture at the direct-push locations selected. In accordance with the May 15, 2007 agreement between RL and Ecology, a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. As such, and as discussed in Section 5.3 of the RI/FS work plan, intrusive techniques that include soil sampling will be performed in Phase II and/or Phase III.	Closed
196.	Section 4.2, Page 4-9, lines 7-8.	The text states: "Passive organic-vapor surveys will be used to determine if containers of organic liquids may have been disposed in these landfills." While passive organic-vapor surveys can be used to determine the presence of organic vapors, organic-surveys may not be able to determine if in-tact and unvented containers containing organic wastes have been placed in the burial grounds. It is recommended that the sentence be re-written so that expectations of confirmation/validation	Recommended re-wording: "Passive organic-vapor surveys will be used to determine the presence or absence of organic vapors in burial ground trenches."	A	The text has been revised as requested.	Closed

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		of existence of "containers of organic liquids" in these burial grounds is not unachievably high.				
197.	Section 4.2, Page 4-9, lines 14-18.	As stated above, topographical surveys should be performed to focus phase II characterization efforts on areas of potential infiltration and to identify areas of subsidence. In addition, the topographical surveys should be used to select/determine direct-push locations during phase I-B characterization efforts. The section should describe the direct-push locations being selected/determined based on the topographical survey information. In particular, the section should indicate that topographical surveys will be performed prior to selection of direct-push locations and that the topographical information will be used to select those locations.		A	LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463.	Closed
198.	Section 4.2, Page 4-9, lines16-18.	The text should identify the locations of direct-push due to flooding and ponding. Also, the date and/or documentation of the flooding or ponding event should be provided in the workplan.		A	The color figures provided in Appendix B of the RI/FS work plan have been modified to include locations of the direct pushes. These modified figures have been added to Appendix A. Available information regarding the documented historical flooding events is presented in Chapter 2.0 of the RI/FS work plan. A focused investigation, to be outlined in SGW-34463, will be performed to locate, review, and compile past occurrences of subsidence and other documented anomalies.	Closed

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199.	Section 4.2, Page 4-9, lines 18-20.	The text indicates the direct pushes will employ gamma logging and moisture logging. The text should specify the type of gamma logging (gross, spectral). In addition, the direct pushes provide an excellent opportunity to obtain passive neutron logging and even soil sampling. The text should identify that passive neutron logging will also be performed. The text should also identify the conditions that soil sampling would be performed.		AP	The text has been revised to indicate that gross/spectral gamma, active neutron (moisture), and passive neutron logging will be performed at the direct-push locations selected. In accordance with the May 15, 2007, agreement between RL and Ecology, a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. As such, and as discussed in Section 5.3 of the RI/FS work plan, intrusive techniques that include soil sampling will be performed in Phase II and/or Phase III.	Closed
200.	Section 4.2, Page 4-9, line 26.	The text states: "Borehole and spectral logging will be performed in a number of accessible boreholes..." The text provides criteria and references the SAP for an identification of eligible wells and boreholes. The text should also indicate how eligible wells and boreholes will actually be selected for logging.	The text should also indicate how eligible wells and boreholes will actually be selected for logging.	A	A statement has been added to the SAP that directs the reader to Chapter 4.0 for the rationale behind the sampling plan.	Closed
201.	pg. 4-9, line 36	The text states that suspected unused portions of the landfills will be evaluated by visual inspection and photo review, and if disturbances are indicated, geophysical surveys may be performed. Surface geophysical surveys are the best way to support determination that a site is unused. Visual inspection and photo evaluation are inadequate to complete this task.	Change text, "Visual inspection of unused portions and annexes of landfills will be performed during site walkdowns, coupled with review of aerial photographs, geophysical surveys, and sampling as necessary to support closure."	AP	The text has been revised as follows, "Visual inspection of unused portions and annexes of landfills will be performed during site walkdowns, coupled with review of aerial photographs and other historical information and geophysical surveys to support procedural closure. If unique anomalies are noted as a result of geophysical surveys, RL and Ecology will determine the need for any further characterization."	Closed
202.	pg. 4-10, line 15	Magnetometry is used to locate buried ferrous metal objects.	Change text, "Magnetometers permit rapid, noncontact surveys to locate buried ferrous objects or features. This technique	AP	The comment is accepted with modification, the term "ferromagnetic" will be used instead of "ferrous."	Closed

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			is applicable for use with buried ferrous metal waste forms or packages."			
203.	pg. 4-12, line 7	As the text recognizes, direct push technologies can be used to collect samples with minimal waste generation. Since direct push technologies are being used for geophysical logging, it makes sense to obtain soil samples in the process. Soil samples should be collected, unless technical justification can be provided. The text also recognizes that organic vapor monitoring can be performed via direct push. This should be done at all push locations. See general comment.	Add soil sampling and organic vapor monitoring to all direct push locations.	R	In accordance with the May 15, 2007, agreement between RL and Ecology, a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. Soil and active soil-vapor samples are proposed for future-phase characterization. Phase I-B will consist of the use of primarily nonintrusive geophysical and soil-gas characterization activities to target areas that may contain either organic vapors or buried masses of metal that may contain liquid organics or areas that contain both. Limited intrusive activities will be conducted during Phase I-B to gain experience operating the hydraulic hammer rig around 200-SW-2 OU landfills. Direct-push locations will be logged with gross/spectral gamma, active neutron moisture, and passive neutron detectors to determine the presence of radioactivity and moisture at the direct push locations. Soil-gas samples could be extracted at direct-push locations following radionuclide and moisture logging using a "knock-off" tip push rod and the hydraulic hammer rig. However, the data could be of questionable integrity due to the inability to properly seal the bottom sediments as the push rod is extracted to isolate the depth from which the soil-gas sample is obtained. Although wetted bentonite could be used to seal the bottom sediments, the moisture could compromise soil-gas sample quality and subsequent field	Closed

