APPENDIX J

RESPONSES TO REGULATORY AGENCY COMMENTS ON PREVIOUS REVISIONS OF THE FEASIBILITY STUDY

United States Environmental Protection Agency, Region 9 Responses to letter from Kathy Setian dated March 14, 2011				
No.	Section No.	Comments	Response to Comments	Modifications
1		EPA recommends indicating in the title of the report that the FS for the UC Davis areas is being performed in two parts (soil/solid waste and groundwater) leading to one Record of Decision. Please indicate in the title that the current submittal is the Feasibility Study Part I: UC Davis Soil/Solid Waste Areas, and provide a brief explanation in the introductory section.	Comment noted. The title of the report will be updated. Volume 1 of the FS will be for soil/solid waste and soil gas and Volume 2 for groundwater. An explanation will be added to the Introduction and in the ES.	Addressed.
2		Where the attached comments refer to a specific section and/or page numbers, they also refer to the associated text in the Executive Summary. For example, comment 2, which refers to Section 3, also pertains to page ES-4.	Comment noted. The ES will be updated accordingly.	Addressed.

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3	**Presentation of Nature and Extent of Contaminants**	The Draft Feasibility Study for the UC Davis Soil/Solid Waste Areas at the Laboratory for Energy-related Health Research/Old Campus Landfill Superfund Site University of California, Davis (FS) does not present the nature and extent of contaminants. Section 2.4 text states that contaminants were detected above screening levels, but does not list or discuss the specific contaminants. Figures 2-10 through 2-11 and the text in Section 2.4 do not include the specific contaminants or range of detected concentrations. It is not sufficient to list only Principal Threat Waste (PTW) in general in Table 2-3. Since the FS should be a stand-alone document, referring to the Remedial Investigation Report is not sufficient. At a minimum, tables that list the minimum and maximum concentrations and the number of samples that are above screening levels or background (for inorganics) for each detected contaminant for each of the six solid waste disposal units should be included. The text should also briefly discuss the nature and extent of contaminants in each disposal unit. Please revise the FS to include this information.	Appendix C details the nature and extent of contamination in each of the disposal units. As noted in the first paragraph of Section 2.4: "The extent of contamination for soil/solid waste is depicted in the figures presented in Appendix C of this FS." A reference to the tables in Appendix C will also be added. References to specific tables and figures in Appendix C will be added to sub-sections 2.4.1 through 2.4.6. Tables C-3 through C-14 list the minimum and maximum concentrations and the number of samples that are above screening levels for each detected contaminant for each of the six solid waste disposal units. Tables C-15 and C-16 identify the samples that exceed background (for inorganics). Figures 2-9, 2-10, and 2-11 will be revised to show concentrations of constituents above screening levels in "order-of-magnitude gradations" (note that new figures have been added to Section 2 and all figures renumbered accordingly). See also response to comment 18 and RWQCB comment 2.	Addressed.
4	**Use of the risk range**	The FS Report inappropriately uses the "upper bound of the risk range, 1 x 10-4 to 1 x 10-6" (Section 3.3, Remedial Action Objectives, Page 3-5) instead of the regulatory target cancer risk of 1 x 10-6 as the benchmark triggering the need for remediation for the protection of human health. Note that estimated cumulative cancer risks less than 1 x 10-6 are considered de minimus, and those that fall in the risk management range must be evaluated further. Risks that fall within the range are not necessarily acceptable, as it is up to the risk manager to decide whether	COCs were selected based on the 10^{-6} risk level. The text will be changed to state: the "lower bound of the risk range, 1 x 10^{-4} to 1 x 10^{-6}." See box section of page 8 in Rules of Thumb for Superfund Remedy Selection, August, 1997: http://www.epa.gov/superfund/policy/remedy/sfremedy/remedies/principles.htm	Addressed.

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		risks within the risk management range require remedial action based on site-specific reasons. This is consistent with EPA guidance regarding the role of the baseline risk assessment in support Superfund remedy selection decisions (EPA, 1991). Please revise discussions in the FS Report to indicate that the risks in the human health risk assessment (HHRA) greater than 1 x 10-6 should represent the point of departure for remedial action consideration in the Draft FS.	"Remedial action objectives (RAOs) provide a general description of what the cleanup will accomplish (e.g., restoration of groundwater). Preliminary remediation goals (PRGs) are the more specific statements of the desired endpoint concentrations or risk levels, for each exposure route, that are believed to provide adequate protection of human health and the environment based on preliminary site information. Initial PRGs are developed early in the RI/FS process and are based on ARARs and other readily available information, such as concentrations associated with 10^{-6} cancer risk or a hazard quotient equal to one for noncarcinogens calculated from EPA toxicity information. Initial PRGs may also be modified based on exposure, uncertainty, and technical feasibility factors. As data are gathered during the baseline risk assessment and RI/FS, PRGs are refined into final contaminant-specific cleanup levels. Based on consideration of factors during the nine criteria analysis and using the PRG as a point of departure, the final cleanup level may reflect a different risk level within the acceptable risk range (10^{-4} to 10^{-6} for carcinogens) than the originally identified PRG. The final cleanup levels, not PRGs, are documented in the Record of Decision."	

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5	**Preference for Treatment**	The retained process options and alternatives do not satisfy the statutory preference for treatment because none of the in situ or ex situ treatment options are retained. Excavation, containment, and off-site disposal do not reduce the toxicity, mobility and volume (TMV) of the contaminants by treatment; instead, contaminants are moved to another location. Section 4 of the FS and Tables 4-1 and 4-2 identify potential treatment options which are implementable and have the potential to reduce TMV for at least a portion of the identified constituents of concern (COCs). However none of the treatment options were retained for further consideration as part of the subsequent detailed analysis in Sections 5 through 7 of the FS. The National Oil and Hazardous Substances Contingency Plan (NCP) Preamble mandates a preference for remedies that permanently reduce the "volume, toxicity, or mobility" of the hazardous substance, and requires that remedies use permanent solutions and alternative technologies or resource recovery technologies to the maximum extent practicable. The stated goal reflects CERCLA's preference for achieving protection through the use of treatment technologies that destroy or reduce the inherent hazards posed by wastes, results in remedies that are highly reliable over time, and significantly reduce the toxicity and/or mobility of the contaminants posing a significant threat (i.e., "contaminants of concern") wherever practicable to reduce the need for long-term management of hazardous material. It is also EPA's preference to seek to reduce hazards (i.e., toxicity and/or mobility) to levels that ensure that contaminated material remaining on-site can be reliably controlled over time through engineering and/or institutional controls. At least one in situ and one ex situ treatment option should be retained and incorporated into alternatives. Please revise the FS to include applicable and implementable treatment options as part of the detailed analysis.	As discussed at our April 19, 2011 meeting, *ex situ* solidification/stabilization will be retained. Estimated volumes and associated costs will be 10 percent of the estimated hazardous soil/solid waste to be excavated and disposed of off-Site under each alternative, as described in the updated Appendix E. No *in situ* treatment options are proposed.	Estimated treatment volumes are presented in Section 6 (Table 6-2) as ten percent of the mixed waste and RCRA hazardous waste fractions. These two waste fractions were developed in Appendix E.

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6	**Screening Process Options and Alternatives**	Many of the treatment options identified as implementable were designated in Table 4-2 as either "Not Retained – other process options are more effective and address the metals and radionuclides" or "Not Retained – not effective for metals and radionuclides; lower-cost process options with equal or greater effectiveness are available for VOCs [volatile organic compounds]." The rejection for consideration of an applicable and implementable option due to cost alone or because it treats only a portion of the COCs does not meet the intent of the NCP evaluation criterion. The NCP Preamble provides an example of when cost assessment is relevant. When two or more alternatives are determined to be comparably effective in achieving the cleanup standard and have the same level of protection, the least costly of the alternatives would be selected as the cost-effective solution. The FS does not appropriately implement the screening process, as the alternatives screened out did not offer the same level of protection (i.e., a reduction of TMV via treatment). Please revise the screening of process options and alternatives to meet the intent of the NCP.	See response to comment 29. Per our April 19th meeting, the following statement will be added as a footnote to Table 4-2: "Process options were eliminated if, on the basis of professional judgment, they were not considered applicable, or if at least one other process option was deemed more effective or more easily implemented, and/or if at least one other process option exhibited a lower estimated cost but was as effective, implementable, and protective as other options."	Addressed
7	**Assessment of Alternatives**	The FS does not fully meet the NCP alternative analysis intent or the nine criterion evaluation for the following reasons: a) The detailed analysis does not provide very much discussion relative to comparative values and the discussion differs very little between alternatives other than the volume of waste removed and costs. This makes it appear that the alternatives are relatively equal in protectiveness, which may be misleading. The detailed analysis does not include a summary assessment matrix table which includes all nine NCP evaluation criteria for all alternatives considered in the FS and does not present a rating system.	a) An alternative comparative summary table including a ranking system will be added to Section 7 using a ranking of Low, Medium, and High.	The alternative comparison summary added to Section 7 used a numerical ranking scheme on a scale of 1-5 for the two balancing and five threshold criteria; a higher ranking reflects a more favorable outcome for the specific category.

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		Therefore, it is difficult to make a meaningful distinction between the alternatives presented. For example, each alternative for which a detailed analysis was provided indicates that the resulting cancer risks "fall near or within the 10-4 to 10-6 NCP cancer risk range and near the hazard index of 1.0." Therefore it is difficult to assess the magnitude of the difference in short-term as well as long-term effectiveness and performance. The presentation of the detailed analysis results per each of the nine evaluation criteria within a table, further refinement of risk evaluation for each alternative, and the use of a ranking system would provide the details necessary for a comparative evaluation. Further, the differentiating features need to be substantiated in the text. Please include a detailed alternative comparative summary table including a ranking system which uses a ranking scale that allows for greater differentiation such that a straightforward determination of the relative performance of the alternatives and identification of major trade-offs can be made. Please also ensure that the assessment clearly indicates the alternative(s) that performs the best overall in each category, as allowed for by the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA (RI/FS Guidance) in Section 6.2.5, Comparative Analysis of Alternatives, on page 6-14.		

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		b) The comparative analysis does not provide time frames for each alternative to achieve the designated preliminary cleanup goals (PCGs). Time required for achieving PCGs is an important component relative to assessment of short term and long term effectiveness of the remedy and may affect the overall remedy options ranking or selection process. In addition, the time required for achieving PCGs affects the time frame necessary for cost estimations. The cost analysis provided is limited to 30 years; however there is no supporting data or discussion to indicate that this is the appropriate time frame for cost comparisons, particularly since waste will remain for a long time (e.g., until radionuclides decay) for some alternatives. As a result of not including long term costs and periodic costs, the associated costs may be biased against alternatives that remove the wastes. The cost analysis also must consider any applicable life-spans of remedy components (e.g., monitoring wells) which are anticipated to require replacement within the cost analysis or remedy completion timeframe. Please include discussion for each alternative relative to the estimated time required to meet PCGs as part of the short term assessment per the RI/FS Guidance, Section 6.2.3.5 and provide correction or refinement necessary to address the remedy completion timeframes.	b) Per the NCP (Section 300.430 (e) (9) iii. (E), short term effectiveness is defined as "the time until protection is achieved." For the soil cover/capping alternatives, protectiveness is achieved when the cap is in place since no exposure would occur, so RAOs would be met by preventing contact, but contamination above PCGs would still remain in the soil. For the excavation alternatives, minimal contamination above PCGs would remain below 20 feet bgs, but again RAOs of preventing contact would be met. Long term protectiveness will be achieved through implementation and maintenance of the remedy. However, metals contamination above PCGs would remain below 20 feet bgs. The cost analysis provides information regarding life-span in the periodic costs provided. Text will be added discussing long-term periodic costs. The cost estimate will be revised to capture the full lifecycle costs (i.e., until cost versus time reaches an asymptote).	

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		c) The "Long-Term Effectiveness and Permanence" sections do not provide an evaluation of the potential future site use and land use capabilities allowed as a result of the alternative remedies. Future land use capabilities are a measure of the long-term sustainability of the remedy and are generally of importance to the acceptance by local and state stakeholders (i.e., the eighth and ninth NCP evaluation criteria). Please include a discussion of the long-term land use capabilities as a result of the remedy alternatives.	c) A comparative discussion on land use impacts of each remedy will be added to Sections 6 and 7. A land use map from the UC Davis 2003 Long-Range Development Plan will be included as Figure 2-9 in Section 2.3.4 (note that new figures have been added to Section 2 and all figures renumbered accordingly).	Addressed. Note the land use map is now Figure 2-11.

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		d) The assessment of long-term effectiveness and permanence in the FS Report is also inconsistent with the NCP. The analysis to be conducted as part of the assessment of this criterion is to focus on any residual risk remaining at the site after the completion of the remedial action. The assessment is to include consideration of the degree of threat posed by the hazardous substances remaining at the site and the adequacy and reliability of any controls (e.g., engineering or institutional controls) used to manage the hazardous substances remaining at the site. The criterion is founded in the CERCLA mandates to select remedies that are protective of human health and the environment; that utilize permanent solutions and alternative treatment technologies or resource recovery technologies; and that maintain protection over time. Please revise the FS to include information regarding the resulting levels of contamination that will remain after implementation of each alternative.	d) As discussed above, the resulting levels of contamination that remain after completion of each alternative are presented in tables in Section 6 (Tables 6-1, 6-4, 6-7, 6-9, 6-11, 6-13, 6-16) in each of the long-term effectiveness and permanence subsections. Note that the RAO of preventing human and most ecological contact would be met. A qualitative discussion comparing residual risk for each alternative will be added to Section 7.	

