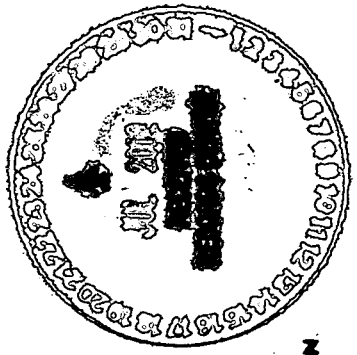
Responsiveness Summary for the Conceptual Design for the Present Landfill Closure Cover, April 15, 2002

Cmt #	Comment	Response
General Response: The conceptual design was developed as a basis for the cover for the Present Landfill and was meant to generate discussion and expectations for the follow-on and final design of the cover. The conceptual design will be used to support the development of the Interim Measures/Interim Remedial Action (IM/IRA) RFCA decision document under which the cover will be constructed. The conceptual design and these comments and responses will be included in the Administrative Record for the Present Landfill. It is anticipated that the follow-on design work will be conducted utilizing the consultative process and that regularly scheduled meeting will be held with RFETS, EPA, USFWS, and CDPHE personnel throughout the development of the 60%, 90%, and 100% design. These regular meetings will be used to refine the cover design requirements.		
Environmental Protection Agency		
1	Throughout the document, the narrative states that performance modeling was used to demonstrate performance of the evapotranspiration (ET) cover. Because modeling does not in fact "demonstrate" performance, the narrative should be revised to state that modeling was used to "predict" performance of the ET cover and this concept should also be reflected in the entire document.	Agreed.[1] The text as written is not technically accurate. The follow-on design works will not represent performance modeling in this manner.



[1] When agreed in included in the response, that is an indication that the comment is well-founded and will be incorporated into the 60% design.

A meeting was held on May 29, 2002 between DOE, EPA, CDPHE, USFWS, and Kaiser-Hill to discuss the major comments associated with the Conceptual Design and develop a path forward. The path forward was not agreed to by all parties, but an indication that everyone was willing to consider the concept in the follow-on design work, if it could be demonstrated to be technically feasible and in compliance with the regulations. The responses to comments reflect the discussions during the meeting.

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2	The document is titled conceptual design for an ET cover. Therefore sufficient information should be provided to indicate that the conceptual design is likely to achieve design goals. However, the document does not provide sufficient justification, in the form of site-specific tests or references, to support key concepts of the design. For example, a key component of the conceptual design is seep treatment and control, but justification to support the concept that seep treatment is likely to be achieved, is not presented. The document, in general, is much too vague even for a conceptual design, and should therefore be revised to support the design of key components of the system. As discussed in the Specific Comments, deficiencies and inconsistencies exist in the conceptual design of some key components including, but not limited, to the following: • the equivalence between the model of the prescriptive Resource Conservation and Recovery Act (RCRA) Subtitle C cover (with gas vent and biota barrier layer) and model of the proposed equivalent cover • the gas vent system design and construction • the seep treatment and control system • settlement and slope stability analyses • water balance for the system • UNSAT-H model parameters The document should be revised to address these deficiencies and inconsistencies.	The ET apron proposed in the conceptual design will not be pursued in the 60% design. As discussed in the meeting on May 29, the current treatment system will be extended to the edge of the new slope once the cover is installed.
3	The landfill cover does not include a biota barrier. Burrowing animals such as prairie dogs, pocket gophers as well as badgers may compromise the integrity of an evapotranspiration cover by eating and/or clearing the vegetation and increasing the permeability of the cap to water via the burrows. These animals may also bring significant amounts of contamination to the surface as they excavate their borrows. The conceptual design for the cover should be revised to include a biota barrier to prevent burrowing animals from bringing contaminated waste to the surface. In addition, to maintain the integrity of the soil cover, the long-term monitoring plan for the landfill cover should address monitoring and corrective actions for burrowing animals.	Agreed. A biota barrier will be included in the follow-on design work. As discussed in the meeting on May 29, the 60% design will include a combination gas venting/biota barrier. The EPA still considers this an issue and referred the design team to the EPA guidance document.

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4	The document indicates that asbestos waste currently disposed in the present landfill may need to be relocated. Disturbance of asbestos containing waste should be avoided or minimized whenever possible to reduce the possibility of creating asbestos emissions. If the asbestos containing waste must be relocated, compliance with the substantive requirements for disposal of asbestos waste would be necessary, including, at a minimum, authorization by the regulatory agencies to relocate the waste; documentation of the disposal location, quantity, and depth; packaging and placement requirements; and record keeping (CDPHE 2000).	Agreed. The option to relocate the asbestos was included in the conceptual design for discussion purposes. The asbestos will not be relocated and the 60% will not contain this information.
5	Because the proposal appears to be that the site will function as a test plot until sufficient monitoring justifies otherwise, the monitoring program should include the full spectrum of testing. Furthermore, if the Department of Energy (DOE) will be responsible for the landfill after closure, the document should clearly state this fact, as well as discuss that it will be monitored in perpetuity.	The monitoring approach included in the design is conceptual and meant to generate discussion. The specifics of the monitoring will be delineated in the follow-on design work. The monitoring assessment (success/failure) and exit strategy will be documented in the IM/IRA for the project.
6	**Executive Summary, Performance Modeling, Page ES-2.** This section discusses performance modeling. The third sentence states that the UNSAT-H model was used "to compare the ET cover's effectiveness. . .." It is not clear to what the modeling was being compared. The sentence should be revised to indicate that the model was run using inputs representative of site-specific parameters and the model outputs are presented and compared to each other in the document. Also, please note that many of the sections of the Executive Summary warrant revision, per the following comments. Please make the appropriate changes in this section as well.	Agreed. The text as written is not technically accurate. The follow-on design works will indicate that the model was run using inputs representative of site-specific parameters and the model outputs are presented and compared to each other in the document.