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					or laboratory analyses. Soil-gas sampling during Phase II allows an appropriate sampling design to be determined through the DQO process with full consideration of existing soil-gas information from landfill vent risers, M-091 Program post-retrieval sampling, ecological assessments, and other sources. Furthermore, a focused investigation is planned to evaluate innovative direct-push techniques capable of conducting soil-gas sampling, soil-moisture sampling, and radionuclide logging at a single direct-push location. Such information will result in more cost-effective soil sampling and analysis during Phase II and Phase III intrusive characterization using the hydraulic hammer rig's dual-wall soil sampler.	
204.	pg. 4-12, line 36	The text states that spectral gamma logging will be performed in all accessible boreholes and groundwater wells and "may" be performed in the direct push holes. Spectral gamma should be performed in the direct push holes as it indicates anthropogenic contamination, unlike gross gamma.	Change text (as consistent with the SAP), "Sodium-iodide spectral-gamma logging will also ~~may~~ be performed in the direct-push boreholes."	A	The text has been revised as requested. In addition, text has been added to the RI/FS work plan indicating that the high purity germanium (HPGe) detector will be used for logging existing wells.	Closed
205.	pg. 4-12, line 38	The text states, "Borehole-logging equipment currently in use for vadose-zone characterization at the Hanford site includes spectral-gamma logging, neutron moisture logging, and passive-neutron logging." As such, all of these geophysical techniques should be employed in both the direct push holes and in the existing wells.	Change text where necessary to indicate that spectral-gamma, passive-neutron, and active-neutron (moisture) logging will be employed at direct push holes and in existing wells.	A	The text has been revised as requested. In addition, text has been added to the RI/FS work plan indicating that the HPGe detector will be used for logging existing wells.	Closed
206.	pg. 4-13, line 6	The small diameter of direct push casings may not accommodate use of	Add text indicating that the HPGe detector will be used	A	The text has been revised to indicate that the HPGe detector will be used for logging	Closed

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		the HPGe spectral gamma-logging detector, but existing cased wells should be large enough to use this detector.	for logging existing wells.		selected, existing wells of sufficient diameter with unobstructed access.	
207.	Section 4.3.3.1, Page 4-12, lines 6-9.	The text acknowledges the direct push methodology can be used to collect samples generating minimal waste (using small-diameter driver). Therefore, soil samples should be collected unless technical or safety reasons prohibit.	Modify the text and identify that soil samples will be collected unless prohibited for technical and/or safety reasons. In addition, modify the text and describe the criteria that will be applied for collecting soil samples.	R	In accordance with the May 15, 2007, agreement between RL and Ecology, a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. As such, and as discussed in Section 5.3 of the RI/FS work plan, intrusive techniques, such as soil sampling, will be performed in Phase II and/or Phase III.	Closed
208.	Section 4.3.3.2, Pages 4-12 – 4-13.	The text identifies that certain wells are configured for geophysical logging. The text also acknowledges that spectral-gamma logging, neutron-moisture logging, and passive-neutron logging are currently in use for vadose-zone characterization at the Hanford Site. Where possible, all of these geophysical techniques should be employed in both the direct push holes and in the existing wells.	Modify text to specify that the 3 geophysical techniques, where possible, will be employed at direct push holes and in existing wells.	A	The text has been revised to state, "Gross/spectral gamma, passive neutron, and active neutron (moisture) logging will be employed at direct-push holes and in existing wells."	Closed
209.	pg. 4-17, row 3	Topographical surveys should be conducted to identify areas that may have been subject to repeated infiltration during normal rain or snow events. See general comment.	Topographical surveys should be performed to focus phase II characterization efforts on areas of potential ponding and to identify subsidence issues.	A	LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463.	Closed
210.	pg. 4-21 to 4-23, Table 4-2	1) The table indicates (with footnote "m") that the analytical methods for use in Phase I-B are radiological screening, GPR, EMI, TMF, passive soil gas, gamma emissions, and neutron moisture logging. The table does not indicate the use of passive-neutron logging for several variables, including "fission products", "plutonium", and	1) Add footnote "m" to indicate the use of passive-neutron logging for these variables. 2) Add footnote "m" to indicate the use of spectral gamma logging with HPGe	A	1) Footnotes have been added to Table 4-3 as requested. 2) The comment is accepted with the following modification: Add footnote "n" to indicate the use of gross/spectral gamma logging with HPGe detector for logging selected, existing wells with sufficient	Closed