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		e) The discussion of "Long-term effectiveness and permanence" for alternatives that involve excavation of hot spots states that "PTW will be removed and transported off-site," but this is misleading in that only PTW identified in previous trenches and borings. It is likely that PTW is present in other areas of the disposal units, but this PTW would not be addressed. The text should be revised to clearly state that PTW identified to date would be removed and that PTW may be present in other areas of the disposal units. Please revise the FS text to clearly state that PTW will still be present after the hot spot excavations are completed.	e) Agree. Applicable sections will be modified to indicate that only PTW identified in previous investigations would be removed and that additional PTW may be present in other areas. Per our June 14, 2011 meeting, additional PTW exploratory trenches will be included, based on the history of the disposal area and in areas with previously identified geophysical anomalies, but where no historical trenching has occurred.	
8	**Preliminary Cleanup Goals**	PCGs should be developed for all COCs that were detected above the Remedial Investigation (RI) screening criteria or above Regional Screening Levels (RSLs). This is necessary for alternatives that involve hot spot or full excavation of one or more of the disposal units, since the limited samples collected to date may not represent the maximum concentrations of detected COCs. As a result, the screening process that resulted in limiting the list of COCs should not be used to develop PCGs. Please develop a complete list of PCGs that includes all of the COCs detected above RI screening criteria.	PCGs were developed for COCs with EPCs above the available 2009/2010 screening values. Table C-17 shows the COCs that were screened out as a result of the EPC being below the screening value. UC Davis believes that updating the RSLs is unnecessary with respect to the evaluation of the alternatives in the FS. However, the final FS will be updated to include the most recent RSLs available at the time of document preparation. In addition, a methodology by which to select PCGs for constituents that had not been previously detected or selected as COCs will be provided in new Appendix G.	Addressed.
9	**Need for Soil/Vegetative Cover**	For alternatives that involve construction of a soil based cap, the FS needs to provide information that demonstrates that UC Davis's Central Valley Regional Water Quality Control Board discharge permit derived goal of reducing	Agree. A runoff estimate demonstrating that the post-development runoff volume will match the pre-development runoff volumes for storms up to the 85th percentile	Weiss used the 85th percentile 24-hour storm event for the UC Davis LEHR Site to represent the mean storm precipitation runoff. Three daily precipitation datasets

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		site generated runoff by 85% can be achieved. Specifically, the remedial alternatives proposed need to be capable of achieving the 85% reduction in runoff. In support of this demonstration, Hydrologic Evaluation of Landfill Performance (HELP) modeling should be conducted which demonstrates that the proposed soil/vegetative cover is capable of up-taking 85% or more of the precipitation that falls on the landfill.	storm event under each alternative will be provided in the FS, according to applicable requirements.	from Davis were analyzed for frequency statistics. Two datasets were downloaded from the UC IPM Online Statewide Integrated Pest Management (UC IPM) Program (http://www.ipm.ucdavis.edu/Weather/). One station contained data from a NOAA climate station (CA042294, Davis WSW Exp Farm) with data from January 1, 1908 through July 18, 2011. Daily precipitation data were used to approximate the 24-hour storm. Data were screened to remove missing values and no-rain days. Daily precipitation values smaller than 0.01 were also eliminated since these events are unlikely to produce any runoff. The 85th percentile 24-hour (daily) storm event was calculated in Excel from the filtered data set. For the Davis NOAA climate station and Davis TouchTone station, the 85th percentile 24-hour (daily) value was calculated as 0.66 in. For the Davis CIMIS station, the 85th percentile 24-hour (daily) event was calculated to be 0.61. A value of 0.66 in was used in the Urban Runoff Quality Management method (WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998)). Based on these runoff estimates, the alternatives that incorporate engineered surface caps were modified to include enhancements to the surface water drainage system, including the construction of extended detention basins, where applicable. These basins were sized to meet the requirements of both the current UC

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				Davis Storm Water Management Plan (2010) and those proposed in the draft 2011 MS4 Permit (2011). Detailed design information will be provided in the remedial design documents.
10	**Additional Alternative Needed**	An alternative that includes removal of Low Level Radioactive Waste (LLRW), disposal of LLRW off-site, and consolidation of other wastes into one or two landfills should be included. Such an alternative would minimize the impact of radioactive isotopes on groundwater and would provide additional options for future reuse of the land through consolidation. Since it is possible that Landfill 2 and/or Landfill 3 may also contain some LLRW, this alternative would require screening and possibly sampling excavated materials for LLRW. Please revise the FS to include an alternative that provides screening for LLRW, excavation of LLRW, disposal of LLRW off-site, and consolidation of the other wastes into one or two areas.	Comment noted. Based on our June 14, 2011 meeting, and meetings between UC Davis and California Department of Public Health - Radiologic Health Branch (RHB) representatives, LLRW can be consolidated within a CAMU. Therefore, an additional alternative to dispose of LLRW off-Site is not planned.	Addressed.

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11	**Groundwater Monitoring Well Network**	The FS does not provide adequate information and figures to determine if the proposed groundwater (GW) monitoring wells, existing and future, will be adequate for the proposed alternatives. The FS does not include any GW flow, elevation, or plume delineation maps by which the location and number of wells can be assessed. In addition, Figures 5-1 through 5-8, Alternatives SW-2 through SW-9, respectively, do not indicate existing and proposed monitoring wells, yet the alternative discussions include a monitoring component utilizing existing as well as proposed monitoring wells. In addition, the locations of wells to be abandoned and associated replacement wells are not included on the figures that depict the alternatives. This information is necessary to verify that there will be sufficient monitoring wells, that the locations are appropriate, and the cost estimates. Please provide the locations of all existing and proposed monitoring wells on Figures 5-1 through 5-8, as well as GW flow, elevation, and plume delineation maps, to ensure that the proposed monitoring network is reasonable and the associated costs are within the allowable -30 percent (%)/+50% error range. In addition, for alternatives that involve abandoning wells, please include those wells on the associated figures.	Groundwater plume maps from the latest Annual Groundwater Monitoring Report will be included in Section 2.2.4.3. Text will also be added to this section discussing these maps. Groundwater monitoring locations proposed in the alternatives will be added to Figures 5-1 through 5-8. As noted on these figures, "Alternative details are subject to refinement and/or modification in post FS remediation documents." In cases where wells will be abandoned due to cover/cap construction, new wells will be installed outside the covered/capped area. The approximate location of these wells will be provided and indicated on Figures 5-1 through 5-8.	Addressed.
12	**Sustainability Evaluation**	The FS does not include an environmental remediation sustainability evaluation consistent with EPA's 2008 Green Remediation: Incorporating Sustainable Environmental Practices into Remediation of Contaminated Sites (EPA 542-R-08-002) or California Department of Toxic Substances Control, California Environmental Protection Agency, Interim Advisory for Green Remediation, December 2009. Specifically, an evaluation of whether alternatives can be made "greener" should be added to the discussions of short-term effectiveness for each alternative. Please revise the discussion of short-term effectiveness to include measures that could make each alternative "greener."	A discussion of how each alternative may be made "greener" will be added to Section 7.5 – Short-term Effectiveness.	The discussion of environmental sustainability was moved to Section 7.9 "Green Remediation Evaluation" instead of under "Short Term Effectiveness" (Section 7.5).

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13	**Cost Estimates**	The cost estimates for the FS alternatives as presented in Section 7.7 (Cost) and Appendix F (Cost Estimates) are not presented in a manner that provides ease and transparency for comparison between the alternatives. Section 7.7 includes Table 7-2 which provides a high level of cost comparisons and Appendix F presents detailed estimated costs from US EPA's Racer™ program. However, a direct correlation or verification of associated costs cannot be readily completed because the provided information does not include drill-up tables by which a reviewer can follow the bottom level cost details through to the top level summary provided in Table 7-2. A series of intermediate tables identifying key cost components by which the alternatives may be compared and summed up in a drill-up process would provide the confidence and assessment necessary for verification that the costs are accurate to the -30%/+50% accuracy range for an FS and in accordance with the US EPA RI/FS Guidance and the Guide to Developing and Documenting Cost Estimates During the Feasibility Study, July 2000, EPA 540-R-00-002. Please revise Appendix F to include drill-up tables to provide the ability to track, verify, and compare alternative costs from the bottom level details to the costs identified in Table 7-2.	The series of drill-up tables are provided in Section 6. A table which compares the alternatives' element costs side-by-side will be added to Section 7.	Addressed.
14	**Data Presentation**	The overall presentation of data relative to the alternatives and the ability to correlate the information presented in comparison to the other alternatives is difficult due to the disjointed presentation. This makes it difficult to determine or verify the information being presented. Data is not traceable or verifiable between the alternative discussions (Sections 5 through 7), waste volume calculations (Appendix E), or cost estimates (Appendix F). Data summaries and tables which allow an understanding, determination, and verification of interrelated data between the FS text and tables, Appendix E, and Appendix F should be presented. Please revise the FS to allow for such an assessment.	Comment noted. The continuity between Appendix E and Appendix F will be improved such that references made in the main body of the FS relative to alternatives can be easily found in either of these two appendices. An additional table may also be added to Section 7 allowing for this comparison.	See Table 5-4 introducing excavation subareas and Table 6-2 summarizing excavation and disposal volumes by alternative. The data provided in these tables can be traced to estimates generated in Appendix E. Table 7-1 ranks the alternatives according to their performance.

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15a		**HHRA Citations:** The Draft FS report contains inconsistencies in its citation of previous reports and sources of screening values. Examples include, but not limited to, the following, which are also discussed in Specific Comments. a) The EPA Region 9 Preliminary Remediation Goals (PRGs) used in the original Human Health Risk Assessment, Part A (HHRA – Part A), are cited as 2002 and 2004 in different parts of the Draft FS report. b) The updated screening values used in the Draft FS report are cited as EPA RSLs from December 2009 and May 2010. However, the most recent version of the RSLs is dated November 2010 (http://www.epa.gov/region9/superfund/prg/). The most current toxicity values should be considered in risk management decisions and conclusions of the FS prior to finalizing the report. c) The original HHRA – Part A is cited as part of Volume 1 of the UC Davis Final Remedial Investigation Report, which was completed by Montgomery Watson Harza (MWH) in 2004. However, Section 3.1.2 (Soil Gas) specifies MWH 2004 and Brown & Caldwell 2006 as citations for the HHRA – Part A. Furthermore, Appendix B (Section B5, References, Page B-6) provides UC Davis 2005 as the citation for HHRA – Part A. For clarity and to allow for verification of information presented, please use consistent citations throughout the report and ensure that the latest sources of screening values are used in the HHRA.	a) Agreed. This will be changed to the 2002 PRGs for HHRA – Part A. b) The cited RSLs for the document are correct based on when each of the sections of the report were prepared. UC Davis plans to update the RSLs in the final version of the Feasibility Study Report. c) Reference to the various parts of the HHRA will be verified and made consistent. Agreed.	Addressed.

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15b	**Cumulative Risk**	Although it appears that, upon completion of the Feasibility Study for the six UCD LEHR land disposal units, three different HHRAs will have been conducted based on different exposure media, the FS does not present the cumulative risk for each unit. Specifically, the draft FS contains a (1) vapor intrusion HHRA (presented in Appendix B); (2) an updated soil/solid waste risk screening (presented in Appendix C); and (3) reference to groundwater risk and hazards is made in Section 2.5.1 (Human Health Risk Assessment, second full paragraph). In addition, Appendix C (Section C1, Purpose and Background, last line) alludes to a groundwater HHRA that will be conducted "at a later date after collection and analysis of additional data." However, there is no discussion about the evaluation of potential cumulative risk across the three media. Please include a discussion in the main text that presents the cumulative risk across all three media, as well as how the FS addresses cumulative risks. Please also update the Executive Summary to present the total risks for each site.	It is correct that Appendix B is a vapor intrusion risk assessment and Appendix C is a risk screening. However, Section 2.5.1 is a discussion of the previously prepared human health risk assessment. Because this FS is for soil/solid waste and soil gas as it relates to the vadose zone, groundwater is not a medium of concern. The risk assessment for GW at the site can be found in MWH 2004 and B&C, 2006 – HHRA Parts A and C, respectively. There is no plan to revise the groundwater risk assessment in the Groundwater FS. New Tables 2-6 and 2-7 will be created to summarize cancer risk and non-cancer hazard, respectively, by exposure route for contaminants in groundwater. Note table number updates. The indoor air risk presented is risk from vapor intrusion (HHRA – Part A; MWH, 2004); the maximum concentration in soil gas was used in the Johnson and Ettinger model to calculate the indoor air concentration. Table 2-8 will be titled "Summary of Cumulative Human Health Cancer Risk by Exposure Route." Table 2-9 will be titled "Summary of Human Health Non-Cancer Hazards by Exposure Route." A discussion of cumulative risk will be added to Section 2 and the ES. A discussion as to how the FS addresses each of these media will also be added to Section 7 of the ES.	Addressed.

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16	**Executive Summary, Nature and Extent of Contamination, Page ES-2**	Although the discussion of the Nature and Extent of Contamination references Table ES-1, there is no specific discussion of the extent of waste, in cubic yards or other measures of mass, nor the nature and extent of contamination. The note about disposal, "organic material has likely decayed" does not provide sufficient information. Further, the text does not discuss other COCs such as radioactive, metallic, or chemical wastes. Please revise the Executive Summary to provide a summary of the nature and extent of contamination, including the total volume and dispersion of contaminants, including COCs that have been detected or documented historically at the site.	Additional rows will be added in Table ES-1 listing the COCs per disposal area as well as the estimated volume of contaminated material. Figure ES-1 shows the dispersion of contaminants in each disposal area.	Addressed.
17	**Section 2.2.4.2, Storm Water Drainage, Page 2-4**	The storm water drainage system discussed in Section 2.2.4.2 does not reference a figure which depicts the drainage system. Please provide a figure which depicts the storm water drainage system.	The available storm water drainage lines will be added as site features to Figure 2-1.	Addressed.

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18	**Section 2.4, Nature and Extent of Contamination, Pages 2-7 to 2-9; Table 2-3**	Section 2.4, along with sub-Sections 2.4.1 through 2.4.6 do not include any detailed information on the nature of the contaminants detected at the site, only noting that "samples exhibited constituent concentrations exceeding screening levels" (Section 2.4.2, Landfill Unit No. 2), without identifying the contaminants or the exceedences. Further Table 2-3 does not identify the nature of the contaminants, for instance noting for Landfill Unit No. 1 that the Potential PTW identified by exploratory trenching was "Blue and green crystalline material," but not identifying what the material was or analytical results from samples of this material. Please revise the text to include a summary of the nature and extent of contamination for each disposal unit. Also, please explain how the "Blue and green crystalline material" was identified as a Potential PTW, and what the material consists of.	Appendix C details the nature and extent of contamination in each of the disposal units. As noted in the first paragraph of Section 2.4: "The extent of contamination for soil/solid waste is depicted in the figures presented in Appendix C of this FS." A reference to the tables in Appendix C will also be added. References to specific tables and figures in Appendix C will be added to sub-sections 2.4.1 through 2.4.6. See also response to comment 3 and RWQCB response to comment 2. Because samples of solid waste were generally not collected from the exploratory trenches, including that defined as PTW, analytical data specific to PTW are not available. Because the chemical nature of many of the items discovered in the exploratory trenches has not been adequately defined analytically, or in the available historical documentation, it was assumed that liquids and small solids (like crystalline material) are potentially hazardous and mobile in the environment, and therefore were defined as PTW. A sentence will be added clarifying the lack of analytical data associated with solid waste items discovered in the exploratory trenches.	Addressed.

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19	**Section 2.4, Nature and Extent of Contamination, Pages 2-7 to 2-9**	This section should discuss changes in the extent of the landfills and why these changes were made. For example, the Landfill 1 area has geophysical anomalies north of the northeast corner of the landfill that resulted in extending the landfill boundaries. Please revise the text to include a discussion of changes that were made to the landfill boundaries, including the rationale for these changes.	Agreed. The text will be revised to include a discussion of changes that were made to the landfill boundaries, including the rationale for these changes.	Addressed.
20	**Section 2.5.1, Human Health Risk Assessment, Page 2-10**	The following comments apply to this section: a) The second paragraph refers to the use of the 2002 EPA Region 9 PRGs in the original HHRA – Part A report. However, Appendix C (Section C2, Summary of 2006 Site-Wide Risk Assessment, Part C, Page C-1, first bullet) states that the 2004 EPA Region 9 PRGs were used in the original HHRA. Please resolve this discrepancy in the Draft FS report.	a) This discrepancy will be resolved. The 2002 EPA PRGs were used in the HHRA – Part A. This will be corrected throughout the document.	Addressed.

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		b) The third paragraph refers to Table 2-4 for a summary of cancer risks for on-Site residents, on-Site resident children, on-Site outdoor researchers, indoor researchers, on-Site construction workers, and age-adjusted adults. However, it refers to Table 2-5 for a summary of non-cancer hazards for on-Site residents, on-Site resident children, age-adjusted adults, and construction workers; but not the on-Site outdoor researchers, indoor researchers, or on-Site construction workers. It is not clear why non-cancer hazards are presented for some, but not all, of the receptors. Please provide clarification, or otherwise include the non-cancer hazards for all receptors that were included in the cancer risk evaluation.	b) The non-cancer hazards for the receptors that were included in the cancer risk evaluation will be added to Table 2-5.	Addressed.
		c) The fourth paragraph indicates that the original HHRA – Part C was updated for the hypothetical on-Site resident receptor. However, no explanation is provided for presenting updated results for the resident but not the other receptors evaluated in the original HHRA – Part C. Please include a discussion of this issue.	c) The following text will be added to the paragraph cited: “The residential exposure scenario was chosen because the HHRA – Part A indicated that the residential receptor was the most sensitive receptor modeled, in comparison to on-Site outdoor researchers, indoor researchers, or on-Site construction workers.”	The following text was added to the paragraph cited: "The residential receptor was chosen because the HHRA – Part A indicated that this receptor was the most sensitive in comparison to the on-Site indoor researcher, the on-Site outdoor researcher, or the on-Site construction worker."
		d) pg 2-10, last paragraph. Please reference the date of the RSL tables used, here as well as a footnote on Table 2-6. It is correctly included on Tables 2-7 and 2-8. S	d) The date of the RSL table will be added.	Addressed.

