



0065326

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

MAY 20 2005

05-AMCP-0260

Mr. Nicholas Ceto, Program Manager
Office of Environmental Cleanup
Hanford Project Office
U.S. Environmental Protection Agency
309 Bradley Blvd., Suite 115
Richland, Washington 99352

RECEIVED
JUN 13 2005

EDMC

Dear Mr. Ceto:

SUBMITTAL OF RESPONSES TO COMMENTS ON THE FEASIBILITY STUDY AND PROPOSED PLAN FOR THE 200-CW-5 (U POND/Z DITCHES COOLING WATER WASTE GROUP), 200-CW-2 (S POND AND DITCHES COOLING WATER WASTE GROUP), 200-CW-4 (T POND AND DITCHES COOLING WATER WASTE GROUP), AND 200-SC-1 (STEAM CONDENSATE WASTE GROUP) OPERABLE UNITS, DRAFT A, DOE/RL-2004-24

The U.S. Department of Energy, Richland Operations Office (RL) received the U.S. Environmental Protection Agency's (EPA) transmittal of comments on Draft A of the Feasibility Study and Proposed Plan for the 200-CW-5 (U Pond/Z Ditches Cooling Water Waste Group), 200-CW-2 (S Pond and Ditches Cooling Water Waste Group), 200-CW-4 (T Pond and Ditches Cooling Water Waste Group), and 200-SC-1 (Steam Condensate Waste Group) Operable Units, as well as additional comments from both the U.S. Geological Survey and the State of Washington Department of Ecology on March 14, 2005.

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The attached draft responses to the comments are submitted in accordance with Section 9.0, "Documentation and Records," of the Tri-Party Agreement Action Plan. RL and Fluor Hanford, Inc. staff are available to meet as needed to close on the responses and address any outstanding issues necessary to update the document for your approval.

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

Sincerely,

Keith A. Klein
Manager

AMCP:BLF

Attachments

cc: See Page 2

Mr. Nicholas Ceto
05-AMCP-0260

-2-

cc w/attachs:

G. Bohnee, NPT

C. E. Cameron, EPA

L. D. Crass, FHI

L. J. Cusack, Ecology

S. Harris, CTUIR

J. S. Hertzfel, FHI

R. Jim, YN

T. M. Martin, HAB

E. J. Murphy-Fitch, FHI

K. Niles, ODOE

J. B. Price, Ecology

M. A. Wilson, Ecology

D. A. Isom, Admin Record, H6-08
Environmental Portal

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

Review Comments and Disposition			
No.	Reference Page Paragraph or Figure	Comment	Comment Disposition
1	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 1 third paragraph	Please reference the report (or at least summarize the work) on the additional modeling that is being performed. It would be better to incorporate it into the final revision of the FS. However, either way the additional modeling report will be included in the administrative record and, along with the FS, will be part of the basis for the decisions.	A summary of the report will be incorporated into the next revision of the FS.
2	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 1 fourth paragraph	Wade Riggsby (now with the Yakama Nation) helped sample the U Pond sediments when it was a functioning pond. He indicated that your inventory and, in particular, the maximum concentration data are significantly less than what they found at the time he was involved. EPA would like to meet with Mr. Riggsby and the DOE and its contractor (including any pertinent technical experts) to resolve any apparent discrepancies.	DOE will support EPA in resolving Mr. Riggsby's concern. It is suggested that Mr. Riggsby identify the source of the data in order for DOE to provide the proper technical experts and facilitate resolving any discrepancies.
3a	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 1 fifth paragraph	EPA believes that DOE continues to open itself up to criticism on the preference for capping and role of cost in remedial decision making. While the FS makes significant strides towards presenting all of the points and counterpoints of remedial alternative features and potential effectiveness, it then appears to place more weight on some of these points (or ignores them) when arriving at the rationale for selection of preferred alternatives. It is obvious to us that DOE has incorporated a bias towards capping into the approach and decision rationale of this feasibility study.	The FS followed the recommended process cited in EPA/540/G-89/004, <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final)</i> , OSWER 9355.3-01. The process defines nine criteria: two threshold, five balancing, and two modifying evaluation criteria. The FS used the two threshold and five balancing criteria information developed in the FS in proposing the preferred alternative. The FS covers 48 waste sites. It recommends one no action site; 22 remove, treat, and dispose (RTD); and 25 capping preferred alternatives. DOE is committed to continuing its efforts to reduce perceived bias in the conduct of the remedial alternative evaluation process performed in the CERCLA-based feasibility studies.

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

Review Comments and Disposition			
No.	Reference Page Paragraph or Figure	Comment	Comment Disposition
3b	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 1 fifth paragraph item 1	<p>The following are examples of this apparent bias:</p> <p>The Remedial Action Objectives (RAOs), by their separation of worker and public health, are set to pit one against the other. The relationship does not have to be treated that way as one can be protective of both with the right controls and approach to cleanup.</p> <p>One example of the bias against Removal, Treatment, and Disposal (RTD), is illustrated when the FS goes as far as indicating that RTD alternatives do not meet the minimizing habitat disturbance RAO (even though there are lots of things that can be done to minimize impacts in staging areas). However, in the next sentence the FS indicates that there is really very little habitat in the waste site areas because of the highly disturbed industrial setting. A case could be made that the short-term disturbance of habitat may be worth the long-term ecological benefits of removing contaminants from the particular site.</p> <p>The RAOs need to come in line with other FSs from the 200 Area to take this structured bias out</p>	<p>The RAOs developed for this FS reflect the reasonably anticipated exposure scenarios as provided in the Tri-Parties' response to HAB advice #132. At the time that this document was submitted, the RAOs were the same as the RAOs for the 200-UW-1 FS. Unfortunately, the 200-UW-1 RAOs continued to be developed after this FS was submitted. DOE will modify the RAOs to be in line with the RAOs for the 200-UW-1 FS, where appropriate.</p> <p>The example cited as bias is a misinterpretation of the section, which reads as follows: "The only RAOs not met are short-term concerns: preventing or reducing occupational health risks and minimizing the general disruption of wildlife habitat. The issue of disruption of wildlife habitat is mitigated due to current and future land use. These waste sites are located in an industrial setting providing little habitation for vegetation and wildlife." The intent of the section is to point out the highly disturbed nature of the waste site and the limited impact it will have on the ecological habitat.</p> <p>DOE will modify the RAOs to be in line with other FSs in the 200 Areas, where appropriate. With regard to the structured bias, this FS covers 48 waste sites. It recommends one no action site, 22 RTD, and 25 capping preferred alternatives.</p>
4a	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 2 item 2	<p>The implementability and cost comparison is warped toward capping in the case of the Z-Ditches, where the FS settles on a scenario in which the entire volume of the waste sites (216-Z-1D, 216-Z-11, and 216-Z-19) would have to be containerized and sent to the Waste Isolation Pilot Plant (WIPP) in New Mexico. There was no attempt to use the characterization data and an important aspect of the conceptual model (will describe below) to determine a more realistic estimate of what would have to go to WIPP and</p>	<p>The FS developed PRGs for each representative site. These goals were used to determine the volume of material that would meet ERDF waste acceptance criteria. Only soil levels that did not meet ERDF acceptance criteria are being sent to WIPP. Not all waste is being shipped to WIPP. Only 2,700 cubic yards will be shipped to WIPP, while 32,400 cubic yards will be shipped to ERDF. Detailed waste-volume determination criteria, assumptions, and calculations are described in Appendix D, Sections D3.3.1 and D3.3.4.</p>

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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		what could go to the Environmental Restoration Disposal Facility (ERDF) here at Hanford.	
4b	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 2 second paragraph item 2	<p>There was an omission in the FS of the logic that went into the siting of the borehole. The FS actually indicated there was no way to select hot spots and this was part of the justification for counting the entire waste site volume (regardless of clean cover, or the lower contamination further below, that could be utilized in a flexible excavation process) in the waste stream to go to WIPP. However, the 200-CW-5 SAP guided an investigation strategy where a gross gamma/passive neutron (GG/PN) logging system was applied to find hot spots. The results were used along with the conceptual model that transuranic contaminants would settle out wherever flow rates diminished in the ditches. The borehole was located just upstream from a spot where flow was impeded by the narrowing of the ditch through a culvert that went underneath a street. The samples analyzed from this borehole did indeed have extremely high TRU contaminant concentrations.</p> <p>Finally, the fact that there is significant variability within the ditch does not necessitate that DOE write off the entire length, depth and surrounding material around these ditches as destined for WIPP.</p>	<p>The description of the analogous waste sites overstates the variability in the ditches and analogous sites. The paragraph in Section 2.9.3 (page 2-57) will be changed as follows: "Surface and near-surface soil data suggest that radioisotopes are distributed over the entire length of the ditches. Analytical results from closely spaced samples indicate significant variability in concentrations, which makes it difficult to confidently segregate portions of the ditch between more or less contaminated areas."</p> <p>As described above, not all waste volume is being sent to WIPP. Only 2,700 cubic yards is going to WIPP, whereas the remaining 32,400 cubic yards is going to ERDF. Radiation level and TRU determination criteria are used to determine separated volume. (See calculations shown in Appendix D, Sections D3.3.1 and D3.3.4 for further details.)</p>
5a	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 2 item 3 first paragraph	The FS does not adequately address the alternative of In Situ Vitrification (ISV). There is a lack of detail on processes and equipment necessary and how conducive local soils might be to this alternative. At one point near the end of the FS, there is a statement that more has to be done to determine whether or not ISV is a viable	In situ vitrification (ISV) is a new technology that has not been commercialized fully for all applications. Due to the status of the technology, not much published information is available. Very few site-specific test or demonstration reports are available (EPA Site Technology Capsule, Geosafe Corporation, In Situ Vitrification Technology; Application of In-Situ Vitrification at the Parsons Chemical Site, Remediation/Spring 1998; etc.). Thus, there is

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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		<p>alternative. This should have been answered by the feasibility study and so if it cannot answer it, the current FS is inadequate with regard to the assessment of this alternative.</p>	<p>sufficient information available to evaluate the ISV; however, Hanford-specific testing has not been conducted since about 1990. The bulk vitrification technology demonstration used Hanford soil as feed material and showed that Hanford soil is compatible with the vitrification process. The technology has been proven on similar contaminants in Australia in mid-1990 (<i>Mixing and Encapsulation of Plutonium in In-Situ Vitrification Trials at Maralinga</i>, which was a report to the Parliamentary Standing Committee on Public Works, Australian Nuclear Science, May 1996). Best-available information was included at the time of report preparation. DOE agrees to review all newly available technical information and appropriately incorporate the information in the next revision of the FS and the proposed plan.</p> <p>The ISV technology is maturing and long-term basic performance information is being developed. The list of items defined in Sections 4.0 and 7.0 of the FS are site-specific performance questions requiring acceptable resolution for implementation. Some of these items require long-term, site-specific demonstration and data development. DOE believes that such an engineering evaluation is not required to perform the FS. Our approach was to perform such demonstration and applicability evaluation, if needed, when a preferred alternative requires an implementation of this technology.</p>
5b	<p>EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 2 item 3 second paragraph</p>	<p>It should also be noted that in the case ISV of a vitrified Z-Ditches mass within the shallow zone, the trench-digging intruder might be the limiting intruder scenario rather than the person growing crops in contaminated drill cuttings. The trench-digging scenario should be run for the alternative to facilitate the decision making process.</p>	<p>Without the specific analyses, it is unclear which scenario (residential intruder or trench-digging intruder) might be more limiting. However, the Z-Ditches were evaluated with respect to a residential intruder (Appendix E), and it was found that a remedy must be selected that would be protective of intruders. In summary, the conclusions from the intruder scenario presented in Appendix E for the Z-Ditches are that the dose to the intruder in all of the Z-Ditches would exceed the 15 mrem/year standard and that contamination would not decay to less than the PRGs in more than 10,000 years. The remedy selected is protective of intruders that might excavate into the waste, regardless of if it is by drilling or trenching.</p>

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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6	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 3 item 4	Worker dose is mentioned as an important issue, yet the FS does not provide (at least in the main text) actual predicted values for Alternative 5 (partial RTD and capping). It is not sufficient to just state that cumulative worker dose will be about the same as Alternative 3.	<p>The concept behind alternative #5 is that most of the contaminants would be removed under this scenario. That means the primary source of radiation exposure would be removed, thus mitigating the hazard. One could expect that personal radiation exposure would be slightly higher for alternative #3; however, because the major source of radiation is removed for both alternatives, the difference is not expected to be appreciable. In addition, for representative sites 216-U-14, 216-Z-11, and 216-A-25, alternatives #3 and #5 are equivalent and, therefore, worker dose should be essentially equal.</p> <p>For 216-U-10, most contaminants of concern are located in the shallow zone (0 to 15 ft), and radionuclide concentrations at other depths are negligible in accordance with the 200-CW-5 RI report, Appendix A. Therefore, the estimated dose for alternative #5 is approximately 803 mrem. For 216-T-26, the estimated remediation worker dose rate for alternative #5 would be approximately 561 mrem.</p>
7	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 3 item 5	Citing the current ERDF remaining capacity as a consideration for RTD is a rather specious point because ERDF is going to continue to be expanded to accept remediation waste and because no one expects DOE to actually excavate down to 200 feet below the ground surface as in the full-removal case for some of the sites where Preliminary Remediation Goals (PRGs) are exceeded to that depth. EPA believes that the limited benefits of such deep excavations (over the protection offered by capping, or partial RTD and capping) do not correspond to the greatly increased worker risk (both industrial and radiological) and difficulty in implementation (huge hole that encroaches on facilities and services and would require elaborate shoring and set back).	As required by EPA/540/G-89/004, <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final)</i> , OSWER 9355.3-01, each alternative must evaluate the implementability of the alternative. One of the sub-elements used when evaluating implementability is the availability of limited resources. The volume of ERDF is a limited resource. In accordance with EPA's guidance, this limited resource must be evaluated. After discussion with EPA, it is agreed that the entire volume, both current and planned, will be reported.

