Response to EPA Comments on the Draft East Trenches Plume Proposed Action Memorandum

Comment	Response
1. Page 11, Section 2.4 East Trenches Plume Contamination Summary This section begins by stating that radiological contamination was not observed in either the subsurface soils or the groundwater, but then mentions that the source area had concentrations of uranium 238 up to 3,240 pCi/g. Although data is presented from one well within the plume (11891) to support the lack of radionuclides in groundwater, it would be more convincing to show by maps and tables that this holds true for the entire plume. Additionally, on pages A-1 and A-2 of the appendix it is stated that the iron filings in the treatment cells would hold the radionuclides from the treated water, thus they would be considered low-level waste. This statement should be revised unless it is true that the groundwater does contain radionuclide contamination.	The available radionuclide data for downgradient locations have been provided. However, the contaminant concentrations are very low, and data points are too widespread to generate meaningful maps for this small area. The appendix has been revised to delete references to radionuclide contamination
2. Page 14 & 15, Section 2.4.2 Subsurface Soil & Table 4 The text discusses analytical results for the subsurface soils of the East Trenches Plume and data is presented in Table 4 for metals and radionuclides. All but one of the wells in Table 4 lie outside the plume boundary and are of little value in showing that the soils within the plume area are below RFCA action levels. These wells should be replaced with wells inside the plume area, starting as close to the source area as possible, to better characterize subsurface soil contamination levels.	As per response to comment 1, radionuclide concentrations for wells within the plume are provided. The data from the recent investigation are included because the data are not captured elsewhere. This information does apply to the plume area because the data are from the same undisturbed materials that are found in the plume area.
3. Page 15 & 16, Section 2.4.3 Surface Water This section needs to display the locations where samples were collected from the seep, culvert and ponds on a map. It would also be beneficial to display all known seeps in the area for a better understanding of the groundwater to surface relationship. In addition, analytical results for the seep water and other surface water samples should all be shown in a table.	The figure has been updated to include the sample locations. Adding the seep locations to the map increases the complexity of an already complex drawing and would be confusing to the reader. Analytical results for the seep water and other surface water samples are now shown in a table.

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4. Page 17, and Figure 6 The southwestern end of the groundwater collection system as stated and shown in the document would allow contaminated groundwater to flow around the system and eventually into surface water. By extending the system approximately 100 feet southwest of well 24397 (in which contaminants are present), the western portion of the plume would probably be completely contained. • Figure 6 shows PCE concentrations but the text on page 11 refers to the figure as showing TCE. • The label for the red line in the legend of Figure 6 should be revised, since it actually shows where the groundwater collection would lie, not a permeable reactive barrier. • Collection sumps are shown in Figure 6, but not in Figure 7, and are not mentioned in the text. If they are part of the design, the text should explain why they are needed and other details of how they fit into the system.	The figure has been updated to show a 100-foot longer collection system. However, the bulk of the groundwater flux is through the Arapahoe No. 1 Sandstone, which is not present at the western edge of the collection system. Relatively little groundwater is expected to be collected by the extension. • Text has been revised to agree more closely with Figure 6 (now renumbered as Figure 7) • Label for the red line in the legend has been revised to state that this represents the groundwater collection system. The details of why the collection sump is needed and how it fits in the system is now explained in the text.
5. Page 21 & 22, Section 3.1.3.1, Groundwater Monitoring The number and placement of piezometers that will be used for water table measurements should be specified in the text and shown in a figure in this document.	Text has been revised to state "Four piezometers will be installed upgradient of the containment wall to measure water levels within the collection system. Placement of piezometers is detailed in design drawings and is expected to be equidistant throughout the trench." Adding the location of the piezometers to the map increases the complexity of an already complex drawing and would be confusing to the reader
6. Figure 8, Collection Trench Details This figure shows a cross section of the collection trench in which the HDPE cutoff wall is placed on the downgradient side of the filter backfill and the bottom 2-foot bentonite seal. Above the filter backfill the drawing shows up to 17 feet of soil that is to be impermeable. For a better seal, the HDPE cutoff wall should probably extend well up into the soil cap (approximately 2 feet or more) depending on the permeability of the soil that is used for the cap.	The figure has been revised to correctly show that the HDPE cutoff wall extends to the level of the topsoil.