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21	**Section 2.6, Fate and Transport, Pages 2-12 and 2-13**	The discussion of fate and transport is very general and only includes a sentence or two about lead, arsenic, chromium, vanadium, carbon-14, and potassium-40. Each contaminant that was detected above screening levels should be discussed in this section. Please revise the text to discuss the fate and transport of each contaminant that has been detected above screening levels.	The fate and transport of each FS COC will be summarized in Section 2.6. Discussion will include consideration of measured groundwater concentrations of soil/solid waste COCs evaluated using trend graphs to assess potential leaching to groundwater.	Addressed.
22	**Section 2.6, Fate and Transport, Pages 2-12 and 2-13**	The discussion about manganese oxides does not acknowledge that the sorptive capacity of soils and manganese oxides is limited. The text does not state whether any monitoring has occurred to confirm that the soil and manganese oxides have sufficient sorptive capacity to address all of the metals that may have been placed in the disposal units. Please revise the text to clarify whether there is any data to confirm statements about the sorptive capacity of soil and manganese oxides at LEHR.	The information regarding manganese oxides will be deleted.	Addressed.
23	**Section 2.6.2.1, Transport from Soil/Solid Waste to Groundwater, Pages 2-12 and 2-14 and Table 2-12, Predicted Vadose Zone Travel Times for Constituents**	According to Table 2-12, the predicted travel time from carbon-14 to reach groundwater is 299 years, but carbon-14 has been detected in groundwater. A reality check of the HELP mode calculations is needed; this assessment should include a comparison with constituents detected in LEHR groundwater. If constituents like carbon-14 have reached groundwater in less than the predicted timeframe, either the HELP model should be rerun or the text should explain the discrepancies between the model results and COCs detected in groundwater. Please compare the HELP model results in Table 2-12 to COCs detected in groundwater and explain why some COCs, like carbon-14, reached groundwater in significantly less time than predicted by the HELP model.	Input parameters to the HELP model will be reviewed, the model re-run, and COC results compared to detections in groundwater. The results of this analysis will be discussed in context of the previous NUFT model (presented in Appendix A) and HELP model results.	Time-to-impact-groundwater was re-calculated with parameters from the NUFT model; results are presented in Table 2-16.

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24	**Table 2-3, Summary of Nature, Extent and Sampling at Land Disposal Units**	The entries for the Waste Burial Holes should not state, "No Waste." The evaluation apparently does not consider the potential that some of the soil returned to the excavation was contaminated. Contaminated soil may be considered "waste" if there are high concentrations of contaminants present, since the soil was excavated from the subsurface and then used to fill the excavations. The table should be revised to discuss this potential. Alternatively, if sufficient samples were collected from the soil excavated from each of the 49 burial holes to conclude that only clean soil was returned to the excavations, the table should state this. Further, the type of soil beneath the burial holes should be stated in the "Layer Underneath Waste" row. Please make these changes to Table 2-3.	We have reasonable confidence per the 1999 WBH Removal Action Report that all solid waste was removed: "The removal of wastes from all waste burial holes in this area of the Site can be considered complete because a systematic method of removal was used to excavate the area. The work was conducted in overlapping trenches in the east-west direction (Phases 1 to 4). By this method, the entire area bounded by the eastern dog pens on the north and the levee on the south was excavated to identify and remove the waste holes. Since the levee was present before this waste burial area was used, burial beneath the levee was not likely. All phases of the excavation, with the exception of the levee (Phase 3, Figure 8), were excavated to a depth of 9 to 12 feet below ground surface (bgs). The levee encroachment permit restrictions required a continuous 2-footwide trench to a depth of 9.5 feet, which was completed to identify waste burial holes. The waste burial holes were then excavated." We will clarify in Table 2-3 that contaminated soil was placed back into the holes. This information will be added to the "Nature of Material Disposed" row. The type of soil beneath the burial holes will be added to Table 2-3 in the "Layer Above Waste" and "Layer Underneath Waste" rows.	Addressed.

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25	**Section 3.1, Chemicals and Media of Concern, Pages 3-1 and 3-2**	All chemicals with risk greater than 1x10-6 or a hazard index (HI) greater than 1 should be retained as COCs. Given the limited number of samples collected from soil and waste, it is possible that higher concentrations are present. In order to account for this uncertainty, all chemicals with a risk greater than 1x10-6 should be retained as COCs. Please make this change.	Appendix C provides detail on risk and hazard and the selection of COCs. The following steps were followed to select COCs (Figure C-3): 1. Is the maximum concentration greater than the risk-based Screening level? 2. For inorganic constituents, is the maximum concentration greater than the background level? 3. Are inorganic concentrations above background based on statistical evaluation? 4. Is estimated exposure point concentration greater than risk-based screening levels? 5. Does qualitative evaluation of the data suggest the constituent is an FS COC? Per our April 19, 2011 meeting, additional research was conducted on element 3 above, regarding arsenic in LFUs-2 and -3 being eliminated based on the background statistical evaluation. The methodology and result of not identifying arsenic as a COC in these landfills is consistent with HHRA – Part A, Appendix B (Tables 17 and 19, respectively for LFU-2 and LFU-3), in which arsenic was also eliminated as a COC based on the background statistical analysis (Mann-Whitney results). In addition, a spatial evaluation of arsenic concentrations greater than background did not identify "hot spot" locations, but showed these concentrations dispersed throughout the disposal units along with concentrations that were not greater than background.	Addressed.

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26	**Section 3.3, Remedial Action Objectives, Page 3-5**	The Remedial Action Objectives (RAOs) do not address soil gas or the prevention of vapor intrusion to existing and future buildings, yet in section 3.3.2, preliminary remediation goals (PRGs) have been established for soil gas COCs other than chloroform. To ensure protection of human health and the environment for all media, please include consideration of soil gas and potential vapor intrusion as part of the RAOs.	Soil gas will be added as a medium in the first RAO.	Soil gas was added as a medium in the first two RAOs.
27	**Section 3.3, Remedial Action Objectives, Page 3-5**	The first RAO should state that human contact will be prevented with waste and soil that poses excess cumulative cancer risk greater than the point of departure, 1x10-6. Please revise this RAO.	The RAO will be revised to state: " …the lower bound of the risk range, 1 x 10-4 to 1 x 10-6."	Addressed.
28	**Section 4.1, General Response Actions, Page 4-1 and Section 5.1, Alternative SW-1: No Further Action, Page 5-2**	The first response action should be "No Action," not "No Further Action." Similarly, Alternative SW-1 should be "No Action." Please make these changes.	Per CERCLA, 40 CFR 300.430(e)(6), "The no-action alternative, which may be no further action if some removal or remedial action has already occurred at the site, shall be developed." Since removal actions have previously occurred at the Waste Burial Holes, this is a No Further Action alternative. Per our April 19, 2011 meeting, Alternative SW-1 will be called No Action/No Further Action.	Addressed.

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29	**Section 4.2.3, Selection of Representative Process Options, Page 4-3**	This section states that "Process options were eliminated … and/or if it exhibited a lower estimated cost but was as effective/implementable as other options." This appears to be a contradiction, since the most expensive or least effective/implementable process option(s) should be eliminated. Please correct the sentence to clarify the criteria for elimination. Further, please ensure that only those alternatives that are first determined to achieve similar levels of protectiveness are screened out.	The statement will be revised: "Process options were eliminated if, on the basis of professional judgment, they were not considered applicable, or if at least one other process option was deemed more effective or more easily implemented, and/or if at least one other process option exhibited a lower estimated cost but was as effective, implementable, and protective as other options." Levels of protectiveness were evaluated in the original selection of the process options.	Addressed.
30	**Table 4-1, Initial Screening of Remedial Technologies and Process Options, Pages 1 and 2**	The "In Situ Physical/Chemical Treatment" process options listed primarily apply to groundwater and not to soil/solid waste. For example, Modified Fenton's Reagent, persulfate, hydrogen peroxide, and ozone are only applicable technologies for groundwater. In situ physical/chemical treatment process options should include typical stabilization/solidification options like vitrification. Further, it is unclear how fracturing is applicable to soil/solid waste; typically, injections and mixing with augers are used to distribute cement grout to accomplish in situ stabilization. Please delete process options that are applicable to groundwater, research in situ treatments that are applicable to soil and solid waste, and revise Table 4-1 to include in situ treatment process options that are applicable to soil and solid waste.	Table 4-1 will be revised. The chemical oxidation, reduction, separation, and fracturing remedial technologies will be deleted. However, please note that Table 4-1 was meant to be as comprehensive as possible. While we agree that many of these options are not appropriate for the Site (the reason they are screened out in Table 4-2), this table serves as documentation of the evaluation process. Vitrification is included in the *in situ* thermal enhancement general response action; stabilization options are included in the process options.	Addressed.

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31	**Table 4-1, Initial Screening of Remedial Technologies and Process Options, Page 2**	The process options listed under "In-Situ Biological Treatment" and "In Situ Thermal Enhancement," also appear to be applicable to groundwater and not to soil and solid waste. For example, phytoremediation is not typically applied to landfills and is not likely applicable for all of the COCs (e.g., radionuclides). Similarly, steam injection, electrical resistance heating, etc. are not typically applied to soil and solid waste (i.e., landfills) because they only address volatile contaminants. Please review the listed technologies and process options and include only those that are applicable to soil/solid waste.	Table 4-1 will be revised. The *in situ* biological treatment general response action will be deleted. The heating process options of hot air/steam injection, electrical resistance, radio frequency/electromagnetic, and electrical conductivity will also be deleted. Please note that Table 4-1 was meant to be as comprehensive as possible. While, we agree that many these options are not appropriate for the Site (the reason they are screened out in Table 4-2), this table serves as documentation of the evaluation process.	Addressed.
32	**Table 4-1, Initial Screening of Remedial Technologies and Process Options, Page 4**	For "Vapor-Phase Treatment" under the "Extraction" option, "passive venting" and "active gas collection system" are both designated as "Not Applicable – on-Site land disposal units do not generate measurable amounts of gas" whereas "soil vapor extraction" and other options involving soil gas collection are designated as "Potentially Applicable." Please explain the differences between similar options requiring soil gas collection that support why they are not similarly potentially applicable.	The difference between these options is that the "not applicable" process options address landfill gas, which is not produced in significant quantity at the Site. The "potentially applicable" options address soil gas likely containing VOCs. For clarity, the options will be divided into two separate remedial technology groups, landfill gas extraction and soil gas extraction.	Addressed.
33	**Table 4-2, Evaluation of Remedial Technologies and Process Options for Soil/Solid Waste or Soil Gas, Page 2**	The basis for the statement, "Long-term effectiveness has not been demonstrated" for the process option "Solidifying/Stabilizing Additive" is not provided. There are sites where solidified wastes have been present for 15 to 20 years or more without problem and other sites are effectively implementing this technology/process option. Please revise the quoted statement or provide justification for this statement.	Per our April 19, 2011 meeting, *ex situ* solidification/stabilization will be retained.	Addressed.

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34	**Table 4-2, Evaluation of Remedial Technologies and Process Options for Soil/Solid Waste or Soil Gas, Page 4**	Under the process options heading, "Soil Vapor Intrusion Barrier" and "Sub-slab Depressurization" associated with the General Response Action "Vapor-Phase Treatment," the entry indicates that "no buildings are currently close enough to VOC sources to be at risk;" however, data and soil-gas plume concentration delineation maps are not provided to verify this claim. Please provide data and soil-gas concentration plume maps to verify that existing buildings are not at risk for vapor intrusion concerns.	Soil gas data are presented in Appendices A and B. A figure will be added in Appendix B showing the risk levels, and associated buildings and VOC hot spot areas; a discussion of the figure will also be added to Appendix B. The rationale for elimination for these process options will be changed to: "Retained – potentially applies to new building construction; however, these process options are not carried through the FS as plans for any new construction are unknown at this time." Note that in Table 5-1, page 14 of 15, Land Use Institutional Controls, item 4 of the list of potential land use controls states: "requirement of assessment and mitigation of potential vapor intrusion hazards to buildings."	Addressed.

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35	**Section 5.2, Alternative SW-2: Institutional Controls and Groundwater Monitoring, Page 5-2**	Since groundwater flows to the northeast or east-northeast, the proposal to use only existing well UCD1-066 to monitor the eastern VOC hot spot is not sufficient. This well is located southeast of the VOC hot spot. Please propose an additional well to the northeast of this hot spot. Also, the text references Table 5-1 to provide details about groundwater monitoring but Table 5-1 does not list the specific wells proposed for groundwater monitoring. Please revise the FS to provide a list of all wells that are proposed for monitoring under this alternative. Finally, based on previous groundwater monitoring reports, there are only two wells to monitor Landfill Unit 3 (LFU-3), which does not provide full downgradient coverage. There are limited wells downgradient of other disposal units. Please propose additional wells to provide full downgradient monitoring of each landfill and disposal unit.	Downgradient well coverage will be reviewed and additional monitoring wells will be proposed, as appropriate. A list of wells included in the groundwater monitoring network will be added to a new Table 5-3. Note that these will be HSU-1 wells. See response to RWQCB comment 5. See response above.	HSU-2 wells to be decommissioned would also be considered for replacement as shown on Table 5-3.
36	**Figure 5-1, Alternative SW-2: Institutional Controls and Groundwater Monitoring**	Since groundwater monitoring is a key component of this alternative, all monitoring wells that are proposed for monitoring should be included on this figure.	Wells proposed for monitoring under each alternative will be added to Figures 5-1 through 5-8. As noted on these figures, "Alternative details are subject to refinement and/or modification in post FS remediation documents."	Addressed.
37	**Table 5-1, Description and Applicability of Remedial Action Alternative Components for Soil/Solid Waste, Page 13**	The "Groundwater and Storm Water Monitoring" discussion references "CAM 17" metals but does not define CAM 17. For clarity, please define what metals are included as part of CAM 17 metals.	The following metals are included in CAM 17 (California Administrative Manual, presently known as California Code of Regulations): antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, vanadium, and zinc. This information will be added as a footnote to Table 5-1.	Addressed.

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38	**Section 5.4, Alternative SW-4: "Hot Spot" Removal, Three Asphalt Covers, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 5-4**	This alternative includes the retention of Buildings H-292 and H-293 with an asphalt pavement covering surrounding the southern portions of the buildings (Figure 5-3), but does not address the proposed extent of VOC removal due to excavation of the "VOC Hot Spots," the potential for VOCs being left in place and at what concentrations, and whether or not the asphalt covering may increase the potential for vapor collection (and vapor intrusion) under the existing buildings. Please provide a discussion relative to the potential impacts of remaining VOCs relative to the asphalt covering and the existing buildings.	Detailed information regarding removal of the VOC hot spot area is provided on Table 5-1, page 8 of 15. The VOC soil gas "hot spots," would be excavated to 20 feet bgs. The excavation depth of 20 feet bgs is five feet deeper than the measured maximum VOC concentration at 15 feet bgs. Detailed analysis regarding what is left in place is presented in Section 6, specifically on Table 6-7 and discussed in Section 6.4.3. As shown on Table 6-7, chloroform would remain at a maximum concentration of 920 micrograms per cubic meter at 25 feet bgs at location LF2-1 (this is the location closest to Building H-293 (Table B-8, Appendix B). This results in an estimated risk of 3 x 10^{-6} for the age-adjusted adult (Appendix B).	Under Alternative SW-4 (now SW-5), the referenced buildings will be removed.