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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8	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 3 item 6	The costs for capping appear to be underestimated in one regard (at least according to the main text) since the FS does not account for groundwater monitoring costs, but instead says that the various groundwater OUs will do this monitoring. If this is true, this is unacceptable and EPA believes this is inconsistent with the CDI FS. Actually, the CDI FS may have gone too far to where it predicts the CDI U Plant will pay for all of the monitoring when costs will likely be shared with other projects within the U Plant closure zone. This sharing across the closure zone would be the most appropriate, except where you have individual Treatment, Storage, or Disposal (TSD) requirements (there are no TSD facilities assigned to these OUs). EPA understands that the costs of monitoring well replacements were factored into the estimates.	The commenter is referred to Appendix D, page D-7, Section D3.1.4, "Long-Term Groundwater Monitoring Costs." This section discusses how long-term monitoring costs are applied to the cost of the caps.
9	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 3 item 7	At this point in the 200 Area planning effort, the FSs need to better define the source and quantities (and types) of borrow material. Obviously, design work will affect predictions. One example of a possible obstacle to applying the current FS's preferred alternative for the Z-Ditches is the promise the Tri-Parties made to the Tribes that basalt onsite would be off limits as a source of intrusion protection layering material. Where is DOE going to get the rock to form this layer of the 0.8 of a mile long Hanford Barrier-type cap?	EPA guidance on preparing FSs requires that a reasonable evaluation of resources be made during the FS. DOE performed preliminary evaluations and believes that adequate resources are available. The text will be modified to reflect the evaluation. As a point of reference, there are 15 commercial rock quarries within the four counties around the Hanford Site. The permitted capacity of these quarries represents over 100 million cubic yards of rock.
10	EPA Comments on Feasibility Study for the 200-CW-5/2/4/SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 3 item 8	It appears that DOE is trying to count the thickness of the caps to meet MTCA requirements or DOE is implying that it intends to make use of provisions within MTCA that allow for barriers over shallow waste. We do not believe that DOE will meet the spirit of MTCA by capping over waste that does not meet PRGs and starts around 2 to 4 feet below	DOE disagrees with this comment. Where MTCA is applicable (i.e., nonradioactive hazardous substances), the establishment of soil cleanup levels are for industrial land use and represents the reasonable maximum exposure. Industrial soil cleanup levels are based on an adult worker exposure scenario, where a cap can be considered part of the remedy. DOE believes that MTCA allows for barriers over shallow waste, as stated in paragraph (B) of the following excerpt

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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		<p>the surface as is the case with the U Pond. You also do not show that you have satisfied any provision to use an alternate depth that would allow these materials to remain so close to the surface even with a cap.</p>	<p>from MTCA [<i>italics added for emphasis</i>]. As stated in MTCA: (iii) <i>Hazardous substances remaining at the property after remedial action would not pose a threat to human health or the environment at the site or in adjacent nonindustrial areas. In evaluating compliance with this criterion, at a minimum the following factors shall be considered: (A) The potential for access to the industrial property by the general public, especially children. The proximity of the industrial property to residential areas, schools, or childcare facilities shall be considered when evaluating access. In addition, the presence of natural features, man-made structures, arterial streets, or intervening land uses that would limit or encourage access to the industrial property shall be considered. Fencing shall not be considered sufficient to limit access to an industrial property since this is insufficient to assure long-term protection; (B) The degree of reduction of potential exposure to residual hazardous substances by the selected remedy. Where the residual hazardous substances are to be capped to reduce exposure, consideration shall be given to the thickness of the cap and the likelihood of future site maintenance activities, utility and drainage work, or building construction re-exposing residual hazardous substances.</i></p> <p>DOE believes that the proposed remedy for the U Pond is consistent with the letter and spirit of MTCA. The potential for access to the pond by the general public is limited by Hanford Site security, and U Pond and the analogous sites are not in the proximity of any public facilities. There are no man-made structures at the U Pond that would encourage access, and the inclusion of a cap as a part of the remedy reduces long-term potential exposure of residual hazardous substances.</p>
11	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 3 item 9	<p>Finally, there is no evidence in the FS that DOE studied whether or not savings could be achieved in cap rigor and expense under Alternative 5 as opposed to Alternative 4. The FS did not discuss the idea that a cut and cap approach might require a surface barrier that either would not have to perform to as high a level or could be constructed</p>	<p>Alternative #5 does utilize a less rigorous cap than alternative #4 that is constructed to grade and planted with vegetation to protect against erosion. The reviewer may have missed the discussion on page 5-8 (last sentence), which states: "The required cap would be less rigorous than if these contaminants were left in place..." The excavation would be filled with borrow material obtained on the Hanford Site. When the backfilling operation is finished, the site</p>

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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		at a very low profile (possibly even at grade with shrub steppe vegetation).	would be capped. Because contaminated soils will be removed from the site, the cap system only consists of two soil components (20 in. of silt loam, and 20 in. of silt loam and pea gravel) and eliminates the filter, drainage, and asphalt-paving layers associated with the modified RCRA C cap.
12	EPA Comments on Feasibility Study for the 200-CW-5/2/4/ SC-1 Operable Unit Group (DOE/RL-2004-24, Draft A) dated February 23, 2005. Page 4 second paragraph	EPA believes that the ecological evaluations in this FS must be supplemented by the larger 200 Area ecological risk assessment effort to be complete. The FS and the proposed plan should contain a short description of the 200 Area ecological risk assessment effort and its current schedule and explain how information from it might be utilized by this remedial action (even though the ROD could be signed before the results are back from the larger effort). Discussions with our legal experts in the region (presently reviewing the 200-UW-1 proposed plan) have driven home the need to make the connection in these documents with the more comprehensive, site-wide look that the 200 Area ecological risk assessment will take.	<p>DOE will include the following information in the FS to describe the current ecological risk effort: "A phased baseline ecological evaluation is planned for the 200 Areas. This evaluation will supplement other characterization data for waste sites in the Central Plateau. This plan is based on the ecological data quality objectives (EcoDQO) summary report for the Central Plateau on the Hanford Site, as documented in WMP-20570, <i>Central Plateau Terrestrial Ecological Risk Assessment Data Quality Objectives Summary Report</i>. This evaluation will provide information that may support evaluation of the health and/or condition of the ecosystem across habitats.</p> <p>The evaluation will be implemented using a phased and tiered approach to characterize ecological risks. Phases are based on the characteristics of study areas, whereas tiers are types of data collected within those study areas. Using a phased approach to characterize ecological risks has the advantage of targeting data collection to those ecological receptors found to be at risk from Hanford processes, waste sites, and associated contaminants of potential environmental concern (COPECs). Phasing also allows for testing aspects of the conceptual model used to develop the overall design. One key aspect of the conceptual model is the list of COPECs, which are based on existing sample data and process knowledge. Sampling for contaminants of interest can help to verify this aspect of the conceptual model.</p> <p>Phase I activities are focused on the Central Plateau in the industrialized core zone; Phase II expands the sampling to US Ecology, tank farm areas in the Central Plateau, and the B/C controlled area; and Phase III includes consideration of habitat sampling outside of the 200 East and 200 West Areas. Phase I and Phase II data collection will be followed by a data quality assessment</p>

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

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			(DQA) early in Phase III, and the subsequent Phase III field investigations will be dependent on the results of the DQA. Phase I and II sampling is scheduled to commence in the spring of 2005, with Phase III commencing in the spring of 2006.”
Specific Comments on Feasibility Study			
1	<i>Page 1-2, Section 1.0, first full paragraph, last sentence.</i>	It is not clear what the specific needs for RCRA-CERCLA integration are. There are no Treatment, Storage, or Disposal (TSD) units in these operable units (OUs). It is preferable that all of the waste sites be CERCLA Past Practice (CPP) units rather than some of them being RCRA Past Practice (RPP) units when EPA is the lead regulator. The DOE and EPA should consider creating a change package to address this.	After reviewing all four of the OUs, DOE agrees with the comment. References will reflect EPA as the lead agency for this document. DOE will work with EPA to evaluate if a change package is necessary.
2	<i>Page 1-2, Section 1.0, second full paragraph</i>	Are the two pipelines part of the 200-IS-1 OU and were just opportunistically characterized under this RI/FS effort? Please clarify.	The two pipelines are part of 200-IS-1 OU. According to the DQO summary report, the two pipelines were opportunistically characterized at EPA’s request during the RI effort.
3	<i>Page 1-2, Section 1.0, third full paragraph, first sentence.</i>	Please state whether or not the change package has been approved.	The change package moving the 200-W-110 from the 200-PW-1 OU to the 200-CW-5 OU has not been approved. It is currently scheduled to be delivered to RL in late May 2005.
4	<i>Page 1-3, Section 1.1, second to the last sentence,</i>	Please also indicate that the rest of the administrative record file will also be part of the basis for the decision.	The sentence will be modified to read as follows: “The Tri-Parties will use the decision documents contained in the Administrative Record as the basis for selecting a remedy to mitigate potential risks to human health and the environment.”
5	<i>Page 2-7, Section 2.1.2.4, second paragraph, first sentence</i>	Where did the rest of the steam condensate from the evaporators go?	The steam condensate was monitored prior to release. If radiation readings were above a specified amount in the retention basins, then the condensate was returned to the feed tank. No change to text required.
6	<i>Page 2-10, Section 2.2.4, last two full sentences on the page.</i>	It appears that the recharge rates are switched.	The recharge rates were inadvertently switched. The text will be modified to reflect the proper recharge rates.
7	<i>Page 2-11, Section 2.2.4, first paragraph, second to the last sentence.</i>	Some examples could be provided to indicate the latest information about fine-textured layers at depth and the moisture and associated mobile contaminants they frequently contain	Information about fine-textured layers at depth and the moisture will be included in the revised text.

EPA Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units) Feasibility Study

Review Comments and Disposition

No.	Reference Page Paragraph or Figure	Comment	Comment Disposition
8	<i>Page 2-17 to 2-18, Section 2.4.1.1, sentence that carries across the pages.</i>	Please don't just list the radionuclides, provide inventory estimates.	On page 2-17, Section 2.4.1.1, 3 rd paragraph, the inventory estimates will be modified as follows: 8 kg plutonium, 1.9 kg uranium, 0.5 Ci Am-241, 11 Ci Cs-137, and 11 Ci Sr-90 (DOE/RL-96-81).
9	<i>Page 2-20, Section 2.4.1.3, second to last sentence</i>	How were the inventory estimates erroneous?	The 2 nd paragraph on page 2-20 provides several possibilities. The paragraph states, "Significant uncertainty exists in estimates of plutonium inventory based on waste stream chemistry. Waste effluent sampling likely was performed by alpha count and then converted to plutonium concentrations. This method can significantly overestimate the quantity of plutonium. Conversely, periodic waste stream sampling likely would not reflect intermittent, short-term higher concentration discharge incidents and, thus, would underestimate the total plutonium released to the ditches."
10	<i>Page 2-20, Section 2.4.1.4, first paragraph, second to last sentence</i>	Please be consistent with the formatting of numbers.	DOE will reformat the numbers to scientific notation to be consistent.
11	<i>Page 2-21, Section 2.4.1.5, fourth paragraph</i>	Why was there surface contamination that had to be removed?	The WIDS database reports that decomposed Russian thistle was the most likely cause for the contamination. DOE has an ongoing program that performs periodic surveys at the 200 Area waste sites. If sites are identified as a risk to workers and the environment (this site was identified as a risk), the surface contamination is removed and clean material is used to backfill the removed material.
12	<i>Page 2-26, Section 2.5, last sentence.</i>	Should explain that lateral spread is to be investigated further during confirmatory sampling.	A discussion, as suggested in this comment, will be added. The added text will read as follows: "The lateral spread of contaminants will be investigated further during confirmatory sampling. The sampling locations will draw upon other recent and ongoing site investigation of lateral spreading to optimize the number and placement of confirmatory sampling locations."
13	<i>Page 2-37, Section 2.6.2.2, item #1.</i>	This deeper contamination on the edge gives credence to the concept raised in discussions about confirmatory sampling for the 200-UW-1; the idea that mobile constituents are present in higher concentrations in a ring that spread out from the source along fine-textured layers	The idea that mobile constituents are present in higher concentrations in a ring that spreads out from the source along fine-texture layers may have credence at the 200-UW-1 OU, and the confirmatory sampling should provide data for evaluation. However, in this case, the point discussed is that a ditch is a conveyance structure, while a crib is a disposal structure. The data discussed here illustrate this difference. In the ditches, contamination is found at relatively shallow depths (9 to 18 ft), while deep contamination may extend to

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			90 ft in the adjacent crib.
14	<i>Page 2-40, Section 2.6.2.5.</i>	What is the leak history for the 200-W-79 Pipeline? The shallow nature of limited releases should be indicated if that is the case to distinguish from the crib.	<p>The WIDS database identifies three separate radiological postings. Each of these postings is associated with an assumed leak on the pipeline.</p> <p>In Section 2.6.2.5, page 2-40, a sentence will be added at the end of item #1. "...The only waste discharged from the 200-W-79 pipeline would have been from leakage; therefore, the depth of contamination is likely less than representative site, 216-T-26 Crib."</p> <p>Also at the end of the 2nd paragraph (after page 2-40), the following text will be added: "...Similarly, the distribution of contaminants from the 200-W-79 pipeline is expected to be more shallow than the 216-T-26 Crib, because the only waste discharged from the 200-W-79 pipeline would have been from leakage."</p>
15	<i>Page 2-40, Section 2.6.2.5, last sentence</i>	Of course, the contamination in the sludge, while lower in volume, would be very concentrated.	DOE agrees with the comment. No change in text required.
16	<i>Page 2-40 through 2-47, Section 2.7</i>	This would be a good place to include (or at least reference) the additional modeling from the report being developed once this FS is revised.	DOE agrees that this is a good place to include the additional modeling
17	<i>Page 2-43, Section 2.7, second paragraph, first sentence</i>	This sentence does not quite make sense. Please explain in this section what was done differently in the additional modeling.	<p>This sentence describes the industrial-land-use scenario's provision of not using the groundwater as a source for drinking water. As such, no change is necessary.</p> <p>Subsequent to the FS submittal, additional RESRAD modeling was performed at EPA's request. This information will be presented in the next revision of the FS.</p>
18	<i>Page 2-43, Section 2.7.1.</i>	Please revise to incorporate comments about how the response to the HAB advice has been clarified. This section should be consistent with the revised section of the 200-UW-1 FS.	Clarifications to HAB advice #132 will be incorporated. This section will be modified to be consistent with the 200-UW-1 FS that was recently submitted.
19	<i>Page 2-45, Section 2.7.2</i>	This is probably a good place to mention the requirement to contribute to no further degradation to groundwater from contaminants leaching from the waste sites.	The text will be modified to conform to the 200-UW-1 FS discussion on no further degradation.
20	<i>Page 2-45, Section 2.7.2.2, last</i>	Please discuss Nuclear Regulatory Commission	NRC regulations are not promulgated environmental regulations and

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	<i>paragraph</i>	regulations that have to do with the 1000 year time period. Were these regulations examined as potential ARARs?	are not applicable to DOE; therefore, they are not evaluated as potential ARARs. However, there are several guidance documents that were considered for this FS. In particular, DOE O 435.1 establishes a 1,000-year period for performance assessment purposes. The 1,000-year period is consistently used across the DOE complex.
21	<i>Page 2-47.</i>	Table 2-3 is referenced as having the dose rates for sites without cover. Actually, Table 2-3 is an important summary of the risk assessment effort and should be included in section 2.7.2.2. Tables 2-4, 2-5, and 2-7 are also important summaries and should be moved up in the text or at least referenced.	The editorial design of the FS is to place all tables at the ends of the sections. Some of the tables are lengthy; thus, placement at the end avoids interrupting the flow of the text. Tables 2-3 and 2-4 are called out in Section 2.7.2.2, "Radiological Results." Table 2-5 is a summary of ecological data and is called out in Section 2.7.3, "Ecological Risk Assessment." Table 2-7 is a summary of intruder dose and risk and is called out in Section 2.7.5, "Intruder Risk Assessment."
22	<i>Page 2-47, Section 2.7.3.</i>	This would be a good place to discuss the wider central plateau ecological evaluation report and the baseline terrestrial ecological risk assessment for the 200 Areas. See other comments on this topic.	DOE agrees. The new discussion will be included in this section.
23	<i>Page 2-48.</i>	Groundwater protection is not a risk assessment, but it is included in the Risk Assessment section. Groundwater is not a pathway used in the risk assessment. This important topic should not be buried in this section but should be covered in a separate section.	DOE would prefer not changing the structure of the document. DOE concurs with the commenter that, in the case of the industrial scenario risk assessment, groundwater protection (or potential impacts to the groundwater) is not considered in the calculation of human health risk and is different from human health risk, as stated in the second sentence of Section 2.7.4. This is the reason why this material was not placed in Section 2.7.2. The groundwater pathway is not a component of the industrial scenario risk assessment because one of the scenario assumptions is that groundwater is not used. However, DOE recognizes that an evaluation of groundwater protection is required by the FS ARARs, even though it is not a part of the industrial scenario risk assessment. However, there is risk of the groundwater being contaminated. That risk is evaluated in terms of human health risk (i.e., dose). Accordingly, it is appropriate to discuss groundwater protection in the risk section, apart from human health risk. Given that risk is one of the most important discriminators in selecting among remedial