7. Figure 9, Treatment Cell Schematic This figure is actually from a Mound Site Plume document, and should be replaced with a schematic that accurately show the details of the East Trenches Plume treatment cell design.	The figure has been revised to better represent the East Trenches Plume treatment cell design.
General Comments: The collection and treatment system described in this document are very similar to that which is presently installed upstream at the Mound Site plume. Since installation last summer, a number of lines in the system have broken in various places. This is a design problem that needs to be addressed so that the same problems do not occur with this system. In addition to the system described in this document, consideration should be given to the use of in situ chemical oxidation. This form of treatment has been shown to be almost immediately effective in treating the type of organic contaminants found in this plume, and at a relatively small cost, depending on the size area treated. Although the system described in the PAM should be effective over the course of time for contaminants upgradient from the collection trench, the groundwater downgradient will not be actively addressed. In situ chemical oxidation could be used in those downgradient areas that exceed Tier I levels and thereby provide more immediate protection for surface water in the drainage.	The lessons learned at the Mound Site Plume have been applied to the East Trenches Plume Project. The design and installation methodology have been revised to address these problems so that the same problems do not occur with this system. The intent of this action is to capture the majority of the contaminant plume. Leaving a small, downgradient contaminated portion of the plume is consistent with RFCA. Any consideration of in situ chemical oxidation and its application should be considered as a separate action to be negotiated separately and not included in this decision document.

Response to CDPHE Comments on the Draft East Trenches Plume Proposed Action Memorandum

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1. The need for this project has not been adequately justified. No surface water samples at a point of evaluation or point of compliance have exceeded action levels. It is the possibility of future exceedances of surface water standards in the water column after active cleanup that must be prevented. For ground water action level exceedances, RFCA requires an evaluation "to determine if remedial or management action is necessary to prevent surface water from exceeding standards." If Tier I action levels are exceeded in a Tier II well, increased sampling frequency is triggered. If exceedances continue modeling is required to predict if "surface water action levels will be exceeded in surface water." Still missing from this evaluation are: estimation of the remaining source, calculation of the lifetime of the plume after source removal, and estimation of the concentrations expected over the lifetime of the plume. Characterization of ground water concentrations in the source area are known and performance monitoring wells are designed to collect information on the remaining plume. The pathway is well enough known that a simple model of this plume can be calibrated and used to predict lifetime and concentration of the plume. CDPHE has committed to perform this modeling with the assistance of technical from the Site by December 18, 1998	The CDPHE modeling was completed by December 18, 1998 and shows that the contaminant flux through the system is predicted to continue past Site closure.
2. Because of current pond management practice, contaminant migration in stream alluvium cannot be documented below pond B3. However, the likelihood of that migration occurring in a future management scenario can be evaluated using known hydrogeologic information. With or without this system, the concentration of volatile organics in the water column will be undetectable most of the time. It is not critical to know if contaminants are transferred to the surface water, but rather if they persist, and if the plume is expanding downstream in the alluvium.	The possibility of contaminant migration in the stream alluvium has been evaluated using the information provided in the OU 6 RFI/RI report. The text has been modified and an additional figure has been added to address the possibility of contaminant migration in the stream alluvium.

3. Stakeholders should be provided with information to weigh the cost benefits of the project in the context of long-term stewardship of the site. This information cannot be provided without an estimate of how long this plume will continue to discharge to the South Walnut Creek drainage and without establishing performance requirements for the system. If the lifetime of the plume is modeled to exceed the period of active remediation at the Site, then this document should address the issue of continued funding for the maintenance and operation of the remedial system.	The alternatives analysis in Appendix A provides the information to the stakeholders to weigh the cost benefits of the project. While operations and maintenance costs were not provided, these are expected to be low cost and no further modifications to the alternatives analysis are planned. It is clear that the plume will continue to exist after active remediation is completed, and this has been added to the text. As stated in Section 6.0, the system is intended to operate until it can be proven that it is no longer required. The monitoring is funded as part of the Integrated Monitoring Plan Program and funding for outyear maintenance and operation of this system will be provided as part of the long term stewardship responsibilities of the Site. Long term monitoring requirements will be established as part of the Buffer Zone ROD. This has been added
4. Comments regarding construction issues were also not addressed in this document. Trenching on a hillside with known slumping during the highest ground water period of the year is questionable. Issues related to how the project may affect mouse habitat are also unresolved and may greatly restrict installation techniques and schedule.	The lessons learned during construction of the Mound Site Plume Project have been provided to the individuals responsible for installation of the East Trenches Plume groundwater collection and treatment system. Slumping and slope failure concerns will be addressed in several ways during project implementation including keeping only a portion of the trench open at any given time, and use of trench boxes as necessary. While this level of detail is important, it is more appropriate for the field implementation documents for the project than the decision document. There is the possibility of project impacts due to the nearby Preble's Mouse. While the project is not in Preble's Mouse habitat, there is a known population nearby. There are ongoing discussions and consultation with the Fish and Wildlife concerning this project, and several steps have been taken to mitigate possible impacts. These mitigating steps are detailed in Section 4.5. Any uncertainties with the Fish and Wildlife must be resolved prior to approval of this document.

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