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		"transuranics". The use of passive-neutron logging is routine at Hanford and should be utilized. 2) Spectral gamma logging with HPGe detector can be used for already existing wells.	detector for logging existing wells.		diameter and unobstructed access.	
211.	Table 4-1	The table does not identify repeated (routine) precipitation events that allow infiltration due to surface topographic lows including areas of subsidence (past and present). To address the CMS provided/depicted in *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0), an additional row should be added to the table that reflects routine precipitation events combined with topographic lows including areas of subsidence.	Include an additional row that identifies the conductance of high resolution surface topographic surveys of all burial grounds (e.g., drive transects with Real Time Kinematic GPS) as the characterization technique. It is also recommended that the row acknowledge that topographical surveys should be performed to focus characterization efforts of phase I-B and future phases on areas of potential pooling/ponding and infiltration and to identify potential existing or future subsidence issues.	A	LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463.	Closed
212.	Section 4.5.2, Page 4-26 and Table D-7	Organic vapor sampling results for certain trenches are provided in Table D-7. The data clearly indicates organic contamination and releases associated with SW-2 OU landfills. However, the text of Section 4.5.2 does not appear to even attempt to interpret the data. It is recommended that, where possible, the data be interpreted. It is also recommended that the information in Table D-7 be plotted on a map or schematic. This information should be		AP	The following text has been added to Section 4.5.2 (just before the final sentence beginning on page 4-26, line 4): "While specific sources for organic contamination measured in the 200-SW-2 OU landfills have not been identified to date, the most recent and comprehensive reporting on organic contamination measured in the 200 West Area vadose zone currently is captured in DOE/RL-2006-51, Rev. 0, *Plutonium/Organic-Rich Process*	Closed

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		combined with the topographic surveys for selection of direct-push locations.			*Condensate/Process Waste Group Operable Unit: Includes 200-PW-1, 200-PW-3, and 200-PW-6 Operable Units.* This document was published in September 2007." Data interpretation has been included in the RI report for the 200-SW-2 OU.	
213.	Figure 5-1, Page 5-2.	The figure does not depict RCRA corrective action. The RCRA permit (Part IV) may also represent the document authorizing selected remedy for past practice sites.	Include RCRA corrective action in the figure.	R	An updated Figure 5-1, based on the recently approved 200-IS-1 OU RI/FS work plan, has been added to the 200-SW-1/2 OU RI/FS work plan.	Closed
214.	Figure E-1, Page E-3.	Contaminant release mechanism via fire does not appear to be depicted in the conceptual exposure pathway model.	Confirm whether fire is included. If not, include the release mechanism.	A	Fire has been included as a release mechanism to the conceptual exposure pathway model in Figure E-1.	Closed
215.	Table 5-1, Page 5-5.	The last bullet of the first column stating "there are no known releases from TSD-unit landfills" is incorrect. CCl4 and CCl4 degradation products detected in riser vents represent releases. In addition, vadose zone characterization indicates organic contaminant releases. In addition, statistical exceedances of groundwater parameters may indicate releases – unfortunately, the groundwater monitoring programs and networks are inadequate to irrefutably answer the question.	Delete the bullet.	A	The bullet has been deleted with the entire table. See also Comments #216 and #217.	Closed
216.	Table 5-1, Page 5-5.	The first bullet of the second column stating "the need for field characterization is driven by the need for removal or decontamination" is inaccurate. Design of caps/covers requires an understanding of 1) waste inventory, 2) extent of releases, 3) waste configuration, etc. Of	Bullet could state: "The need for field characterization can be driven by the need for removal or decontamination." Alternatively, the bullet could state: "Field characterization	AP	Table 5-1 has been deleted.	Closed

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		significance, field characterization supports remedial action decision-making. Typically, industry will compare the costs of stabilizing, capping, and monitoring with the costs of removal and decontamination prior to making the decision on whether to cap and close versus remove and decontaminate.	supports remedial action decision-making".			
217.	Table 5-1, Page 5-5.	The sixth bullet of the second column stating "sampling and analysis for TSD-unit landfill closure should be for purposes of the cover" is inaccurate. Considering the lack of records or the quality of records, sampling may be necessary to satisfy land disposal requirements.	Delete the bullet.	A	Table 5-1 has been deleted.	Closed

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218.	pg. 5-31, Section 5.5.3.2	1) COPC's should not be "screened". 2) The text states, "Samples will be collected in Phases II and III from locations that show the highest concentrations of contamination, based on surface geophysics and intrusive and/or non-intrusive evaluations of radionuclide and chemical inventories." Concentrations of contamination are not discernable using surface geophysical methods, and borehole geophysics outside the trenches will provide only limited information on the nature and extent of contamination. Similarly, passive soil vapor detections are based on proximity and flow paths from the source. 3) Due to the limitations of geophysical and soil vapor surveys, these methods will allow focusing in later phases to a fairly limited extent. Focused/biased sampling designs are only recommended when reliable physical and historical information are known about a site. See general comment.	1) Change text, "The project will evaluate ~~screen~~ the list of COPCs developed for the OU and ~~against~~ the anticipated inventories at the landfills, to determine which sites have the highest potential for releases…". 2) Revise text, "Samples will be collected in Phases II and III from locations ~~that show the highest concentrations of contamination~~, based on information obtained through surface geophysics and intrusive and/or non-intrusive evaluations of radionuclide and chemical inventories."	A	1) The text has been revised as requested. 2) The text has been revised as requested.	Closed
219.	pg. 5-32, line 26	The text states, "Based on the results of Phases I-A and I-B, an assessment will be completed concerning the need for additional data collection for each of the bins…If the need for additional data collection is determined…planning for Phase II will be initiated." This statement fails to recognize the limitations of the non-intrusive technologies. The results of the Phase I-A and I-B investigations are qualitative	Remove this statement from the text.	A	The statement has been removed from the text as requested.	Closed