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39	**Section 5.4, Alternative SW-4: "Hot Spot" Removal, Three Asphalt Covers, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 5-5**	It is unclear why item 4 states that the VOC hot spot on the east side of the Eastern Trenches will remain in place when this alternative incorporates item 5 from Alternative SW-3, which includes excavation of the eastern VOC hot spot. Please resolve this discrepancy.	The text was re-worded as follows: LFU-1, LFU-2, and LFU-3, the ET and WBH areas, would be graded and covered with imported, clean, low-permeability soil; an HDPE liner and drainage mat, or equivalent; and an asphalt cap, as described in Table 5-1. Under this alternative, the VOC "hot spot" areas would also be covered with asphalt after excavation, waste disposal, and backfilling.	Element 25 in Section 5.5 was re-worded as follows: "LFU-1, LFU-2, LFU-3, the ET, and the WBH areas would be graded and covered with clean, compacted, low-permeability soil and base rock, as needed, an HDPE liner and drainage mat (or equivalent), and an asphalt cap, as described in Table 5 1. Under this alternative, the VOC "hot spot" areas would also be covered with asphalt after excavation, waste disposal, and backfilling; the eastern half of the ET VOC "hot spot" would be backfilled with clean fill. The cap construction adjacent to the northern landward levee toe of Putah Creek would comply with the levee maintenance easement requirements."
40	**Section 5.4, Alternative SW-5: "Hot Spot" Removal, Three Multiple-Layer Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 5-5**	Item two indicates that nine on-site buildings will be demolished and that "some of these buildings could be replaced or relocated;" however the discussion does not address what future considerations would be necessary to prevent future potential construction from compromising the integrity of the cap and whether or not vapor intrusion mitigation would be necessary. Special provisions would be necessary to allow for any future construction within the footprint of a designated cap. Please provide in this section and corresponding Table 5-1 a discussion relative to considerations or controls necessary to address future construction within or near the capped units.	Comment noted. This information is provided in Table 5-1, page 14 of 15.	Addressed

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41	**Section 5.5, Alternative SW-5: "Hot Spot" Removal, Three Multiple-Layer Caps, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 5-6**	Item number five references a "density-driven convection [DDC] groundwater remediation system;" however, the corresponding Figure 5-4 does not include identification and location of this unit. Please provide the identification and location of the DDC unit on Figure 5-4.	The location of the DDC will be added to Figure 2-1, Site Features and each figure in Section 5.	Addressed
42	**Section 5.7, Alternative SW-7: "Hot Spot" Removal, Consolidate Waste into One On-Site Capped and Lined Corrective Action Management Unit, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 5-7**	Item two indicates that the clean excavated soils would be used as backfill and that the "amount of clean soil available would be sufficient to fill the expected volume of the excavated areas, making a 1:1 exchange of clean soil for excavated waste;." however, data to support this assumption could not be identified within the data presented in Appendix E, Volume Estimates. Please provide quantified verification, with reference to and consistent with the Appendix E calculations, that the clean excavated waste will be sufficient volume for backfill.	Appendix E will be reorganized such that volume information for each alternative will be transparent. Section 5 will be consistent with the volumes presented in Appendix E. Note that the information is currently presented in Appendix E, but will be reorganized for easier reference.	Tables E-10 and E-12 provide support for this assumption.

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43	**Table 5-1, Description and Applicability of Remedial Action Alternative Components for Soil/Solid Waste, Page 2**	This table indicates a "Pre-Construction Biological Survey" will be completed prior to the initiation of site work, but does not evaluate the costs for potential mitigation. Table 6-6 and Appendix F, Cost Estimates include costs associated with completion of the study but do not address costs associated with the uncertainty of whether mitigation will be required as a result of this study. Please provide discussion relative to the management of the uncertainty due to the future biological study, including potential future costs of mitigation or contingency.	Based on a prior biological survey at the site, mitigation beyond what is required for the VELB is assumed to be a very low likelihood. Appendix D, Section D1.3 and Table D-4 discuss endangered species in more detail. Based on this evaluation, additional mitigation costs are not anticipated.	Addressed.

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44	**Section 5.9, Alternative SW-9: Excavate and Dispose of Waste Off-Site, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 5-8 and Section 6.9, Alternative SW-9: Excavate and Dispose of Waste Off-Site, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Pages 6-30 and 6-31**	Since all soil and waste will be excavated under this alternative, ICs and groundwater monitoring should not be necessary (note that groundwater monitoring may still be necessary for future alternatives for the groundwater plumes, but the sources of these plumes in the disposal units will have been removed, but these activities and costs will be included in the upcoming Groundwater FS). It appears that this alternative should be a "Clean-closure" alternative. If not, the text should explain why clean-closure is not proposed. Please revise Alternative SW-9 to propose a clean-closure alternative, including deleting institutional controls, groundwater monitoring and all costs associated with ongoing post-excavation activities at these disposal units. Please also revise other sections of the FS (e.g., Section 7) to reflect this change.	Table 6-16 shows the constituents in each of the land disposal areas above PCGs present after excavation of waste under Alternative SW-9, note depths are greater than 20 feet bgs. The text in Section 6.9.3 (page 6-32) states: "Although concentrations of COCs greater than PCGs would remain in place at depths greater than 20 feet bgs, human and ecological exposure would be limited." As such, subsurface hazard notification, deed restrictions, and groundwater monitoring are included in this alternative. Per our April 19, 2011 meeting, a sentence will be added to the beginning of this section stating that the alternatives do not address COC present at depths below 20 feet bgs. See response to RWQCB comment 6.	Addressed.
45	**Section 6.1, Alternative SW-1: No Further Action, Page 6-2**	Consideration was not given in the "no action" alternative for the need to properly abandon monitoring wells, which would no longer be used. Please include the inclusion of well abandonment as part of the "no action" alternative and include associated costs as part of the cost analysis.	Monitoring well abandonment and associated costs will be deferred to the No Action alternative in the groundwater FS. This statement will be added to the text.	Addressed.

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46	**Section 6.1, Alternative SW-1: No Further Action, Page 6-2**	The US EPA RI/FS Guidance specifically refers to the "no action" alternative with specific guidance for the analysis. Consistent with the US EPA RI/FS Guidance nomenclature, please revise the title of this alternative to the "No Action" alternative and revise all other references as appropriate.	Per 40 CFR 300.430(e)(6), "The no-action alternative, which may be no further action if some removal or remedial action has already occurred at the site, shall be developed." Since removal actions have previously occurred at the Waste Burial Holes, this is a No Further Action alternative. Per our April 19, 2011 meeting, this alternative will be called No Action/No Further Action.	Addressed.
47	**Section 6.2, Alternative SW-2: Institutional Controls and Groundwater Monitoring, Page 6-4**	Alternative SW-2 should include a Soils Management Plan to allow managing excavated soil and waste should future excavation be necessary (e.g., for infrastructure installation or replacement). Please revise Alternative SW-2 to include a Soils Management Plan.	A Soil Management Plan will be mentioned in the first paragraph of each major section in Section 6.	Addressed.
48	**Sections 6.3.3, 6.4.3, 6.5.3, 6.6.3, 6.7.3, 6.8.3, 6.9.3, Long-Term Effectiveness and Permanence, Pages 6-8, 12, 16, 20, 24, 28, 31 respectively**	These sections each state "The VOC "hot spot" areas would also be removed, eliminating the future potential for vapor intrusion risk should buildings be built and occupied in the area;" however data is not provided demonstrating the extent of the soil gas plume relative to the VOC "hot spot" areas or existing buildings in order to show that the expected effectiveness of the anticipated removal action will eliminate vapor intrusion concerns. Additionally, the source of the soil gas plume would need to be documented as being within the hot spot areas proposed for excavation. Please provide data and graphic demonstration of the VOC plume areas with respect to the elevated soil gas levels clearly showing that the excavation of the VOC "hot spot" areas will reduce risk due to soil gas to acceptable levels.	Soil gas data are presented in Appendices A and B. A figure will be added in Appendix B showing the risk levels, and associated buildings and VOC hot spot areas; a discussion of the figure will also be added to Appendix B. The text in the referenced sections in Section 6 will refer the reader to the appropriate sections of Appendix B.	Addressed.

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49	**Sections 6.2.1, 6.3.1, 6.4.1, 6.5.1, 6.6.1, 6.7.1, 6.8.1, and 6.9.1, Pages 6-4, 6-7, 6-11, 6-15, 6-19, 6-23, 6-27, and 6-31, respectively**	The first sentence of these sections should not include the phrase "for unrestricted land use in each land disposal unit," in discussing the risk under "Protection of Human Health and the Environment. Unrestricted reuse, unlimited excavation would be permitted, allowing contact with wastes and contaminants, including radionuclides. Since the disposal units have not been fully characterized, there may be higher concentrations and other contaminants present. Therefore, unrestricted use is not an option for these disposal units. Please delete the quoted phrase from each of these sections.	Per our April 19, 2011 meeting, the first sentence of each of the referenced sections will be deleted.	Addressed.
50	**Section 6.9, Excavate and Dispose of Waste Off-Site, Institutional Controls, Drainage Enhancements, and Groundwater Monitoring, Page 6-30**	This alternative consists of excavation and removal of wastes from all waste units and disposal off site, yet the analysis does not indicate what wastes would remain such that unrestricted use would not be achieved. It is unclear why this alternative does not result in meeting cleanup goals sufficient for unrestricted use. Please provide clarification of wastes remaining and conditions which prevent unrestricted use after implementation of this alternative or explain why an unrestricted use scenario is not feasible.	Table 6-16 shows the constituents in each of the land disposal areas above PCGs present after excavation of waste under Alternative SW-9, note depths are greater than 20 feet bgs. The text in Section 6.9.3 (page 6-32) states: "Although concentrations of COCs greater than PCGs would remain in place at depths greater than 20 feet bgs, human and ecological exposure would be limited." As such, subsurface hazard notification, deed restrictions, and groundwater monitoring are included in this alternative. Per our April 19, 2011 meeting, a sentence will be added just before the beginning of Section 6.1 stating that the alternatives do not address COCs present at depths below 20 feet bgs.	Addressed.

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51	**Tables 6-1, 6-4, 6-7, 6-9, 6-11, 6-13, 6-16, Concentrations of Constituents of Concern Remaining in Soil and Soil Gas Above Preliminary Cleanup Goals**	The individual tables cannot be assembled to comprise a detailed assessment of the alternatives as outlined in the NCP. For transparency and clarity of the comparison, please provide a summary table of the data which identifies the remaining concentrations of COCs for each alternative.	A summary table comparing the alternatives with remaining concentrations in soil will be added to Section 7.	Addressed.
52	**Section 7.0, Comparative Analysis of Remedial Alternatives, Page 7-1**	This section does not include any discussion of low-level radioactive waste (LLRW), yet Section 6.3.5 indicates that "It is likely that LLRW would be encountered during PTW removal" and Table 6-3 indicates estimated volumes of LLRW wastes for Alternatives SW-3 through SW-9. As an identified COC, the remedial alternative comparative analysis should include discussion relative to LLRW. Please include discussion of the remedial alternative comparisons relative to the management and cleanup of LLRW.	Remedial alternative comparisons with respect to LLRW will be added to Section 7. See responses to comments on Appendix E. Note that a table comparing alternatives will also be added to Section 7.	Table 6-2 provides the estimated amount of LLRW to be sent for off-Site disposal under each alternative. Most of the alternatives (previously SW-3 through SW-7, now SW-3 through SW-8) rely on maintaining LLRW in on-Site CAMUs.

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53	**Appendix A, Section 2.5, Chemicals of Concern and Preliminary Cleanup Goals, Page 2-11**	Since landfills are heterogeneous, it is possible that constituents that were not detected in the limited number of soil samples that were utilized for this study may be detected in confirmation samples for any remedy that includes excavation and consolidation or off-site disposal of one or more disposal units. If this occurs, it is unclear how cleanup goals would be established. Since metals and other constituents could be detected at elevated concentrations in these confirmation samples, it is recommended that cleanup goals be established for all detected chemicals to date, including those that were detected in less than 5 percent of samples and that the FS include a procedure for establishing additional cleanup goals. Please provide cleanup goals for all metals and organic compounds detected to date and include a procedure for establishing additional cleanup goals in the FS.	Per the final Feasibility Study Data Gaps Work Plan (August 26, 2008), "Analytes with frequency of detection less than 5% were eliminated from any further analysis." Appendix A was finalized on February 12, 2010. No changes to this document are proposed. In new Appendix G, a methodology by which to select PCGs at the confirmation sample planning stage of the cleanup for constituents that had not been previously detected or selected as COCs will be provided.	Addressed.
54	**Appendix A, Section 3.1.1, Vapor Intrusion Evaluation Overview, Page 3-1**	The second sentence of this section identifies chloroform and tetrachloroethene (PCE) as "preliminary COCs" in vadose zone soil in some areas based on estimated excess cancer risks above 1E-06 in the VI evaluation; however, the Executive Summary (page ES-4); Section 3.3, Vapor Intrusion Conclusions and Recommendations (page 3-3); Table 3-1, Maximum Soil Vapor Concentrations and Risk-Based Screening Values for Hypothetical Future Onsite Residents; and Table 3-2, Maximum Soil Vapor Concentrations and Risk-Based Screening Values for Onsite Indoor Researchers, report 1,2-dichloropropane as another primary COC in these areas. Please revise the Report to address these discrepancies.	The Appendix B vapor intrusion evaluation supersedes the discussion in Appendix A. This information will be added to the text and the discrepancies between text, tables and appendices will be resolved.	Addressed.

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55	**Appendix A, Table 3-1, Maximum Soil Vapor Concentrations and Risk-Based Screening Values for Hypothetical Future Onsite Residents**	This table contains a column that presents California Human Health Screening Levels (CHHSLs) issued by the California Environmental Protection Agency in 2005, but the 2005 CHHSLs may not incorporate the most current toxicity data available. In the absence of more recent State-issued indoor air screening levels and to ensure that screening values incorporate the most current toxicity data, please include EPA's RSLs for indoor air, which are accessible online at www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. While the latest version of the RSLs to date was issued in November 2010, this website is updated as new toxicity values become available.	Appendix A was finalized on February 12, 2010. No changes to this document are proposed. Note that the frequent changes in toxicity values (i.e., semi-annual RSL updates) cannot be incorporated in real time. UC Davis suggests delaying RSL-related updates until the final feasibility study.	Addressed.
56	**Appendix B, Vapor Intrusion Risk Assessment, Section B2.2, Toxicity Data, Page B-3**	The first paragraph cites the December 2009 EPA RSL tables as the source for toxicity data used in the vapor intrusion HHRA; however, the May 2010 EPA RSLs are cited in the main text and Appendix C of the Draft FS report. Please ensure that the most updated source of RSLs – tables issued in November 2010, as of this review – are used and consistently cited in the FS report. Further, the RSL tables should not constitute the primary source of toxicity values used in a risk assessment, since the RSL table is only periodically updated. Instead, EPA's Integrated Risk Information System (IRIS; www.epa.gov/iris/) and California EPA's toxicity value website (www.oehha.ca.gov/risk/ChemicalDB/index.asp) should be checked to ensure that the most current toxicity values are used in the HHRA. Please ensure that the most current toxicity values were used in the HHRA.	The May 2010 RSLs were used for the main body of the FS as well as Appendix C, as these were the most recent values available at the time of report preparation and delivery to UC Davis for review. Because the vapor intrusion appendix was prepared prior to May 2010, the December 2009 RSLs were used. Because calculations need to be verified based on EPA comment 57, the toxicity values for this appendix will be updated. The most recent toxicity values from IRIS and OEHHA will be used. In cases where no toxicity values are available from these sources, values from ATSDR will be used, as cited in the November 2010 RSLs.	Addressed.