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7	**Section 2.2.5, Page 16.** This section discusses model layering. Figure 3 shows the modeled cover cross sections. It appears that the modeling effort does not compare equivalent features. Because the landfill is a hazardous waste landfill, a prescriptive RCRA Subtitle C cover should be used as the basis for comparison. The typical prescriptive cover should include the following components: a 2-foot thick clay barrier, a 20-mil geomembrane, a 12-inch thick drainage layer or layer of geotextile, and a 2-foot thick layer of vegetated soil. A 1-foot thick gas vent layer is placed under the clay liner, if required. A comparison of the modeled cover cross-sections illustrated in Figure 3 indicates the following: a. The modeled prescriptive cover does not include the drainage layer or the gas vent layer whereas the ET cover includes the gas vent layer. b. In the ET cover, there is a geotextile fabric above the gas vent layer. Because the geotextile is pervious, it appears that this fabric will allow gas to reach the root zone of the plants and will not function effectively as a gas barrier. c. The modeling effort should compare "apples and apples." This section should provide a basis for selecting the section modeled and discuss the apparent differences between the modeled cross-sections. d. The biota barrier was not included in the sections analysed. The model of the prescriptive cover and the proposed ET cover should have equivalent layers, the combined function of which are equivalent to the RCRA Subtitle C prescriptive cover.	Agreed, the 60% design will contain a convention Subtitle C cover for comparison purposes. a. The 60% design will include a drainage layer and gas venting layer for the modeled prescriptive cover b. The purpose of the venting layer for the ET cover is gas venting and oxygen circulation; therefore, a geotextile (permeable) surface is required. The 60% design will contain additional information and modeling of this layer to demonstrate that it will work as designed. c. Agreed, this section will be revised for the 60% design d. Agreed, a biota barrier will be included in the 60% design. As discussed in the meeting on May 29, the 60% design will include a combination gas venting/biota barrier. The EPA still considers this an issue and referred the design team to the EPA guidance document. Agreed, the 60% design will ensure that the models of the two covers are comparable.

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8	**Section 2.8, Page 22.** This section discusses design life. The first sentence states "Since an ET cover is constructed of unconsolidated soil, it can accommodate differential settlement without damage or loss of integrity." The term "unconsolidated soil" should be defined and a discussion should be provided of the parameters used to quantify the term. Also, differential settlement could lead to ponding and the development of depressions or potholes on a cover. These could also lead to the formation of "pipes", resulting in hydraulic failure of the cover. The terminology in this paragraph should be revised or additional narrative should be provided to clarify the meaning of the terms.	Agreed. The term unconsolidated soil will be defined in the follow-on design work and additional narrative will be added to clarify the meaning of the terms.
9	**Figure 4, Page 26.** It is not clear what this figure is representing. Is the entire cover supposed to be ET? If so, it should be represented as such in the figure as well as in the entire document. If not, this design must be further supported.	As indicated on the drawing, the entire cover relies on evapotranspiration; however the ET cover, slope, and apron have slightly different performance objectives. The follow-on design work will provide greater clarification.
10	**Section 3.2.2.1, Page 30.** This section discusses soil-rooting medium. The last sentence refers to "significant fraction of silt and clay size particles. . ." The term "significant fraction" should be quantified.	Agreed. The follow-on design will contain more definitive specifications with respect to soil gradation.
11	**Section 3.2.2.2, Page 32.** This section discusses the gas-venting layer. The first paragraph states that the purpose of the gas-venting system is to provide a well oxygenated root zone. As discussed in Comment 2, it is not clear how a gravel layer underlying a pervious geotextile can function effectively to prevent methane from attacking the root zone. This section should discuss the design of the gas-venting layer and its function, and revise the design as needed.	The proposed gas venting layer is meant to serve to functions: 1. provide a preferential flow for landfill gases and 2. provide a pathway for oxygen from the atmosphere. The venting layer is not meant to be an impermeable layer. The 60% design will be include additional information and modeling as to the purpose and function of this layer. The EPA still considers this an issue and referred the design team to the EPA guidance document.

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12	**Section 3.2.2.4.1, Page 34.** This section discusses seep treatment and control. The fourth paragraph indicates that the seep produces 2 to 3 gallons per minute and vegetation can typically utilize approximately 3 acre-feet per year. The site-specific basis for these numbers should be provided. The fifth paragraph also indicates that several different plant species will be used in the ET apron and the main ET cover, and implies that the KH Ecology Group has selected appropriate plant species for use in the site-specific applications. It is not clear that this site-specific information exists. The specific basis for these statements should be provided. This section should more fully discuss water quantity and water quality issues and provide a more substantive basis to support the proposal that the system will treat and control the seepage.	The ET apron is conceptual and water balance modeling has not been completed. Additional modeling and investigation will be conducted during the follow-on design work. As discussed in the meeting on May 29, the ET apron concept will not be pursued in the 60% design; instead the current treatment system will be extended to the edge of the new slope. The KH Ecology group has not selected the appropriate plant species, but they will be involved in the seed mix specification, which will be developed during the follow-on design activity. A working group will be established to ensure that the appropriate input is received on the seed specification.
13	**Section 3.2.2.4.2, Page 35.** This section discusses the source of the soil for use in the proposed ET apron and indicates that the soil from the ET apron excavation is acceptable for use for the various components of the cover. However, no information is provided on the soil characteristics nor is an actual grain size distribution curve introduced or discussed to support the statements indicating that the soil will be acceptable even after processing. The section should be revised to provide a more substantive basis to support the proposal that the soil from the apron excavation will be acceptable.	Appendix H contains the summary of the geotechnical results of the soils evaluated from a potential off-site borrow source. Geotechnical information is available for both on-site and off-site borrow sources, which can be made available. The follow-on design work will focus on a particular borrow source and contain more detailed information.
14	**Section 3.2.3, Page 36.** This section discusses storm water control. The fourth paragraph indicates that the final topsoil should have a permeability of 8 centimeters per hour (cm/hr) to allow infiltration of heavy rainfall. It is not clear if the permeability assumes unsaturated or saturated flows, and refers to as-built conditions or long-term conditions. It is not clear how this specification will relate thickness of topsoil layer, soil type, placement conditions, and the permeability performance requirement. It is also not clear how the performance of the topsoil layer (permeability of 8 cm/hr) is accounted for in the prediction of flow in the model which has a top layer with a permeability of 1.8 cm/hr. This section should provide a more substantive basis to support the recommended top soil permeability specification. The specification should be consistent with the layer concept described in previous sections, including, but not limited to Section 2.2.5 Model Layering and Section 2.3 Cover Soil Properties.	The 8 cm/hr for topsoil permeability is an assumption. If the follow-on design activities indicate that this is an incorrect assumption, additional modeling will be required. The follow-on design work will have specific specifications for topsoil permeability.