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			alternatives, placement of groundwater protection in the risk section does not bury this important topic.
24	<i>Page 2-48, Section 2.7.3.</i>	How does the sludge from the one trench compare to the representative site as far as ecological risk?	The following contaminants exceeded the ecological soil indicator concentrations or biota concentration guides: Am-241, Cs-137, Pu-238, Pu-239, Pu-239/240, Ra-226, Th-228, and Sr-90. Aroclor-1254 and aroclor-1260 exceeded the PCB level of Table 749-3, but further evaluation is necessary to determine the ecological impact. In addition, there was no indicator concentration for boron. These contaminants are further evaluated in Section 2.8. No change in the text required.
25	<i>Page 2-48, Section 2.7.3, second bullet on page</i>	Please explain the statement that more ecological evaluation is necessary for the PCBs in the 216-Z-11 Ditch.	The statement was made because there is no specific value for Aroclor. The statement will be modified with the following clause: "...because Table 749-3 of WAC 173-340-900 lists only PCB mixtures, not a value specific to Aroclor."
26	<i>Page 2-49, Section 2.7.4.</i>	Please reference the sources of information for the STOMP modeling done for other representative sites.	The STOMP modeling for the representative site (200-T-26 Crib) can be found in the RI report (DOE/RL-2002-42). STOMP modeling was not performed at Gable Mountain Pond. RESRAD results for Gable Mountain Pond indicate less than 1 mrem/year. The text will be modified to show the reference documents.

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27	<i>Page 2-49, Section 2.7.4.1, last bullet.</i>	Why are the RBCs based on the shallow zone samples?	The commenter is correct that shallow zone samples should not be used for screening groundwater against soil-based RBCs. We have checked the analytical results for 216-T-26 Crib and have determined that non-radiological screening based on deep zone samples also yields the conclusion that only total uranium exceeds the groundwater protection RBCs. Therefore, the parenthetic "(based on shallow zone samples)" will be deleted.
28	<i>Page 2-51, Section 2.7.5, first paragraph, last two sentences</i>	Please describe how the additional modeling performed recently differs from this description.	There were four scenarios analyzed in the additional modeling: three rural-residential scenarios and one Native American scenario. The rural-residential scenarios evaluated dose and risk as a consequence of direct exposure from the waste site without any groundwater use (i.e., direct human consumption, cattle watering, or crop irrigation). Case 2 considers direct exposure and adds groundwater use for human and cattle drinking water. The groundwater is obtained from a well drilled through the waste site. Case 3 includes everything in Case 2, but adds groundwater use for crop irrigation. The Native American scenario was the subsistence developed by Harris and Harper in 1977. No change to the text required.
29	<i>Page 2-57, Section 2.9.3, second paragraph</i>	This discussion of hot spots is in contradiction with the survey data and lateral conceptual model from the Sampling and Analysis Plan that targeted the location of the borehole. See comments on the FS.	A discussion will be added to Section 2.5 as suggested. The text addition will read as follows: "The lateral spread of contaminants will be investigated further during confirmatory sampling. The sampling locations will draw upon other recent and ongoing site investigation of lateral spreading to optimize the number and placement of confirmatory sampling locations." The sentence in Section 2.9.3 will be changed as follows: "Surface and near-surface soil data suggest that radioisotopes are distributed over the entire length of the ditches. Analytical results from closely spaced samples indicate significant variability in concentrations, which makes it difficult to confidently segregate portions of the ditch between more or less contaminated areas."
30	<i>Page 2-58, Section 2.9.4, fourth bullet, last sentence</i>	It is not true that Gable Mountain Pond is in an industrial setting. Please distinguish between this pond that is not part of the remedial action and the analogous site.	The 216-A-25 Gable Mountain Pond is located outside the core zone (Figure 2-16) and is not automatically assumed to be an industrial setting. The last sentence of the 4 th bullet will be revised.

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31	<i>Page 2-59, Section 2.9.5</i>	The STOMP modeling issues with regard to Tc-99 have not been fully resolved for the 216-T-26 Crib. The DOE should continue to work with EPA and the USGS to develop a reasonable approach to simulating the hold up of water and Tc-99 in the vadose zone that is indicated by borehole sampling data	DOE agrees with this comment.
32	<i>Page 2-82, Figure 2-15.</i>	This does not seem to account for the intruder scenarios. This fact should be mentioned in a footnote.	The analysis does account for an intruder scenario. The following footnote will be added to Figure 2-15: "For this analysis, the residential farmer scenario is also known as the inadvertent intruder scenario, as described in Section 2.7.5."
33	<i>Page 2-106, Table 2-6, column on time to reach PRGs</i>	Please indicate in parentheses the actual estimated time to reach PRGs for each entry.	DOE will provide the estimated time to reach the PRGs identified in Table 2-6 for those sites modeled as a part of this FS.
34	<i>Page 3-1, Section 3.0, second paragraph, last sentence.</i>	Please indicate that the remediation goals are preliminary until finalized in the ROD.	DOE will indicate that the remediation goals are preliminary until finalized in the ROD.
35	<i>Page 3-6, Section 3.1.4</i>	Need to acknowledge additional modeling work and its purpose.	The additional RESRAD modeling work will be referenced as requested.
36	<i>Page 3-9, Section 3.5, first sentence.</i>	They won't be preliminary in the ROD.	DOE agrees with this comment; however, it is believed that no modification to the text is required. It is unfortunate that the first portion of the sentence appears on the previous page. The entire sentence reads, "Final remediation goals developed from PRGs will be specified in the ROD..."
37	<i>Page 3-10, Section 3.5.2.1, first paragraph, last sentence.</i>	This is a good way to write it.	Thank you.
38	<i>Page 3-12, Section 3.5.2.2.</i>	It would be beneficial to discuss the central plateau ecological risk assessment and its more inclusive COC approach.	The following text will be inserted in Section 3.5.2.2: "An ecological risk assessment is being performed for the Hanford Central Plateau. Originally focused on CERCLA waste sites on the Plateau, this risk assessment was expanded to include habitat surrounding and between the 200 East and 200 West Areas. The data collected will supplement other characterization data for waste sites in the Central Plateau. The process used to establish the sampling requirements is EPA's 8-step ecological risk assessment guidance for Superfund, resulting in the development of a series of ecological data quality objective (EcoDQO) summary reports for the Central Plateau. This evaluation will provide information that supports waste site remedial decision

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			<p>making and evaluation of the health and/or condition of the ecosystem across habitats.</p> <p>The risk assessment will be implemented using a phased and tiered approach to characterize ecological risks. Phases are based on the spatial components (i.e., study areas), whereas tiers are types of data collected within those study areas. Using a phased approach to characterize ecological risks has the advantage of targeting data collection to those ecological receptors found to be at risk from Hanford processes waste sites and associated contaminants of potential environmental concern (COPECs). Phasing also allows for testing aspects of the conceptual model used to develop the overall design. One key aspect of the conceptual model is the list of COPECs, which are based on existing sample data and process knowledge. Sampling for contaminants of interest can help to verify this aspect of the conceptual model.</p> <p>Phase I activities are focused on the Central Plateau in the industrialized core zone, Phase II expands the sampling to the B/C controlled area, and Phase III includes consideration of habitat sampling outside of the 200 East and 200 West Areas. Phase I and Phase II data collection will be followed by a data quality assessment (DQA) early in Phase III, and the subsequent Phase III field investigations will be dependent on the results of the DQA.</p> <p>The culmination of the phased DQOs/SAPs and field characterization will be the development of a final Central Plateau ecological risk assessment, planned for FY07.”</p>
39	<i>Page 3-13, Section 3.5.3.</i>	Please discuss the no further degradation requirement.	The text will be expanded to conform to the 200-UW-1 FS discussion on no further degradation.
40	<i>Page 3-14, Section 3.5.3.2, first full paragraph, first sentence.</i>	Please add the micro symbol in front of grams.	DOE will add the microgram symbol.
41	<i>Page 4-12, Section 4.3.</i>	Even though partial RTD and capping isn't a specific technology, it is an important combination that deserves more than one sentence of coverage.	In Section 5.2.5, alternative #5 (partial RTD with capping) contains the additional text that is being requested in this comment. DOE believes that this is the proper location in the FS report for this text. Additional text in Section 4.3 is not necessary.

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42	<i>Page 5-2, Section 5.1, first paragraph</i>	All of the alternatives are covered but plain capping.	The last sentence on page 5-1, Section 5.1 addresses this issue. The RTD alternative and the containment using surface barriers alternative also are retained in this FS. No change to the text is required.
43	<i>Page 5-9, Section 5.2.6, second paragraph, last sentence, first parenthetical</i>	Thank you for mentioning the difficulties in capping something with the geometry of these ditches.	DOE agrees with the comment.
44	<i>Page 6-6, Section 6.1.8.</i>	This discussion of state acceptance should not include EPA which is a federal agency and the lead regulatory agency for this remedial action. Please note that EPA also writes the ROD.	This paragraph will be modified to read, "This criterion evaluates the technical issues and concerns that Ecology could have regarding a remedial alternative.
45	<i>Page 6-15, Section 6.2.3, second paragraph, last sentence.</i>	The disposal site must be WIPP if over 100 nCi/g. Please revise.	If material over 100 nCi/g and greater than 20-year half-life is generated, it will be disposed in accordance with the appropriate regulations in force at the time of generation.
46	<i>Page 6-15, Section 6.2.3, last sentence.</i>	This is true except for ERDF which does not require a permit as a CERCLA disposal facility meeting RCRA technical requirements. An extensive risk assessment was performed and helped establish the waste acceptance criteria.	The sentence will be changed to read as follows: "Risks associated with the failure of the disposal facility are not evaluated here but are instead evaluated in the ERDF ROD and associated CERCLA documents. This includes ERDF authorization basis documentation."
47	<i>Page 6-18, Section 6.2.3.5.1, first sentence.</i>	The fact that these activities might be classified as nuclear is another reason for not leaving this material around for future generations to come across or deal with.	The FS followed the recommended process cited in EPA/540/G-89/004, <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final)</i> , OSWER 9355.3-01. The process defines nine criteria: two threshold, five balancing, and two modifying evaluation criteria. The FS used the two threshold and five balancing criteria information developed in the FS in proposing the preferred alternative. This process allows for a wide range of possible remedial actions. DOE's evaluation of the alternatives indicates that placing a barrier at this site is protective of human health and the environment.
48	<i>Page 6-19, Section 6.2.3.5.2, first paragraph, second to last sentence.</i>	It should be noted that there were many ditches and ponds that were open to the air when site operations were happening.	Section 6.0 provides detailed analysis of the alternatives. Such historical statement is better suited for in Section 2.0, "Background Information." The following statement will be added to Section 2.1.2, 1 st paragraph: "...and/or chemicals. During site operations, many ditches and ponds were open to the air."

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49	<i>Page 6-20, Section 6.2.3.5.2, first paragraph after bullet.</i>	The discussion of Gable Mountain Pond is not relevant to these operable units except as a representative site. Please delete discussion or explain this. This issue recurs in later sections.	Discussion of Gable Mountain Pond is deleted from Section 6.2.3.5.2 – 1 st paragraph after bullets, and from Section 6.2.5.5.2 – 2 nd paragraph after bullets.
50	<i>Page 6-21, Section 6.2.3.5.3.</i>	These assumptions about the number of excavators seem a little ridiculous. Also, the estimate of how much waste ERDF can accept in a day is off by about a factor of 10.	An integral part of the detailed analysis is a discussion on the time that it takes to meet the RAOs. As such, assumptions are necessary in order for independent reviewers to validate the reported time to meet the RAOs. With regard to the estimate of how much waste ERDF can accept in a day, the commenter may be correct on the total volume that ERDF can accept in a day. Unfortunately, the text in the document does not fully explain the stated volume. The volume stated is based on the assumption that a single project cannot take up the entire daily disposal capacity of ERDF. The text will be modified to reflect that the disposal capacity stated is an assumed allotment of the total daily capacity.
51	<i>Page 6-21, Section 6.2.3.5.3, last bullet.</i>	Why are the analogous sites not mentioned here? Please discuss them. This same comment applies in following sections.	Reviewer may have misread this bullet, which states, in part, “– Remediation of the 216-T-26 Crib analogous waste sites would take approximately 8.4 years.”
52	<i>Page 7-3, Section 7.2, fifth paragraph, last sentence.</i>	Then employ adequate worker protections.	Use of proper personal protective equipment will be added. Such use will be commensurate with the hazards identified during remediation
53	<i>Page B-2, Section B1.0, first full paragraph, last two sentences</i>	Are there any RCRA units that will need to be incorporated into the permit?	After reviewing all four of the OUs, DOE agrees with the comment. References will reflect EPA as the lead agency for this document.
54	<i>Page B-5, Table B-1.</i>	This table should have already been consistent with tables in numerous documents reviewed by EPA. The ARARs and their applicability must be consistent with the revised 200-UW-1 FS (with the exception of ARARs necessary for TSD units).	Appendix B has been updated to incorporate that latest information on ARARs. As required by the National Contingency Plan, ARARs are identified for each individual remedial action evaluation. EPA guidance and recently approved CERCLA evaluation and decision documents were used as a basis to identify ARARs for these OUs.
55	<i>Page C-18.</i>	Why is an irrigation rate of 0.76 m used in the evaluation of groundwater protection? Is irrigation included in the industrial scenario? The reason for including irrigation should be stated.	Irrigation may be appropriate in the industrial scenario because of the arid climate at Hanford. Industrial locations often have grass that needs watering. The assumption of irrigation provides a more conservative analysis for protection of groundwater. This analysis will be rerun with out irrigation.
56	<i>Page C-21.</i>	Why are different Kd values used for the 216-T-26 Crib than those used for the other sites? The Kd	The parameters used were taken from the <i>Composite Analysis for Low-Level Waste Disposal in the 200 Area Plateau of the Hanford</i>