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		and should be used to support refinement of the CSM and to aid in locating Phase II samples. Phase II sampling will be necessary.				
220.	pg. 5-32, line 32	The text recognizes the need for statistical evaluation (95% UCL) of the data resulting from Phase II; however the work plan repeatedly indicates the use of a focused sample design for future phases. This type of sample design prevents proper statistical analyses, including the use of a 95% upper confidence level evaluation of data.	Address this in the text.	A	The following or similar text has been added to Section 5.6, "A discussion (SGW-37737, *200-SW-2 Operable Unit: Considerations for Phase-II Characterization – Focused Versus Statistical Sampling Designs*) regarding statistical and judgmental sampling, based on existing EPA and Ecology guidance documents, has been prepared and will be retained in the 200-SW-1/2 OU Project file for use during the Phase II and/or Phase III DQO processes." The text on page 4-8, lines 26-31 has been revised as follows, "Phases II and III likely will involve more intrusive investigations and require a larger data set for decision making. The Phase II and III evaluations are expected to entail more extensive sampling and laboratory analyses. Phase II and III data will support development of decision documents and completion of the RI/FS process. Selection of locations for Phase II and III sampling will be made after review of Phase I-B results. The Phase I-B characterization primarily is based on a focused sampling design. Phase II and III characterization, involving focused, statistical, and/or other sampling designs, will be conducted under separate DQO processes and revisions to this RI/FS work plan and SAP. ~~Phase II and III activities will be conducted under a separate DQO and a revision to this RI/FS work plan and SAP.~~"	Closed
221.	pg. 5-33, line 32	The text states, "The risk assessment presented in the RI report will use data	Clarify in the text.	A	The text has been revised as follows, "The risk assessment presented in the RI report	Closed

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		collected from the Phases I-A and I-B sampling and will allow for initial quantification of risk." It is unclear why data from all phases would not be incorporated into the risk assessment. Data from Phase I should only be used to indicate contamination, but not to rule out contamination and will provide only limited data for risk assessment purposes.			will use data collected from ~~the Phases I-A and I-B~~ all phases of sampling and will allow for initial quantification of risk."	
222.	Page 7-16	SGW-34463, *Treatability Investigations Supporting the 200-SW-2 Radioactive Landfills and Dumps Group OU"* was not submitted to Ecology to review during the review period of the Work Plan. Ecology can not approve or deny (at this time) any information in the Work Plan regarding Treatability Investigations without first reviewing this document.	Provide this document or information in the document that is incorporated into the Work Plan.	A	A summary of SGW-34463 was provided in Chapter 5.0, Section 5.8.3, of the Draft B work plan. The document has been provided to Ecology.	Closed
223.	Page 7-16	SGW-35016, *Information and Data Management Plan for the 200-SW-2 Radioactive Landfills and Dumps Group OU"* was not submitted to Ecology to review during the review period of the Work Plan. Ecology can not approve or deny (at this time) any information in the Work Plan regarding Data Management (use of records, sampling and survey data collected in Phase I, etc.) without first reviewing this document.	Provide this document or information in the document that is incorporated into the Work Plan. And provide a framework or basis in the Work Plan that will discuss how the data generated and collected as a part of the Phase I activities will be reviewed and incorporated at the Project level and then used to develop the Phase II characterization.	A	A summary of SGW-35016 was provided in Chapter 5.0, Section 5.8.5, of the Draft B work plan. The document has been provided to Ecology. The text in Section 5.8.5 also will be revised to include the following, "Data generated as a result of the Phase I-A and Phase I-B investigations will form the basis for the Phase II DQO process."	Closed
224.	pg. A1-7, line 2	The text indicates that the landfills were binned based on similar characteristics "anticipated to aid in choosing appropriate remedial paths..." This text implies the same remedy for sites within	Change text, "This sorting is anticipated to aid ~~in choosing~~ characterization to support choice of appropriate remedial	A	The text has been revised as requested.	Closed

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		a bin. However, these sites were binned based on historical information that remains to be verified during the RI.	paths..."			
225.	pg. A2-6, Table A2-1	The COPCs identified in this table are not consistent with the COPCs listed in Table 3-6 on pg. 3-54. Table 3-6 includes radioactive constituents which are not shown in Table A2-1. Additionally, the list of COPCs in Table 3-6 does not appear to include radionuclides that may be detected via the proposed borehole geophysical methods (spectral gamma, passive-neutron).	Please include a comprehensive list of COPCs detectable by all proposed methods, including passive vapor and the geophysical methods that are used to determine contamination (i.e. the borehole geophysical methods).	A	The table has been revised to include a comprehensive list of COPCs that may be detected by all characterization methods proposed for Phase I-B.	Closed
226.	Page A2-1, section A2.0:	This QAPjP should also comply with the most recent version of DOE/RL-96-68, HASQARD	Add DOE/RL-96-68, (Hanford Analytical Services Quality Assurance Required Documents) to the list of documents which must be complied with.	A	A reference to DOE/RL-96-68, *Hanford Analytical Services Quality Assurance Requirements Documents* (HASQARD) has been added to Chapter A2.0 as requested.	Closed
227.	Page A2-5, section A2.1.3, lines 17-20:	The text states, "An additional two landfills in the 200-SW-1 OU were included in the DQO, as well as this RI/FS work plan; however, it is proposed that these landfills be closed outside of the CERCLA process. They are included for information purposes only."	Please include the names of the two 200-SW-1 landfills within this section.	A	The text has been revised as follows: "An additional two landfills in the 200-SW-1 OU (NRDWL and SWL) are included in this RI/FS work plan; however, it is proposed that these landfills be closed outside of the CERCLA process. As such, they are included for information purposes only."	Closed
228.	Page A2-16, section A2.2.4, lines 20-22:	The text state, "If the laboratory uses a nonstandard or unapproved method, the laboratory must provide method validation to confirm that the method is adequate for the intended use of the data."	Edit the sentence as follows: "If the laboratory uses a nonstandard or unapproved method, the laboratory must notify the project of the basis for the deviation, and obtain prior approval before reporting any data that results from the nonstandard	A	The text has been revised as requested.	Closed