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57	**Appendix B, Vapor Intrusion Risk Assessment, Section B2.1 Exposure Assumptions and Model Input Values, Page B-3**	This section states that for on-site indoor researcher exposures, "the calculation option for soil gas advection rates" was used, but this is not justified because the building dimensions were not changed from the default building assumptions. Thus, according to DTSC guidance (2005), the default soil gas advection rate should be used. Consistent with regulatory guidance, please utilize the default soil gas advection rate for the on-site indoor researcher unless the building size is assumed to be larger than 10 meters by 10 meters.	In LFU-2, the building size of the Geriatrics Buildings is larger than 10 meters by 10 meters. As such, vapor intrusion risk for the on-Site indoor researcher in these buildings will be re-calculated using the Johnson and Ettinger model-derived soil gas advection rate for this building size. Building sizes in the other land disposal units and other buildings within LFU-2 are smaller than 10 meters by 10 meters; default parameters used for these buildings in the Draft version of this appendix have not been modified.	Addressed.
58	**Appendix B, Vapor Intrusion Risk Assessment, Section B2.3, Risk Estimate Results, Page B-3**	This section reports that "[t]otal cancer risk to the resident adult was below 1E-06 at Landfill Unit No. 3 and Southern Trenches;" however, risk estimates greater than 1E-06 are reported for Landfill Unit No. 3 in the subsequent bulleted list of exceedences, specifically, "Landfill Unit No. 3 at 1.2E-06 at 25 feet [below ground surface (bgs)." Please resolve this discrepancy.	The bullet for Landfill No. 3 will be deleted.	The text was revised to state: "Total cancer risk to the age-adjusted adult was equal to or below 1E-06 at the ST. Total risk above 1E-06 was calculated for the following locations." The bullet for LFU-3 at 1.2E-06 at 25 feet bgs was retained. This risk is near the 1E-06 risk threshold and is located at depth. Risks at shallower depths are below the point of departure.

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59	**Appendix C, Update – Soil/Solid Waste Human Health Constituents of Concern for Unrestricted Land Use**	The following comments apply to Appendix C as a whole: a) The title of Appendix C suggests that it only updates the soil/solid waste COCs. However, as shown in Tables C-22 and C-23, updated cancer risk and noncancer hazard estimates are also presented in this appendix, respectively. The title of Appendix C should be revised to indicate that it updates the constituents of concern as well as the risk estimates presented in original HHRA – Part C.	a) Comment noted. The purpose of Appendix C was to select COCs for the FS, not to redo the baseline risk assessment (i.e., an update to HHRA – Part C not HHRA Part A). However, to select COCs, comparison with updated risk screening levels had to be conducted and compared to the COCs selected in the HHRA Part C - 2006. Updated cancer risk and non-cancer hazards were therefore calculated. Risks were updated for COCs only. The title of Appendix C will be revised – Updated Risk Characterization and Constituents of Concern for the Feasibility Study for the UC Davis Soil/Solid Waste Areas.	Appendix C title was revised to: "Update - Soil/Solid Waste Risk Characterization and Human Health Constituents of Concern"
		b) As indicated in an earlier Specific Comment, Appendix C updates the COC selection and risk estimates for the hypothetical on-Site resident receptor only; however, no explanation is provided for excluding updated results for the other receptors evaluated in the original HHRA – Part C. Please include a discussion of this issue.	b) As noted above, Appendix C was not meant as a revised baseline risk assessment, but as an update to HHRA Part C – Risk Characterization to select/confirm COCs based on the original risk assessment. As a conservative measure, the residential exposure scenario was used to select COCs (such that COCs would not be overlooked if a less conservative exposure scenario was used). This sentence will be added to the text of Appendix C.	Addressed.

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60	**Appendix C, Update – Soil/Solid Waste Human Health Constituents of Concern for Unrestricted Land Use, Section C2, Summary of 2006 Site-Wide Risk Assessment, Part C, Page C-1**	The first bullet in this section states that the 2004 PRGs did not consider the plant ingestion pathway, but the text should explain how this pathway was evaluated in the HHRA. Section C4.5 (Feasibility Study Chemicals of Concern for Soil/Solid Waste, Page C-8) adds that the 2010 RSLs used in this updated evaluation also did not include the plant ingestion pathway. Further explanation is warranted as to how the plant ingestion pathway was evaluated in the HHRA, as the risk results of this exposure pathway are presented in Tables C-22 and C-23.	The HHRA – Part A discusses how the plant ingestion pathway was evaluated. Tables C-22 and C-23 are summaries directly from the baseline risk assessment (sources shown at the bottom of the tables – MWH, 2004 and B&C, 2006). Explanations regarding the plant ingestion pathway are provided in these references. As noted above, Appendix C is not meant to be a revised baseline risk assessment, but a selection/confirmation of COCs as presented in the HHRA – Part C. The plant ingestion pathway is not evaluated in the RSL calculations, but as noted in Section C4.5: "Although this pathway was not specifically evaluated in this supplement for organics or metals (because the calculation of the 2010 RSLs does not include this pathway), it is unlikely that preliminary COCs have been overlooked because other considerations including spatial distribution, detection frequency, likelihood of historical use and/or release, data quality, and contribution of background to risk were also evaluated such that COCs could be appropriately selected. This methodology is similar to Tier I of the human health risk assessment (MWH, 2004), in which maximum concentrations of constituents were screened against the US EPA's 2004 PRGs, which also did not incorporate the plant ingestion pathway. The PRGs for radiological constituents do account for the plant ingestion pathway."	The excerpt from Section C4.5 reads: "Although this pathway was not specifically evaluated for organics or metals in this supplement (because the calculation of the 2010 RSLs does not include this pathway), it is unlikely that preliminary COCs have been overlooked, because other considerations, including spatial distribution, detection frequency, likelihood of historical use and/or release, data quality, and contribution of background to risk, were also evaluated so that COCs could be appropriately selected. This methodology is similar to Tier I of the human health risk assessment (HHRA – Part A), in which maximum concentrations of constituents were screened against the US EPA's 2002 PRGs, which also did not incorporate the plant ingestion pathway. Further, the HHRA – Part C emphasized the high level of uncertainty in the model used to estimate risk for ingestion of homegrown produce; modeling of chemical uptake by plants was theoretical and had not been validated by field studies. Therefore, any risk associated with this exposure pathway was given less weight during the risk management decision process. The PRGs for radiological constituents do account for the plant ingestion pathway."

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61	**Appendix E, Section E2.1, Eastern Trenches, Page E-3 and Figure E-1, Soil Excavation Areas for Eastern Trenches 0 Volume Estimates**	This section indicates "five additional shorter east-west disposal trenches are presumed to be present in the northernmost area of the ET (ET north)" which are not shown on the associated Figure E-1; however, it is not clear whether the identified trenches are included in the excavation calculations since they are not included on Figure E-1. Please clarify whether or not these trenches are included in the excavation calculations; if not please include them. Additionally, ensure that the five trenches in questions are shown on Figure E-1. In addition, the calculated volume appears to be inconsistent with some figures. Figure E-1 indicates excavation of "ET North" in the area bounded by the green boundary, yet Figures 5-4 through 5-8 include the area within the blue color boundary. It is appears based on the volumes presented on Table E-1 that the zone between the areas designated as "ET North"(green) and "ET All" (blue) on Figure E-1 was not included in the volume calculations. Please clarify the expanse of the areas included in the volume calculations and ensure consistency between the text, Figure E-1, and Table E-1. Finally, there is another apparent discrepancy in the volume calculations. Section E.2.1 discusses two excavation areas referred to as "Pothole 1" and "Pothole 2" with excavation depths of 20 feet and 15 feet respectively. These areas are also identified on Figure E-1. However the volume calculations presented in Table E-1 do not identify volumes associated with these areas, thus it appears the additional excavation depth associated with these areas is not included in the volume calculations. Please correct or explain this discrepancy.	Yes, the trenches are included in the excavation calculations for the ET and LFU-2. Language will be added to explain that these trenches were included in the volume estimates. Disposal trench locations presented on Figure 3-1 of the DOE RI/FS Work Plan (April 1995) will be added to Figures E-1through E-6. Figure 3-1 from the DOE RI/FS Work Plan also shows an approximate disposal location for the Hopland Field Station Disposal Area. The Figures in Section 5 will be revised to match those in the revised Appendix E. Each volume calculation will be verified to make sure the text, figures, tables, costs, agree. After further detailed data evaluation, the pothole areas are no longer differentiated in the excavation of the Eastern Trenches. References to potholes will be deleted.	Disposal trench locations were added to Figures E-1 through E-5.

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62	**Appendix E, Section E2.3, Landfill Unit No. 2, Page E-5 and Figure E-3, Soil Excavation Areas for Landfill Unit 2 – Volume Estimates**	The use of the term "LFU-2 All" is confusing as according to Figure E-3 and volume calculations in Table E-1, the entire area of LFU-2 is not included in the excavation totals. However Figures 5-6 through 5-8 indicate the entire area of LFU-2 for excavation. Please clarify the areas of excavation and ensure consistency between the text, Figures 5-6 through 5-8, Figure E-3, and Table E-1. Further, it appears additional volume will require excavation. Figure E-3 identifies cells for excavation within the LFU-2 area. These cells are spaced relatively closely, which raises the question about the practicality of actual field excavation being limited to the designated area boundaries. A more conservative and practical quantitation of the excavation volumes would be calculations based upon the entire LFU-2 boundaries. This is also consistent with the excavation areas shown on Figures 5-6 through 5-8. The total volumes could be about 30 % greater taking in account the entire area for excavation. Please correct the LFU-2 volume calculations to consider field excavation capabilities and to be consistent with Figures 5-6 through 5-8.	Sub-area names will be revised for sake of clarity. The Figures in Section 5 will be revised to match those in the revised Appendix E. Each volume calculation will be verified to make sure the text, figures, tables, costs, agree. Tables combining the information from Tables E-2 and E-8 for each alternative will be developed. Comment noted. The current volume estimate and costs associated with the delineated waste cells in LFU-2 will remain (note, figures will be revised to reflect waste cell excavation).	Tables E-1, E-11, E-12, E-13, and E-14 allow for the volumes generated under each alternative to be followed from initial subarea excavation to cumulative volumes for each alternative.
63	**Appendix E, Section E2.4, Landfill Unit No. 3, Page E-5**	The use of the term "LFU-3 All" is confusing as according to Figure E-4 and volume calculations in Table E-1, the entire area of LFU-3 is not included in the excavation totals. However, Figures 5-5 through 5-8 indicate the entire area of LFU-3 for excavation. Please clarify the areas of excavation and ensure consistency between the text, Figures 5-6 through 5-8, Figure E-3, and Table E-1.	Sub-area names will be revised for sake of clarity. The Figures in Section 5 will be revised to match those in the revised Appendix E. Each volume calculation will be verified to make sure the text, figures, tables, costs, agree.	Addressed.

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64	**Appendix E, Section E2.6, Southern Trenches and Hopland Field Station Disposal Area (HFSDA), Page E-6**	The volume calculations for the HFSDA area in Table E-1 are inconsistent with the area designated on Figure E-6. According to the scale given on Figure E-6 and assuming a 6 foot depth, the volume is approximately 470 cubic yards (CY) instead of the 19 CY indicated on Table E-1. Please address the discrepancy between Figure E-6 and the calculated volume on Table E-1.	The volume of the HFSDA will be re-evaluated and will be made consistent between Figure E-6 and Table E-1.	The HFSDA is shown on Figure E-5.
65	**Appendix E, Section E2.7, Other Areas, Page E-6 and E-7**	The areas identified in this section are not identified on any figures associated with the excavation volume calculations nor are dimensions provided by which the volumes in Table E-1 can be verified. Please provide a figure and dimensions by which the volume calculations presented in Appendix E can be verified.	Comment noted. The following three areas are shown on figures, but are not referenced in this section of the text: -Volume of Non-impacted Clean Area Between LFU-1 and LFU-2 -Trenches with Known Principal Threat Waste (ET) -Trenches with Known Principal Threat Waste (LFU-1 and LFU-2) A figure and dimensions by which the volume calculations can be verified will be provided in the revision to Appendix E.	Note that Section E2.7 now discusses only the Non-Impacted Area between LFU-1 and LFU-2 shown on Figure E-7. The Trenches with Known Principal Threat Waste are now discussed in earlier Sections of E2. Subareas introduced in Section E2 are shown on Figures E-1 through E-7. Dimensions of the subareas are provided in Table E-1.

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66	**Appendix E, Section E3, Methodology for Estimating Waste Category Percentages, Page E-7**	The presentation of the methodology for estimating waste category percentages does not clearly demonstrate the correlation between Table E-8, Tables E-1-1 through E-1-18, and Figures E-7 through E-21, thus preventing verification of the waste category volumes and percentages. Please present the methodology used such that the calculations can be verified to ensure the cost estimates are within the error range of -30%/+50%.	Agreed. Waste category percentages were estimated based on analytical data provided in Attachments E-1 through E-18. A clearer explanation of this analysis will be added to Appendix E. The percentage of waste and soil was estimated using trench logs, geophysical studies, historic reports, and aerial photos. These assumptions are combined to form Figures E-7 through E-21. The figures depicting waste categorization provided estimated waste volumes for costing. This process will be described in the text and the organization of the appendix will be re-arranged to parallel the process. Figures E-7 through E-21 will cover each sub-area listed in Appendix E tables and correspond to sub-areas depicted in Appendix E figures.	Results from the waste characterization analyses are summarized in Attachment E-1-23, and feed directly into Table E-10. For greater clarity, Figures E-7 through E-21 were replaced by a conceptual Figure, E-9, and the data from those figures were moved to the new Table E-10.
67	**Appendix E, Table E-8, Summary of Volume Estimates by Waste Category**	This table summarizes the volume estimates by waste category only and does not provide a similar breakdown by alternative such that the data can be easily compared between alternatives. As a result, the associated volumes per alternative presented in Appendix F (Cost Estimates) cannot be verified against the volume calculations presented in Appendix E. Please provide a table which summarizes volumes by waste category for comparison of the alternatives with respect to the same waste categories used for Table E-8.	Tables will make clear what remedial action will occur in each subarea under each alternative. A table will be provided showing the volume breakdown by waste category to allow comparisons between alternatives. Further, the sub-areas will be identified such that they can be easily traced to the waste categories (Figures E-7 through E-21) and presented on the figures in Appendix E (Figures E-1 through E-6). This change in organizational structure should allow the reader to understand what volumes fed into the cost estimates provided in Appendix F.	Note: Figures E-7 through E-21 were replaced by Table E-10.

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68	**Appendix F – Cost Estimates**	For all alternatives which include excavation activities the cost assumptions and cost estimates do not indicate inclusion of dust control measures, when FS Section 7.5 (Short-term Effectiveness) indicates that dust control measures would be required to mitigate risks due to fugitive dust generation. Fugitive dust generation is associated with any of the alternatives that include excavation of soils. For consistency with FS Section 7.5, please include dust control measures as a cost element associated with excavation activities.	Agreed. The cost for dust control measures will be added to the estimate for consistency.	The costs for dust control measures were previously included under the excavation cost estimates. This will be made clear in the Appendix F costing assumptions (Attachments F-2a, F-3a, F-4a, F-5a, F-6a, F-7a, F-8a, F-9a, and F-10a.
69	**Attachment F-2a-2, Alternative SW-2 Description, Page 1**	The components list does not include the FS Table 5-1 "Planning / Oversight / General" and "Decontamination Facilities" components identified for Alternative SW-2. Cost components should be consistent with the FS Section 5.2 and Table 5-1. Please include these components in the cost estimations.	Agreed. These components will be listed according to Table 5-1.	Addressed.
70	**Attachment F-2a-2, Institutional Controls, Page 2**	Only four access control signs are indicated in the costs. This number seems low considering the site size and that the three LFU units are separate areas (signage is proportional to the overall perimeter size). Signage for institutional control (IC) application would be necessary on multiple sides of the units and depend on length of fencing and access points. This comment is applicable to all alternatives with ICs included. Please revise the number of signs and associated costs or discuss the placement and justification for the number of access control signs necessary.	Agree. Additional signage will be added. Signage will be provided at access points and at locations every 150 feet of the perimeter fence.	Addressed.