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		values are markedly different. For example, the Kd for Co-60 used for four sites is 1200 whereas the 216-T-26 crib uses a Kd of 0 for Co-60. There are other marked differences.	Site (PNNL-11800). The 216-T-26 Crib waste is classified in the document as “chelates/high salts,” while the other sites are classified as “low organic/low salts/near neutral.” The associated distribution coefficient values are different due to the differences in the waste streams.
General Comments-USGS			
1		<p><u>Analogous Site Approach</u> The potential advantages of using the analogous site approach are obvious, but limitations to the approach became apparent during my review. Foremost is the uncertainty that the representative sites are “worst case” sites as is presumed. Table C10 in the Feasibility Study (FS) indicates that the highest RESRAD dose results for the next 200 years at the 216-U-10 Pond is from Cs-137. However, at six of the ten analogous sites with data available (FS, Table 2-2), the contaminant inventory of Cs-137 exceeds that of the representative site even though the volumes of effluent to the analogous sites were less. With regard to total uranium, all ten analogous sites with data available have contaminant inventories that exceed the inventory at the representative site. Thus, the 216-U-10 Pond does not appear to represent the worst case, and there may be substantially higher risks at some of the analogous sites. Given those uncertainties, the quantitative risk results presented in the FS for the representative sites cannot be assumed to represent or “bound” the risk at analogous sites.</p>	<p>The analogous site approach was a key element in the development of the <i>200 Areas Soil Remediation Strategy - Environmental Restoration Program</i> (DOE/RL-96-67) and its companion document, <i>Waste Site Grouping for 200 Areas Soil Investigations</i> (DOE/RL-96-81). One objective of these reports was to select representative site(s) that best represents typical and worst-case conditions for a particular waste group. The selection was performed to support a more efficient and cost-effective approach to characterization of the waste site groups. The selection of the representative sites used seven criteria to select the site: volume of effluent, contaminant inventory, site size, site construction, conceptual contaminant distribution, geology, and geophysical logging information. Three other criteria were used to select the representative sites, including long-lived contaminants, current surface threat, and technology testing. Sites with the presence of long-lived contaminants were prioritized over sites with only short-lived contaminants, and sites that posed a surface threat were considered before sites that do not pose a surface threat.</p> <p>The inventory reported at the 216-U-10 Pond includes uranium, plutonium, americium, cesium, and strontium. The data suggest that the porewater volume was exceeded at 216-U-10 Pond. Using the criteria described above, a comparison of this inventory data against the analogous site data compares favorably with all the analogous sites. The commenter is correct in identifying that Cs-137 inventory is greater; however, this is just one factor in selecting a representative site. Examination of the other identified contaminants shows that the 216-U-10 Pond contains more potential contaminants of concern in its inventory, it received more than three and one-half times than the reported effluent in any of the analogous sites, the construction is similar for the other analogous sites mentioned in this analysis, and it</p>

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			contains 2,000+ more long-lived contaminants than any other analogous site. All of the information presented above points to the 216-10 Pond as a typical representative site.
2		Two analogous sites do not appear to be well represented by the 216-U-10 Pond representative site. The lack of contamination at depth beneath the 216-U-9 Ditch and 216-U-11 Ditch and the resulting low potential for ground-water contamination indicates that they are substantially dissimilar to the 216-U-10 Pond. Thus, remedial alternative 3 (RTD) should be re-evaluated for those ditches to consider removal of shallow soils only, and alternatives 4 and 5 should be re-evaluated to reflect that ground-water protection is unnecessary.	DOE will re-evaluate the 216-U-9 and the 216-U-11 Ditch. The re-evaluation will focus on the function of the two mentioned sites. If the two sites routinely contained effluent and disposal was through percolation, then the site may be well represented by the 216-U-10 Pond. If the two sites in question only acted as a conveyance of effluents, then the presence of deep contamination is less likely.
3		It is not clear how the proposed additional sampling data for analogous sites will be used. Will risk be reassessed with additional RESRAD runs if substantially more contamination is found? The additional data will presumably help define the extent of excavation or capping needed, but there is no apparent mechanism to reconsider whether capping or excavation is still the most implementable and effective remedy in the short term.	The additional sampling data will be used to help answer design questions, confirm the CSMs, and confirm the need for remedial action. If substantially more or less contamination is found, the analogous site would be compared to the representative site model to evaluate the two site models. It is speculative to assume a course of action at this time; however, RESRAD might be run, or additional fate and transport evaluations might be necessary.
Preferred Alternatives - USGS			
4a		Although the spatial distributions of contaminants at the sites are not described, there is undoubtedly substantial variation, particularly across the area of the larger ponds and longer ditches. It is likely that the RTD/capping alternative could be tailored for individual sites to consider only removal the most severe near surface contamination.	The vertical distribution of contaminants above PRGs are shown in Figures 2-6, 2-7, 2-8, 2-10, and 2-13. DOE acknowledges the possibility of variation in contaminants across this site; however, there are no criteria available that define severe near-surface contamination. Without such guidance, it is difficult to evaluate the postulated alternative.

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4b		The selection of capping as the preferred alternative for the 216-Z-11 Ditch and analogous sites is questionable. The Reduction in TMV criterion was rated only as “moderate” for the RTD alternative at these sites, whereas it was rated as “high” for every other site considered. The verbiage describing Reduction in TMV on page 38 of the Proposed Plan is identical to that for all other sites, so there is no apparent reason to downgrade the effectiveness of RTD for the Z-ditches only.	The designation of RTD as “moderate” is a mistake. The RTD alternative and the short-term effectiveness are reversed. The principal reason for rating the short-term effectiveness as low is the dose of 5.8 rem to the remedial action worker.
4c		In addition, the long-term effectiveness of capping the Z ditches is over-rated—the contaminants will require a longer duration (>1000 years) to decay to acceptable levels than the design life of a cap (500 years). Thus, long term effectiveness of the capping would be low.	In accordance with the <i>Focused Feasibility Study for Engineered Barriers for Waste Management Units in the 200 Area</i> (DOE/RL-93-33), the barrier proposed for the Z-Ditches is designed to remain functional for a performance period of 1,000 years and to provide the maximum available degree of containment and hydrologic protection. This barrier includes a layer of coarse, fractured basalt intended to perform the primary biointrusion and human intrusion control functions. In addition to the primary intruder engineered features, a secondary engineered intrusion feature is integrated in the barriers design.
4d		The RTD alternative in general is described as providing a “perceived” risk reduction only. Given the historical difficulties in accurately tracking and managing wastes at the Hanford Site over the past 60 years, it is a reasonable assumption that any activities that simplify long-term waste management would provide a very real reduction in risk. Thus, excavating and consolidating wastes from multiple dispersed sites into a single more managed facility (the RTD alternative) would provide a substantial reduction in risk in the long term.	<p>The word “perceived” will be removed and a discussion of ERDF’s protectiveness will be added to the text.</p> <p>With regard to the request that centralized waste management will be easier to maintain, DOE disagrees with this comment. There are several issues associated with centralized waste management. First, it is not obvious how consolidating waste will make waste management less risky. By centralizing, the waste different risks are introduced. If all of the wastes were centralized, it would represent a more concentrated mass of contaminants. If the containment structure at ERDF failed, this concentrated mass of contaminants could pose a large threat to either the groundwater or the ecology of the surroundings site. Secondly, it is unclear how moving mobile long half-life material that is above PRGs from one 200 Area site to another is more protective. Another area of uncertainty is sites that require intruder protection. The cover at ERDF does not currently</p>

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			have an engineered intruder-protection feature incorporated into the design. As such, there is little protection from the current inadvertent intruder risk scenario. Based on the above, DOE is not convinced that centralized waste management would reduce risk in the long-term.
Specific Comments (Proposed Plan) - USGS			
5	Page 12, Summary of Site Risks, fourth bullet	The ecological risk conclusions in the Proposed Plan are not well supported by the information presented in the FS report (see FS report comments on Section 2.7.2.2 and Section 2.8).	Although the extent to which the sites are used by burrowing animals (e.g., badgers, coyotes, pocket gophers, burrowing owls, and rodents) cannot be quantified, the 216-Z-11 Ditch, 216-U-14 Ditch, and 216-T-26 Crib are sites whose total areal extents are very small, providing little opportunity for use by terrestrial receptors. Exposure to soil contaminants by burrowing animals in the 216-U-10 Pond and the 216-A-25 Pond is possible to some extent and, thus, potential risk to terrestrial wildlife from site-related contaminants at these two sites cannot be ruled out. However, all sites, with the exception of 216-A-25 (Gable Mountain Pond), are located in industrial areas, and land use at the sites is not expected to change significantly in the future. Thus, exposure to site-related contaminants at the sites by wildlife receptors would be minimal.
6	Page 16, third paragraph	Statement that "Because a clean soil cover exists at the site, these contaminants do not currently pose a risk to Hanford Site workers" applies only to the representative site. For reasons previously discussed, the risk from radiation at certain analogous sites is unknown.	DOE disagrees with this comment. DOE has an ongoing program to verify that all waste sites present no immediate risk to human health or the environment. Since the early 1980s, the Radiation Area Remedial Action Program has identified those sites that posed a threat to human health and the environment. All waste sites are periodically surveyed to confirm that early remedial actions are effective. If radiation levels are found to be unacceptable during this surveying effort, then corrective actions are implemented. Therefore, if an analogous site presents a risk to the workers, an interim action of placing a clean cover over the site is conducted.
7	Pages 16-27, Summary of Alternative Evaluations and Preferred Alternatives, 216-U-10 Pond and analogous sites	The preference of alternative 4 over 5 for most sites in this group is a subjective one. It could be argued that partially satisfying all balancing criteria (alternative 5) is preferable to "best" satisfying the shorter-term criteria (short-term effectiveness and implementability) while only marginally satisfying the longer-term criteria (long-term effectiveness and reduction in TMV). The alternative summary	DOE will include the estimated life of the caps in this discussion. With regard to item #1, DOE disagrees with this comment. The use of the 500 years of institutional controls (i.e., 150 years of active controls and 350 years of passive controls) is based on the ERDF ROD. The response to HAB advice #132 risk framework description states, "The core zone (200 Area, including B Pond [main pond] and S Ponds) will have an industrial scenario for the foreseeable future."

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		in Table 3 does give the impression that the most expedient and least costly alternative is preferred. The associated discussion somewhat tempers that impression by reminding us that radioactive decay will reduce the surface risks to acceptable in 280 years—it would help to remind the reader that the proposed caps have design service lives of 500 years. However, that 280-yr attenuation estimate applies to the representative site only—many analogous sites may require longer times for attenuation to be effective. Overall, it is difficult to argue technically with the selection of the capping alternative assuming (1) the caps and institutional controls can be maintained long into the future as proposed, and (2) the representative site is the worst case scenario. The latter assumption is unproven, and the former is uncertain.	Using the two pieces of information above, it is not inconceivable that the foreseeable future at the Hanford Site extends to 500 years. With regard to item #2, the commenter is referred to the answer to comment #1 under “General Comments – USGS.”
8	Page 26, Cost	It is unclear why a RTD depth of 210-ft was selected for 216-U-10 Pond and analogous sites. The conceptual model describes contamination down to a depth of 140-ft only.	A RTD depth of 210 ft was selected based on the groundwater protection scenario assessment. Modeling assessment for groundwater protection indicated that excavation to the water table (210 ft below ground surface) was required to meet groundwater protection criteria.
9	Page 30, second bullet	If ground-water protection is not an issue for the Z ditches, the reduction of infiltration through capping would have no impact on the protection of human health and the environment.	Modeling with STOMP indicates that no contaminants would reach the groundwater within the 1,000-year period of analysis. Therefore, capping would provide no benefit with respect to groundwater protection. However, capping would provide protection to human health (intruder protection) and wildlife from the radionuclide concentrations present in the Z-Ditches.
10	Page 49, Alternative 6	The conditions described do not match any of the plug-in Conceptual Site Models. Do you need a sixth conceptual model in the mix? It appears that “significant concentrations of transuranic radionuclides in shallow soils that pose significant worker risk” is the distinguishing feature.	A sixth CSM will be developed for this FS.

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Specific Comments (Feasibility Study) - USGS			
1	Section 2.6, page 2-33	How is it known that the representative sites reflect worst case conditions? That is particularly questionable for the 216-U-10 Pond—the total uranium mass at every analogous site and the Cs-137 and Sr-90 inventory at many analogous sites are greater than that for the so-called representative site.	The representative sites are not always the worst condition. The representative sites were chosen after evaluating a number of factors. The commenter is referred to the answer to comment #1 under “General Comments – USGS.”
2	Table 2-2	<p>This table contains some speculative or erroneous statements. Specific comments are as follows:</p> <ul style="list-style-type: none"> • What does ‘--’ signify in the contaminant inventory columns? No data available or no contaminant found. <p>The phrase “the inventory for this site is bounded by the 216-U-10 Pond” or similar is used often in the rightmost column. Most readers expect that phrase to mean the representative site has more contamination (in either mass of radiation) than the analogous site. The contaminant inventory data suggest that the phrase does not mean that. For example, the total uranium mass at every analogous site with available data is greater than that for the so-called representative site 216-U-10 Pond. The total U and Pu inventory for the 216-T-12 Trench is referred to as “less than the representative site” but the inventory at the representative site is not shown.</p>	<p>“--” signifies that no data are available. An appropriate footnote to the table will be added.</p> <p>The analogous site approach is not only based on radionuclide inventory numbers. The analogous site approach was a key element in the development of the <i>200 Areas Soil Remediation Strategy – Environmental Restoration Program</i> (DOE/RL-96-67) and companion document, <i>Waste Site Grouping for 200 Areas Soil Investigations</i> (DOE/RL-96-81). One objective of these reports was to select representative site(s) that best represents (bounds) typical and worst-case conditions for a particular waste group. The selection was performed to support a more efficient and cost-effective approach to characterization of the waste site groups. The selection of the representative sites used seven criteria to select the site: volume of effluent, contaminant inventory, site size, site construction, conceptual contaminant distribution, geology, and geophysical logging information. Three other criteria were used in selecting representative sites, including long-lived contaminants, current surface threat, and technology testing. Sites with the presence of long-lived contaminants were prioritized over sites with only short-lived contaminants, and sites that posed a surface threat were considered before sites that do not pose a surface threat.</p> <p>The inventory reported at the 216-U-10 Pond includes uranium, plutonium, americium, cesium, and strontium. The data suggest that the pore water volume was exceeded at the 216-U-10 Pond. Using the criteria described above, comparison of the inventory data against the analogous site data compares favorably with all the analogous</p>