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			or unapproved method. The laboratory must then provide method validation to confirm that the method is adequate for the intended use of the data."			
229.	Page A2-17, section A2.2.5.2:	The text states, "Field splits of passive soil vapor samples are not considered necessary to be collected under this SAP."	Add the following sentence to the section: "However, Regulator splits will be collected upon Regulator request."	AP	The comment is accepted with the following modification, "However, ~~Regulator~~ sample splits may ~~will~~ be collected ~~upon Regulator request~~ if requested by the project's lead regulatory agency."	Closed
230.	Page A2-22, section A2.4.1, line 23:	The text states, "Laboratory personnel may perform data verification."	Include within the text, whom else may perform data verification, besides the laboratory personnel. And how it is determined whose responsibility it will be for each data verification case.	A	The text has been revised as follows: "Laboratory personnel ~~may~~ will perform data verification for passive organic vapor samples. Other characterization results (surface geophysics and geophysical logging) will be verified by trained and qualified personnel based on the equipment manufacturers' specifications."	Closed
231.	Page A2-23, section A2.4.2, lines 7-9:	The text states, "However, since the passive organic vapor sampling results are used primarily for screening purposes, validation and verification is not warranted. Validation and verification may be applicable for future/follow-on sampling. All other characterization activities involve qualitative reconnaissance-level surveys that will not require data verification and verification." What is specifically meant by "future/follow-on" sampling. Does it pertain to sampling that is within the scope and project plans for Phase I-B, or is this future sampling pertaining to sampling efforts of upcoming phases (e.g., Phase II or Phase III)? Please clarify this within the text. Also, what guidance states that validation and verification is not	Perform Level C validation on 5% of all passive organic vapor data. As stated within the comment, this is necessary to determine if quantitative data are of the correct type and are of adequate quality and quantity to meet the project's data quality objectives? Please revise the text throughout the document, where necessary, to reflect that data validation will be done for Phase-IB intrusive characterization data (i.e., passive organic vapor analysis).	A	The text has been revised to reflect Level C validation on 5% of the passive soil-gas analysis data. The intrusive characterization for Phase I-B includes only gross/spectral gamma, passive neutron, and active neutron (moisture) logging, which include no laboratory analysis for data validation.	Closed

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		warranted, since the passive organic vapor sampling results are used primarily for screening purposes? Please provide the technical and regulatory basis for this decision. Furthermore, section A2.4.1 states that "Data verification will be performed on analytical data sets to ensure and document that the reported results reflect what was actually done." and "Data validation will be performed on analytical data sets to ensure that the data quality goals established during the planning phase have been achieved." Since the report now reveals that neither verification or validation will be done, how will it be determined if quantitative data are of the correct type and are of adequate quality and quantity to meet the project's data quality objectives?				
232.	pg. A2-6, Table A2-1	It is not clear from the text or table how the COPCs were developed. Are these the only contaminants detectable via the passive gas survey, or was the list of COPCs refined in some way?	Add text to indicate how the list of COPCs was developed.	A	The table and text have been revised to match the COPC table and discussion presented in the Phase I-B DQO summary report.	Closed
233.	pg. A1-7, line 2	The text indicates that the landfills were binned based on similar characteristics "anticipated to aid in choosing appropriate remedial paths…" This text implies the same remedy for sites within a bin. However, these sites were binned based on historical information that remains to be verified during the RI.	Change text, "This sorting is anticipated to aid ~~in choosing~~ characterization to support choice of appropriate remedial paths…"	A	The text has been revised as requested.	Closed
234.	pg. A2-6, line 19	The text states, "All other characterization techniques presented in this SAP are essentially field screening/logging techniques." COPCs and performance criteria should still be	Add COPCs to Table A2-1 and add performance criteria to Table A2-2 for all methods used to detect contamination.	A	Tables A2-1 and A2-2 have been modified to reflect COPCs and performance criteria.	Closed

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		identified for all techniques used to detect contamination.				
235.	pg. A2-13, line 8	HEIS is the official data repository per the TPA.	Add text indicating that all pertinent data will be stored in and entered into HEIS in a timely fashion as dictated by TPA procedure.	A	The text has been revised as requested.	Closed
236.	Pg. A2-13, line 20	The text states that vapor surveys will be performed in areas showing a strong metallic signature as detected via geophysics. The basis for selecting these locations is unclear. See general comment.	Expand the scope of the soil vapor sampling to include widespread coverage of all trenches.	AP	Widespread coverage for passive soil-gas surveys is not expected to result in data that will provide added value to the characterization effort. Rather, the Phase I-B passive soil-gas surveys primarily will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics. These areas have the potential to contain drums or other vessels that potentially could have held organic liquids). However, 56 additional locations over areas containing soft (non-metallic) waste will be sampled for organic vapors. These locations were chosen based on a review of process history, focusing on those facilities/processes that are known to have used organic liquids, and have the potential to have generated waste containing sorbed organic liquids. Section 4.2 has been modified to further clarify the rationale for passive vapor sampling in Phase I-B.	Closed
237.	pg. A2-13, line 26	The text states that visual inspection and "potential" geophysical surveys of unused areas of TSDs will be performed to support closure. Surface geophysical surveys are necessary to support determination that a site is unused. Visual inspection is	Change text, "Visual inspection and ~~potential~~ geophysical surveys of unused areas of TSD unit landfills to support administrative closure of these areas."	A	The text has been revised as requested.	Closed