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71	**Attachments F-3a-1, F-4a-1, F-5a-1, F-6a-1, F-7a-1, F-8a-1, F-9a-1, Alternative Description, Page 1**	The alternatives components lists do not include the FS Table 5-1 "Planning / Oversight / General" component identified for each of these alternatives. Cost components should be consistent with the FS Section 5.2 and Table 5-1. Although similar activities are included in the more specific cost estimate details for the excavations component, under "Professional Labor Management Activities," the activities listed in Table 5-1 for this component would apply to all activities to some degree. Please include this component and all applicable activities as part of each alternative cost estimate to be consistent with Table 5-1 or explain how this cost is captured elsewhere.	Agree. These components will be listed according to Table 5-1. Modification in language and organization will be made in Appendix F to assure the reader that Table 5-1 components were included.	Addressed.
72	**Attachment F-3a-1, Alternative SW-3 Description, Page 1; Attachment F-4a-1, Alternative SW-4 Description, Page 1**	These sections indicate that alternative components include "Replace GW [ground water] Monitoring Wells;" however, the FS Section 5.3 and Table 5-1 description of alternative SW-3 and SW-4 do not include this component. In the more detailed cost activities discussion, it is apparent that the associated work is a modification of the existing GW monitoring wells rather than replacement. However, the label as "Replace GW Monitoring Wells" is carried through in the assembly level reports and spreadsheets. Please resolve this discrepancy.	More specific terminology will be used; the correction will be made in RACER and carried throughout Alternatives SW-3 and SW-4.	Addressed.

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1	**RCRA Considerations**	Alternatives 3, 4 and 5 seem to include some degree of moving soils around on site without designating a CAMU. Under the Resource Conservation and Recovery Act (RCRA) materials that are excavated from landfills and other hazardous waste sites are considered a waste, unless it can be demonstrated that the excavated materials are not a characteristic or listed waste. Therefore for each alternative (SW-3, SW-4 and SW-5) that involves excavating soil and placing it in another location, all of the excavated soil needs to be tested to demonstrate that it is suitable for placement back on site. It is likely that some of this soil will require offsite disposal, so the cost estimates should be revised to include sampling and analysis with a defined percentage of soil costed for offsite disposal. For example, soil with a high lead content that would trigger and disposal restrictions (LDRs) would require offsite disposal or treatment to meet LDR standards. (This does not apply to the Alternatives 6 and 7 which designate a CAMU). The soil also should be screened and analyzed for radioisotopes known to have been used on site and screened for gamma activity to ensure that low level radioactive waste (LLRW) is identified. This will require a materials management plan (MMP) as part of the Remedial Design. Implementation of the MMP will require sorting excavated soil and debris, stockpiling it, sampling and analysis, determining whether the excavated soil and debris can be placed on site or whether it requires treatment and/or offsite disposal. Further, this may require establishing a Treatment Unit (part of the CAMU regulations) if soil must be treated before it can be placed on site or sent offsite for disposal. The FS should also include applicable treatment and disposal standards. Please revise the FS to discuss and cost a MMP and provide sufficient details and costs for implementation of	As agreed at our June 14, 2011 meeting, Alternatives SW-3, -4, and -5 will be designated as CAMUs. A Materials Management Plan for excavated soil will be included as part of any alternative involving excavation and is described in Table 5-1 and was added to the cost in Sections 6 and 7 and Appendix F.	Addressed. New alternative SW-3 will also be designated as a CAMU. Note that Alternative numbers have increased by one due to the inclusion of the new alternative.

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		the MMP. This should include description of the process and costs for sorting excavated materials, stockpiling them, sampling and analysis of all excavated soil/debris, radiological screening of excavated soil and debris, and potential treatment and/or offsite disposal. In addition, please revise the FS to include applicable treatment and disposal standards.		
2	**Identification and Disposal of Principal Threat Waste**	It appears that less Principal Threat Waste (PTW) will be disposed offsite for Alternatives SW-5 and SW-6 than for Alternative SW-4, based on a comparison of Figure 5-3 with Figures 5-4, and 5-5, since five areas (24, 26, TRL-45, TRL-47, and TRL-48) in the Eastern Trenches are not identified as PTW on Figures 5-4 and 5-5 A note in the legends on these figures indicates that PTW will be segregated and disposed offsite, but the FS does not explain how this will be done and it does not appear that sufficient sampling and analysis was included in the cost estimate to accomplish this segregation. Since excavated soil that is considered a listed or characteristic waste should be disposed offsite, the five areas listed above with previously identified PTW in the Eastern Trenches area should also be identified on Figures 5-4 and 5-5. In addition, the text should be revised to explain the process for identifying and segregating PTW. Finally, because it is likely that more PTW is present than identified in the five areas, sufficient sampling should be done to ensure that the rest of the soil that will be excavated and moved does not contain listed or characteristic waste. Please revise the FS to address these issues. Also, the costs for PTW Excavation for Alternatives SW-4 and SW-5 are less than for Alternative SW-3, which also suggests that less PTW will be excavated for Alternatives SW-4 and SW-5. Please resolve or revise the text to explain this discrepancy.	PTW identified in the five trenches in the ET under Alternative SW-4 (Figure 5-3) is also proposed for off-Site disposal under Alternatives SW-5 and SW-6. Because the entire ET area is proposed for excavation under these alternatives, it was inferred that the known PTW would be disposed of off-Site; as noted, this is stated in the legend. Excavation of the PTW trenches in the ET has been added to Figures 5-4 (SW-5) and 5-5 (SW-6). A paragraph will be added to Section 5 explaining how segregation of PTW will take place. Note that the costs for PTW excavation under Alternatives SW-4 and SW-5 are lower than Alternative SW-3, because the cost of the removal and segregation of PTW within the ET trenches is included in the cost of the total excavation of the ET. Costing tables will be reorganized to more clearly indicate which trenches are included under the PTW excavation cost element. The process for identifying and segregating PTW will be added to Table 5-1. Per our June 14, 2011 meeting, additional	Addressed. PTW will also be addressed under new Alternative SW-3. Note that Alternative numbers have increased by one due to the inclusion of the new alternative.

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			PTW exploratory trenches will be included in the description and evaluation of Alternatives SW-3 through SW-6 based on the history of the disposal area and in areas with previously identified geophysical anomalies, but where no historical trenching has occurred.	
3	**Table 5-2, Elements Included in Solid Waste Alternatives**	The entry for Alternative SW-4 is silent about PTW, but this alternative includes excavating and offsite disposal of previously identified PTW. Also, the entry for Alternative SW-5 does not include offsite disposal of PTW, although excavation and segregation of PTW are included. Please revise this table to include excavation, segregation, and offsite disposal of PTW for Alternative SW-4 and offsite disposal of PTW for Alternative SW-5.	Agreed. Table 5-2 will be revised to include excavation, segregation, and off-Site disposal of PTW, as appropriate.	Addressed.

REFERENCE

United States Environmental Protection Agency (EPA). 1991. Role of the Baseline Risk Assessment in Superfund Remedy Selection Decisions. OSWER Directive 9355.0-30. Office of Solid Waste and Emergency Response.

Regional Water Quality Control Board Responses to letter from Kathryn Dominic dated March 21, 2011				
No.	Section No.	Comments	Response to Comments	Modifications
		General Comments		
1		The July 2010 post-construction stormwater permit requirements – specifically, the requirement that UC Davis eliminate 85 % of all site-generated runoff – should be acknowledged as an ARAR for this FS. Because stormwater management is a key component of remedial alternatives SW-3 through SW-9, and the post-construction stormwater requirements are permanent, the stormwater requirements may add significantly to the complexity and cost of these alternatives. The draft FS must propose, for these alternatives, methods of diverting storm water that meet the 85% reduction goal, as well as initial and out-year costs.	A runoff estimate demonstrating that the post-development runoff volume will match the pre-development runoff volumes for storms up to the 85th percentile storm event under each alternative will be provided in the FS. Runoff generated during the 85th percentile event that cannot be captured, infiltrated or evapotranspired will be treated in a flow through device capable of treating runoff at a rate produced during a storm event with twice the hourly rainfall intensity as the 85th percentile event. See response to EPA comment 9.	Weiss used the 85th percentile 24-hour storm event for the UC Davis LEHR Site to represent the mean storm precipitation runoff. Three daily precipitation datasets from Davis were analyzed for frequency statistics. Two datasets were downloaded from the UC IPM Online Statewide Integrated Pest Management (UC IPM) Program (http://www.ipm.ucdavis.edu/Weather/). One station contained data from a NOAA climate station (CA042294, Davis WSW Exp Farm) with data from January 1, 1908 through July 18, 2011. Daily precipitation data were used to approximate the 24-hour storm. Data were screened to remove missing values and no-rain days. Daily precipitation values smaller than 0.01 were also eliminated since these events are unlikely to produce any runoff. The 85th percentile 24-hour (daily) storm event was calculated in Excel from the filtered data set. For the Davis NOAA climate station and Davis TouchTone station, the 85th percentile 24-hour (daily) value was calculated as 0.66 in. For the Davis CIMIS station, the 85th percentile 24-hour (daily) event was calculated to be 0.61. A value of 0.66 in was used in the Urban Runoff Quality Management method (WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998)). Based on these runoff estimates, the alternatives that incorporate engineered surface caps were modified to include enhancements to the surface water drainage system, including the construction of extended detention basins, where applicable. These basins were sized to meet the requirements of both the current UC Davis Storm Water Management Plan (2010) and those proposed in the draft 2011 MS4 Permit (2011). Detailed design information will be provided in the remedial design documents.

Regional Water Quality Control Board Responses to letter from Kathryn Dominic dated March 21, 2011				
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2		The draft FS should include, in either tabular or graphic format, a summary of the quantitative data on nature and extent of contamination. Specifically, the contaminants of concern (COCs) detected, minimum and maximum concentrations detected, horizontal and vertical distributions, and number of detections in each waste management unit above screening levels should be presented in Section 2, as an additional table after Table 2-3.	Appendix C details the nature and extent of contamination in each of the disposal units. As noted in the first paragraph of Section 2.4: "The extent of contamination for soil/solid waste is depicted in the figures presented in Appendix C of this FS." A reference to the tables in Appendix C will also be added. References to specific tables and figures in Appendix C will be added to sub-sections 2.4.1 through 2.4.6. Tables C-3 through C-14 list the minimum and maximum concentrations and the number of samples that are above screening levels for each detected contaminant for each of the six solid waste disposal units. Tables C-15 and C-16 identify the samples that exceed background (for inorganics). Figures 2-9, 2-10, and 2-11 will be revised to show concentrations of constituents above screening levels in "order-of-magnitude gradations" (note that new figures have been added to Section 2, and all figures have been renumbered accordingly). See responses to EPA comments 3 and 18.	Addressed. Figures 2-9, 2-10, and 2-11 have been renumbered as Figures 2-12, 2-13, and 2-14, respectively.

Regional Water Quality Control Board Responses to letter from Kathryn Dominic dated March 21, 2011				
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3		There needs to be text in Section 5 of the FS that explains your criteria for selection of soil excavation areas. This information should be presented in a series of "if-then" statements that illustrate how you established proposed excavation limits for each waste disposal area. Please include information on how you weighed the multiple lines of evidence in selecting the excavation areas. For example, landfill materials are not proposed to be excavated in the area of soil boring SBL0028 in the northern portion of Landfill Unit 2, where sampling data indicate COC concentrations greater than screening levels, because there was no geophysical anomaly or historical documentation of waste placement at that location. The text needs to explain the basis for decisions such as these. Text should explain that the limits of several proposed excavations may allow for many COCs to remain in the landfill soils above the preliminary cleanup goals (PCGs), as shown in Tables 6-1, 6-4, 6-7, 6-9, 6-11, 6-13, and 6-16 (Concentrations of Constituents of Concern Remaining in Soil and Soil Gas Above Preliminary Cleanup Goals). The tables cannot be interpreted correctly without additional narrative explaining your assumptions regarding soil removal for each proposed excavation.	Appendix E, which details the volumes removed for each alternative, is being revised to be more transparent as to how volumes were established. A summary of this methodology will be added just before Section 5.1.	Addressed.

Regional Water Quality Control Board Responses to letter from Kathryn Dominic dated March 21, 2011				
No.	Section No.	Comments	Response to Comments	Modifications
4		VOC “hot spot” removals are incorporated into alternatives SW-3 through SW-7. The FS and Appendix E should present discussion, data, and/or maps showing the proposed footprints of the “hot spot” excavations relative to the limits of the VOC soil vapor impacts.	The revised Appendix E will include this information.	Appendix B text and Figure B-3 include the VOC "hot spots" in relation to VOC soil vapor concentrations. Appendix E discusses how the VOC "hot spot" areas were selected.

Regional Water Quality Control Board Responses to letter from Kathryn Dominic dated March 21, 2011				
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5		The groundwater monitoring networks for each alternative need to be more thoroughly described and discussed. For Alternative SW-1, all monitoring wells would need to be destroyed – this is not included in the discussion of the alternative or in Table 5-1. For Alternatives SW-2 through SW-8, there will need to be additional monitoring well coverage to monitor the effectiveness of the remedy, including in the downgradient direction. Table 5-1 and Figures 5-1 through 5-7 should show all current and proposed monitoring wells (including wells proposed for destruction) to be used to evaluate the effectiveness of the alternatives. Additional monitoring wells beyond those mentioned in Table 5-1 will be needed downgradient of VOC hot spots or landfills/disposal units in order to provide adequate delineation of groundwater impacts. Please revisit the descriptions of the alternatives and their accompanying figures to add a sufficient number of monitoring wells for this purpose. Please include a table in the FS that shows all wells in the proposed monitoring network for each alternative.	Per our meeting with EPA on April 19, 2011, monitoring well abandonment and associated costs will be deferred to the No Action alternative in the groundwater FS. This statement will be added to the text. See EPA comment 45. Groundwater monitoring locations proposed in the alternatives will be added to Figures 5-1 through 5-8. As noted on these figures, "Alternative details are subject to refinement and/or modification in post FS remediation documents." In cases where wells will be abandoned due to cover/cap construction, new wells will be installed outside the covered/capped area. The approximate location of these wells will be provided. See response to EPA comments 35 and 36. Downgradient well coverage will be reviewed and additional monitoring wells will be proposed as appropriate. See response to EPA comment 35. A list of wells included in the groundwater monitoring network will be added to a new Table 5-3. Note that these will be HSU-1 wells. See response to EPA comment 35.	Addressed. A new alternative was added. Groundwater monitoring locations proposed in the alternatives were added to Figures 5-1 through 5-9.