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			sites. The commenter is correct in identifying that Cs-137 inventory is greater; however, this is just one factor in selecting a representative site. Examination of the other identified contaminants show that 216-U-10 Pond contains more potential contaminants of concern in its inventory, it received more than three and one-half times the effluent than reported in any of the analogous sites, and the construction is similar for the other analogous sites mentioned in this analysis.
3	Table 2-3	Long-term radiation risk at the 216-U-10 Pond is from Th-232, but that is not listed in description of representative sites (table 2-2). Although the 1,000 year dose calculated for the 210-U-10 Pond was <15 mrem/yr, the long-term risk may exceed 15 mrem/yr at the analogous sites if they have more thorium. If that is the case, capping would not be effective in the long term because the design life of a cap is less than 1,000 years. This is another example of the uncertainties that result from the analogous site approach.	The commenter is correct that Th-232 dominates the dose at 1,000 years; however, Table 2-2 does not report dose contributors but addresses only those radionuclides with appreciable concentrations. With only 1 pCi/g of Th-232, the 216-U-10 Pond has very little Th-232 activity compared to other radionuclides. In the long-term, the shorter radionuclides decay away, leaving Th-232 as one of the few contributors.
4	Section 2.7.2.2, Radiological Results (risk assessment)	The next-to-last statement of the second paragraph on p. 2-47 is not consistent with the results shown in appendix Table C-12. Doses at three of the four sites remain under the 15-mrem/yr standard for 1,000 yrs, but the dose equals 15 mrem/yr at the 216-Z-11 Ditch in 500 years, and is 34,000-mrem/yr in 1,000 years. In addition, dose rates begin to increase after 300-yrs at the 216-U-10 Pond as well as at the 216-Z-11 Ditch.	Table C-12 presents data on four sites. The fifth site, 216-T-26, was not modeled because no radionuclides were present in the shallow zone, as explained in the sentence before the one commented on. Therefore, it is correct that four of the five sites remain below the 15 mrem/year standard. While it is true that the 216-U-10 site has increasing dose, the increase over time is very moderate compared to the increases for the 216-Z-11 site. There is no way to tell if the 216-U-10 doses will increase over the standard, whereas, the 216-Z-11 dose increased two orders of magnitude in 500 years. Suggest no change.
5	Section 2.8, Evaluation of Ecological Significance	There are few data or objective information presented to justify many of the ecological risk assessment conclusions. The Section 2.8 detailed evaluations on a site by site basis are subjective and somewhat unrealistic because they do not consider all waste sites within a potential receptor's (terrestrial animal) home range. The conclusion	It is true that the ecological evaluation of these waste sites is somewhat subjective. The conclusions of the ecological evaluation are based largely on the cover of clean soil on the sites, the industrial character of the sites, and for three of the five sites, their small size. As such, DOE is conducting a multi-phased, comprehensive ecological study of the Central Plateau. The reviewer's comment regarding cumulative risks would be more applicable if the sites were

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		<p>that animal usage of ditch areas would be limited because of the “miniscule” areal extent of a Representative Site does not take into account the cumulative effects of all waste sites in the vicinity. An animal (or population) may not use a single Representative or Analogous site exclusively for foraging and shelter, but it seems probable that it will spend a lot of time at various waste sites within the 200 Area. The following specific conclusive statements are poorly supported, and should be tempered by considering cumulative risk in the broader 200 Area:</p> <ul style="list-style-type: none"> • Section 2.8.2, sentences 4, 5, 8, and 9 • Section 2.8.3, sentences 2, 3, 8, and 9 <p>The overall conclusions presented in the first paragraph in Section 2.8.6 are also poorly supported. In particular, the cumulative risk of the three representative ditch and crib sites was not evaluated, and the risks from those three individual sites also extend to their associated analogous sites. I agree with the final statement in the section that recommends no additional ecological evaluations at individual sites. A cumulative ecological risk evaluation of the 200-Area may be warranted, although human health appears to be the primary risk at the Operable Units.</p>	<p>not covered with clean fill. It is true that the home range of a wide-ranging animal (e.g., coyote or badger) would encompass more than one waste site, but because the sites are covered with clean fill, a wide-ranging receptor would be exposed to multiple sites only if it had burrows in more than one site, which would be rare. Based on these reasons, DOE concurs with the reviewer’s final statement in the comment that no additional ecological evaluation is warranted, and human health risk appears to be the primary concern. Therefore, an evaluation of cumulative ecological risks would not be productive.</p>
6	Appendix E, Page E-1, third paragraph	<p>It is highlighted that the intruder scenario risk analysis was done separately for the Z-11, Z-1-D and Z-19 ditches “to avoid drawing conclusions for all three ditches based on results from just one.” However, the latter two sites were previously assumed to be analogous to the 216-Z-11 Ditch. It appears that the authors have the same lack of confidence in the transferability of risk results from representative sites to analogous sites as are expressed in previous comments.</p>	<p>DOE disagrees with this comment. While the representative/analogous site approach may not be perfect, the analysis provided in Appendix E supports the appropriateness and robustness of the approach.</p> <p>The 216-Z-11 Ditch is a representative waste site originally identified in the <i>Waste Site Grouping for 200 Areas Soil Investigations</i> (DOE/RL-96-81) and the <i>200 Areas Remedial Investigation/ Feasibility Study Implementation Plan – Environmental Restoration Program</i> (DOE/RL-98-28). Two other nearby parallel ditches</p>

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			<p>(216-Z-1D and 216-Z-19) are identified as analogous sites to the 216-Z-11 Ditch. These three ditches are discussed collectively in the RI report because of the uncertainty associated with the location of boreholes along these ditches and because they share common boundaries. For human health analyses (Section 2.0 of the FS), the three ditches were analyzed as one based on their close proximity and similar use. This approach could have been carried forward to the intruder scenario evaluation (Appendix E); however, as noted in Appendix E, Section E1.0, the ditches were evaluated separately to avoid drawing conclusions for all three ditches based on the results from just one and as part of the process where DOE has used all the data available. The conclusion for the intruder scenario for all three ditches is basically the same in that human health is not protected, without removal or an engineered intruder feature, because Appendix E shows that the maximum intruder dose will be above the goal of 15 mrem/year for all three ditches, as summarized in Section 2.9.3.</p>

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
1	General	The FS does little to discuss integration of these OUs with the groundwater OUs (i.e. 200-UP-1 for contamination from U pond). Although the 200-UP-1 is discussed with relation to groundwater at several points of the document (for example §1.2 and §3.1.4), the FS fails to discuss how to best limit future impact on 200-UP-1 through remediation decisions in 200-CW-5. See comment #3 above.	The integration of this FS with the 200-UP-1 OU is a planned activity during the development of the 200-UP-1 OU FS. Discussion on future impacts on the groundwater is presented in Section 3.0. The current planned approach is to establish points of calculation for the groundwater OUs. Remedial actions for the groundwater OUs will be based on these points of calculation.
2	General	Lateral spreading was discussed in the work plan to be evaluated in the FS; however, the FS contains little or no information about this issue. Add discussion throughout the document discussing how lateral spreading could affect barrier installation at sites, and how this issue is being addressed when designing barriers. (see comment#15 below for specific example of revised section).	A discussion, as suggested in the comment, will be added based on the results of the recent 200-UW-1 investigation.
3	General, chapters 6 & 8	In general, for 216-U-10, not enough information was presented to display how installing a barrier will be protective of groundwater, considering that groundwater protection standards are exceeded at significant concentrations for this site (as stated in Table 2-2 and appendix C). At a minimum a table or preferably modeling figures should be added to the FS displaying how the modeling results are altered with the addition of a 500 year barrier, and referenced in these chapters. This should also be the case for any site that exceeds groundwater protection standards and where capping is recommended. These figures should be similar to ones presented for 200-UW-1 about the reduction of risk after installation of the barriers.	DOE will provide a table showing the results of the proposed barriers based on modeling.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
4	2-17	216-U-10 Pond was a significant contributor to groundwater contamination; include this in the description to better align with information presented about gable mountain pond having Sr-90 in the groundwater.	<p>The effects of the 216-U-10 Pond on groundwater contamination will be assessed using available data and will be summarized at a level consistent with the evaluation of the 216-A-25 Gable Mountain Pond.</p> <p>The 216-U-10 Pond was a significant contributor to groundwater contamination. Historical operation of the 216-U-10 Pond, including estimates of contaminants releases into the pond, are provided in Sections 2.1.1.1, 2.1.4.1, and 2.5.1, where it is also acknowledged that operation of 216-U-10 Pond likely resulted in contaminants reaching the saturated zone.</p>
5	§2.4.2	Data used from 216-Z-1D and 216-Z-9 as bounding cases from the RI report and discussed in subsection 2.4.2.3 are not included in the discussion of data collection activities in this section. Include these sources in this general section with an explanation of why this data was used.	The use of data from analogous sites 216-Z-1-D and 216-Z-19 to represent the Z-Ditches, including 216-Z-11, will be described in Section 2.4.2.
6	§2.4.2.3	This section does not provide a summary of the 2002 sampling of the 216-Z-11 ditch that is referred to in section 2.4.2. Add characterization information about this sampling to section 2.4.2.3, at a minimum, which reflects the amount of information presented for gable mountain pond and 216-T-26 crib summary (sections 2.4.2.4 and 2.4.2.5)	The 2002 sampling of the single borehole in 216-Z-11 will be added to the discussion.
7	§2.6.2.1 to §2.6.2.5	Under the titles "Expected Distribution of contaminant" in each of these sections fails to discuss possible lateral spreading of contaminants. The CSM in the work plan discusses lateral spreading in each of the 3 representative sites in the 200-CW-5 OU; revise these sections to address this in the distribution of contaminants.	See response to comment #2.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
8	§2.7 general; §2.7 pg 2-42	The failure to consider a residential scenario and future native American scenario is not in-line with HAB advice #132, which assumes an industrial setting but that is only out to institutional controls at 150 years. The FS should consider a residential and native American scenario at the +150 years, after taking into account radioactive decay.	The requested information was performed as an addendum to the RI report (DOE/RL-2003-11). A summary of this information will be presented in this FS.
9	§2.7, section 2-43 2 nd	Standard method B must be used for calculation of groundwater protection values, to restore the groundwater to the most beneficial levels. If an alternative fate and transport model is used, it must be justified per WAC 173-340-747(8). Revise the text in this paragraph to specifically identify either standard method B or the alternative (with the justification of the alternative).	The nonradiological RBCs used in the FS were taken from the pertinent RI reports. The RI reports used the equations in WAC 173-340-747, Method B or the CLARC tables, which represent the same values. Accordingly, Method B was indeed used. For radionuclides, neither the equations in WAC 173-340-747 nor the values in CLARC apply. Individual radionuclide levels are not appropriate, so total dose from all contaminants was modeled. The source of RBCs or modeling is explained in Section 2.7.4. The paragraph cited by the commenter is a general paragraph not dealing with specific methods; nevertheless, it does cite WAC 173-340-747, which does require Method B.
10	§2.9.3, pg-2-57	Groundwater protection standard is listed as not required because modeling indicates that it will not reach the groundwater; however, both Aroclor-1254 and nitrite currently exceed groundwater protection standards. Therefore, this bullet should be revised to state that groundwater protection standards are currently exceeded. Revise this issue throughout the document with relation to groundwater in the Z-11 trench.	Soil concentrations of aroclor-1254 and nitrite exceed the screening-level risk-based concentrations. Accordingly, modeling was performed to more accurately determine the need for groundwater protection. Given that the STOMP modeling discussed in Section 2.7.4.3 indicates that no contaminants reach the groundwater within the period of analysis, DOE concludes that groundwater protection is not required. The text will be modified to acknowledge exceedance of screening-level values, but that modeling does not indicate the need for groundwater protection. See response to comment #12, in which Section 2.7.4.3 is modified to make this point more clear.
11	§2.8, §3.5.1.2	Evaluation of ecological significance in the post 150 years period should be included in this section (see comment#15 above)	It is probably safe to assume that the Hanford waste sites will be very different in the post-150-year period than they are today, but quantifying ecological risks in that timeframe are not considered meaningful because the Central Plateau is still in the early stages of remedial decision making. As such, the ecological risk is considered to be bounded by current conditions. No change is required in the reference text sections.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
12	Table 2-3	Groundwater protection standards are exceeded for 216-Z-11 ditch based on initial screening, however, the table indicates that groundwater protection is not required, presumably due to the footnote that STOMP indicates that groundwater protection standards will not be exceeded. Revise this table to indicate groundwater protection is required, as groundwater protection standards are currently exceeded. If modeling is used to dismiss this pathway, add a section to the text to indicate this.	The text will be modified in Section 2.7.4.3 as follows: "Therefore, in cases where STOMP modeling was performed, it provided the final determination of when groundwater protection was required."
13	§3.1	Discussion should be added that the future 200 area classification of industrial use should only apply to the next 150 years, when the institutional controls are assumed to end.	DOE disagrees with this comment. The use of the 500 years of institutional controls (i.e., 150 years of active controls and 350 years of passive controls) is based on the ERDF ROD. The Tri-Parties' response to HAB advice #132 risk framework description states, "The core zone (200 Area, including B Pond [main pond] and S Ponds) will have an industrial scenario for the foreseeable future." Using the two pieces of information above, it is not inconceivable that the foreseeable future at the Hanford Site extends to at least 500 years.
14	§3.5.12, pg. 3-10 2 nd paragraph	The Central Plateau ecological evaluation has presented data indicating that 90% of the biological activity at Hanford probably occurs in the upper 9 feet of the soil column. Some activity has been observed down to 12 – 15 feet. Although a conditional point of compliance may be appropriate in some circumstances, it would not be appropriate for higher concentration or higher activity waste, where the consequences of biological intrusion into the waste would be moderate to severe. In addition, the cited WAC regulations are appropriate where there is a significant barrier to biological intrusion, e.g., a paved area or concrete foundation. That is not the situation at these waste sites. Retain the standard point of compliance: 15 feet.	The alternatives developed in Section 5.0 recognize the 15-ft depth point of compliance for terrestrial receptors. The text in Section 3.5.1.2 will be changed to delete the reference to the 9-ft conditional point of compliance and reference the standard 15-ft depth point of compliance.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
		standard point of compliance: 15 feet.	
15	§4.0 general comment	Treatability texts need to be identified for this OU, as required in CERCLA guidance. A treatability test was identified as being performed on the prototype for the Hanford barrier; however, further treatability tests for this OU need to be discussed and identified, or provide justification.	Six remedial alternatives are described in Section 5.2. Of these alternatives, the in situ vitrification (ISV) technology is the only other technology for which treatability tests would be warranted under CERCLA, and this technology is not selected for implementation at any of the sites.
16	§6.2.4	Alternative Barriers have been found to out perform RCRA C barriers at a much lower cost. Alternative barriers require more up front engineering and site characterization costs than a RCRA C barrier, but those costs are more than compensated by the lower construction costs. Designating a Hanford Barrier is conservative for a barrier cost estimate.	Recent barrier workshops have presented additional information on the use of alternative barriers. Alternatives presented in this FS represent the consensus agreement at the time that the FS was submitted. With regard to the upfront engineering and characterization offsetting the regulatory and construction costs, this is speculation at this point in time. DOE will evaluate this new information and incorporate it into future alternative evaluations.
17	§6.2.4.1	Overall Protection of Human Health and the Environment: The designation of a 1,000-year protection period for the Hanford Barrier is still not addressing the 24,000 year half-life of plutonium. How is placing a Hanford Barrier attenuate the human health risks associated with the long half-lives of TRU compared with the entombment of such waste at a geologic repository? Some characterization sources indicate the 90+% of the plutonium is contained in ~ 200 ft ³ of segments. Alternatives of segregating and "mining" such sediments as a means of remediating the site would greatly decrease impact risks.	The feasibility study followed the recommended process cited in EPA/540/G-89/004, <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final)</i> , OSWER 9355.3-01. The process defines nine criteria: two threshold, five balancing, and two modifying evaluation criteria. The FS used the two threshold and five balancing criteria information developed in the FS in proposing the preferred alternative. In accordance with the <i>Focused Feasibility Study for Engineered Barriers for Waste Management Units in the 200 Area</i> (DOE-RL-93-33), the barrier proposed for the Z-Ditches is designed to remain functional for a performance period of 1,000 years and to provide the maximum available degree of containment and hydrologic protection. However, DOE is willing to discuss other alternatives but relief from the 45 day update period may be required.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
18	§6.2.4.3	Long-Term Effectiveness and Performance: The discussion only addresses the two assumed barrier designs, RCRA C cap and the Hanford Barrier. Alternative barriers are viable for arid lands and have been shown to out perform RCRA barriers. There is no discussion on performance aspects of the identified barriers except generalities. Specific attributes need to be addressed, especially with contaminants that have very long half-lives and toxic characteristics.	The reviewer may have missed the discussion on page 5-8 (last sentence), which states, "The required cap would be less rigorous than if these contaminants were left in place...". With regard to the specific attributes of the identified surface barriers, DOE will modify the text to include discussions on: <ul style="list-style-type: none"> ➤ infiltration through the barrier ➤ storage capacity of the barrier ➤ durability of the barrier ➤ design life of the barrier ➤ the barriers ability to inhibit deep root penetration ➤ its ability to prevent burrowing animals to reach the contaminants of concern ➤ design features for limiting inadvertent human intrusion Other contaminant specific features will be addressed as needed.
19	§8.1.1	The remediation alternative for 216-U-10 should coordinate with the 200-UP-1 groundwater OU to protect future groundwater impacts. Revise the text to include how capping will help with the remedy for 200-UP-1	The text in this section will be revised to reflect that capping impedes the percolation of rainwater, controlling infiltration and the subsequent migration of contaminants in the vadose zone. Additional text will be added to the 2 nd paragraph as follows: Capping is an effective technology for reducing the migration of mobile contaminants. Based on previous modeling work conducted by PNNL, the capping alternative will increase the residence time and reduce the mass flux of contaminants to the groundwater."
20	§8.1.3	"Groundwater protection is not required" should not be stated in this section. 2 analytes exceeded groundwater protection values for 216-Z-11. Revise text to include dismissal of groundwater protection due to modeling.	The sentence will be changed to read as follows: "Although groundwater protection screening levels were exceeded, more extensive modeling predicts that groundwater protection is not required because no contaminants reach the groundwater within the period of analysis." See responses to comments #10 and #12.
21	§8.1.3	Capping should not be the preferred alternative for 216-Z-11 ditch, where contaminants exceed the TRU criteria of 100 nCi/g. The alternatives that should be discussed are RTD and in-situ vitrification only. Revise section of text to select one of these remedies at shallow contaminated sites.	Based on the evaluation conducted, DOE believes the preferred alternative is protective of human health and the environment. However, DOE is willing to discuss other alternatives but relief from the 45 day update period may be required.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
22	Appendix D Cost Estimate Backup	General comment: Need to address the concepts of accuracy verse precision. Using seven significant figures as a cost basis with assumptions that are only good to two significant figures gives the illusion of precision, but the resulting cost estimate is no more accurate.	Cost estimates for the FS are prepared so an experienced independent estimator can evaluate the estimate and determine if the estimate is within the CERCLA guidance of plus 50% and minus 30%. It may be preferable to report a range of cost estimates rather than a single number.
23	D3.1.1	It is advisable to use the State of Washington prevailing wage rates for the bounding job classifications presented in the D3.1.1 Labor costs for a contractor rather than specific labor costs given by Fluor Hanford. Provide specific reference for the assumed labor costs; e.g., Fluor Government Group contract. Fluor Hanford labor rates need to have the note that the labor rates are averaged company rates and may vary (significantly) depending on assigned individuals. Provide the specific reference for the assumed labor rates, e.g., based on FY-2004 normalized labor rates for the given labor category.	The basis for selecting the prevailing wage rates for bargaining unit representation is the current Hanford Site stabilization agreement and for other classifications. We use the Common Occupational Classification System (COCS) to organize wage rates. The COCS consists of about 80 codes, grouped into 9 job families. All Hanford workers are assigned a COCS as a part of the Human Resources/Payroll system. Fluor Hanford's Finance group runs a report of actual cost for each COCS. This results in a rate table are used for estimating and planning for the following year. Our current table was prepared in June 2004.
24	D3.1.2	Markups: There needs to be provisions for the change in markup for overtime and premium pay situations or incorporate in the assumptions that the cost estimates do not include overtime or premium pay options.	The assumptions will state that there are no provisions for overtime or premium pay options.
25	D3.1.3	General Assumptions: Disagree with the assumption to exclude from the costs estimates the costs for design, work plan preparation, or other preparatory project costs. For some alternatives such costs can be sizable. Agreed that equipment rental rates can be normalized to a 21 day month, 8 hour day, and 5 day week; however, there needs to be some provisions for surcharges in rental rates should additional operating hours and "off-times" be required to	Currently, there are two guidance documents on cost estimates for FSs: EPA/540/G-89/004, <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final)</i> , OSWER 9355.3-01; and EPA 540-R-00-002, <i>A Guide to Developing and Documenting Cost Estimates During the Feasibility Study</i> , OSWER 9355.0-75. These documents provide different guidance with respect to engineering design cost. However, in order to provide Ecology with the data they requested, DOE will estimate the design costs as an indirect construction cost, as suggested by the second document.