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		inadequate to complete this task.				
238.	pg. A2-20, line 5	The official data repository per the TPA is HEIS. All appropriate data should be stored in HEIS.	Change text, "Electronic data access, when appropriate, will be via a database(s), including HEIS ~~(e.g. HEIS or a project specific database)~~."	A	The text has been revised as requested.	Closed
239.	pg. A3-2, line 34	The text is not consistent with Table A3-1. Table A3-1 indicates that 218-W-3A and 218-W-4C will be sampled for Stage I. Table A3-1 does not indicate that 218-W-3 will be sampled.	Resolve the inconsistencies between the text and Table A3-1.	A	The text has been revised to change "218-W-3" to "218-W-3A" on page A3-2, line 34. Added 218-W-4C to the text.	Closed
240.	pg. A3-3, line 6	It is unclear why stage 2 passive gas surveys are only being performed in trenches with high metallic signatures. See general comment.	Expand the scope of the soil vapor sampling to include widespread coverage of all trenches.	AP	Widespread coverage for passive soil-gas surveys is not expected to result in data that will provide added value to the characterization effort. Rather, the Phase I-B passive soil-gas surveys primarily will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics. These areas have the potential to contain drums or other vessels that potentially could have held organic liquids). However, 56 additional locations over areas containing soft (non-metallic) waste will be sampled for organic vapors. These locations were chosen based on a review of process history, focusing on those facilities/processes that are known to have used organic liquids, and have the potential to have generated waste containing sorbed organic liquids. Section 4.2 has been modified to further clarify the rationale for passive vapor sampling in Phase I-B.	Closed

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241.	General Appendix A and Section A3.1.1.1.3, Page A3-12, lines 2-7	Topographical surveys should be performed to focus phase I-B and phase II characterization efforts on areas of potential infiltration and to identify areas of subsidence. The section should describe the conductance of high resolution surface topographic surveys of all burial grounds (e.g., drive transects with Real Time Kinematic GPS). Furthermore, topographical surveys should be performed prior to selection of direct-push locations.	The SAP should include a description of how and when topographical surveys will be performed.	A	LIDAR surveys will be performed and analyzed in support of Phase II characterization and subsequent refinement of the CSMs. This task currently is captured as one of the focused investigations described in SGW-34463.	Closed
242.	A3.1.1.2, Page A3-12, lines 9-19 and table A3-3.	Surface geophysical surveys should be performed for all the landfills, including the TSDs (excluding the submarine reactor cores* (sic) and open/operational trenches). These surveys represent the only continuous data set that can be collected, and will support the basis for focusing sampling in future phases. Table A3-3 should be expanded to include geophysical surveys for those landfills where a geophysical survey hasn't been performed.		R	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos) than the past-practice landfills. However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463. Refer to Section 4.2 for the rationale for performing geophysical surveys. *Submarine "reactor cores" should read "reactor compartments." Reactor cores currently are stored in Idaho Falls.	Closed

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243.	pg. A3-15, Section A3.1.1.3	Surface geophysical surveys are necessary to support determination that a site is unused. Visual inspection will not be adequate for closure.	Include surface geophysical surveys to verify that trenches are unused.	A	The text has been revised to include surface geophysical surveys to support procedural closure of unused areas of TSD landfills.	Closed
244.	pg. A3-16, line 9	The text states that "Logging data will be reviewed for applicability to 200-SW-2 OU landfills." It is not clear how applicability will be determined.	Include in the text a discussion of the criteria that will be considered in this review.	A	Text has been revised as follows: "Logging data from existing wells will be reviewed and used in conjunction with new data from DPTs (moisture distribution, soil stratigraphy, absence or presence of radioactive contaminants) to refine the CSMs."	Closed
245.	pg. A3-16, line 14; pg. A3-17, Section A3.1.2.1.1	The text states that at least one upgradient and one downgradient well will be logged. The SAP should clearly identify which wells will be logged for all burial grounds. Considering that borehole geophysical methods detect contamination within 1-2 feet of the detector, the distance of the well from the burial grounds should be an important consideration in the selection of wells for logging.	Add a list indicating which wells will be logged and the criteria for their selection.	AP	Sections A3.1.2.1 and A3.1.2.1.1 have been modified to include reference to SGW-32755, *Wells Near the 200-SW-2 Operable Unit Landfills.* Table 1 (page 6) of SGW-32755 provides a summary of wells located within 50 m of each of the 200-SW-2 OU landfills that are available for logging. Appendix B provides a list of the specific wells and general well information. The wells to be logged will be selected after evaluation of existing well construction and logging data by FH hydrogeology staff and consideration of logging tool limitations. The following or similar text has been added to Section A3.1.2.1.1: "Wells within 50 m of a given landfill are of interest because (1) wells, as structures, can influence the vertical migration of contaminants within the vadose zone if not properly sealed, (2) historic well characterization and monitoring data may offer insight to potential past migration of contaminants from landfills, and (3) existing well structures and/or monitoring programs may represent cost-effective opportunities to gather data relevant to the RI/FS process.	Closed