Regional Water Quality Control Board Responses to letter from Kathryn Dominic dated March 21, 2011				
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6		It is not clear why groundwater monitoring is a component of alternative SW-9, which calls for excavation and off-site disposal of all waste. (Table 5-1, page 13). For this alternative, all wells would need to be destroyed – this item is not included in the discussion of alternative SW-9.	Table 6-16 shows the constituents in each of the land disposal areas above PCGs present after excavation of waste under Alternative SW-9, note depths are greater than 20 feet bgs. The text in Section 6.9.3 (page 6-32) states: "Although concentrations of COCs greater than PCGs would remain in place at depths greater than 20 feet bgs, human and ecological exposure would be limited." As such, subsurface hazard notification, deed restrictions, and groundwater monitoring are included in this alternative. A sentence will be added to the beginning of this section stating that the alternatives do not address depths below 20 feet bgs. See response to EPA comment 44.	Addressed. Note that a new alternative has been added, and the alternative that calls for excavation and off-Site disposal of all waste is now Alternative SW-10. Table 6-19 shows constituents above PCGs under SW-10. The text in Section 6.10.3 (page 6-44) now states: "Concentrations of COCs greater than PCGs would remain in place at depths greater than 20 feet bgs. Table 6-19 shows post-remediation concentrations and associated depths where COCs would remain at levels above PCGs. Although COCs would remain, RAOs preventing human and ecological contact, as well as preventing migration to surface water, storm water, and groundwater, would be achieved."
7		Alternatives that require well destruction should include a plan for well destruction and, if necessary, a plan for replacement of any monitoring wells that are necessary for monitoring the effectiveness of the remedy and maintaining the ability to monitor any existing groundwater plume.	Comment noted. Please see Table 5-1, page 6 of 15 – Decommissioning and Reinstallation of Groundwater Monitoring Wells.	Addressed. Decomissioning of Groundwater Monitoring Wells is presented on page 7 of Table 5-1. Groundwater Monitoring Well Installation is described on page 19 of Table 5-1.

Department of Toxic Substances Control Responses to letter from John Bystra dated March 18, 2011				
No.	Section No.	Comments	Response to Comments	Modifications
		Specific Comments		
1	**Appendix D, Table D-3, Page 18**	Evaluation of risk of radioactive constituents. In the Soil FS, Appendix D, Table D-3, Page 18 of 22, under the column titled Requirement/Authority there is one action specific ARAR that is titled *Control of Radioactive Contamination in the Environment,* whose source is the California Health and Safety Code, §114705 *et.seq.* This sequence of references speaks of radioactive constituents in terms of dose rather than in terms of risk. While it is important to understand what the resulting risks are on the LEHR site due to radioactive constituents in the soil, listing the doses produced by these radioactive constituents at the LEHR site is important to fulfill compliance with this ARAR. Please identify the doses corresponding to the resulting risks in the text of the Soil FS.	Nuclide- and area-specific radiation doses associated with the Preliminary Cleanup Goals (based on hypothetical residential exposure) and a brief discussion about California Health and Safety Code, §114705 *et.seq.* will be added to the text section in Appendix D. Other references to radiation risks in the FS Report will be expressed as excess cancer risks in accordance with OWSER Directive 9200.4-18.	Addressed.
2	**Page ES-3**	Risk calculations for soil gas. On page ES-3 of ES-9 within the Executive Summary in the Soil FS, a table depicts the highest calculated risk from soil gas at depth at the various land disposal units on the LEHR site, and the constituent that is the driver for that resulting risk. While it is useful to understand where the highest soil gas concentrations are (to determine potential location of source material) it would be more appropriate to list the risks associated with the depths immediately near the surface to determine what is the likely resulting indoor air risk. Please include calculated risks for the uppermost sampled depth for each land disposal unit in a revised table.	Comment noted. The table will be revised to show the risk estimate for the uppermost sample depth in each land disposal unit. Supplementary text will discuss the highest calculated risks in the land disposal unit if they differ from the uppermost sample depth depicted in the table.	Calculated risks for the upper-most sampled depth for each land disposal unit are included in the table.

Department of Toxic Substances Control Responses to letter from John Bystra dated March 18, 2011				
No.	Section No.	Comments	Response to Comments	Modifications
3	**Table 5-1**	Groundwater monitoring well installation. On Table 5-1 of the Soil FS, pages 6 and 13 list the Remedial Action Components (RAC) of Decommissioning and Reinstallation of Groundwater Monitoring Wells and Groundwater Monitoring Well Installation (respectively). The first RAC describes what wells will be decommissioned and reinstalled and which solid waste alternatives will utilize this RAC, segregated by which wells will be decommissioned. However, the Groundwater Monitoring Well Installation RAC does not list any of these planned well reinstallations, and associated figures in the Soil FS do not depict the likely locations of where these new wells will be. Please alter the table with respect to the second RAC and add appropriate language to describe the new wells, including the number, location and in which figures the wells are depicted.	Comment noted. Groundwater monitoring locations proposed in the alternatives will be added to Figures 5-1 through 5-8. As noted on these figures, "Alternative details are subject to refinement and/or modification in post FS remediation documents." See response to EPA comments 35 and 36 and RWQCB comment 5. A corresponding list of wells included in the groundwater monitoring network will be added to a new Table 5-3. Note that these will be HSU-1 wells. See response to EPA comment 35.	HSU-2 wells to be decommissioned would also be considered for replacement as shown on Table 5-3. A new alternative was added. Groundwater monitoring locations proposed in the alternatives were added to Figures 5-1 through 5-9.

United States Environmental Protection Agency Responses to letter from Kathy Setian dated January 6, 2012				
No.	Section No.	Comments	Response to Comments	Modifications
General Comments				
1	**Locating Principal Threat Waste (PTW)**	Section 2.4 states that the previous trenches were not surveyed, so it is unclear how the PTW that was identified in these trenches will be located for alternatives that require excavation of PTW (i.e., Alternatives SW-3 through SW-8). For example, if an initial trench does not result in location of the PTW, it is unclear if the excavation will be expanded until the PTW is found. Please revise the FS to explain how the PTW will be located since the previous trenches were not surveyed. Please also explain whether the costs include expanded excavations in the event that PTW is not identified in the initial trench/excavation in an area where PTW was previously identified.	The following text will be added to Element #9 in Section 5.3 of the FS, "The locations of the exploratory trenches with previously identified PTW were estimated based on geophysical anomalies identified in previous geophysical surveys. However, the locations of these trenches were not surveyed. To confirm the locations of these original exploratory trenches, new spatially-referenced geophysical surveys would be conducted. The results of these surveys would be compared to previous survey results to re-establish the locations of the original exploratory trenches and the potential location of PTW." In addition to the text above, the following text will also be added to page 8 of Table 5-1, "Initial trenching would be conducted in a grid pattern over the identified geophysical anomalies using a small backhoe bucket to locate solid waste cells before full trench excavation begins." Trench dimensions and volumes are provided on Table E-1 (Appendix E). The total volumes of the original exploratory trenches were used to estimate the total excavation volume of new trenches potentially containing PTW in the ET, LFU-1, and LFU-2. Because PTW was documented to comprise a small percentage of the total excavation volumes of the original exploratory trenches (1.25 to 2 percent), the use of	In addition to the text added in the previous response, the following text was added on page 8 of Table 5-1, "Under Alternatives SW-8, SW-9, and SW-10, the land disposal units would be targeted in their entirety and would not require an initial geophysical survey." The following text was added to Sections E2.1, E2.2, and E2.3 concerning trenches with known PTW, "However, the current locations of these trenches were estimated based on un-surveyed geophysical anomalies. To confirm the locations of these original exploratory trenches, new spatially-referenced geophysical surveys would be conducted. The results of these surveys would be compared to previous survey results to re-establish the locations of the original exploratory trenches and the potential location of PTW. The total volumes of the original exploratory trenches were used to estimate the TEV of the new trenches potentially containing PTW.

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			these volumes is conservative. This information will be added to Appendix E. In addition, a 15 percent contingency was included in the initial cost estimate to account for grid excavation that may be necessary in locating the PTW. No further costs were added for expanded or additional excavations.	Based on the trench logs, this assumption is conservative because PTW was estimated to comprise a small percentage of the total excavated volume of the original exploratory trenches (less than two percent)." Further, for proposed exploratory trenches also in Sections E2.1, E2.2, and E2.3, the following sentence was added, "Trench locations would be based on the results of the geophysical survey mentioned above." A similar statement was added to Section E2.4. Costs were modified to include the cost of the geophysical surveys.

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2	**Excavation of PTW Waste**	For Alternative SW-2 and other alternatives that include excavation and off-site disposal of PTW, the text states, "Excavation would continue in these [new] trenches until no further PTW is encountered," but it is unclear what volume of soil is estimated for excavation (e.g., the percentage beyond the original trench volume that was included in the cost estimates) and of PTW was estimated for off-site disposal. Please include this information in the text.	Tables E-10 and E-11 in Appendix E provide the estimated percentages and volumes, respectively, of PTW expected to be found in the PTW-containing trenches (e.g., LFU-1 Exploratory Trenches). As described in the response to comment number 1, the total volumes of the original exploratory trenches were used to estimate the total excavation volume of new trenches potentially containing PTW in the ET, LFU-1, and LFU-2. Because PTW was documented to comprise a small percentage of the total excavation volumes of the original exploratory trenches (1.25 to 2 percent), the use of these volumes is conservative. This information will be added to Appendix E. Tables 6-2 and E-13 include the estimated volumes of PTW anticipated for off-Site disposal under each alternative. No text modification is proposed.	See response for comment 1.

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No.	Section No.	Comments	Response to Comments	Modifications
3	**Lining stormwater swales**	The description of the storm water swales (e.g., Alternative SW-3) does not state whether a geomembrane or rip-rap will be used to line the swales to ensure that erosion does not occur. Although the specific details will be included in the remedial design, the FS should include a cost estimate for these to ensure that erosion does not occur. Please revise the FS to include measures to ensure that erosion of the swales does not occur in the Alternative descriptions.	The following text will be added to Table 5-1 under "LFU-3 Concrete-Lined Drainage Channel Demolition/Reconstruction," "LFU-3 East-West Trending Drainage Ditch Relocation," and "LFU-1 Drainage/Vegetated Swale" (pp. 16-17): "Erosion controls would be installed as appropriate, and may include geotextile and/or rip-rap." Note that current drainage channels at the Site require minimal erosion controls because of high clay content of the soils and low gradients and corresponding flow velocities. Cost descriptions will be updated to include erosion controls for portions of the unlined drainage swales most susceptible to erosion (assume 50 percent of length), and are assumed to include geotextile and rip-rap.	Assumptions made for the addition of erosions controls were documented in the alternative cost assumptions in Appendix F (Attachments F-3a, F-4a, F-5a, F-6a, F-7a, F-8a, F-9a, and F-10a). Costs were updated accordingly.
4	**Section 2.3.2, Review of Historical Aerial Photographs, Page 2-5**	It is unclear why the history based on aerial photographs begins in 1952, since this is after Landfill 1 was used for waste disposal. Also, the site was originally used as a golf course, based on older historical aerial photographs, but this is not discussed in Sections 2.3.1 or 2.3.2. At a minimum, older aerial photographs that depict the Landfill 1 area during the 1940s when it was in use should be included. Please expand this section to include earlier aerial photographs, including one where the golf course was present and one when Landfill 1 was in use. Please also revise the text to include this early history.	A 1937 aerial photo of the golf course will be added. The following text will be added to Section 2.3.2, "The 1937 aerial photograph (Figure 2-5) shows the LEHR/OCL Site location prior to land disposal activities. At the time, the Site was used as a portion of a golf course. The OWTP was present within a group of trees along the southern boundary adjacent to the South Fork of Putah Creek." No aerial photographs of active LFU-1 excavation were located.	Response was incorporated as written.

United States Environmental Protection Agency Responses to letter from Kathy Setian dated January 6, 2012				
No.	Section No.	Comments	Response to Comments	Modifications
		Specific Comments		
1	**Response to Comments 8 and 55**	The responses address the comments, but please ensure that the most recent regional screening levels (RSLs), currently November 2011, are used when the Final Feasibility Study for the University of California, Davis Areas, Volume 1: Soil/Solid Waste and Soil Gas, Laboratory for Energy-related Health Research/Old Campus Landfill Superfund Site (Final FS) is issued. If RSLs are not updated, please discuss any differences between the May 2011 RSLs and the most recent RSLs at the time the Final FS is issued in the uncertainty section of the human health risk assessment (HHRA).	The November 2011 Regional Screening Levels will be used in the Final FS.	Response was incorporated as written.

United States Environmental Protection Agency Responses to letter from Kathy Setian dated January 6, 2012				
No.	Section No.	Comments	Response to Comments	Modifications
2	**Response to Comment 9**	The response partially addresses the comment. While alternatives that incorporate engineered surface caps were modified to include additional storm water drainage enhancements to further reduce infiltration in the land disposal units, the runoff estimates, calculations, and supporting data/documentation, included in the response, are not provided in the Draft Final FS. The response states that this information will be provided in the design, but this does not allow for verification that an alternative is viable and is capable of achieving the required UC Davis's Central Valley Regional Water Quality Control Board discharge permit derived goal of reducing site generated runoff by 85%. Please revise the Draft Final FS to include the runoff estimates, calculations, and supporting data/documentation, which indicated that additional storm water drainage enhancements were necessary. It should be noted that during final design, final cover plant species should be selected which will uptake the greatest volume of water possible so as to reduce the volume of water which will need to be managed by the developed cap system detention basins.	Runoff estimates, calculations, and supporting data/documentation will be provided in new Appendix G (old Appendix G is now Appendix H). Best management practices capable of handling the runoff will be presented, and design calculations for extended detention basins will be provided to demonstrate the feasibility of meeting the post-construction runoff requirements defined in the Draft 2011 Phase II Small MS4 Permit. The following statement will be added to Appendix G: "During remedial design, plant species for the engineered surface covers/caps would be selected to maximize evapotranspiration and reduce storm water runoff volumes."	Section G4.1 of Appendix G was written to address the last sentence of the comment as follows, "During remedial design, plant species for the engineered surface covers/caps would be selected to maximize evapotranspiration and reduce storm water runoff volumes that would be treated by other BMPs."

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No.	Section No.	Comments	Response to Comments	Modifications
3	**Response to Comment 10**	The *response* addresses the comment; however, the Draft Final FS does not include the information included in the response. Please revise the Draft Final FS to cite the 6/14/11 meeting minutes and include them as a reference to document that LLRW can be consolidated within a Corrective Action Management Unit (CAMU).	As requested, the DTSC memo from John Bystra (June 14, 2011) that discusses LLRW and CAMUs will be added as an attachment to Appendix D (Attachment 2). The June 14, 2011 meeting minutes also will be added as an attachment to Appendix D (Attachment 3). The following sentence will be added to the introduction to Section 5: "A review of ARARs related to shallow burial of LLRW, as well as LEHR Team discussions held on June 14, 2011, have supported that LLRW can be consolidated on-Site in a CAMU as part of the remedial alternatives (Appendix D, Attachments 2 and 3)."	Note the DTSC memo was attached as Attachment D-2 and the June 14, 2011 meeting minutes as Attachment D-3.

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4	**Response to Comment 12**	The response partially addresses the comment. While the Draft Final FS was revised to include Section 7.9 (Green Remediation Evaluation) and Table 7-5 (Green Remediation Best Management Practices for Site Remedial Alternatives), insufficient information is provided to meet the level of detail specified in the U.S. Environmental Protection Agency (EPA) Green Remediation: Incorporating Sustainable Environmental Practices into remediation of Contaminated Sites, EPA 542-R-08-002, dated April 2008 (EPA Green Remediation Guidance. For example, tools referenced in the EPA Green Remediation Guidance were not utilized to calculate energy consumption. Please revise the Draft Final FS to provide an evaluation which meets the level of detail specified in the EPA Green Remediation Guidance.	The SiteWise Green and Sustainable Remediation tool from the Navy, US Army Corps of Engineers (USACE), and Battelle will be used to calculate energy consumption. Assumptions used in the model will be based on the cost information developed in RACER (Appendix F). The information generated from the model will be included in a new appendix. A summary table will be provided in Section 7.	Results of the green and sustainable remediation footprint analysis were summarized in a new table in Section 6 (Table 6-4). Note that table number changes have occurred as a result of this addition. The results of the analysis are also discussed under the short-term effectiveness sections in Section 6. Section 7 incorporates a comparative analysis of the results in the short-term effectiveness section (Section 7.5), and further discussion of the analysis was included in Section 7.9 (Green Remediation Evaluation). Note that new figures graphically displaying the results of the analysis have been added to Section 7 (Figures 7-1 through 7-6) and that figure number changes have occurred as a result of these additions.