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
		facilitate transport conditions, or state in the assumptions that such costs are not included.	With regard to the request to provide provisions for surcharges in rental rates, DOE believes that this is speculative without actually knowing the market conditions at the time of construction and at the FS stage that supports remedial planning. DOE agrees with the comment that surcharges in rental rates are situation-specific and that provisions should be made at the time of final design.
26	D3.1.4	Long-Term Groundwater Monitoring Costs: Reference the basis for the assumed number of sites in each closure zones. Reference the basis for \$180,000 per well estimate; whether it is based on budget cost, or even better, actual costs of the last well install, and reference the date when it was installed. Provide sample analysis cost basis, and the laboratory where the sample analysis is to take place. The estimate cost for sampling event is assumed to be \$300. Provide specific for this assumed cost. Provide the reference basis for the sampling event frequencies. Clarify the groundwater monitoring costs, break out administration costs and baseline staff requirements assumed, and if contracted, so state.	The commenter is referenced to Appendix D, Section D3.1.4 for this information.
27	D3.2.1	General Assumption – Alternative 2: Using a different cost estimating methodology to the other three alternatives lends itself to inconsistencies when comparing costs. Secondly, Analogous Site determinations based on area can lead to skewing the estimate away from the minimum site administrative costs, especially for the small site. A site by site estimate technique as was developed for the other alternatives needs to be done for this alternative to capture the similarities in the cost estimating methodologies. Thirdly, to exclude part of the costs of doing business (fencing) does not provide a complete cost picture. The	<p>The use of different cost-estimating methodologies is a standard technique in cost estimating. The cost methodology used for this alternative is based on actual costs incurred in the current site inspection and monitoring program at the Hanford Site. DOE agrees with the reviewer’s observation on the area estimates; this issue is accounted for in the minimum cost developed for small sites. The minimum cost accounts for the fixed costs associated with each alternative. Each site in alternative #2 was considered on a site-by-site basis.</p> <p>Additional explanation on why the fencing costs are considered to be “institutional costs” will be added to the general assumptions in Appendix D, Section D3.2.1.</p> <p>The basis of \$1,000 for small sites will be included in the assumptions section.</p>

**Ecology Comments on DOE/RL-2004-24, Draft A (200-CW-5 and Associated Operable Units Feasibility Study)
and DOE/RL-2004-26, Draft A (Proposed Plan)**

Review Comments and Disposition			
No.	Ref. Page Par. or Fig.	Comment and Proposed Resolution	Comment Disposition
		<p>referenced sources are not shown anywhere. For example, provide the cost basis for \$1,000 for every survey event for sites smaller than 5,000 ft².</p> <p>The costs of site inspections do not capture the administration aspects of compiling and documenting the inspection. What is the basis for several of the cost estimate numbers, e.g., "Unit costs for vadose zone monitoring" being \$75 per bore hole. Too many of such numbers are in the estimate and are not supported with actual cost information.</p>	<p>The costs of performing the administrative aspects are included in the estimate, albeit not explicitly discussed. The appropriate level of detail for this FS will be added.</p>

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
EPA General Comments - Proposed Plan		
1	The U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy (DOE) needs to plan for the participation of the National Remedy Review Board as the potential remedies selected add up to more than \$75 million for these soil waste sites.	DOE will cooperate with EPA in developing the necessary information.
2	There appears to have been some confusion on the part of the authors of this proposed plan. The lead regulatory agency for all of the units and waste sites is the EPA, not the Washington Department of Ecology (Ecology). Please revise the document wherever necessary to reflect this	After reviewing all four of the OUs, DOE agrees with the comment. References will reflect EPA as the lead agency for this document.
3	The proposed plan appears to be biased towards capping and to place too much weight on the balancing factor of cost. Please see the specific comments section and EPA's comments on the feasibility study (FS) that identified examples of this bias. Reviewers from Ecology and the U.S. Geological Survey (USGS) made similar comments.	The proposed plan is based on the FS, which followed the recommended process cited in EPA/540/G-89/004, <i>Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (Interim Final)</i> , OSWER 9355.3-01. The process defines nine criteria: two threshold, five balancing, and two modifying evaluation criteria. The proposed plan used the two threshold and five balancing criteria information developed in the FS in proposing the preferred alternative. The proposed plan covers 48 waste sites. It recommends one no action site; 22 remove, treat, and dispose (RTD); and 25 capping preferred alternatives.
4	The use of "bounding" representative waste sites for analogous site grouping of disparate types of waste sites (albeit coming from the same waste stream sources) is an approach that oversimplifies characterization efforts and can only be compensated for by more detailed analysis of individual analogous sites followed by confirmatory sampling. Fortunately in this proposed plan, most of the waste sites that vary significantly in type from their representative site are planned to undergo Removal, Treatment, and Disposal (RTD). The RTD will follow the observational approach and the cleanup will be verified. However, as was noted in USGS comments, some of the ditches (shallow-contaminated sites) have the same capping remedy preferred as is mentioned for their representative site, the 216-U-10 Pond. Please provide clarification as to the reason for preferring the same alternative for each type here.	The two ditches in question were inadvertently overlooked during the detailed analysis for this representative site. The two ditches in question, 216-U-9 and 216-U-11, will be re-evaluated.

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
5a	EPA legal review of the 200-UW-1 proposed plan has led to some items that need to be addressed in this proposed plan. First, the 200-CW-5 proposed plan is very long and still has a fair amount of Hanford jargon and therefore will be difficult for members of the public to read. This appears to be true even with helpful definitions in the side column instead of in a glossary. EPA would like to help determine ways to trim it down. We believe that the proposed plan would really benefit from inserting the fact sheet up front to serve as a kind of executive summary. It should be no longer than three pages. This will hopefully make reading the rest of the document easier. We may even have to resort to having a table of contents and possibly section numbers because it is so long.	DOE and FH welcome the opportunity to work with EPA in producing a quality proposed plan that is easily understandable by members of the public. The use of a fact sheet as an executive summary is agreeable and should clarify important concepts discussed in the proposed plan.
5b	Finally, the ecological risk discussion will appear to be inadequate without reference to the greater central plateau ecological risk assessment and how information from it will be factored in, even if it will not be until after the Record of Decision (ROD). Please describe this greater risk assessment in both the FS and proposed plan. The FS currently mentions only the Central Plateau Ecological Evaluation, which is not a full, baseline ecological risk assessment.	DOE will provide a reference to the Central Plateau ecological risk assessment in the proposed plan and FS.
6	The findings of the report on additional modeling (exposure scenarios) performed need to be incorporated into this proposed plan and both the proposed plan and FS need to refer to the additional modeling; its purpose, methods, and findings and how they relate to the work already covered in the FS. The report should either be rolled into the FS when it is revised to address comments or, at the very least, it needs to be placed in the administrative record file for these operable units.	DOE will incorporate the findings of the report in the additional RESRAD risk assessment report to be submitted to EPA as an appendix to the FS.
7a	The EPA is struggling with the concept of relying on the plug-in approach when this should be a final ROD. For one thing, the complexity of many 200 Area sites would likely require a ROD amendment to add them into an ongoing remedial action. Newly discovered waste sites (found under facility slabs, for example) could be plugged in on a limited basis, but significant sites or numbers should be added in through a ROD amendment.	DOE agrees that the 200 Area sites present a complex issue. DOE will work with EPA to resolve future applications of the plug-in approach.

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
7b	The plug-in approach should be used when confirmatory sampling performed on a waste site already within this remedial action shows that the selected alternative is not appropriate. If another remedy analyzed under the FS will work, it can be applied with only the use of an Explanation of Significant Difference. If a totally different remedy (not analyzed under the FS) is the answer, then a ROD amendment would have to be written.	DOE agrees with this comment. No change in the text required.
7c	We believe that patience is required to navigate through these first few decisions. These first few projects are difficult because many policy level decisions need to be made to reach agreement and develop RODs. Once these larger issues are resolved and embodied in RODs, the other decisions on the Central Plateau will go a lot more smoothly. This is the lesson from the 100 Area effort. The amount of characterization and the adequacy of FSs must not be reduced based on the plug-in approach as characterization is already very streamlined. The two late substitutions of representative sites from other operable units sufficed for this FS, but the excuse that time ran out on the schedule (as explained in the FS) and that is why they were needed is not a justification for this substitution.	DOE is committed to work cooperatively with EPA in resolving policy-level decisions. Several issues are currently being discussed at the executive IAMIT level. DOE is actively pursuing resolutions to these issues with both EPA and Ecology. The text will be modified to read, "The two substitute representative sites were used after evaluation of key bounding parameters and with the concurrence of EPA."
7d	As large as the currently planned operable unit groups are in scope the Tri-Parties should hold fast to the number of proposed plans and decision documents as enough streamlining has been achieved. This is not to say that lessons learned about waste sites should be ignored when coming to decisions elsewhere in the 200 Areas. The lessons learned will no doubt fulfill the purpose of the plug-in approach while still maintaining the appropriate level of detail and analysis for these large groups of waste sites.	DOE understands this comment and looks forward to continued cooperation on developing the ROD strategy for the Central Plateau.
8	The EPA agrees with the preferred alternative (Alternative 4) suggested for 216-T-36 Crib (and by default, for the representative site 216-T-26 Crib from 200-TW-1). However, results of a planned treatability study for Tc-99 for the 200 Areas are necessary to ensure deep Tc-99 is addressed adequately by the remedy once selected. It should be acknowledged that capping will not likely prevent very deep contamination from reaching the groundwater and the FS and proposed plan should describe a	DOE is considering treatability testing needs. RL is expecting a recommendation from its primary contractor, Fluor Hanford (FH), on this matter. FH has brought in a team of technical experts to review treatment technology evaluations performed to date as well as to examine what the related issues are at Hanford's waste sites, and determine what technology or technologies might warrant further evaluation through treatability tests. A technical review with a technical expert assistance team was conducted April 26-28, 2005. A final report is scheduled for the end of June 2005 with a forthcoming recommendation from FH regarding treatability testing at Hanford.