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					As indicated in the SAP (Appendix A of DOE/RL-2004-60, Draft B) the primary purpose for investigating existing wells is to use existing data or collect a limited amount of new data (at least one upgradient and one downgradient well where data do not currently exist and wells are close enough to be meaningful) to help understand site stratigraphy, soil moisture content, and possible presence or absence of mobile radionuclides. This is being done in an "opportunistic" fashion using existing wells and information. Information collected from existing wells will be used to help focus future-phase intrusive activities and refine conceptual site models. At 9 of the 25 200-SW-2 OU landfills listed in Table 1 of SGW-32755, no wells exist within 50 m of the landfills. While other wells exist beyond 50 m, they may not provide meaningful information with respect to site-specific conditions at the landfills and could be influenced by other adjacent waste disposal sites (e.g., cribs, ponds, ditches, tank farms). All but one of the nine landfills without wells within 50 m are in the 200 East Area where the site stratigraphy is expected to be relatively uniform. Information regarding soil moisture content and presence/absence of contamination from wells greater than 50 m from landfills could be affected by other adjacent waste disposal sites and need to be assessed on a case-by-case basis."	
246.	pg. A3-16, Section A3.1.2.1	Logging at Hanford routinely includes passive neutron logging for detection of alpha-emitting radionuclides. This method should be performed in the	Add passive neutron logging as a geophysical method for logging existing wells.	A	Passive neutron logging has been added to the text as a geophysical method for logging existing wells.	Closed

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		selected wells.				
247.	pg. A3-16, Section A3.1.2.1	The text does not indicate the depth to which existing wells will be logged.	Indicate within the text or table the depth to which existing wells will be logged.	A	The text has been revised to indicate that the existing wells will be logged the entire depth of the vadose zone to groundwater or the bottom of the well, if the bottom of the well does not extend to groundwater.	Closed
248.	pg. A3-17, line 31	The text states that direct pushes will be installed to obtain spectral gamma, neutron moisture "and/or passive neutron logs". Passive neutron logging has a different application than spectral gamma or neutron moisture logging and should be used in conjunction with these methods.	Change text, "Direct-push holes will be installed to obtain spectral gamma, neutron moisture, and/~~or~~ passive neutron logs...".	A	The text has been revised as requested.	Closed
249.	Pg. A3-12, Section A3.1.1.2	Following this phase, surface geophysical surveys will have been performed for all landfills except the TSDs. Although more historical documentation exists for the TSDs than for the other landfills, surface geophysical surveys are necessary to confirm trench boundaries and are the best way to gain continuous information to focus phase II sampling. See general comment.	Add surface geophysical surveys for all Bin 1 landfills (TSDs).	R	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos) than the past-practice landfills. However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463. Refer to Section 4.2 for the rationale for performing geophysical surveys.	Closed
250.	pg. A3-22, Section A,.1.2.2.1	One direct push per landfill, in between trenches, will provide limited information to focus later phase sampling.	Include justification for the proposed samples design and add direct push	AP	Justification for the proposed sampling design for Phase I-B is presented in Section 4.2, "Characterization Approach." In	Closed

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		Geophysical logging methodologies will provide information immediately in the vicinity of the detector; whereas, contamination and stratigraphy are likely to vary considerably over the area of the landfill. For the borehole geophysical methods to provide locations of focus, they must be applied at many more locations.	locations for a more systematic approach.		addition, figures depicting direct-push locations have been added to the SAP. Although one direct push per landfill may provide limited information to focus later-phase sampling, additional intrusive characterization techniques, including direct pushes, will be evaluated through the DQO processes for Phases II and/or III. The text on page A3-23, line 8 has been revised as follows, "The vertical direct pushes described above will be used to assess the stratigraphy under the landfills and radiological conditions at those locations~~, and to direct future phase soil samples~~."	
251.	Pg. A3-22, Section A3.1.2.2.1	As the text recognizes (pg. 4-7), direct push technologies can be used to collect samples with minimal waste generation. Soil and vapor samples should be collected via direct push (see general comment).	Include soil and vapor sampling via direct push at all locations where direct pushes will be performed.	R	In accordance with the May 15, 2007, agreement between RL and Ecology, a phased characterization approach will be used for characterization of the 200-SW-2 OU landfills. Soil and active soil-gas samples are proposed for future-phase characterization. Phase I-B will consist of the use of primarily nonintrusive geophysical and soil-gas characterization activities to target areas that may contain either organic vapors or buried masses of metal that may contain liquid organics or areas that contain both. Limited intrusive activities will be conducted during Phase I-B to gain experience operating the hydraulic hammer rig around 200-SW-2 OU landfills. Direct-push locations will be logged with gross/spectral gamma, active neutron moisture, and passive neutron detectors to determine the presence of radioactivity and	Closed

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					moisture at the push locations. Soil-gas samples could be extracted at direct-push locations following radionuclide and moisture logging using a "knock-off" tip push rod and the hydraulic hammer rig. However, the data could be of questionable integrity due to the inability to properly seal the bottom sediments as the push rod is extracted to isolate the depth from which the soil-gas sample is obtained. Although wetted bentonite could be used to seal the bottom sediments, the moisture could compromise soil-gas sample quality and subsequent field or laboratory analyses. Soil-gas sampling during Phase II allows an appropriate sampling design to be determined through the DQO process with full consideration of existing soil-gas information from landfill vent risers, M-091 Program post-retrieval sampling, ecological assessments, and other sources. Furthermore, a focused investigation is planned to evaluate innovative direct-push techniques capable of conducting soil-gas sampling, soil-moisture sampling, and radionuclide logging at a single direct-push location. Such information will result in more cost-effective soil sampling and analysis during Phase II and Phase III intrusive characterization using the hydraulic hammer rig's dual-wall soil sampler.	
252.	pg. A3-22, line 4	Logging is not described in section A3.1.1.3. Section A3.1.1.3 pertains to visual inspection of landfills.	Please correct the reference in the text.	A	The section references have been corrected as requested.	Closed
253.	pg. A3-23, line 4	The text states that logging in landfills that have experienced historical events	Please correct the reference in the text.	A	The section references have been corrected as requested.	Closed