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15	Section 3.2.5.3, Pages 47 & 48. Provide support for the statement that the primary waste settlement will occur within approximately the first five years of placement and other statements that the most primary settlement has already occurred. This does not seem to take into account the construction and existence of the new cover nor does it seem to jive with the data provided in Table 5. How will the installation of this cover impact the present system? The parameters that were used to run each model should be included. Also, the Sowers Method results in Table 5 seem to indicate ponding will be present within the cover. This needs to be further evaluated and the design modified accordingly.	The statements included in the conceptual design are based on the estimation methods outlined in that section. The follow-on design work will evaluate the potential for ponding on the cover.
16	Section 3.2.6.1, Page 50. This section discusses the existing gas vents. It indicates that the vents will be easily removed by pulling them out or plugging them with bentonite. This implies that the geomembrane portion of the existing vent system will be left in place. It is not known if the geomembrane is a geotextile or a geomembrane liner. If the existing system has a geomembrane liner and the new gas venting system is then placed over the existing plugged system in accordance with the design concept shown in Figure 10, the new system will have no access to the gases trapped under the old system. The new vents will therefore serve no purpose. Thus, details of the existing system should be evaluated to determine if it is necessary to perforate the geomembrane liner of the existing system to allow gases to access the new system. This section should be revised to include the results of the evaluation and the revised design concept.	There is no geomembrane system associated with the current gas venting system. The existing system was evaluated as part of the conceptual design and it was concluded that is ineffectual. Appendix E contains additional information on the results of this evaluation and the proposed conceptual design for gas venting. The EPA still considers this an issue and referred the design team to the EPA guidance document.
17	Section 3.2.6.2, Page 50. This section discusses the East Landfill Pond and Dam. The last sentence of this section indicates that "the ET apron, located over the same area as the current pond and dam, will provide similar wetland type habitat as an offset for removal of the pond and surrounding wetland." However, the last paragraph on page 34 states "The ET apron is designed to provide enough increased evapotranspiration to eliminate the seep." It is not clear if the proposed design will create wetland or eliminate the seep. A credible preliminary water balance study should be performed for the entire system, including the surface water and ground water regimes, to support the design concept. The results of this study should be included in this document to provide a more substantive basis to support the conceptual design. Also, concerning wetlands mitigation, the third sentence of the second paragraph in Section 2.6 should be revised to say that the wetlands mitigation will be defined with input from the regulatory agencies ("will", as opposed to "should"),	The ET apron is conceptual and water balance modeling has not been completed. The ET apron will not be developed in the 60% design for seep management. As discussed in the meeting on May 29, the current treatment system will be extended to the edge of the new slope once the cover is installed. The wetlands mitigation and regulatory status and authority will be more fully developed and addressed in the IM/IRA.

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18	**Section 7, Page 82.** This section discusses the monitoring plan. The first paragraph states that the purpose of action monitoring is to anticipate performance failure before it happens. However, the section does not discuss the actions to be taken in response to indications of failure. The section should be revised (and probably given a new title) to include a response plan that lists criteria and action levels, and describes actions to be taken when action levels are reached.	A response plan with criteria and action levels will be included in the IM/IRA.
19	**Section 7.2.3, Page 86.** This section discusses the use of lysimeters. The second paragraph states that lysimeters are not recommended at the site because methane levels are high enough to affect rooting depths, transpiration rates, and cover performance. Furthermore, lysimeters are sealed at the bottom and would not be subjected to landfill gas flux. These statements are confusing. They give the impression that the design intent is to subject the proposed new ET cover to landfill gas flux. If this is the design intent then the purpose of the gas vent layer is confusing. It appears that an effective gas vent layer with a geomembrane layer (instead of geotextile layer) over the granular vent layer will prevent methane from affecting roots and simultaneously isolate the soil rooting layer and other layers, such as a biota barrier, above the geomembrane. A lysimeter installed with the bottom liner located on top of the geomembrane that overlies the granular vent layer will be consistent with the design of an effective gas vent system and a functional lysimeter. This section should reconsider the use of lysimeters and the design of the gas vent system should be revisited.	Lysimeters are being considered for performance monitoring.

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20	**Appendix A, Section A.4.2, Page A-26.** This appendix discusses the UNSAT-H modeling effort. This section discusses rooting depth. The second paragraph indicates the data shows that dense vegetation was present only where significant free oxygen concentrations are found below a depth of 3 feet. This suggests that the minimum thickness of the soil rooting layer above a venting layer should be 3 feet. The type, thickness, and features of the layered ET cover system should be revised to include at least a 3-foot thick soil rooting layer. The last paragraph in this section states "The effects of landfill gas on cover performance is summarized in Attachment A1, Figure A1-7. . ." It is not clear how "effects of landfill gas on cover performance" was modeled. Because UNSAT-H is basically a hydraulic model, the narrative should state that the effect on percolation due to inclusion of a gas vent layer in the layered system is shown in Figure A1-7. In addition, as previously mentioned, it is not clear how the gas vent layer will function to prevent methane from accessing the soil rooting layer without a geomembrane (and not geotextile) between the rooting layer and the gas vent layer.	The average thickness of the soil rooting layer is 50 inches, with an average soil cover thickness of 62 inches with the erosion protection layer. The 60% design will evaluate a soil rooting medium of 3 feet, and propose installation of grade fill in any areas requiring more that 4 feet of soil rooting medium to achieve the required grade. Landfill gas was not modeled with UNSAT-H; this is a poorly worded section that will be clarified in the 60% design.
21	**Appendix A, Section A.4.3, Page A-28.** This section discusses the layering system of the conventional cover selected for analysis. As discussed previously, the prescribed RCRA Subtitle C cover system includes a drainage layer and a biota barrier layer. This section should be revised to include a biota barrier layer.	Agreed, a biota barrier will be included in the 60% design. As discussed in the meeting on May 29, the 60% design will include a combination gas venting/biota barrier. The EPA still considers this an issue and referred the design team to the EPA guidance document.
22	**Appendix A, Section A.5, Page A-31.** This section presents the overall results and conclusions of the modeling effort. The first bullet indicates that the proposed cover is equivalent to the conventional cover. Because the conventional cover analyzed did not include the prescribed drainage and biota barrier layers, this statement is inaccurate. Additional modeling should be performed on the revised prescribed layered system. Also, because the field test results (Appendix A, Section A.4.2, Page A-26, Second Paragraph) indicate that adequate depth of free oxygen in the root zone is a major design consideration, the proposed cover should include a 3-foot thick soil rooting layer at a minimum. As previously discussed, a geomembrane liner should overlie the granular gas vent layer and a biota barrier should also be included in the model. Additional modeling should be performed on the revised proposed layered system.	Agreed, the 60% design will contain a convention Subtitle C cover for comparison purposes. The 60% design will evaluate a soil rooting medium of 3 feet, and propose installation of grade fill in any areas requiring more that 4 feet of soil rooting medium to achieve the required grade. The proposed gas venting layer is meant to serve to functions: 1. provide a preferential flow for landfill gases and 2. provide a pathway for oxygen from the atmosphere. The venting layer is not meant to be an impermeable layer. The 60% design will be include additional information and modeling as to the purpose and function of this layer. The EPA still considers this an issue and referred the design team to the EPA guidance document.