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
	strategy for how to address this. We also agree that Alternative 3 should be the preferred alternative for the 200-W-79 Pipeline.	For those sites where capping may not prevent deep contamination from reaching the groundwater, a strategy will be presented.
9	The EPA agrees with the preferred alternative (Alternative 3) for 216-U-14 Ditch and analogous sites.	DOE agrees with this comment.
10	The EPA concurs with the preferred alternative (Alternative 3) for the 207 A Retention Basin.	DOE agrees with this comment.
11	The EPA disagrees with the preferred alternative listed (Alternative 4) for the 216-U-10 Pond and its analogous sites. EPA believes that Alternative 5 (Partial RTD and capping) is the best choice to meet shallow cleanup requirements driven by MTCA and CERCLA's preference for RTD. This would provide protection of groundwater, hopefully, with a cap that is not required to perform to as high a level. Removal of shallow contamination to ERDF will provide better protection against intruder exposures. EPA does agree that Alternative 3 should be selected for shallow sites with no groundwater protection issues, and that Alternative 1 (No Action) should be chosen for the 216-B-64 Retention Basin; which was not used. The latter may have already been reclassified under the M-14 process.	<p>DOE disagrees with this comment. The cleanup requirements driven by MTCA and CERCLA were evaluated with the preferred alternative for the 216-U-10 Pond as capping. Removing the "shallow contamination" will not protect the groundwater because deep contamination (i.e., greater than 100 ft) exists at this site. Moving the waste to ERDF is questionable in regard to intruder protection. The ERDF cap design does not include an intruder-deterrent feature, while the cap proposed for the 216-U-10 Pond has this engineered feature included.</p> <p>DOE agrees with EPA that no action is appropriate for the 216-B-64 Retention Basin.</p> <p>Where MTCA is applicable (i.e., nonradioactive hazardous substances), the establishment of soil cleanup levels are for industrial land use and represents the reasonable maximum exposure. Industrial soil cleanup levels are based on an adult worker exposure scenario, where a cap can be considered part of the remedy. As stated in MTCA: (iii) Hazardous substances remaining at the property after remedial action would not pose a threat to human health or the environment at the site or in adjacent nonindustrial areas. In evaluating compliance with this criterion, at a minimum the following factors shall be considered: (A) The potential for access to the industrial property by the general public, especially children. The proximity of the industrial property to residential areas, schools, or childcare facilities shall be considered when evaluating access. In addition, the presence of natural features, man-made structures, arterial streets, or intervening land uses that would limit or encourage access to the industrial property shall be considered. Fencing shall not be considered sufficient to limit access to an industrial property since this is insufficient to assure long-term protection; (B) The degree of reduction of potential exposure to residual hazardous substances by the selected remedy. Where the residual hazardous substances are to be capped to reduce exposure, consideration shall be given to the thickness of the cap and the likelihood of future site maintenance activities, utility and drainage work, or building construction re-exposing residual hazardous substances.</p>

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
		DOE believes that the proposed remedy for the U Pond is consistent with the letter and spirit of MTCA. The potential for access to the pond by the general public is limited by Hanford Site security, and the U Pond and analogous sites are not in the proximity of any public facilities. There are no man-made structures at the U Pond that would encourage access, and the inclusion of a cap as a part of the remedy reduces long-term potential exposure of residual hazardous substances.
12	<p>The EPA disagrees with the preferred alternative given (Alternative 4) for 216-Z-11 Ditch and its analogous sites. EPA believes that removal of this shallow contamination to WIPP and ERDF is the most protective alternative for this long-lived problem. Some of the Z-Ditches will not attain PRGs for over 10,000 years and just capping this material that is so near to the surface will not ensure protection against intrusion over this long time frame. Safe removal of waste sites with high transuranic content is occurring at the Idaho National Environmental Engineering Laboratory in Idaho, so safe practices have been developed and proven.</p> <p>Capping with a nearly mile-long Hanford Barrier is not an effective use of cleanup money compared with the more certain hazard reduction of removing contaminants to ERDF and TRU-level contamination (some of it 130 times the TRU level of 100 nCi/g) to a geologic repository (WIPP).</p>	<p>DOE is committed to working cooperatively with EPA in resolving this policy-level decision. Discussions are currently underway at the executive IAMIT level. DOE is actively pursuing resolutions to these issues. DOE believes that the installation of a barrier with the performance characteristics in <i>Focused Feasibility Study for Engineered Barriers for Waste Management Units in the 200 Area</i> (DOE-RL-93-33) meets the criteria established in the National Contingency Plan. The barrier is a 15-ft barrier with a substantial intrusion-deterrent feature. When constructed, the barrier represents a separation of 17 ft from the ground surface to the waste site.</p> <p>Capping the waste site was compared with removal and disposal of the waste material in both ERDF and the WIPP site. The present-worth cost for removal of the waste material that exceeds the PRGs is \$77,501,000. This does not include the additional cost to transport and monitor the waste at the WIPP facility. If the programmatic cost was added to the capital cost estimate, the cost of this alternative is estimated to be \$142,247,000.</p> <p>The present-worth cost to install the engineered barrier is \$42,237,000, and the undiscounted cost is estimated to be \$68,690,000.</p>
Specific Comments on the Proposed Plan		
1	<i>Page 1, Introduction.</i> The ordering of the discussion should follow starting from Alternative 1 towards 6. Where is the discussion in the text about the ROD and whether or not it is a final ROD? The “How You Can Participate” box is a little too vague and scant on this subject to suffice.	<p>DOE will reorder the text to present the alternatives in a 1 through 6 order.</p> <p>DOE will add additional discussion on the ROD and the “How You Can Participate” box.</p>
2	<i>Page 1, Introduction, first paragraph, second sentence.</i> Add “eliminate or” before “reduce.”	DOE will make the requested change.

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
3	<i>Page 1, Introduction, fourth paragraph.</i> Please remove references to Ecology; they are not a lead or joint-lead regulatory agency for these operable units. Also, please remove references to Treatment, Storage and Disposal (TSD) units, as there are no TSDs associated with the waste sites in this operable unit.	DOE agrees with this comment and references to Ecology will be removed as requested.
4	<i>Page 2.</i> There is not enough room for the column in the margin, unless maybe the document is double-sided.	Please see the response to comment #5a in the "General Comments" section.
5	<i>Page 2, first full paragraph.</i> It is not clear why there is a need to discuss RCRA/CERCLA integration if there are no TSDs associated with these waste sites. Please explain.	DOE agrees that there is not appropriate need to discuss RCRA/CERCLA integration for this operable unit grouping. Such discussion will be removed.
6	<i>Page 2, Overview of Proposed Plan, fourth paragraph, two sentences before bullets, sentence beginning "Appendix A..."</i> Why are the present-value costs the only ones included? Show both kinds of costs as some of these alternatives would be implemented over different time frames. This is especially important to reflect impact of the costs of groundwater monitoring over long durations.	Section 300.430 (e) (9) (iii) (G) (3) of the NCP requires the present-value costs. DOE has included both the present-value cost and the undiscounted costs in the "Preferred Alternative" tables. The undiscounted cost will also be presented.
7	<i>Page 2, Overview of Proposed Plan, last set of bullets.</i> Please include "State acceptance" since Ecology is not a lead or joint-lead regulator on this project.	DOE will include a discussion on State acceptance which is an established modifying criterion under the CERCLA nine criteria for remedy evaluation.
8	<i>Page 3, side column, entry entitled, "How do we know what contaminants are present at the waste site?"</i> Delete this. This is a waste. One cannot sum this up in a column entry. It would be better to mention that supporting information is provided in the FS and give the title and DOE document number. It would be best not to mention the other two FSs, except later in the text where there is enough opportunity to discuss	DOE will delete this side column.
9	<i>Page 4, 200 Areas.</i> Please indicate that while the volumes were unknown for waste sites within some of these units, that confirmatory sampling will be performed to make sure they fit within the conceptual model assigned to them.	DOE will add a statement that confirmatory sampling will be performed to confirm the conceptual model.
10	<i>Page 4, Scope and Role of Action, last sentence.</i> There is no substance to this sentence. Please elaborate.	This section will be rewritten to discuss the role of the waste sites remediation and the groundwater remediation.
11	<i>Page 5, side column, entry for "Analogous Site Approach."</i> Please delete, this is too much to explain in a side column entry	DOE will delete this side column.

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
12	<i>Page 9, Land Use.</i> The use of 500 years instead of 150 years (100 years after active waste management) has no connection with the reality of discussions at the exposure scenarios task force workshop that was the impetus for Hanford Advisory Board advice and the Tri-Party response. Please eliminate everywhere in the document this misuse of the anticipated period where it is believed active institutional controls may not be able to be relied upon to keep intruders out of central plateau core zone waste sites. In this section, it also appears on the Native American uses bullet and on the bullet about no consumptive use of groundwater. This last bullet needs to be revised based on clarifications being made to the Tri-Party response that are compliant with CERCLA groundwater restoration requirements. These changes must be made in the FS, too.	DOE disagrees with this comment. The use of the 500 years of institutional controls (i.e., 150 years of active controls and 350 of passive controls) is based on the ERDF ROD. The response to HAB advice #132 risk framework description states: "The core zone (200 Area, including B Pond [main pond] and S Ponds) will have an industrial scenario for the foreseeable future." Using the two pieces of information above, it is not inconceivable that the foreseeable future at the Hanford Site extends to 500 years.
13	<i>Pages 9 and 10, Remedial Action Objectives, bullets.</i> Please only state the RAOs as they are without additional explanation. Please explain how these are met in the other sections.	The RAOs will be stated separately with explanation on how the RAOs are met in follow-up sections.
14	<i>Page 10, Preliminary Remediation Goals, third sentence after bullets.</i> Replace "a given" with "the above" and replace "criterion" with "criteria."	DOE will make the requested change.
15	<i>Page 10, Summary of Remediation Objectives.</i> The title of this section is confusing. Does DOE intend to discuss further how it is going to demonstrate attainment of the RAOs? Please clarify.	The information in this section will be discussed under the "Land Use" section.
16	<i>Page 10, Summary of Remediation Objectives.</i> EPA understands that DOE management has a preference for final RODs. Why then is the Hanford Past-Practice Strategy mentioned as the guide to how ecological risk evaluations were performed? The use of this approach is inadequate for baseline risk assessments necessary for final decisions. DOE will need to update (and possibly address findings) this OU-specific ecological risk assessment when the results of the wider central plateau baseline terrestrial ecological risk assessment is completed. Only then will ecological risk be fully addressed. The wider risk assessment must be completed and information analyzed before remedies are implemented.	References to the "Hanford Past-Practice Strategy" will be removed. The inclusion in this document was intended to show the general public that DOE has followed the strategy of taking action on the sites that posed an imminent risk to human health or the environment. DOE agrees that the current 200 Areas ecological evaluation will be referenced. Once the findings of this ecological evaluation are available, the OU-specific ecological risk assessment will be reassessed using the new findings. The sites in this document present primarily a risk to human health or the groundwater. At this time, these sites do not present solely an ecological risk.

**EPA Comments on DOE/RL-2004-26, Draft A, Proposed Plan
(200-CW-5 and Associated Operable Units)**

Review Comments and Disposition		
No.	Comment	Comment Disposition
17	<i>Page 11, Table 2.</i> The PRGs for the mobile contaminants need to be listed, even though site-specific modeling has been conducted. This modeling can be explained. The EPA believes that the conceptual models and characterization data indicate that some of these contaminants that are far down in the vadose zone will reach groundwater no matter what is done at the surface. This is similar to the situation with some of the cribs in the 200-UW-1 project. We believe that the document and FS should acknowledge the likelihood of this possibility and discuss a plan to deal with it. The 200 Area wide treatability study effort for Tc-99 and other mobile constituents may provide answers to how to approach this contamination at depth. Any plan would include coordination with the groundwater operable units.	DOE will list the PRGs for the mobile contaminants. For those sites where capping may not prevent deep contamination from reaching the groundwater, a strategy will be presented. The current strategy is to establish points of calculation for the groundwater OUs. Remedial actions for the groundwater OUs will be based on these points of calculations. DOE is conducting a treatability investigation. For additional information, please see the response to comment #8 in the "General Comments" section.
18	<i>Page 11, Table 2.</i> The PRG for Sr-90 in the 216-T-26 section seems too high, is this an error? Please explain.	As presented in Table 3-2 of the FS, this value comes from the intruder scenario. It is the concentration in the soil that could potentially be present and brought to the surface in a 12-in. well for exposure to a gardener. In all cases analyzed, the PRGs under the intruder scenario were significantly higher than the other exposure scenarios as a result of the small amount of radioactive material brought to the surface. The reviewer may be more familiar with the 20 pCi/g that has been reported in other FSs as an ecological PRG. The waste at this site is 18 ft below ground surface; therefore, there is no ecological risk.
19	<i>Page 12, side column entry for Human Health Risk.</i> Replace "land-use" with "exposure."	DOE will make the requested change.
20	<i>Page 12, Summary of Site Risks, last bullet.</i> Insert "representative" between "two" and "sites."	DOE will make the requested change
21	<i>Page 12, side column entry for Inadvertent Intruder Scenario.</i> This is just one example of where the institutional control date mentioned is 500 years but must be 150.	DOE disagrees with this comment. The use of the 500 years of institutional controls (i.e., 150 years of active controls and 350 of passive controls) is based on the ERDF ROD. The response to HAB advice #132 risk framework description states, "The core zone (200 Area including B Pond [main pond] and S Ponds) will have an industrial scenario for the foreseeable future." Using the two pieces of information above, it is not inconceivable that the foreseeable future at the Hanford Site extends to 500 years.
22	<i>Page 13, Summary of Remedial Alternatives, bullet on Alternative 4.</i> It is speculative to state that the Hanford Barrier could "prevent" human intrusion, especially for a period longer than 10,000 years (time to reach PRGs through radioactive decay).	DOE agrees with this comment. Still, DOE has performed an extensive evaluation of several barriers in the <i>Focused Feasibility Study of Engineered Barriers for Waste Management Units in the 200 Areas</i> (DOE/RL-93-33) and is continuing to build long term performance monitoring data via the instrumentation at the prototype surface barrier at the 216-B57 crib. The surface barriers cited in bullet 4 are intended to provide the maximum practicable degree of waste isolation and long-term containment,