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		will be performed as described in Section A3.1.1.3. Section A3.1.1.3 pertains to visual inspection of landfills.				
254.	Page A3-1, section A3.1.1.1, line 35:	Add the following to the sentence, "...or have the potential to do so."	Refer to comment.	R	Liquid organics that have not breached their containment cannot be detected by passive organic vapor samplers.	Closed
255.	Page 3-2, line 15:	Please quantify what will be determined as a "relatively high" soil vapor measurement.	Refer to comment.	A	The following text has been added to the document to specify what action level was used, "25 ng/sample/constituent". This level is the manufacturer's detection limit for the passive soil-vapor samplers.	Closed
256.	Page A3-1, section A3.1.1.1, line 35:	Add the following to the sentence, "...or have the potential to do so."	Refer to comment.	R	Liquid organics that have not breached their containment cannot be detected by passive organic vapor samplers.	Closed
257.	Page 3-21 and Appendix A	No GPR planned for the 218-W-3A Burial Ground.	Provide a definitive basis or add GPR for the 218-W-3A Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463.	Closed
258.	Page 3-22 and Appendix A	No GPR planned for the 218-W-4B Burial Ground.	Provide a definitive basis or add GPR for the 218-W-4B Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste	Closed

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					disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463.	
259.	Page 3-22 and Appendix A	No GPR planned for the 218-W-4C Burial Ground.	Provide a definitive basis or add GPR for the 218-W-4C Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463.	Closed
260.	Page 3-24 and Appendix A	No GPR planned for the 218-W-5 Burial Ground.	Provide a definitive basis or add GPR for the 218-W-5 Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according	Closed

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					to SGW-34463.	
261.	Page 4-7 and Appendix A	No GPR planned for the 218-W-3AE Burial Ground.	Provide a definitive basis or add GPR for the 218-W-3AE Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463.	Closed
262.	Page 4-9 and Appendix A	No GPR or passive soil gas monitoring planned for the 218-E-10 Burial Ground.	Provide a definitive basis or add passive soil gas monitoring and GPR for the 218-E-10 Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463. Text will be added to Section 4.2 to outline the basis for performing passive soil-gas surveys in the landfills during Phase I-B characterization activities. The basis will	Closed

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					explain that a review of historical records was performed as part of Phase I-A characterization activities to determine locations in the landfills that had any indication that liquids may be present. Passive soil-gas samplers were placed at these areas and the results recorded. Those areas that had detectable (greater than 25 ng/sample) results will be further investigated with passive soil-gas surveys as part of Phase I-B characterization activities. Phase I-B passive soil-vapor surveys also will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics). These areas have the potential to contain drums or other vessels that potentially could have held organic liquids.	
263.	Page 4-9 and Appendix A	No GPR or passive soil gas monitoring planned for the 218-E-12B Burial Ground.	Provide a definitive basis or add passive soil gas monitoring and GPR for the 218-E-12B Burial Ground for Phase I-B.	A	Surface geophysical investigations on the TSD landfills are not expected to provide information that cannot be found in existing historical documentation. In general, TSD landfills have a higher relative quality and quantity of records (e.g., drawings, waste disposal records, photos). However, an area of up to 10 acres within a Bin 1 (TSD) landfill will be investigated via surface geophysical surveys to verify burial records. The exact location(s) of the geophysical investigations will be determined through a 'focused investigation" according to SGW-34463. Text has been added to Section 4.2 to outline the basis for performing passive soil-gas surveys in the landfills during	Closed

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					Phase I-B characterization activities. The basis will explain that a review of historical records was performed as part of Phase I-A characterization activities to determine locations in the landfills that had any indication that liquids may be present. Passive soil-gas samplers were placed at these areas and the results recorded. Those areas that had detectable (greater than 25 ng/sample) results will be further investigated with passive soil-gas surveys as part of Phase I-B characterization activities. Phase I-B passive soil-vapor surveys also will be focused on those areas that have/had the greatest potential to contain liquid organics (i.e., areas in the landfills that show a metallic signature based on surface geophysics). These areas have the potential to contain drums or other vessels that potentially could have held organic liquids.	
264.	Figures E-2 – E-7, Pages E-4 – E-9.	To address the CSM provided/depicted in *Performance Assessment Monitoring Plan for the Hanford Site Low-Level Burial Grounds* (DOE/RL-2000-72 Revision 0), additional CSMs reflecting operating (i.e., non-stabilized or non-capped) conditions with infiltrating precipitation need to be added to each figure. Such CSMs would reflect the potential for contamination migration to extend to groundwater.		AP	Each of the CSMs depicted in the Draft B version of Appendix E has been modified to more clearly depict an operational (i.e., backfilled but non-capped) configuration with a slightly larger, standard-shaped contamination plume showing a to-be-determined (TBD) depth, precipitation, surface water run-on, and the potential for vertical and horizontal migration. Also, additional text has been added to Section 3.6.3 to acknowledge the greater likelihood of precipitation infiltration during operating conditions (i.e., trenches backfilled but not closed with a cover).	Closed
265.	Page E-19	Deficient CSM information.	Add package types and burial configuration information to the CSM.	A	The CSM has been revised to include available packaging and burial configuration information.	Closed
266.	Page E-20	Deficient CSM information.	Add burial configuration information to the CSM.	A	The CSM has been revised to include available burial configuration information.	Closed

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267.	Page E-30	CSM lists that the 218-W-4B contains "11" Caissons. The text and supporting information states there are "12".	Resolve this information and correct either the text or CSM.	A	The CSM has been revised to list 12 caissons.	Closed