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23	**Appendix B, Section B.2.2, Page B-12.** This appendix discusses feasibility of using an ET cover. This section discusses ET cover performance and indicates that the report compares results from UNSAT-H modeling of a conventional cover and the proposed ET cover. Specific Comment 2 presents issues about the comparison of the model results.	Agreed, the 60% design will contain a convention Subtitle C cover for comparison purposes.
24	**Appendix H.** This appendix shows geotechnical testing results for candidate off-site borrow soils. The results should be amended to show the density of all samples used in performing saturated and unsaturated flow tests.	Agreed, the 60% design will contain more detailed borrow source information.
CDPHE Comments		
1	The most critical component for a successful ET cover is the soil. As you know, the material must be capable of supporting vegetative growth as well as hold moisture during periods of low or nonexistent evapotranspiration. Adequate moisture retention properties, as shown through moisture characteristics curves and saturated hydraulic conductivity, must be demonstrated for the range of soils proposed for use by specific laboratory testing and appropriate numerical modeling. Inputs used for the modeling must consist of actual material properties, as opposed to using assumed values selected from design charts or other projects. Once this information is obtained, an "Acceptable Zone" can be developed, where standard soil "index properties" (i.e., gradation, Atterberg limits) can be used to qualify material for use in cover construction. Currently, there is no detailed procedure discussed in the Conceptual Design as to how this will be accomplished.	Agreed[2], the 60% design will contain more detailed borrow source information. The acceptable zone concept will be included in the 60% design. This topic will be specifically discussed after the meeting on July 24 with the subcontractor selected for the design/construction work on the Present Landfill. A brief paper will be prepared before the meeting and distributed for consideration. The State is welcome to participate in the development of the acceptable zone methodology or the zone itself, as the borrow source data becomes available. Any information or advice based on experience at other sites would be appreciated.

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2	Construction techniques used for an ET cover are quite different than those used for virtually any other earthworks project. The primary reason for this difference is due to the required low compaction range of the soils, which must be able to support vegetative growth. Although stated several times in the document that this type of construction is "standard" in the industry, CDPHE believes that placing soils between 80% to 90% of the maximum standard Proctor density is unusual for most earthwork contractors, and may be more difficult to achieve than placing soils at higher densities normally used for structural applications. CDPHE has previously expressed this same concern in Comment 4 submitted for the Preliminary Draft Work Plan. Based on experience, CDPHE does not share the same optimism that ET cover construction is simple and uncomplicated. We would like to evaluate a full-scale field construction demonstration of the proposed ET cover, prior to actual cover construction. This demonstration, similar to the use of a test pad for compacted clay liner constructability, should use the same equipment, specifications, and QC/QA testing that is planned for the actual cover construction. This demonstration should be planned for in the project schedule. In addition, the project designers may want to consider a "method" specification rather than a "performance" specification for cover construction, or, require the construction subcontractor to provide a detailed work plan that the regulatory agencies can evaluate.	The use of a construction pad will be evaluated. The subcontractor that won the design/construction contract for the Present Landfill has indicated that they will perform a constructability pad before initiating full-scale construction of the cover.
3	CDPHE will not accept the minimum 2-foot thick ET cover recommended in the report. The report states that modeling shows that the 2-foot cover is equivalent to a conventional cover. Not only do we question some of the input values to the numerical modeling, there is also no field demonstration of the performance for a 2-foot cover. In addition, covering hazardous waste for the 1,000-year design life requires some conservatism to account for potential construction imperfections. RFETS should seriously consider a minimum 4-foot cover. Soil loss through erosion must also be accounted for during the 1,000-year design life. The project designers must consider placing an additional amount of soil during construction to account for long-term soil loss.	The 60% design will evaluate a soil rooting medium of 3 feet, and propose installation of grade fill in any areas requiring more that 4 feet of soil rooting medium to achieve the required grade. The current conceptual design does evaluate soil loss. The cover thickness of four feet is a minimum. Additional UnSat-H modeling will be conducted using the actual borrow source information. The goal of this modeling is to model five years (two consecutive wet) and have zero infiltration through the cover, which may require the cover thickness to increase.

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4	The maximum slope described, up to 14%, is far beyond the EPA guidance for ET covers. In addition to the potential excessive erosion that occurs through gully and channel formation for slopes steeper than about 5%, vegetative establishment may also prove difficult. ET covers for hazardous waste have never been constructed on slopes this steep. While we understand the difficulties and costs associated with designing a flatter slope in this area due to existing topography, regulatory approval will not be obtained until the 14% slopes are flattened. Alternatives such as additional grade fill, or using a composite cover (compacted clay and geomembrane) in the areas with steep slopes should be considered in order to achieve goal of addressing slope stability to minimize erosion/slumping. This concern was previously expressed as Comment 10 for the Preliminary Draft Work Plan.	As discussed in the May 29 meeting, the 60% design will evaluate the installation of an ET cover only over the waste that has slopes no greater than 5%. Side slopes of the landfill that are not over waste will be designed for erosion control and slope stability. As these slopes are developed, monthly working meeting will be used to discuss the regulatory concerns associated with the proposed slopes.
5	The use of lysimeters for measuring percolation through the cover has not been recommended in this document. Other than lysimeters, CDPHE is not aware of any other technique that can provide this direct measurement. As stated throughout this document, the ET cover will be designed to "minimize surface infiltration through the cover to levels that equal or outperform standard regulatory design". The only way to conclusively show that this is being achieved is through direct measurement. The use of HDSs or TDRs will not provide the information needed to show that the cover is performing satisfactorily from a regulatory perspective. Please include lysimeters within any proposed post-construction performance monitoring.	Lysimeters are being considered for performance monitoring, and the consultative process will be used during the follow-on design activities to ensure that the regulator inputs are addressed. Lysimeters have been included as a requirement in the IM/IRA for the Present Landfill cover performance monitoring.
6	Consistent with RCRA closure regulations and the Technical Guidance Document EPA/600/R-93/182 "Quality Assurance and Quality Control for Waste Containment Facilities", an *independent* Construction Quality Assurance Engineer (CQAE) should be brought into the project, and fully discussed in future design efforts. The CQAE is responsible for independent certification that the cover construction is consistent with the design requirements. This independent oversight should be supplemental to the Construction Quality Control (CQC) activities to be performed by others for the various earthworks, aggregate, piping, and geosynthetics components. The inspections and tests that are performed by both the CQAE and CQC are normally summarized in a matrix for clarification.	Independent quality assurance will be conducted during construction to oversee the subcontractor's construction quality control program. The construction subcontractor's Quality Assurance Plan will be review by subject matter experts within Kaiser-Hill and DOE. The CQAE will use this plan as a basis for oversight of the subcontractor during construction.

A meeting was held on May 29, 2002 between DOE, EPA, CDPHE, USFWS, and Kaiser-Hill to discuss the major comments associated with the Conceptual Design and develop a path forward. The path forward was not agreed to by all parties, but an indication that everyone was willing to consider the concept in the follow-on design work, if it could be demonstrated to be technically feasible and in compliance with the regulations. The responses to comments reflect the discussions during the meeting.