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		environmental protection, and human intrusion control. The word “prevent” may be too definitive for this application. DOE will modify the sentence to read as follows: “...a surface barrier is built over the contaminated waste site, thus ‘capping’ the site to inhibit water from infiltrating into the waste and to inhibit to the maximum extent practicable intrusion by humans or ecological receptors.”
23	<i>Page 14, Summary of Remedial Alternatives, bullet on Alternative 5.</i> Both the FS and proposed plan fail to mention the possibility that a less robust cap may be adequate once near surface contamination is removed. This source removal might help limit potential for groundwater impacts and especially eliminate near-surface intrusion into waste (because the waste would be sent to ERDF to be buried deeper and under centralized institutional controls [ICs]) by plants, animals and people.	Alternative #5 does utilize a less rigorous cap than alternative #4 that is constructed to grade and planted with vegetation to protect against erosion. The reviewer may have missed the discussion on page 5-8 (last sentence), which states, “The required cap would be less rigorous than if these contaminants were left in place...” The excavation would be filled with borrow material obtained on the Hanford Site. When the backfilling operation is finished, the site would be capped. Because contaminated soils will be removed from the site, the cap system only consists of two soil components (20 in. of silt loam, and 20 in. of silt loam and pea gravel) and eliminates the filter, drainage, and asphalt-paving layers associated with the modified RCRA C cap
24	<i>Page 14, Summary of Remedial Actions, bullet on Alternative 6.</i> The trench-digging worker is the most likely limiting intruder scenario after vitrification has taken place. This scenario was not run and should be modeled and reported on in the revised FS and proposed plan.	Without the specific analyses, it is unclear which scenario (residential intruder or trench-digging intruder) might be more limiting. However, the Z-Ditches were evaluated with respect to a residential intruder (Appendix E), and it was found that a remedy must be selected that would be protective of intruders. In short, the conclusions from the intruder scenario presented in Appendix E for the Z-Ditches are that the dose to the intruder in all of the Z-Ditches would exceed the 15 mrem/year standard and contamination would not decay to less than the PRGs in more than 10,000 years. The remedy selected is protective to intruders that might excavate into the waste by drilling or trenching.
25	<i>Page 15, CERCLA Evaluation and Process, bullets.</i> The existence of deep contamination does not mean that shallow contamination (above 15 feet) should be left behind even covered by a cap. The bullet on shallow, high-volume waste sites is especially indicative of DOE’s weighting of cost over compliance with other requirements. Capping material that is close to the surface (especially above 9 feet below ground surface) does not meet the spirit of complying with MTCA or other requirements. It does not matter how large the area is. The Hanford cleanup effort should not be limited to just doing the most inexpensive cleanup, as long as it is not impracticable or technically infeasible to accomplish. Excavating down to 15 feet meets none of those criteria (impracticability or technical infeasibility). Also, shallow TRU contaminated sites are no different. Work in Idaho has	DOE disagrees with the comment. The bullet, which reads: “For shallow, high-volume waste sites, there is a preference for the capping alternative or the removal, treatment, and disposal alternative, depending on balancing evaluation criteria.” This bullet clearly includes disposal alternatives in addition to capping. Further, where MTCA is applicable (i.e., nonradioactive hazardous substances), the establishment of soil cleanup levels are for industrial land use and represents the reasonable maximum exposure. Industrial soil cleanup levels are based on an adult worker exposure scenario, where a cap can be considered part of the remedy. As stated in MTCA: (iii) Hazardous substances remaining at the property after remedial action would not pose a threat to human health or the environment at the site or in adjacent nonindustrial areas. In evaluating compliance with this criterion, at a minimum the following factors shall be considered: (A) The potential for access to the industrial property by the general public, especially children. The proximity of the industrial property to residential areas, schools, or childcare facilities shall be considered when evaluating access. In addition, the presence of natural

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	shown that these sites can undergo RTD safely and that TRU contaminated soils can be certified for WIPP	<p>features, man-made structures, arterial streets, or intervening land uses that would limit or encourage access to the industrial property shall be considered. Fencing shall not be considered sufficient to limit access to an industrial property since this is insufficient to assure long-term protection; (B) The degree of reduction of potential exposure to residual hazardous substances by the selected remedy. Where the residual hazardous substances are to be capped to reduce exposure, consideration shall be given to the thickness of the cap and the likelihood of future site maintenance activities, utility and drainage work, or building construction re-exposing residual hazardous substances.”</p> <p>DOE believes that the proposed remedy for the U Pond is consistent with the letter and spirit of MTCA. The potential for access to the pond by the general public is limited by Hanford Site security, the U Pond and analogous sites are not in the proximity of any public facilities. There are no man-made structures at the U Pond that would encourage access, and the inclusion of a cap as a part of the remedy reduces long-term potential exposure of residual hazardous substances.</p>
	Not all of the volume of the Z-Ditches is necessarily destined to have to go to WIPP, but could go to ERDF depending on how it is removed and if it can meet ERDF WAC.	The total volume of excavated material at the Z-Ditches is roughly 35,100 cubic yards. The volume for disposal at ERDF is approximately 32,400 cubic yards, with 2,700 cubic yards to be disposed at a WIPP-type facility.
26	<i>Pages 16 and later, side column entries with Summary of Alternative Evaluations and Preferred Alternatives section.</i> Please do not list what the preferred alternatives are in the side column. Or, at least do not list them until the end so that readers can judge for themselves after reading the evaluation sections.	DOE will move the preferred alternatives to the end of the section.
27	<i>Pages 16 and later, Summary of Alternative Evaluations and Preferred Alternatives section.</i> Please do not provide the preferred alternative up front. Please maintain an order where the discussion starts with Alternative 1 and then 2, etc, and be consistent throughout the different groups of representative-analogous waste sites.	DOE will move the preferred alternatives to the end of the section. Also, DOE will maintain the alternative order of 1 through 6 in the discussion for all representative sites.
28	<i>Page 16, Alternative Evaluations, first paragraph, last sentence.</i> Do not just state that In Situ Vitrification is not applicable, explain why. Please do this in the other sections where this statement is made.	The text will be modified to read: “Alternative #6 (in situ vitrification) does not apply to this representative site and associated analogous sites due to the depth of contamination (more than 6.1 m [20 ft]). Similar modifications will be made on pages 28, 39, and 43.

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29	<i>Page 26, Short-term effectiveness.</i> Please note in the text that while capping does not involve potential habitat destruction through excavation at the waste site, it might involve covering areas with established habitat. This area is variable and depends on the design of the cap to cover and protect against mobile contamination that is spread out laterally at depth.	DOE will add the suggested text to the section.
30	<i>Page 26, Reduction of Toxicity, Mobility, or Volume Through Treatment.</i> Whenever capping is selected, confirmatory and design sampling and analysis are important to limit uncertainty about whether or not the conceptual model is correct and the extent of lateral contamination is understood. One does not really know that materials removed will or will not require, or benefit from, treatment. This uncertainty is greater whenever one leaves material in the ground instead of excavating it and characterizing it for waste disposal. This distinction should be mentioned here and in all other sections where this statement has been made.	DOE will add the suggested text to the appropriate sections.
31	<i>Page 26, Reduction of Toxicity, Mobility, or Volume Through Treatment, sentence beginning, "Alternatives 3 and 5..."</i> The use of the word "perceived" is inappropriate since EPA and DOE believe that ERDF is a highly protective disposal facility. Please remove this statement wherever it appears and replace it with a discussion of how ERDF is protective and how centralized ICs there will be easier to maintain.	<p>DOE agrees with part of this comment. The word "perceived" will be removed and a discussion of ERDF's protectiveness will be added to the text.</p> <p>With regard to the request that centralized IC will be easier to maintain, DOE disagrees with the comment. There are several issues associated with centralized waste management. First, it is not obvious how consolidating waste will make centralized IC easier to maintain. By centralizing the waste, different risks are introduced. If all of the wastes were centralized, it would represent a more concentrated mass of contaminants. If the containment structure at ERDF failed, this concentrated mass of contaminants could pose a large threat to either the groundwater or the ecology of the surroundings site. Secondly, it is unclear how moving mobile, long half-life material that is above PRGs from one 200 Area site to another is more protective. Another area of uncertainty is sites that require intruder protection. The cover at ERDF does not currently have an engineered intruder-protection feature incorporated into its design. As such, there is little protection from the current inadvertent intruder risk scenario. Based on the above, DOE is not convinced that centralized ICs are easier to maintain.</p>

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32	<i>Page 26, Reduction of Toxicity, Mobility, or Volume Through Treatment, sentence beginning, "Alternatives 3 and 5..."</i> The last sentence also places ERDF in an unnecessarily poor light, especially since even less can be said for the protection at these capped sites. This is because ERDF has gone through an extensive performance modeling effort that was used to ensure that its WAC is protective, even given some of the uncertainties about mobile constituents.	It is not the intention of the author to place a poor light on ERDF. The word "perceived" will be removed and a discussion of ERDF's protectiveness will be added to the text.
33	<i>Page 26, Implementability, second sentence.</i> Saying that Alternative 2 is in place is only partly true. Part of the alternative of Monitored Natural Attenuation must be the provision for corrective action if monitoring shows that it is not being protective. This is not currently being performed.	The sentence will be modified to read, "The essential portions of alternative #2 are currently in use for all of the waste sites. Implementation of this alternative would include corrective actions if monitoring shows that it is not being protective."
34	<i>Page 26, Implementability.</i> It would be better for readability if some of these large paragraphs were shortened or split.	DOE will make the requested change.
35	<i>Page 26, Implementability, sentence beginning, "Alternative 5..."</i> This argument about ERDF capacity is somewhat specious because ERDF expansion is planned and ongoing for just such wastes. Please add this fact wherever this previous statement is made.	The volume of ERDF is a limited resource. In accordance with EPA's guidance, an evaluation of the implementability of limited resources must be evaluated. After discussion with EPA, agreement was reached that the entire volume, both current and planned, will be reported.
36	<i>Page 28, Representative Site..., last sentence.</i> It should be noted that the small area of the site will not matter much if an animal brings the material to the surface where it can be spread around by others and enter the food web. The rationale stated should not be provided much weight in decisions to leave material above 15 feet.	It is true that the ecological evaluation of these waste sites is somewhat subjective. The conclusions of the ecological evaluation are based largely on the cover of clean soil on the sites, the industrial character of the sites, and for three of the five sites, their small size. As such, DOE is conducting a multi-phased, comprehensive ecological study of the Central Plateau. With this in mind, DOE concurs with the reviewer's final statement in comment #5 (USGS's specific comments on the FS) that no additional ecological evaluation is warranted and human health risk appears to be the primary concern.
37	<i>Page 33, Implementability, last sentence on page.</i> Stating that the construction of caps is "easy" is overselling the implementability of installing them to perform over long time periods. Here and in other places where this statement is made, please revise the statement. The recent technical workshop put on by the ITRC in Boise did not indicate that installing and maintaining such barriers was "easy." It did indicate that they are implementable and that evapotranspiration caps have applicability to the semi-arid climate at Hanford.	DOE will modify the sentence to read as follows: "These barriers are straightforward to construct and maintain."

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38	<i>Page 34, Representative Site...</i> , sentence beginning, "If no clean cover..." Please indicate in parentheses after "1000 years" that the time to meet PRGs is actually longer than 10,000 years. One could just put "(more than 10,000 years)" in the sentence. This makes the level of attainment of the long-term effectiveness criterion all the more important. There are other spots in the document where this specificity also needs to be included.	DOE will make the requested change.
39	<i>Page 36, Table 5, footnote "g"</i> . This is speculative based on the unlikely scenario that the entire volume of the Z-Ditches waste site must be containerized and sent to WIPP. There was no effort made to come up with a more reasonable estimate based on survey and sampling data and the longitudinal conceptual model mentioned in the Sampling and Analysis Plan (see FS comments)	The footnote "g" represents only that portion of waste that would exceed ERDF waste acceptance criteria. It presents the lifecycle cost of removal, the cost of meeting the WIPP's waste acceptance criteria, transportation to the WIPP facility, and monitoring the waste.
40	<i>Page 37, Overall Protection of Human Health and the Environment, paragraph after bullets</i> . The FS elaborates on the merits of capping with a set of bullets, but says a minimum about RTD. Please add to this paragraph (sentence) a discussion of how RTD is more protective of intruders. This should be done in all other places discussing Alternative 3 or 5 where the topic of overall protection is covered. Again, the order of alternatives is mixed up because of the up front discussion of the preferred alternative which should not be talked about yet.	DOE will balance the discussion. It will add a discussion on why RTD is more protective in all appropriate sections. The following text will be added: "With the contaminants removed, there would be no exposure to workers, intruders could not bring contaminated well cuttings on the surface, and wildlife could not burrow into the contaminants. This would result in greater overall, long-term protection of humans and the environment in the immediate vicinity." The order of alternatives will be modified as previously discussed.
41	<i>Page 38, Short-Term Effectiveness</i> . What are the assumptions that went into the radiological dose estimates for workers for RTD?	The major assumptions used for estimation of the remediation worker dose rates are listed below. <ul style="list-style-type: none"> • A waste container filled with the highest concentration of radioactivity would not exceed the ERDF limit of 50 mrem/hr. • Contamination is homogeneously spread across soil depths. • Appendix A of the applicable RI report was used to determine specific radionuclide depth concentrations. • The distance from the source was determined based upon the depth of contaminants. • Site excavation is maintained at a 1.5:1 slope. • Doses to personnel in the excavators are calculated based on a distance of 4 ft from the contamination, with 1 in. of steel between the source and personnel. • The MicroShield program was used to estimate the remediation worker dose rate.

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		<ul style="list-style-type: none"> The calculated remediation worker dose rates are approximately the same for alternatives #3 and #5. <p>Results are rounded up to the next highest mrem. No change in the text required.</p>
42	<i>Page 42, Short-Term Effectiveness.</i> The cumulative dose to workers for Gable Mountain Pond is not relevant. What is the ballpark figure for removing the 207-A Retention Basin?	DOE will review data applicable to the 207-A Retention Basin and provide an estimated dose to workers in the revised text.
43	<i>Page 43, Alternative Evaluations.</i> Please note in the text that the FS for 200-TW-1/2/PW-5 (minus the 200-BC Cribs and Trenches) has not been approved by EPA and Ecology.	DOE will add the requested note.
44	<i>Page 43, Overall Protection..., second paragraph.</i> This paragraph is confusing because one cannot distinguish when 216-T-36 is being discussed and when 200-W-79 is the topic. Please clarify.	DOE will re-word the section to clearly identify which waste site is being discussed.
45	<i>Page 45, Short-Term Effectiveness.</i> Here and elsewhere in the document where both Alternative 3 and 5 are applicable, please provide the radiological dose estimate for Alternative 5.	The estimated dose for alternative #5 is approximately 803 mrem for the 216-U-10 Pond. For 216-T-26, the estimated remediation worker dose rate for alternative #5 would be approximately 561 mrem. The text will be modified to include the dose rates.
46	<i>Page 46, Preferred Alternatives.</i> The statements in the Preferred Alternatives sections sound more like legal statements than rationale for selection. Please add actual rationale to these sections.	DOE will add additional text to discuss the factors employed in the decision-making process.
47	<i>Page 48, Establishing the Standard Remedy.</i> The same comments about meeting the spirit and letter of MTCA for shallow contamination and about high-volume shallow sites that were made in earlier comments apply here and these standard alternatives need to be revised in accordance with those comments. EPA will work with DOE to revise these standard remedies and the conditions for when and to what extent the plug-in approach can be used. If another guiding document needs to be created or a part added to the TPA, that can be investigated. Relying on the outdated and generic sections of the 200 Area Implementation Plan will not best serve progress in cleanup of the 200 Areas. The 200 Area Implementation Plan was helpful for the characterization phase, but it is not well suited for the remediation phase. Discussions are	<p>Please see the response to comment #11 in the "EPA General Comment" section.</p> <p>DOE will work cooperatively with EPA to evaluate and revise the standard remedies.</p> <p>DOE will support ongoing discussions to develop guidance in this area.</p>

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	ongoing about the concept of developing a separate document to help guide this phase.	
48	<i>Page 49, Public Involvement in the Plug-in Approach, second bullet.</i> Probably should add “or best suited (as agreed to by the Tri-Parties)” to the end of the sentence	DOE will make the requested change.