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5	**Response to Comment 34**	The response partially addresses the comment. Appendix B (Vapor Intrusion Risk Assessment) was revised to include Figure B-3 (Spatial Distribution of Vapor Intrusion Risk, Residential Receptor – Vapor Intrusion Risk Assessment), which shows the risk levels, buildings, and volatile organic compound (VOC) hot spot areas. However, it is unclear why vapor-phase treatments are not retained in Table 4-2 (Evaluation of Remedial Technologies and Process Options for Soil/Solid Waste or Soil Gas) and carried forward in the Draft Final FS. While plans for new construction are unknown at this time, several buildings remain located within 100 feet of VOC hot spot areas [i.e., Geriatrics Building No. 1 (H-292), Geriatrics Building No. 2 (H-293), Cobalt-60 Building]. As such, it is unclear why vapor-phase treatment general response actions are not retained and carried forward in the Draft Final FS. It should also be noted that Alternatives SW-2 and SW-3 do not include demolition of Geriatrics Buildings No. 1 (H-292) or No. 2 (H-293). Please revise the Draft Final FS to retain vapor-phase treatments or clarify why these general response actions are not retained and carried forward, taking into consideration the locations of VOC hot spots near existing buildings.	A sentence will be added to the soil vapor extraction vapor-phase treatment in Table 4-2 stating: "Not Retained – Results from an SVE Pilot Test for chloroform concluded that the low-permeability material would limit the effectiveness of SVE and that low VOC concentrations at the blower inlet would not justify an active treatment such as SVE (Brown and Caldwell, 2002). Excavation is more effective/protective for source removal and has comparable cost."	The added text was modified as follows: "Not Retained – Results from an SVE Pilot Test for chloroform concluded that pervasive low-permeability soil in HSU-1 would limit the effectiveness of SVE and that the resulting low VOC concentrations at the blower inlet would not justify an active treatment such as SVE (Brown and Caldwell, 2002). Excavation is more effective/protective for source removal and has comparable cost."
6	**Response to Comment 35**	The response partially addresses the comment. Additional wells were added to the west and northwest of the landfills, but no wells were added to the south of the landfills. Historically, during some quarters groundwater flowed to the south in hydrostratigraphic unit (HSU)-1, so wells to the south should also be included. Please propose additional monitoring wells to the south of the landfills.	Two additional monitoring wells will be added south of LFU-1 and LFU-3. In addition, the existing well south of LFU-2/ET/WBH, UCD1-034, will be included in the monitoring well network. Under Alternative SW-3, the land disposal units will be graded to reduce infiltration and promote drainage. While the DDC system, located in the northern	The Section 5 figures, Table 5-3, and costs were modified to incorporate these changes to the monitoring well network. With respect to the DDC system discussion, the following text was added to

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		In addition, it is unclear why the density driven convection system (DDC) wells will be decommissioned for some alternatives, but not for others. If these wells are decommissioned, it is unclear how the VOC contamination in groundwater will be addressed (it is understood that this FS does not cover groundwater, but it seems that if the DDC wells are necessary to treat groundwater, they should be retained and protected during construction or replaced). Please explain why the DDC wells will not be decommissioned for Alternative SW-3 and for other Alternatives how the remaining VOC contamination will be addressed if these wells are decommissioned.	part of the Eastern Trenches, would be included in the graded area, it is assumed that the proper grade can be established without requiring modification of the current DDC system. This text will be added to Section 5.3, Element #13. Under Alternatives SW-4 through SW-10, part of the DDC area may be capped (SW-4 and SW-5) or excavated (SW-6 through SW-10). The following text will be added to Element #20 in Section 5.4: "As the current density driven convection (DDC) system lies within the boundaries of the ET North, implementation of the remedial action in this area may require its decommissioning. Although future configuration of the DDC system is subject to change upon further evaluation of HSU-1 groundwater treatment strategies, for alternative comparison and costing purposes, it was assumed that the wells within the ET North boundary would be decommissioned and that three DDC wells and three nested piezometers would be replaced (Table 5-3)." Text related to the DDC will be deleted from Element #24 in Section 5.6. The soil/solid waste alternatives will not compromise groundwater treatment at the Site. The following text will be added to the alternative descriptions in Sections 5.4 and 5.5: "This alternative is compatible with the future groundwater remedies in	element 13 in Section 5.3: "While the density-driven convection (DDC) system, located in the northern part of the ET (ET North subarea [as defined in Appendix E]), would be included in the graded area, it is assumed that the proper grade can be established without requiring modification of the current DDC system." Costs were modified accordingly. In addition, to address the comment concerning future VOC treatment in groundwater, the following text was added to the alternative descriptions in Sections 5.4 through 5.8: "This alternative is compatible with future groundwater remedies in the DDC area since the cap can be designed to accommodate the DDC system, or be locally removed and reconstructed." The following text was added to the alternative descriptions

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			the DDC area since the cap can be designed to accommodate the DDC or be locally removed and reconstructed."	in Sections 5.9 and 5.10: "This alternative is compatible with future groundwater remedies in the DDC area since the DDC system can be relocated or reconstructed."
7	**Response to Comment 38 and 40**	The responses address the comment, but cite the wrong page of Table 5-1. The information about VOC Hot Spot excavations is on Page 10 of 23, not page 8 of 15, as stated in the response to comment 38, and the information about Land Use Controls (Comment 40) is on page 21 of 23, not page 14 of 15. For future responses to comments, please ensure that the page number in the revised document (in this case, the Draft Final FS) is cited.	Comment noted. The change is due to the additional alternative (revised from original response to comments which had nine alternatives to the modification which had 10 alternatives).	None.
8	**Response to Comment 47**	Although the *response* appears to address the comment, the introductory paragraphs of the major sections in Section 6 were not revised to include a Soils Management Plan. Please revise the text to include the information described in this response.	The introductory paragraphs of the alternative description sections in Sections 5 and 6 will be revised to state: "A requirement for a soil management plan would also be identified as a requirement in the land use covenant for implementation during post-remediation earthwork and construction activities."	The introductory paragraphs of the alternative description sections in Sections 5 and 6 were revised to state: "Signage would be posted to notify of potential subsurface hazards, and land use covenant (LUC) would be recorded to prohibit residential land use, restrict non-residential land use, and include a requirement for a soil management plan for post-remediation earthwork activities."

Regional Water Quality Control Board Responses to letter from Durin Linderholm dated January 17, 2012				
No.	Section No.	Comments	Response to Comments	Modifications
General Comments				
1		The draft final FS indicates that the stormwater management and cap alternatives have been designed to meet the 85% reduction in site-generated run-off as required by the post-construction stormwater permit requirements. Please include the supporting documentation, previously supplied separately, with the final FS. This material is necessary in evaluating the feasibility of the various alternatives.	Runoff estimates, calculations, and supporting data/documentation will be provided in new Appendix G (old Appendix G is now Appendix H). Best management practices capable of handling the runoff will be presented, and design calculations for extended detention basins will be provided to demonstrate the feasibility of meeting the post-construction runoff requirements defined in the Draft 2011 Phase II Small MS4 Permit.	Response incorporated as written.
2		While additional monitoring wells are included for long-term groundwater monitoring for those alternatives where waste will be left in-place, the proposed network does not provide adequate monitoring for all historic groundwater flow directions. Additional monitoring wells should be included in the final FS on the south side of LFU-1 and LFU-3 for those alternatives where waste will be left in place at these locations.	Two additional monitoring wells will be added south of LFU-1 and LFU-3. In addition, the existing well south of LFU-2/ET/WBH, UCD1-034, will be included in the monitoring well network.	The Section 5 figures, Table 5-3, and costs were modified to incorporate these changes to the monitoring well network.
3		Alternatives SW-4 through SW-10 propose abandonment of the density-driven convection system (DDC) wells, but do not propose replacement of these wells. While treatment of volatile organic compounds in groundwater will be part of Volume 2 of the FS, alternatives in the final Soil/Solid Waste FS should include both the costs of the abandonment and replacement, if necessary, of the DDC wells.	Under Alternatives SW-4 through SW-10, part of the DDC area may be capped (SW-4 and SW-5) or excavated (SW-6 through SW-10). The following text will be added to Element #20 in Section 5.4: "As the current density driven convection (DDC) system lies within the boundaries of the ET North, implementation of the remedial action in this area may require its decommissioning. Although future	With respect to the DDC system discussion, the following text was added to element 13 in Section 5.3: "While the density-driven convection (DDC) system, located in the northern part of the ET (ET North subarea [as defined in Appendix E]), would be included in the graded area, it is assumed that the proper grade can be established without requiring

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			configuration of the DDC system is subject to change upon further evaluation of HSU-1 groundwater treatment strategies, for alternative comparison and costing purposes, it was assumed that the wells within the ET North boundary would be decommissioned and that three DDC wells and three nested piezometers would be replaced (Table 5-3)." Text related to the DDC will be deleted from Element #24 in Section 5.6. The soil/solid waste alternatives will not compromise groundwater treatment at the Site. The following text will be added to the alternative descriptions in Sections 5.4 and 5.5: "This alternative is compatible with the future groundwater remedies in the DDC area since the cap can be designed to accommodate the DDC or be locally removed and reconstructed."	modification of the current DDC system." Costs were modified accordingly. In addition, to address the comment concerning future VOC treatment in groundwater, the following text was added to the alternative descriptions in Sections 5.4 through 5.8: "This alternative is compatible with future groundwater remedies in the DDC area since the cap can be designed to accommodate the DDC system, or be locally removed and reconstructed." The following text was added to the alternative descriptions in Sections 5.9 and 5.10: "This alternative is compatible with future groundwater remedies in the DDC area since the DDC system can be relocated or reconstructed."

US Environmental Protection Agency Responses to email from David Stensby dated March 27, 2012			
No.	Section No.	Comments	Response to Comments
		General Comments	
1		The *Final Feasibility Study for the University of California, Davis Areas, Volume 1 - Soil/Solid Waste and Soil Gas, Laboratory for Energy-related Health Research/Old Campus Landfill Superfund Site, University of California, Davis, California*, dated February 2012 (the Preview Final FS) does not include the previously submitted comments and response to comments on the *Draft Feasibility Study for the UC Davis Operable Unit/Laboratory for Energy-related Health Research/Old Campus Landfill Superfund Site, University of California, Davis, California*, dated January 2011 (the Draft FS) or the *Draft Final Feasibility Study for the UC Davis Operable Unit, Laboratory for Energy-related Health Research/Old Campus Landfill Superfund Site, University of California, Davis, California*, dated November 2011 (the Draft Final FS). Please ensure that the Final FS includes an appendix which includes all previously submitted comments and responses to comments on the Draft FS, Draft Final FS, and Preview Final FS.	As requested, Appendix J will be added to the Final FS and will include the previously submitted comments and responses to comments on the Draft FS, Draft Final FS, and Preview Final FS.
		Specific Comments	
1	**Appendix B, Vapor Intrusion Risk Assessment, Section B2.1, Exposure Assumptions and Model Input Values, Page B-3:**	Appendix B was revised to cite and incorporate the most recent version of the U.S. EPA Regional Screening Levels (RSLs), however, exposure assumptions and model input values are referenced to an outdated Department of Toxic Substances Control (DTSC) vapor intrusion guidance document dated 2005. The DTSC issued Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Final VI Guidance) in October, 2011 and this version should be cited. Please ensure that the assumptions and input parameters are consistent with the Final VI Guidance. Further, if the assumptions and input parameters are different from those previously used in the Johnson and Ettinger modeling, please discuss this as an uncertainty in Section B.3 Uncertainty and indicate whether the use of updated input values would change the results and conclusions of the FS.	The Final DTSC 2011 VI Guidance has been cited. The Uncertainty Section has been moved to Section B4. The following text has been added to Section B4.3, Changes to Vapor Intrusion Guidance: "Several exposure assumptions and model input values used in this vapor intrusion risk assessment were referenced to the Interim VI Guidance (DTSC, 2005). Since the vapor intrusion pathway was initially evaluated in this FS, the *Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (Final VI Guidance) was issued by DTSC in 2011 (DTSC, 2011). As such, the exposure assumptions and model input values presented in the Interim VI Guidance (Section B2.1) were compared to those in the Final VI Guidance. Exposure assumptions and model input values used in

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			this evaluation are consistent between the 2005 Interim VI Guidance and the 2011 Final VI Guidance, except for the soil gas to indoor air attenuation factor used in the preliminary screening (Section B1). The attenuation factor cited in the Final VI Guidance is an order of magnitude lower (less conservative) than the attenuation factor used in this risk assessment. Use of this attenuation factor would have eliminated formaldehyde and 1,3-butadiene as COPCs during the preliminary screening. However, use of the new value would not have impacted the overall scope or evaluation of the alternatives in this FS; therefore, corresponding COC changes have not been made. 1,3-Butadiene and formaldehyde should be eliminated as COCs in the Proposed Plan and ROD." Similar text has also been added to the Executive Summary and Section 3.1.2, Soil Gas.

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2	**Appendix B, Table B-6. Non-Carcinogen Toxicity Values – Vapor Intrusion Risk Assessment, UC Davis LEHR/OCL**	The reference concentration (RfC) for tetrachloroethene (PCE) is listed as 0.27 milligrams per cubic meter (mg/m^3) however, on February 10, 2012, EPAs Integrated Risk Information System (IRIS), listed new toxicity values for both cancer and non-cancer effects for this chemical. The carcinogenic values actually decreased slightly which would reduce the resultant risks if the more current inhalation toxicity value was used; however, the RfC is significantly lower and is now 0.04 mg/m^3 which is nearly seven times lower than the value used in the risk assessment. Consequently, when the RfC is lower, the hazard quotient (HQ) will increase by a factor of seven times. It is not clear whether results of modeling using updated toxicity values for PCE would result in changes to the FS, but this issue should be discussed as an uncertainty in Appendix B. Please revise the discussion of uncertainty in Appendix B to include a discussion of this issue.	The Uncertainty Section has been moved to Section B4. The following text has been added to Section B4.5, Changes to Toxicity Factors: "On February 10, 2012, the IRIS database was updated to include new toxicity values for cancer and non-cancer effects for tetrachloroethene. The new IRIS unit risk factor is 2.6 x 10^{-7} per microgram per cubic meter (µg/m^3). This risk assessment used a unit risk factor of 5.9 x 10-6 per µg/m^3 from OEHHA's database. Although the IRIS cancer toxicity value would result in a lower estimated unit risk, the California-specific toxicity value is more conservative; a query of the OEHHA database on March 29, 2012 showed the California-specific toxicity value was unchanged. No changes to the existing risk assessment conclusions are recommended. The new non-cancer reference concentration for tetrachloroethene listed in IRIS (0.04 mg/m^3) is approximately seven times more conservative than the value used in this risk assessment (0.27 mg/m^3) (US EPA, 2011a). Review of the risk assessment results indicated that the hazard quotients estimated for tetrachloroethene were more than a factor of seven below the hazard threshold of 1.0. Thus, incorporation of the new IRIS reference concentration would not change the risk assessment outcome for tetrachloroethene."