Responsiveness Summary for the Conceptual Design for the Present Landfill Closure Cover, April 15, 2002

Cmt #	Comment	Response
7	There are numerous inconsistencies and contradictions between and within sections in the document, these should be addressed in subsequent design documents. The duplication of discussions should be reduced in subsequent design documents, to assist in minimizing inconsistencies. Additionally there should be a consistent use of the terms for the erosion protection layer and soil rooting medium.	Agreed. The Conceptual design went through many iteration, which resulted in a redundant and inconsistent document, which will be addressed in subsequent design documents.
8	Section 2.2.3, page 14, 3rd par. – The discussion concerning the percent of bare soil at the Rocky Mountain Arsenal (RMA) appears low. Test cover inspections at RMA (i.e., June 4, 2001) have shown that bare soil, even after the establishment of vegetation, is in the range of about 40% to 55% of the total ground area. Therefore, the 2% to 5% inputs used for the UNSAT-H modeling are too low, and probably produced unreasonably optimistic results. The model should be rerun with more realistic numbers.	The modeling will be re-run with different inputs. The exact inputs used will be developed using the consultative process during the follow-on design effort.
9	Section 2.2.3, page 15, 3rd par. – For final design modeling the appropriate soil tests need to be conducted on the selected source material so these parameters are the best estimates possible.	Agreed. Appendix H contains the summary of the geotechnical results of the soils evaluated from a potential off-site borrow source. Geotechnical information is available for both on-site and off-site borrow sources, which can be made available. The follow-on design work will focus on a particular borrow source and contain more detailed information.
10	Section 2.3, page 18 – The bulleted data shown should include additional information, such as the number of tests, the range of the values, and the average value for each of the parameters.	Agreed. The follow-on design work will focus on a particular borrow source and contain more detailed and the requested information.
11	Section 2.5, page 20, second bullet – Will soil erosion be monitored? What contingency plans will there be for excessive erosion?	Soil erosion will be monitored through visual inspections. Areas of erosion will be repaired. If excessive erosion continues to occur, the cover grading may have to be modified. This criteria will be included in the IM/IRA. The requirement for erosion/settlement monuments has been added to the IM/IRA for the Present Landfill.
12	Section 2.5, page 20, third bullet – Reference is made to future engineered storm water control measures. Subsequent sections indicate that storm water control measures outside those that are inherent to the design of the ET, will be managed by the RFETS storm water control system. For No Name gulch the only storm water control system is the Landfill Pond. No Name gulch is a drainage that intersects Walnut Creek about one-mile east of the Landfill. There are no actual "storm water control structures" along this segment of Walnut Creek.	This inaccuracy will be corrected during the follow-on design work and evaluated to ensure that the design adequately addresses storm water control.

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Responsiveness Summary for the Conceptual Design for the Present Landfill Closure Cover, April 15, 2002

Cmt #	Comment	Response
13	Section 2.6, page 21 – This discussion of wetlands impacts is confusing, the ideas suggested here need to be explained more fully. These statements are inconsistent with subsequent discussions on elimination of the existing seep and presumed construction impacts to existing wetlands around the landfill pond.	Wetlands impacts and mitigation will be addressed in the IM/IRA.
14	Section 2.9, page 22 – Any discussion of ET soil construction specifications should include moisture requirements. For ET covers, a specification for moisture to be below the optimum moisture content should be included.	Agreed. The follow-on design work will contain the requested information.
15	Section 3.2.2.1, page 31 – Reference is made to slope stability present at RFETs. There are numerous areas that exhibit active slumping and erosional surfaces on various slopes, including areas around the landfill. Such features should be kept in mind during the design process and take into consideration the potential of certain native materials e.g., colluvium or RF alluvium, which may be considered as potential borrow materials, to exhibit characteristics that may be more conducive to erosion or slumping.	As discussed in the May 29 meeting, the 60% design will evaluate the installation of an ET cover only over the waste that has slopes no greater than 5%. Side slopes of the landfill that are not over waste will be designed for erosion control and slope stability. As these slopes are developed, monthly working meeting will be used to discuss the regulatory concerns associated with the proposed slopes.
16	Section 3.2.2.4, page 33 – The State does not think elimination of seep caused wetlands is consistent with other site objectives. Does the seep currently exceed surface water quality stream standards for Segment 5 of Big Dry Creek (5 CCR 1002-38)? What is the source of the seep – infiltration through the landfill or groundwater infiltration on slopes into No Name Gulch? Are the constituents conducive to natural attenuation over current exposure to ambient conditions? Assuming that the ET apron with the trench structures (i.e., infiltration galleries) will be implemented, and the seep water not exposed to ambient air.	As discussed in the May 29 meeting, the seep will not be managed by the proposed ET apron, and instead the current treatment system will be extended to the new slope surface. Side slopes of the landfill that are not over waste will be designed for erosion control and slope stability. As these slopes are developed, monthly working meeting will be used to discuss the regulatory concerns associated with the proposed slopes. Based on input from USFWS, the impacts to the areas around the landfill will be minimized; however the design of the remedy will not be driven by retention of the pond.
17	Section 3.2.2.4.1, page 34 – The discussion on the ET apron appears to indicate that the apron will be used for "treatment" of water from the seep, which may have other regulatory or stewardship implications for future management of the landfill. A question that should be considered in the design of the subsurface trench system proposed for management of seep water, is what happens if the point of saturation is attained in the trench system? Where will the shallow groundwater discharge, and could that discharge have an impact to waters of the state? Will the use of the trench system achieve natural attenuation for the constituents of concern? Additionally, the ET apron design appears to eliminate the landfill pond, which has been designated a water of the state. Implications of the closure of the pond as part of the landfill closure requires discussion.	The ET apron will not be developed in the 60% design for seep management. As discussed in the meeting on May 29, the current treatment system will be extended to the edge of the new slope once the cover is installed. The implications of eliminating the pond will be addressed in the IM/IRA.

A meeting was held on May 29, 2002 between DOE, EPA, CDPHE, USFWS, and Kaiser-Hill to discuss the major comments associated with the Conceptual Design and develop a path forward. The path forward was not agreed to by all parties, but an indication that everyone was willing to consider the concept in the follow-on design work, if it could be demonstrated to be technically feasible and in compliance with the regulations. The responses to comments reflect the discussions during the meeting.

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Cmt #	Comment	Response
18	Section 3.2.3, page 36 – Are the storm water control measures discussed in this section part of the optional ET apron, or separate? Additionally, the closure design requires consideration of the existing method of storm water control for the landfill area. Outside of the landfill pond, there are no other storm water control measures for No Name Gulch. Additionally, if the landfill pond is eliminated and the seep remains (ET apron not constructed), how is the seep water to be managed?	The ET apron will not be developed in the 60% design for seep management. As discussed in the meeting on May 29, the current treatment system will be extended to the edge of the new slope once the cover is installed. The existing stormwater controls will be evaluated and addressed in the 60% design. The inaccurate statements regarding stormwater controls in No Name Gulch will be corrected in the 60% design.
19	Section 3.2.3, page 36, 4th par. – How has the topsoil design specification been evaluated against the soils being considered?	It is assumed that topsoil will have to be imported.
20	Section 3.2.5.1, Table 3, page 45 – The wet bulk density of the landfill gas-venting layer seems low. The layer is described as aggregate consisting of clean gravel with minimal fines. This material is assumed to classify as a poorly sorted gravel (GP), according to the USCS. Average dry densities for GP soils are about 112 to 137 pcf, with a moisture content of about 6.5% (Design of Small Dams, U.S. Bureau of Reclamation, 1987). Therefore, we assume that an average value for the wet bulk density of GP soils are about 119 to 146 pcf, which is much denser than the 96.3 pcf shown.	Based on the meeting May 29, the 60% design will have a combination gas venting/biota barrier, which will require additional engineering. The bulk density will be evaluated.
21	Section 3.2.6.3, page 51 - An understanding of the hydraulic control of the existing surface water diversion ditch is required before a decision is made to eliminate the ditch. Does the ditch actually recharge groundwater infiltration in the landfill area, or does it actually divert water away as designed?	The existing stormwater controls will be evaluated and addressed in the 60% design.
22	Section 3.3.2, page 60, 3rd par. – Prior to committing resources to a particular borrow source, lab testing should be performed to obtain actual material properties. The specific soil properties should then be input into the UNSAT-H model in order to verify that the proposed materials will be acceptable. An "Acceptable Zone" as well as construction specifications can then be developed for the ET cover. See Comment 1.	Appendix H contains the summary of the geotechnical results of the soils evaluated from a potential off-site borrow source. Geotechnical information is available for both on-site and off-site borrow sources, which can be made available. The follow-on design work will focus on a particular borrow source and contain more detailed information.
23	Section 3.4.2, page 68, Table 8. – The extra soil available in the asbestos relocation option should be considered to decrease the unacceptable slopes proposed.	The option to relocate the asbestos was included in the conceptual design for discussion purposes. The asbestos will not be relocated and the 60% will not contain this information.
24	Section 4.3, page 73 – If the seep is eliminated by placement of the ET apron, then what will be the alternate source of water for irrigation? If the landfill pond is eliminated, what is the structure for storage of irrigation water?	Irrigation water required during vegetation establishment will be piped from the modular storage tanks.

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Cmt #	Comment	Response
25	Section 6.1, page 78 – There are no other storm water management basins downstream in No Name Gulch. See comments 12 and 18.	This inaccuracy will be corrected during the follow-on design work and evaluated to ensure that the design adequately addresses storm water control.
26	Section 6.2.3, page 80 – The results between the runoff methods is significant. The use of infiltration value of 3 in/hr seems very conservative. The evaluation should be expanded to include lesser infiltration rates, to see the differences in flow rates under other projected conditions.	The evaluation will be expanded to include lesser infiltration rates in the 60% design.
27	Section 7.2.3, page 86 – Lysimeters must be the major component of the performance monitoring. See Comment 5.	Lysimeters are being considered for performance monitoring and will be discussed throughout the 60% design development during the monthly status meetings. Lysimeters have been included as a requirement in the IM/IRA for the Present Landfill cover performance monitoring.
28	Section 7.3, page 87 – The cover monitoring should be performed at a frequency greater than each quarter. Typically, monthly monitoring is initiated until equilibrium is approached. At that time, a reduced monitoring effort, potentially each quarter, can be considered.	The monitoring included in the conceptual design was just a starting point for discussion. The 60% design will include quarterly monitoring while the vegetation is being established and monthly monitoring for years 2 through 6. Decision criteria will be placed in the IM/IRA to determine how decisions will be made on monitoring requirements after year 6.
29	Section 7.3.1, page 87 – The Phase I Monitoring program does not include a discussion of water quality monitoring (assumed to include surface water and groundwater) as is mentioned in the Phase II Monitoring Program. Such a discussion needs to be incorporated in future design.	The post-closure monitoring will be addressed in the IM/IRA.
30	Section 7.3.1, page 87, 3rd par. – Please explain what "action monitoring" means.	This term will not be used in the 60% design.
31	Sections 7.3.2 and 7.3.3 – The discussions need to be expanded so one can determine if water quality sampling includes surface water and ground water.	The post-closure monitoring will be addressed in the IM/IRA.
32	Section 7.3.3, page 88 – The last sentence assumes that 30-years is the end of the monitoring period. This is not necessarily correct. Although 30-years is typically the post-closure monitoring period, monitoring for this facility should continue until the system essentially achieves equilibrium, which could potentially be greater than 30-years. A decision to end the cover monitoring will be made in the future after evaluating the cover percolation data to be obtained through lysimeters over time.	Agreed, the IM/IRA will address post-closure and performance monitoring requirements, the reduction of monitoring, and the monitoring exit strategy.
33	Section 8.1, page 90 – The second paragraph states that a detailed off-site investigation has been conducted and suitable soils have been located. Please provide this information to CDPHE for review.	The geotechnical data will be forwarded. All available geotechnical data was forwarded on June 26. The subcontractor is currently performing a more detailed borrow study. The methodology for the approach will be discussed at the meeting on July 24.

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Cmt #	Comment	Response
34	Section 8.2, page 91 – Onsite borrowing needs to ensure the ground water table remains at a depth that will not encourage phreatophyte development unless it is part of a PMJM habitat enhancement.	Agreed
35	Section 8.2, page 92, 2nd par. – For clarity, provide the ASTM or other testing designations with the bulleted items shown. Also, what are the differences between "standard Proctor compaction", "dry bulk density", and "particle density"?	Agreed, the 60% design will include this information.
36	Section 8.2, page 92, 3rd par. – Rather than estimate cobble percentages based on observed drill cuttings, actual sampling and lab testing (gradations) through the use of test pits or trenches should be performed.	Agreed, in the event that an on-site borrow source is pursued, the cobbles will not be estimated.
37	Section 8.3.3, page 95 – Although it is up to the construction subcontractor to determine means and methods for soil excavation and placement, the use of scrapers for placement of the ET cover should not be allowed. Scrapers tend to compact soils, which will inhibit vegetative growth on the cover. In fact, as a selling point, the Caterpillar Equipment Company web site states the following: "Caterpillar scrapers load quickly, have high travel speeds, and *compact as they dump* and spread on the run." It is not acceptable to assume that overcompaction will take place, and then adjusted by disking or other means to loosen the soil.	Agreed, the scrapers were only proposed for excavating soil for stockpiling near the landfill, not for placement.
38	Section 8.3.4, page 95 – In addition to considering adequate time frames for processing the soil and aggregate, QC and QA testing must also be considered. Once the actual stockpile is developed, QC/QA testing at agreed upon frequencies must be performed. Although this can be done during material placement, it is often more efficient to perform at least some of the required testing prior to actual construction.	Agreed
39	Section 8.3.6, page 97 – 1) Please remove the reference to "ripping", and replace it with shallow "disking". It has been shown at RMA that deep ripping will create seepage paths that may allow water to easily percolate through the cover. 2) The term "low-weight wheeled vehicle" is misleading. Tracked vehicles may exert low ground pressure, usually with wider treads to distribute the load, but wheel vehicles transfer their entire load (weight of vehicle plus soil it is carrying) at the point of wheel contact with the ground. 3) Although drying soils to proper moisture for ET cover placement may be difficult, or even costly, if the soils are wetter than optimum, this still must be part of the placement specifications. Ripping or processing soils after placement should not be viewed as the primary means to place soils within the acceptable compaction zone.	1. The 60% design will not include the term ripping. 2. Agreed, the conceptual design should have used the term low ground pressure equipment. 3. Agreed

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Cmt #	Comment	Response
40	Section 8.3.7, page 97 – Prior to placing the soil-rooting medium and erosion protection layer on the venting layer aggregate, the aggregate to the interim cover will probably be the critical interface. A slope stability calculation, using the correct density for the aggregate layer (see Comment 10) should be performed.	Based on the meeting May 29, the 60% design will have a combination gas venting/biota barrier, which will require additional engineering. The bulk density will be evaluated.
41	Section 8.3.10, page 99, 3rd par. – Please clarify how the proposed permeable conduits will distribute seep water in the shallow soils. Specifically where and at what rate will the water be directed? It does not appear this option was modeled. Performance of the ET apron should be tested with UNSATH.	The ET apron will not be developed in the 60% design for seep management. As discussed in the meeting on May 29, the current treatment system will be extended to the edge of the new slope once the cover is installed.
42	Section 9.1.3, page 111 – Please clarify that an *independent* CQAE will be utilized consistent with EPA guidance. See comment 2 above.	Independent quality assurance will be conducted during construction to oversee the subcontractor's construction quality control program. The construction subcontractor's Quality Assurance Plan will be review by subject matter experts within Kaiser-Hill and DOE. The CQAE will use this plan as a basis for oversight of the subcontractor during construction.

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U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**

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U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**
1	Soil-rooting medium depth – Any vegetation on the evapotranspiration (ET) cover will be seeded on the Erosion Protection Layer (EPL). It is expected that roots of the vegetation will extend through the EPL and into the Soil-Rooting Medium (SRM). Until the time that the root system extends into the SRM, the cover will not be operating at its optimum capability. Throughout the report, the depths of the EPL and the SRM vary. Table 1 states that vegetation will be able to grow to a depth of the ET cover, which will be no less than three feet. Figure 3 shows a cross section where the EPL is one half to one foot and the SRM is one to one and one half feet, with a minimum of both at two feet. This is underlain by a geotextile fabric, which will prohibit further root growth. Figures 6 and 13 cross sections show the minimum design thickness of the EPL and SRM to be two and one half feet. In section 3.3.2, it states that the minimum thickness of the EPL and SRM layers will be thirty inches, with an average of fifty inches. The document needs to be reviewed so that the minimum thickness of the EPL and the SRM are consistent. It should be noted that root systems of tallgrass prairie grasses in the Great Plains can extend seven to over sixteen feet down into the soil. Some of those species are found on Rocky Flats. While rooting depths on Rocky Flats is specifically unknown, the Service has a concern that two and a half to three feet of rooting depth may not be sufficient to allow the plants to establish themselves and operate as needed for the ET cover. The Service recommends that the EPL/SRM depth be a minimum of four to five feet to allow root systems of the tallgrass species to establish themselves. (References available)	The 60% design will evaluate a soil rooting medium of 3 feet, and propose installation of grade fill in any areas requiring more that 4 feet of soil rooting medium to achieve the required grade.

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U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**
2	Biota Barrier – The Service believes that a biota barrier is mandatory in the ET cover. Fossorial (burrowing) animals can compromise the integrity of waste covers by excavating soil from the cover, increasing water infiltration rates into the soil and waste cells beneath soil covers, increasing soil erosion (both by runoff and air dispersion), and adversely affecting the vegetative cover. Pocket gophers may cast as much or more than 15,000 kg of subsurface soil to the surface in an area of one hectare (2.47 acres) in a period of one year. If all of the disturbed soil erodes, the loss would be about equal to nearly five inches in 100 years. Many vertebrate and invertebrate animals can significantly penetrate the soil to obtain food, raise young, escape temperature extremes and predators, and to meet other needs for survival. Although most of the burrowing activity is in the upper two to three feet, some animals are capable of burrowing to much greater depths. Prairie dogs have been shown to burrow to greater depths than 7 feet in Colorado and up to 14 feet in other areas. Great Basin pocket mice are capable of burrowing to depths of four to six feet. Invertebrate animals such as harvester ants, in arid regions, can tunnel to depths well over 10 feet. Such penetration can lead to direct contamination of the burrowing animals and this in turn provides opportunity for dispersal or food chain transport of the toxic materials and possibly for deleterious impacts to the individual involved. In one study, radioactive contamination has been detected above waste burial sites in soil brought to the surface by burrowing animals and in feces and bone fragments of burrowing animals. Burrowing and tunneling activities are obviously influenced by the subterranean environment, with factors such as soil density, cohesiveness and moisture content being some of the most important. (References available)	Agreed.[3] A biota barrier will be included in the follow-on design work. As discussed in the meeting on May 29, the 60% design will include a combination gas venting/biota barrier.

[3] When agreed in included in the response, that is an indication that the comment is well-founded and will be incorporated into the 60% design.
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U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**
3	Revegetation Plan – This and other reports have stated that the revegetation of remediated sites will be done in accordance with the K-H Ecology Group, but does not give any detail as to how it is to be done. The Service has a concern that there has been some discussion of eliminating the K-H Ecology Group, before these decisions can be made. The Service believes that USDOE/K-H needs to develop a formal revegetation plan for the ET cover and other remediation projects. The Conceptual Design Report states that the seed mix will be procured from an off-site source based on specifications that meet the K-H Ecology Group requirements, if available. It is unknown what those requirements are or what existing REFETS guidelines require for the vegetation projects. As a cost saving activity, it is also possible to collect seeds from on-site sources. The Service began discussions with the K-H Ecology Group about collecting seeds for use in revegetation projects. The report also discussed three types of upland vegetation communities, xeric tallgrass prairie, needle-and-thread grass community, and mesic mixed grass prairie. The final community selection should be specified now so that the final seed mix can be developed and recorded in the design documents. As the project nears completion, this would enable the purchase of seeds when they are readily available. The revegetation plan should also address any soil preparations (physical work and amendments) that are needed for proper vegetation success.	Agreed, a working group will be established to ensure that this issue is resolved prior to completion of the 60% design.

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U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**
4	Monitoring Plan – The Service is concerned that the monitoring plan calls for periodic visual inspections of surface water controls, vegetation quality, weeds, seepage, burrowing animals, subsidence, and erosion. It then covers general corrective actions for the issues discovered in the periodic visual inspections, except for the burrowing animals. What is planned when animals are detected burrowing on the cover? Are any corrective actions expected to take place? In Phase I of the monitoring plan, inspections will occur monthly for the first two years and quarterly for the next four years. During the quarterly inspections there is a chance that burrowing animals may have established themselves on the cover since the last inspection. The Service recommends that there be "informal" inspections more frequently to ensure that burrowing animals do not establish themselves on the cover. There are some possibilities to manage the cover that may deter some burrowing animals from migration onto the cover (buffer area, vegetation height, some sort of barrier, etc.). These can be looked at as the cover design is developed.	Agreed, inspections for burrowing animals will be added to the 60% design, but will also be covered in the IM/IRA. More frequent inspections will be added to the proposed plan through the Phase I monitoring.
5	Section 2.4 – General comments 1 and 4 cover a lot of the issues. Another plant property would be resistance against herbivores and omnivores. The Service would like to be very involved in the seed selection and revegetation process for all remediation projects.	Agreed, a working group will be established to ensure that this issue is resolved prior to completion of the 60% design.

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U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**
6	Section 2.11 – The landfill gas-venting system could easily be enhanced to become an eighteen-inch biota barrier as well. Specifications for a coarse aggregate material biota barrier can be found in the Rocky Mountain Arsenal's "Biota Barriers for Cap and Cover Systems". The aggregate is a granular biota barrier that has a nominal thickness of eighteen inches and consists of at least thirty-three percent particles that are a minimum 6 inches in diameter and a maximum size of about nine inches in diameter. Gradation characteristics are as follows: Maximum Sieve Size — Percent Passing 10 inches — 100 6 inches — 50 – 67 3 inches — 30 – 55 1 inch — 10 – 35 3/8 inch — 0 – 10 Placement of the layer should minimize continuous voids that are greater than 2 inches in diameter. The unconfined compressive strength of the particle material should be as least 2000 psi, and the unit weight of the material should be a minimum of 130 pcf.	Agreed. A biota barrier will be included in the follow-on design work. As discussed in the meeting on May 29, the 60% design will include a combination gas venting/biota barrier.
7	Section 3.2.2.1 – The minimum thickness of the EPL and SRM should be four feet, unless there is no contamination in the rooting zone, such as the toe of the cover over native soil.	The 60% design will evaluate a soil rooting medium of 3 feet, and propose installation of grade fill in any areas requiring more that 4 feet of soil rooting medium to achieve the required grade.
8	Section 3.2.2.3 – See general comment 3.	Agreed, a working group will be established to ensure that this issue is resolved prior to completion of the 60% design.
9	Section 3.2.6.4 – Any clearing and grubbing should be planned so that it does not take place during the ground-nesting bird breeding season. Any time habitat, even if it is marginal habitat, is disturbed or destroyed, all attempts should be made not to harm or harass breeding birds or natal animals. Inspections of the subject area or timing of the activity can accomplish this request.	Agreed, monthly meeting will be established to ensure that the design development is consistent with the entire team's objectives and that there are no major issues at the 60% design phase. Assuming this process works, it will be requested that the mobilization effort and clearing grubbing are initiated when the 90% design is complete.

A meeting was held on May 29, 2002 between DOE, EPA, CDPHE, USFWS, and Kaiser-Hill to discuss the major comments associated with the Conceptual Design and develop a path forward. The path forward was not agreed to by all parties, but an indication that everyone was willing to consider the concept in the follow-on design work, if it could be demonstrated to be technically feasible and in compliance with the regulations. The responses to comments reflect the discussions during the meeting.

Responsiveness Summary for the Conceptual Design for the Present Landfill Closure Cover, April 15, 2002

U.S. FISH AND WILDLIFE SERVICE		
Cmt. #	**Comment**	**Response**
10	Section 3.3.2 – See general comment 1. It would be very helpful if there is an example of what a 14% grade would look like, either an example somewhere on-site or even a two dimensional model in the plan. If any area outside the cover area is disturbed (e.g., borrow area or temporary access road), that area must be restored to pre-existing conditions. Also, any habitat loss due to the disturbance may need to be addressed in a Natural Resource Damage Assessment and Restoration process.	Figure 12 of the conceptual design compares the 14% slope with the current grade.
11	Section 4.0 – See general comment 3. This section needs to be expanded in future versions.	Agreed, a working group will be established to ensure that this issue is resolved prior to completion of the 60% design.
12	Section 7.3.1 – Monthly inspections for burrowing animals may need to continue after the initial two-year period. It will probably have to continue for the life of the remedy.	Agreed, inspections for burrowing animals will be added to the 60% design, but will also be covered in the IM/IRA. More frequent inspections will be added to the proposed plan through the Phase I monitoring.
13	Section 8.1.1 – On-site collection of seeds for revegetation may be a viable option to purchasing seeds.	Agreed, a working group will be established to ensure that this issue is resolved prior to completion of the 60% design.
14	Section 8.3.1 – See specific comment 5.	Agreed, a working group will be established to ensure that this issue is resolved prior to completion of the 60% design.
15	Section 8.3.5 – The Service would not like to see a road built between the LaFarge Quarry and the Present Landfill. The road would probably go through quality xeric tallgrass prairie that would be difficult and expensive to restore. There would probably also be a security issue with an additional access road.	Agreed, additional borrow sources and alternate haul routes will be evaluated as part of the 60% design to minimize to the extent practical impacts to non-impacted areas
16	Section 8.3.7 – See general comment 2 and specific comment 2.	Agreed. A biota barrier will be included in the follow-on design work. As discussed in the meeting on May 29, the 60% design will include a combination gas venting/biota barrier.
17	Section 8.4 – The schedule has clearing and grubbing activities occurring in late May and June. The Service would rather see it occur in January-February or July-August. See specific comment 5.	Agreed, monthly meeting will be established to ensure that the design development is consistent with the entire team's objectives and that there are no major issues at the 60% design phase. Assuming this process works, it will be requested that the mobilization effort and clearing grubbing are initiated when the 90% design is complete.

A meeting was held on May 29, 2002 between DOE, EPA, CDPHE, USFWS, and Kaiser-Hill to discuss the major comments associated with the Conceptual Design and develop a path forward. The path forward was not agreed to by all parties, but an indication that everyone was willing to consider the concept in the follow-on design work, if it could be demonstrated to be technically feasible and in compliance with the regulations. The responses to comments reflect the discussions during the meeting.

5/1/02